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Text Part Number: 78EE117C99-1920841690

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## 1.2 libjpeg 6b

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README for release 6b of 27-Mar-1998

=====

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This software is the work of Tom Lane, Philip Gladstone, Jim Boucher, Lee Crocker, Julian Minguillon, Luis Ortiz, George Phillips, Davide Rossi, Guido Vollbeding, Ge' Weijers, and other members of the Independent JPEG Group.

IJG is not affiliated with the official ISO JPEG standards committee.

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.  
RELATED SOFTWARE    Other stuff you should get.  
FILE FORMAT WARS    Software \*not\* to get.  
TO DO                Plans for future IJG releases.

Other documentation files in the distribution are:

User documentation:

install.doc      How to configure and install the IJG software.  
usage.doc        Usage instructions for cjpeg, djpeg, jpegtran,  
                  rdjpgcom, and wrjpgcom.  
\*.1                Unix-style man pages for programs (same info as usage.doc).  
wizard.doc        Advanced usage instructions for JPEG wizards only.  
change.log        Version-to-version change highlights.

Programmer and internal  
documentation:

libjpeg.doc      How to use the JPEG library in your own programs.  
example.c        Sample code for calling the JPEG library.  
structure.doc    Overview of the JPEG library's internal structure.  
filelist.doc     Road map of IJG files.  
coderules.doc    Coding style rules --- please read if you contribute code.

Please read at least the files install.doc and usage.doc. Useful 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 compression and decompression. JPEG (pronounced "jay-peg") is a standardized compression method for full-color and gray-scale images.

JPEG is intended for compressing "real-world" scenes; line drawings, cartoons and other non-realistic images are not its strong suit. JPEG is lossy, meaning that the output image is not exactly identical to the input image. Hence you must not use JPEG if you have to have identical output bits. However, on typical photographic images, very good compression levels can be obtained with no visible change, and remarkably high compression levels are possible if you can tolerate a low-quality image. For more details, see the references, or just experiment with various compression settings.

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. For legal reasons, we are not distributing code for the arithmetic-coding variants of JPEG; see LEGAL ISSUES. 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.

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ansi2knr.c for full details.) However, since ansi2knr.c is not needed as part of any program generated from the IJG code, this does not limit you more than the foregoing paragraphs do.

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, ltconfig, ltmain.sh). Another support script, install-sh, is copyright by M.I.T. but is also freely distributable.

It appears that the arithmetic coding option of the JPEG spec is covered by patents owned by IBM, AT&T, and Mitsubishi. Hence arithmetic coding cannot legally be used without obtaining one or more licenses. For this reason, support for arithmetic coding has been removed from the free JPEG software. (Since arithmetic coding provides only a marginal gain over the unpatented Huffman mode, it is unlikely that very many implementations will support it.) So far as we are aware, there are no patent restrictions on the remaining code.

The IJG distribution formerly included code to read and write GIF files. To avoid entanglement with the Unisys LZW patent, GIF reading support has been removed altogether, and the GIF writer has been simplified to produce "uncompressed GIFs". This technique does not use the LZW algorithm; the resulting GIF files are larger than usual, but are readable by all standard GIF decoders.

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## REFERENCES

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We

highly 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 PostScript file containing a revised version of Wallace's article is available at <ftp://ftp.uu.net/graphics/jpeg/wallace.ps.gz>. 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 full 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). This is by far the most complete exposition of JPEG in existence, and we highly recommend it.

The JPEG standard itself is not available electronically; you must order a paper copy through ISO or ITU. (Unless you feel a need to own a certified official copy, we recommend buying the Pennebaker and Mitchell book instead; it's much cheaper and includes a great deal of useful explanatory material.) In the USA, copies of the standard may be ordered from ANSI Sales at (212) 642-4900, or from Global Engineering Documents at (800) 854-7179. (ANSI doesn't take credit card orders, but Global does.) It's not cheap: as of 1992, ANSI was charging \$95 for Part 1 and \$47 for Part 2, plus 7% shipping/handling. The 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.

Some extensions to the original JPEG standard are defined in JPEG Part 3, a newer ISO standard numbered ISO/IEC IS 10918-3 and ITU-T T.84. IJG currently does not support any Part 3 extensions.

The JPEG standard does not specify all details of an interchangeable file format. For the omitted details we follow the "JFIF" conventions, revision 1.02. A copy of the JFIF spec is available from:

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Milpitas, CA 95035  
phone (408) 944-6300, fax (408) 944-6314

A PostScript version of this document is available by FTP at <ftp://ftp.uu.net/graphics/jpeg/jfif.ps.gz>. There is also a plain text version at <ftp://ftp.uu.net/graphics/jpeg/jfif.txt.gz>, but it is missing the figures.

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 <ftp.sgi.com> or from <ftp://ftp.uu.net/graphics/jpeg/>. 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. libtiff is available from <ftp://ftp.sgi.com/graphics/tiff/>.

#### ARCHIVE LOCATIONS

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The "official" archive site for this software is <ftp.uu.net> (Internet address 192.48.96.9). The most recent released version can always be found there in directory <graphics/jpeg>. This particular version will be archived as <ftp://ftp.uu.net/graphics/jpeg/jpegsrc.v6b.tar.gz>. If you don't have direct Internet access, UUNET's archives are also available via UUCP; contact [help@uunet.uu.net](mailto:help@uunet.uu.net) for information on retrieving files that way.

Numerous Internet sites maintain copies of the UUNET files. However, only <ftp.uu.net> is guaranteed to have the latest official version.

You can also obtain this software in DOS-compatible "zip" archive format from the SimTel archives (<ftp://ftp.simtel.net/pub/simtelnet/msdos/graphics/>), or on CompuServe in the Graphics Support forum (GO CIS:GRAPHSUP), library 12 "JPEG Tools". Again, these versions may sometimes lag behind the <ftp.uu.net> release.

The JPEG FAQ (Frequently Asked Questions) article is a useful source of general information about JPEG. It is updated constantly and therefore is not included in this distribution. The FAQ is posted every two weeks to Usenet newsgroups <comp.graphics.misc>, <news.answers>, and other groups. 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: <ftp://rtfm.mit.edu/pub/usenet/news.answers/jpeg-faq/>.  
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with body  
send usenet/news.answers/jpeg-faq/part1  
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## RELATED SOFTWARE

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Numerous viewing and image manipulation programs now support JPEG. (Quite a few of them use this library to do so.) The JPEG FAQ described above lists some of the more popular free and shareware viewers, and tells where to obtain them on Internet.

If you are on a Unix machine, we highly recommend Jef Poskanzer's free PBPLUS software, which provides many useful operations on PPM-format image files. In particular, it can convert PPM images to and from a wide range of other formats, thus making cjpeg/djpeg considerably more useful. The latest version is distributed by the NetPBM group, and is available from numerous sites,

notably <ftp://wuarchive.wustl.edu/graphics/graphics/packages/NetPBM/>.

Unfortunately PBPLUS/NETPBM is not nearly as portable as the IJG software is; you are likely to have difficulty making it work on any non-Unix machine.

A different free JPEG implementation, written by the PVRG group at Stanford, is available from <ftp://havefun.stanford.edu/pub/jpeg/>. This program is designed for research and experimentation rather than production use; it is slower, harder to use, and less portable than the IJG code, but it is easier to read and modify. Also, the PVRG code supports lossless JPEG, which we do not. (On the other hand, it doesn't do progressive JPEG.)

## FILE FORMAT WARS

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Some JPEG programs produce files that are not compatible with our library. The root of the problem is that the ISO JPEG committee failed to specify a concrete file format. Some vendors "filled in the blanks" on their own, creating proprietary formats that no one else could read.

(For example, none of the early commercial JPEG implementations for the Macintosh were able to exchange compressed files.)

The file format we have adopted is called JFIF (see REFERENCES). This format has been agreed to by a number of major commercial JPEG vendors, and it has become the de facto standard. JFIF is a minimal or "low end" representation.



We recommend the use of TIFF/JPEG (TIFF revision 6.0 as modified by TIFF Technical Note #2) for "high end" applications that need to record a lot of additional data about an image. TIFF/JPEG is fairly new and not yet widely supported, unfortunately.

The upcoming JPEG Part 3 standard defines a file format called SPIFF. SPIFF is interoperable with JFIF, in the sense that most JFIF decoders should be able to read the most common variant of SPIFF. SPIFF has some technical advantages over JFIF, but its major claim to fame is simply that it is an official standard rather than an informal one. At this point it is unclear whether

SPIFF will supersede JFIF or whether JFIF will remain the de-facto standard. IJG intends to support SPIFF once the standard is frozen, but we have not decided whether it should become our default output format or not. (In any case, our decoder will remain capable of reading JFIF indefinitely.)

Various proprietary file formats incorporating JPEG compression also exist. We have little or no sympathy for the existence of these formats. Indeed, one of the original reasons for developing this free software was to help force convergence on common, open format standards for JPEG files. Don't use a proprietary file format!

TO DO

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The major thrust for v7 will probably be improvement of visual quality. The current method for scaling the quantization tables is known not to be very good at low Q values. We also intend to investigate block boundary smoothing, "poor man's variable quantization", and other means of improving quality-vs-file-size performance without sacrificing compatibility.

In future versions, we are considering supporting some of the upcoming JPEG Part 3 extensions --- principally, variable quantization and the SPIFF file format.

As always, speeding things up is of great interest.

Please send bug reports, offers of help, etc. to [jpeg-info@uunet.uu.net](mailto:jpeg-info@uunet.uu.net).

## 1.3 javax-inject 1

### 1.3.1 Available under license :

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```
* /opt/cola/permits/127992493_1695293957.3536224/0/jzlib-1-1-3-sources-zip/com/jcraft/jzlib/Deflate.java
* /opt/cola/permits/127992493_1695293957.3536224/0/jzlib-1-1-3-sources-zip/com/jcraft/jzlib/Inflate.java
* /opt/cola/permits/127992493_1695293957.3536224/0/jzlib-1-1-3-sources-zip/com/jcraft/jzlib/ZStream.java
* /opt/cola/permits/127992493_1695293957.3536224/0/jzlib-1-1-3-sources-zip/com/jcraft/jzlib/Adler32.java
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```
* /opt/cola/permits/127992493_1695293957.3536224/0/jzlib-1-1-3-sources-zip/com/jcraft/jzlib/InfCodes.java
* /opt/cola/permits/127992493_1695293957.3536224/0/jzlib-1-1-3-sources-zip/com/jcraft/jzlib/Tree.java
* /opt/cola/permits/127992493_1695293957.3536224/0/jzlib-1-1-3-sources-zip/com/jcraft/jzlib/ZStreamException.java
* /opt/cola/permits/127992493_1695293957.3536224/0/jzlib-1-1-3-sources-zip/com/jcraft/jzlib/StaticTree.java
* /opt/cola/permits/127992493_1695293957.3536224/0/jzlib-1-1-3-sources-zip/com/jcraft/jzlib/InfTree.java
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\* /opt/cola/permits/127992493\_1695293957.3536224/0/jzlib-1-1-3-sources-zip/com/jcraft/jzlib/GZIPOutputStream.java

\* /opt/cola/permits/127992493\_1695293957.3536224/0/jzlib-1-1-3-sources-zip/com/jcraft/jzlib/Inflater.java

\* /opt/cola/permits/127992493\_1695293957.3536224/0/jzlib-1-1-3-sources-zip/com/jcraft/jzlib/DeflaterOutputStream.java

\*

/opt/cola/permits/127992493\_1695293957.3536224/0/jzlib-1-1-3-sources-zip/com/jcraft/jzlib/ZInputStream.java

\* /opt/cola/permits/127992493\_1695293957.3536224/0/jzlib-1-1-3-sources-zip/com/jcraft/jzlib/ZOutputStream.java

\* /opt/cola/permits/127992493\_1695293957.3536224/0/jzlib-1-1-3-sources-zip/com/jcraft/jzlib/JZlib.java

\* /opt/cola/permits/127992493\_1695293957.3536224/0/jzlib-1-1-3-sources-zip/com/jcraft/jzlib/InflaterInputStream.java

\* /opt/cola/permits/127992493\_1695293957.3536224/0/jzlib-1-1-3-sources-zip/com/jcraft/jzlib/GZIPException.java

\* /opt/cola/permits/127992493\_1695293957.3536224/0/jzlib-1-1-3-sources-zip/com/jcraft/jzlib/CRC32.java

\* /opt/cola/permits/127992493\_1695293957.3536224/0/jzlib-1-1-3-sources-zip/com/jcraft/jzlib/InfBlocks.java

\* /opt/cola/permits/127992493\_1695293957.3536224/0/jzlib-1-1-3-sources-zip/com/jcraft/jzlib/Checksum.java

\* /opt/cola/permits/127992493\_1695293957.3536224/0/jzlib-1-1-3-sources-zip/com/jcraft/jzlib/Deflater.java

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## 1.12 httpasyncclient 4.1.1

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## 1.13 httpcore-nio 4.4.4

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```

```
*  
*/  
  
/**  
* Embedded non-blocking server and server bootstrap.  
*/  
package org.apache.http.impl.nio.bootstrap;
```

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jar/org/intellij/lang/annotations/Identifier.java  
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jar/org/intellij/lang/annotations/Pattern.java  
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\* /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

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\*/

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\* /opt/cola/permits/174180979\_1651176763.07/0/hdrhistogram-2-1-9-sources-jar/org/HdrHistogram/package-info.java

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\* 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\_TIMES\$";

}

Found in path(s):

\* /opt/cola/permits/174180979\_1651176763.07/0/hdrhistogram-2-1-9-sources-jar/org/HdrHistogram/Version.java.template

## 1.17 assertj-core 3.9.1

### 1.17.1 Available under license :

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Found in path(s):

\* /opt/cola/permits/176722374\_1695326499.9478843/0/assertj-core-3-9-1-sources-jar/org/assertj/core/api/MapSizeAssert.java  
\* /opt/cola/permits/176722374\_1695326499.9478843/0/assertj-core-3-9-1-sources-jar/org/assertj/core/error/ShouldBeEqualByComparingFieldByFieldRecursively.java  
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\* /opt/cola/permits/176722374\_1695326499.9478843/0/assertj-core-3-9-1-sources-  
jar/org/assertj/core/error/ShouldHaveExtension.java  
\* /opt/cola/permits/176722374\_1695326499.9478843/0/assertj-core-3-9-1-sources-  
jar/org/assertj/core/api/AbstractOffsetDateTimeAssert.java  
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/opt/cola/permits/176722374\_1695326499.9478843/0/assertj-core-3-9-1-sources-  
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\* /opt/cola/permits/176722374\_1695326499.9478843/0/assertj-core-3-9-1-sources-  
jar/org/assertj/core/api/DateAssert.java  
\* /opt/cola/permits/176722374\_1695326499.9478843/0/assertj-core-3-9-1-sources-  
jar/org/assertj/core/error/ShouldBeAssignableFrom.java  
\* /opt/cola/permits/176722374\_1695326499.9478843/0/assertj-core-3-9-1-sources-  
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\* /opt/cola/permits/176722374\_1695326499.9478843/0/assertj-core-3-9-1-sources-  
jar/org/assertj/core/api/AtomicLongArrayAssert.java  
\* /opt/cola/permits/176722374\_1695326499.9478843/0/assertj-core-3-9-1-sources-  
jar/org/assertj/core/api/InputStreamAssert.java  
\* /opt/cola/permits/176722374\_1695326499.9478843/0/assertj-core-3-9-1-sources-  
jar/org/assertj/core/error/ShouldNotBeInstanceOfAny.java  
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\* /opt/cola/permits/176722374\_1695326499.9478843/0/assertj-core-3-9-1-sources-  
jar/org/assertj/core/internal/AtomicReferenceArrayElementComparisonStrategy.java  
\* /opt/cola/permits/176722374\_1695326499.9478843/0/assertj-core-3-9-1-sources-  
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\* /opt/cola/permits/176722374\_1695326499.9478843/0/assertj-core-3-9-1-sources-  
jar/org/assertj/core/error/uri/ShouldHaveProtocol.java



\* /opt/cola/permits/176722374\_1695326499.9478843/0/assertj-core-3-9-1-sources-jar/org/assertj/core/util/diff/DeleteDelta.java  
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/opt/cola/permits/176722374\_1695326499.9478843/0/assertj-core-3-9-1-sources-jar/org/assertj/core/error/ShouldNotBeExactlyInstanceOf.java  
\* /opt/cola/permits/176722374\_1695326499.9478843/0/assertj-core-3-9-1-sources-jar/org/assertj/core/api/CharArrayAssert.java  
\* /opt/cola/permits/176722374\_1695326499.9478843/0/assertj-core-3-9-1-sources-jar/org/assertj/core/util/diff/DiffAlgorithm.java  
\* /opt/cola/permits/176722374\_1695326499.9478843/0/assertj-core-3-9-1-sources-jar/org/assertj/core/error/ShouldNotBeSame.java  
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\* /opt/cola/permits/176722374\_1695326499.9478843/0/assertj-core-3-9-1-sources-jar/org/assertj/core/internal/CharArrays.java  
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\* /opt/cola/permits/176722374\_1695326499.9478843/0/assertj-core-3-9-1-sources-jar/org/assertj/core/api/AbstractCharArrayAssert.java  
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\* /opt/cola/permits/176722374\_1695326499.9478843/0/assertj-core-3-9-1-sources-jar/org/assertj/core/error/ShouldHaveReference.java  
\* /opt/cola/permits/176722374\_1695326499.9478843/0/assertj-core-3-9-1-sources-

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\* /opt/cola/permits/176722374\_1695326499.9478843/0/assertj-core-3-9-1-sources-  
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\* /opt/cola/permits/176722374\_1695326499.9478843/0/assertj-core-3-9-1-sources-  
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\* /opt/cola/permits/176722374\_1695326499.9478843/0/assertj-core-3-9-1-sources-  
jar/org/assertj/core/api/BigIntegerAssert.java  
\* /opt/cola/permits/176722374\_1695326499.9478843/0/assertj-core-3-9-1-sources-  
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\* /opt/cola/permits/176722374\_1695326499.9478843/0/assertj-core-3-9-1-sources-  
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\* /opt/cola/permits/176722374\_1695326499.9478843/0/assertj-core-3-9-1-sources-  
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\* /opt/cola/permits/176722374\_1695326499.9478843/0/assertj-core-3-9-1-sources-  
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jar/org/assertj/core/api/AtomicIntegerAssert.java  
\* /opt/cola/permits/176722374\_1695326499.9478843/0/assertj-core-3-9-1-sources-  
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\* /opt/cola/permits/176722374\_1695326499.9478843/0/assertj-core-3-9-1-sources-  
jar/org/assertj/core/error/ShouldNotBeEqual.java  
\* /opt/cola/permits/176722374\_1695326499.9478843/0/assertj-core-3-9-1-sources-  
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/opt/cola/permits/176722374\_1695326499.9478843/0/assertj-core-3-9-1-sources-  
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\* /opt/cola/permits/176722374\_1695326499.9478843/0/assertj-core-3-9-1-sources-  
jar/org/assertj/core/api/ErrorCollector.java  
\* /opt/cola/permits/176722374\_1695326499.9478843/0/assertj-core-3-9-1-sources-  
jar/org/assertj/core/api/ListAssert.java  
\* /opt/cola/permits/176722374\_1695326499.9478843/0/assertj-core-3-9-1-sources-  
jar/org/assertj/core/error/future/ShouldBeCancelled.java  
\* /opt/cola/permits/176722374\_1695326499.9478843/0/assertj-core-3-9-1-sources-  
jar/org/assertj/core/api/AbstractEnumerableAssert.java

\* /opt/cola/permits/176722374\_1695326499.9478843/0/assertj-core-3-9-1-sources-jar/org/assertj/core/api/JUnitSoftAssertions.java

\* /opt/cola/permits/176722374\_1695326499.9478843/0/assertj-core-3-9-1-sources-jar/org/assertj/core/api/NumberAssert.java

\* /opt/cola/permits/176722374\_1695326499.9478843/0/assertj-core-3-9-1-sources-jar/org/assertj/core/util/diff/myers/MyersDiff.java

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/opt/cola/permits/176722374\_1695326499.9478843/0/assertj-core-3-9-1-sources-jar/org/assertj/core/internal/IterableElementComparisonStrategy.java

\* /opt/cola/permits/176722374\_1695326499.9478843/0/assertj-core-3-9-1-sources-jar/org/assertj/core/api/Java6BDDAssertions.java

\* /opt/cola/permits/176722374\_1695326499.9478843/0/assertj-core-3-9-1-sources-jar/org/assertj/core/error/ShouldHaveMessage.java

\* /opt/cola/permits/176722374\_1695326499.9478843/0/assertj-core-3-9-1-sources-jar/org/assertj/core/internal/Diff.java

\* /opt/cola/permits/176722374\_1695326499.9478843/0/assertj-core-3-9-1-sources-jar/org/assertj/core/extractor/Extractors.java

\* /opt/cola/permits/176722374\_1695326499.9478843/0/assertj-core-3-9-1-sources-jar/org/assertj/core/api/BooleanAssert.java

\* /opt/cola/permits/176722374\_1695326499.9478843/0/assertj-core-3-9-1-sources-jar/org/assertj/core/api/LocalDateTimeAssert.java

\* /opt/cola/permits/176722374\_1695326499.9478843/0/assertj-core-3-9-1-sources-jar/org/assertj/core/internal/DeepDifference.java

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/opt/cola/permits/176722374\_1695326499.9478843/0/assertj-core-3-9-1-sources-jar/org/assertj/core/internal/Uri.java

\* /opt/cola/permits/176722374\_1695326499.9478843/0/assertj-core-3-9-1-sources-jar/org/assertj/core/error/ShouldHavePropertyOrField.java

\* /opt/cola/permits/176722374\_1695326499.9478843/0/assertj-core-3-9-1-sources-jar/org/assertj/core/error/uri/ShouldHaveAnchor.java

\* /opt/cola/permits/176722374\_1695326499.9478843/0/assertj-core-3-9-1-sources-jar/org/assertj/core/error/ShouldContainValues.java

\* /opt/cola/permits/176722374\_1695326499.9478843/0/assertj-core-3-9-1-sources-jar/org/assertj/core/error/ConditionAndGroupGenericParameterTypeShouldBeTheSame.java

\* /opt/cola/permits/176722374\_1695326499.9478843/0/assertj-core-3-9-1-sources-jar/org/assertj/core/error/ShouldBeBlank.java

\* /opt/cola/permits/176722374\_1695326499.9478843/0/assertj-core-3-9-1-sources-jar/org/assertj/core/presentation/StandardRepresentation.java

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/opt/cola/permits/176722374\_1695326499.9478843/0/assertj-core-3-9-1-sources-jar/org/assertj/core/internal/RecursiveFieldByFieldComparator.java

\* /opt/cola/permits/176722374\_1695326499.9478843/0/assertj-core-3-9-1-sources-jar/org/assertj/core/api/filter/NotInFilter.java

\* /opt/cola/permits/176722374\_1695326499.9478843/0/assertj-core-3-9-1-sources-jar/org/assertj/core/api/WithAssumptions.java

\* /opt/cola/permits/176722374\_1695326499.9478843/0/assertj-core-3-9-1-sources-jar/org/assertj/core/error/ShouldBeEqualToIgnoringFields.java

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 jar/org/assertj/core/api/ObjectAssertFactory.java

\* /opt/cola/permits/176722374\_1695326499.9478843/0/assertj-core-3-9-1-sources-jar/org/assertj/core/internal/Numbers.java  
\* /opt/cola/permits/176722374\_1695326499.9478843/0/assertj-core-3-9-1-sources-jar/org/assertj/core/description/TextDescription.java  
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\* /opt/cola/permits/176722374\_1695326499.9478843/0/assertj-core-3-9-1-sources-

jar/org/assertj/core/error/ShouldBeLowerCase.java  
 \* /opt/cola/permits/176722374\_1695326499.9478843/0/assertj-core-3-9-1-sources-  
 jar/org/assertj/core/error/ShouldNotContainValue.java  
 \* /opt/cola/permits/176722374\_1695326499.9478843/0/assertj-core-3-9-1-sources-  
 jar/org/assertj/core/configuration/ConfigurationProvider.java  
 \* /opt/cola/permits/176722374\_1695326499.9478843/0/assertj-core-3-9-1-sources-  
 jar/org/assertj/core/internal/ExtendedByTypesComparator.java  
 \* /opt/cola/permits/176722374\_1695326499.9478843/0/assertj-core-3-9-1-sources-  
 jar/org/assertj/core/error/ShouldNotBeEqualWithinOffset.java  
 \*  
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 \* /opt/cola/permits/176722374\_1695326499.9478843/0/assertj-core-3-9-1-sources-  
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 \* /opt/cola/permits/176722374\_1695326499.9478843/0/assertj-core-3-9-1-sources-  
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 jar/org/assertj/core/api/FactoryBasedNavigableIterableAssert.java  
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 jar/org/assertj/core/api/LocalTimeAssert.java  
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 \* /opt/cola/permits/176722374\_1695326499.9478843/0/assertj-core-3-9-1-sources-  
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 jar/org/assertj/core/internal/Maps.java

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\* /opt/cola/permits/176722374\_1695326499.9478843/0/assertj-core-3-9-1-sources-jar/org/assertj/core/api/PathAssert.java

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\* /opt/cola/permits/176722374\_1695326499.9478843/0/assertj-core-3-9-1-sources-jar/org/assertj/core/api/ThrowableAssert.java

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\* /opt/cola/permits/176722374\_1695326499.9478843/0/assertj-core-3-9-1-sources-jar/org/assertj/core/api/AbstractUriAssert.java

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/opt/cola/permits/176722374\_1695326499.9478843/0/assertj-core-3-9-1-sources-jar/org/assertj/core/error/MessageFormatter.java

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 \* /opt/cola/permits/176722374\_1695326499.9478843/0/assertj-core-3-9-1-sources-  
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 \* /opt/cola/permits/176722374\_1695326499.9478843/0/assertj-core-3-9-1-sources-  
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 \* /opt/cola/permits/176722374\_1695326499.9478843/0/assertj-core-3-9-1-sources-  
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 \* /opt/cola/permits/176722374\_1695326499.9478843/0/assertj-core-3-9-1-sources-  
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 /opt/cola/permits/176722374\_1695326499.9478843/0/assertj-core-3-9-1-sources-  
 jar/org/assertj/core/error/ShouldHaveDateField.java



\* /opt/cola/permits/176722374\_1695326499.9478843/0/assertj-core-3-9-1-sources-jar/org/assertj/core/error/ShouldBeReadable.java  
 \* /opt/cola/permits/176722374\_1695326499.9478843/0/assertj-core-3-9-1-sources-jar/org/assertj/core/api/AbstractOptionalIntAssert.java  
 \* /opt/cola/permits/176722374\_1695326499.9478843/0/assertj-core-3-9-1-sources-jar/org/assertj/core/util/Maps.java  
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 \* /opt/cola/permits/176722374\_1695326499.9478843/0/assertj-core-3-9-1-sources-jar/org/assertj/core/error/ShouldBeBeforeOrEqualsTo.java  
 \* /opt/cola/permits/176722374\_1695326499.9478843/0/assertj-core-3-9-1-sources-jar/org/assertj/core/error/ShouldContainSequence.java  
 \* /opt/cola/permits/176722374\_1695326499.9478843/0/assertj-core-3-9-1-sources-jar/org/assertj/core/api/PredicateAssert.java  
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 \* /opt/cola/permits/176722374\_1695326499.9478843/0/assertj-core-3-9-1-sources-jar/org/assertj/core/error/ShouldContainSequenceOfCharSequence.java  
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\* /opt/cola/permits/176722374\_1695326499.9478843/0/assertj-core-3-9-1-sources-jar/org/assertj/core/internal/DoubleArrays.java

\* /opt/cola/permits/176722374\_1695326499.9478843/0/assertj-core-3-9-1-sources-jar/org/assertj/core/error/ShouldBeEqualWithinPercentage.java

\* /opt/cola/permits/176722374\_1695326499.9478843/0/assertj-core-3-9-1-sources-jar/org/assertj/core/error/ShouldNotBeOfClassIn.java

\* /opt/cola/permits/176722374\_1695326499.9478843/0/assertj-core-3-9-1-sources-

jar/org/assertj/core/error/ShouldBeInSameDay.java  
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\* /opt/cola/permits/176722374\_1695326499.9478843/0/assertj-core-3-9-1-sources-jar/org/assertj/core/error/ShouldBeEqualByComparingOnlyGivenFields.java  
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\* /opt/cola/permits/176722374\_1695326499.9478843/0/assertj-core-3-9-1-sources-jar/org/assertj/core/error/ShouldBeMarked.java  
\* /opt/cola/permits/176722374\_1695326499.9478843/0/assertj-core-3-9-1-sources-jar/org/assertj/core/internal/Classes.java  
\* /opt/cola/permits/176722374\_1695326499.9478843/0/assertj-core-3-9-1-sources-jar/org/assertj/core/api/AbstractOptionalDoubleAssert.java  
\* /opt/cola/permits/176722374\_1695326499.9478843/0/assertj-core-3-9-1-sources-jar/org/assertj/core/error/ShouldHaveAtIndex.java  
\* /opt/cola/permits/176722374\_1695326499.9478843/0/assertj-core-3-9-1-sources-jar/org/assertj/core/presentation/PredicateDescription.java  
\* /opt/cola/permits/176722374\_1695326499.9478843/0/assertj-core-3-9-1-sources-jar/org/assertj/core/util/Files.java  
\* /opt/cola/permits/176722374\_1695326499.9478843/0/assertj-core-3-9-1-sources-jar/org/assertj/core/api/AbstractSoftAssertions.java  
\*  
/opt/cola/permits/176722374\_1695326499.9478843/0/assertj-core-3-9-1-sources-jar/org/assertj/core/error/OptionalShouldBeEmpty.java  
\* /opt/cola/permits/176722374\_1695326499.9478843/0/assertj-core-3-9-1-sources-jar/org/assertj/core/util/diff/DiffUtils.java  
\* /opt/cola/permits/176722374\_1695326499.9478843/0/assertj-core-3-9-1-sources-jar/org/assertj/core/error/ShouldHaveOnlyElementsOfType.java  
\* /opt/cola/permits/176722374\_1695326499.9478843/0/assertj-core-3-9-1-sources-jar/org/assertj/core/error/AnyElementShouldMatch.java  
\* /opt/cola/permits/176722374\_1695326499.9478843/0/assertj-core-3-9-1-sources-jar/org/assertj/core/api/DoublePredicateAssert.java

\* /opt/cola/permits/176722374\_1695326499.9478843/0/assertj-core-3-9-1-sources-jar/org/assertj/core/api/StringAssert.java

\* /opt/cola/permits/176722374\_1695326499.9478843/0/assertj-core-3-9-1-sources-jar/org/assertj/core/api/FloatArrayAssert.java

\* /opt/cola/permits/176722374\_1695326499.9478843/0/assertj-core-3-9-1-sources-jar/org/assertj/core/error/ShouldBeSubsetOf.java

\*

/opt/cola/permits/176722374\_1695326499.9478843/0/assertj-core-3-9-1-sources-jar/org/assertj/core/error/ShouldMatchPattern.java

\* /opt/cola/permits/176722374\_1695326499.9478843/0/assertj-core-3-9-1-sources-jar/org/assertj/core/error/ShouldNotBeEqualIgnoringWhitespace.java

\* /opt/cola/permits/176722374\_1695326499.9478843/0/assertj-core-3-9-1-sources-jar/org/assertj/core/api/Java6JUnitSoftAssertions.java

\* /opt/cola/permits/176722374\_1695326499.9478843/0/assertj-core-3-9-1-sources-jar/org/assertj/core/api/IterableSizeAssert.java

\* /opt/cola/permits/176722374\_1695326499.9478843/0/assertj-core-3-9-1-sources-jar/org/assertj/core/api/ProxyableListAssert.java

\* /opt/cola/permits/176722374\_1695326499.9478843/0/assertj-core-3-9-1-sources-jar/org/assertj/core/error/ShouldBeSymbolicLink.java

\* /opt/cola/permits/176722374\_1695326499.9478843/0/assertj-core-3-9-1-sources-jar/org/assertj/core/internal/BinaryDiff.java

\* /opt/cola/permits/176722374\_1695326499.9478843/0/assertj-core-3-9-1-sources-jar/org/assertj/core/internal/Lists.java

\*

/opt/cola/permits/176722374\_1695326499.9478843/0/assertj-core-3-9-1-sources-jar/org/assertj/core/error/ShouldBeEqualIgnoringHours.java

\* /opt/cola/permits/176722374\_1695326499.9478843/0/assertj-core-3-9-1-sources-jar/org/assertj/core/api/ObjectArrayAssert.java

\* /opt/cola/permits/176722374\_1695326499.9478843/0/assertj-core-3-9-1-sources-jar/org/assertj/core/api/AbstractAtomicReferenceAssert.java

\* /opt/cola/permits/176722374\_1695326499.9478843/0/assertj-core-3-9-1-sources-jar/org/assertj/core/api/AutoCloseableBDDSoftAssertions.java

\* /opt/cola/permits/176722374\_1695326499.9478843/0/assertj-core-3-9-1-sources-jar/org/assertj/core/internal/BinaryDiffResult.java

\* /opt/cola/permits/176722374\_1695326499.9478843/0/assertj-core-3-9-1-sources-jar/org/assertj/core/util/introspection/MemberUtils.java

\* /opt/cola/permits/176722374\_1695326499.9478843/0/assertj-core-3-9-1-sources-jar/org/assertj/core/error/ShouldBeAnnotation.java

\*

/opt/cola/permits/176722374\_1695326499.9478843/0/assertj-core-3-9-1-sources-jar/org/assertj/core/internal/Files.java

\* /opt/cola/permits/176722374\_1695326499.9478843/0/assertj-core-3-9-1-sources-jar/org/assertj/core/api/AbstractZonedDateTimeAssert.java

\* /opt/cola/permits/176722374\_1695326499.9478843/0/assertj-core-3-9-1-sources-jar/org/assertj/core/error/ElementsShouldHave.java

\* /opt/cola/permits/176722374\_1695326499.9478843/0/assertj-core-3-9-1-sources-jar/org/assertj/core/error/ShouldContainExactly.java

\* /opt/cola/permits/176722374\_1695326499.9478843/0/assertj-core-3-9-1-sources-

```

jar/org/assertj/core/error/OptionalShouldContain.java
* /opt/cola/permits/176722374_1695326499.9478843/0/assertj-core-3-9-1-sources-
jar/org/assertj/core/error/ShouldBeInSameSecondWindow.java
* /opt/cola/permits/176722374_1695326499.9478843/0/assertj-core-3-9-1-sources-
jar/org/assertj/core/error/ElementsShouldSatisfy.java
* /opt/cola/permits/176722374_1695326499.9478843/0/assertj-core-3-9-1-sources-
jar/org/assertj/core/error/ShouldNotHaveDuplicates.java
*
/opt/cola/permits/176722374_1695326499.9478843/0/assertj-core-3-9-1-sources-
jar/org/assertj/core/error/ShouldBeSorted.java
* /opt/cola/permits/176722374_1695326499.9478843/0/assertj-core-3-9-1-sources-
jar/org/assertj/core/internal/Longs.java
* /opt/cola/permits/176722374_1695326499.9478843/0/assertj-core-3-9-1-sources-
jar/org/assertj/core/api/OptionalIntAssert.java
* /opt/cola/permits/176722374_1695326499.9478843/0/assertj-core-3-9-1-sources-
jar/org/assertj/core/internal/Comparables.java
* /opt/cola/permits/176722374_1695326499.9478843/0/assertj-core-3-9-1-sources-
jar/org/assertj/core/api/AssertProvider.java
* /opt/cola/permits/176722374_1695326499.9478843/0/assertj-core-3-9-1-sources-
jar/org/assertj/core/api/Condition.java
* /opt/cola/permits/176722374_1695326499.9478843/0/assertj-core-3-9-1-sources-
jar/org/assertj/core/internal/Conditions.java
* /opt/cola/permits/176722374_1695326499.9478843/0/assertj-core-3-9-1-sources-
jar/org/assertj/core/error/ShouldBeExecutable.java
*
/opt/cola/permits/176722374_1695326499.9478843/0/assertj-core-3-9-1-sources-
jar/org/assertj/core/error/ShouldBeBeforeYear.java
* /opt/cola/permits/176722374_1695326499.9478843/0/assertj-core-3-9-1-sources-
jar/org/assertj/core/api/ProxyableObjectAssert.java
* /opt/cola/permits/176722374_1695326499.9478843/0/assertj-core-3-9-1-sources-
jar/org/assertj/core/data/TemporalUnitWithinOffset.java
* /opt/cola/permits/176722374_1695326499.9478843/0/assertj-core-3-9-1-sources-
jar/org/assertj/core/error/ShouldHaveContent.java
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```

```
*/
/**
 * Base class for all implementations of assertions for { @link BigDecimal}s.
 *
 * @param <SELF> the "self" type of this assertion class. Please read &quot;<a href="http://bit.ly/1IZIRcY"
 *     target="_blank">Emulating 'self types' using Java Generics to simplify fluent API
 * implementation</a>&quot;
 *
 *     for more details.
 *
 * @author Drummond Dawson
 * @author David DIDIER
 * @author Ted M. Young
 * @author Yvonne Wang
 * @author Alex Ruiz
 * @author Joel Costigliola
 * @author Mikhail Mazursky
 */
```

Found in path(s):

```
* /opt/cola/permits/176722374_1695326499.9478843/0/assertj-core-3-9-1-sources-
jar/org/assertj/core/api/AbstractBigDecimalAssert.java
```

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 */
```

```
/**
 * Base class for all implementations of assertions for { @link Throwable}s.
 *
 * @param <SELF> the "self" type of this assertion class. Please read &quot;<a href="http://bit.ly/1IZIRcY"
 *     target="_blank">Emulating 'self types' using Java Generics to simplify fluent API
 * implementation</a>&quot;
 *
 *     for more details.
 * @param <ACTUAL> the type of the "actual" value.
 */
```

\* @author David DIDIER  
\* @author Alex Ruiz  
\* @author Joel Costigliola  
\* @author Mikhail Mazursky  
\*/

Found in path(s):

\* /opt/cola/permits/176722374\_1695326499.9478843/0/assertj-core-3-9-1-sources-jar/org/assertj/core/api/AbstractThrowableAssert.java

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\*/

/\*\*

\* Base class for all assertions.

\*

\* @param <SELF> the "self" type of this assertion class. Please read ["http://bit.ly/1IZIRcY"](http://bit.ly/1IZIRcY)

\* `target="_blank">Emulating 'self types' using Java Generics to simplify fluent API implementation</a>`

\* `for more details.`

\* @param <ACTUAL> the type of the "actual" value.

\*

\* @author Alex Ruiz

\* @author Joel Costigliola

\* @author Mikhail Mazursky

\* @author Nicolas François

\*/

Found in path(s):

\* /opt/cola/permits/176722374\_1695326499.9478843/0/assertj-core-3-9-1-sources-jar/org/assertj/core/api/AbstractAssert.java

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\*/

/\*\*

\* Base class for all implementations of assertions for { @link Character}s.

\*

\* @param <SELF> the "self" type of this assertion class. Please read &quot;<a href="http://bit.ly/1IZIRcY"

\* target="\_blank">Emulating 'self types' using Java Generics to simplify fluent API

implementation</a>&quot;

\*

for more details.

\*

\* @author Yvonne Wang

\* @author David DIDIER

\* @author Ansgar Konermann

\* @author Alex Ruiz

\* @author Joel Costigliola

\* @author Mikhail Mazursky

\*/

Found in path(s):

\* /opt/cola/permits/176722374\_1695326499.9478843/0/assertj-core-3-9-1-sources-

jar/org/assertj/core/api/AbstractCharacterAssert.java

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\*/

```
/**
 * Base class for all implementations of assertions for { @link Short}s.
 *
 * @param <SELF> the "self" type of this assertion class. Please read &quot;<a href="http://bit.ly/1IZIRcY"
 *     target="_blank">Emulating 'self types' using Java Generics to simplify fluent API
 * implementation</a>&quot;
 *     for
 *     more details.
 *
 * @author Drummond Dawson
 * @author Yvonne Wang
 * @author David DIDIER
 * @author Ansgar Konermann
 * @author Alex Ruiz
 * @author Mikhail Mazursky
 * @author Nicolas François
 */
```

Found in path(s):

```
* /opt/cola/permits/176722374_1695326499.9478843/0/assertj-core-3-9-1-sources-
jar/org/assertj/core/api/AbstractShortAssert.java
```

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 */
```

```
/**
 * Base class for all implementations of assertions for { @link File}s.
 *
 * @param <SELF> the "self" type of this assertion class. Please read &quot;<a href="http://bit.ly/1IZIRcY"
 *     target="_blank">Emulating 'self types' using Java Generics to simplify fluent API
 * implementation</a>&quot;
 *     for more
 *     details.
 *
 * @author David DIDIER
 * @author Yvonne Wang
```

\* @author Alex Ruiz  
\* @author Olivier Michallat  
\* @author Olivier Demeijer  
\* @author Mikhail Mazursky  
\* @author Jean-Christophe Gay  
\*/

Found in path(s):

\* /opt/cola/permits/176722374\_1695326499.9478843/0/assertj-core-3-9-1-sources-jar/org/assertj/core/api/AbstractFileAssert.java

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\*/

/\*\*

\* Base class for all implementations of assertions for { @link Long}s.

\*

\* @param <SELF> the "self" type of this assertion class. Please read ["http://bit.ly/1IZIRcY"](http://bit.ly/1IZIRcY)

\* `target="_blank">Emulating 'self types' using Java Generics to simplify fluent API`

implementation</a>"

\* `for more`

details.

\*

\* @author Drummond Dawson

\* @author Yvonne Wang

\* @author David DIDIER

\* @author Ansgar Konermann

\* @author Alex Ruiz

\* @author Joel Costigliola

\* @author Mikhail Mazursky

\* @author Nicolas François

\*/

Found in path(s):

\* /opt/cola/permits/176722374\_1695326499.9478843/0/assertj-core-3-9-1-sources-jar/org/assertj/core/api/AbstractLongAssert.java



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 *
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 */
/**
 * Base class for all implementations of assertions for {@code CharSequence}s.
 *
 * @param <SELF> the "self" type of this assertion class. Please read Emulating 'self types' using Java Generics to simplify fluent API
 \* implementation
 *
 *     for more details.
 * @param <ACTUAL> the type of the "actual" value.
 *
 * @author Yvonne Wang
 * @author David DIDIER
 * @author Alex Ruiz
 * @author Joel Costigliola
 * @author Mikhail Mazursky
 * @author Nicolas Francois
 * @author Daniel Weber
 */
```

Found in path(s):

```
* /opt/cola/permits/176722374_1695326499.9478843/0/assertj-core-3-9-1-sources-
jar/org/assertj/core/api/AbstractCharSequenceAssert.java
```

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*
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*/
/**
* Base class for all implementations of assertions for { @link InputStream}s.
* @param <SELF> the "self" type of this assertion class. Please read &quot;<a href="http://bit.ly/1IZIRcY"
*     target="_blank">Emulating 'self types' using Java Generics to simplify fluent API
implementation</a>&quot;
*     for
more details.
* @param <ACTUAL> the type of the "actual" value.
*
* @author Matthieu Baechler
* @author Mikhail Mazursky
*/

```

Found in path(s):

```

* /opt/cola/permits/176722374_1695326499.9478843/0/assertj-core-3-9-1-sources-
jar/org/assertj/core/api/AbstractInputStreamAssert.java

```

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* specific language governing permissions and limitations under the License.
*
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*/
/**
* Base class for all implementations of assertions for { @link List}s.
* @param <SELF> the "self" type of this assertion class. Please read &quot;<a href="http://bit.ly/1IZIRcY"
*     target="_blank">Emulating 'self types' using Java Generics to simplify fluent API
implementation</a>&quot;
*     for more
details.
* @param <ACTUAL> the type of the "actual" value.
* @param <ELEMENT> the type of elements of the "actual" value.
* @param <ELEMENT_ASSERT> used for navigational assertions to return the right assert type.

```

\*  
\* @author Yvonne Wang  
\* @author Alex Ruiz  
\* @author Joel Costigliola  
\* @author Mikhail Mazursky  
\*/

Found in path(s):

\* /opt/cola/permits/176722374\_1695326499.9478843/0/assertj-core-3-9-1-sources-jar/org/assertj/core/api/AbstractListAssert.java

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\*/

/\*\*  
\* Base class for all implementations of assertions for { @link Class }es.  
\*  
\* @param <SELF> the "self" type of this assertion class. Please read ["Emulating 'self types' using Java Generics to simplify fluent API implementation"](http://bit.ly/1IZIRcY)  
\* for  
\* more details.  
\*  
\* @author William Delanoue  
\* @author Mikhail Mazursky  
\*/

Found in path(s):

\* /opt/cola/permits/176722374\_1695326499.9478843/0/assertj-core-3-9-1-sources-jar/org/assertj/core/api/AbstractClassAssert.java

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*/
/**
* Base class for all implementations of assertions for { @link Date}s.
* <p>
* Note that assertions with date parameter comes with two flavor, one is obviously a { @link Date } and the other is a
* { @link String } representing a Date.<br>
* For the latter, the default format follows ISO 8901 : "yyyy-MM-dd", user can
  override it with a custom format by
* calling { @link #withDateFormat(DateFormat)}.<br>
* The user custom format will then be used for all next Date assertions (i.e not limited to the current assertion) in
* the test suite.<br>
* To turn back to default format, simply call { @link #withDefaultDateFormatsOnly()}.
*
* @param <SELF> the "self" type of this assertion class. Please read "<a href="http://bit.ly/1IZIRcY"
*     target="_blank">Emulating 'self types' using Java Generics to simplify fluent API implementation</a>" for
*     more details.
* @author Tomasz Nurkiewicz (thanks for giving assertions idea)
* @author Joel Costigliola
* @author Mikhail Mazursky
* @author William Delanoue
* @author Michal Kordas
*/

```

Found in path(s):

```

* /opt/cola/permits/176722374_1695326499.9478843/0/assertj-core-3-9-1-sources-
jar/org/assertj/core/api/AbstractDateAssert.java

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```

```

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*/
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* Base class for all implementations of assertions for { @link Double}s.
*
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*     target="_blank">Emulating 'self types' using Java Generics to simplify fluent API
implementation</a>&quot;;
*     for
*     more details.
*
* @author Drummond Dawson
* @author Yvonne Wang
* @author David DIDIER
* @author Alex Ruiz
* @author Ansgar Konermann
* @author Joel Costigliola
* @author Mikhail Mazursky
* @author Nicolas François
*/

```

Found in path(s):

```

* /opt/cola/permits/176722374_1695326499.9478843/0/assertj-core-3-9-1-sources-
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* Base class for all implementations of assertions for { @link Byte}s.
*
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*     target="_blank">Emulating 'self types' using Java Generics to simplify fluent API
implementation</a>&quot;;
*     for more

```

details.

\*  
\* @author Drummond Dawson  
\* @author Yvonne Wang  
\* @author David DIDIER  
\* @author Ansgar Konermann  
\* @author Alex Ruiz  
\* @author Mikhail Mazursky  
\* @author Nicolas François  
\*/

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\* /opt/cola/permits/176722374\_1695326499.9478843/0/assertj-core-3-9-1-sources-jar/org/assertj/core/api/AbstractByteAssert.java

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\*/

/\*\*  
\* Assertions methods applicable to groups of objects (e.g. arrays or collections.)  
\*  
\* @param <SELF> the "self" type of this assertion class. Please read ["http://bit.ly/1IZIRcY"](http://bit.ly/1IZIRcY)  
\* `target="_blank">Emulating 'self types' using Java Generics to simplify fluent API`  
\* implementation</a>"</code>  
\*  
\*  
\* for more details.  
\* @param <ELEMENT> the type of elements of the "actual" value.  
\*  
\* @author Yvonne Wang  
\* @author Alex Ruiz  
\* @author Nicolas François  
\* @author Mikhail Mazursky  
\* @author Joel Costigliola  
\* @author Nicolas François  
\* @author Florent Biville  
\*/

Found in path(s):

\* /opt/cola/permits/176722374\_1695326499.9478843/0/assertj-core-3-9-1-sources-jar/org/assertj/core/api/ObjectEnumerableAssert.java

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\*/

/\*\*

\* Base class for all implementations of assertions for { @link Integer}s.

\*

\* @param <SELF> the "self" type of this assertion class. Please read ["http://bit.ly/1IZIRcY"](http://bit.ly/1IZIRcY)

\* [target="\\_blank">Emulating 'self types' using Java Generics to simplify fluent API implementation</a>](#)

\* for

more details.

\*

\* @author Drummond Dawson

\* @author Yvonne Wang

\* @author David DIDIER

\* @author Ansgar Konermann

\* @author Alex Ruiz

\* @author Joel Costigliola

\* @author Mikhail Mazursky

\* @author Nicolas François

\*/

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\* /opt/cola/permits/176722374\_1695326499.9478843/0/assertj-core-3-9-1-sources-jar/org/assertj/core/api/AbstractIntegerAssert.java

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/**
* Base class for all implementations of assertions for { @link Map}s.
*
* @param <SELF> the "self" type of this assertion class. Please read &quot;<a href="http://bit.ly/1IZIRcY"
*     target="_blank">Emulating 'self types' using Java Generics to simplify fluent API
implementation</a>&quot;
*     for more
details.
* @param <ACTUAL> the type of the "actual" value.
* @param <K> the type of keys in the map.
* @param <V> the type of values in the map.
*
* @author David DIDIER
* @author Yvonne Wang
* @author Alex Ruiz
* @author Mikhail Mazursky
* @author Nicolas François
* @author dorzey
*/

```

Found in path(s):

```

* /opt/cola/permits/176722374_1695326499.9478843/0/assertj-core-3-9-1-sources-
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```



```

*/
/**
 * Base class for all implementations of assertions for { @link Float}s.
 *
 * @param <SELF> the "self" type of this assertion class. Please read &quot;<a href="http://bit.ly/1IZIRcY"
 *     target="_blank">Emulating 'self types' using Java Generics to simplify fluent API
 * implementation</a>&quot;;
 *     for
 *     more details.
 *
 * @author Drummond Dawson
 * @author Yvonne Wang
 * @author Alex Ruiz
 * @author Ansgar Konermann
 * @author Mikhail Mazursky
 * @author Nicolas François
 */

```

Found in path(s):

```

* /opt/cola/permits/176722374_1695326499.9478843/0/assertj-core-3-9-1-sources-
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 */

```

```

/**
 * Base class for all implementations of assertions for { @link Object}s.
 *
 * @param <SELF> the "self" type of this assertion class. Please read &quot;<a href="http://bit.ly/1IZIRcY"
 *     target="_blank">Emulating 'self types' using Java Generics to simplify fluent API
 * implementation</a>&quot;;
 *     for
 *     more details.
 * @param <ACTUAL> the type of the "actual" value.
 *
 * @author Yvonne Wang

```

\* @author Alex Ruiz  
\* @author Nicolas François  
\* @author Mikhail Mazursky  
\* @author Joel Costigliola  
\* @author Libor Ondrusek  
\*/

Found in path(s):

\* /opt/cola/permits/176722374\_1695326499.9478843/0/assertj-core-3-9-1-sources-jar/org/assertj/core/api/AbstractObjectAssert.java

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\*/

/\*\*

\* Base class for implementations of `{ @link ObjectEnumerableAssert }` whose actual value type is `{ @link Collection }`.

\*

\* @param <SELF> the "self" type of this assertion class. Please read ["Emulating 'self types' using Java Generics to simplify fluent API implementation"](http://bit.ly/1IZIRcY) for more details.

\* for more details.

\* @param <ACTUAL> the type of the "actual" value.

\* @param <ELEMENT> the type of elements of the "actual" value.

\* @param <ELEMENT\_ASSERT> used for navigational assertions to return the right assert type.

\*

\* @author Yvonne Wang

\* @author Alex Ruiz

\* @author Mathieu Baechler

\* @author Joel Costigliola

\* @author Maciej Jaskowski

\* @author Nicolas François

\* @author Mikhail Mazursky

\* @author Mateusz Haligowski

\* @author Lovro Pandzic

\* @author Marko Bekhta

\*/

Found in path(s):

\* /opt/cola/permits/176722374\_1695326499.9478843/0/assertj-core-3-9-1-sources-jar/org/assertj/core/api/AbstractIterableAssert.java

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\*/

/\*\*

\* Base class for all implementations of assertions for { @link Boolean}s.

\*

\* @param <SELF> the "self" type of this assertion class. Please read ["http://bit.ly/1IZIRcY"](http://bit.ly/1IZIRcY)

\* `target="_blank">Emulating 'self types' using Java Generics to simplify fluent API`

implementation</a>"

\* `for`

more details.

\*

\* @author Alex Ruiz

\* @author Yvonne Wang

\* @author David DIDIER

\* @author Ansgar Konermann

\* @author Mikhail Mazursky

\*/

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\* /opt/cola/permits/176722374\_1695326499.9478843/0/assertj-core-3-9-1-sources-jar/org/assertj/core/api/AbstractBooleanAssert.java

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## 1.19 httpcomponents-core 4.4.10

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# 1.20 derby 10.14.2.0

## 1.20.1 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" />
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<meta content="rreflicense" name="DC.Identifier" />
<meta content="en-us" name="DC.Language" />
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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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```

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</pre>

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</div>

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SourceFilePermission.java ;org/apache/derbyTesting/functionTests/tests/lang/Permissionjava/lang/Object()V!
Y**+*,#$ %&
```

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<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))' />
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<meta content="en-us" name="DC.Language" />
```

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<link href="commonltr.css" type="text/css"
rel="stylesheet" />
<title>License</title>
</head>
<body id="rdevlicense"><a name="rdevlicense"><!-- --></a>
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```
<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>

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</body>

</html>

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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" />

<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))' />

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</head>
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```

```
<div><p />
```

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

</div>

</div>

</body>

</html>

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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`  
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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  
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```
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<!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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<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
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<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>
<pre>
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</pre>

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<?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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<meta name="copyright" content="(C) Copyright 2005" />
<meta name="DC.rights.owner" content="(C) Copyright 2005" />
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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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</div>

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</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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</pre>

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</div>

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<?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>

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<meta name="DC.rights.owner" content="(C) Copyright 2005" />
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## 1.21 failureaccess 1.0.1

## 1.22 commons-io 2.6

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## 1.24 j2objc-annotations 1.3

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## 1.32 jline 2.14.6

# 1.33 commons-compiler 2.6.1

# 1.34 istack-commons 2.13

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<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)

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woodstox-core-asl (5.1.0)

\* License: Pending

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

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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

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- \* 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>

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

wsm.xsd  
(1.2)

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wstx-wsat.xsd (1.1)

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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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*/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/codec/Encoder.java  
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\* /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/EncodeException.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/Retriyer.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



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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
```

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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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jar/redis/clients/jedis/util/MurmurHash.java

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## 1.55 guice-multibindings 4.2.3

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## 1.56 t-digest 3.2

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Found in path(s):

```
* /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
```

## 1.57 jctools-core 3.1.0

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```
<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>
```

```

<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>
<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>
  </plugins>
  <plugin>
    <groupId>org.apache.maven.plugins</groupId>

```



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    <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>
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      <id>attach-javadocs</id>
      <goals>
        <goal>jar</goal>
      </goals>
    </execution>
  </executions>
</plugin>
</plugins>
</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>

<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/ws\_local/PERMITS\_SQL/1093815924\_1601014602.33/0/jctools-core-3-1-0-sources-jar/META-INF/maven/org.jctools/jctools-core/pom.xml

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\* /opt/ws\_local/PERMITS\_SQL/1093815924\_1601014602.33/0/jctools-core-3-1-0-sources-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

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/\* /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

\*

```

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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/MpscGrowArrayQueue.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/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
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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/atomic/SpmcLinkedAtomicQueue.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/MpscGrowArrayQueue.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  
 \* /opt/ws\_local/PERMITS\_SQL/1093815924\_1601014602.33/0/jctools-core-3-1-0-sources-  
 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-  
 jar/org/jctools/queues/MpscUnboundedXaddChunk.java  
 \* /opt/ws\_local/PERMITS\_SQL/1093815924\_1601014602.33/0/jctools-core-3-1-0-sources-  
 jar/org/jctools/queues/atomic/MpscUnboundedAtomicArrayQueue.java  
 \* /opt/ws\_local/PERMITS\_SQL/1093815924\_1601014602.33/0/jctools-core-3-1-0-sources-  
 jar/org/jctools/queues/LinkedQueueNode.java  
 \* /opt/ws\_local/PERMITS\_SQL/1093815924\_1601014602.33/0/jctools-core-3-1-0-sources-  
 jar/org/jctools/queues/SpSCUnboundedArrayQueue.java  
 \* /opt/ws\_local/PERMITS\_SQL/1093815924\_1601014602.33/0/jctools-core-3-1-0-sources-  
 jar/org/jctools/util/PortableJvmInfo.java  
 \* /opt/ws\_local/PERMITS\_SQL/1093815924\_1601014602.33/0/jctools-core-3-1-0-sources-  
 jar/org/jctools/queues/ConcurrentCircularArrayQueue.java  
 \* /opt/ws\_local/PERMITS\_SQL/1093815924\_1601014602.33/0/jctools-core-3-1-0-sources-  
 jar/org/jctools/maps/NonBlockingSetInt.java  
 \*  
 /opt/ws\_local/PERMITS\_SQL/1093815924\_1601014602.33/0/jctools-core-3-1-0-sources-  
 jar/org/jctools/queues/atomic/BaseLinkedAtomicQueue.java  
 \* /opt/ws\_local/PERMITS\_SQL/1093815924\_1601014602.33/0/jctools-core-3-1-0-sources-  
 jar/org/jctools/queues/atomic/SequencedAtomicReferenceArrayQueue.java  
 \* /opt/ws\_local/PERMITS\_SQL/1093815924\_1601014602.33/0/jctools-core-3-1-0-sources-  
 jar/org/jctools/queues/MpscLinkedQueue.java  
 \* /opt/ws\_local/PERMITS\_SQL/1093815924\_1601014602.33/0/jctools-core-3-1-0-sources-  
 jar/org/jctools/util/UnsafeRefArrayAccess.java  
 \* /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-  
 jar/org/jctools/queues/SpSCChunkedArrayQueue.java  
 \* /opt/ws\_local/PERMITS\_SQL/1093815924\_1601014602.33/0/jctools-core-3-1-0-sources-  
 jar/org/jctools/queues/SpSCArrayQueue.java  
 \* /opt/ws\_local/PERMITS\_SQL/1093815924\_1601014602.33/0/jctools-core-3-1-0-sources-  
 jar/org/jctools/queues/atomic/AtomicReferenceArrayQueue.java

```

*
/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-
jar/org/jctools/queues/MpscArrayQueue.java
* /opt/ws_local/PERMITS_SQL/1093815924_1601014602.33/0/jctools-core-3-1-0-sources-
jar/org/jctools/util/UnsafeAccess.java
* /opt/ws_local/PERMITS_SQL/1093815924_1601014602.33/0/jctools-core-3-1-0-sources-
jar/org/jctools/queues/MpscUnboundedArrayQueue.java
* /opt/ws_local/PERMITS_SQL/1093815924_1601014602.33/0/jctools-core-3-1-0-sources-
jar/org/jctools/queues/atomic/SpSCGrowAtomicArrayQueue.java
* /opt/ws_local/PERMITS_SQL/1093815924_1601014602.33/0/jctools-core-3-1-0-sources-
jar/org/jctools/queues/IndexedQueueSizeUtil.java
* /opt/ws_local/PERMITS_SQL/1093815924_1601014602.33/0/jctools-core-3-1-0-sources-
jar/org/jctools/queues/atomic/MpscLinkedAtomicQueue.java
*
/opt/ws_local/PERMITS_SQL/1093815924_1601014602.33/0/jctools-core-3-1-0-sources-
jar/org/jctools/queues/SpSCGrowArrayQueue.java
* /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/BaseSpSCLinkedArrayQueue.java

```

## 1.58 xerces-j 2.12.2

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Alaa Nassef  
Andrey Derevyanko  
Andrey Rodionov  
Asutosh Pandya  
Benson Margulies  
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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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jar/rx/internal/util/UtilityFunctions.java
* /opt/cola/permits/1128344293_1676352144.1405265/0/rxjava-1-3-0-sources-1-jar/rx/Observable.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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\* /opt/cola/permits/1128344293\_1676352144.1405265/0/rxjava-1-3-0-sources-1-jar/rx/singles/BlockingSingle.java  
\* /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  
\* /opt/cola/permits/1128344293\_1676352144.1405265/0/rxjava-1-3-0-sources-1-jar/rx/internal/util/BlockingUtils.java  
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*/
```

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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-
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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:  
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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  
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jar/rx/internal/operators/OperatorDoAfterTerminate.java
* /opt/cola/permits/1128344293_1676352144.1405265/0/rxjava-1-3-0-sources-1-
jar/rx/internal/operators/OperatorWindowWithTime.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/internal/operators/OnSubscribeRefCount.java

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\* /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/SpSCLinkedListArrayQueue.java

\* /opt/cola/permits/1128344293\_1676352144.1405265/0/rxjava-1-3-0-sources-1-jar/rx/internal/operators/OnSubscribeDelaySubscriptionWithSelector.java

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/opt/cola/permits/1128344293\_1676352144.1405265/0/rxjava-1-3-0-sources-1-jar/rx/internal/operators/OperatorWindowWithObservable.java

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\* /opt/cola/permits/1128344293\_1676352144.1405265/0/rxjava-1-3-0-sources-1-jar/rx/internal/schedulers/NewThreadScheduler.java

\* /opt/cola/permits/1128344293\_1676352144.1405265/0/rxjava-1-3-0-sources-1-jar/rx/schedulers/TrampolineScheduler.java

\* /opt/cola/permits/1128344293\_1676352144.1405265/0/rxjava-1-3-0-sources-1-jar/rx/internal/operators/CompletableOnSubscribeMergeDelayErrorArray.java

\* /opt/cola/permits/1128344293\_1676352144.1405265/0/rxjava-1-3-0-sources-1-jar/rx/internal/operators/OnSubscribeFilter.java

\* /opt/cola/permits/1128344293\_1676352144.1405265/0/rxjava-1-3-0-sources-1-jar/rx/internal/operators/BlockingOperatorLatest.java

\* /opt/cola/permits/1128344293\_1676352144.1405265/0/rxjava-1-3-0-sources-1-jar/rx/internal/util/BackpressureDrainManager.java

\* /opt/cola/permits/1128344293\_1676352144.1405265/0/rxjava-1-3-0-sources-1-jar/rx/internal/operators/CompletableOnSubscribeMergeArray.java

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/opt/cola/permits/1128344293\_1676352144.1405265/0/rxjava-1-3-0-sources-1-jar/rx/internal/operators/OperatorSequenceEqual.java

\* /opt/cola/permits/1128344293\_1676352144.1405265/0/rxjava-1-3-0-sources-1-jar/rx/observers/TestSubscriber.java

\* /opt/cola/permits/1128344293\_1676352144.1405265/0/rxjava-1-3-0-sources-1-jar/rx/internal/util/IndexedRingBuffer.java

\* /opt/cola/permits/1128344293\_1676352144.1405265/0/rxjava-1-3-0-sources-1-jar/rx/internal/operators/OnSubscribeToMap.java

\* /opt/cola/permits/1128344293\_1676352144.1405265/0/rxjava-1-3-0-sources-1-jar/rx/subscriptions/RefCountSubscription.java

\* /opt/cola/permits/1128344293\_1676352144.1405265/0/rxjava-1-3-0-sources-1-

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jar/rx/internal/operators/OperatorSkipLast.java
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* /opt/cola/permits/1128344293_1676352144.1405265/0/rxjava-1-3-0-sources-1-
jar/rx/internal/operators/OperatorOnErrorResumeNextViaFunction.java
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* /opt/cola/permits/1128344293_1676352144.1405265/0/rxjava-1-3-0-sources-1-
jar/rx/internal/operators/CompletableOnSubscribeConcatArray.java
* /opt/cola/permits/1128344293_1676352144.1405265/0/rxjava-1-3-0-sources-1-jar/rx/functions/Action9.java
* /opt/cola/permits/1128344293_1676352144.1405265/0/rxjava-1-3-0-sources-1-
jar/rx/internal/operators/OnSubscribeUsing.java
* /opt/cola/permits/1128344293_1676352144.1405265/0/rxjava-1-3-0-sources-1-
jar/rx/internal/operators/OperatorTakeUntil.java
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* /opt/cola/permits/1128344293_1676352144.1405265/0/rxjava-1-3-0-sources-1-
jar/rx/internal/util/LinkedList.java
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jar/rx/internal/operators/SingleOnSubscribeMap.java
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jar/rx/internal/util/ScalarSynchronousObservable.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-
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* /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-
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* /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
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/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
* /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
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\* Original location: <https://github.com/JCTools/JCTools/blob/master/jctools-core/src/main/java/org/jctools/queues/ConcurrentSequencedCircularArrayQueue.java>  
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Found in path(s):

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\* /opt/cola/permits/1128344293\_1676352144.1405265/0/rxjava-1-3-0-sources-1-jar/rx/internal/operators/CompletableFromEmitter.java  
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- \* /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
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- /opt/cola/permits/1128344293\_1676352144.1405265/0/rxjava-1-3-0-sources-1-jar/rx/internal/util/ActionNotificationObserver.java
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- \* /opt/cola/permits/1128344293\_1676352144.1405265/0/rxjava-1-3-0-sources-1-jar/rx/observers/SafeCompletableSubscriber.java
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- \* /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
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- \* /opt/cola/permits/1128344293\_1676352144.1405265/0/rxjava-1-3-0-sources-1-jar/rx/internal/util/InternalObservableUtils.java
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- \* /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/internal/schedulers/SchedulePeriodicHelper.java
* /opt/cola/permits/1128344293_1676352144.1405265/0/rxjava-1-3-0-sources-1-
jar/rx/internal/operators/OnSubscribeDetach.java
* /opt/cola/permits/1128344293_1676352144.1405265/0/rxjava-1-3-0-sources-1-
jar/rx/internal/subscriptions/CancellableSubscription.java
* /opt/cola/permits/1128344293_1676352144.1405265/0/rxjava-1-3-0-sources-1-
jar/rx/internal/schedulers/GenericScheduledExecutorServiceFactory.java
*

```

/opt/cola/permits/1128344293\_1676352144.1405265/0/rxjava-1-3-0-sources-1-jar/rx/internal/operators/SingleTakeUntilSingle.java  
\* /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  
\* /opt/cola/permits/1128344293\_1676352144.1405265/0/rxjava-1-3-0-sources-1-jar/rx/internal/operators/SingleFromFuture.java  
\* /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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\* /opt/cola/permits/1128344293\_1676352144.1405265/0/rxjava-1-3-0-sources-1-jar/rx/annotations/Experimental.java

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```
/**
 * This plugin class provides 2 ways to customize {@link Scheduler} functionality
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 * 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):

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\* Original location: <https://github.com/JCTools/JCTools/blob/master/jctools-core/src/main/java/org/jctools/queues/MpmcArrayQueue.java>  
\*/

Found in path(s):

\* /opt/cola/permits/1128344293\_1676352144.1405265/0/rxjava-1-3-0-sources-1-jar/rx/internal/util/unsafe/MpmcArrayQueue.java

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\* /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-jar/rx/internal/util/unsafe/QueueProgressIndicators.java  
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    */
```

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* /opt/cola/permits/1128344293_1676352144.1405265/0/rxjava-1-3-0-sources-1-jar/rx/internal/util/unsafe/UnsafeAccess.java  
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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

```

## 1.65 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

```

## 1.66 Lombok 1.18.12

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\*

/opt/cola/permits/1135840359\_1613613123.36/0/jcommander-1-78-sources-2-jar/com/beust/jcommander/JCommander.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
* /opt/cola/permits/1135840359_1613613123.36/0/jcommander-1-78-sources-2-
jar/com/beust/jcommander/converters/URICConverter.java
* /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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jar/com/beust/jcommander/validators/NoValidator.java
* /opt/cola/permits/1135840359_1613613123.36/0/jcommander-1-78-sources-2-
jar/com/beust/jcommander/validators/PositiveInteger.java
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jar/com/beust/jcommander/validators/NoValueValidator.java
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```
* /opt/cola/permits/1135840457_1613613080.13/0/commons-logging-1-1-sources-9-
jar/org/apache/commons/logging/LogFactory.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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Java ClassMate library was originally written by Tatu Saloranta (tatu.saloranta@iki.fi)

Other developers who have contributed code are:

\* Brian Langel

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*  
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*/
```

Found in path(s):

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

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~

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# 1.75 jakarta-ws-rs-api 2.1.6

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\* Source: <https://github.com/mockito/mockito/releases/tag/v2.16.0>

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# 1.84 hk2-api 2.6.1

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## 1.88 javassist 3.24.1-GA

### 1.88.1 Available under license :

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```
/*  
* Javassist, a Java-bytecode translator toolkit.  
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* License.  
*/
```

Found in path(s):

```
* /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  
 \* /opt/cola/permits/1136375532\_1613752600.16/0/javassist-3-24-1-ga-sources-3-jar/javassist/compiler/ast/Variable.java  
 \* /opt/cola/permits/1136375532\_1613752600.16/0/javassist-3-24-1-ga-sources-3-jar/javassist/runtime/Cflow.java  
 \* /opt/cola/permits/1136375532\_1613752600.16/0/javassist-3-24-1-ga-sources-3-jar/javassist/scopedpool/ScopedClassPool.java  
 \* /opt/cola/permits/1136375532\_1613752600.16/0/javassist-3-24-1-ga-sources-3-jar/javassist/bytecode/DeprecatedAttribute.java  
 \*  
 /opt/cola/permits/1136375532\_1613752600.16/0/javassist-3-24-1-ga-sources-3-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  
 \* /opt/cola/permits/1136375532\_1613752600.16/0/javassist-3-24-1-ga-sources-3-jar/javassist/compiler/MemberResolver.java  
 \* /opt/cola/permits/1136375532\_1613752600.16/0/javassist-3-24-1-ga-sources-3-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  
 \* /opt/cola/permits/1136375532\_1613752600.16/0/javassist-3-24-1-ga-sources-3-jar/javassist/bytecode/AnnotationsAttribute.java  
 \* /opt/cola/permits/1136375532\_1613752600.16/0/javassist-3-24-1-ga-sources-3-jar/javassist/CtNewConstructor.java  
 \* /opt/cola/permits/1136375532\_1613752600.16/0/javassist-3-24-1-ga-sources-3-jar/javassist/convert/TransformNewClass.java  
 \* /opt/cola/permits/1136375532\_1613752600.16/0/javassist-3-24-1-ga-sources-3-jar/javassist/bytecode/Bytecode.java  
 \* /opt/cola/permits/1136375532\_1613752600.16/0/javassist-3-24-1-ga-sources-3-jar/javassist/scopedpool/ScopedClassPoolRepository.java

\* /opt/cola/permits/1136375532\_1613752600.16/0/javassist-3-24-1-ga-sources-3-jar/javassist/compiler/ast/Keyword.java  
 \* /opt/cola/permits/1136375532\_1613752600.16/0/javassist-3-24-1-ga-sources-3-jar/javassist/bytecode/SyntheticAttribute.java  
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 /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  
 \* /opt/cola/permits/1136375532\_1613752600.16/0/javassist-3-24-1-ga-sources-3-jar/javassist/util/HotSwapAgent.java  
 \* /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  
 \*  
 /opt/cola/permits/1136375532\_1613752600.16/0/javassist-3-24-1-ga-sources-3-jar/javassist/bytecode/analysis/IntQueue.java  
 \* /opt/cola/permits/1136375532\_1613752600.16/0/javassist-3-24-1-ga-sources-3-jar/javassist/tools/reflect/Reflection.java  
 \* /opt/cola/permits/1136375532\_1613752600.16/0/javassist-3-24-1-ga-sources-3-jar/javassist/tools/reflect/Loader.java  
 \* /opt/cola/permits/1136375532\_1613752600.16/0/javassist-3-24-1-ga-sources-3-jar/javassist/bytecode/ConstPool.java  
 \* /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  
 \* /opt/cola/permits/1136375532\_1613752600.16/0/javassist-3-24-1-ga-sources-3-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  
 \* /opt/cola/permits/1136375532\_1613752600.16/0/javassist-3-24-1-ga-sources-3-jar/javassist/tools/web/Webserver.java  
 \* /opt/cola/permits/1136375532\_1613752600.16/0/javassist-3-24-1-ga-sources-3-jar/javassist/expr/Expr.java  
 \*  
 /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  
 \* /opt/cola/permits/1136375532\_1613752600.16/0/javassist-3-24-1-ga-sources-3-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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jar/javassist/compiler/JvstCodeGen.java
* /opt/cola/permits/1136375532_1613752600.16/0/javassist-3-24-1-ga-sources-3-
jar/javassist/tools/rmi/RemoteRef.java
* /opt/cola/permits/1136375532_1613752600.16/0/javassist-3-24-1-ga-sources-3-jar/javassist/CtConstructor.java
* /opt/cola/permits/1136375532_1613752600.16/0/javassist-3-24-1-ga-sources-3-
jar/javassist/compiler/ast/ASTList.java
*
/opt/cola/permits/1136375532_1613752600.16/0/javassist-3-24-1-ga-sources-3-jar/javassist/expr/Instanceof.java
* /opt/cola/permits/1136375532_1613752600.16/0/javassist-3-24-1-ga-sources-3-
jar/javassist/compiler/ast/IntConst.java
* /opt/cola/permits/1136375532_1613752600.16/0/javassist-3-24-1-ga-sources-3-
jar/javassist/tools/reflect/Metalevel.java
* /opt/cola/permits/1136375532_1613752600.16/0/javassist-3-24-1-ga-sources-3-
jar/javassist/compiler/MemberCodeGen.java
* /opt/cola/permits/1136375532_1613752600.16/0/javassist-3-24-1-ga-sources-3-jar/javassist/ClassPoolTail.java
* /opt/cola/permits/1136375532_1613752600.16/0/javassist-3-24-1-ga-sources-3-
jar/javassist/bytecode/NestHostAttribute.java
* /opt/cola/permits/1136375532_1613752600.16/0/javassist-3-24-1-ga-sources-3-
jar/javassist/bytecode/analysis/Frame.java
* /opt/cola/permits/1136375532_1613752600.16/0/javassist-3-24-1-ga-sources-3-
jar/javassist/bytecode/NestMembersAttribute.java
*
/opt/cola/permits/1136375532_1613752600.16/0/javassist-3-24-1-ga-sources-3-
jar/javassist/convert/Transformer.java
* /opt/cola/permits/1136375532_1613752600.16/0/javassist-3-24-1-ga-sources-3-jar/javassist/tools/rmi/Sample.java
* /opt/cola/permits/1136375532_1613752600.16/0/javassist-3-24-1-ga-sources-3-
jar/javassist/compiler/ast/Symbol.java
* /opt/cola/permits/1136375532_1613752600.16/0/javassist-3-24-1-ga-sources-3-jar/javassist/compiler/Lex.java
* /opt/cola/permits/1136375532_1613752600.16/0/javassist-3-24-1-ga-sources-3-
jar/javassist/compiler/ast/AssignExpr.java
* /opt/cola/permits/1136375532_1613752600.16/0/javassist-3-24-1-ga-sources-3-
jar/javassist/compiler/ProceedHandler.java
* /opt/cola/permits/1136375532_1613752600.16/0/javassist-3-24-1-ga-sources-3-
jar/javassist/util/proxy/FactoryHelper.java
* /opt/cola/permits/1136375532_1613752600.16/0/javassist-3-24-1-ga-sources-3-
jar/javassist/tools/web/BadHttpRequest.java
* /opt/cola/permits/1136375532_1613752600.16/0/javassist-3-24-1-ga-sources-3-
jar/javassist/bytecode/analysis/SubroutineScanner.java
*
/opt/cola/permits/1136375532_1613752600.16/0/javassist-3-24-1-ga-sources-3-
jar/javassist/bytecode/ParameterAnnotationsAttribute.java
* /opt/cola/permits/1136375532_1613752600.16/0/javassist-3-24-1-ga-sources-3-
jar/javassist/bytecode/AttributeInfo.java
* /opt/cola/permits/1136375532_1613752600.16/0/javassist-3-24-1-ga-sources-3-
jar/javassist/compiler/SymbolTable.java
* /opt/cola/permits/1136375532_1613752600.16/0/javassist-3-24-1-ga-sources-3-
jar/javassist/tools/reflect/Compiler.java
* /opt/cola/permits/1136375532_1613752600.16/0/javassist-3-24-1-ga-sources-3-jar/javassist/CtNewClass.java

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\* /opt/cola/permits/1136375532\_1613752600.16/0/javassist-3-24-1-ga-sources-3-jar/javassist/bytecode/AnnotationDefaultAttribute.java  
 \* /opt/cola/permits/1136375532\_1613752600.16/0/javassist-3-24-1-ga-sources-3-jar/javassist/compiler/ast/Pair.java  
 \* /opt/cola/permits/1136375532\_1613752600.16/0/javassist-3-24-1-ga-sources-3-jar/javassist/CtNewWrappedMethod.java  
 \*  
 /opt/cola/permits/1136375532\_1613752600.16/0/javassist-3-24-1-ga-sources-3-jar/javassist/bytecode/annotation/AnnotationImpl.java  
 \* /opt/cola/permits/1136375532\_1613752600.16/0/javassist-3-24-1-ga-sources-3-jar/javassist/tools/rmi/StubGenerator.java  
 \* /opt/cola/permits/1136375532\_1613752600.16/0/javassist-3-24-1-ga-sources-3-jar/javassist/bytecode/EnclosingMethodAttribute.java  
 \* /opt/cola/permits/1136375532\_1613752600.16/0/javassist-3-24-1-ga-sources-3-jar/javassist/Modifier.java  
 \* /opt/cola/permits/1136375532\_1613752600.16/0/javassist-3-24-1-ga-sources-3-jar/javassist/runtime/Inner.java  
 \* /opt/cola/permits/1136375532\_1613752600.16/0/javassist-3-24-1-ga-sources-3-jar/javassist/tools/reflect/CannotInvokeException.java  
 \* /opt/cola/permits/1136375532\_1613752600.16/0/javassist-3-24-1-ga-sources-3-jar/javassist/compiler/KeywordTable.java  
 \* /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
* /opt/cola/permits/1136375532_1613752600.16/0/javassist-3-24-1-ga-sources-3-
jar/javassist/util/proxy/ProxyObjectInputStream.java
* /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
* /opt/cola/permits/1136375532_1613752600.16/0/javassist-3-24-1-ga-sources-3-jar/javassist/runtime/DotClass.java
* /opt/cola/permits/1136375532_1613752600.16/0/javassist-3-24-1-ga-sources-3-jar/javassist/expr/NewExpr.java
* /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
* /opt/cola/permits/1136375532_1613752600.16/0/javassist-3-24-1-ga-sources-3-jar/javassist/expr/Cast.java
* /opt/cola/permits/1136375532_1613752600.16/0/javassist-3-24-1-ga-sources-3-jar/javassist/compiler/Parser.java
*
/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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Found in path(s):

\* /opt/cola/permits/1136375532\_1613752600.16/0/javassist-3-24-1-ga-sources-3-jar/javassist/bytecode/annotation/MemberValueVisitor.java  
\* /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

## 1.89 Icms 2.12



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Upstream-Name: liblz4

Upstream-Contact: Yann Collet <Cyan4973@github.com>

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

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```
* /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
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* /opt/cola/permits/1157317048_1619537047.34/0/re2j-1-2-sources-1-jar/com/google/re2j/Regex.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
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* /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
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```
* /opt/cola/permits/1157317048_1619537047.34/0/re2j-1-2-sources-1-jar/com/google/re2j/Simplify.java
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## 1.96 antlr 4.6

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\*/

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

No license file was found, but licenses were detected in source scan.

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Found in path(s):

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

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

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/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

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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/codegen/model/decl/TokenDecl.java  
 \* /opt/cola/permits/1166873170\_1621514800.65/0/antlr4-4-6-sources-1-  
 jar/org/antlr/v4/codegen/model/Recognizer.java  
 \* /opt/cola/permits/1166873170\_1621514800.65/0/antlr4-4-6-sources-1-  
 jar/org/antlr/v4/codegen/model/BaseListenerFile.java  
 \* /opt/cola/permits/1166873170\_1621514800.65/0/antlr4-4-6-sources-1-  
 jar/org/antlr/v4/gui/TreeLayoutAdaptor.java  
 \*  
 /opt/cola/permits/1166873170\_1621514800.65/0/antlr4-4-6-sources-1-  
 jar/org/antlr/v4/analysis/LeftRecursiveRuleAnalyzer.java  
 \* /opt/cola/permits/1166873170\_1621514800.65/0/antlr4-4-6-sources-1-  
 jar/org/antlr/v4/analysis/LeftRecursiveRuleAltInfo.java  
 \* /opt/cola/permits/1166873170\_1621514800.65/0/antlr4-4-6-sources-1-jar/org/antlr/v4/gui/TreeTextProvider.java  
 \* /opt/cola/permits/1166873170\_1621514800.65/0/antlr4-4-6-sources-1-  
 jar/org/antlr/v4/codegen/model/LabeledOp.java  
 \* /opt/cola/permits/1166873170\_1621514800.65/0/antlr4-4-6-sources-1-  
 jar/org/antlr/v4/tool/ast/GrammarRootAST.java  
 \* /opt/cola/permits/1166873170\_1621514800.65/0/antlr4-4-6-sources-1-  
 jar/org/antlr/v4/codegen/model/SemPred.java  
 \* /opt/cola/permits/1166873170\_1621514800.65/0/antlr4-4-6-sources-1-  
 jar/org/antlr/v4/codegen/model/LL1OptionalBlock.java  
 \* /opt/cola/permits/1166873170\_1621514800.65/0/antlr4-4-6-sources-1-  
 jar/org/antlr/v4/tool/ast/OptionalBlockAST.java  
 \*



/opt/cola/permits/1166873170\_1621514800.65/0/antlr4-4-6-sources-1-  
 jar/org/antlr/v4/parse/ResyncToEndOfRuleBlock.java  
 \* /opt/cola/permits/1166873170\_1621514800.65/0/antlr4-4-6-sources-1-  
 jar/org/antlr/v4/codegen/model/decl/TokenListDecl.java  
 \* /opt/cola/permits/1166873170\_1621514800.65/0/antlr4-4-6-sources-1-  
 jar/org/antlr/v4/parse/ToolANTLRParser.java  
 \* /opt/cola/permits/1166873170\_1621514800.65/0/antlr4-4-6-sources-1-jar/org/antlr/v4/tool/ast/GrammarAST.java  
 \* /opt/cola/permits/1166873170\_1621514800.65/0/antlr4-4-6-sources-1-  
 jar/org/antlr/v4/codegen/model/ModelElement.java  
 \* /opt/cola/permits/1166873170\_1621514800.65/0/antlr4-4-6-sources-1-  
 jar/org/antlr/v4/codegen/DefaultOutputModelFactory.java  
 \* /opt/cola/permits/1166873170\_1621514800.65/0/antlr4-4-6-sources-1-  
 jar/org/antlr/v4/codegen/model/DispatchMethod.java  
 \* /opt/cola/permits/1166873170\_1621514800.65/0/antlr4-4-6-sources-1-jar/org/antlr/v4/tool/AttributeResolver.java  
 \* /opt/cola/permits/1166873170\_1621514800.65/0/antlr4-4-6-sources-1-  
 jar/org/antlr/v4/codegen/target/GoTarget.java  
 \*  
 /opt/cola/permits/1166873170\_1621514800.65/0/antlr4-4-6-sources-1-  
 jar/org/antlr/v4/codegen/model/decl/RuleContextListDecl.java  
 \* /opt/cola/permits/1166873170\_1621514800.65/0/antlr4-4-6-sources-1-  
 jar/org/antlr/v4/codegen/model/ThrowNoViableAlt.java  
 \* /opt/cola/permits/1166873170\_1621514800.65/0/antlr4-4-6-sources-1-  
 jar/org/antlr/v4/tool/GrammarSyntaxMessage.java  
 \* /opt/cola/permits/1166873170\_1621514800.65/0/antlr4-4-6-sources-1-  
 jar/org/antlr/v4/automata/ATNOptimizer.java  
 \* /opt/cola/permits/1166873170\_1621514800.65/0/antlr4-4-6-sources-1-jar/org/antlr/v4/tool/Rule.java  
 \* /opt/cola/permits/1166873170\_1621514800.65/0/antlr4-4-6-sources-1-  
 jar/org/antlr/v4/codegen/model/decl/ContextRuleGetterDecl.java  
 \* /opt/cola/permits/1166873170\_1621514800.65/0/antlr4-4-6-sources-1-jar/org/antlr/v4/codegen/model/Loop.java  
 \* /opt/cola/permits/1166873170\_1621514800.65/0/antlr4-4-6-sources-1-jar/org/antlr/v4/tool/ast/TerminalAST.java  
 \*  
 /opt/cola/permits/1166873170\_1621514800.65/0/antlr4-4-6-sources-1-jar/org/antlr/v4/tool/ast/SetAST.java  
 \* /opt/cola/permits/1166873170\_1621514800.65/0/antlr4-4-6-sources-1-  
 jar/org/antlr/v4/semantics/SymbolChecks.java  
 \* /opt/cola/permits/1166873170\_1621514800.65/0/antlr4-4-6-sources-1-  
 jar/org/antlr/v4/codegen/model/VisitorDispatchMethod.java  
 \* /opt/cola/permits/1166873170\_1621514800.65/0/antlr4-4-6-sources-1-  
 jar/org/antlr/v4/codegen/model/chunk/ThisRulePropertyRef\_ctx.java  
 \* /opt/cola/permits/1166873170\_1621514800.65/0/antlr4-4-6-sources-1-  
 jar/org/antlr/v4/codegen/model/MatchToken.java  
 \* /opt/cola/permits/1166873170\_1621514800.65/0/antlr4-4-6-sources-1-jar/org/antlr/v4/tool/ast/ActionAST.java  
 \* /opt/cola/permits/1166873170\_1621514800.65/0/antlr4-4-6-sources-1-  
 jar/org/antlr/v4/codegen/target/SwiftTarget.java  
 \* /opt/cola/permits/1166873170\_1621514800.65/0/antlr4-4-6-sources-1-jar/org/antlr/v4/tool/ErrorSeverity.java  
 \* /opt/cola/permits/1166873170\_1621514800.65/0/antlr4-4-6-sources-1-jar/org/antlr/v4/misc/Graph.java  
 \*  
 /opt/cola/permits/1166873170\_1621514800.65/0/antlr4-4-6-sources-1-  
 jar/org/antlr/v4/codegen/model/decl/ElementListDecl.java

\* /opt/cola/permits/1166873170\_1621514800.65/0/antlr4-4-6-sources-1-jar/org/antlr/v4/codegen/model/chunk/RulePropertyRef\_ctx.java  
 \* /opt/cola/permits/1166873170\_1621514800.65/0/antlr4-4-6-sources-1-jar/org/antlr/v4/codegen/model/decl/RuleContextDecl.java  
 \* /opt/cola/permits/1166873170\_1621514800.65/0/antlr4-4-6-sources-1-jar/org/antlr/v4/codegen/model/chunk/SetAttr.java  
 \* /opt/cola/permits/1166873170\_1621514800.65/0/antlr4-4-6-sources-1-jar/org/antlr/v4/semantics/UseDefAnalyzer.java  
 \* /opt/cola/permits/1166873170\_1621514800.65/0/antlr4-4-6-sources-1-jar/org/antlr/v4/parse/ToolANTLR Lexer.java  
 \* /opt/cola/permits/1166873170\_1621514800.65/0/antlr4-4-6-sources-1-jar/org/antlr/v4/tool/GrammarSemanticsMessage.java  
 \* /opt/cola/permits/1166873170\_1621514800.65/0/antlr4-4-6-sources-1-jar/org/antlr/v4/codegen/Wildcard.java  
 \* /opt/cola/permits/1166873170\_1621514800.65/0/antlr4-4-6-sources-1-jar/org/antlr/v4/tool/ast/NotAST.java  
 \*  
 /opt/cola/permits/1166873170\_1621514800.65/0/antlr4-4-6-sources-1-jar/org/antlr/v4/codegen/model/LL1StarBlockSingleAlt.java  
 \* /opt/cola/permits/1166873170\_1621514800.65/0/antlr4-4-6-sources-1-jar/org/antlr/v4/codegen/model/chunk/RulePropertyRef.java  
 \* /opt/cola/permits/1166873170\_1621514800.65/0/antlr4-4-6-sources-1-jar/org/antlr/v4/tool/LeftRecursiveRule.java  
 \* /opt/cola/permits/1166873170\_1621514800.65/0/antlr4-4-6-sources-1-jar/org/antlr/v4/tool/DOTGenerator.java  
 \* /opt/cola/permits/1166873170\_1621514800.65/0/antlr4-4-6-sources-1-jar/org/antlr/v4/codegen/model/ExceptionClause.java  
 \* /opt/cola/permits/1166873170\_1621514800.65/0/antlr4-4-6-sources-1-jar/org/antlr/v4/tool/DefaultToolListener.java  
 \* /opt/cola/permits/1166873170\_1621514800.65/0/antlr4-4-6-sources-1-jar/org/antlr/v4/codegen/model/decl/ContextRuleListIndexedGetterDecl.java  
 \* /opt/cola/permits/1166873170\_1621514800.65/0/antlr4-4-6-sources-1-jar/org/antlr/v4/codegen/model/SrcOp.java  
 \*  
 /opt/cola/permits/1166873170\_1621514800.65/0/antlr4-4-6-sources-1-jar/org/antlr/v4/codegen/model/ThrowEarlyExitException.java  
 \* /opt/cola/permits/1166873170\_1621514800.65/0/antlr4-4-6-sources-1-jar/org/antlr/v4/codegen/target/JavaTarget.java  
 \* /opt/cola/permits/1166873170\_1621514800.65/0/antlr4-4-6-sources-1-jar/org/antlr/v4/codegen/CodeGenPipeline.java  
 \* /opt/cola/permits/1166873170\_1621514800.65/0/antlr4-4-6-sources-1-jar/org/antlr/v4/codegen/model/SerializedATN.java  
 \* /opt/cola/permits/1166873170\_1621514800.65/0/antlr4-4-6-sources-1-jar/org/antlr/v4/codegen/model/RuleFunction.java  
 \* /opt/cola/permits/1166873170\_1621514800.65/0/antlr4-4-6-sources-1-jar/org/antlr/v4/codegen/model/CaptureNextTokenType.java  
 \* /opt/cola/permits/1166873170\_1621514800.65/0/antlr4-4-6-sources-1-jar/org/antlr/v4/codegen/model/decl/Decl.java  
 \* /opt/cola/permits/1166873170\_1621514800.65/0/antlr4-4-6-sources-1-jar/org/antlr/v4/codegen/model/chunk/RulePropertyRef\_parser.java  
 \*  
 /opt/cola/permits/1166873170\_1621514800.65/0/antlr4-4-6-sources-1-jar/org/antlr/v4/codegen/model/AddToLabelList.java

\* /opt/cola/permits/1166873170\_1621514800.65/0/antlr4-4-6-sources-1-jar/org/antlr/v4/codegen/model/InvokeRule.java  
 \* /opt/cola/permits/1166873170\_1621514800.65/0/antlr4-4-6-sources-1-jar/org/antlr/v4/parse/ScopeParser.java  
 \* /opt/cola/permits/1166873170\_1621514800.65/0/antlr4-4-6-sources-1-jar/org/antlr/v4/semantics/BlankActionSplitterListener.java  
 \* /opt/cola/permits/1166873170\_1621514800.65/0/antlr4-4-6-sources-1-jar/org/antlr/v4/codegen/model/decl/TokenTypeDecl.java  
 \* /opt/cola/permits/1166873170\_1621514800.65/0/antlr4-4-6-sources-1-jar/org/antlr/v4/tool/ast/RangeAST.java  
 \* /opt/cola/permits/1166873170\_1621514800.65/0/antlr4-4-6-sources-1-jar/org/antlr/v4/codegen/model/ListenerFile.java  
 \* /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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 */

```

```

// 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: {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>  
    /// \</summary>  
    /// \<param name="context">The parse tree.\</param>  
    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>  
    /// \</summary>  
    /// \<param name="context">The parse tree.\</param>  
    void Exit<Iname; format="cap">([NotNull] <csIdentifier.(file.parserName)>.<Iname; 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>.<lname>"/>.
<endif>
/// \<para>The default implementation does nothing.\</para>
/// \</summary>
/// \<param name="context">The parse tree.\</param>
public virtual void Exit<lname; format="cap">([NotNull] <csIdentifier.(file.parserName)>.<lname;
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:{lname |
/// \<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:{1 | <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>\>(0);
    }
>>
ContextRuleListGetterDecl(r) ::= <<
public <contextGetterCollection({<r.ctxName>})> <csIdentifier.(r.name)>() {
    return GetRuleContexts\<<r.ctxName>\>(0);
    }
>>
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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```

```
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```
*/
```

Found in path(s):

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

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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.Util;
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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 */

```

```

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,fixedsize=false<else>shape=doublecircle, fixedsize=true,
```

```
width=.6<endif>];
```

```
>>
```

Found in path(s):

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

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)>
```

```
# 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>: {Iname |
```

```
# Enter a parse tree produced by <file.parserName>#<Iname>.
```

```
def enter<Iname; format="cap">(self, ctx:<file.parserName>.<Iname; format="cap">Context):
```

```
    pass
```

```
# Exit a parse tree produced by <file.parserName>#<Iname>.
```

```
def
```

```
exit<Iname; format="cap">(self, ctx:<file.parserName>.<Iname; format="cap">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(sempredFuncs)>
def sempred(self, localctx:RuleContext, ruleIndex:int, predIndex:int):
    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: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="\n1">
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="\n1">
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="\n">
>>

```

```

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="\n">
>>

```

```

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: { l | <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: { l | <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: { l | <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: { l | <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(1)> = }><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
No license file was found, but licenses were detected in source scan.

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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<Iname; format="cap">(<file.parserName>.<Iname; format="cap">Context ctx);
```

```
/**
```

```
<if(file.listenerLabelRuleNames.(Iname))>
```

```
 * Exit a parse tree produced by the { @code <Iname> \}
```

```
 * labeled alternative in { @link <file.parserName>#<file.listenerLabelRuleNames.(Iname)> \}.
```

```
<else>
```

```
 * Exit a parse tree produced by { @link <file.parserName>#<Iname> \}.
```

```
<endif>
```

```
 * @param ctx the parse tree
```

```
 */
```

```
void exit<Iname; format="cap">(<file.parserName>.<Iname; 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:{ lname |
/**
<if(file.visitorLabelRuleNames.(lname))>
 * Visit a parse tree produced by the { @code <lname>}
 * labeled alternative in { @link <file.parserName>#<file.visitorLabelRuleNames.(lname)>} .
<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,
_LSYMBOLIC_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((<r.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>(0<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(l)> = }><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
```

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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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\*/

```
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;
    $somos = DefaultOutputModelFactory.list(loop);
}
| block[null, null]    {$somos = $block.omos;}
;

blockSet[GrammarAST label, boolean invert] returns [List<SrcOp> omos]
: ^(SET atom[label,invert]+) {$somos = controller.set($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[$label, true]) {$somos = $a.omos;}
| range[label]    {$somos = $range.omos;}
| ^(DOT ID terminal[$label])
| ^(DOT ID ruleref[$label])
| ^(WILDCARD .)    {$somos = controller.wildcard($WILDCARD, $label);}
| WILDCARD        {$somos = controller.wildcard($WILDCARD, $label);}
| terminal[label]  {$somos = $terminal.omos;}
| ruleref[label]   {$somos = $ruleref.omos;}
| blockSet[$label, invert] {$somos = $blockSet.omos;}
;

ruleref[GrammarAST label] returns [List<SrcOp> omos]
: ^(RULE_REF ARG_ACTION? elementOptions?) {$somos = controller.ruleRef($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-
jar/org/antlr/v4/codegen/SourceGenTriggers.g

```

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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  
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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>:{Iname |

```

```

// Enter a parse tree produced by <file.parserName>#<Iname>.

```

```

<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) ::= <<
<ttypes:{ 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 | "<t>"}; 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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```

```
/*
```

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```

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*
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```
*/
```

```
Found in path(s):
```

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

```
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```

```
/*
```

```
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```

```
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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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\*/

Found in path(s):

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

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\*/

/\*

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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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\*/

/\*\* 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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```

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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(semprdfFuncs)>
def semprdf(self, localctx, ruleIndex, predIndex):
    if self._predicates == None:
        self._predicates = dict()
<parser.semprdfFuncs.values:{ f |
    self._predicates[<f.ruleIndex>] = self.<f.name>_semprdf}; 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)

<semprdfFuncs.values; separator="\n">
<endif>

>>

dumpActions(recog, argFuncs, actionFuncs, semprdfFuncs) ::= <<
<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="\n">
>>

```

```

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="\n">
>>

```

```

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: { l | <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: { l | <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: { l | <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: { l | <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.

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 *

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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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```

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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 {
```

```
/*
```

```
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```

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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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```
/*
```

```
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```
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\*/

Found in path(s):

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

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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<Iname; format="cap">(_ ctx: <file.parserName>.<Iname; 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:{ Iname |
/**
* { @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..\<length {
    var name = VOCABULARY.getLiteralName(i)

```

```

if name == nil {
  name = VOCABULARY.getSymbolicName(i)
}
if name == nil
{
  name = "\<INVALID>"
}
tokenNames[i] = name
}
return tokenNames
}()

override
<!--@Deprecated!>
open func getTokenNames() -> [String?]? {
  return tokenNames
}
>>

dumpActions(recog, argFuncs, actionFuncs, sempredFuncs) ::= <<
<if(actionFuncs)>
override
open func action(_ _localctx: RuleContext?, _ ruleIndex: Int, _ actionIndex: Int) throws {
  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:{1 | <labelref(1)> = 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:{1 | <labelref(1)> = 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:{1 | <labelref(1)>
= }>try _input.LT(1)<endif>
<capture>
if (<if(invert)><m.varName> \<= 0 || <else>!<endif><(<expr>)) {
  <if(m.labels)><m.labels:{1 | <labelref(1)> = }><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(1)> = }><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

```

# 1.97 commons-dbutils 1.5

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## 1.100 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","generated/_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", 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"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.kt", "util/Tuples.kt", "kotlin/UIntRange.kt", "kotlin/UIterators.kt", "kotlin/ULongRange.kt", "kotlin/UMath.kt", "kotlin/UNumbers.kt", "kotlin/UProgressionUtil.kt", "kotlin/UStrings.kt", "kotlin/annotations/Unsigned.kt", "kotlin/MathH.kt", "coroutines.kt", "CoroutinesLibrary.kt", "coroutinesIntrinsics.kt", "ContinuationInterceptor.kt", "CoroutineContext.kt", "CoroutineContextImpl.kt", "Coroutines.kt", "Intrinsics.kt", "SequenceBuilder.kt"], "sourcesContent": ["(function (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", "/\*\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\nKotlin.isArray = function (a) {\n return (Array.isArray(a) || a instanceof Int8Array) && a.\$type\$

```

=== \"BooleanArray\";\n\nKotlin.isByteArray = function (a) {\n  return a instanceof Int8Array && a.$type$
!=\"BooleanArray\";\n\nKotlin.isShortArray = function (a) {\n  return a instanceof
Int16Array;\n\nKotlin.isCharArray
= function (a) {\n  return a instanceof Uint16Array && a.$type$ === \"CharArray\";\n\nKotlin.isIntArray =
function (a) {\n  return a instanceof Int32Array;\n\nKotlin.isFloatArray = function (a) {\n  return a instanceof
Float32Array;\n\nKotlin.isDoubleArray = function (a) {\n  return a instanceof
Float64Array;\n\nKotlin.isLongArray = function (a) {\n  return Array.isArray(a) && a.$type$ ===
\"LongArray\";\n\nKotlin.isArray = function (a) {\n  return Array.isArray(a) &&
!a.$type$;\n\nKotlin.isArrayish = function (a) {\n  return Array.isArray(a) ||
ArrayBuffer.isView(a);\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\nKotlin.arrayDeepToString = function (arr) {\n  return
Kotlin.kotlin.collections.contentDeepToStringImpl(arr);\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\nKotlin.arrayDeepEquals = function (a, b) {\n  return
Kotlin.kotlin.collections.contentDeepEqualsImpl(a, b);\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\nKotlin.arrayDeepHashCode = function (arr) {\n  return
Kotlin.kotlin.collections.contentDeepHashCodeImpl(arr);\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\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\nfunction getPropertyRefClass(obj, setter, cache) {\n
obj.$metadata$ = getPropertyRefMetadata(typeof setter === \"function\" ? cache.mutable : cache.immutable);\n
obj.constructor = obj;\n  return obj;\n\nvar propertyRefClassMetadataCache = [\n  {\n    mutable: { value:
null, implementedInterface: function () {\n      return Kotlin.kotlin.reflect.KMutableProperty0 }\n    },\n
immutable: { value: null, implementedInterface: function () {\n      return Kotlin.kotlin.reflect.KProperty0 }\n
}\n  },\n  {\n    mutable: { value: null, implementedInterface: function () {\n      return
Kotlin.kotlin.reflect.KMutableProperty1 }\n    },\n    immutable: { value: null, implementedInterface: function
() {\n      return Kotlin.kotlin.reflect.KProperty1 }\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\nKotlin.toByte = function (a) {\n  return (a & 0xFF)
<< 24 >> 24;\n\nKotlin.toChar = function (a) {\n  return a & 0xFFFF;\n\nKotlin.numberToLong =
function (a) {\n  return a instanceof Kotlin.Long ? a : Kotlin.Long.fromNumber(a);\n\nKotlin.numberToInt =
function (a) {\n  return a instanceof Kotlin.Long ? a.toInt() : Kotlin.doubleToInt(a);\n\nKotlin.numberToShort
= function (a) {\n  return Kotlin.toShort(Kotlin.numberToInt(a));\n\nKotlin.numberToByte = function (a) {\n
return Kotlin.toByte(Kotlin.numberToInt(a));\n\nKotlin.numberToDouble = function (a) {\n  return
+a;\n\nKotlin.numberToChar = function (a) {\n  return
Kotlin.toChar(Kotlin.numberToInt(a));\n\nKotlin.doubleToInt = function(a) {\n  if (a > 2147483647) return

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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 obj2 === "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, { 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-
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the Apache 2.0 license that can be found in the license/LICENSE.txt file.\n */\n\n// Copyright 2009 The Closure
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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 */\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
{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\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 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/**\n * @type

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{!Kotlin.Long} *^nKotlin.Long.ZERO = Kotlin.Long.fromInt(0);n\n\n/** @type {!Kotlin.Long}
*^nKotlin.Long.ONE = Kotlin.Long.fromInt(1);n\n\n/** @type {!Kotlin.Long} *^nKotlin.Long.NEG_ONE =
Kotlin.Long.fromInt(-1);n\n\n/** @type {!Kotlin.Long} *^nKotlin.Long.MAX_VALUE =n
Kotlin.Long.fromBits(0xFFFFFFFF | 0, 0x7FFFFFFF | 0);n\n\n/** @type {!Kotlin.Long}
*^nKotlin.Long.MIN_VALUE = Kotlin.Long.fromBits(0, 0x80000000 | 0);n\n\n/**n * @type {!Kotlin.Long}n *
@private\n *^nKotlin.Long.TWO_PWR_24_ = Kotlin.Long.fromInt(1
<< 24);n\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\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\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/**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\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\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\n/** @return {number} The high
32-bits as a signed value. *^nKotlin.Long.prototype.getHighBits = function() {\n return this.high_;n};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\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/**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\n/** @return {boolean} Whether this value is zero.
*^nKotlin.Long.prototype.isZero = function() {\n return this.high_ == 0 && this.low_ == 0;n};n\n\n/** @return
{boolean} Whether this value is negative. *^nKotlin.Long.prototype.isNegative = function() {\n return this.high_ <
0;n};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/**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/**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/**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/**n * @param
{Kotlin.Long} other Long to compare against.n * @return {boolean} Whether this Long is less than or equal to the

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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
{\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;\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 * 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 *
@param {string} id\n * @param {Object} declaration\n */\nKotlin.defineModule = function (id, declaration)
{\n};\n\nKotlin.defineInlineFunction = function(tag, fun) {\n return fun;\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\nKotlin.isTypeOf = function(type) {\n return
function (object) {\n return typeof object === type;\n } \n};\n\nKotlin.isInstanceOf = function (klass) {\n
return function (object) {\n return Kotlin.isType(object, klass);\n } \n};\n\nKotlin.orNull = function (fn) {\n
return function (object) {\n return object == null || fn(object);\n } \n};\n\nKotlin.andPredicate
= function (a, b) {\n return function (object) {\n return a(object) && b(object);\n
}\n};\n\nKotlin.kotlinModuleMetadata = function (abiVersion, moduleName, data) {\n};\n\nKotlin.suspendCall =
function(value) {\n return value;\n};\n\nKotlin.coroutineResult = function(qualifier) {\n
throwMarkerError();\n};\n\nKotlin.coroutineController = function(qualifier) {\n
throwMarkerError();\n};\n\nKotlin.coroutineReceiver = function(qualifier) {\n
throwMarkerError();\n};\n\nKotlin.setCoroutineResult = function(value, qualifier) {\n
throwMarkerError();\n};\n\nKotlin.getReifiedTypeParameterKType = function(typeParameter) {\n
throwMarkerError();\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\nKotlin.getFunctionById = function(id, defaultValue)
{\n return function() {\n return defaultValue;\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.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\nKotlin.primitiveCompareTo = function (a, b) {\n return a < b ? -1 : a > b ? 1 :
0;\n};\n\nKotlin.doubleCompareTo = function (a, b) {\n if (a < b) return -1;\n if (a > b) return 1;\n\n if (a ===

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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\nKotlin.charInc = function (value)
{\n    return Kotlin.toChar(value+1);\n};\n\nKotlin.charDec = function (value) {\n    return Kotlin.toChar(value-
1);\n};\n\nKotlin.imul = Math.imul || imul;\n\nKotlin.imulEmulated = imul;\n\nfunction imul(a, b) {\n    return ((a &
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\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; // 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                }\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                }\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

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implementations derived from boost special math functions,\n // Copyright Eric Ford & Hubert Holin 2001.\n\nif (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                        if (x > upper_taylor_2_bound)\n                            {\n                                // approximation by laurent series in 1/x at 0+ order from -1 to 0\n                                    return\n                                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 Math.log(x * 2 + (1 / (x * 2)));\n                                }\n                    }\n                else\n                    {\n                        return Math.log(x + Math.sqrt(x * x + 1));\n                    }\n            }\n        else if (x <= -taylor_n_bound)\n            {\n                return -asinh(-x);\n            }\n        else\n            {\n                // approximation by taylor series in x at 0 up to\n                order 2\n                var result = x;\n                if (Math.abs(x) >= taylor_2_bound)\n                    {\n                        var x3 =\n                        x * x * x;\n                        // approximation by taylor series in x at 0 up to order 4\n                            result -= x3 / 6;\n                    }\n                return result;\n            }\n        }; \n    Math.asinh = asinh;\n}\n\nif (typeof Math.acosh ===\n\"undefined\")\n{\n    Math.acosh = function(x) {\n        if (x < 1)\n            {\n                return NaN;\n            }\n        else if\n        (x - 1 >= taylor_n_bound)\n            {\n                if (x > upper_taylor_2_bound)\n                    {\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                        return Math.log(x + Math.sqrt(x * x - 1));\n                    }\n            }\n        else\n            {\n                var y = Math.sqrt(x - 1);\n                // approximation by taylor series in y at 0 up to\n                order 2\n                var result = y;\n                if (y >= taylor_2_bound)\n                    {\n                        var y3 = y * y *\n                        y;\n                        // approximation by taylor series in y at 0 up to order 4\n                            result -= y3 / 12;\n                    }\n                return Math.sqrt(2)\n                * result;\n            }\n        }; \n}\n\nif (typeof Math.atanh === \"undefined\") {\n    Math.atanh = function(x)\n    {\n        if (Math.abs(x) < taylor_n_bound) {\n            var result = x;\n            if (Math.abs(x) >\n            taylor_2_bound) {\n                result += (x * x * x) / 3;\n            }\n            return result;\n        }\n        return Math.log((1 + x) / (1 - x)) / 2;\n    }; \n}\n\nif (typeof Math.log1p === \"undefined\") {\n    Math.log1p\n    = function(x) {\n        if (Math.abs(x) < taylor_n_bound) {\n            var x2 = x * x;\n            var x3 = x2 *\n            x;\n            var x4 = x3 * x;\n            // approximation by taylor series in x at 0 up to order 4\n                return (-\n            x4 / 4 + x3 / 3 - x2 / 2 + x);\n        }\n        return Math.log(x + 1);\n    }; \n}\n\nif (typeof Math.expm1\n    === \"undefined\") {\n    Math.expm1 = function(x) {\n        if (Math.abs(x)\n        < taylor_n_bound) {\n            var x2 = x * x;\n            var x3 = x2 * x;\n            var x4 = x3 * x;\n            //\n            approximation by taylor series in x at 0 up to order 4\n                return (x4 / 24 + x3 / 6 + x2 / 2 + x);\n        }\n        return Math.exp(x) - 1;\n    }; \n}\n\nif (typeof Math.hypot === \"undefined\") {\n    Math.hypot =\n    function() {\n        var y = 0;\n        var length = arguments.length;\n        for (var i = 0; i < length; i++) {\n            if (arguments[i] === Infinity || arguments[i] === -Infinity) {\n                return Infinity;\n            }\n            y +=\n            arguments[i] * arguments[i];\n        }\n        return Math.sqrt(y);\n    }; \n}\n\nif (typeof Math.log10 === \"undefined\")\n{\n    Math.log10 = function(x) {\n        return Math.log(x) * Math.LOG10E;\n    }; \n}\n\nif (typeof Math.log2 ===\n\"undefined\") {\n    Math.log2 = function(x) {\n        return Math.log(x) * Math.LOG2E;\n    }; \n}\n\nif\n    (typeof Math.clz32 === \"undefined\") {\n    Math.clz32 = (function(log, LN2) {\n        return function(x) {\n            var asUInt = x >>> 0;\n            if (asUInt === 0) {\n                return 32;\n            }\n            return 31 - (log(asUInt) /\n            LN2 | 0) | 0; // the \"| 0\" acts like math.floor\n        }; \n    })(Math.log, Math.LN2);\n}\n\n// For HtmlUnit and\nPhantomJs\nif (typeof ArrayBuffer.isView === \"undefined\") {\n    ArrayBuffer.isView = function(a) {\n        return a != null && a.__proto__ != null && a.__proto__.__proto__ === Int8Array.prototype.__proto__;\n    }; \n}\n\nif (typeof Array.prototype.fill === \"undefined\") {\n    // Polyfill from https://developer.mozilla.org/en-\n    US/docs/Web/JavaScript/Reference/Global_Objects/Array/fill#Polyfill\n    Array.prototype.fill = function() {\n        //\n        Steps 1-2.\n        if (this == null) {\n            throw new TypeError('this is null or not defined');\n        }\n        var O =\n        Object(this);\n        // Steps 3-5.\n        var len = O.length >>> 0;\n        // Steps 6-7.\n        var start = arguments[1];\n        var relativeStart = start >>\n        0;\n        // Step 8.\n        var k = relativeStart < 0 ?\n        Math.max(len + relativeStart, 0) :\n
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Math.min(relativeStart, len);\n\n // Steps 9-10.\n    var end = arguments[2];\n    var relativeEnd = end ===
undefined ?\n    len : end >> 0;\n\n // Step 11.\n    var final = relativeEnd < 0 ?\n    Math.max(len +
relativeEnd, 0) :\n    Math.min(relativeEnd, len);\n\n // Step 12.\n    while (k < final) {\n    O[k] = value;\n    k++;\n    }\n\n // Step 13.\n    return O;\n    };\n\n(function() {\n    function normalizeOffset(offset,
length) {\n    if (offset < 0) return Math.max(0, offset + length);\n    return Math.min(offset, length);\n    }\n    function typedArraySlice(begin, end) {\n    if (typeof end === \"undefined\") {\n    end = this.length;\n    }\n    begin = normalizeOffset(begin
|| 0, this.length);\n    end = Math.max(begin, normalizeOffset(end, this.length));\n    return new
this.constructor(this.subarray(begin, end));\n    }\n\n    var arrays = [Int8Array, Int16Array, Uint16Array,
Int32Array, Float32Array, Float64Array];\n    for (var i = 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\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\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    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\"/*\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\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    var superPrototype = ctor.prototype != null ?
Object.getPrototypeOf(ctor.prototype) : null;\n    var superConstructor = superPrototype != null ?

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superPrototype.constructor : null;\n    return superConstructor != null &&
isInheritanceFromInterface(superConstructor, iface);\n}\n\n/**\n * \n * @param {*} object\n * @param
{Function|Object} klass\n * @returns {Boolean}\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 (klassMetadata == null) {\n        return object instanceof
klass;\n    }\n\n    if (klassMetadata.kind === Kotlin.Kind.INTERFACE && object.constructor != null) {\n        return
isInheritanceFromInterface(object.constructor, klass);\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    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};",null,"/*\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    val name: String\n        get() =
_name\n    val ordinal: Int\n        get() = _ordinal\n    override fun compareTo(other: Enum<T>) =
ordinal.compareTo(other.ordinal)\n    override fun equals(other: Any?) = this === other\n    override fun
hashCode(): Int = js("Kotlin.identityHashCode")(this)\n    override fun toString() = name\n    companion
object\n} ,null,"/*\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// 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 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@kotlin.internal.InlineOnly\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@kotlin.internal.InlineOnly\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@kotlin.internal.InlineOnly\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@kotlin.internal.InlineOnly\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@kotlin.internal.InlineOnly\npublic inline operator fun LongArray.component1(): Long {\n

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return get(0)\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@kotlin.internal.InlineOnly\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@kotlin.internal.InlineOnly\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@kotlin.internal.InlineOnly\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@kotlin.internal.InlineOnly\npublic inline operator fun CharArray.component1(): Char {\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@kotlin.internal.InlineOnly\npublic inline operator fun <T> Array<out T>.component2(): T {\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@kotlin.internal.InlineOnly\npublic inline operator fun ByteArray.component2(): Byte {\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@kotlin.internal.InlineOnly\npublic inline operator fun ShortArray.component2(): Short {\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@kotlin.internal.InlineOnly\npublic inline operator fun IntArray.component2(): Int {\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@kotlin.internal.InlineOnly\npublic inline operator fun LongArray.component2(): Long {\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@kotlin.internal.InlineOnly\npublic inline operator fun FloatArray.component2(): Float {\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@kotlin.internal.InlineOnly\npublic inline operator fun DoubleArray.component2(): Double {\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@kotlin.internal.InlineOnly\npublic inline operator fun BooleanArray.component2(): Boolean {\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@kotlin.internal.InlineOnly\npublic inline operator fun CharArray.component2(): Char {\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@kotlin.internal.InlineOnly\npublic inline operator fun <T> Array<out T>.component3(): T {\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@kotlin.internal.InlineOnly\npublic inline operator fun ByteArray.component3(): Byte {\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@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 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)` 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.

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*^@kotlin.internal.InlineOnly\npublic inline operator
fun ByteArray.component5(): Byte {\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 *^@kotlin.internal.InlineOnly\npublic inline operator fun ShortArray.component5():
Short {\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
*^@kotlin.internal.InlineOnly\npublic inline operator fun IntArray.component5(): Int {\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
*^@kotlin.internal.InlineOnly\npublic inline operator fun LongArray.component5(): Long {\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
*^@kotlin.internal.InlineOnly\npublic inline operator fun FloatArray.component5(): Float {\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
*^@kotlin.internal.InlineOnly\npublic inline operator fun DoubleArray.component5(): Double {\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
*^@kotlin.internal.InlineOnly\npublic inline operator fun BooleanArray.component5(): Boolean {\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 *^@kotlin.internal.InlineOnly\npublic inline operator fun CharArray.component5():
Char {\n    return get(4)\n}\n\n**\n * Returns true if [element] is found in the array.\n *^@public operator fun
<@kotlin.internal.OnlyInputTypes T> Array<out T>.contains(element: T): Boolean {\n    return indexOf(element)
>= 0\n}\n\n**\n * Returns true if [element] is found in the array.\n *^@public operator fun
ByteArray.contains(element: Byte): Boolean {\n    return indexOf(element) >= 0\n}\n\n**\n * Returns true if
[element] is found in the array.\n *^@public operator fun ShortArray.contains(element: Short): Boolean {\n    return
indexOf(element) >= 0\n}\n\n**\n * Returns true if [element] is found in the array.\n *^@public operator fun
IntArray.contains(element: Int): Boolean {\n    return indexOf(element) >= 0\n}\n\n**\n * Returns true if
[element] is found in the array.\n *^@public operator fun LongArray.contains(element: Long): Boolean {\n    return
indexOf(element) >= 0\n}\n\n**\n * Returns true if [element] is found in the array.\n *^@public operator fun
FloatArray.contains(element: Float): Boolean {\n    return indexOf(element) >= 0\n}\n\n**\n * Returns true if
[element] is found in the array.\n *^@public operator fun DoubleArray.contains(element: Double): Boolean {\n
return indexOf(element) >= 0\n}\n\n**\n * Returns true if [element] is found in the array.\n *^@public operator
fun BooleanArray.contains(element: Boolean): Boolean {\n    return indexOf(element) >= 0\n}\n\n**\n * Returns
true if [element] is found in the array.\n *^@public operator fun CharArray.contains(element: Char): 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 array.\n * \n * @sample
samples.collections.Collections.Elements.elementAt\n
*^@public expect fun <T> Array<out T>.elementAt(index: Int): T\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 *^@public expect fun ByteArray.elementAt(index: Int):
Byte\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 *^@public
expect fun ShortArray.elementAt(index: Int): Short\n\n**\n * Returns an element at the given [index] or throws an
    
```



```

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
*^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
*^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
*^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
*^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
*^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
*^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 * \n *^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 * \n *^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
*^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 * \n *^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 * \n *^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
*^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 */\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 */\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
*/\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 */\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 */\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
*/\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 */\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 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}\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 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.

```

public fun CharArray.firstOrNull(): Char? {
    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> Array<out T>.firstOrNull(predicate:
    (T) -> Boolean): T? {
    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.

```

public inline fun ByteArray.firstOrNull(predicate: (Byte) -> Boolean): Byte? {
    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.

```

public inline fun ShortArray.firstOrNull(predicate: (Short) -> Boolean): Short? {
    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.

```

public inline fun IntArray.firstOrNull(predicate: (Int) -> Boolean): Int? {
    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.

```

public inline fun LongArray.firstOrNull(predicate: (Long) -> Boolean): Long? {
    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.

```

public inline fun FloatArray.firstOrNull(predicate: (Float) -> Boolean): Float? {
    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.

```

public inline fun DoubleArray.firstOrNull(predicate: (Double) -> Boolean): Double? {
    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.

```

public inline fun BooleanArray.firstOrNull(predicate: (Boolean) -> Boolean): Boolean? {
    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.

```

public inline fun CharArray.firstOrNull(predicate: (Char) -> Boolean): Char? {
    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 array.

```

@kotlin.internal.InlineOnly
public inline fun <T> Array<out T>.getOrNull(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 the result of calling the [defaultValue] function if the [index] is out of bounds of this array.

```

@kotlin.internal.InlineOnly
public inline fun ByteArray.getOrNull(index: Int,
    defaultValue: (Int) -> Byte): Byte? {
    return if (index >= 0 && index <= lastIndex) get(index) else
        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 array.

```

@kotlin.internal.InlineOnly
public inline fun ShortArray.getOrNull(index: Int,
    defaultValue: (Int) -> Short): Short? {
    return if (index >= 0 && index <= lastIndex) get(index) else
        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 array.

```

@kotlin.internal.InlineOnly
public inline fun IntArray.getOrNull(index: Int,
    defaultValue: (Int) -> Int): Int? {
    return if (index >= 0 && index <= lastIndex) get(index) else
        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 array.

```

@kotlin.internal.InlineOnly
public inline fun LongArray.getOrNull(index: Int,
    defaultValue: (Int) -> Long): Long? {
    return if (index >= 0 && index <= lastIndex) get(index) else
        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 array.

```

@kotlin.internal.InlineOnly
public inline fun FloatArray.getOrNull(index: Int,
    defaultValue: (Int) -> Float): Float? {
    return if (index >= 0 && index <= lastIndex) get(index) else
        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 array.

```

@kotlin.internal.InlineOnly
public inline fun DoubleArray.getOrNull(index: Int,
    defaultValue: (Int) -> Double): Double? {
    return if (index >= 0 && index <= lastIndex) get(index) else
        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 array.

function if the

```
[index] is out of bounds of this array.\n *^@kotlin.internal.InlineOnly\npublic inline fun  
BooleanArray.getOrElse(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.getOrElse(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 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
```



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    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    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.indexOfLast(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

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FloatArray.indexOfLast(predicate: (Float) -> Boolean): Int {
    for (index in indices.reversed()) {
        if (predicate(this[index])) {
            return index
        }
    }
    return -1
}
// Returns index of the last element matching the given [predicate], or -1 if the array does not contain such element.
// public inline fun DoubleArray.indexOfLast(predicate: (Double) -> Boolean): Int {
//     for (index in indices.reversed()) {
//         if (predicate(this[index])) {
//             return index
//         }
//     }
//     return -1
// }
// Returns index of the last element matching the given [predicate], or -1 if the array does not contain such element.
// public inline fun BooleanArray.indexOfLast(predicate: (Boolean) -> Boolean): Int {
//     for (index in indices.reversed()) {
//         if (predicate(this[index])) {
//             return index
//         }
//     }
//     return -1
// }
// Returns index of the last element matching the given [predicate], or -1 if the array does not contain such element.
// public inline fun CharArray.indexOfLast(predicate: (Char) -> Boolean): Int {
//     for (index in indices.reversed()) {
//         if (predicate(this[index])) {
//             return index
//         }
//     }
//     return -1
// }
// Returns the last element.
// @throws [NoSuchElementException] if the array is empty.
// public fun <T> Array<out T>.last(): T {
//     if (isEmpty()) {
//         throw NoSuchElementException("Array is empty.")
//     }
//     return this[lastIndex]
// }
// Returns the last element.
// @throws [NoSuchElementException] if the array is empty.
// public fun ByteArray.last(): Byte {
//     if (isEmpty()) {
//         throw NoSuchElementException("Array is empty.")
//     }
//     return this[lastIndex]
// }
// Returns the last element.
// @throws [NoSuchElementException] if the array is empty.
// public fun ShortArray.last(): Short {
//     if (isEmpty()) {
//         throw NoSuchElementException("Array is empty.")
//     }
//     return this[lastIndex]
// }
// Returns the last element.
// @throws [NoSuchElementException] if the array is empty.
// public fun IntArray.last(): Int {
//     if (isEmpty()) {
//         throw NoSuchElementException("Array is empty.")
//     }
//     return this[lastIndex]
// }
// Returns the last element.
// @throws [NoSuchElementException] if the array is empty.
// public fun LongArray.last(): Long {
//     if (isEmpty()) {
//         throw NoSuchElementException("Array is empty.")
//     }
//     return this[lastIndex]
// }
// Returns the last element.
// @throws [NoSuchElementException] if the array is empty.
// public fun FloatArray.last(): Float {
//     if (isEmpty()) {
//         throw NoSuchElementException("Array is empty.")
//     }
//     return this[lastIndex]
// }
// Returns the last element.
// @throws [NoSuchElementException] if the array is empty.
// public fun DoubleArray.last(): Double {
//     if (isEmpty()) {
//         throw NoSuchElementException("Array is empty.")
//     }
//     return this[lastIndex]
// }
// Returns the last element.
// @throws [NoSuchElementException] if the array is empty.
// public fun BooleanArray.last(): Boolean {
//     if (isEmpty()) {
//         throw NoSuchElementException("Array is empty.")
//     }
//     return this[lastIndex]
// }
// Returns the last element.
// @throws [NoSuchElementException] if the array is empty.
// public fun CharArray.last(): Char {
//     if (isEmpty()) {
//         throw NoSuchElementException("Array 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> Array<out T>.last(predicate: (T) -> Boolean): T {
//     for (index in this.indices.reversed()) {
//         val element = this[index]
//         if (predicate(element)) return element
//     }
//     throw NoSuchElementException("Array contains no element matching the predicate.")
// }
// Returns the last element matching the given [predicate].
// @throws [NoSuchElementException] if no such element is found.
// public inline fun ByteArray.last(predicate: (Byte) -> Boolean): Byte {
//     for (index in this.indices.reversed()) {
//         val element = this[index]
//         if (predicate(element)) return element
//     }
//     throw NoSuchElementException("Array contains no element matching the predicate.")
// }
// Returns the last element matching the given [predicate].
// @throws [NoSuchElementException] if no such element is found.
// public inline fun ShortArray.last(predicate: (Short) -> Boolean): Short {
//     for (index in this.indices.reversed()) {
//         val element = this[index]
//         if (predicate(element)) return element
//     }
//     throw NoSuchElementException("Array contains no element matching the predicate.")
// }
// Returns the last element matching the given [predicate].
// @throws [NoSuchElementException] if no such element is found.
// public inline fun IntArray.last(predicate: (Int) -> Boolean): Int {
//     for (index in this.indices.reversed()) {
//         val element = this[index]
//         if (predicate(element)) return element
//     }
//     throw

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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/**\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/**\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/**\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/**\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/**\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.\n */\npublic fun IntArray.lastIndexOf(element: Int): 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 LongArray.lastIndexOf(element: Long): 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 FloatArray.lastIndexOf(element: Float): 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 DoubleArray.lastIndexOf(element: Double): 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 BooleanArray.lastIndexOf(element: Boolean): 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 CharArray.lastIndexOf(element: Char): Int {\n    for (index in

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indices.reversed()) {\n    if (element == this[index]) {\n        return index\n    }\n    return -1\n}\n\n/**\n * Returns the last element, or `null` if the\n * array is empty.\n */\n\npublic fun <T> Array<out T>.lastOrNull(): T? {\n    return if (isEmpty()) null else this[size -\n    1]\n}\n\n/**\n * Returns the last element, or `null` if the array is empty.\n */\n\npublic fun ByteArray.lastOrNull():\n    Byte? {\n    return if (isEmpty()) null else this[size - 1]\n}\n\n/**\n * Returns the last element, or `null` if the array is\n * empty.\n */\n\npublic fun ShortArray.lastOrNull(): Short? {\n    return if (isEmpty()) null else this[size -\n    1]\n}\n\n/**\n * Returns the last element, or `null` if the array is\n * empty.\n */\n\npublic fun IntArray.lastOrNull(): Int?\n    {\n    return if (isEmpty()) null else this[size - 1]\n}\n\n/**\n * Returns the last element, or `null` if the array is\n * empty.\n */\n\npublic fun LongArray.lastOrNull(): Long? {\n    return if (isEmpty()) null else this[size - 1]\n}\n\n/**\n * Returns the last element, or `null` if the array is\n * empty.\n */\n\npublic fun FloatArray.lastOrNull(): Float? {\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\npublic fun DoubleArray.lastOrNull(): Double? {\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\npublic fun BooleanArray.lastOrNull(): Boolean? {\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\npublic fun CharArray.lastOrNull(): Char? {\n    return\n    if (isEmpty()) null else this[size - 1]\n}\n\n/**\n * Returns the last element matching the given [predicate], or `null`\n * if no such element was found.\n */\n\npublic inline fun <T> Array<out T>.lastOrNull(predicate: (T) -> Boolean): T?\n    {\n    for (index in this.indices.reversed()) {\n        val element = this[index]\n        if (predicate(element)) return\n        element\n    }\n    return null\n}\n\n/**\n * Returns the last element matching the given [predicate], or `null` if\n * no such element was found.\n */\n\npublic inline fun\n    ByteArray.lastOrNull(predicate: (Byte) -> Boolean): Byte? {\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\n * the last element matching the given [predicate], or `null` if no such element was found.\n */\n\npublic inline fun\n    ShortArray.lastOrNull(predicate: (Short) -> Boolean): Short? {\n    for (index in this.indices.reversed()) {\n        val\n        element = this[index]\n        if (predicate(element)) return element\n    }\n    return null\n}\n\n/**\n * Returns the last\n * element matching the given [predicate], or `null` if no such element was found.\n */\n\npublic inline fun\n    IntArray.lastOrNull(predicate: (Int) -> Boolean): Int? {\n    for (index in this.indices.reversed()) {\n        val element\n        = this[index]\n        if (predicate(element)) return element\n    }\n    return null\n}\n\n/**\n * Returns the last element\n * matching the given [predicate], or `null`\n * if no such element was found.\n */\n\npublic inline fun\n    LongArray.lastOrNull(predicate: (Long) -> Boolean): Long?\n    {\n    for (index in this.indices.reversed()) {\n        val element = this[index]\n        if (predicate(element)) return\n        element\n    }\n    return null\n}\n\n/**\n * Returns the last element matching the given [predicate], or `null` if\n * no such element was found.\n */\n\npublic inline fun\n    FloatArray.lastOrNull(predicate: (Float) -> Boolean): Float? {\n    for\n    (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\n * no such element\n * was found.\n */\n\npublic inline fun\n    DoubleArray.lastOrNull(predicate: (Double) -> Boolean): Double? {\n    for\n    (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\n * last element matching the given [predicate], or `null` if no such element was found.\n */\n\npublic inline fun\n    BooleanArray.lastOrNull(predicate: (Boolean) -> Boolean): Boolean? {\n    for (index in this.indices.reversed()) {\n        val\n        element = this[index]\n        if (predicate(element)) return element\n    }\n    return null\n}\n\n/**\n * Returns\n * the last element matching the given [predicate], or `null` if no such element was found.\n */\n\npublic inline fun\n    CharArray.lastOrNull(predicate: (Char) -> Boolean): Char? {\n    for (index in this.indices.reversed()) {\n        val\n        element = this[index]\n        if (predicate(element)) return element\n    }\n    return null\n}\n\n/**\n * Returns a\n * random element from this array.\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\n    random(Random)\n}\n\n/**\n * Returns a random element from this array.\n * @throws

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NoSuchElementException if this array is empty.\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
*^@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 *^@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
*^@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 *^@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
*^@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 *^@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
*^@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
*^@SinceKotlin("1.3")\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
NoSuchElementException if this array is empty.\n *^@SinceKotlin("1.3")\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
*^@SinceKotlin("1.3")\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
*^@SinceKotlin("1.3")\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
*^@SinceKotlin("1.3")\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
*^@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
NoSuchElementException if this array is empty.\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
*^@SinceKotlin("1.3")\npublic fun BooleanArray.random(random: Random): Boolean {\n    if (isEmpty())\n        throw
NoSuchElementException("Array is empty.")\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.\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 */\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 */\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 */\n@SinceKotlin("1.3")\n@ExperimentalStdlibApi\npublic fun

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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 */\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 */\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
*/\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.\n */\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.\n */\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.\n */\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.\n */\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.\n */\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.\n */\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.\n */\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.\n */\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.\n */\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 matching the given [predicate], or throws exception if there is no or more than one matching
element.\n */\npublic inline fun <T> Array<out T>.single(predicate: (T) -> Boolean): T {\n  var single: T? = null\n
\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  }\n  if (!found) throw NoSuchElementException("Array contains no element matching
the predicate.")\n  @Suppress("UNCHECKED_CAST")\n  return single as T\n}\n\n/**\n * Returns the single

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element matching the given [predicate], or throws exception if there is no or more than one matching element.\n
*/\npublic inline fun ByteArray.single(predicate: (Byte) -> Boolean): Byte {\n    var single: Byte? = null\n    var found = false\n    for (element in this) {\n        if (predicate(element)) {\n            if (found) throw\nIllegalArgumentException("Array contains more than one matching element.")\n            single = element\nfound = true\n        }\n    }\n    if (!found) throw NoSuchElementException("Array contains\nno element matching the predicate.")\n    @Suppress("UNCHECKED_CAST")\n    return single as\nByte\n}\n\n/**\n * Returns the single element matching the given [predicate], or throws exception if there is no or\nmore than one matching element.\n */\npublic inline fun ShortArray.single(predicate: (Short) -> Boolean): Short {\n    var single: Short? = null\n    var found = false\n    for (element in this) {\n        if (predicate(element)) {\n            if\n(found) throw IllegalArgumentException("Array contains more than one matching element.")\n            single =\nelement\n            found = true\n        }\n    }\n    if (!found) throw NoSuchElementException("Array contains no\nelement matching the predicate.")\n    @Suppress("UNCHECKED_CAST")\n    return single as Short\n}\n\n/**\n * Returns the single element matching the given [predicate], or throws exception if there is no or more than one\nmatching element.\n */\npublic inline fun IntArray.single(predicate: (Int) -> Boolean):\nInt {\n    var single: Int? = null\n    var found = false\n    for (element in this) {\n        if (predicate(element)) {\n            if (found) throw\nIllegalArgumentException("Array contains more than one matching element.")\n            single =\nelement\n            found = true\n        }\n    }\n    if (!found) throw NoSuchElementException("Array contains no\nelement matching the predicate.")\n    @Suppress("UNCHECKED_CAST")\n    return single as Int\n}\n\n/**\n * Returns the single element matching the given [predicate], or throws exception if there is no or more than one\nmatching element.\n */\npublic inline fun LongArray.single(predicate: (Long) -> Boolean): Long {\n    var single:\nLong? = null\n    var found = false\n    for (element in this) {\n        if (predicate(element)) {\n            if (found)\nthrow IllegalArgumentException("Array contains more than one matching element.")\n            single = element\nfound = true\n        }\n    }\n    if\n(!found) throw NoSuchElementException("Array contains no element matching the predicate.")\n    @Suppress("UNCHECKED_CAST")\n    return single as Long\n}\n\n/**\n * Returns the single element matching\nthe given [predicate], or throws exception if there is no or more than one matching element.\n */\npublic inline fun\nFloatArray.single(predicate: (Float) -> Boolean): Float {\n    var single: Float? = null\n    var found = false\n    for\n(element in this) {\n        if (predicate(element)) {\n            if (found) throw\nIllegalArgumentException("Array\ncontains more than one matching element.")\n            single = element\n            found = true\n        }\n    }\n    if\n(!found) throw NoSuchElementException("Array contains no element matching the predicate.")\n    @Suppress("UNCHECKED_CAST")\n    return single as Float\n}\n\n/**\n * Returns the single element matching\nthe given [predicate], or throws exception if there is no or more than one matching element.\n */\npublic inline\nfun DoubleArray.single(predicate: (Double) -> Boolean): Double {\n    var single: Double? = null\n    var found =\nfalse\n    for (element in this) {\n        if (predicate(element)) {\n            if (found) throw\nIllegalArgumentException("Array contains more than one matching element.")\n            single = element\nfound = true\n        }\n    }\n    if (!found) throw NoSuchElementException("Array contains no element\nmatching the predicate.")\n    @Suppress("UNCHECKED_CAST")\n    return single as Double\n}\n\n/**\n * Returns the\nsingle element matching the given [predicate], or throws exception if there is no or more than one matching\nelement.\n */\npublic inline fun BooleanArray.single(predicate: (Boolean) -> Boolean): Boolean {\n    var single:\nBoolean? = null\n    var found = false\n    for (element in this) {\n        if (predicate(element)) {\n            if (found)\nthrow\nIllegalArgumentException("Array contains more than one matching element.")\n            single = element\nfound = true\n        }\n    }\n    if (!found) throw\nNoSuchElementException("Array contains no element matching the predicate.")\n    @Suppress("UNCHECKED_CAST")\n    return single as\nBoolean\n}\n\n/**\n * Returns the single element matching the given [predicate], or throws exception if there is no\nor more than one matching element.\n */\npublic inline fun CharArray.single(predicate: (Char) -> Boolean): Char\n{\n    var single: Char? = null\n    var found = false\n    for (element in this) {\n        if (predicate(element)) {\n            if\n(found) throw\nIllegalArgumentException("Array contains more than one matching element.")\n            single =\nelement\n            found = true\n        }\n    }\n    if (!found) throw\nNoSuchElementException("Array contains no

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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.
public 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.
public 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.
public 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.
public 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.
public 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.
public 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.
public 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.
public 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.
public 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.
public 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.
public 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.
public 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.
public 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.
public 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.
public 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.
public inline fun DoubleArray.singleOrNull(predicate: (Double) -> Boolean): Double? {
    var single:
Double? = null
}

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    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\n * 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\n * 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\n * 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\n * 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\n * 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\n * 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\n * 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\n * 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 except first [n] elements.\n * \n * @throws IllegalArgumentException if [n] is negative.\n * \n * @sample\n * 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\n */

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IllegalArgumentException if [n] is negative.\n * \n * @sample
samples.collections.Collections.Transformations.drop\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 *\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 *\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 *\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 *\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 *\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 *\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 *\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 *\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 *\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 *\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 *\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

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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 =

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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            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 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 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
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 * @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 * @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 * @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

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\* 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

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*^public 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
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 *^public 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 *^public 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 *^public 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 *^public 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 *^public 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 *^public 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 *^public 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 *^public
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 *^public 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 *^public 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 *

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@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 \*  
 public 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 \* 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 \*  
 public 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 \*  
 @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 \*  
 public 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 \*  
 @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 \*  
 public 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 \*  
 public 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 \*  
 public 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 \*  
 public 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 \*  
 public 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 \*  
 public 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 \*  
 public 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 \*  
 public 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 \*  
 public 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 \*  
 public 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 \*  
 public 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 \*  
 public 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 \*  
 public 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 \*  
 public fun <C : MutableCollection<in T>, T : Any> Array<out T?>.filterNotNullTo(destination: C): C {\n for

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(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>> 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/**\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/**\n * Appends all 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

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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: 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 (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 */\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 *

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Returns a list containing elements at specified [indices].\n *^public 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
*^public 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 *^public 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 *^public fun
CharArray.slice(indices: Iterable<Int>): List<Char> {\n    val size = indices.collectionSizeOrDefault(10)\n    if (size
== 0) return emptyList()\n    val list = ArrayList<Char>(size)\n    for (index in indices) {\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 *^public
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 *^public 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 *^public 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 *^public 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 *^public 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 *^public 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 *^public 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 *^public 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 *^public 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 *^public 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 *^public 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

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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/**\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/**\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 + 1)\n}\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/**\n * Returns a list containing first [n] elements.\n\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/**\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/**\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/**\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/**\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/**\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

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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  }\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 *\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 IllegalArgumentException 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
IllegalArgumentException 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 IllegalArgumentException 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 IllegalArgumentException 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 IllegalArgumentException if [n] is negative.\n * \n *
@sample

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@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 IllegalArgumentException 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 IllegalArgumentException 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 IllegalArgumentException 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 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
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 */\npublic fun IntArray.reversed(): List<Int> {\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 LongArray.reversed(): List<Long> {\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 FloatArray.reversed(): List<Float> {\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 DoubleArray.reversed(): List<Double> {\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 BooleanArray.reversed(): List<Boolean> {\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 CharArray.reversed(): List<Char> {\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 */\npublic fun <T> Array<T>.reversedArray(): Array<T> {\n    if (isEmpty()) return this\n    val result = arrayOfNulls(this, size)\n    val lastIndex = lastIndex\n    for (i in 0..lastIndex)\n        result[lastIndex - i] = this[i]\n    return result\n}\n\n/**\n * Returns an array with elements of this array in reversed order.\n */\npublic fun ByteArray.reversedArray(): ByteArray {\n    if (isEmpty()) return this\n    val result = ByteArray(size)\n    val lastIndex = lastIndex\n    for (i in 0..lastIndex)\n        result[lastIndex - i] = this[i]\n    return result\n}\n\n/**\n * Returns an array with elements of this array in reversed order.\n */\npublic fun ShortArray.reversedArray(): ShortArray {\n    if

```

```

(isEmpty()) return this\n    val result = ShortArray(size)\n    val lastIndex = lastIndex\n    for (i in 0..lastIndex)\n    result[lastIndex - i] = this[i]\n    return result\n}\n\n/**\n * Returns an array with elements of this array in reversed  

order.\n */\npublic fun IntArray.reversedArray(): IntArray {\n    if (isEmpty()) return this\n    val result =  

IntArray(size)\n    val lastIndex = lastIndex\n    for (i in 0..lastIndex)\n        result[lastIndex - i] = this[i]\n    return  

result\n}\n\n/**\n * Returns an array with elements of this array in reversed order.\n */\npublic fun  

LongArray.reversedArray(): LongArray {\n    if (isEmpty()) return this\n    val result = LongArray(size)\n    val  

lastIndex = lastIndex\n    for (i in 0..lastIndex)\n        result[lastIndex  

- i] = this[i]\n    return result\n}\n\n/**\n * Returns an array with elements of this array in reversed order.\n */\npublic fun  

FloatArray.reversedArray(): FloatArray {\n    if (isEmpty()) return this\n    val result =  

FloatArray(size)\n    val lastIndex = lastIndex\n    for (i in 0..lastIndex)\n        result[lastIndex - i] = this[i]\n    return  

result\n}\n\n/**\n * Returns an array with elements of this array in reversed order.\n */\npublic fun  

DoubleArray.reversedArray(): DoubleArray {\n    if (isEmpty()) return this\n    val result = DoubleArray(size)\n    val  

lastIndex = lastIndex\n    for (i in 0..lastIndex)\n        result[lastIndex - i] = this[i]\n    return result\n}\n\n/**\n *  

Returns an array with elements of this array in reversed order.\n */\npublic fun BooleanArray.reversedArray():  

BooleanArray {\n    if (isEmpty()) return this\n    val result = BooleanArray(size)\n    val lastIndex = lastIndex\n    for  

(i in 0..lastIndex)\n        result[lastIndex - i] = this[i]\n  

return result\n}\n\n/**\n * Returns an array with elements of this array in reversed order.\n */\npublic fun  

CharArray.reversedArray(): CharArray {\n    if (isEmpty()) return this\n    val result = CharArray(size)\n    val  

lastIndex = lastIndex\n    for (i in 0..lastIndex)\n        result[lastIndex - i] = this[i]\n    return result\n}\n\n/**\n *  

Sorts elements in the array 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 */\npublic inline fun <T, R : Comparable<R>> Array<out T>.sortBy(crossinline selector: (T) -> R?): Unit  

{\n    if (size > 1) sortByWith(compareBy(selector))\n}\n\n/**\n * Sorts elements in the array 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 */\npublic inline fun <T, R : Comparable<R>> Array<out  

T>.sortByDescending(crossinline selector: (T) -> R?): Unit {\n    if (size > 1)  

sortByWith(compareByDescending(selector))\n}\n\n/**\n * Sorts elements in the array 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 */\npublic fun <T : Comparable<T>> Array<out T>.sortDescending(): Unit {\n  

sortByWith(reverseOrder())\n}\n\n/**\n * Sorts elements in the array in-place descending according to their natural  

sort order.\n */\npublic fun ByteArray.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  

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 */

```



```

*^public fun ByteArray.sorted(): List<Byte> {
    return toTypedArray().apply { sort() }.asList()
}
Returns a list of all elements sorted according to their natural sort order.

*^public fun ShortArray.sorted():
List<Short> {
    return toTypedArray().apply { sort() }.asList()
}
Returns a list of all elements sorted
according to their natural sort order.

*^public fun IntArray.sorted(): List<Int> {
    return toTypedArray().apply
{ sort() }.asList()
}
Returns a list of all elements sorted according
to their natural sort order.

*^public fun LongArray.sorted(): List<Long> {
    return toTypedArray().apply {
sort() }.asList()
}
Returns a list of all elements sorted according to their natural sort order.

*^public
fun FloatArray.sorted(): List<Float> {
    return toTypedArray().apply { sort() }.asList()
}
Returns a
list of all elements sorted according to their natural sort order.

*^public fun DoubleArray.sorted(): List<Double>
{
    return toTypedArray().apply { sort() }.asList()
}
Returns a list of all elements sorted according to
their natural sort order.

*^public fun CharArray.sorted(): List<Char> {
    return toTypedArray().apply { sort()
}.asList()
}
Returns an array with all elements of this array sorted 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<T>.sortedArray():
Array<T> {
    if (isEmpty()) return this
    return this.copyOf().apply { sort() }
}
Returns an array
with all elements of this array sorted according to their natural sort order.

*^public fun ByteArray.sortedArray():
ByteArray {
    if (isEmpty()) return this
    return this.copyOf().apply { sort() }
}
Returns an array
with all elements of this array sorted according to their natural sort order.

*^public fun ShortArray.sortedArray():
ShortArray {
    if (isEmpty()) return this
    return this.copyOf().apply { sort() }
}
Returns an array
with all elements of this array sorted according to their natural sort order.

*^public fun IntArray.sortedArray():
IntArray {
    if (isEmpty()) return this
    return this.copyOf().apply { sort() }
}
Returns an array with
all elements of this array sorted according to their natural sort order.

*^public fun LongArray.sortedArray():
LongArray {
    if (isEmpty()) return
this
    return this.copyOf().apply { sort() }
}
Returns an array with all elements of this array sorted
according to their natural sort order.

*^public fun FloatArray.sortedArray(): FloatArray {
    if (isEmpty())
return this
    return this.copyOf().apply { sort() }
}
Returns an array with all elements of this array
sorted according to their natural sort order.

*^public fun DoubleArray.sortedArray(): DoubleArray {
    if
(isEmpty()) return this
    return this.copyOf().apply { sort() }
}
Returns an array with all elements of
this array sorted according to their natural sort order.

*^public fun CharArray.sortedArray(): CharArray {
    if
(isEmpty()) return this
    return this.copyOf().apply { sort() }
}
Returns an array with all elements of
this array 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<T>.sortedArrayDescending(): Array<T> {
    if (isEmpty())
return this
    return this.copyOf().apply { sortWith(reverseOrder()) }
}
Returns an array with all
elements of this array sorted descending according to their natural sort order.

*^public fun
ByteArray.sortedArrayDescending(): ByteArray {
    if (isEmpty()) return this
    return this.copyOf().apply {
sortDescending() }
}
Returns an array with all elements of this array sorted descending according to
their natural sort order.

*^public fun ShortArray.sortedArrayDescending(): ShortArray {
    if (isEmpty()) return
this
    return this.copyOf().apply { sortDescending() }
}
Returns an array with all elements of this
array sorted descending according to their natural sort order.

*^public fun IntArray.sortedArrayDescending():
IntArray {
    if (isEmpty()) return this
    return this.copyOf().apply { sortDescending() }
}
Returns an array with all elements of this array sorted descending
according to their natural sort order.

*^public fun LongArray.sortedArrayDescending(): LongArray {
    if (isEmpty()) return this
    return
this.copyOf().apply { sortDescending() }
}
Returns an array with all elements of this array sorted
descending according to their natural sort order.

*^public fun FloatArray.sortedArrayDescending(): FloatArray
{
    if (isEmpty()) return this
    return this.copyOf().apply { sortDescending() }
}
Returns an array
with all elements of this array sorted descending according to their natural sort order.

*^public fun
DoubleArray.sortedArrayDescending(): DoubleArray {
    if (isEmpty()) return this
    return this.copyOf().apply

```



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 toTypedArray().apply { sortWith(comparator) }.asList()
}

```

\* Returns a list of all elements sorted according to the specified [comparator].

```

public fun ShortArray.sortedWith(comparator: Comparator<in Short>): List<Short> {
    return toTypedArray().apply { sortWith(comparator) }.asList()
}

```

\* Returns a list of all elements sorted according to the specified [comparator].

```

public fun IntArray.sortedWith(comparator: Comparator<in Int>): List<Int> {
    return toTypedArray().apply { sortWith(comparator) }.asList()
}

```

\* Returns a list of all elements sorted according to the specified [comparator].

```

public fun LongArray.sortedWith(comparator: Comparator<in Long>): List<Long> {
    return toTypedArray().apply { sortWith(comparator) }.asList()
}

```

\* Returns a list of all elements sorted according to the specified [comparator].

```

public fun FloatArray.sortedWith(comparator: Comparator<in Float>): List<Float> {
    return toTypedArray().apply { sortWith(comparator) }.asList()
}

```

\* Returns a list of all elements sorted according to the specified [comparator].

```

public fun DoubleArray.sortedWith(comparator: Comparator<in Double>): List<Double> {
    return toTypedArray().apply { sortWith(comparator) }.asList()
}

```

\* Returns a list of all elements sorted according to the specified [comparator].

```

public fun CharArray.sortedWith(comparator: Comparator<in Char>): List<Char> {
    return toTypedArray().apply { sortWith(comparator) }.asList()
}

```



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`.`  
`*\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 * 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@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 * 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@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 * 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@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 * 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@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 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("1.1")\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("1.1")\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("1.1")\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("1.1")\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("1.1")\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("1.1")\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("1.3")\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("1.3")\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("1.3")\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



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.

```


public expect fun CharArray.copyInto(destination: CharArray, destinationOffset: Int = 0, startIndex: Int = 0, endIndex: Int = size): CharArray {
    Returns new array which is a copy of the original array.
}
sample samples.collections.Arrays.CopyOfOperations.copyOfOf


```

```


public expect fun <T> Array<T>.copyOf():
Array<T> {
    Returns new array which is a copy of the original array.
}
sample samples.collections.Arrays.CopyOfOperations.copyOfOf


```

```


public expect fun ByteArray.copyOfOf():
ByteArray {
    Returns new array which is a copy of the original array.
}
sample samples.collections.Arrays.CopyOfOperations.copyOfOf


```

```


public expect fun ShortArray.copyOfOf():
ShortArray {
    Returns new array which is a copy of the original array.
}
sample samples.collections.Arrays.CopyOfOperations.copyOfOf


```

```


public expect fun IntArray.copyOfOf(): IntArray {
    Returns new array which is a copy of the original array.
}
sample samples.collections.Arrays.CopyOfOperations.copyOfOf


```

```


public expect fun LongArray.copyOfOf():
LongArray {
    Returns new array which is a copy of the original array.
}
sample samples.collections.Arrays.CopyOfOperations.copyOfOf


```

```


public expect fun FloatArray.copyOfOf():
FloatArray {
    Returns new array which is a copy of the original array.
}
sample samples.collections.Arrays.CopyOfOperations.copyOfOf


```

```


public expect fun DoubleArray.copyOfOf(): DoubleArray {
    Returns new array which is a copy of the original array.
}
sample samples.collections.Arrays.CopyOfOperations.copyOfOf


```

```


public expect fun BooleanArray.copyOfOf(): BooleanArray {
    Returns new array which is a copy of the original array.
}
sample samples.collections.Arrays.CopyOfOperations.copyOfOf


```

```


public expect fun CharArray.copyOfOf(newSize: Int): CharArray {
    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.
}
sample samples.collections.Arrays.CopyOfOperations.resizedPrimitiveCopyOf


```

```


public expect fun ByteArray.copyOfOf(newSize: Int): ByteArray {
    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.
}
sample samples.collections.Arrays.CopyOfOperations.resizedPrimitiveCopyOf


```

```


public expect fun ShortArray.copyOfOf(newSize: Int): ShortArray {
    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.
}
sample samples.collections.Arrays.CopyOfOperations.resizedPrimitiveCopyOf


```

```


public expect fun IntArray.copyOfOf(newSize: Int): IntArray {
    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.
}
sample samples.collections.Arrays.CopyOfOperations.resizedPrimitiveCopyOf


```



@sample samples.collections.Arrays.CopyOfOperations.resizedPrimitiveCopyOf\n \*^/npublic expect fun  
 LongArray.copyOf(newSize: Int): LongArray\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  
 FloatArray.copyOf(newSize: Int): FloatArray\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 DoubleArray.copyOf(newSize: Int): DoubleArray\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 \* \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 expect fun  
 BooleanArray.copyOf(newSize: Int): BooleanArray\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 \* \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 expect fun CharArray.copyOf(newSize: Int): 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 `null`  
 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 `null` values.\n \* \n \* @sample samples.collections.Arrays.CopyOfOperations.resizingCopyOf\n  
 \*^/n@Suppress("NO\_ACTUAL\_FOR\_EXPECT")\npublic expect fun <T> Array<T>.copyOf(newSize: Int):  
 Array<T?>\n/n/\*\*\n \* Returns a new array which is a copy of the specified range of the original array.\n \* \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  
 \*^/n@Suppress("NO\_ACTUAL\_FOR\_EXPECT")\npublic expect fun <T> Array<T>.copyOfRange(fromIndex:  
 Int, toIndex: Int): Array<T>\n/n/\*\*\n \* Returns a new array which is a copy of the specified range of the original  
 array.\n \* \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  
 ByteArray.copyOfRange(fromIndex: Int, toIndex: Int): ByteArray\n/n/\*\*\n \* Returns a new array which is a copy of  
 the specified range of the original array.\n \* \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 ShortArray.copyOfRange(fromIndex: Int, toIndex: Int): ShortArray\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  
 IntArray.copyOfRange(fromIndex: Int, toIndex: Int): IntArray\n/n/\*\*\n \* Returns a new array which is a copy of the  
 specified range of the original array.\n \* \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 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 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
IllegalArgumentOutOfRangeException 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

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*\/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 !isEmpty()\n}\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 */\n
public 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 */\n
public 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 */\n
public 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 */\n
public 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 */\n
public expect operator fun BooleanArray.plus(elements: Collection<Boolean>): BooleanArray\n\n/**\n

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\* Returns an array containing all elements of the original array and then all elements of the given [elements] collection.  
`\n *^public 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.  
`*^@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 elements of the given [elements] array.  
`*^public 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.  
`*^public 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.  
`*^public 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.  
`*^public 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.  
`*^public 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.  
`*^public 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.  
`*^public 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.  
`*^public 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].  
`*^@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 *^public expect fun IntArray.sort(): Unit\n\n**\n *`  
Sorts the array in-place.  
`\n * \n * @sample samples.collections.Arrays.Sorting.sortArray\n *^public expect fun LongArray.sort(): Unit\n\n**\n *`  
Sorts the array in-place.  
`\n * \n * @sample samples.collections.Arrays.Sorting.sortArray\n *^public expect fun ByteArray.sort(): Unit\n\n**\n *`  
Sorts the array in-place.  
`\n * \n * @sample samples.collections.Arrays.Sorting.sortArray\n *^public expect fun ShortArray.sort(): Unit\n\n**\n *`  
Sorts the array in-place.  
`\n * \n * @sample samples.collections.Arrays.Sorting.sortArray\n *^public expect fun DoubleArray.sort(): Unit\n\n**\n *`  
Sorts the array in-place.  
`\n * \n * @sample samples.collections.Arrays.Sorting.sortArray\n *^public expect fun FloatArray.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 *^public 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 *^public 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.  
`*^public 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.  
`*^public 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.  
`*^public 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.  
`*^public 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.  
`*^public fun Array<out`



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LongArray.associate(transform: (Long) -> Pair<K, V>): Map<K, V> {\n  val capacity =
mapCapacity(size).coerceAtLeast(16)\n
  return associateTo(LinkedHashMap<K, V>(capacity), transform)\n}\n\n/**\n * Returns a [Map] containing key-
value pairs provided by [transform] function\n * applied to elements 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 * The returned map preserves the entry iteration
order of the original array.\n * \n * @sample
samples.collections.Arrays.Transformations.associateArrayOfPrimitives\n */\npublic inline fun <K, V>
FloatArray.associate(transform: (Float) -> Pair<K, V>): Map<K, V> {\n  val capacity =
mapCapacity(size).coerceAtLeast(16)\n  return associateTo(LinkedHashMap<K, V>(capacity),
transform)\n}\n\n/**\n * Returns a [Map] containing key-value pairs provided by [transform] function\n * applied to
elements 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 * The returned map preserves the entry iteration order of the original array.\n * \n * @sample
samples.collections.Arrays.Transformations.associateArrayOfPrimitives\n */\npublic inline fun <K, V>
DoubleArray.associate(transform: (Double) -> Pair<K, V>): Map<K, V> {\n  val capacity =
mapCapacity(size).coerceAtLeast(16)\n  return associateTo(LinkedHashMap<K, V>(capacity),
transform)\n}\n\n/**\n * Returns a [Map] containing key-value pairs provided by [transform] function\n * applied to
elements 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 * The returned map preserves the entry iteration order of the original array.\n * \n * @sample
samples.collections.Arrays.Transformations.associateArrayOfPrimitives\n */\npublic inline fun <K, V>
BooleanArray.associate(transform: (Boolean) -> Pair<K, V>): Map<K, V> {\n  val capacity =
mapCapacity(size).coerceAtLeast(16)\n  return associateTo(LinkedHashMap<K, V>(capacity),
transform)\n}\n\n/**\n * Returns a [Map] containing key-value pairs provided by [transform] function\n *
applied to elements 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 * The returned map preserves the entry iteration order of the original array.\n * \n *
@sample samples.collections.Arrays.Transformations.associateArrayOfPrimitives\n */\npublic inline fun <K, V>
CharArray.associate(transform: (Char) -> Pair<K, V>): Map<K, V> {\n  val capacity =
mapCapacity(size).coerceAtLeast(16)\n  return associateTo(LinkedHashMap<K, V>(capacity),
transform)\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 <T, K> Array<out T>.associateBy(keySelector: (T) -> K): Map<K, T> {\n  val capacity =
mapCapacity(size).coerceAtLeast(16)\n  return associateByTo(LinkedHashMap<K, T>(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>
ByteArray.associateBy(keySelector: (Byte) -> K): Map<K, Byte> {\n  val capacity =
mapCapacity(size).coerceAtLeast(16)\n  return associateByTo(LinkedHashMap<K, Byte>(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>
ShortArray.associateBy(keySelector: (Short) -> K): Map<K, Short> {\n  val capacity =
mapCapacity(size).coerceAtLeast(16)\n  return associateByTo(LinkedHashMap<K, Short>(capacity),

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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> IntArray.associateBy(keySelector: (Int) -> K): Map<K, Int> {\n    val capacity =
mapCapacity(size).coerceAtLeast(16)\n    return associateByTo(LinkedHashMap<K, Int>(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>
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

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*^public 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
*^public 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
samples.collections.Arrays.Transformations.associateArrayOfPrimitivesByWithValueTransform\n
*^public 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
*^public 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
*^public 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
*^public 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
*^public 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 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 <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 * 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 * 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 * 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 * 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 * 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 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.

```

@sample samples.collections.Arrays.Transformations.associateArrayOfPrimitivesByTo
public inline
fun <K, M : MutableMap<in K, in Float>> FloatArray.associateByTo(destination: M, keySelector: (Float) -> 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 applied to each element of the given array 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.

```

@sample samples.collections.Arrays.Transformations.associateArrayOfPrimitivesByTo
public inline fun <K, M : MutableMap<in K, in Double>> DoubleArray.associateByTo(destination: M, keySelector:
(Double) -> 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 applied to each element of the given array 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.

```

@sample samples.collections.Arrays.Transformations.associateArrayOfPrimitivesByTo
public inline fun <K, M : MutableMap<in K, in Boolean>> BooleanArray.associateByTo(destination: M,
keySelector: (Boolean) -> 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 applied to each element of the given array 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.

```

@sample samples.collections.Arrays.Transformations.associateArrayOfPrimitivesByTo
public inline fun <K, M : MutableMap<in K, in Char>> CharArray.associateByTo(destination: M, keySelector:
(Char) -> 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 array. If any two elements would have the same key returned by [keySelector] the last one gets added to the map.

```

@sample
samples.collections.Arrays.Transformations.associateArrayOfPrimitivesByToWithValueTransform
public inline fun <T, K, V, M : MutableMap<in K, in V>> Array<out 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, where key is provided by the [keySelector] function and value is provided by the [valueTransform] function applied to elements of the given array. If any two elements would have the same key returned by [keySelector] the last one gets added to the map.

```

@sample
samples.collections.Arrays.Transformations.associateArrayOfPrimitivesByToWithValueTransform
public inline fun <K, V, M : MutableMap<in K, in V>> ByteArray.associateByTo(destination: M, keySelector: (Byte) ->
K, valueTransform: (Byte) -> 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, where key is provided by the [keySelector] function and value is provided by the [valueTransform] function applied to elements of the given array. If any two elements would have the same key returned by [keySelector] the last one gets added to the map.

```

@sample
samples.collections.Arrays.Transformations.associateArrayOfPrimitivesByToWithValueTransform
public inline fun <K, V, M : MutableMap<in K, in V>> ShortArray.associateByTo(destination: M, keySelector: (Short) ->
K, valueTransform: (Short) -> 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, where key is provided by the [keySelector] function and value is provided by the [valueTransform] function applied to elements of the given array. If any two elements would have the same key returned by [keySelector] the last one gets added to the map.

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),
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
*/\npublic 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
*/\npublic 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) ->
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 } 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 } 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 } 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 } 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 } 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 } 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 } 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 } 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 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>.toList(): 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  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/**\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/**\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/**\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/**\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/**\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/**\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/**\n * Returns a [Set] of all elements.\n * \n * The returned set preserves the element iteration order of the original array.\n *

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\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/**\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/**\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>(), 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

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fun <R, C : MutableCollection<in R>> ShortArray.flatMapTo(destination: C, transform: (Short) -> Iterable<R>): C
{
    for (element in this) {
        val list = transform(element)
        destination.addAll(list)
    }
    return destination
}
public inline fun <R, C :
MutableCollection<in R>> IntArray.flatMapTo(destination: C, transform: (Int) -> Iterable<R>): C {
    for
(element in this) {
        val list = transform(element)
        destination.addAll(list)
    }
    return
destination
}
public inline fun <R, C : MutableCollection<in R>>
LongArray.flatMapTo(destination: C, transform: (Long) -> Iterable<R>): C {
    for (element in this) {
        val
list = transform(element)
        destination.addAll(list)
    }
    return destination
}
public inline fun <R, C : MutableCollection<in R>>
FloatArray.flatMapTo(destination: C, transform: (Float) -> Iterable<R>): C {
    for (element in this) {
        val
list = transform(element)
        destination.addAll(list)
    }
    return destination
}
public inline fun <R, C : MutableCollection<in R>> DoubleArray.flatMapTo(destination: C,
transform: (Double) -> Iterable<R>): C {
    for (element in this) {
        val list = transform(element)
        destination.addAll(list)
    }
    return destination
}
public inline fun <R, C : MutableCollection<in R>> BooleanArray.flatMapTo(destination: C, transform:
(Boolean) -> Iterable<R>): C {
    for (element in this) {
        val list = transform(element)
        destination.addAll(list)
    }
    return destination
}
public inline fun <R, C : MutableCollection<in R>> CharArray.flatMapTo(destination: C, transform: (Char) -> Iterable<R>): C
{
    for (element in this) {
        val list = transform(element)
        destination.addAll(list)
    }
    return
destination
}
Groups elements of the original array by the key returned by the given [keySelector]
function applied to each element and returns a map where each group key is associated with a list of
corresponding elements.
The returned map preserves the entry iteration order of the keys produced from the
original array.
@sample samples.collections.Collections.Transformations.groupBy
public inline fun <T, K> Array<out T>.groupBy(keySelector: (T) -> K): Map<K, List<T>> {
    return
groupByTo(LinkedHashMap<K, MutableList<T>>(), keySelector)
}
Groups elements of the original
array by the key returned by the given [keySelector] function applied to each element and returns a map where
each group key is associated with a list of corresponding elements.
The returned map preserves the entry
iteration order of the keys produced from the original array.
@sample
samples.collections.Collections.Transformations.groupBy
public inline fun <K>
ByteArray.groupBy(keySelector: (Byte) -> K): Map<K, List<Byte>> {
    return groupByTo(LinkedHashMap<K,
MutableList<Byte>>(), keySelector)
}
Groups elements of the original array by the key returned by the
given [keySelector] function applied to each element and returns a map where each group key is associated with
a list of corresponding elements.
The returned map preserves
the entry iteration order of the keys produced from the original array.
@sample
samples.collections.Collections.Transformations.groupBy
public inline fun <K>
ShortArray.groupBy(keySelector: (Short) -> K): Map<K, List<Short>> {
    return
groupByTo(LinkedHashMap<K, MutableList<Short>>(), keySelector)
}
Groups elements of the
original array by the key returned by the given [keySelector] function applied to each element and returns a map
where each group key is associated with a list of corresponding elements.
The returned map preserves the
entry iteration order of the keys produced from the original array.
@sample
samples.collections.Collections.Transformations.groupBy
public inline fun <K>
IntArray.groupBy(keySelector: (Int) -> K): Map<K, List<Int>> {
    return groupByTo(LinkedHashMap<K,

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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 */\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 */\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 */\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
 */\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 */\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
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 */\npublic inline fun <T, K, V>
Array<out 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 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 */\npublic
inline fun <K, V> ByteArray.groupBy(keySelector: (Byte) -> K, valueTransform: (Byte) -> 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

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samples.collections.Collections.Transformations.groupByKeyAndValues\n *\npublic inline fun <K, V>
ShortArray.groupBy(keySelector: (Short) -> K, valueTransform: (Short) -> 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.groupByKeyAndValues\n *\npublic inline fun <K, V>
IntArray.groupBy(keySelector: (Int) -> K, valueTransform: (Int) -> 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.groupByKeyAndValues\n *\npublic inline fun <K, V>
LongArray.groupBy(keySelector: (Long) -> K, valueTransform: (Long) -> 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.groupByKeyAndValues\n *\npublic inline fun <K, V>
FloatArray.groupBy(keySelector: (Float) -> K, valueTransform: (Float) -> 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.groupByKeyAndValues\n *\npublic inline fun <K, V>
DoubleArray.groupBy(keySelector: (Double) -> K, valueTransform: (Double) -> 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.groupByKeyAndValues\n *\npublic inline fun <K, V>
BooleanArray.groupBy(keySelector: (Boolean) -> K, valueTransform: (Boolean) -> 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.groupByKeyAndValues\n *\npublic inline fun <K, V>
CharArray.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 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

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*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 {
    for (element in
this) {
        val key = keySelector(element)
        val list = destination.getOrPut(key) { ArrayList<Float>() }
        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<Double>>> DoubleArray.groupByTo(destination: M, keySelector: (Double) -> K): M {
    for
(element in this) {
        val key = keySelector(element)
        val list = destination.getOrPut(key) {
ArrayList<Double>() }
        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<Boolean>>> BooleanArray.groupByTo(destination: M, keySelector:
(Boolean) -> K): M {
    for (element in this) {
        val key = keySelector(element)
        val list =

```

```

destination.getOrPut(key) { ArrayList<Boolean>() } } 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<Char>>> CharArray.groupByTo(destination: M,
keySelector: (Char) -> K): M {
    for (element in this) {
        val key = keySelector(element)
        val list = destination.getOrPut(key) { ArrayList<Char>() }
        list.add(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.groupByKeysAndValues
*/
public inline fun <T, K, V, M : MutableMap<in K, MutableList<V>>> Array<out T>.groupByTo(destination: M, keySelector: (T) -> K,
valueTransform: (T) -> 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.groupByKeysAndValues
*/
public inline fun <K, V, M : MutableMap<in K, MutableList<V>>> ByteArray.groupByTo(destination: M,
keySelector: (Byte) -> K, valueTransform: (Byte) -> 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.groupByKeysAndValues
*/
public inline fun <K, V, M : MutableMap<in K, MutableList<V>>> ShortArray.groupByTo(destination: M, keySelector: (Short) -> K,
valueTransform: (Short) -> 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.groupByKeysAndValues
*/
public inline fun <K, V, M : MutableMap<in K, MutableList<V>>> IntArray.groupByTo(destination: M,
keySelector: (Int) -> K, valueTransform: (Int) -> 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.groupByKeysAndValues
*/
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

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[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.groupByKeyAndValues\n * \n\npublic
inline fun <K, V, M : MutableMap<in K, MutableList<V>>> FloatArray.groupByTo(destination: M, keySelector:
(Float) -> K, valueTransform: (Float) -> 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.groupByKeyAndValues\n
*\n\npublic inline fun <K, V, M : MutableMap<in K, MutableList<V>>> DoubleArray.groupByTo(destination: M,
keySelector: (Double) -> K, valueTransform: (Double) -> 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.groupByKeyAndValues\n *\n\npublic inline fun <K, V, M :
MutableMap<in K, MutableList<V>>> BooleanArray.groupByTo(destination: M, keySelector: (Boolean) -> K,
valueTransform: (Boolean) -> 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.groupByKeyAndValues\n
*\n\npublic inline fun <K, V, M : MutableMap<in K, MutableList<V>>> CharArray.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 an
array 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\n@SinceKotlin("1.1")\n\npublic inline fun <T, K> Array<out 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**\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 *\n\npublic inline fun
<T, R> Array<out T>.map(transform: (T) -> R): List<R> {\n return mapTo(ArrayList<R>(size),
transform)\n}\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 *\n\npublic
inline fun <R> ByteArray.map(transform: (Byte) -> R): List<R> {\n return mapTo(ArrayList<R>(size),
transform)\n}\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 *\n\npublic
inline fun <R> ShortArray.map(transform: (Short) -> R): List<R> {\n return mapTo(ArrayList<R>(size),
transform)\n}\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 *\n\npublic
inline fun <R> IntArray.map(transform: (Int) -> R): List<R> {\n return mapTo(ArrayList<R>(size),
transform)\n}\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 *\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 * @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> DoubleArray.mapIndexed(transform: (index: Int, Double) -> 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> BooleanArray.mapIndexed(transform: (index: Int, Boolean) -> 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 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]. @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>>
FloatArray.mapIndexedTo(destination: C, transform: (index: Int, Float) -> 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\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/**\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 *\npublic inline fun <R, C : MutableCollection<in R>> BooleanArray.mapTo(destination: C,
transform: (Boolean) -> 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>>
CharArray.mapTo(destination: C, transform: (Char) -> R): C {\n    for (item in this)\n

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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 */\npublic fun <T> Array<out T>.withIndex(): Iterable<IndexedValue<T>> {\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 */\npublic fun ByteArray.withIndex():
Iterable<IndexedValue<Byte>> {\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 */\npublic fun ShortArray.withIndex(): Iterable<IndexedValue<Short>> {\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 */\npublic fun
IntArray.withIndex(): Iterable<IndexedValue<Int>> {\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 */\npublic fun LongArray.withIndex():
Iterable<IndexedValue<Long>> {\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 */\npublic fun FloatArray.withIndex(): Iterable<IndexedValue<Float>> {\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 */\npublic fun
DoubleArray.withIndex(): Iterable<IndexedValue<Double>> {\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 */\npublic fun BooleanArray.withIndex():
Iterable<IndexedValue<Boolean>> {\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 */\npublic fun CharArray.withIndex(): Iterable<IndexedValue<Char>> {\n    return
IndexingIterable { iterator()
}\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 <T> Array<out
T>.distinct(): List<T> {\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 ByteArray.distinct(): List<Byte> {\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 ShortArray.distinct(): List<Short> {\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 IntArray.distinct():
List<Int> {\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
LongArray.distinct(): List<Long> {\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 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/**\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 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

```

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

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array and the specified collection.

`BooleanArray.intersect(other: Iterable<Boolean>): Set<Boolean>` {`val set = this.toMutableSet()``set.retainAll(other)``return set`}  
 Returns a set containing all elements that are contained by both this array and the specified collection. The returned set preserves the element iteration order of the original array.

`CharArray.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. The returned set preserves the element iteration order of the original array.

`<T> Array<out T>.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. The returned set preserves the element iteration order of the original array.

`ByteArray.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. The returned set preserves the element iteration order of the original array.

`ShortArray.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. The returned set preserves the element iteration order of the original array.

`IntArray.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. The returned set preserves the element iteration order of the original array.

`LongArray.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. The returned set preserves the element iteration order of the original array.

`FloatArray.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. The returned set preserves the element iteration order of the original array.

`DoubleArray.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. The returned set preserves the element iteration order of the original array.

`BooleanArray.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. The returned set preserves the element iteration order of the original array.

`CharArray.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. The returned set preserves the element iteration order of the original array.

`<T> Array<out T>.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. The returned set preserves the element iteration order of the original array.

`ByteArray.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. The returned set preserves the element iteration order of the original array.

`ShortArray.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. The returned set preserves the element iteration order of the original array.



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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 */\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/**\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/**\n * Returns `true` if all elements match the given [predicate].\n * \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/**\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/**\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/**\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/**\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/**\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/**\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/**\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/**\n * Returns `true` if all elements match the given [predicate].\n * \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/**\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 *
\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

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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
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@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@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@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@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@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@kotlin.internal.InlineOnly\npublic
inline fun FloatArray.count(): Int {\n  return size\n}\n\n/**\n * Returns the number of elements

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in this array.\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 *^@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
*^@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 *^public 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 *^public 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 *^public 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 *^public inline fun IntArray.count(predicate: (Int) -> 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 *^public 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 *^public 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
*^public 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 *^public 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 *^public 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 *^public 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 *^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 *^public 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 *^public 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 *^public 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 *^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 *^public inline fun <R>
DoubleArray.fold(initial: R, operation: (acc: R, Double) -> R): R {\n    var accumulator = initial\n    for (element in

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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 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

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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 *\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 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

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fun <T, R> Array<out T>.foldRightIndexed(initial: R, operation: (index:
Int, T, acc: R) -> R): R {
    var index = lastIndex
    var accumulator = initial
    while (index >= 0) {
        accumulator = operation(index, get(index), accumulator)
        --index
    }
    return accumulator
}

```

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.

@param [operation] function that takes the index of an element, the element itself and current accumulator value, and calculates the next accumulator value.

```

*public inline fun <R> ByteArray.foldRightIndexed(initial: R, operation: (index: Int, Byte, acc: R) -> R): R {
    var index = lastIndex
    var accumulator = initial
    while (index >= 0) {
        accumulator = operation(index,
get(index), accumulator)
        --index
    }
    return accumulator
}

```

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.

@param [operation] function that takes the index of an element, the element itself and current accumulator value, and calculates the next accumulator value.

```

*public inline fun <R> ShortArray.foldRightIndexed(initial: R, operation: (index: Int, Short, acc: R) -> R): R {
    var index = lastIndex
    var accumulator = initial
    while (index >= 0) {
        accumulator = operation(index, get(index), accumulator)
        --index
    }
    return accumulator
}

```

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.

@param [operation] function that takes the index of an element, the element itself and current accumulator value, and calculates the next accumulator value.

```

*public inline fun <R> IntArray.foldRightIndexed(initial: R, operation:
(index: Int, Int, acc: R) -> R): R {
    var index = lastIndex
    var accumulator = initial
    while (index >= 0) {
        accumulator = operation(index, get(index), accumulator)
        --index
    }
    return accumulator
}

```

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.

@param [operation] function that takes the index of an element, the element itself and current accumulator value, and calculates the next accumulator value.

```

*public inline fun <R> LongArray.foldRightIndexed(initial: R, operation: (index: Int, Long, acc: R) -> R): R {
    var index = lastIndex
    var accumulator = initial
    while (index >= 0) {
        accumulator = operation(index,
get(index), accumulator)
        --index
    }
    return accumulator
}

```

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.

@param [operation] function that takes the index of an element, the element itself and current accumulator value, and calculates the next accumulator value.

```

*public inline fun <R> FloatArray.foldRightIndexed(initial: R,
operation: (index: Int, Float, acc: R) -> R): R {
    var index = lastIndex
    var accumulator = initial
    while (index >= 0) {
        accumulator = operation(index, get(index), accumulator)
        --index
    }
    return accumulator
}

```

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.

@param [operation] function that takes the index of an element, the element itself and current accumulator value, and calculates the next accumulator value.

```

*public inline fun <R> DoubleArray.foldRightIndexed(initial:
R, operation: (index: Int, Double, acc: R) -> R): R {
    var index = lastIndex
    var accumulator = initial
    while (index >= 0) {
        accumulator = operation(index, get(index), accumulator)
        --index
    }
    return accumulator
}

```

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.

@param [operation] function that takes the index of an element, the element itself and current accumulator value, and calculates the next accumulator value.

```

*public inline fun <R> BooleanArray.foldRightIndexed(initial: R, operation: (index:
Int, Boolean, acc: R) -> R): R {
    var index = lastIndex
    var accumulator = initial
    while (index >= 0) {
        accumulator = operation(index, get(index), accumulator)
        --index
    }
    return accumulator
}

```

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.

@param [operation] function that takes the index of an element, the element itself and

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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\n * and performs the desired action on the
element.\n */\npublic inline fun <T> Array<out T>.forEachIndexed(action: (index: Int, T) -> Unit): Unit {\n  var
index = 0\n  for (item in this) action(index++, item)\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
ByteArray.forEachIndexed(action: (index: Int, Byte) -> Unit): Unit {\n  var index = 0\n  for (item in this)
action(index++, item)\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 ShortArray.forEachIndexed(action: (index: Int, Short) ->
Unit): Unit {\n  var index = 0\n  for (item in this) action(index++, item)\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
IntArray.forEachIndexed(action: (index: Int, Int) -> Unit): Unit {\n  var index = 0\n  for (item in this)
action(index++, item)\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
LongArray.forEachIndexed(action: (index: Int, Long) -> Unit): Unit {\n  var index = 0\n  for (item in this)
action(index++, item)\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 FloatArray.forEachIndexed(action: (index: Int, Float) ->
Unit): Unit {\n  var index = 0\n  for (item in this) action(index++, item)\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
DoubleArray.forEachIndexed(action: (index: Int, Double) -> Unit): Unit {\n  var index = 0\n  for (item
in this) action(index++, item)\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 BooleanArray.forEachIndexed(action: (index: Int,
Boolean) -> Unit): Unit {\n  var index = 0\n  for (item in this) action(index++, item)\n}\n\n/**\n * Performs the

```

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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 CharArray.forEachIndexed(action: (index: Int, Char) -> Unit): Unit {\n    var index = 0\n    for (item in
this) action(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\n@SinceKotlin("1.1")\npublic
fun Array<out Double>.max(): Double? {\n    if (isEmpty()) 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\n@SinceKotlin("1.1")\npublic fun Array<out Float>.max(): Float? {\n    if
(isEmpty()) 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\npublic fun <T : Comparable<T>> Array<out T>.max(): T?
{\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\npublic fun
ByteArray.max(): Byte? {\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\npublic fun ShortArray.max(): Short? {\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\npublic fun IntArray.max(): Int? {\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\npublic fun LongArray.max():
Long? {\n    if (isEmpty())\n        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()) 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 DoubleArray.max(): Double? {\n    if
(isEmpty()) 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\npublic fun CharArray.max(): Char? {\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 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\npublic inline fun <T, R :
Comparable<R>> Array<out T>.maxBy(selector: (T) -> R): T? {\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\npublic inline
fun <R : Comparable<R>> ByteArray.maxBy(selector: (Byte) -> R): Byte? {\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\npublic inline fun <R : Comparable<R>>

```

```

ShortArray.maxBy(selector: (Short) -> R): Short? {\n  if (isEmpty()) return null\n  var maxElem = this[0]\n  val\n  lastIndex = this.lastIndex\n  if (lastIndex == 0) return maxElem\n  var maxValue\n  = selector(maxElem)\n  for (i in 1..lastIndex) {\n    val e = this[i]\n    val v = selector(e)\n    if (maxValue <\n  v) {\n    maxElem = e\n    maxValue = v\n  }\n  }\n  return maxElem\n}\n\n/* Returns the first\n  element yielding the largest value of the given function or `null` if there are no elements.\n  *\n  * @sample\n  samples.collections.Collections.Aggregates.maxBy\n  */\npublic inline fun <R : Comparable<R>>

IntArray.maxBy(selector: (Int) -> R): Int? {\n  if (isEmpty()) return null\n  var maxElem = this[0]\n  val\n  lastIndex = this.lastIndex\n  if (lastIndex == 0) return maxElem\n  var maxValue = selector(maxElem)\n  for (i\n  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/* Returns the first element yielding the largest value\n  of the given function or `null` if there are no elements.\n  *\n  * @sample\n  samples.collections.Collections.Aggregates.maxBy\n  */\npublic inline fun <R : Comparable<R>>

LongArray.maxBy(selector: (Long) -> R): Long? {\n  if (isEmpty()) return null\n  var maxElem = this[0]\n  val\n  lastIndex = this.lastIndex\n  if (lastIndex == 0) return maxElem\n  var maxValue = selector(maxElem)\n  for (i\n  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/* Returns the first element yielding the largest value\n  of the given function or `null` if there are no elements.\n  *\n  * @sample\n  samples.collections.Collections.Aggregates.maxBy\n  */\npublic inline fun <R : Comparable<R>>

FloatArray.maxBy(selector: (Float) -> R): Float? {\n  if (isEmpty()) return null\n  var maxElem = this[0]\n  val\n  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\n  = e\n    maxValue = v\n  }\n  }\n  return maxElem\n}\n\n/* Returns the first element yielding the\n  largest value of the given function or `null` if there are no elements.\n  *\n  * @sample\n  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\n  lastIndex = this.lastIndex\n  if (lastIndex == 0) return maxElem\n  var maxValue = selector(maxElem)\n  for\n  (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/* Returns the first element yielding the largest\n  value of the given function or `null` if there are no elements.\n  *\n  * @sample\n  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 =\n  this[0]\n  val lastIndex = this.lastIndex\n  if (lastIndex == 0) return maxElem\n  var maxValue =\n  selector(maxElem)\n  for (i in 1..lastIndex) {\n    val e = this[i]\n    val v = selector(e)\n    if (maxValue < v)\n  {\n    maxElem = e\n    maxValue = v\n  }\n  }\n  return maxElem\n}\n\n/* Returns the first\n  element yielding the largest value of the given function or `null` if there are no elements.\n  *\n  * @sample\n  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\n  lastIndex = this.lastIndex\n  if (lastIndex == 0) return maxElem\n  var maxValue = selector(maxElem)\n  for (i\n  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/* Returns the first element having the largest value\n  according to the provided [comparator] or `null` if there are no elements.\n  */\npublic fun <T> Array<out\n  T>.maxWith(comparator: Comparator<in T>): T? {\n  if (isEmpty()) return null\n  var max = this[0]\n  for (i in\n  1..lastIndex) {\n    val e = this[i]\n    if (comparator.compare(max, e) < 0) max = e\n  }\n  return\n  max\n}\n\n/* Returns the first element having the largest value according to the provided [comparator] or `null`\n  if there are no elements.\n  */\npublic fun ByteArray.maxWith(comparator: Comparator<in Byte>): Byte? {\n  if\n  (isEmpty()) return null\n  var max = this[0]\n  for (i in 1..lastIndex) {\n    val e = this[i]\n    if\n  (comparator.compare(max, e) < 0) max = e\n  }\n  return max\n}\n\n/*

```

\* Returns the first element having the largest value according to the provided [comparator] or `null` if there are no elements.

```

public fun ShortArray.maxWith(comparator: Comparator<in Short>): Short? {
    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 first element having the largest value according to the provided [comparator] or `null` if there are no elements.

```

public fun IntArray.maxWith(comparator: Comparator<in Int>): Int? {
    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 first element having the largest value according to the provided [comparator] or `null` if there are no elements.

```

public fun LongArray.maxWith(comparator: Comparator<in Long>): Long? {
    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 first element having the largest value according to the provided [comparator] or `null` if there are no elements.

```

public fun FloatArray.maxWith(comparator: Comparator<in Float>): Float? {
    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 first element having the largest value according to the provided [comparator] or `null` if there are no elements.

```

public fun DoubleArray.maxWith(comparator: Comparator<in Double>): Double? {
    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 first element having the largest value according to the provided [comparator] or `null` if there are no elements.

```

public fun BooleanArray.maxWith(comparator: Comparator<in Boolean>): Boolean? {
    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 first element having the largest value according to the provided [comparator] or `null` if there are no elements.

```

public fun CharArray.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 element or `null` if there are no elements. \* If any of elements is `NaN` returns `NaN`.

```

@SinceKotlin("1.1")
public fun Array<out Double>.min(): Double? {
    if (isEmpty()) return null
    var min = this[0]
    if (min.isNaN()) return min
    for (i in 1..lastIndex) {
        val e = this[i]
        if (e.isNaN()) return e
        if (min > e) min = e
    }
    return min
}

```

\* Returns the smallest element or `null` if there are no elements. \* If any of elements is `NaN` returns `NaN`.

```

@SinceKotlin("1.1")
public fun Array<out Float>.min(): Float? {
    if (isEmpty()) return null
    var min = this[0]
    if (min.isNaN()) return min
    for (i in 1..lastIndex) {
        val e = this[i]
        if (e.isNaN()) return e
        if (min > e) min = e
    }
    return min
}

```

\* Returns the smallest element or `null` if there are no elements.

```

public fun <T : Comparable<T>> Array<out T>.min(): T? {
    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 smallest element or `null` if there are no elements.

```

public fun ByteArray.min(): Byte? {
    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 smallest element or `null` if there are no elements.

```

public fun ShortArray.min(): Short? {
    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 smallest element or `null` if there are no elements.

```

public fun IntArray.min(): Int? {
    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 smallest element or `null` if there are no elements.

```

public fun LongArray.min(): Long? {
    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 smallest element or `null` if there are no elements. \* If any of elements is `NaN` returns `NaN`.

```

public fun FloatArray.min(): Float? {
    if (isEmpty()) return null
    var min = this[0]
    if (min.isNaN()) return min
    for (i in 1..lastIndex) {
        val e = this[i]
        if (e.isNaN()) return e
        if (min > e) min = e
    }
    return min
}

```



```

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/**\n * Returns the smallest element or `null` if there
are no elements.\n * \n * If any of elements is `NaN` returns `NaN`.\n */\npublic fun DoubleArray.min(): Double?
{\n  if (isEmpty()) return null\n  var min = this[0]\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/**\n * Returns the
smallest element or `null` if there are no elements.\n */\npublic 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/**\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 <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/**\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>>
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/**\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>>
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/**\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 * \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 * \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 * \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 * \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 (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

```

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*^/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.none\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.none\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.none\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.none\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 *
Returns `true` if no elements match the given [predicate].\n * \n * @sample
samples.collections.Collections.Aggregates.none\n *^/npublic 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.none\n *^/npublic 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.none\n *^/npublic 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.none\n *^/npublic 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.none\n *^/npublic 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
*^/npublic 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

```

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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\n accumulator value and each element.\n * \n * @sample samples.collections.Collections.Aggregates.reduce\n */\npublic inline fun ByteArray.reduce(operation: (acc: Byte, Byte) -> Byte): Byte {\n    if (isEmpty())\n        throw\n UnsupportedOperationException("Empty array can't be reduced.")\n    var accumulator = this[0]\n    for (index in\n 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\n value and each element.\n * \n * @sample samples.collections.Collections.Aggregates.reduce\n */\npublic inline fun\n ShortArray.reduce(operation: (acc: Short, Short) -> Short): Short {\n    if (isEmpty())\n        throw\n UnsupportedOperationException("Empty array can't be reduced.")\n    var accumulator\n = this[0]\n    for (index in 1..lastIndex) {\n    accumulator = operation(accumulator, this[index])\n    }\n    return\n accumulator\n}\n\n/**\n * Accumulates value starting with the first element and applying [operation] from left\n to right to current accumulator value and each element.\n * \n * @sample\n samples.collections.Collections.Aggregates.reduce\n */\npublic inline fun IntArray.reduce(operation: (acc: Int, Int) -\n > 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]\n from left to right to current accumulator value and each element.\n * \n * @sample\n samples.collections.Collections.Aggregates.reduce\n */\npublic inline fun LongArray.reduce(operation: (acc: Long,\n Long) -> Long):\n Long {\n    if (isEmpty())\n        throw UnsupportedOperationException("Empty array can't be reduced.")\n    var\n 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]\n from left to right to current accumulator value and each element.\n * \n * @sample\n samples.collections.Collections.Aggregates.reduce\n */\npublic inline fun FloatArray.reduce(operation: (acc: Float,\n Float) -> Float): Float {\n    if (isEmpty())\n        throw UnsupportedOperationException("Empty array can't be\n reduced.")\n    var accumulator = this[0]\n    for (index in 1..lastIndex) {\n    accumulator =\n operation(accumulator, this[index])\n    }\n    return accumulator\n}\n\n/**\n * Accumulates value starting with the\n first element and applying [operation] from left to right to current accumulator value and each element.\n * \n * \n * @sample samples.collections.Collections.Aggregates.reduce\n */\npublic inline fun DoubleArray.reduce(operation:\n (acc: Double, Double) -> Double): Double {\n    if (isEmpty())\n        throw\n UnsupportedOperationException("Empty array can't be reduced.")\n    var accumulator = this[0]\n    for (index in\n 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\n 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\n UnsupportedOperationException("Empty array can't be reduced.")\n    var accumulator = this[0]\n    for (index in\n 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\n 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\n UnsupportedOperationException("Empty array can't be reduced.")\n    var accumulator = this[0]\n    for (index in\n 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\n accumulator value and each element with its index in the original array.\n * @param [operation] function that takes\n the index of an element, current accumulator value\n * and the element itself and calculates the next accumulator\n value.\n * \n * @sample samples.collections.Collections.Aggregates.reduce\n */\npublic inline

```

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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 * 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 * 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 * 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 * 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 * 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
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 * 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

```

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= 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@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@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@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
*\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 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

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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
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
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
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 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 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
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    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
*/\npublic inline fun
IntArray.reduceRight(operation: (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(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
*/\npublic inline

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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 accumulator = 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 ShortArray.reduceRightIndexed(operation: (index: Int, Short, acc: Short) -> Short): Short {
    var index = lastIndex
    if (index < 0) throw UnsupportedOperationException("Empty array can't be reduced.")
    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 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), 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
CharArray.reduceRightIndexed(operation: (index: Int, Char, acc: Char) -> Char): Char {\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\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--),
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 ByteArray.reduceRightOrNull(operation:
(Byte, acc: Byte) -> Byte): Byte? {\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 ShortArray.reduceRightOrNull(operation:
(Short, acc: Short) -> Short): Short? {\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 IntArray.reduceRightOrNull(operation:
(Int, acc: Int) -> Int): Int? {\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 LongArray.reduceRightOrNull(operation:
(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 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 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: (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
samples.collections.Collections.Aggregates.reduceRightOrNull\n
*\n@SinceKotlin("1.3")\n@ExperimentalStdlibApi\npublic inline fun

```

```

BooleanArray.reduceRightOrNull(operation: (Boolean, acc: Boolean) -> Boolean): Boolean? {
    var index = lastIndex
    if (index < 0) return null
    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. Returns null if the array is empty.

@sample samples.collections.Collections.Aggregates.reduceRightOrNull

```

*\/n@SinceKotlin("1.3")\/n@ExperimentalStdlibApi\/npublic inline fun CharArray.reduceRightOrNull(operation:
(Char, acc: Char) -> Char): Char? {
    var index = lastIndex
    if (index < 0) return null
    var accumulator =
get(index--)
    while (index >= 0) {
        accumulator = operation(get(index--), 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> Array<out T>.scan(initial: R,
operation: (acc: R, T) -> R): List<R> {
    if (isEmpty()) return listOf(initial)
    val result = ArrayList<R>(size +
1).apply { add(initial) }
    var accumulator = initial
    for (element in this) {
        accumulator =
operation(accumulator, element)
        result.add(accumulator)
    }
    return result
}

```

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\/n@kotlin.internal.InlineOnly\/npublic inline fun <R>
ByteArray.scan(initial: R, operation: (acc: R, Byte) -> R): List<R> {
    if (isEmpty()) return listOf(initial)
    val result = ArrayList<R>(size + 1).apply { add(initial) }
    var accumulator = initial
    for (element in this) {
        accumulator = operation(accumulator, element)
        result.add(accumulator)
    }
    return result
}

```

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\/n@kotlin.internal.InlineOnly\/npublic inline fun <R>
ShortArray.scan(initial: R, operation: (acc: R, Short) -> R): List<R> {
    if (isEmpty()) return listOf(initial)
    val result = ArrayList<R>(size + 1).apply { add(initial) }
    var accumulator = initial
    for (element in this) {
        accumulator = operation(accumulator, element)
        result.add(accumulator)
    }
    return result
}

```

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\/n@kotlin.internal.InlineOnly\/npublic inline fun <R>
IntArray.scan(initial: R, operation: (acc: R, Int) -> R): List<R> {
    if (isEmpty()) return listOf(initial)
    val result = ArrayList<R>(size + 1).apply { add(initial) }
    var accumulator = initial
    for (element in this) {
        accumulator = operation(accumulator, element)
        result.add(accumulator)
    }
    return result
}

```

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

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>
```

```
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 \* @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>
```

```
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 \* @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>
```

```
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        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 to each element, its index in the original array 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> 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}
```

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 [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\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}
```

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 [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\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}
```

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 [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\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 {\n        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}
```

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 [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

and the element itself, and calculates the next accumulator value.

`samples.collections.Collections.Aggregates.scan`

```
*\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 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  
* to each element, its index in the original array and current accumulator value that starts with [initial] value.  
* Note that `acc`  
value passed to [operation] function should not be mutated;\n * 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\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  
* to each element, its index in the original array and  
current accumulator value that starts with [initial] value.  
* Note that `acc` value passed to [operation] function  
should not be mutated;\n * 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\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  
* to each element, its index in the original array and  
current accumulator value that starts with [initial] value.  
* Note that `acc` value passed to [operation] function  
should not be mutated;\n * 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\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  
* to each element, its index in the original array and  
current accumulator value that starts with [initial] value.  
* Note that `acc` value passed to [operation] function  
should not be
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mutated;\n \* 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\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
*/\n\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\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\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\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\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

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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@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@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@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@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@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)
}\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
IntArray.scanReduceIndexed(operation: (index: Int, 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(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
LongArray.scanReduceIndexed(operation: (index: Int, 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(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
FloatArray.scanReduceIndexed(operation: (index: Int, 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(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

```



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applied to each element in the array.\n */\npublic inline fun CharArray.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 element in the array.\n */\npublic inline fun
<T> Array<out 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/**\n * Returns the sum of all values
produced by [selector] function applied to each element in the array.\n */\npublic inline fun
ShortArray.sumByDouble(selector: (Short) -> 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 IntArray.sumByDouble(selector: (Int)
-> 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 LongArray.sumByDouble(selector: (Long) ->
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 FloatArray.sumByDouble(selector: (Float) -> 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
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}\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
}

```

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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 */\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 * @sample samples.collections.Iterables.Operations.zipIterable\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 * @sample
samples.collections.Iterables.Operations.zipIterable\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 * @sample samples.collections.Iterables.Operations.zipIterable\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 * @sample
samples.collections.Iterables.Operations.zipIterable\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.

```

    @sample samples.collections.Iterables.Operations.zipIterable
    public infix fun <R> LongArray.zip(other: Array<out R>): List<Pair<Long, R>> {
        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
    public infix fun <R> FloatArray.zip(other: Array<out R>): List<Pair<Float, R>> {
        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
    public infix fun <R> DoubleArray.zip(other: Array<out R>): List<Pair<Double, R>> {
        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
    public infix fun <R> BooleanArray.zip(other: Array<out R>): List<Pair<Boolean, R>> {
        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
    public infix fun <R> CharArray.zip(other: Array<out R>): List<Pair<Char, R>> {
        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 collection.
    @sample
    samples.collections.Iterables.Operations.zipIterableWithTransform
    public inline fun <T, R, V> Array<out T>.zip(other: Array<out R>, transform: (a: T, 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> 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\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: Array<out R>, transform: (a: Float, 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 *
\npublic inline fun <R, V>
DoubleArray.zip(other: Array<out R>, transform: (a:
Double, 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 *
\npublic inline fun <R, V>
BooleanArray.zip(other: Array<out R>, transform: (a: Boolean, 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 *
\npublic inline fun <R, V>
CharArray.zip(other: Array<out R>, transform: (a: Char, 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 *
\npublic infix fun <T, R> Array<out 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 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> 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

```

```

*^public infix fun <R> DoubleArray.zip(other: Iterable<R>): List<Pair<Double, 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.
* @sample
samples.collections.Iterables.Operations.zipIterable

*^public infix fun <R> BooleanArray.zip(other: Iterable<R>): List<Pair<Boolean, 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.
* @sample
samples.collections.Iterables.Operations.zipIterable

*^public infix fun <R> CharArray.zip(other: Iterable<R>): List<Pair<Char, R>> {
    return zip(other) { t1, t2 -> t1 to t2 }
}

* Returns a list of values built from the elements of `this` array and the [other] collection 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 <T, R, V> Array<out T>.zip(other: Iterable<R>, transform: (a: T, 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 values built from the elements of `this` array and the [other] collection 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> ByteArray.zip(other: Iterable<R>, transform: (a: Byte, 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 values built from the elements of `this` array and the [other] collection 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: Iterable<R>, transform: (a: Short, 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 values built from the elements of `this` array and the [other] collection 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: Iterable<R>, transform: (a: Int, 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 values built from the elements of `this` array and the [other] collection 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: Iterable<R>, transform: (a: Long, 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 values built from the elements of `this` array and the [other] collection 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: Iterable<R>, transform: (a: Float, 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
}

```

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    {\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 {\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    {\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 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
```





```

}
return list
}

Append 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
<T, A : Appendable> Array<out T>.joinTo(buffer: A, separator: CharSequence
= ", ", prefix: CharSequence = "", postfix: CharSequence = "", limit: Int = -1, truncated: CharSequence = "...",
transform: ((T) -> CharSequence)? = null): A {
    buffer.append(prefix)
    var count = 0
    for (element in this) {
        if (++count > 1) buffer.append(separator)
        if (limit < 0 || count <= limit) {
            buffer.appendElement(element, transform)
        } else break
    }
    if (limit >= 0 && count > limit)
        buffer.append(truncated)
    buffer.append(postfix)
    return buffer
}

Append 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>
ByteArray.joinTo(buffer: A, separator: CharSequence = ", ", prefix: CharSequence = "", postfix: CharSequence
= "", limit: Int = -1, truncated: CharSequence = "...", transform: ((Byte) -> 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 buffer
}

Append 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>
ShortArray.joinTo(buffer: A, separator: CharSequence = ", ", prefix: CharSequence = "", postfix: CharSequence
= "", limit: Int = -1, truncated: CharSequence = "...", transform: ((Short) -> 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 buffer
}

Append 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> IntArray.joinTo(buffer:
A, separator: CharSequence = ", ", prefix: CharSequence = "", postfix: 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 buffer
}

Append 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) {\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/**\n * Appends the string from all the elements separated using [separator] and using the given\n [prefix] and [postfix] if supplied.\n * \n * If the collection could be huge, you can specify a non-negative value of\n [limit], in which case only the first [limit]\n * elements will be appended, followed by the [truncated] string (which\n defaults to "...").\n * \n * @sample samples.collections.Collections.Transformations.joinTo\n */\npublic fun <A : Appendable> FloatArray.joinTo(buffer: A, separator: CharSequence = "\", \"", prefix: CharSequence = "\", postfix: CharSequence = "\", limit: Int = -1, truncated: CharSequence = "...", transform: ((Float) -> CharSequence)? = null): A {\n    buffer.append(prefix)\n    var count = 0\n    for (element in this) {\n        if (++count > 1)\n            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)\n        buffer.append(truncated)\n    buffer.append(postfix)\n    return buffer\n}\n\n/**\n * Appends the string from all the elements separated using [separator] and using the given\n [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> DoubleArray.joinTo(buffer: A, separator: CharSequence = "\", \"", prefix: CharSequence = "\", postfix: CharSequence = "\", limit: Int = -1, truncated: CharSequence = "...", transform: ((Double) -> CharSequence)? = null): A {\n    buffer.append(prefix)\n    var count = 0\n    for (element in this) {\n        if (++count > 1)\n            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)\n        buffer.append(truncated)\n    buffer.append(postfix)\n    return buffer\n}\n\n/**\n * Appends the string from all the elements separated using [separator] and using the given\n [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> BooleanArray.joinTo(buffer: A, separator: CharSequence = "\", \"", prefix: CharSequence = "\", postfix: CharSequence = "\", limit: Int = -1, truncated: CharSequence = "...", transform: ((Boolean) -> CharSequence)? = null): A {\n    buffer.append(prefix)\n    var count = 0\n    for (element in this) {\n        if (++count > 1)\n            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)\n        buffer.append(truncated)\n    buffer.append(postfix)\n    return buffer\n}\n\n/**\n * Appends the string from all the elements separated using [separator] and using the given\n [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> 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)\n            buffer.append(separator)\n        if (limit < 0 || count <= limit) {\n            if (transform != null)\n                buffer.append(transform(element))\n            else\n                buffer.append(element)\n        } else break\n    }\n    if (limit >= 0 && count > limit)\n        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 * \n * If the collection could be huge, you can specify a non-negative value

```



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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 *
Creates a [Sequence] instance that wraps the original array returning its elements when being iterated.\n * \n *
@sample samples.collections.Sequences.Building.sequenceFromArray\n

```

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*^public fun ShortArray.asSequence(): Sequence<Short> {
    if (isEmpty()) return emptySequence()
    return Sequence { this.iterator() }
}

*^ Creates a [Sequence] instance that wraps the original array returning its elements when being iterated.
*^ @sample samples.collections.Sequences.Building.sequenceFromArray

*^public fun IntArray.asSequence(): Sequence<Int> {
    if (isEmpty()) return emptySequence()
    return Sequence { this.iterator() }
}

*^ Creates a [Sequence] instance that wraps the original array returning its elements when being iterated.
*^ @sample samples.collections.Sequences.Building.sequenceFromArray

*^public fun LongArray.asSequence(): Sequence<Long> {
    if (isEmpty()) return emptySequence()
    return Sequence { this.iterator() }
}

*^ Creates a [Sequence] instance that wraps the original array returning its elements when being iterated.
*^ @sample samples.collections.Sequences.Building.sequenceFromArray

*^public fun FloatArray.asSequence(): Sequence<Float> {
    if (isEmpty()) return emptySequence()
    return Sequence { this.iterator() }
}

*^ Creates a [Sequence] instance that wraps the original array returning its elements when being iterated.
*^ @sample samples.collections.Sequences.Building.sequenceFromArray

*^public fun DoubleArray.asSequence(): Sequence<Double> {
    if (isEmpty()) return emptySequence()
    return Sequence { this.iterator() }
}

*^ Creates a [Sequence] instance that wraps the original array returning its elements when being iterated.
*^ @sample samples.collections.Sequences.Building.sequenceFromArray

*^public fun BooleanArray.asSequence(): Sequence<Boolean> {
    if (isEmpty()) return emptySequence()
    return Sequence { this.iterator() }
}

*^ Creates a [Sequence] instance that wraps the original array returning its elements when being iterated.
*^ @sample samples.collections.Sequences.Building.sequenceFromArray

*^public fun CharArray.asSequence(): Sequence<Char> {
    if (isEmpty()) return emptySequence()
    return Sequence { this.iterator() }
}

*^ Returns an average value of elements in the array.

*^@kotlin.jvm.JvmName("averageOfByte")
public fun Array<out Byte>.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.

*^@kotlin.jvm.JvmName("averageOfShort")
public fun Array<out Short>.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.

*^@kotlin.jvm.JvmName("averageOfInt")
public fun Array<out Int>.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.

*^@kotlin.jvm.JvmName("averageOfLong")
public fun Array<out Long>.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.

*^@kotlin.jvm.JvmName("averageOfFloat")
public fun Array<out Float>.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.

*^@kotlin.jvm.JvmName("averageOfDouble")
public fun Array<out Double>.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 ByteArray.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 ShortArray.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 IntArray.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 LongArray.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.

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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 FloatArray.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 DoubleArray.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)\n        Double.NaN else sum / count\n}\n\n/**\n * Returns the sum of all elements in the array.\n
*/\n\n@kotlin.jvm.JvmName("sumOfByte")\npublic fun Array<out 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
array.\n */\n\n@kotlin.jvm.JvmName("sumOfShort")\npublic fun Array<out 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 array.\n */\n\n@kotlin.jvm.JvmName("sumOfInt")\npublic fun Array<out 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 array.\n */\n\n@kotlin.jvm.JvmName("sumOfLong")\npublic fun Array<out 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 array.\n
*/\n\n@kotlin.jvm.JvmName("sumOfFloat")\npublic fun Array<out 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 array.\n
*/\n\n@kotlin.jvm.JvmName("sumOfDouble")\npublic fun Array<out 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 * Returns the sum of
all elements in the array.\n */\n\npublic fun ByteArray.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 array.\n */\n\npublic fun
ShortArray.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 array.\n */\n\npublic fun IntArray.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 array.\n */\n\npublic fun LongArray.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 array.\n */\n\npublic
fun FloatArray.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 array.\n */\n\npublic fun DoubleArray.sum(): Double
{\n    var sum: Double = 0.0\n    for (element in this) {\n        sum += element\n    }\n    return sum\n}\n\n"/\n\n *
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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// 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
random element from this range.\n * \n * @throws IllegalArgumentException if this range is empty.\n
*/\n\n@SinceKotlin("1.3")\n@kotlin.internal.InlineOnly\npublic inline fun IntRange.random(): Int {\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@kotlin.internal.InlineOnly\npublic
inline fun LongRange.random(): Long {\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@kotlin.internal.InlineOnly\npublic inline fun CharRange.random(): Char {\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")\npublic fun IntRange.random(random: Random): Int {\n    try {\n        return
random.nextInt(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

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*\/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 * 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 * 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 * 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 * 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
CharRange.randomOrNull(): Char? {\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@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 * 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 * 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 * 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 * 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 * 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 * 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 * 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 * 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 *
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 * 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

```



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ClosedRange<Float>.contains(value: Byte): Boolean {
    return contains(value.toFloat())
}

@Deprecated("This `contains` operation mixing integer and floating point arguments has ambiguous semantics and is going to be removed.")
@kotlin.jvm.JvmName("intRangeContains")
public operator fun ClosedRange<Int>.contains(value: Double): Boolean {
    return value.toIntExactOrNull().let { if (it != null) contains(it) else false }
}

@Deprecated("This `contains` operation mixing integer and floating point arguments has ambiguous semantics and is going to be removed.")
@kotlin.jvm.JvmName("longRangeContains")
public operator fun ClosedRange<Long>.contains(value: Double): Boolean {
    return value.toLongExactOrNull().let { if (it != null) contains(it) else false }
}

@kotlin.jvm.JvmName("byteRangeContains")
public operator fun ClosedRange<Byte>.contains(value: Double): Boolean {
    return value.toByteExactOrNull().let { if (it != null) contains(it) else false }
}

@Deprecated("This `contains` operation mixing integer and floating point arguments has ambiguous semantics and is going to be removed.")
@kotlin.jvm.JvmName("shortRangeContains")
public operator fun ClosedRange<Short>.contains(value: Double): Boolean {
    return value.toShortExactOrNull().let { if (it != null) contains(it) else false }
}

@kotlin.jvm.JvmName("floatRangeContains")
public operator fun ClosedRange<Float>.contains(value: Double): Boolean {
    return contains(value.toFloat())
}

@Deprecated("This `contains` operation mixing integer and floating point arguments has ambiguous semantics and is going to be removed.")
@kotlin.jvm.JvmName("intRangeContains")
public operator fun ClosedRange<Int>.contains(value: Float): Boolean {
    return value.toIntExactOrNull().let { if (it != null) contains(it) else false }
}

@Deprecated("This `contains` operation mixing integer and floating point arguments has ambiguous semantics and is going to be removed.")
@kotlin.jvm.JvmName("longRangeContains")
public operator fun ClosedRange<Long>.contains(value: Float): Boolean {
    return value.toLongExactOrNull().let { if (it != null) contains(it) else false }
}

@kotlin.jvm.JvmName("byteRangeContains")
public operator fun ClosedRange<Byte>.contains(value: Float): Boolean {
    return value.toByteExactOrNull().let { if (it != null) contains(it) else false }
}

@Deprecated("This `contains` operation mixing integer and floating point arguments has ambiguous semantics and is going to be removed.")
@kotlin.jvm.JvmName("shortRangeContains")
public operator fun ClosedRange<Short>.contains(value: Float): Boolean {
    return value.toShortExactOrNull().let { if (it != null) contains(it) else false }
}

@kotlin.jvm.JvmName("doubleRangeContains")
public operator fun ClosedRange<Double>.contains(value: Float): Boolean {
    return contains(value.toDouble())
}

@kotlin.jvm.JvmName("longRangeContains")
public operator fun ClosedRange<Long>.contains(value: Int): Boolean {
    return contains(value.toLong())
}

@kotlin.jvm.JvmName("byteRangeContains")
public operator fun ClosedRange<Byte>.contains(value: Int): Boolean {
    return value.toByteExactOrNull().let { if (it != null) contains(it) else false }
}

@kotlin.jvm.JvmName("shortRangeContains")
public operator fun ClosedRange<Short>.contains(value: Int): Boolean {
    return value.toShortExactOrNull().let { if (it != null) contains(it) else false }
}

@Deprecated("This `contains` operation mixing

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integer and floating point arguments has ambiguous semantics and is going to be removed.\n\n@kotlin.jvm.JvmName("doubleRangeContains")\n\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\n@Deprecated("This `contains` operation mixing integer and floating point arguments has ambiguous semantics and is going to be removed.\n")\n@kotlin.jvm.JvmName("floatRangeContains")\n\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\n@kotlin.jvm.JvmName("intRangeContains")\n\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\n@kotlin.jvm.JvmName("byteRangeContains")\n\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\n@kotlin.jvm.JvmName("shortRangeContains")\n\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\n@Deprecated("This `contains` operation mixing integer and floating point arguments has ambiguous semantics and is going to be removed.\n")\n@kotlin.jvm.JvmName("doubleRangeContains")\n\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\n@Deprecated("This `contains` operation mixing integer and floating point arguments has ambiguous semantics and is going to be removed.\n")\n@kotlin.jvm.JvmName("floatRangeContains")\n\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\n@kotlin.jvm.JvmName("intRangeContains")\n\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\n@kotlin.jvm.JvmName("longRangeContains")\n\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\n@kotlin.jvm.JvmName("byteRangeContains")\n\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/\*\*\n \* Checks if the specified [value] belongs to this range.\n \*/\n\n@Deprecated("This `contains` operation mixing integer and floating point arguments has ambiguous semantics and is going to be removed.\n")\n@kotlin.jvm.JvmName("doubleRangeContains")\n\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\n@Deprecated("This `contains` operation mixing integer and floating point arguments has ambiguous semantics and is going to be removed.\n")\n@kotlin.jvm.JvmName("floatRangeContains")\n\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\n@kotlin.jvm.JvmName("intDownTo")\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\n@kotlin.jvm.JvmName("longDownTo")\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\n@kotlin.jvm.JvmName("byteDownTo")\n\npublic infix fun Byte.downTo(to: Byte): IntProgression {\n return IntProgression.fromClosedRange(this.toInt(), to.toInt(), -



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[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/**\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/**\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() -

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1).toLong()\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.\n */\npublic infix fun Int.until(to: Int): IntRange {\n    if (to <= Int.MIN_VALUE) return
IntRange.EMPTY\n    return this .. (to - 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:
Int): 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: Int): IntRange {\n    if (to <= Int.MIN_VALUE) return
IntRange.EMPTY\n    return this.toInt() .. (to - 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: Int): IntRange {\n    if (to <= Int.MIN_VALUE) return
IntRange.EMPTY\n    return this.toInt() .. (to - 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 Int.until(to: Long): LongRange
{\n    if (to <= Long.MIN_VALUE) return LongRange.EMPTY\n    return this.toLong() .. (to -
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 Long.until(to:
Long): LongRange {\n    if (to <= Long.MIN_VALUE) return LongRange.EMPTY\n    return this .. (to -
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:
Long): LongRange {\n    if (to <= Long.MIN_VALUE) return LongRange.EMPTY\n    return this.toLong() .. (to -
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 Short.until(to: Long): LongRange {\n    if (to <= Long.MIN_VALUE) return LongRange.EMPTY\n    return
this.toLong() .. (to - 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 Int.until(to: Short): 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: Short): 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: Short): 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: Short): IntRange {\n    return this.toInt() .. (to.toInt() - 1).toInt()\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.coerceAtLeastComparable\n */\npublic fun <T : Comparable<T>>
T.coerceAtLeast(minimumValue: T): T {\n    return if (this < minimumValue) minimumValue else this\n}\n\n/**\n

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* 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 public fun Byte.coerceAtLeast(minimumValue: Byte):
Byte {\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 public fun Short.coerceAtLeast(minimumValue: Short): Short {\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 public fun Int.coerceAtLeast(minimumValue:
Int): Int {\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 public 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 public 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 public 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 public 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 public 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 public 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 public 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 public 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 public 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

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value if it's less than or equal to the [maximumValue] or the [maximumValue] otherwise.\n * \n * @sample
samples.comparisons.ComparableOps.coerceAtMost\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 *^\npublic fun <T : Comparable<T>>
T.coerceIn(minimumValue: T?, maximumValue: T?): T {\n    if (minimumValue !== null && maximumValue !==
null) {\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    }\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 *^\npublic 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 *^\npublic 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 *^\npublic 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 *^\npublic 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
*^\npublic 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

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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 */\npublic 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@SinceKotlin("1.1")\npublic 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.lessThanOrEquals(this,
range.start) && !range.lessThanOrEquals(range.start, this) -> range.start\n        // this > end equiv to this >= end &&
!(this <= end)\n        range.lessThanOrEquals(range.endInclusive, this) && !range.lessThanOrEquals(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.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\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        /**\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        /**\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        /**\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    /** 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    /** 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    /** 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

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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
/** 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 /** 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\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 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 * 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\n /** Returns this value. */\n @kotlin.internal.InlineOnly\n public inline fun
toUByte(): UByte = this\n /**\n * Converts this [UByte] value to [UShort].\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 * 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 * 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 /**\n * Converts this [UByte] value to [Float].\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 /**\n * Converts this [UByte] value to [Double].\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\n public override fun toString(): String =
toInt().toString()\n\n}\n\n/**\n * Converts this [Byte] value to [UByte].\n * If this value is positive, the resulting
`UByte` value represents the same numerical value as this `Byte`.\n */\n

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* The resulting `UByte` value has the same binary representation as this `Byte` value.\n
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic 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 *\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\npublic 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 *\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\npublic 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 *\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\npublic 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@Suppress("NON_PUBLIC_PRIMARY_CONSTRUCTOR_OF_INLINE_CLASS")\n@
SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\npublic
inline class UInt @PublishedApi internal 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 MIN_VALUE: UInt = UInt(0)\n\n         /**\n         * A constant holding the
maximum value an instance of UInt can have.\n         *\n         * public const val MAX_VALUE: UInt = UInt(-1)\n\n
         /**\n         * The number of bytes used to represent an instance of UInt in a binary form.\n         *\n         *
public
const val SIZE_BYTES: Int = 4\n\n         /**\n         * The number of bits used to represent an instance of UInt in a
binary form.\n         *\n         * public const val SIZE_BITS: Int = 32\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.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 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.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 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:
UInt): Int = uintCompare(this.data, other.data)\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    @kotlin.internal.InlineOnly\n    public inline operator fun plus(other: UByte): UInt =
this.plus(other.toUInt())\n\n    /**\n     * Adds the other value to this value. *\n    @kotlin.internal.InlineOnly\n    public
inline operator fun plus(other: UShort): UInt = this.plus(other.toUInt())\n\n    /**\n     * Adds the other value to this value.
*\n    @kotlin.internal.InlineOnly\n    public inline operator fun plus(other: UInt): UInt =
UInt(this.data.plus(other.data))\n\n    /**\n     * Adds the other value to this value. *\n    @kotlin.internal.InlineOnly\n

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    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.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.minus(other.toUInt())\n    /** Subtracts the other value
from this value. */\n    @kotlin.internal.InlineOnly\n    public inline operator fun minus(other: UInt): UInt =
UInt(this.data.minus(other.data))\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.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.times(other.toUInt())\n    /** Multiplies this value by the other value. */\n
    @kotlin.internal.InlineOnly\n    public inline operator fun times(other: UInt): UInt =
UInt(this.data.times(other.data))\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.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.div(other.toUInt())\n    /** Divides this value by the other value. */\n    @kotlin.internal.InlineOnly\n    public
inline operator fun div(other: UInt): UInt
= uintDivide(this, 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.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.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 = uintRemainder(this, 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(): UInt = UInt(data.inc())\n    /**
Decrements this value. */\n    @kotlin.internal.InlineOnly\n    public inline operator fun dec(): UInt =
UInt(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: UInt): UIntRange = UIntRange(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): UInt = UInt(data shl bitCount)\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): UInt = UInt(data ushr bitCount)\n    /** Performs a bitwise AND operation between the two
values. */\n    @kotlin.internal.InlineOnly\n    public inline infix fun and(other:
UInt): UInt = UInt(this.data and other.data)\n    /** Performs a bitwise OR operation between the two values. */\n
    @kotlin.internal.InlineOnly\n    public inline infix fun or(other: UInt): UInt = UInt(this.data or other.data)\n
    /** Performs a bitwise XOR operation between the two values. */\n    @kotlin.internal.InlineOnly\n    public inline infix
fun xor(other: UInt): UInt = UInt(this.data xor other.data)\n    /** Inverts the bits in this value. */\n
    @kotlin.internal.InlineOnly\n    public inline fun inv(): UInt = UInt(data.inv())\n\n    /**\n     * Converts this [UInt]
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 `UInt`.\n     * The resulting `Byte` value is represented by
the least significant 8 bits of this `UInt` 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 [UInt] value to [Short].\n     * If this value is
less than or equals to [Short.MAX_VALUE], the resulting `Short` value represents\n     * the same numerical value

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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].  
 \* The resulting `Double` value represents the same numerical value as this `UInt`.  
 @kotlin.internal.InlineOnly  
 public inline fun toDouble(): Double = uintToDouble(data)  
 public override fun toString(): String = toLong().toString()  
 /\*\*  
 \* Converts this [Byte] value to [UInt].  
 \* If this value is positive, the resulting `UInt` value represents the same numerical value as this `Byte`.  
 \* The least significant 8 bits of the resulting `UInt` value are the same as the bits of this `Byte` value, whereas the most significant 24 bits are filled with the sign bit of this value.  
 @SinceKotlin("1.3")  
 @ExperimentalUnsignedTypes  
 @kotlin.internal.InlineOnly  
 public inline fun Byte.toUInt(): UInt = UInt(this.toInt())  
 /\*\*  
 \* Converts this [Short] value to [UInt].  
 \* If this value is positive, the resulting `UInt` value represents the same numerical value as this `Short`.  
 \* The least significant 16 bits of the resulting `UInt` value are the same as the bits of this `Short` value, whereas the most significant 16 bits are filled with the sign bit of this value.  
 @SinceKotlin("1.3")  
 @ExperimentalUnsignedTypes  
 @kotlin.internal.InlineOnly  
 public inline fun Short.toUInt(): UInt = UInt(this.toInt())  
 /\*\*  
 \* Converts this [Int] value to [UInt].  
 \* If this value is positive, the resulting `UInt` value represents the same numerical value as this `Int`.  
 \* The resulting `UInt` value has the same binary representation as this `Int` value.  
 @SinceKotlin("1.3")  
 @ExperimentalUnsignedTypes  
 @kotlin.internal.InlineOnly  
 public inline fun Int.toUInt(): UInt = UInt(this)  
 /\*\*  
 \* Converts this [Long] value to [UInt].  
 \* If this value is positive and less than or equals to [UInt.MAX\_VALUE], the resulting `UInt` value represents the same numerical value as this `Long`.  
 \* The resulting `UInt` value is represented by the least significant 32 bits of this `Long` value.

```

*^@SinceKotlin("1.3")^@ExperimentalUnsignedTypes^@kotlin.internal.InlineOnly^public inline fun
Long.toUInt(): UInt = UInt(this.toInt())^//^ * Converts this [Float] value to [UInt].^ * The fractional part,
if any, is rounded down towards zero.^ * Returns zero if this `Float` value is negative or `NaN`,
[UInt.MAX_VALUE] if it's bigger than `UInt.MAX_VALUE`.^
*^@SinceKotlin("1.3")^@ExperimentalUnsignedTypes^@kotlin.internal.InlineOnly^public inline fun
Float.toUInt(): UInt = doubleToUInt(this.toDouble())^//^ * Converts this [Double] value to [UInt].^ * The
fractional part, if any, is rounded down towards zero.^ * Returns zero if this `Double` value is
negative or `NaN`, [UInt.MAX_VALUE] if it's bigger than `UInt.MAX_VALUE`.^
*^@SinceKotlin("1.3")^@ExperimentalUnsignedTypes^@kotlin.internal.InlineOnly^public inline fun
Double.toUInt(): UInt = doubleToUInt(this)^//^ * 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.^ *^// Auto-generated file. DO NOT EDIT!^package kotlin.^nimport
kotlin.experimental.^//^ *^@Suppress("NON_PUBLIC_PRIMARY_CONSTRUCTOR_OF_INLINE_CLASS")^@
SinceKotlin("1.3")^@ExperimentalUnsignedTypes^public inline class UShort @PublishedApi internal
constructor(@PublishedApi internal val data: Short) : Comparable<UShort> {^ companion object {^ //^
    * A constant holding the minimum value an instance of UShort can have.^ //^ public const val
MIN_VALUE: UShort = UShort(0)^ //^ * A constant holding
the maximum value an instance of UShort can have.^ //^ public const val MAX_VALUE: UShort =
UShort(-1)^ //^ * The number of bytes used to represent an instance of UShort in a binary form.^
//^ public const val SIZE_BYTES: Int = 2^ //^ * The number of bits used to represent an
instance of UShort in a binary form.^ //^ public const val SIZE_BITS: Int = 16^ }^ //^ *
Compares this value with the specified value for order.^ * Returns zero if this value is equal to the specified other
value, a negative number if it's less than other,^ * or a positive number if it's greater than other.^ //^
@kotlin.internal.InlineOnly^ public inline operator fun compareTo(other: UByte): Int =
this.toInt().compareTo(other.toInt())^ //^ * Compares this value with the specified value for order.^ *
Returns zero if this value is equal to the specified other value,
a negative number if it's less than other,^ * or a positive number if it's greater than other.^ //^
@kotlin.internal.InlineOnly^ @Suppress("OVERRIDE_BY_INLINE")^ public override inline operator fun
compareTo(other: UShort): Int = this.toInt().compareTo(other.toInt())^ //^ * Compares this value with the
specified value for order.^ * Returns zero if this value is equal to the specified other value, a negative number if
it's less than other,^ * or a positive number if it's greater than other.^ //^ @kotlin.internal.InlineOnly^
public inline operator fun compareTo(other: UInt): Int = this.toUInt().compareTo(other)^ //^ * Compares
this value with the specified value for order.^ * Returns zero if this value is equal to the specified other value, a
negative number if it's less than other,^ * or a positive number if it's greater than other.^ //^
@kotlin.internal.InlineOnly^ public inline operator fun compareTo(other:
ULong): Int = this.toULong().compareTo(other)^ //^ * Adds the other value to this value.^ //^
@kotlin.internal.InlineOnly^ public inline operator fun plus(other: UByte): UInt =
this.toUInt().plus(other.toUInt())^ //^ * Adds the other value to this value.^ //^ @kotlin.internal.InlineOnly^
public inline operator fun plus(other: UShort): UInt = this.toUInt().plus(other.toUInt())^ //^ * Adds the other value
to this value.^ //^ @kotlin.internal.InlineOnly^ public inline operator fun plus(other: UInt): UInt =
this.toUInt().plus(other)^ //^ * Adds the other value to this value.^ //^ @kotlin.internal.InlineOnly^ public
inline operator fun plus(other: ULong): ULong = this.toULong().plus(other)^ //^ * Subtracts the other value from
this value.^ //^ @kotlin.internal.InlineOnly^ public inline operator fun minus(other: UByte): UInt =
this.toUInt().minus(other.toUInt())^ //^ * Subtracts the other value from this value.^ //^
@kotlin.internal.InlineOnly^
    public inline operator fun minus(other: UShort): UInt = this.toUInt().minus(other.toUInt())^ //^ * Subtracts the
other value from this value.^ //^ @kotlin.internal.InlineOnly^ public inline operator fun minus(other: UInt):
UInt = this.toUInt().minus(other)^ //^ * Subtracts the other value from this value.^ //^

```

```

@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(): UShort = UShort(data.inc())\n /** Decrements this value. */\n @kotlin.internal.InlineOnly\n
public inline operator fun dec(): UShort = UShort(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:
UShort): 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: UShort): UShort =
UShort(this.data and other.data)\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
/** 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 /** 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 * 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
*\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 * Converts this [UShort] value to [Short].\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 * 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 * Converts this [UShort] value to [Int].\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 * Converts this [UShort] value to [Long].\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)
/**
 * Converts this [UShort] 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 `UShort`.
 * The resulting `UByte` value is represented by the least significant 8 bits of this `UShort` value.
 */
@kotlin.internal.InlineOnly
public inline fun toUByte(): UByte = data.toUByte()
/** Returns this value. */
@kotlin.internal.InlineOnly
public inline fun toUShort(): UShort = this
/**
 * Converts this [UShort] value to [UInt].
 * The resulting `UInt` value represents the same numerical value as this `UShort`.
 * The least significant 16 bits of the resulting `UInt` value are the same as the bits of this `UShort` value, whereas the most significant 16 bits are filled with zeros.
 */
@kotlin.internal.InlineOnly
public inline fun toUInt(): UInt = UInt(data.toInt() and 0xFFFF)
/**
 * Converts this [UShort] value to [ULong].
 * The resulting `ULong` value represents the same numerical value as this `UShort`.
 * The least significant 16 bits of the resulting `ULong` value are the same as the bits of this `UShort` value, whereas the most significant 48 bits are filled with zeros.
 */
@kotlin.internal.InlineOnly
public inline fun toULong(): ULong = ULong(data.toLong() and 0xFFFF)
/**
 * Converts this [UShort] value to [Float].
 * The resulting `Float` value represents the same numerical value as this `UShort`.
 */
@kotlin.internal.InlineOnly
public inline fun toFloat(): Float = this.toInt().toFloat()
/**
 * Converts this [UShort] value to [Double].
 * The resulting `Double` value represents the same numerical value as this `UShort`.
 */
@kotlin.internal.InlineOnly
public inline fun toDouble(): Double = this.toInt().toDouble()
public override fun toString(): String = toInt().toString()
}
}
/**
 * Converts this [Byte] value to [UShort].
 * If this value is positive, the resulting `UShort` value represents the same numerical value as this `Byte`.
 * The least significant 8 bits of the resulting `UShort` value are the same as the bits of this `Byte` value, whereas the most significant 8 bits are filled with the sign bit of this value.
 */
@SinceKotlin("1.3")
@ExperimentalUnsignedTypes
@kotlin.internal.InlineOnly
public inline fun Byte.toUShort(): UShort = UShort(this.toShort())
/**
 * Converts this [Short] value to [UShort].
 * If this value is positive, the resulting `UShort` value represents the same numerical value as this `Short`.
 * The resulting `UShort` value has the same binary representation as this `Short` value.
 */
@SinceKotlin("1.3")
@ExperimentalUnsignedTypes
@kotlin.internal.InlineOnly
public inline fun Short.toUShort(): UShort = UShort(this)
/**
 * Converts this [Int] value to [UShort].
 * If this value is positive and less than or equals to [UShort.MAX_VALUE], the resulting `UShort` value represents the same numerical value as this `Int`.
 * The resulting `UShort` value is represented by the least significant 16 bits of this `Int` value.
 */
@SinceKotlin("1.3")
@ExperimentalUnsignedTypes
@kotlin.internal.InlineOnly
public inline fun Int.toUShort(): UShort = UShort(this.toShort())
/**
 * Converts this [Long] value to [UShort].
 * If this value is positive and less than or equals to [UShort.MAX_VALUE], the resulting `UShort` value represents the same numerical value as this `Long`.
 * The resulting `UShort` value is represented by the least significant 16 bits of this `Long` value.
 */
@SinceKotlin("1.3")
@ExperimentalUnsignedTypes
@kotlin.internal.InlineOnly
public inline fun Long.toUShort(): UShort = UShort(this.toShort())
}
}
/** 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.
 */
@file:AutoGenerated
package kotlin.ranges
/**
 * A range of values of type `Char`.
 */
public class CharRange(start: Char, endInclusive: Char) : CharProgression(start, endInclusive, 1), ClosedRange<Char> {
    override val start: Char get() = first
    override val endInclusive: Char get() = last
    override fun contains(value: Char): Boolean = first <= value && value <= last
    override fun isEmpty(): Boolean = first > last
    override fun equals(other: Any?): Boolean = other is CharRange && (isEmpty() && other.isEmpty() || first == other.first && last == other.last)
    override fun hashCode(): Int = if (isEmpty()) -1 else (31 * first.toInt() + last.toInt())
    override fun toString(): String = "$first..$last"
}

```



```

companion object {
    /** An empty range of values of type Char. */
    public val EMPTY: CharRange = CharRange(1.toChar(), 0.toChar())
}

/** A range of values of type `Int`. */
public class IntRange(start: Int, endInclusive: Int) : IntProgression(start, endInclusive, 1), ClosedRange<Int> {
    override val start: Int get() = first
    override val endInclusive: Int get() = last
    override fun contains(value: Int): Boolean = first <= value && value <= last
    override fun isEmpty(): Boolean = first > last
    override fun equals(other: Any?): Boolean =
        other is IntRange && (isEmpty() && other.isEmpty()) ||
        first == other.first && last == other.last
    override fun hashCode(): Int = if (isEmpty()) -1 else (31 * first + last)
    override fun toString(): String = "$first..$last"
}

companion object {
    /** An empty range of values of type Int. */
    public val EMPTY: IntRange = IntRange(1, 0)
}

/** A range of values of type `Long`. */
public class LongRange(start: Long, endInclusive: Long) : LongProgression(start, endInclusive, 1), ClosedRange<Long> {
    override val start: Long get() = first
    override val endInclusive: Long get() = last
    override fun contains(value: Long): Boolean = first <= value && value <= last
    override fun isEmpty(): Boolean = first > last
    override fun equals(other: Any?): Boolean =
        other is LongRange && (isEmpty() && other.isEmpty()) ||
        first == other.first && last == other.last
    override fun hashCode(): Int = if (isEmpty()) -1 else (31 * (first xor (first ushr 32)) + (last xor (last ushr 32))).toInt()
    override fun toString(): String = "$first..$last"
}

companion object {
    /** An empty range of values of type Long. */
    public val EMPTY: LongRange = LongRange(1, 0)
}

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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.
 */
@file:kotlin.jvm.JvmMultifileClass
@file:kotlin.jvm.JvmName("CollectionsKt")
@file:UseExperimental(kotlin.experimental.ExperimentalTypeInference::class)
package kotlin.collections

import kotlin.contracts.*
internal object EmptyIterator : ListIterator<Nothing> {
    override fun hasNext(): Boolean = false
    override fun hasPrevious(): Boolean = false
    override fun nextIndex(): Int = 0
    override fun previousIndex(): Int = -1
    override fun next(): Nothing = throw NoSuchElementException()
    override fun previous(): Nothing = throw NoSuchElementException()
}

internal object EmptyList : List<Nothing>, Serializable, RandomAccess {
    private const val serialVersionUID: Long = -7390468764508069838L
    override fun equals(other: Any?): Boolean = other is List<*> && other.isEmpty()
    override fun hashCode(): Int = 1
    override fun toString(): String = "[]"
    override val size: Int get() = 0
    override fun isEmpty(): Boolean = true
    override fun contains(element: Nothing): Boolean = false
    override fun containsAll(elements: Collection<Nothing>): Boolean = elements.isEmpty()

    override fun get(index: Int): Nothing = throw IndexOutOfBoundsException("Empty list doesn't contain element at index $index.")
    override fun indexOf(element: Nothing): Int = -1
    override fun lastIndexof(element: Nothing): Int = -1
    override fun iterator(): Iterator<Nothing> = EmptyIterator
    override fun listIterator(): ListIterator<Nothing> = EmptyIterator
    override fun listIterator(index: Int): ListIterator<Nothing> {
        if (index != 0) throw IndexOutOfBoundsException("Index: $index")
        return EmptyIterator
    }

    override fun subList(fromIndex: Int, toIndex: Int): List<Nothing> {
        if (fromIndex == 0 && toIndex == 0) return this
        throw IndexOutOfBoundsException("fromIndex: $fromIndex, toIndex: $toIndex")
    }

    private fun readResolve(): Any = EmptyList

    internal fun <T> Array<out T>.asCollection(): Collection<T> = ArrayAsCollection(this, isVarargs = false)
    private class ArrayAsCollection<T>(val values: Array<out T>, val isVarargs: Boolean) : Collection<T> {
        override val size: Int get() = values.size
        override fun isEmpty(): Boolean = values.isEmpty()
        override fun contains(element: T): Boolean = values.contains(element)
        override fun containsAll(elements: Collection<T>): Boolean = elements.all { contains(it) }
        override fun iterator(): Iterator<T> = values.iterator()
        // override hidden toArray implementation to prevent copying of values array
        public fun toArray(): Array<out Any?> = values.copyToArrayOfAny(isVarargs)
    }

    /** Returns an empty read-only list. The returned list is serializable (JVM).
     * @sample samples.collections.Collections.Lists.emptyReadOnlyList
     */
    public 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
*/\n\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\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\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 */\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 */\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 */\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 */\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 * 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 * @sample
samples.collections.Collections.Lists.readOnlyListFromInitializer\n
*/\n\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 * 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 *
@sample samples.collections.Collections.Lists.mutableListFromInitializer\n
*/\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/**\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 * @sample
samples.collections.Builders.Lists.buildListSample\n
*/\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 {
        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 *\n * @throws IllegalArgumentException if the given [capacity] is negative.\n *\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**\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 * Returns the index of the last item in
the list or -1 if the list is empty.\n *\n * @sample samples.collections.Collections.Lists.lastIndexOfList\n *\npublic
val <T> List<T>.lastIndex: Int\n get() = this.size - 1\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.collectionOrNullEmpty\n *\n@kotlin.internal.InlineOnly\npublic inline fun
<T> Collection<T>?.orEmpty(): Collection<T> = this ?: emptyList()\n**\n * Returns this List if it's not `null` and
the empty list otherwise.\n * @sample samples.collections.Collections.Lists.listOrNullEmpty\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 *\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 * Checks if all
elements in the specified collection are contained in this collection.\n
*\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 *\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.\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 while (low <= high) {\n val mid = (low +
high).ushr(1) // safe from overflows\n val midVal = get(mid)\n val cmp = compareValues(midVal,
element)\n\n if (cmp < 0)\n

```

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        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\n the binary search algorithm.\n * The list is expected to be sorted into ascending order according to the specified\n [comparator],\n * otherwise the result is undefined.\n *\n * If the list contains multiple elements equal to the\n specified [element], there is no guarantee which one will be found.\n *\n * `null` value is considered to be less than\n any non-null value.\n *\n * @return the index of the element, if it is contained in the list within the specified\n range;\n * otherwise, the inverted insertion point `(-insertion point - 1)`.\n * The insertion point is defined as the\n index at which the element should be inserted,\n * so that the list (or the specified subrange of list) still remains\n sorted according to the specified [comparator].\n *\n * @sample samples.collections.Collections.Lists.binarySearchWithComparator\n */\npublic fun <T>\nList<T>.binarySearch(element: T, comparator: Comparator<in T>, fromIndex: Int = 0, toIndex: Int = size): Int {\n    rangeCheck(size, fromIndex, toIndex)\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\n according to the Comparable natural ordering of keys\n of its elements.\n * otherwise the result is undefined.\n *\n * If the list contains multiple elements with the specified\n [key], there is no guarantee which one will be found.\n *\n * `null` value is considered to be less than any non-null\n value.\n *\n * @return the index of the element with the specified [key], if it is contained in the list within the\n specified range;\n * otherwise, the inverted insertion point `(-insertion point - 1)`.\n * The insertion point is defined\n as the index at which the element should be inserted,\n * so that the list (or the specified subrange of list) still\n remains sorted.\n *\n * @sample samples.collections.Collections.Lists.binarySearchByKey\n */\npublic inline fun <T,\nK : Comparable<K>> List<T>.binarySearchBy(\n    key: K?,\n    fromIndex: Int = 0,\n    toIndex: Int = size,\n    crossinline selector: (T) -> K?): Int =\n    binarySearch(fromIndex, toIndex) { compareValues(selector(it), key)\n}\n\n// do not introduce this overload --- too rare\npublic fun\n<T, K> List<T>.binarySearchBy(key: K, comparator: Comparator<K>, fromIndex: Int = 0, toIndex: Int = size(),\nselector: (T) -> K): Int =\n    binarySearch(fromIndex, toIndex) { comparator.compare(selector(it), key)\n}\n\n/**\n * Searches this list or its range for an element for which the given [comparison] function returns zero\n using the binary search algorithm.\n *\n * The list is expected to be sorted so that the signs of the [comparison]\n function's return values ascend on the list elements,\n * i.e. negative values come before zero and zeroes come\n before positive values.\n *\n * Otherwise, the result is undefined.\n *\n * If the list contains multiple elements for which\n [comparison] returns zero, there is no guarantee which one will be found.\n *\n * @param comparison function that\n returns zero when called on the list element being searched.\n * On the elements coming before the target element,\n the function must return negative values;\n * on the elements coming after the target\n element, the function must return positive values.\n *\n * @return the index of the found element, if it is contained\n in the list within the specified range;\n * otherwise, the inverted insertion point `(-insertion point - 1)`.\n * The\n insertion point is defined as the index at which the element should be inserted,\n * so that the list (or the specified\n subrange of list) still remains sorted.\n *\n * @sample\n samples.collections.Collections.Lists.binarySearchWithComparisonFunction\n */\npublic fun <T>\nList<T>.binarySearch(fromIndex: Int = 0, toIndex: Int = size, comparison: (T) -> Int): Int {\n    rangeCheck(size,\nfromIndex, toIndex)\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        if (cmp < 0)\n            low = mid + 1\n        else if (cmp > 0)\n            high = mid - 1\n        else\n            return\nmid //\nkey found\n    }\n    return -(low + 1) // key not found\n}\n\n/**\n * Checks that `from` and `to` are in\n * the range\n of [0..size] and throws an appropriate exception, if they aren't.\n *\n * @private fun rangeCheck(size: Int, fromIndex:

```

```

Int, toIndex: Int) {
    when {
        fromIndex > toIndex -> throw IllegalArgumentException("fromIndex
($fromIndex) is greater than toIndex ($toIndex).")
        fromIndex < 0 -> throw
IndexOutOfBoundsException("fromIndex ($fromIndex) is less than zero.")
        toIndex > size -> throw
IndexOutOfBoundsException("toIndex ($toIndex) is greater than size ($size).")
    }
}

@PublishedApi
@SinceKotlin("1.3")
internal expect fun checkIndexOverflow(index: Int):
Int

@PublishedApi
@SinceKotlin("1.3")
internal expect fun checkCountOverflow(count: Int):
Int

@PublishedApi
@SinceKotlin("1.3")
internal fun throwIndexOverflow() { throw
ArithmeticException("Index overflow has happened.") }

@PublishedApi
@SinceKotlin("1.3")
internal
fun throwCountOverflow() { throw ArithmeticException("Count overflow has happened.") }

/*
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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("MapsKt")
@file:UseExperimental(kotlin
.experimental.ExperimentalTypeInference::class)
package kotlin.collections
import
kotlin.contracts.*
private object EmptyMap : Map<Any?, Nothing>, Serializable {
    private const val
serialVersionUID: Long = 8246714829545688274
    override fun equals(other: Any?): Boolean = other is
Map<*, *> && other.isEmpty()
    override fun hashCode(): Int = 0
    override fun toString(): String = "{}"
    override val size: Int get() = 0
    override fun isEmpty(): Boolean = true
    override fun containsKey(key:
Any?): Boolean = false
    override fun containsValue(value:
Nothing): Boolean = false
    override fun get(key: Any?): Nothing? = null
    override val entries:
Set<Map.Entry<Any?, Nothing>> get() = EmptySet
    override val keys: Set<Any?> get() = EmptySet
    override val values: Collection<Nothing> get() = EmptyList
    private fun readResolve(): Any =
EmptyMap
}

/*
Returns an empty read-only map of specified type.
The returned map is serializable
(JVM).
@sample samples.collections.Maps.Instantiation.emptyReadOnlyMap
*/
public fun <K, V>
emptyMap(): Map<K, V> = @Suppress("UNCHECKED_CAST") (EmptyMap as Map<K, V>)

/*
Returns
a new read-only map with the specified contents, given as a list of pairs
where the first value is the key and the
second is the value.
If multiple pairs have the same key, the resulting map will contain the value from the
last of those pairs.
Entries of the map are iterated in the order they were specified.
The returned map
is serializable
(JVM).
*/
@sample samples.collections.Maps.Instantiation.mapFromPairs
*/
public fun <K, V>
mapOf(vararg pairs: Pair<K, V>): Map<K, V> =
    if (pairs.size > 0)
pairs.toMap(LinkedHashMap(mapCapacity(pairs.size))) else emptyMap()

/*
Returns an empty read-only
map.
The returned map is serializable (JVM).
*/
@sample
samples.collections.Maps.Instantiation.emptyReadOnlyMap
*/
@kotlin.internal.InlineOnly
public inline fun
<K, V> mapOf(): Map<K, V> = emptyMap()

/*
Returns an empty new [MutableMap].
The returned
map preserves the entry iteration order.
*/
@sample samples.collections.Maps.Instantiation.emptyMutableMap
*/
@SinceKotlin("1.1")
@kotlin.internal.InlineOnly
public inline fun <K, V> mutableMapOf():
MutableMap<K, V> = LinkedHashMap()

/*
Returns a new [MutableMap] with the specified contents, given
as a list of pairs
where the first component is the key and the second is the value.
If multiple pairs have
the
same key, the resulting map will contain the value from the last of those pairs.
Entries of the map are
iterated in the order they were specified.
*/
@sample
samples.collections.Maps.Instantiation.mutableMapFromPairs
*/
@sample
samples.collections.Maps.Instantiation.emptyMutableMap
*/
public fun <K, V> mutableMapOf(vararg pairs:
Pair<K, V>): MutableMap<K, V> =
    LinkedHashMap<K, V>(mapCapacity(pairs.size)).apply { putAll(pairs)
}

/*
Returns an empty new [HashMap].
*/
@sample
samples.collections.Maps.Instantiation.emptyHashMap
*/
@SinceKotlin("1.1")
@kotlin.internal.InlineOnly
public inline fun <K, V> hashMapOf(): HashMap<K, V>
= HashMap<K, V>()

/*
Returns a new [HashMap] with the specified contents, given as a list of pairs
*/

```

where the first component is the key and the second is the value.

```

@sample
samples.collections.Maps.Instantiation.hashMapFromPairs
public fun <K, V> hashMapOf(vararg pairs:
Pair<K, V>): HashMap<K, V> =
    HashMap<K, V>(mapCapacity(pairs.size)).apply { putAll(pairs) }
Returns an empty new [HashMap].
@SinceKotlin("1.1")
@kotlin.internal.InlineOnly
public inline fun <K, V>
linkedMapOf(): LinkedHashMap<K, V> = LinkedHashMap<K, V>()
Returns a new [LinkedHashMap]
with the specified contents, given as a list of pairs
where the first component is the key and the second is the
value.
If multiple pairs have the same key, the resulting map will contain the value from the last of those
pairs.
Entries of the map are iterated in the order they were specified.
@sample
samples.collections.Maps.Instantiation.linkedMapFromPairs
public fun <K, V> linkedMapOf(vararg pairs:
Pair<K, V>): LinkedHashMap<K, V> = pairs.toMap(LinkedHashMap(mapCapacity(pairs.size)))
Builds a new read-only [Map] by populating a [MutableMap] using the given [builderAction]
and returning a read-only map with the same key-value pairs.
The map
passed as a receiver to the [builderAction] is valid only inside that function.
Using it outside of the function produces an unspecified behavior.
Entries of the map are iterated in the order they were added by the
[builderAction].
@sample samples.collections.Builders.Maps.buildMapSample
@SinceKotlin("1.3")
@ExperimentalStdlibApi
@kotlin.internal.InlineOnly
public inline fun <K, V>
buildMap(@BuilderInference builderAction: MutableMap<K, V>().->Unit): Map<K, V> {
    contract {
        callsInPlace(builderAction, InvocationKind.EXACTLY_ONCE)
    }
    return LinkedHashMap<K,
V>().apply(builderAction)
}
Builds a new read-only [Map] by populating a [MutableMap] using the
given [builderAction]
and returning a read-only map with the same key-value pairs.
The map passed as a
receiver to the [builderAction] is valid only inside that function.
Using it outside of the function produces an
unspecified behavior.
[capacity] is used to hint
the expected number of pairs added in the [builderAction].
Entries of the map are iterated in the order they
were added by the [builderAction].
@throws IllegalArgumentException if the given [capacity] is negative.
@sample samples.collections.Builders.Maps.buildMapSample
@SinceKotlin("1.3")
@ExperimentalStdlibApi
@kotlin.internal.InlineOnly
public inline fun <K, V>
buildMap(capacity: Int, @BuilderInference builderAction: MutableMap<K, V>().->Unit): Map<K, V> {
    contract {
        callsInPlace(builderAction, InvocationKind.EXACTLY_ONCE)
    }
    checkBuilderCapacity(capacity)
    return LinkedHashMap<K, V>(mapCapacity(capacity)).apply(builderAction)
}
Calculate the initial
capacity of a map.
@PublishedApi
internal expect fun mapCapacity(expectedSize: Int): Int
Checks a collection builder function capacity argument.
@SinceKotlin("1.3")
@ExperimentalStdlibApi
@PublishedApi
internal expect fun
checkBuilderCapacity(capacity:
Int)
Returns `true` if this map is not empty.
@kotlin.internal.InlineOnly
public inline fun <K, V>
Map<out K, V>.isEmpty(): Boolean = !isEmpty()
Returns `true` if this nullable map is either null or
empty.
@sample samples.collections.Maps.Usage.mapIsEmpty
@SinceKotlin("1.3")
@kotlin.internal.InlineOnly
public inline fun <K, V> Map<out K,
V>?.isNullOrEmpty(): Boolean {
    contract {
        returns(false) implies (this@isNullOrEmpty != null)
    }
    return this == null || isEmpty()
}
Returns the [Map] if its not `null`, or the empty [Map] otherwise.
@sample samples.collections.Maps.Usage.mapOrEmpty
@kotlin.internal.InlineOnly
public inline fun
<K, V> Map<K, V>?.orEmpty(): Map<K, V> = this ?: emptyMap()
Returns this map if it's not empty
or the result of calling [defaultValue] function if the map is empty.
@sample
samples.collections.Maps.Usage.mapIfEmpty
@SinceKotlin("1.3")
@kotlin.internal.InlineOnly
public
inline fun <M, R> M.ifEmpty(defaultValue: () -> R): R where M : Map<*, *>, M : R =
    if (isEmpty())
    defaultValue() else this
Checks if the map contains the given key.
This method allows to use the
`x in map` syntax for checking whether an object is contained in the map.
@kotlin.internal.InlineOnly
public
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\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/\*\*\n \* Allows to use the index operator for storing values in a mutable map.\n \*/\n\n@kotlin.internal.InlineOnly\npublic inline operator fun <K, V> MutableMap<K, V>.set(key: K, value: V): Unit {\n put(key, value)\n}\n\n\n/\*\*\n \* Returns `true` if the map contains the specified [key].\n \*/\n\n \* Allows to overcome type-safety restriction of `containsKey` that requires to pass a key of type `K`.\n \*/\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/\*\*\n \* Returns `true` if the map maps one or more keys to the specified [value].\n \*/\n\n \* Allows to overcome type-safety restriction of `containsValue` that requires to pass a value of type `V`.\n \*/\n\n @sample samples.collections.Maps.Usage.containsValue\n\n\n \*\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\n/\*\*\n \* Removes the specified key and its corresponding value from this map.\n \*/\n\n \* @return the previous value associated with the key, or `null` if the key was not present in the map.\n \*/\n\n \* Allows to overcome type-safety restriction of `remove` that requires to pass a key of type `K`.\n \*/\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\n/\*\*\n \* Returns the key component of the map entry.\n \*/\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\n@kotlin.internal.InlineOnly\npublic inline operator fun <K, V> Map.Entry<K, V>.component1(): K = key\n\n\n\n/\*\*\n \* Returns the value component of the map entry.\n \*/\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\n@kotlin.internal.InlineOnly\npublic inline operator fun <K, V> Map.Entry<K, V>.component2(): V = value\n\n\n\n/\*\*\n \* Converts entry to [Pair] with key being first component and value being second.\n \*/\n\n@kotlin.internal.InlineOnly\npublic inline fun <K, V> Map.Entry<K, V>.toPair(): Pair<K, V> = Pair(key, value)\n\n\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\n @sample samples.collections.Maps.Usage.getOrNull\n\n\n@kotlin.internal.InlineOnly\npublic inline fun <K, V> Map<K, V>.getOrNull(key: K, default: () -> V): V = get(key) ?: default\n\n\n\ninternal inline fun <K, V> Map<K, V>.getOrNullNullable(key: K, default: () -> V): V {\n val value = get(key)\n if (value == null && !containsKey(key)) {\n return default\n } else {\n @Suppress("UNCHECKED\_CAST")\n return value as V\n }\n}\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\n \* If the map was created by [withDefault], resorts to its `default` provider function instead of throwing an exception.\n \*/\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\n@SinceKotlin("1.1")\npublic fun <K, V> Map<K, V>.getValue(key: K): V = getOrNull(key)\n\n\n\n/\*\*\n \* Returns the value for the given key. If the key is not found in the map, calls the [defaultValue] function, puts its result into the map under the given key and returns it.\n \*/\n\n \* Note that the operation is not guaranteed to be atomic if the map is being modified concurrently.\n \*/\n\n @sample samples.collections.Maps.Usage.getOrPut\n\n\npublic inline fun <K, V> MutableMap<K, V>.getOrPut(key: K, default: () -> V): V {\n val value = get(key)\n return if (value == null) {\n val answer = default\n put(key, answer)\n answer\n } else {\n value\n }\n}\n\n\n\n/\*\*\n \* Returns an [Iterator] over the entries in the [Map].\n \*/\n\n @sample samples.collections.Maps.Usage.forOverEntries\n\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 */\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\n * by applying the [transform] function to each entry
in this [Map] and the values of this map.\n *\n * In case if any two entries are mapped to the equal keys, the value of
the latter one will overwrite\n * the value associated with the former one.\n */\npublic 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
{\n    return entries.associateByTo(destination, transform, { it.value })\n}\n\n/**\n * Puts all the given [pairs] into
this [MutableMap] with the first component in the pair being the key and the second the value.\n */\npublic fun <K,
V> MutableMap<in K, in V>.putAll(pairs: Array<out Pair<K, V>>): Unit {\n    for ((key, value) in pairs) {\n
put(key, value)\n    }\n}\n\n/**\n * 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.\n */\npublic fun
<K, V> MutableMap<in K, in V>.putAll(pairs: Iterable<Pair<K, V>>): Unit {\n    for ((key, value) in pairs) {\n
put(key, value)\n    }\n}\n\n/**\n * 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.\n */\npublic fun <K, V> MutableMap<in K, in
V>.putAll(pairs: Sequence<Pair<K, V>>): Unit {\n    for ((key, value) in pairs) {\n        put(key, value)\n
    }\n}\n\n/**\n * Returns a new map with entries having the keys of this map and the values obtained by applying the
[transform]\n * function to each entry in this [Map].\n *\n * The returned map preserves the entry iteration order of
the original map.\n *\n * @sample samples.collections.Maps.Transformations.mapValues\n */\npublic inline fun
<K, V, R> Map<out K, V>.mapValues(transform: (Map.Entry<K, V>) -> R): Map<K,
R> {\n    return mapValuesTo(LinkedHashMap<K, R>(mapCapacity(size)), transform) //
.optimizeReadOnlyMap()\n}\n\n/**\n * Returns a new Map with entries having the keys obtained by applying the
[transform] function to each entry in this\n * [Map] and the values of this map.\n *\n * In case if any two entries are
mapped to the equal keys, the value of the latter one will overwrite\n * the value associated with the former one.\n
*\n * The returned map preserves the entry iteration order of the original map.\n *\n * @sample
samples.collections.Maps.Transformations.mapKeys\n */\npublic inline fun <K, V, R> Map<out K,
V>.mapKeys(transform: (Map.Entry<K, V>) -> R): Map<R, V> {\n    return mapKeysTo(LinkedHashMap<R,
V>(mapCapacity(size)), transform) // .optimizeReadOnlyMap()\n}\n\n/**\n * Returns a map containing all key-
value pairs with keys matching the given [predicate].\n *\n * The returned map preserves the entry iteration order of
the original map.\n *\n * @sample samples.collections.Maps.Filtering.filterKeys\n
*/\npublic inline fun <K, V> Map<out K, V>.filterKeys(predicate: (K) -> Boolean): Map<K, V> {\n    val result =
LinkedHashMap<K, V>()\n    for (entry in this) {\n        if (predicate(entry.key)) {\n            result.put(entry.key,
entry.value)\n        }\n    }\n    return result\n}\n\n/**\n * Returns a map containing all key-value pairs with values
matching the given [predicate].\n *\n * The returned map preserves the entry iteration order of the original map.\n
*\n * @sample samples.collections.Maps.Filtering.filterValues\n */\npublic inline fun <K, V> Map<out K,
V>.filterValues(predicate: (V) -> Boolean): Map<K, V> {\n    val result = LinkedHashMap<K, V>()\n    for (entry
in this) {\n        if (predicate(entry.value)) {\n            result.put(entry.key, entry.value)\n        }\n    }\n
return result\n}\n\n/**\n * Appends all entries matching the given [predicate] into the mutable map given as [destination]
parameter.\n *\n * @return the destination map.\n
*\n * @sample samples.collections.Maps.Filtering.filterTo\n */\npublic inline fun <K, V, M : MutableMap<in K, in
V>> Map<out K, V>.filterTo(destination: M, predicate: (Map.Entry<K, V>) -> Boolean): M {\n    for (element in
this) {\n        if (predicate(element)) {\n            destination.put(element.key, element.value)\n        }\n    }\n
return destination\n}\n\n/**\n * Returns a new map containing all key-value pairs matching the given [predicate].\n
*\n */

```



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)}
}
Append 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
public inline fun <K, V> Map<out K, V>.filterNot(predicate:
(Map.Entry<K, V>) -> Boolean): Map<K, V> {
    return filterNotTo(LinkedHashMap<K, V>(),
predicate)}
Returns a new map containing all key-value pairs from the given collection of pairs.
The returned map preserves the entry iteration order of the original collection.
If any of two pairs would have the
same key the last one gets added to the map.
public fun <K, V> Iterable<Pair<K, V>>.toMap(): Map<K, V>
{
    if (this is Collection) {
        return when (size) {
            0 -> emptyMap()
            1 -> mapOf(if (this is
List) this[0] else iterator().next())
            else -> toMap(LinkedHashMap<K, V>(mapCapacity(size)))
        }
    }
    return toMap(LinkedHashMap<K, V>()).optimizeReadOnlyMap()
}
Populates and returns the
[destination] mutable map with key-value pairs from the given collection of pairs.
public fun <K, V, M :
MutableMap<in K, in V>> Iterable<Pair<K, V>>.toMap(destination: M): M =
destination.apply {
    putAll(this@toMap)
}
Returns a new map containing all key-value pairs from the given array of pairs.
The returned map preserves the entry iteration order of the original array.
If any of two pairs would have
the same key the last one gets added to the map.
public fun <K, V> Array<out Pair<K, V>>.toMap(): Map<K,
V> = when (size) {
    0 -> emptyMap()
    1 -> mapOf(this[0])
    else -> toMap(LinkedHashMap<K,
V>(mapCapacity(size)))
}
Populates and returns the [destination] mutable map with key-value pairs
from the given array of pairs.
public fun <K, V, M : MutableMap<in K, in V>> Array<out Pair<K,
V>>.toMap(destination: M): M =
destination.apply {
    putAll(this@toMap)
}
Returns a new map
containing all key-value pairs from the given sequence of pairs.
The returned map preserves the entry
iteration order of the original sequence.
If any of two pairs would have the same key the last one gets added to
the map.
public fun <K, V> Sequence<Pair<K, V>>.toMap(): Map<K, V> = toMap(LinkedHashMap<K,
V>()).optimizeReadOnlyMap()
Populates and returns the [destination] mutable map with key-value pairs
from the given sequence of pairs.
public fun <K, V, M : MutableMap<in K, in V>> Sequence<Pair<K,
V>>.toMap(destination: M): M =
destination.apply {
    putAll(this@toMap)
}
Returns a new read-only
map containing all key-value
pairs from the original map.
The returned map preserves the entry iteration order of the original map.
@SinceKotlin("1.1")
public fun <K, V> Map<out K, V>.toMap(): Map<K, V> = when (size) {
    0 ->
emptyMap()
    1 -> toSingletonMap()
    else -> toMutableMap()
}
Returns a new mutable map
containing all key-value pairs from the original map.
The returned map preserves the entry iteration order of
the original map.
@SinceKotlin("1.1")
public fun <K, V> Map<out K, V>.toMutableMap():
MutableMap<K, V> = LinkedHashMap(this)
Populates and returns the [destination] mutable map with
key-value pairs from the given map.
@SinceKotlin("1.1")
public fun <K, V, M : MutableMap<in K, in V>>
Map<out K, V>.toMap(destination: M): M =
destination.apply {
    putAll(this@toMap)
}
Creates a new
read-only map by replacing or adding an entry to this map from a given key-value [pair].
The returned map
preserves the entry
iteration order of the original map.
The [pair] is iterated in the end if it has a unique key.
public operator
fun <K, V> Map<out K, V>.plus(pair: Pair<K, V>): Map<K, V> =
if (this.isEmpty()) mapOf(pair) else
LinkedHashMap(this).apply {
    put(pair.first, pair.second)
}
Creates a new read-only map by replacing or
adding entries to this map from a given collection of key-value [pairs].
The returned map preserves the entry

```

iteration order of the original map.  
 \* Those [pairs] with unique keys are iterated in the end in the order of [pairs] collection.  
 \*  
 public operator fun <K, V> Map<out K, V>.plus(pairs: Iterable<Pair<K, V>>): Map<K, V> =  
 if (this.isEmpty()) pairs.toMap() else LinkedHashMap(this).apply { putAll(pairs) }  
 \* Creates a new read-only map by replacing or adding entries to this map from a given array of key-value [pairs].  
 \* The returned map preserves the entry iteration order of the original map.  
 \* Those [pairs] with unique keys are iterated in the end in the order of [pairs] array.  
 \*  
 public operator fun <K, V> Map<out K, V>.plus(pairs: Array<out Pair<K, V>>): Map<K, V> =  
 if (this.isEmpty()) pairs.toMap() else  
 LinkedHashMap(this).apply { putAll(pairs) }  
 \* Creates a new read-only map by replacing or adding entries to this map from a given sequence of key-value [pairs].  
 \* The returned map preserves the entry iteration order of the original map.  
 \* Those [pairs] with unique keys are iterated in the end in the order of [pairs] sequence.  
 \*  
 public operator fun <K, V> Map<out K, V>.plus(pairs: Sequence<Pair<K, V>>): Map<K, V> =  
 LinkedHashMap(this).apply { putAll(pairs) }.optimizeReadOnlyMap()  
 \* Creates a new read-only map by replacing or adding entries to this map from another [map].  
 \* The returned map preserves the entry iteration order of the original map.  
 \* Those entries of another [map] that are missing in this map are iterated in the end in the order  
 of that [map].  
 \*  
 public operator fun <K, V> Map<out K, V>.plus(map: Map<out K, V>): Map<K, V> =  
 LinkedHashMap(this).apply { putAll(map) }  
 \* Appends or replaces the given [pair] in this mutable map.  
 \*  
 @kotlin.internal.InlineOnly  
 public inline operator fun <K, V> MutableMap<in K, in V>.plusAssign(pair: Pair<K, V>) {  
 put(pair.first, pair.second)  
 }  
 \* Appends or replaces all pairs from the given collection of [pairs] in this mutable map.  
 \*  
 @kotlin.internal.InlineOnly  
 public inline operator fun <K, V> MutableMap<in K, in V>.plusAssign(pairs: Iterable<Pair<K, V>>) {  
 putAll(pairs)  
 }  
 \* Appends or replaces all pairs from the given array of [pairs] in this mutable map.  
 \*  
 @kotlin.internal.InlineOnly  
 public inline operator fun <K, V> MutableMap<in K, in V>.plusAssign(pairs: Array<out Pair<K, V>>) {  
 putAll(pairs)  
 }  
 \* Appends or replaces all pairs from the given sequence of [pairs] in this mutable map.  
 \*  
 @kotlin.internal.InlineOnly  
 public inline operator fun <K, V> MutableMap<in K, in V>.plusAssign(pairs: Sequence<Pair<K, V>>) {  
 putAll(pairs)  
 }  
 \* Appends or replaces all entries from the given [map] in this mutable map.  
 \*  
 @kotlin.internal.InlineOnly  
 public inline operator fun <K, V> MutableMap<in K, in V>.plusAssign(map: Map<K, V>) {  
 putAll(map)  
 }  
 \* Returns a map containing all entries of the original map except the entry with the given [key].  
 \* The returned map preserves the entry iteration order of the original map.  
 \*  
 @SinceKotlin("1.1")  
 public operator fun <K, V> Map<out K, V>.minus(key: K): Map<K, V> =  
 this.toMutableMap().apply { minusAssign(key) }.optimizeReadOnlyMap()  
 \* Returns a map containing all entries of the original map except those entries  
 \* the keys of which are contained in the given [keys] collection.  
 \*  
 \* The returned map preserves the entry iteration order of the original map.  
 \*  
 @SinceKotlin("1.1")  
 public operator fun <K, V> Map<out K, V>.minus(keys: Iterable<K>): Map<K, V> =  
 this.toMutableMap().apply { minusAssign(keys) }.optimizeReadOnlyMap()  
 \* Returns a map containing all entries of the original map except those entries  
 \* the keys of which are contained in the given [keys] array.  
 \*  
 \* The returned map preserves the entry iteration order of the original map.  
 \*  
 @SinceKotlin("1.1")  
 public operator fun <K, V> Map<out K, V>.minus(keys: Array<out K>): Map<K, V> =  
 this.toMutableMap().apply { minusAssign(keys) }.optimizeReadOnlyMap()  
 \* Returns a map containing all entries of the original map except those entries  
 \* the keys of which are contained in the given [keys] sequence.  
 \*  
 \* The returned map preserves the entry iteration order of the original map.  
 \*  
 @SinceKotlin("1.1")  
 public operator fun <K, V> Map<out K, V>.minus(keys: Sequence<K>): Map<K, V> =  
 this.toMutableMap().apply { minusAssign(keys) }.optimizeReadOnlyMap()  
 \* Removes the entry with the given [key] from this mutable map.  
 \*  
 @SinceKotlin("1.1")  
 @kotlin.internal.InlineOnly  
 public inline operator fun <K, V> MutableMap<K, V>.minusAssign(key: K) {  
 remove(key)  
 }  
 \* Removes all entries the keys of which are contained in the given [keys] collection from this mutable map.

```

*\n@SinceKotlin("1.1")\n@kotlin.internal.InlineOnly\npublic inline operator fun <K, V> MutableMap<K,
V>.minusAssign(keys: Iterable<K>) {\n  this.keys.removeAll(keys)\n}\n\n/**\n * Removes all entries the keys of
which are contained in the given [keys] array from this mutable map.\n
*\n@SinceKotlin("1.1")\n@kotlin.internal.InlineOnly\npublic inline operator fun <K, V> MutableMap<K,
V>.minusAssign(keys: Array<out K>) {\n  this.keys.removeAll(keys)\n}\n\n/**\n * Removes all entries from the
keys of which are contained in the given [keys] sequence from this mutable map.\n
*\n@SinceKotlin("1.1")\n@kotlin.internal.InlineOnly\npublic inline operator fun <K,
V> MutableMap<K, V>.minusAssign(keys: Sequence<K>) {\n  this.keys.removeAll(keys)\n}\n\n// do not
expose for now @PublishedApi\ninternal fun <K, V> Map<K, V>.optimizeReadOnlyMap() = when (size) {\n  0 -
> emptyMap()\n  1 -> toSingletonMapOrSelf()\n  else -> 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\n@file:kotlin.jvm.JvmMultifileClass\n@file:kotlin.jvm.JvmName("SetsKt")\n@file:UseExperimental(kotlin.e
xperimental.ExperimentalTypeInference::class)\n\npackage kotlin.collections\n\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@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. *\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

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unspecified behavior.\n *\n * Elements of the set are iterated in the order they were added by the [builderAction].\n
*\n * @sample samples.collections.Builders.Sets.buildSetSample\n
*\n @SinceKotlin("1.3")\n @ExperimentalStdlibApi\n @kotlin.internal.InlineOnly\n public inline fun <E>\n buildSet(@BuilderInference builderAction: MutableSet<E>(). -> Unit): Set<E> {\n    contract {\n    callsInPlace(builderAction, InvocationKind.EXACTLY_ONCE) }\n    return\n    LinkedHashSet<E>().apply(builderAction)\n }\n\n/**\n * Builds a new read-only [Set] by populating a [MutableSet]\n using the given [builderAction]\n * and returning a read-only set with the same elements.\n *\n * The set passed as a\n receiver to the [builderAction] is valid only inside that function.\n *\n Using it outside of the function produces an\n unspecified behavior.\n *\n [capacity] is used to hint the expected number of elements added in the\n [builderAction].\n *\n Elements of the set are iterated in the order they were added by the [builderAction].\n
*\n * @throws IllegalArgumentException if the given [capacity] is negative.\n *\n * @sample\n samples.collections.Builders.Sets.buildSetSample\n
*\n @SinceKotlin("1.3")\n @ExperimentalStdlibApi\n @kotlin.internal.InlineOnly\n public inline fun <E>\n buildSet(capacity: Int, @BuilderInference builderAction: MutableSet<E>(). -> Unit): Set<E> {\n    contract {\n    callsInPlace(builderAction, InvocationKind.EXACTLY_ONCE) }\n    checkBuilderCapacity(capacity)\n    return\n    LinkedHashSet<E>(mapCapacity(capacity)).apply(builderAction)\n }\n\n/**\n Returns this Set if it's not `null` and\n the empty set otherwise. *\n @kotlin.internal.InlineOnly\n public inline fun <T> Set<T>?.orEmpty(): Set<T> = this\n ?: emptySet()\n\ninternal fun <T> Set<T>.optimizeReadOnlySet() = when (size) {\n    0 -> emptySet()\n    1 ->\n    setOf(iterator().next())\n    else -> this\n }\n\n"/*\n * Copyright 2010-2018 JetBrains s.r.o. and Kotlin Programming\n Language contributors.\n * Use of this source code is governed by the Apache\n 2.0 license that can be found in the license/LICENSE.txt file.\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]\n number and returns the result\n * or `null` if the string is not a valid representation of a number.\n
*\n @SinceKotlin("1.1")\n public fun String.toByteArrayOrNull(): Byte? = toByteOrNull(radix = 10)\n\n/**\n * Parses\n the string as a signed [Byte] number and returns the result\n * or `null` if the string is not a valid representation of a\n number.\n *\n @throws IllegalArgumentException when [radix] is not a valid radix for string to number\n conversion.\n
*\n @SinceKotlin("1.1")\n public fun String.toByteArrayOrNull(radix: Int): Byte? {\n    val int =\n    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]\n number and returns the result\n * or `null` if the string is not a valid representation of a number.\n
*\n @SinceKotlin("1.1")\n public fun String.toShortOrNull(): Short? = toShortOrNull(radix = 10)\n\n/**\n * Parses the\n string as a [Short] number and returns the result\n * or `null` if the string is not a valid representation of a\n number.\n *\n @throws IllegalArgumentException when [radix] is not a valid radix for string to number\n conversion.\n
*\n @SinceKotlin("1.1")\n public fun String.toShortOrNull(radix: Int): Short? {\n    val int =\n    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\n is not a valid representation of a number.\n
*\n @SinceKotlin("1.1")\n public fun String.toIntOrNull(): Int? =\n toIntOrNull(radix = 10)\n\n/**\n * Parses the string as an [Int] number and returns the result\n * or\n `null` if the string is not a valid representation of a number.\n *\n @throws IllegalArgumentException when\n [radix] is not a valid radix for string to number conversion.\n
*\n @SinceKotlin("1.1")\n public fun\n String.toIntOrNull(radix: Int): Int? {\n    checkRadix(radix)\n    val length = this.length\n    if (length == 0) return\n    null\n    val start: Int\n    val isNegative: Boolean\n    val limit: Int\n    val firstChar = this[0]\n    if (firstChar <\n '0') {\n        // Possible leading sign\n        if (length == 1) return null // non-digit (possible sign) only, no digits after\n    }\n    start = 1\n    if (firstChar == '-') {\n        isNegative = true\n        limit = Int.MIN_VALUE\n    } else if\n (firstChar == '+') {\n        isNegative = false\n        limit = -Int.MAX_VALUE\n    } else\n        return\n    null\n    } else {\n        start = 0\n        isNegative = false\n        limit = -Int.MAX_VALUE\n    }\n    val\n    limitForMaxRadix = (-Int.MAX_VALUE)

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/ 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\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")\n\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 *\n * @throws IllegalArgumentException when [radix] is
not a valid radix for string to number conversion.\n *\n * @SinceKotlin("1.1")\n\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\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 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\ninternal fun numberFormatException(input: String): Nothing = throw
NumberFormatException("Invalid number format: '$input')\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("UnsignedKt")\n * @file:UseExperimental(ExperimentalUnsignedTypes::class)\n\npac
kage kotlin\n\n@PublishedApi\n\ninternal fun uintCompare(v1: Int, v2: Int): Int = (v1 xor
Int.MIN_VALUE).compareTo(v2 xor Int.MIN_VALUE)\n\n@PublishedApi\n\ninternal fun ulongCompare(v1: Long,
v2: Long): Int = (v1 xor Long.MIN_VALUE).compareTo(v2 xor Long.MIN_VALUE)\n\n@PublishedApi\n\ninternal
fun uintDivide(v1: UInt, v2: UInt): UInt = (v1.toLong() / v2.toLong()).toUInt()\n\n@PublishedApi\n\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\n\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)
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\n\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)

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/ 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()    // 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    // Long.MAX_VALUE + 1 < v <
ULong.MAX_VALUE\n}\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\n\ninternal fun ulongToString(v:
Long, base: Int): String {\n    if (v >= 0) return v.toString(base)\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"/*\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 * Given an [iterator]
function constructs an [Iterable] instance that returns values through the [Iterator]\n * provided by that function.\n *
@sample samples.collections.Iterables.Building.iterable\n */\n\n@kotlin.internal.InlineOnly\npublic inline fun <T>
Iterable(crossinline iterator: () -> Iterator<T>): Iterable<T> = object : Iterable<T> {\n    override fun iterator():
Iterator<T> = iterator()\n}\n\n\n/**\n * A wrapper over another [Iterable] (or any other object that can produce an
[Iterator]) that returns\n * an indexing iterator.\n */\n\ninternal class IndexingIterable<out T>(private val
iteratorFactory: () -> Iterator<T>) : Iterable<IndexedValue<T>> {\n    override fun iterator():
Iterator<IndexedValue<T>> = IndexingIterator(iteratorFactory())\n}\n\n\n\n/**\n * Returns the size of this iterable if
it is known, or `null` otherwise.\n */\n\n@PublishedApi\ninternal fun <T> Iterable<T>.collectionSizeOrNull(): Int? =
if (this is Collection<*>) this.size else null\n\n\n/**\n * Returns the size of this iterable
if it is known, or the specified [default] value otherwise.\n */\n\n@PublishedApi\ninternal fun <T>
Iterable<T>.collectionSizeOrDefault(default: Int): Int = if (this is Collection<*>) this.size else default\n\n\n/**
Returns true when it's safe to convert this collection to a set without changing contains method behavior. */\n\nprivate
fun <T> Collection<T>.safeToConvertToSet() = size > 2 && this is ArrayList\n\n\n/** Converts this collection to a
set, when it's worth so and it doesn't change contains method behavior. */\n\ninternal fun <T>
Iterable<T>.convertToSetForSetOperationWith(source: Iterable<T>): Collection<T> =\n    when (this) {\n        is
Set -> this\n        is Collection -> \n            when {\n                source is Collection && source.size < 2 -> this\n
                else -> if (this.safeToConvertToSet()) toHashSet() else this\n            }\n        else -> toHashSet()\n    }\n\n\n/**
Converts this collection to a set, when it's worth so and it doesn't change contains method
behavior. */\n\ninternal fun <T> Iterable<T>.convertToSetForSetOperation(): Collection<T> =\n    when (this) {\n        is
Set -> this\n        is Collection -> if (this.safeToConvertToSet()) toHashSet() else this\n        else -> toHashSet()\n    }\n\n\n\n/**\n * Returns a single list of all elements from all collections in the given collection.\n *
@sample
samples.collections.Iterables.Operations.flattenIterable\n */\n\npublic fun <T> Iterable<Iterable<T>>.flatten():
List<T> {\n    val result = ArrayList<T>()\n    for (element in this) {\n        result.addAll(element)\n    }\n    return
result\n}\n\n\n\n/**\n * Returns a pair of lists, where\n * *first* list is built from the first values of each pair from this
collection,\n * *second* list is built from the second values of each pair from this collection.\n *
@sample
samples.collections.Iterables.Operations.unzipIterable\n */\n\npublic fun <T, R> Iterable<Pair<T, R>>.unzip():

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Pair<List<T>, List<R>> {\n    val expectedSize = collectionSizeOrDefault(10)\n
    val listT = ArrayList<T>(expectedSize)\n    val listR = ArrayList<R>(expectedSize)\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 * 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\npackage
kotlin.sequences\n\n/**\n * Given an [iterator] function constructs a [Sequence] that returns values through the
[Iterator]\n * provided by that function.\n * The values are evaluated lazily, and the sequence is potentially
infinite.\n * \n * @sample samples.collections.Sequences.Building.sequenceFromIterator\n
*/\n\n@kotlin.internal.InlineOnly\npublic inline fun <T> Sequence(crossinline iterator: () -> Iterator<T>):
Sequence<T> = object : Sequence<T> {\n    override
    fun iterator(): Iterator<T> = iterator()\n}\n\n/**\n * Creates a sequence that returns all elements from this iterator.
The sequence is constrained to be iterated only once.\n * \n * @sample
samples.collections.Sequences.Building.sequenceFromIterator\n */\n\npublic fun <T> Iterator<T>.asSequence():
Sequence<T> = Sequence { this }.constrainOnce()\n\n/**\n * Creates a sequence that returns the specified values.\n * \n * @sample samples.collections.Sequences.Building.sequenceOfValues\n */\n\npublic fun <T> sequenceOf(vararg
elements: T): Sequence<T> = if (elements.isEmpty()) emptySequence() else elements.asSequence()\n\n/**\n *
Returns an empty sequence.\n */\n\npublic fun <T> emptySequence(): Sequence<T> = EmptySequence\n\nprivate
object EmptySequence : Sequence<Nothing>, DropTakeSequence<Nothing> {\n    override fun iterator():
Iterator<Nothing> = EmptyIterator\n    override fun drop(n: Int) = EmptySequence\n    override fun take(n: Int) =
EmptySequence\n}\n\n/**\n * Returns this sequence if
it's not `null` and the empty sequence otherwise.\n * \n * @sample
samples.collections.Sequences.Usage.sequenceOrEmpty\n
*/\n\n@SinceKotlin("1.3")\n@kotlin.internal.InlineOnly\npublic 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\n@SinceKotlin("1.3")\npublic fun
<T> Sequence<T>.ifEmpty(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 */\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\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 */\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 */\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 =

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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                {\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        @SuppressWarnings("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 * 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>\nconstructor(private val sequence: Sequence<T>, private val transformer: (T) -> R) : Sequence<R> {\n    override fun\n        iterator(): Iterator<R> = object : Iterator<R> {\n            val iterator = sequence.iterator()\n            override fun next(): R {\n                return transformer(iterator.next())\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>\nconstructor(private val sequence: Sequence<T>, private val transformer: (Int, T) -> R) : Sequence<R> {\n    override fun iterator(): Iterator<R> = object : Iterator<R> {\n        val iterator = sequence.iterator()\n        var\n            index = 0\n        override fun next(): R {\n            return transformer(checkIndexOverflow(index++),\n                iterator.next())\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>\nconstructor(private val sequence: Sequence<T>) : Sequence<IndexedValue<T>> {\n    override fun iterator(): Iterator<IndexedValue<T>> = object : Iterator<IndexedValue<T>> {\n        val iterator = sequence.iterator()\n        var index = 0\n        override fun next(): IndexedValue<T> {\n            return IndexedValue(checkIndexOverflow(index++), iterator.next())\n        }\n        override fun hasNext(): Boolean {\n            return iterator.hasNext()\n        }\n    }\n}\n\n/**\n * A sequence which takes the values from two parallel underlying sequences, passes them to the given\n * [transform] function and returns the values returned by that function. The sequence stops returning\n * values as soon as one of the underlying sequences stops returning values.\n */\ninternal class MergingSequence<T1, T2, V>\nconstructor(\n    private val sequence1: Sequence<T1>,\n    private val sequence2: Sequence<T2>,\n    private val transform: (T1, T2) -> V\n) : Sequence<V> {\n    override fun iterator(): Iterator<V> = object : Iterator<V> {\n        val iterator1 = sequence1.iterator()\n        val iterator2 = sequence2.iterator()\n        override fun next(): V {\n            return transform(iterator1.next(), iterator2.next())\n        }\n        override fun hasNext(): Boolean {\n            return iterator1.hasNext() && iterator2.hasNext()\n        }\n    }\n}\n\ninternal class FlatteningSequence<T, R, E>\nconstructor(\n    private val sequence: Sequence<T>,\n    private val transformer: (T)\n-> R,\n    private val iterator: (R) -> Iterator<E>\n) : Sequence<E> {\n    override fun iterator(): Iterator<E> = object : Iterator<E> {\n        val iterator = sequence.iterator()\n        var\n            itemIterator: Iterator<E>? = null\n        override fun next(): E {\n            if (!ensureItemIterator())\n                throw\n                NoSuchElementException()\n            return itemIterator!!.next()\n        }\n        override fun hasNext(): Boolean {\n            return ensureItemIterator()\n        }\n        private fun ensureItemIterator(): Boolean {\n            if (itemIterator?.hasNext() == false)\n                itemIterator = null\n            while (itemIterator == null) {\n                if (!iterator.hasNext())\n                    return false\n            } else {\n                val element = iterator.next()\n                val nextItemIterator = iterator(transformer(element))\n                if (nextItemIterator.hasNext())\n                    itemIterator = nextItemIterator\n            }\n            return\n        }\n    }\n}

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true\n      }\n      }\n      }\n      return true\n      }\n      }\n}\n\n/**\n * A sequence that supports drop(n) and take(n) operations\n */\ninternal interface DropTakeSequence<T> : Sequence<T> {\n fun drop(n: Int): Sequence<T>\n fun take(n: Int): Sequence<T>}\n}\n\n/**\n * A sequence that skips [startIndex] values from the underlying [sequence]\n * and stops returning values right before [endIndex], i.e. stops at `endIndex - 1`\n */\ninternal class SubSequence<T>(\n private val sequence: Sequence<T>,\n private val startIndex: Int,\n private val endIndex: Int)\n : Sequence<T>, DropTakeSequence<T> {\n init {\n require(startIndex >= 0) {\n \"startIndex should be non-negative, but is $startIndex\" }\n require(endIndex >= 0) {\n \"endIndex should be non-negative, but is $endIndex\" }\n require(endIndex >= startIndex) {\n \"endIndex should be not less than startIndex, but was $endIndex < $startIndex\" }\n }\n }\n\n private val count: Int get() = endIndex - startIndex\n override fun drop(n: Int): Sequence<T> = if (n >= count) emptySequence() else SubSequence(sequence, startIndex + n, endIndex)\n override fun take(n: Int): Sequence<T> = if (n >= count) this else SubSequence(sequence, startIndex, startIndex + n)\n\n override fun iterator(): object : Iterator<T> {\n val iterator = sequence.iterator()\n var position = 0\n // Shouldn't be called from constructor to avoid premature iteration\n private fun drop() {\n while (position < startIndex && iterator.hasNext()) {\n iterator.next()\n position++\n }\n }\n\n override fun hasNext(): Boolean {\n drop()\n return (position < endIndex) && iterator.hasNext()\n }\n\n override fun next(): T {\n drop()\n if (position >= endIndex)\n throw NoSuchElementException()\n position++\n\n return iterator.next()\n }\n }\n}\n\n/**\n * A sequence that returns at most [count] values from the underlying [sequence], and stops returning values\n * as soon as that count is reached.\n */\ninternal class TakeSequence<T>(\n private val sequence: Sequence<T>,\n private val count: Int)\n : Sequence<T>, DropTakeSequence<T> {\n init {\n require(count >= 0) {\n \"count must be non-negative, but was $count.\" }\n }\n }\n\n override fun drop(n: Int): Sequence<T> = if (n >= count) emptySequence() else SubSequence(sequence, n, count)\n override fun take(n: Int): Sequence<T> = if (n >= count) this else TakeSequence(sequence, n)\n\n override fun iterator(): Iterator<T> = object : Iterator<T> {\n var left = count\n val iterator = sequence.iterator()\n\n override fun next(): T {\n if (left == 0)\n throw NoSuchElementException()\n left--\n return iterator.next()\n }\n\n override fun hasNext(): Boolean {\n return left > 0 && iterator.hasNext()\n }\n }\n}\n\n/**\n * A sequence that returns values from the underlying [sequence] while the [predicate] function returns\n * `true`, and stops returning values once the function returns `false` for the next element.\n */\ninternal class TakeWhileSequence<T>(\n constructor(\n private val sequence: Sequence<T>,\n private val predicate: (T) -> Boolean)\n )\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 if (iterator.hasNext()) {\n val item = iterator.next()\n if (predicate(item)) {\n nextState = 1\n nextItem = item\n return\n }\n\n nextState = 0\n }\n\n override fun next(): T {\n if (nextState == -1)\n calcNext() // will change nextState\n if (nextState == 0)\n throw NoSuchElementException()\n\n @Suppress(\"UNCHECKED_CAST\")\n val result = nextItem as T\n // Clean next to avoid keeping reference on yielded instance\n nextItem = null\n nextState = -1\n return result\n }\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/**\n * A sequence that skips the specified number of values from the underlying [sequence] and returns\n * all values after that.\n */\ninternal class DropSequence<T>(\n private val sequence: Sequence<T>,\n private val count: Int)\n : Sequence<T>, DropTakeSequence<T> {\n init {\n require(count >= 0) {\n \"count must be non-negative, but was $count.\" }\n }\n }\n\n override fun drop(n: Int): 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 SubSequence(sequence, count, n1) }

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}

override fun iterator(): Iterator<T> = object : Iterator<T> {
    val iterator = sequence.iterator()
    var left = count
    // Shouldn't be called from constructor to avoid premature iteration
    private fun drop() {
        while (left > 0 && iterator.hasNext()) {
            iterator.next()
            left--
        }
    }
    override fun next(): T {
        drop()
        return iterator.next()
    }
    override fun hasNext(): Boolean {
        drop()
        return iterator.hasNext()
    }
}

/** A sequence that skips the values from the underlying [sequence] while the given [predicate] returns `true` and returns all values after that.

internal class DropWhileSequence<T> constructor(
    private val sequence: Sequence<T>,
    private val predicate: (T) -> Boolean
) : Sequence<T> {
    override fun iterator(): Iterator<T> = object : Iterator<T> {
        val iterator = sequence.iterator()
        var dropState: Int = -1 // -1 for not dropping, 1 for nextItem, 0 for normal iteration
        var nextItem: T? = null
        private fun drop() {
            while (iterator.hasNext()) {
                val item = iterator.next()
                if (!predicate(item)) {
                    nextItem = item
                    dropState = 1
                    return
                }
                dropState = 0
            }
            override fun next(): T {
                if (dropState == -1) drop()
                if (dropState == 1) {
                    @Suppress("UNCHECKED_CAST")
                    val result = nextItem as T
                    nextItem = null
                    dropState = 0
                    return result
                }
                return iterator.next()
            }
            override fun hasNext(): Boolean {
                if (dropState == -1) drop()
                return dropState == 1 || iterator.hasNext()
            }
        }
    }
}

internal class DistinctSequence<T, K>(private val source: Sequence<T>, private val keySelector: (T) -> K) : Sequence<T> {
    override fun iterator(): Iterator<T> = DistinctIterator(source.iterator(), keySelector)
}

private class DistinctIterator<T, K>(private val source: Iterator<T>, private val keySelector: (T) -> K) : AbstractIterator<T>() {
    private val observed = HashSet<K>()
    override fun computeNext() {
        while (source.hasNext()) {
            val next = source.next()
            val key = keySelector(next)
            if (observed.add(key)) {
                setNext(next)
                return
            }
            done()
        }
    }
}

private class GeneratorSequence<T : Any>(private val getInitialValue: () -> T?, private val getNextValue: (T) -> T?) : Sequence<T> {
    override fun iterator(): Iterator<T> = object : Iterator<T> {
        var nextItem: T? = null
        var nextState: Int = -2 // -2 for initial unknown, -1 for next unknown, 0 for done, 1 for continue
        private fun calcNext() {
            nextItem = if (nextState == -2) getInitialValue() else getNextValue(nextItem!!)
            nextState = if (nextItem == null) 0 else 1
        }
        override fun next(): T {
            if (nextState < 0) calcNext()
            if (nextState == 0) throw NoSuchElementException()
            val result = nextItem as T
            // Do not clean nextItem (to avoid keeping reference on yielded instance) -- need to keep state for getNextValue
            nextState = -1
            return result
        }
        override fun hasNext(): Boolean {
            if (nextState < 0) calcNext()
            return nextState == 1
        }
    }
}

/** Returns a wrapper sequence that provides values of this sequence, but ensures it can be iterated only one time.

 * The operation is _intermediate_ and _stateless_.

 * [IllegalStateException] is thrown on iterating the returned sequence from the second time.

public fun <T> Sequence<T>.constrainOnce(): Sequence<T> {
    // as? does not work in js
    // return this as? ConstrainedOnceSequence<T>?
    ConstrainedOnceSequence(this)
    return if (this is ConstrainedOnceSequence<T>) this else ConstrainedOnceSequence(this)
}

/** Returns a sequence which invokes the function to calculate the next value on each iteration until the function returns `null`.

 * The returned sequence is constrained to be iterated only once.

 * @see constrainOnce
 * @see kotlin.sequences.sequence
 * @sample samples.collections.Sequences.Building.generateSequence

public fun <T : Any> generateSequence(
    nextFunction: () -> T?
): Sequence<T> {
    return GeneratorSequence(nextFunction, { nextFunction() }).constrainOnce()
}

/** Returns a sequence defined by the starting value [seed] and the function [nextFunction], which is invoked to calculate the next value based on the previous one on each iteration.

 * The sequence produces values until it encounters first `null` value.

 * If [seed] is `null`, an empty sequence is produced.

 * The sequence can be iterated multiple times, each time starting with [seed].

```

```

@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 * 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 * 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("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) {\n
"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) {\n "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 {\n contract {\n     returns() implies value\n } \n if
(!value) {\n     val message = lazyMessage()\n     throw IllegalStateException(message.toString())\n } \n}\n\n/**\n * Throws an [IllegalStateException] if the [value] is null. Otherwise\n * returns the not null value.\n * \n * @sample
samples.misc.Preconditions.failCheckWithLazyMessage\n *\n@kotlin.internal.InlineOnly\npublic
inline fun <T : Any> checkNotNull(value: T?): T {\n contract {\n     returns() implies (value != null)\n } \n
return checkNotNull(value) { "Required value was null." }\n}\n\n/**\n * Throws an [IllegalStateException] with
the result of calling [lazyMessage] if the [value] is null. Otherwise\n * returns the not null value.\n * \n * @sample
samples.misc.Preconditions.failCheckWithLazyMessage\n *\n@kotlin.internal.InlineOnly\npublic inline fun <T :
Any> checkNotNull(value: T?, lazyMessage: () -> Any): T {\n contract {\n     returns() implies (value !=
null)\n } \n\n if (value == null) {\n     val message = lazyMessage()\n     throw
IllegalStateException(message.toString())\n } else {\n     return value\n } \n}\n\n/**\n * Throws an

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[IllegalStateException] with the given [message].\n * \n * @sample samples.misc.Preconditions.failWithError\n
*\n@\kotlin.internal.InlineOnly\npublic inline fun error(message: Any): Nothing = throw
IllegalStateException(message.toString())\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/\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 primitiveArrayConcat\nimport withType\nimport kotlin.ranges.contains\nimport
kotlin.ranges.reversed\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 * \npublic actual fun <T> Array<out T>.elementAt(index:
Int): T {\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 * \npublic
actual fun ByteArray.elementAt(index: Int): Byte {\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 * \npublic actual fun ShortArray.elementAt(index: Int): Short
{\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 * \npublic
actual fun IntArray.elementAt(index: Int): Int {\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 * \npublic actual fun LongArray.elementAt(index: Int): Long
{\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 * \npublic
actual fun FloatArray.elementAt(index: Int): Float {\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 * \npublic actual fun DoubleArray.elementAt(index: Int):
Double {\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 * \npublic actual fun
BooleanArray.elementAt(index: Int): Boolean {\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 * \npublic actual fun CharArray.elementAt(index: Int): Char
{\n    return elementAtOrElse(index) { throw IndexOutOfBoundsException("\index: $index, size: $size")}
}\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/**\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/**\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/**\n * Returns a [List] that wraps the

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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`\n * 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

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`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")\npublic actual fun
FloatArray.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 DoubleArray.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 BooleanArray.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 CharArray.contentHashCode(): Int {\n

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definedExternally\n}\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")\npublic actual fun <T> Array<out T>.contentToString():
String {\n
    definedExternally\n}\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")\npublic actual fun ByteArray.contentToString(): String {\n
    definedExternally\n}\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")\npublic actual fun ShortArray.contentToString(): String {\n
    definedExternally\n}\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")\npublic actual fun IntArray.contentToString(): String {\n
    definedExternally\n}\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")\npublic actual fun LongArray.contentToString(): String {\n
    definedExternally\n}\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")\npublic actual fun FloatArray.contentToString(): String {\n
    definedExternally\n}\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")\npublic actual fun DoubleArray.contentToString(): String
{\n    definedExternally\n}\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")\npublic actual fun BooleanArray.contentToString(): String
{\n    definedExternally\n}\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")\npublic actual fun CharArray.contentToString(): String {\n
    definedExternally\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 <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 * \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.\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 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 *\n@Suppress("NOTHING_TO_INLINE")\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\n 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\n samples.collections.Arrays.CopyOfOperations.copyOf\n
```

```
*\n@Suppress("NOTHING_TO_INLINE")\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 *\n@Suppress("NOTHING_TO_INLINE")\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 \* \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

```
*\n@Suppress("NOTHING_TO_INLINE")\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 * \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 * \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 * \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 * \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 * \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 * \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 * \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

```

```

*\n@Suppress("ACTUAL_WITHOUT_EXPECT")\npublic actual fun <T> Array<out T>.copyOf(newSize: Int):
Array<T?> {\n  require(newSize >= 0) { "Invalid new array size: $newSize.\n" }\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
* @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@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")\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")\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")\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")\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")\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 \* @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 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 * @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")\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 * @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")\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@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@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@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@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@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@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@Suppress("NOTHING_TO_INLINE")\npublic actual inline operator fun DoubleArray.plus(elements:

```

```

DoubleArray): DoubleArray {
    return primitiveArrayConcat(this, elements)
}

/**
 * Returns an array containing all elements of the original array and then all elements
 * of the given [elements] array.
 */
@Suppress("NOTHING_TO_INLINE")
public actual inline operator fun
BooleanArray.plus(elements: BooleanArray): BooleanArray {
    return primitiveArrayConcat(this,
elements)
}

/**
 * Returns an array containing all elements of the original array and then all elements of the
 * given [elements] array.
 */
@Suppress("NOTHING_TO_INLINE")
public actual inline operator fun
CharArray.plus(elements: CharArray): CharArray {
    return primitiveArrayConcat(this, elements)
}

/**
 * Returns an array containing all elements of the original array and then the given [element].
 */
@Suppress("ACTUAL_WITHOUT_EXPECT", "NOTHING_TO_INLINE")
public actual inline fun <T>
Array<out T>.plusElement(element: T): Array<T> {
    return
this.asDynamic().concat(arrayOf(element))
}

/**
 * Sorts the array in-place.
 */
@sample
samples.collections.Arrays.Sorting.sortArray
@library("primitiveArraySort")
public actual fun
IntArray.sort(): Unit
{
    definedExternally
}

/**
 * Sorts the array in-place.
 */
@sample
samples.collections.Arrays.Sorting.sortArray
@public actual fun LongArray.sort(): Unit {
    if (size > 1) sort {
a: Long, b: Long -> a.compareTo(b)
}
}

/**
 * Sorts the array in-place.
 */
@sample
samples.collections.Arrays.Sorting.sortArray
@library("primitiveArraySort")
public actual fun
ByteArray.sort(): Unit {
    definedExternally
}

/**
 * Sorts the array in-place.
 */
@sample
samples.collections.Arrays.Sorting.sortArray
@library("primitiveArraySort")
public actual fun
ShortArray.sort(): Unit {
    definedExternally
}

/**
 * Sorts the array in-place.
 */
@sample
samples.collections.Arrays.Sorting.sortArray
@library("primitiveArraySort")
public actual fun
DoubleArray.sort(): Unit {
    definedExternally
}

/**
 * Sorts the array in-place.
 */
@sample
samples.collections.Arrays.Sorting.sortArray
@library("primitiveArraySort")
public actual fun
FloatArray.sort(): Unit {
    definedExternally
}

/**
 * Sorts the array in-place according to the natural order
 * of its elements.
 */
@sample
samples.collections.Arrays.Sorting.sortArrayOfComparable
@public actual fun
<T : Comparable<T>> Array<out T>.sort(): Unit {
    if (size > 1) sortArray(this)
}

/**
 * Sorts the array in-
 * place according to the order specified by the given [comparison] function.
 */
@sample
samples.collections.Arrays.Sorting.sortArrayOfComparable
@public actual fun
<T> Array<out
T>.sort(comparison: (a: T, b: T) -> Int): Unit {
    if (size > 1) sortArrayWith(this,
comparison)
}

/**
 * Sorts the array in-place according to the order specified by the given [comparison]
 * function.
 */
@kotlin.internal.InlineOnly
public inline fun ByteArray.sort(noinline comparison: (a: Byte, b:
Byte) -> Int): Unit {
    asDynamic().sort(comparison)
}

/**
 * Sorts the array in-place according to the order
 * specified by the given [comparison] function.
 */
@kotlin.internal.InlineOnly
public inline fun
ShortArray.sort(noinline comparison: (a: Short, b: Short) -> Int): Unit {
    asDynamic().sort(comparison)
}

/**
 * Sorts the array in-place according to the order specified by the given
 * [comparison] function.
 */
@kotlin.internal.InlineOnly
public inline fun IntArray.sort(noinline comparison: (a:
Int, b: Int) -> Int): Unit {
    asDynamic().sort(comparison)
}

/**
 * Sorts the array in-place according to the
 * order specified by the given [comparison] function.
 */
@kotlin.internal.InlineOnly
public inline fun
LongArray.sort(noinline
comparison: (a: Long, b: Long) -> Int): Unit {
    asDynamic().sort(comparison)
}

/**
 * Sorts the array in-
 * place according to the order specified by the given [comparison] function.
 */
@kotlin.internal.InlineOnly
public inline fun FloatArray.sort(noinline comparison: (a: Float, b: Float) -> Int): Unit {
    asDynamic().sort(comparison)
}

/**
 * Sorts the array in-place according to the order specified by the given
 * [comparison] function.
 */
@kotlin.internal.InlineOnly
public inline fun DoubleArray.sort(noinline comparison:
(a: Double, b: Double) -> Int): Unit {
    asDynamic().sort(comparison)
}

/**
 * Sorts the array in-place
 */

```



```

according to the order specified by the given [comparison] function.\n *^@kotlin.internal.InlineOnly\npublic
inline fun CharArray.sort(noinline comparison: (a: Char, b: Char) -> Int): Unit {\n
asDynamic().sort(comparison)\n}\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
*^@public actual fun <T> Array<out T>.sortWith(comparator: Comparator<in T>): Unit {\n if (size > 1)
sortArrayWith(this, comparator)\n}\n\n/**\n * Returns a *typed* object array containing all of the elements of this
primitive array.\n *^@public actual fun ByteArray.toTypedArray(): Array<Byte> {\n return
js("[\]").slice.call(this)\n}\n\n/**\n * Returns a *typed* object array containing all of the elements of this primitive
array.\n *^@public actual fun ShortArray.toTypedArray(): Array<Short> {\n return
js("[\]").slice.call(this)\n}\n\n/**\n * Returns a *typed* object array containing all of the elements of this primitive
array.\n *^@public actual fun IntArray.toTypedArray(): Array<Int> {\n return js("[\]").slice.call(this)\n}\n\n/**\n * Returns a *typed* object array containing all of the elements of this primitive array.\n *^@public actual fun
LongArray.toTypedArray():
Array<Long> {\n return js("[\]").slice.call(this)\n}\n\n/**\n * Returns a *typed* object array containing all of the
elements of this primitive array.\n *^@public actual fun FloatArray.toTypedArray(): Array<Float> {\n return
js("[\]").slice.call(this)\n}\n\n/**\n * Returns a *typed* object array containing all of the elements of this primitive
array.\n *^@public actual fun DoubleArray.toTypedArray(): Array<Double> {\n return
js("[\]").slice.call(this)\n}\n\n/**\n * Returns a *typed* object array containing all of the elements of this primitive
array.\n *^@public actual fun BooleanArray.toTypedArray(): Array<Boolean> {\n return
js("[\]").slice.call(this)\n}\n\n/**\n * Returns a *typed* object array containing all of the elements of this primitive
array.\n *^@public actual fun CharArray.toTypedArray(): Array<Char> {\n return Array(size) { index ->
this[index] }\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
*^@file:kotlin.jvm.JvmName("ComparisonsKt")\n@file:kotlin.jvm.JvmMultifileClass\n\npackage
kotlin.comparisons\n\n/**\n * Compares two values using the specified functions [selectors] to calculate the result
of the comparison.\n * The functions are called sequentially, receive the given values [a] and [b] and return
[Comparable]\n * objects. As soon as the [Comparable] instances returned by a function for [a] and [b] values do
not\n * compare as equal, the result of that comparison is returned.\n * \n * @sample
samples.comparisons.Comparisons.compareValuesByWithSelectors\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\nprivate 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/**\n * Compares two values using the specified [selector] function
to calculate the result of the comparison.\n * The function is applied to the given values [a] and [b] and return
[Comparable] objects.\n * The result of comparison of these [Comparable] instances is returned.\n * \n * @sample
samples.comparisons.Comparisons.compareValuesByWithSingleSelector\n *^@kotlin.internal.InlineOnly\npublic
inline fun <T> compareValuesBy(a: T, b: T, selector: (T) -> Comparable<*>?): Int {\n return
compareValues(selector(a), selector(b))\n}\n\n/**\n * Compares two values using the specified [selector] function to
calculate the result of the comparison.\n * The function is applied to the given values [a] and [b] and return objects
of type K which are then being\n * compared with the given [comparator].\n * \n * @sample
samples.comparisons.Comparisons.compareValuesByWithComparator\n *^@kotlin.internal.InlineOnly\npublic
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\n/// compareValuesWith(v1, v2, compareBy { it.prop1 } thenByDescending { it.prop2 })\n///**\n *
Compares two values using the specified [comparator].\n *^@n//@Suppress("NOTHING_TO_INLINE")\n//public

```

```

inline fun <T> compareValuesWith(a: T, b: T, comparator: Comparator<T>): Int = comparator.compare(a,
b)\n/\n\n/**\n * Compares two nullable [Comparable] values. Null is considered less than any value.\n *\n * @sample samples.comparisons.Comparisons.compareValues\n */\npublic 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/**\n * Creates a comparator using the sequence of
functions to calculate a result of comparison.\n * The functions are called sequentially, receive the given values `a`
and `b` and return [Comparable]\n * objects. As soon as the [Comparable] instances returned by a function for `a`
and `b` values do not\n * compare as equal, the result of that comparison is returned from the [Comparator].\n *\n * @sample samples.comparisons.Comparisons.compareByWithSelectors\n */\npublic 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/**\n * Creates a comparator using the function to transform value
to a [Comparable] instance for comparison.\n *\n * @sample
samples.comparisons.Comparisons.compareByWithSingleSelector\n */\n@kotlin.internal.InlineOnly\npublic inline
fun <T> compareBy(crossinline selector:
(T) -> Comparable<*>?): Comparator<T> =\n    Comparator { a, b -> compareValuesBy(a, b, selector) }\n}\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/**\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/**\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/**\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/**\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/**\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 * 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/**\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 *\n@kotlin.internal.InlineOnly\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    }\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.thenDescending\n *\n@kotlin.internal.InlineOnly\npublic infix fun <T>
Comparator<T>.thenDescending(comparator: Comparator<in T>): Comparator<T> =\n    Comparator<T> { a, b -
->\n        val previousCompare = this@thenDescending.compare(a, b)\n        if (previousCompare != 0)
previousCompare else comparator.compare(b, a)\n    }\n\n\n// Not so useful without type inference for receiver of
expression\n\n/**\n * Extends the given [comparator] of non-nullable values to a comparator of nullable values\n *
considering `null` value less than any other value.\n *\n * @sample
samples.comparisons.Comparisons.nullsFirstLastWithComparator\n *\n@kotlin.internal.InlineOnly\npublic fun <T : Any>
nullsFirst(comparator: Comparator<in T>): Comparator<T?> =\n    Comparator { a, b ->\n        when {\n            a
=== b -> 0\n            a == null -> -1\n            b == null -> 1\n            else -> comparator.compare(a, b)\n        }\n    }\n\n\n/**\n *
Provides a comparator of nullable [Comparable] values\n * considering `null` value less than any other value.\n *\n *
@sample samples.comparisons.Comparisons.nullsFirstLastComparator\n *\n@kotlin.internal.InlineOnly\npublic
inline fun <T : Comparable<T>> nullsFirst(): Comparator<T?> = nullsFirst(naturalOrder())\n\n\n/**\n * Extends the
given [comparator] of non-nullable values to a comparator of nullable values\n * considering `null` value greater
than any other value.\n *\n * @sample samples.comparisons.Comparisons.nullsFirstLastWithComparator\n
*\n@kotlin.internal.InlineOnly\npublic fun <T : Any> nullsLast(comparator: Comparator<in T>): Comparator<T?> =\n    Comparator { a, b ->\n
        when {\n            a === b -> 0\n            a == null -> 1\n            b == null -> -1\n            else ->
comparator.compare(a, b)\n        }\n    }\n\n\n/**\n * Provides a comparator of nullable [Comparable] values\n *
considering `null` value greater than any other value.\n *\n * @sample
samples.comparisons.Comparisons.nullsFirstLastComparator\n
*\n@kotlin.internal.InlineOnly\npublic inline fun <T : Comparable<T>> nullsLast(): Comparator<T?> =
nullsLast(naturalOrder())\n\n\n/**\n * Returns a comparator that compares [Comparable] objects in natural order.\n
*\n * @sample samples.comparisons.Comparisons.naturalOrderComparator\n *\n@kotlin.internal.InlineOnly\npublic
fun <T : Comparable<T>> naturalOrder(): Comparator<T> = @Suppress("UNCHECKED_CAST") (NaturalOrderComparator as
Comparator<T>)\n\n\n/**\n * Returns a comparator that compares [Comparable] objects in reversed natural order.\n
*\n * @sample samples.comparisons.Comparisons.nullsFirstLastWithComparator\n *\n@kotlin.internal.InlineOnly\npublic
fun <T : Comparable<T>> reverseOrder(): Comparator<T> = @Suppress("UNCHECKED_CAST") (ReverseOrderComparator as
Comparator<T>)\n\n\n/**\n * Returns a comparator that imposes the reverse ordering
of this comparator.\n *\n * @sample samples.comparisons.Comparisons.reversed\n *\n@kotlin.internal.InlineOnly\npublic
fun <T>

```

```

Comparator<T>.reversed(): Comparator<T> = when (this) {
    is ReversedComparator
    -> this.comparator
    NaturalOrderComparator -> @Suppress("UNCHECKED_CAST")
    (ReverseOrderComparator as Comparator<T>)\n ReverseOrderComparator ->
    @Suppress("UNCHECKED_CAST") (NaturalOrderComparator as Comparator<T>)\n else ->
    ReversedComparator(this)\n}\n\nprivate class ReversedComparator<T>(public val comparator: Comparator<T>) :
    Comparator<T> {\n    override fun compare(a: T, b: T): Int = comparator.compare(b, a)\n
    @Suppress("VIRTUAL_MEMBER_HIDDEN")\n    fun reversed(): Comparator<T> = comparator\n}\n\nprivate
    object NaturalOrderComparator : Comparator<Comparable<Any>> {\n    override fun compare(a:
    Comparable<Any>, b: Comparable<Any>): Int = a.compareTo(b)\n
    @Suppress("VIRTUAL_MEMBER_HIDDEN")\n    fun reversed(): Comparator<Comparable<Any>> =
    ReverseOrderComparator\n}\n\nprivate object ReverseOrderComparator : Comparator<Comparable<Any>> {\n
    override fun compare(a: Comparable<Any>, b: Comparable<Any>): Int = b.compareTo(a)\n
    @Suppress("VIRTUAL_MEMBER_HIDDEN")\n
    fun reversed(): Comparator<Comparable<Any>> = NaturalOrderComparator\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\n\npublic actual
    interface Comparator<T> {\n    @JsName("compare")\n    actual fun compare(a: T, b: T): Int\n}\n\npublic actual
    inline fun <T> Comparator(crossinline comparison: (a: T, b: T) -> Int): Comparator<T> = object : Comparator<T>
    {\n    override fun compare(a: T, b: T): Int = comparison(a, b)\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("StandardKt")\npackage kotlin\n\nimport
    kotlin.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 */\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 */\n * For detailed usage information see the documentation for
    [scope functions](https://kotlinlang.org/docs/reference/scope-functions.html#run).\n
    */\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
    */\n * For detailed usage information see the documentation for [scope
    functions](https://kotlinlang.org/docs/reference/scope-functions.html#run).\n
    */\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 */\n * For detailed usage
    information see the documentation for [scope functions](https://kotlinlang.org/docs/reference/scope-functions.html#with).\n
    */\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 */\n * For detailed usage information see the documentation for [scope
    functions](https://kotlinlang.org/docs/reference/scope-functions.html#apply).\n
    */\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.

\* For detailed usage information see the documentation for [scope functions](https://kotlinlang.org/docs/reference/scope-functions.html#also).

```

*\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.

\* For detailed usage information see the documentation for [scope functions](https://kotlinlang.org/docs/reference/scope-functions.html#let).

```

*\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@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@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].

```

\* A zero-based index of current iteration is passed as a parameter to [action].

\* @sample samples.misc.ControlFlow.repeat

```

*\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/\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.js.*\n\n**\n *
Returns the greater of two values.

```

\* If values are equal, returns the first one.

```

*\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@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@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@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@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@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@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@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@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\n@Suppress("DEPRECATION_ERROR")\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")\n@kotlin.internal.InlineOnly\n@Suppress("DEPRECATION_ERROR")\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
*\n@SinceKotlin("1.1")\n@kotlin.internal.InlineOnly\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")\n@kotlin.internal.InlineOnly\n@Suppress("DEPRECATION_ERROR")\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\n@Suppress("DEPRECATION_ERROR")\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
```

```
\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 elementAtOrElse(index) { throw
```

```
IndexOutOfBoundsException("Collection doesn't contain element at index $index.") }\n}\n\n/**\n * Returns an
```

```
element at the given [index] or throws an [IndexOutOfBoundsException] if the [index] is out of bounds of this list.\n
```

```
\n *\n * @sample samples.collections.Collections.Elements.elementAt\n *\n@kotlin.internal.InlineOnly\npublic
```

```
inline fun <T> List<T>.elementAt(index: Int): T {\n    return get(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 collection.\n
```

```
\n *\n * @sample samples.collections.Collections.Elements.elementAtOrElse\n *\npublic fun <T>
```

```
Iterable<T>.elementAtOrElse(index: Int, defaultValue: (Int) -> T): T {\n    if (this is List)\n        return
```

```
this.getOrElse(index, defaultValue)\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 the result of calling the [defaultValue] function if the [index] is out of bounds of this list.\n
```

```
\n *\n * @sample samples.collections.Collections.Elements.elementAtOrElse\n *\n@kotlin.internal.InlineOnly\npublic
```

```
inline fun <T> List<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
```

```
`null` if the [index] is out of bounds of this collection.\n
```

```
\n *\n * @sample
```

```
samples.collections.Collections.Elements.elementAtOrNull\n *\npublic fun <T>
```

```
Iterable<T>.elementAtOrNull(index: Int): T? {\n    if (this is List)\n        return this.getOrNull(index)\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 an element at the given
```

```

[index] or `null` if the [index] is out of bounds of this list.\n * \n * @sample
samples.collections.Collections.Elements.elementAtOrNull\n * \n @kotlin.internal.InlineOnly\n public inline fun
<T> List<T>.elementAtOrNull(index: Int): T? {\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 @kotlin.internal.InlineOnly\n public inline fun <T> Iterable<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 @kotlin.internal.InlineOnly\n public inline fun <T> Iterable<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 * \n @kotlin.internal.InlineOnly\n public inline fun <T> List<T>.findLast(predicate: (T) ->
Boolean): T? {\n     return lastOrNull(predicate)\n }\n \n /**\n * Returns first element.\n * @throws
[NoSuchElementException] if the collection is empty.\n * \n public fun <T> Iterable<T>.first(): T {\n     when (this)
{\n         is List -> return this.first()\n         else -> {\n             val iterator = iterator()\n             if (!iterator.hasNext())\n                 throw NoSuchElementException("Collection is empty.")\n             return iterator.next()\n         }\n     }\n }\n \n /**\n * Returns first element.\n * @throws [NoSuchElementException] if the list is empty.\n * \n public fun
<T> List<T>.first(): T {\n     if (isEmpty())\n         throw NoSuchElementException("List 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 * \n public inline fun <T>
Iterable<T>.first(predicate: (T) -> Boolean): T {\n     for (element in this) if (predicate(element)) return element\n
     throw NoSuchElementException("Collection contains no element matching the predicate.")\n }\n \n /**\n * Returns
the first element, or `null` if the collection is empty.\n * \n public fun <T> Iterable<T>.firstOrNull(): T? {\n     when
(this) {\n         is List -> {\n             if (isEmpty())\n                 return null\n             else\n                 return this[0]\n         }\n         else -> {\n             val iterator = iterator()\n             if (!iterator.hasNext())\n                 return null\n             return iterator.next()\n         }\n     }\n }\n \n /**\n * Returns the first element, or `null` if the list is empty.\n * \n public
fun <T> List<T>.firstOrNull(): T? {\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 * \n public inline fun <T>
Iterable<T>.firstOrNull(predicate: (T) -> Boolean): T? {\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 list.\n * \n @kotlin.internal.InlineOnly\n public inline
fun <T> List<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 `null` if the
[index] is out of bounds of this list.\n * \n public fun <T> List<T>.getOrNull(index: Int): T? {\n     return if (index >=
0 && index <= lastIndex) get(index) else null\n }\n \n /**\n * Returns first index of [element], or -1 if the collection
does not contain element.\n * \n public fun <@kotlin.internal.OnlyInputTypes T> Iterable<T>.indexOf(element:
T): Int {\n     if (this is List) return this.indexOf(element)\n     var index = 0\n     for (item in this) {\n
         checkIndexOverflow(index)\n         if (element == item)\n             return index\n             index++\n     }\n     return -
1\n }\n \n /**\n * Returns first index of [element], or -1 if the list does not contain element.\n
*\n @Suppress("EXTENSION_SHADOWED_BY_MEMBER") // false warning, extension takes precedence in
some cases\n public fun <@kotlin.internal.OnlyInputTypes T> List<T>.indexOf(element: T): Int {\n     return
indexOf(element)\n }\n \n /**\n * Returns index of the first element matching the given [predicate], or -1 if the
collection does not contain such element.\n * \n public inline fun <T> Iterable<T>.indexOfFirst(predicate: (T) ->
Boolean): Int {\n     var index = 0\n     for (item in this) {\n         checkIndexOverflow(index)\n         if
(predicate(item))\n             return index\n             index++\n     }\n     return -1\n }\n \n /**\n * Returns index of the first
element matching the given [predicate], or -1 if the list does not contain such element.\n * \n public inline fun <T>
List<T>.indexOfFirst(predicate: (T) -> Boolean): Int {\n     var index = 0\n     for (item in this) {\n         if
(predicate(item))\n             return index\n             index++\n     }\n     return -1\n }\n \n /**\n * Returns index of the last
element matching the given [predicate], or -1 if the collection does not contain such element.\n * \n public inline fun
<T> Iterable<T>.indexOfLast(predicate: (T) -> Boolean): Int {\n     var lastIndex = -1\n     var index = 0\n     for (item

```



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in this) {\n    checkIndexOverflow(index)\n    if (predicate(item))\n        lastIndex = index\n        index++\n}\n return lastIndex\n}\n\n/**\n * Returns index of the last element matching the given [predicate], or -1 if the list\n does not contain such element.\n */\npublic inline fun <T> List<T>.indexOfLast(predicate: (T) -> Boolean): Int {\n\n    val iterator = this.listIterator(size)\n\n    while (iterator.hasPrevious()) {\n        if (predicate(iterator.previous())) {\n            return iterator.nextIndex()\n        }\n    }\n    return -1\n}\n\n/**\n * Returns the last element.\n * @throws [NoSuchElementException] if the\n collection is empty.\n */\npublic fun <T> Iterable<T>.last(): T {\n    when (this) {\n        is List -> return this.last()\n        else -> {\n            val iterator = iterator()\n            if (!iterator.hasNext())\n                throw\n                NoSuchElementException("Collection is empty.")\n            var last = iterator.next()\n            while\n                (iterator.hasNext())\n                last = iterator.next()\n            return last\n        }\n    }\n}\n\n/**\n * Returns the last\n element.\n * @throws [NoSuchElementException] if the list is empty.\n */\npublic fun <T> List<T>.last(): T {\n    if (isEmpty())\n        throw NoSuchElementException("List is empty.")\n    return this[lastIndex]\n}\n\n/**\n * Returns the last element matching the given\n [predicate].\n * @throws [NoSuchElementException] if no such element is found.\n */\npublic inline fun <T>\n Iterable<T>.last(predicate: (T) -> Boolean): T {\n    var last: T? = null\n    var found = false\n    for (element in this) {\n        if (predicate(element)) {\n            last = element\n            found = true\n        }\n    }\n    if (!found) throw\n        NoSuchElementException("Collection contains no element matching the predicate.")\n    @Suppress("UNCHECKED_CAST")\n    return last as T\n}\n\n/**\n * Returns the last element matching the\n given [predicate].\n * @throws [NoSuchElementException] if no such element is found.\n */\npublic inline fun <T>\n List<T>.last(predicate: (T) -> Boolean): T {\n    val iterator = this.listIterator(size)\n    while (iterator.hasPrevious()) {\n        val element = iterator.previous()\n        if (predicate(element)) return element\n    }\n    throw\n        NoSuchElementException("List contains no element matching the predicate.")\n}\n\n/**\n * Returns\n last index of [element], or -1 if the collection does not contain element.\n */\npublic fun\n <@kotlin.internal.OnlyInputTypes T> Iterable<T>.lastIndexOf(element: T): Int {\n    if (this is List) return\n        this.lastIndexOf(element)\n    var lastIndex = -1\n    var index = 0\n    for (item in this) {\n        checkIndexOverflow(index)\n        if (element == item)\n            lastIndex = index\n            index++\n    }\n    return\n        lastIndex\n}\n\n/**\n * Returns last index of [element], or -1 if the list does not contain element.\n */\n@Suppress("EXTENSION_SHADOWED_BY_MEMBER") // false warning, extension takes precedence in\n some cases\npublic fun <@kotlin.internal.OnlyInputTypes T> List<T>.lastIndexOf(element: T): Int {\n    return\n        lastIndexOf(element)\n}\n\n/**\n * Returns the last element, or `null` if the collection is empty.\n */\npublic fun\n <T> Iterable<T>.lastOrNull(): T? {\n    when (this) {\n        is List -> return if (isEmpty()) null else this[size - 1]\n        else -> {\n            val iterator = iterator()\n            if (!iterator.hasNext())\n                return null\n            var last =\n                iterator.next()\n            while (iterator.hasNext())\n                last = iterator.next()\n            return last\n        }\n    }\n}\n\n/**\n * Returns the last element, or `null` if the list is empty.\n */\npublic fun <T> List<T>.lastOrNull(): T?\n {\n    return if (isEmpty()) null else this[size - 1]\n}\n\n/**\n * Returns the last element matching the given\n [predicate], or `null` if no such element was found.\n */\npublic inline fun <T> Iterable<T>.lastOrNull(predicate:\n (T) -> Boolean): T? {\n    var last: T? = null\n    for (element in this) {\n        if (predicate(element)) {\n            last =\n                element\n        }\n    }\n    return last\n}\n\n/**\n * Returns the last element matching the given [predicate], or `null`\n if no such element was found.\n */\npublic inline fun <T> List<T>.lastOrNull(predicate: (T) -> Boolean): T? {\n    val iterator = this.listIterator(size)\n\n    while (iterator.hasPrevious()) {\n        val element = iterator.previous()\n        if (predicate(element)) return\n            element\n    }\n    return null\n}\n\n/**\n * Returns a random element from this collection.\n * @throws\n NoSuchElementException if this collection is empty.\n */\n@SinceKotlin("1.3")\n@kotlin.internal.InlineOnly\npublic inline fun <T> Collection<T>.random(): T {\n    return\n        random(Random)\n}\n\n/**\n * Returns a random element from this collection using the specified source of\n randomness.\n * @throws\n NoSuchElementException if this collection is empty.\n */\n@SinceKotlin("1.3")\npublic fun <T> Collection<T>.random(random: Random): T {\n    if (isEmpty())\n
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throw NoSuchElementException("Collection is empty.")\n    return elementAt(random.nextInt(size))\n}\n\n/**\n * Returns a random element from this collection, or `null` if this collection is empty.\n *\n */\n@SinceKotlin("1.3")\n@ExperimentalStdlibApi\n@kotlin.internal.InlineOnly\npublic\ninline fun <T> Collection<T>.randomOrNull(): T? {\n    return randomOrNull(Random)\n}\n\n/**\n * Returns a random element from this collection using the specified source of randomness, or `null` if this collection is empty.\n *\n */\n@SinceKotlin("1.3")\n@ExperimentalStdlibApi\npublic fun <T> Collection<T>.randomOrNull(random: Random): T? {\n    if (isEmpty())\n        return null\n    return elementAt(random.nextInt(size))\n}\n\n/**\n * Returns the single element, or throws an exception if the collection is empty or has more than one element.\n *\n */\npublic fun <T> Iterable<T>.single(): T {\n    when (this) {\n        is List -> return this.single()\n        else -> {\n            val iterator = iterator()\n            if (iterator.hasNext())\n                throw NoSuchElementException("Collection is empty.")\n            val single = iterator.next()\n            if (iterator.hasNext())\n                throw\n                IllegalArgumentException("Collection has more than one element.")\n            return single\n        }\n    }\n}\n\n/**\n * Returns the single element, or throws an exception if the list is empty or has more than one element.\n *\n */\npublic fun <T> List<T>.single(): T {\n    return when (size) {\n        0 -> throw NoSuchElementException("List is empty.")\n        1 -> this[0]\n        else -> throw\n            IllegalArgumentException("List has more than one element.")\n    }\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 */\npublic inline fun <T> Iterable<T>.single(predicate: (T) -> Boolean): T {\n    var single: T? = null\n    var found = false\n    for (element in this) {\n        if (predicate(element)) {\n            if (found) throw\n                IllegalArgumentException("Collection contains more than one matching element.")\n            single = element\n            found = true\n        }\n    }\n    if (!found) throw NoSuchElementException("Collection contains no element matching the predicate.")\n    @Suppress("UNCHECKED_CAST")\n    return single as T\n}\n\n/**\n * Returns single element, or `null` if the collection is empty or has more than one element.\n *\n */\npublic fun <T> Iterable<T>.singleOrNull(): T? {\n    when (this) {\n        is List -> return if (size == 1) this[0] else null\n        else -> {\n            val iterator = iterator()\n            if (!iterator.hasNext())\n                return null\n            val single = iterator.next()\n            if (iterator.hasNext())\n                return null\n            return single\n        }\n    }\n}\n\n/**\n * Returns single element, or `null` if the list is empty or has more than one element.\n *\n */\npublic fun <T> List<T>.singleOrNull(): T? {\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 *\n */\npublic inline fun <T> Iterable<T>.singleOrNull(predicate: (T) -> Boolean): T? {\n    var single: T? = 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\n * samples.collections.Collections.Transformations.drop\n *\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            return list\n        }\n    }\n    else {\n        list = ArrayList<T>()\n        var count = 0\n        for (item in this) {\n            if (count >= n) list.add(item)\n            else ++count\n        }\n        return list.optimizeReadOnlyList()\n    }\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\n * samples.collections.Collections.Transformations.drop\n *\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\n * samples.collections.Collections.Transformations.drop\n */

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*^/npublic inline fun <T> List<T>.dropLastWhile(predicate: (T) -> Boolean): List<T> {
    if (!isEmpty()) {
        val iterator = listIterator(size)
        while (iterator.hasPrevious()) {
            if (!predicate(iterator.previous())) {
                return take(iterator.nextIndex() + 1)
            }
        }
        return emptyList()
    }
}
*n * Returns a list containing all elements except first elements that satisfy the given [predicate].
*n * @sample samples.collections.Collections.Transformations.drop
*^/npublic inline fun <T> Iterable<T>.dropWhile(predicate: (T) -> Boolean): List<T> {
    var yielding = false
    val list = ArrayList<T>()
    for (item in this) {
        if (yielding) {
            list.add(item)
        } else if (!predicate(item)) {
            list.add(item)
            yielding = true
        }
    }
    return list
}
*n * Returns a list containing only elements matching the given [predicate].
*^/npublic inline fun <T> Iterable<T>.filter(predicate: (T) -> Boolean): List<T> {
    return filterTo(ArrayList<T>(), predicate)
}
*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.
*^/npublic inline fun <T> Iterable<T>.filterIndexed(predicate: (index: Int, T) -> Boolean): List<T> {
    return filterIndexedTo(ArrayList<T>(), predicate)
}
*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.
*^/npublic inline fun <T, C : MutableCollection<in T>> Iterable<T>.filterIndexedTo(destination: C, predicate: (index: Int, T) -> Boolean): C {
    forEachIndexed { index, element ->
        if (predicate(index, element)) destination.add(element)
    }
    return destination
}
*n * Returns a list containing all elements that are instances of specified type parameter R.
*^/npublic inline fun <reified R> Iterable<*>.filterIsInstance(): List<@kotlin.internal.NoInfer R> {
    return filterIsInstanceTo(ArrayList<R>())
}
*n * Appends all elements that are instances of specified type parameter R to the given [destination].
*^/npublic inline fun <reified R, C : MutableCollection<in R>> Iterable<*>.filterIsInstanceTo(destination: C): C {
    for (element in this) {
        if (element is R) destination.add(element)
    }
    return destination
}
*n * Returns a list containing all elements not matching the given [predicate].
*^/npublic inline fun <T> Iterable<T>.filterNot(predicate: (T) -> Boolean): List<T> {
    return filterNotTo(ArrayList<T>(), predicate)
}
*n * Returns a list containing all elements that are not `null`.
*^/npublic fun <T : Any> Iterable<T?>.filterNotNull(): List<T> {
    return filterNotNullTo(ArrayList<T>())
}
*n * Appends all elements that are not `null` to the given [destination].
*^/npublic fun <C : MutableCollection<in T>, T : Any> Iterable<T?>.filterNotNullTo(destination: C): C {
    for (element in this) {
        if (element != null) destination.add(element)
    }
    return destination
}
*n * Appends all elements not matching the given [predicate] to the given [destination].
*^/npublic inline fun <T, C : MutableCollection<in T>> Iterable<T>.filterNotTo(destination: C, predicate: (T) -> Boolean): C {
    for (element in this) {
        if (!predicate(element)) destination.add(element)
    }
    return destination
}
*n * Appends all elements matching the given [predicate] to the given [destination].
*^/npublic inline fun <T, C : MutableCollection<in T>> Iterable<T>.filterTo(destination: C, predicate: (T) -> Boolean): C {
    for (element in this) {
        if (predicate(element)) destination.add(element)
    }
    return destination
}
*n * Returns a list containing elements at indices in the specified [indices] range.
*^/npublic fun <T> List<T>.slice(indices: IntRange): List<T> {
    if (indices.isEmpty()) return listOf()
    return this.subList(indices.start, indices.endInclusive + 1).toList()
}
*n * Returns a list containing elements at specified [indices].
*^/npublic fun <T> List<T>.slice(indices: Iterable<Int>): List<T> {
    val size = indices.collectionSizeOrDefault(10)
    if (size == 0) return emptyList()
    val list = ArrayList<T>(size)
    for (index in indices) {
        list.add(get(index))
    }
    return list
}
*n * Returns a list containing first [n] elements.
*n * @throws IllegalArgumentException if [n] is negative.
*n * @sample samples.collections.Collections.Transformations.take
*^/npublic fun <T> Iterable<T>.take(n: Int): List<T> {
    require(n >= 0) { "Requested element count $n is less than zero." }
    if (n == 0) return emptyList()
    if (this is Collection<T>) {
        if (n >= size) return toList()
        if (n == 1) return listOf(first())
    }
    var count = 0
    val list = ArrayList<T>(n)
    for (item in this) {
        list.add(item)
        if (++count == n) break
    }
    return list.optimizeReadOnlyList()
}
*n * Returns a list containing last [n] elements.

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@throws IllegalArgumentException if [n] is negative.\n * \n * @sample
samples.collections.Collections.Transformations.take\n * \n\npublic 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 *
\n * @sample samples.collections.Collections.Transformations.take\n * \n\npublic 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 return toList()\n}\n\n/**\n * Returns a list containing first elements
satisfying the given [predicate].\n * \n * \n * @sample samples.collections.Collections.Transformations.take\n * \n\npublic
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 * \n\npublic
expect fun <T> MutableList<T>.reverse(): Unit\n\n/**\n * Returns a list with elements in reversed order.\n
\n * \n\npublic 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 * \n\npublic inline fun <T, R :
Comparable<R>> MutableList<T>.sortBy(crossinline selector: (T) -> R?): Unit {\n if (size > 1)
sortWith(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 * \n\npublic inline fun
<T, R : Comparable<R>> MutableList<T>.sortByDescending(crossinline selector: (T) -> R?): Unit {\n if (size >
1) sortWith(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 * \n\npublic fun <T : Comparable<T>> MutableList<T>.sortDescending(): Unit {\n
sortWith(reverseOrder())\n}\n\n/**\n * Returns a list of all elements sorted according to their natural sort order.\n
\n * \n * The sort is _stable_. It means that equal elements preserve their order relative to each other after sorting.\n
\n * \n\npublic 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 (toTypedArray<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 * \n\npublic inline fun <T, R : Comparable<R>>
Iterable<T>.sortedBy(crossinline selector: (T) -> R?): List<T> {\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.\n * \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 * \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  }\n  @Suppress("UNCHECKED_CAST")\n  return (toArray<Any?>() as Array<T>).apply {\n    sortWith(comparator) }.asList()\n  }\n  return toMutableList().apply\n  {\n    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 * 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]\n * 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\n * of the original collection.\n *\n * @sample
samples.collections.Collections.Transformations.associateByWithValueTransform\n *\npublic inline fun <T, K, V>
Iterable<T>.associateBy(keySelector: (T) -> K, valueTransform: (T) -> V): Map<K, V> {\n  val capacity =
mapCapacity(collectionSizeOrDefault(10)).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 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.

```

public fun <T> Iterable<T>.toSet(): Set<T> {
    if (this is Collection) {
        return when (size) {
            0 -> emptySet()
            1 -> setOf(if (this is List) this[0] else iterator().next())
            else -> toCollection(LinkedHashSet<T>(mapCapacity(size)))
        }
    }
}

```



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 [IndexedValue] 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 \* The elements in the resulting list are in the same order as they were in the source collection.\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 \* The elements in the resulting list are in the same order as they were in the source collection.\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 \* The returned set preserves the element iteration order of the original collection.\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): 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 \* 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



returned set preserves the element iteration order of the original collection.

```

public fun <T>
Iterable<T>.toMutableSet(): MutableSet<T> {
    return when (this) {
        is Collection<T> ->
        LinkedHashSet(this)
        else -> toCollection(LinkedHashSet<T>())
    }
}

```

`* Returns a set containing all distinct elements from both collections.`

`* The returned set preserves the element iteration order of the original collection.`

`* Those elements of the [other] collection that are unique are iterated in the end`

`* in the order of the [other] collection.`

`* To get a set containing all elements that are contained in both collections use [intersect].`

```

public infix fun <T> Iterable<T>.union(other:
Iterable<T>): Set<T> {
    val set = this.toMutableSet()
    set.addAll(other)
    return set
}

```

`* Returns `true` if all elements match the given [predicate].`

`* @sample samples.collections.Collections.Aggregates.all`

```

public inline fun <T> Iterable<T>.all(predicate: (T) -> Boolean): Boolean {
    if (this is Collection && isEmpty()) return true
    for (element in this) if (!predicate(element)) return false
    return true
}

```

`* Returns `true` if collection has at least one element.`

`* @sample samples.collections.Collections.Aggregates.any`

```

public fun <T> Iterable<T>.any(): Boolean {
    if (this is Collection) return !isEmpty()
    return iterator().hasNext()
}

```

`* Returns `true` if at least one element matches the given [predicate].`

`* @sample samples.collections.Collections.Aggregates.anyWithPredicate`

```

public inline fun <T> Iterable<T>.any(predicate: (T) -> Boolean): Boolean {
    if (this is Collection && isEmpty()) return false
    for (element in this) if (predicate(element)) return true
    return false
}

```

`* Returns the number of elements in this collection.`

```

public fun <T> Iterable<T>.count(): Int {
    if (this is Collection) return size
    var count = 0
    for (element in this) checkCountOverflow(++count)
    return count
}

```

`* Returns the number of elements in this collection.`

```

@kotlin.internal.InlineOnly
public inline fun <T> Collection<T>.count(): Int {
    return size
}

```

`* Returns the number of elements matching the given [predicate].`

```

public inline fun <T> Iterable<T>.count(predicate: (T) -> Boolean): Int {
    if (this is Collection && isEmpty()) return 0
    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.`

```

public inline fun <T, R> Iterable<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 collection.`

`* @param [operation] function that takes the index of an element, current accumulator value`

`* and the element itself, and calculates the next accumulator value.`

```

public inline fun <T, R> Iterable<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
}

```

`* Accumulates value starting with [initial] value and applying [operation] from right to left to each element and current accumulator value.`

```

public inline fun <T, R> List<T>.foldRight(initial: R, operation: (T, acc: R) -> R): R {
    var accumulator = initial
    if (!isEmpty()) {
        val iterator = listIterator(size)
        while (iterator.hasPrevious()) {
            accumulator = operation(iterator.previous(), accumulator)
        }
    }
    return accumulator
}

```

`* Accumulates value starting with [initial] value 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.`

```

public inline fun <T, R> List<T>.foldRightIndexed(initial: R, operation: (index: Int, T, acc: R) -> R): R {
    var accumulator = initial
    if (!isEmpty()) {
        val iterator = listIterator(size)
        while (iterator.hasPrevious()) {
            val index = iterator.previousIndex()
            accumulator = operation(index, iterator.previous(), accumulator)
        }
    }
    return accumulator
}

```

`* Performs the given [action] on each element.`

```

@kotlin.internal.HidesMembers
public inline fun <T> Iterable<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.

```

public inline fun <T> Iterable<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`.

```

@SinceKotlin("1.1")
public fun Iterable<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`.

```

@SinceKotlin("1.1")
public fun Iterable<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.

```

public fun <T : Comparable<T>>
Iterable<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.

```

@sample samples.collections.Collections.Aggregates.maxBy
public inline fun <T, R
: Comparable<R>> Iterable<T>.maxBy(selector: (T) -> R): T? {
    val iterator = iterator()
    if
(!iterator.hasNext()) return null
    var maxElem = iterator.next()
    if (!iterator.hasNext()) return maxElem
    var
maxValue = selector(maxElem)
    do {
        val e = iterator.next()
        val v = selector(e)
        if (maxValue < v) {
            maxElem = e
            maxValue = v
        }
    } while
(iterator.hasNext())
    return maxElem
}

```

\* Returns the first element having the largest value according to the provided [comparator] or `null` if there are no elements.

```

public fun <T> Iterable<T>.maxWith(comparator:
Comparator<in T>): T? {
    val iterator = iterator()
    if (!iterator.hasNext()) return null
    var max =
iterator.next()
    while (iterator.hasNext()) {
        val e = iterator.next()
        if (comparator.compare(max, e) <
0) max = e
    }
    return max
}

```

\* Returns the smallest element or `null` if there are no elements.

\* If any of elements is `NaN` returns `NaN`.

```

@SinceKotlin("1.1")
public fun Iterable<Double>.min():
Double? {
    val iterator = iterator()
    if (!iterator.hasNext()) return null
    var min = iterator.next()
    if
(min.isNaN()) return min
    while (iterator.hasNext()) {
        val e = iterator.next()
        if (e.isNaN()) return e
        if (min > e) min = e
    }
    return
min
}

```

\* Returns the smallest element or `null` if there are no elements.

\* If any of elements is `NaN` returns `NaN`.

```

@SinceKotlin("1.1")
public fun Iterable<Float>.min(): Float? {
    val
iterator = iterator()
    if (!iterator.hasNext()) return null
    var min = iterator.next()
    if (min.isNaN()) return min
    while (iterator.hasNext()) {
        val e = iterator.next()
        if (e.isNaN()) return e
        if (min > e) min = e
    }
    return
min
}

```

\* Returns the smallest element or `null` if there are no elements.

```

public fun <T : Comparable<T>> Iterable<T>.min(): T? {
    val iterator = iterator()
    if (!iterator.hasNext()) return null
    var
min = iterator.next()
    while (iterator.hasNext()) {
        val e = iterator.next()
        if (min > e) min = e
    }
    return
min
}

```

\* Returns the first element yielding the smallest value of the given function or `null` if there are no elements.

```

@sample samples.collections.Collections.Aggregates.minBy
public inline fun <T, R : Comparable<R>>
Iterable<T>.minBy(selector: (T) -> R): T? {
    val iterator = iterator()
    if (!iterator.hasNext()) return null
    var
minElem = iterator.next()
    if (!iterator.hasNext()) return minElem
    var min
Value = selector(minElem)
    do {
        val e = iterator.next()
        val v = selector(e)
        if (minValue > v) {
            minElem = e
            min
Value = v
        }
    } while (iterator.hasNext())
    return minElem
}

```

\* Returns the first element having the smallest value according to the provided [comparator] or `null` if there are no elements.

```

public fun <T> Iterable<T>.minWith(comparator: Comparator<in T>): T? {
    val iterator = iterator()
    if
(!iterator.hasNext()) return null
    var min = iterator.next()
    while (iterator.hasNext()) {
        val e = iterator.next()
        if (comparator.compare(min, e) > 0) min = e
    }
    return
min
}

```

\* Returns `true` if the collection has no elements.

```

@sample

```

```

samples.collections.Collections.Aggregates.none\n *\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 *\npublic
inline fun <T> Iterable<T>.none(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 * Performs the
given [action] on each element and returns the collection itself afterwards.\n *\n@SinceKotlin("1.1")\npublic
inline fun <T, C : Iterable<T>> C.onEach(action: (T) -> Unit): C {\n  return apply { for (element
in this) action(element) }\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 <S, T : S> Iterable<T>.reduce(operation:
(acc: S, T) -> S): S {\n  val iterator = this.iterator()\n  if (!iterator.hasNext()) throw
UnsupportedOperationException("Empty collection can't be reduced.")\n  var accumulator: S = iterator.next()\n
while (iterator.hasNext()) {\n    accumulator = operation(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\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 * \n * @sample samples.collections.Collections.Aggregates.reduce\n *\npublic inline fun <S,
T : S> Iterable<T>.reduceIndexed(operation: (index: Int, acc: S, T) -> S): S {\n  val iterator = this.iterator()\n
if (!iterator.hasNext()) throw UnsupportedOperationException("Empty collection 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 collection is empty.\n * \n * @sample
samples.collections.Collections.Aggregates.reduceOrNull\n
*\n@SinceKotlin("1.3")\n@ExperimentalStdlibApi\npublic inline fun <S, T : S>
Iterable<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 * 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 *\npublic inline fun <S, T : S>
List<T>.reduceRight(operation: (T, acc: S) -> S): S {\n  val iterator = listIterator(size)\n  if
(!iterator.hasPrevious())\n    throw UnsupportedOperationException("Empty list can't be reduced.")\n  var
accumulator: S = iterator.previous()\n  while (iterator.hasPrevious()) {\n    accumulator =
operation(iterator.previous(), 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 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 * \n * @sample
samples.collections.Collections.Aggregates.reduceRight\n *\npublic inline fun <S, T : S>
List<T>.reduceRightIndexed(operation: (index: Int, T, acc: S) -> S): S {\n  val iterator = listIterator(size)\n
if (!iterator.hasPrevious())\n    throw UnsupportedOperationException("Empty list can't be reduced.")\n  var
accumulator: S = iterator.previous()\n  while (iterator.hasPrevious()) {\n    val index = iterator.previousIndex()\n
accumulator = operation(index, iterator.previous(), 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 list is empty.\n * \n * @sample
samples.collections.Collections.Aggregates.reduceRightOrNull\n
*\n@SinceKotlin("1.3")\n@ExperimentalStdlibApi\npublic inline fun <S, T : S>
List<T>.reduceRightOrNull(operation: (T, acc: S) -> S): S? {\n  val iterator = listIterator(size)\n  if

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(!iterator.hasPrevious())\n    return null\n    var accumulator: S = iterator.previous()\n    while
(iterator.hasPrevious()) {\n    accumulator = operation(iterator.previous(), 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> 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    }\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 collection
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\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/**\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 collection.\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
*/\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/**\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 collection and current accumulator
value that starts with the first element of this collection.\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>
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    }\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 collection.\n */\npublic inline fun <T> Iterable<T>.sumBy(selector: (T) -> Int): Int {\n    var sum: Int

```

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= 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 collection.\n */\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/**\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> 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\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> List<T?>.requireNonNulls(): List<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 List<T>\n}\n\n/**\n * Splits this collection into
a list of lists each not exceeding the given [size].\n * \n * The last list in the resulting 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 collection.\n * \n * @sample
samples.collections.Collections.Transformations.chunked\n */\n@SinceKotlin("1.2")\npublic fun <T>
Iterable<T>.chunked(size:
Int): List<List<T>> {\n    return windowed(size, size, partialWindows = true)\n}\n\n/**\n * Splits this collection
into several lists 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 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 collection.\n * \n * @sample samples.text.Strings.chunkedTransform\n */\n@SinceKotlin("1.2")\npublic fun <T, R> Iterable<T>.chunked(size: Int, transform: (List<T>) -> R): List<R>
{\n    return windowed(size, size, partialWindows = true, transform = transform)\n}\n\n/**\n * Returns a list containing all elements of the original collection without the first occurrence of the given
[element].\n */\npublic operator fun <T> Iterable<T>.minus(element: T): List<T> {\n    val result =
ArrayList<T>(collectionSizeOrDefault(10))\n    var removed = false\n    return this.filterTo(result) { if (!removed
&& it == element) { removed = true; false } else true }\n}\n\n/**\n * Returns a list containing all elements of the
original collection except the elements contained in the given [elements] array.\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>
Iterable<T>.minus(elements: Array<out T>): List<T> {\n    if (elements.isEmpty()) return this.toList()\n    val other
= elements.toHashSet()\n    return this.filterNot { it in other }\n}\n\n/**\n * Returns a list containing all elements of the original collection except the elements contained in the given
[elements] collection.\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> Iterable<T>.minus(elements: Iterable<T>): List<T>
{\n    val other = elements.convertToSetForSetOperationWith(this)\n    if (other.isEmpty())\n        return
this.toList()\n    return this.filterNot { it in other }\n}\n\n/**\n * Returns a list containing all elements of the original
collection except the elements contained in the given [elements] sequence.\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> Iterable<T>.minus(elements: Sequence<T>): List<T> {\n    val other =
elements.toHashSet()\n    if (other.isEmpty())\n        return this.toList()\n    return this.filterNot { it in other
}\n}\n\n/**\n * Returns a list containing all elements of the original collection without the first occurrence of the
given [element].\n */\n@kotlin.internal.InlineOnly\npublic inline fun <T> Iterable<T>.minusElement(element: T):

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windowSize = size.coerceAtMost(thisSize - index)\n      if (windowSize < size && !partialWindows) break\n      result.add(List(windowSize) { this[it + index] })\n      index += step\n    }\n    return result\n  }\n  val
result = ArrayList<List<T>>()\n
  windowedIterator(iterator(), size, step, partialWindows, reuseBuffer = false).forEach {\n    result.add(it)\n  }\n
return result\n}\n\n/**\n * Returns a list of results of applying the given [transform] function to\n * an each list
representing a view over the window of the given [size]\n * sliding along this collection with the given [step].\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 * Several last lists may
have less elements than the given [size].\n * \n * Both [size] and [step] must be positive and can be greater than the
number of elements in this collection.\n * @param size the number of elements to take in each window\n * @param
step the number of elements to move the window forward by on an each step, by default 1\n * @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")\npublic 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 @SinceKotlin("1.2")\npublic 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 @SinceKotlin("1.2")\npublic
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 @SinceKotlin("1.2")\npublic 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 @SinceKotlin("1.2")\npublic
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")\npublic
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

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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")\npublic
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
*\npublic fun <T, A : Appendable> Iterable<T>.joinTo(buffer: A, separator: CharSequence = "\n", prefix:
CharSequence = "", postfix: CharSequence = "", 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 * \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>
Iterable<T>.joinToString(separator: CharSequence = "\n", prefix: CharSequence = "", postfix: CharSequence =
"\n", 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/**\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

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Iterable<Double>.average(): Double {
    var sum: Double = 0.0
    var count: Int = 0
    for (element in this) {
        sum += element
        checkCountOverflow(++count)
    }
    return if (count == 0) Double.NaN else sum / count
}

Returns the sum of all elements in the collection.
@kotlin.jvm.JvmName("sumOfByte")
public fun
Iterable<Byte>.sum(): Int {
    var sum: Int = 0
    for (element in this) {
        sum += element
    }
    return sum
}

Returns the sum of all elements in the collection.
@kotlin.jvm.JvmName("sumOfShort")
public fun Iterable<Short>.sum(): Int {
    var sum: Int = 0
    for (element in this) {
        sum += element
    }
    return sum
}

Returns the sum of all elements in the
collection.
@kotlin.jvm.JvmName("sumOfInt")
public fun Iterable<Int>.sum(): Int {
    var sum: Int = 0
    for (element in this) {
        sum += element
    }
    return sum
}

Returns the sum of all elements in
the collection.
@kotlin.jvm.JvmName("sumOfLong")
public fun Iterable<Long>.sum(): Long {
    var
sum: Long
= 0L
    for (element in this) {
        sum += element
    }
    return sum
}

Returns the sum of all
elements in the collection.
@kotlin.jvm.JvmName("sumOfFloat")
public fun Iterable<Float>.sum(): Float {
    var sum: Float = 0.0f
    for (element in this) {
        sum += element
    }
    return sum
}

Returns the sum of all elements in the collection.
@kotlin.jvm.JvmName("sumOfDouble")
public fun
Iterable<Double>.sum(): Double {
    var sum: Double = 0.0
    for (element in this) {
        sum += element
    }
    return sum
}

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license/LICENSE.txt file.
package kotlin.collections
import kotlin.comparisons.naturalOrder
import
kotlin.random.Random

Returns the array if it's not `null`, or an empty array otherwise.
@kotlin.internal.InlineOnly
public
actual inline fun <T> Array<out T>?.orEmpty(): Array<out T> = this ?:
emptyArray<T>()
@kotlin.internal.InlineOnly
public actual inline fun <T> Collection<T>.toArray():
Array<T> = copyToArray(this)
@JsName("copyToArray")
@PublishedApi
internal fun <T>
copyToArray(collection: Collection<T>): Array<T> {
    return if (collection.asDynamic().toArray !==
undefined)
        collection.asDynamic().toArray().unsafeCast<Array<T>>()
    else
        copyToArrayImpl(collection).unsafeCast<Array<T>>()
}
@JsName("copyToArrayImpl")
internal actual fun
copyToArrayImpl(collection: Collection<*>): Array<Any?> {
    val array = emptyArray<Any?>()
    val iterator
= collection.iterator()
    while (iterator.hasNext())
        array.asDynamic().push(iterator.next())
    return
array
}
@JsName("copyToExistingArrayImpl")
internal actual fun <T> copyToArrayImpl(collection:
Collection<*>, array: Array<T>): Array<T> {
    if (array.size < collection.size)
        return copyToArrayImpl(collection).unsafeCast<Array<T>>()
    val iterator = collection.iterator()
    var
index = 0
    while (iterator.hasNext()) {
        array[index++] = iterator.next().unsafeCast<T>()
    }
    if (index
< array.size) {
        array[index] = null.unsafeCast<T>()
    }
    return array
}

Returns an immutable
list containing only the specified object [element].
public fun <T> listOf(element: T): List<T> =
arrayListOf(element)

Returns an immutable set containing only the specified object [element].
public fun <T> setOf(element: T): Set<T> = hashSetOf(element)

Returns an immutable map,
mapping only the specified key to the
specified value.
public fun <K, V> mapOf(pair: Pair<K, V>):
Map<K, V> = hashMapOf(pair)

Fills the list with the provided [value].
Each element in the list
gets replaced with the [value].
@SinceKotlin("1.2")
public actual fun <T> MutableList<T>.fill(value:
T): Unit {
    for (index in 0..lastIndex) {
        this[index] = value
    }
}

Randomly shuffles
elements in this list.
See:
https://en.wikipedia.org/wiki/Fisher%20%80%93Yates\_shuffle#The\_modern\_algorithm
@SinceKotlin("1.2")
public actual fun <T> MutableList<T>.shuffle(): Unit = shuffle(Random)

Returns a new list with the elements of this list randomly shuffled.
@SinceKotlin("1.2")
public actual fun
<T> Iterable<T>.shuffled(): List<T> = toMutableList().apply { shuffle() }

Sorts elements in the list in-
place according to their natural sort order.
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 \*\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\n val array = copyToArray(list)\n sortArrayWith(array, comparator)\n\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\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 } else {\n for (index in  
rangeSize - 1 downTo 0) {\n destination[destinationOffset + index] = source[startIndex + index]\n }\n }\n }\n }\n\n // no singleton map implementation in js, return map as  
is\n@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\n@PublishedApi\ninternal actual fun  
checkIndexOverflow(index: Int): Int {\n if (index < 0) {\n throwIndexOverflow()\n }\n return  
index\n}\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/\*\*\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/\*\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 \*\ninternal class IndexingIterator<out T>(private val  
iterator: Iterator<T>) : Iterator<IndexedValue<T>> {\n private var index = 0\n final override fun hasNext():

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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\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/**
 * 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

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*^@SinceKotlin("1.1")^@kotlin.internal.InlineOnly^public expect inline fun minOf(a: Double, b: Double):
Double^/^/*^ * Returns the smaller of three values.^ *^@SinceKotlin("1.1")^@kotlin.internal.InlineOnly^public expect fun <T :
Comparable<T>> minOf(a: T, b: T, c: T): T^/^/*^ * Returns the smaller of three values.^
*^@SinceKotlin("1.1")^@kotlin.internal.InlineOnly^public expect inline fun minOf(a: Byte, b: Byte, c: Byte):
Byte^/^/*^ * Returns the smaller of three values.^
*^@SinceKotlin("1.1")^@kotlin.internal.InlineOnly^public expect inline fun minOf(a: Short, b: Short, c:
Short): Short^/^/*^ * Returns the smaller of three values.^
*^@SinceKotlin("1.1")^@kotlin.internal.InlineOnly^public expect inline fun minOf(a: Int, b: Int, c: Int):
Int^/^/*^ * Returns the smaller of three values.^ *^@SinceKotlin("1.1")^@kotlin.internal.InlineOnly^public
expect inline fun minOf(a: Long, b: Long, c: Long): Long^/^/*^ * Returns the smaller of three values.^
*^@SinceKotlin("1.1")^@kotlin.internal.InlineOnly^public expect inline fun minOf(a: Float, b: Float, c: Float):
Float^/^/*^ * Returns the smaller of three values.^
*^@SinceKotlin("1.1")^@kotlin.internal.InlineOnly^public expect inline fun minOf(a: Double, b: Double, c:
Double): Double^/^/*^ * Returns the smaller of three values according to the order specified by the given
[comparator].^ *^@SinceKotlin("1.1")^@kotlin.internal.InlineOnly^public fun <T> minOf(a: T, b: T, c: T, comparator: Comparator<in T>):
T {^
    return minOf(a, minOf(b, c, comparator), comparator)^
}^/^/*^ * Returns the smaller of two values
according to the order specified by the given [comparator].^ * If values are equal, returns the first one.^
*^@SinceKotlin("1.1")^@kotlin.internal.InlineOnly^public fun <T> minOf(a: T, b: T, comparator: Comparator<in T>): T {^
    return if
    (comparator.compare(a,
    b) <= 0) a else b^
}^/^/*^ * 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.^

*^@file:kotlin.jvm.JvmMultifileClass^@file:kotlin.jvm.JvmName("MapsKt")^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.random.^import
kotlin.ranges.contains^import kotlin.ranges.reversed^/^/*^ * Returns a [List] containing all key-value pairs.^
*^public fun <K, V> Map<out K, V>.toList(): List<Pair<K, V>> {^
    if (size == 0)^
        return emptyList()^
    val iterator = entries.iterator()^
    if (!iterator.hasNext())^
        return emptyList()^
    val first = iterator.next()^
    if (!iterator.hasNext())^
        return listOf(first.toPair())^
    val result = ArrayList<Pair<K,
    V>>(size)^
    result.add(first.toPair())^
    do {^
        result.add(iterator.next().toPair())^
    } while
    (iterator.hasNext())^
    return result^
}^/^/*^ * Returns a single list of all elements yielded from results of
[transform] function being invoked on each entry of original map.^ * ^ @sample
samples.collections.Collections.Transformations.flatMap^ *^public inline fun <K, V, R> Map<out K,
V>.flatMap(transform: (Map.Entry<K, V>) -> Iterable<R>): List<R> {^
    return flatMapTo(ArrayList<R>(),
    transform)^
}^/^/*^ * Appends all elements yielded from results of [transform] function being invoked on each
entry of original map, to the given [destination].^ *^public inline fun <K, V, R, C : MutableCollection<in R>>
Map<out K, V>.flatMapTo(destination: C, transform: (Map.Entry<K, V>) -> Iterable<R>): C {^
    for (element in
    this) {^
        val list = transform(element)^
        destination.addAll(list)^
    }^
    return destination^
}^/^/*^ *
Returns a list
containing the results of applying the given [transform] function^ * to each entry in the original map.^ * ^ @sample
samples.collections.Collections.Transformations.mapToList^ *^public inline fun <K, V, R> Map<out K,
V>.map(transform: (Map.Entry<K, V>) -> R): List<R> {^
    return mapTo(ArrayList<R>(size),
    transform)^
}^/^/*^ * Returns a list containing only the non-null results of applying the given [transform]
function^ * to each entry in the original map.^ *^public inline fun <K, V, R : Any> Map<out K,
V>.mapNotNull(transform: (Map.Entry<K, V>) -> R?): List<R> {^
    return mapNotNullTo(ArrayList<R>(),
    transform)^
}^/^/*^ * Applies the given [transform] function to each entry in the original map^ * and appends
only the non-null results to the given [destination].^ *^public inline fun <K, V, R : Any, C : MutableCollection<in
R>> Map<out K, V>.mapNotNullTo(destination: C, transform: (Map.Entry<K, V>) -> R?): C {^
    forEach {

```



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*\n\n@file:kotlin.jvm.JvmMultifileClass\n@file:kotlin.jvm.JvmName("\nSequencesKt")\n\npackage\nkotlin.sequences\n\n/\n\n// NOTE: THIS FILE IS AUTO-GENERATED by the GenerateStandardLib.kt\n// See:\nhttps://github.com/JetBrains/kotlin/tree/master/libraries/stdlib\n\n/\n\nimport kotlin.random.*\n\n/**\n * Returns\n `true` if [element] is found in the sequence.\n *\n * The operation is _terminal_.\n *\n * \n\npublic operator fun\n<@kotlin.internal.OnlyInputTypes T> Sequence<T>.contains(element: T): Boolean {\n    return indexOf(element)\n    >= 0\n}\n\n/**\n * Returns an element at the given [index] or throws an [IndexOutOfBoundsException] if the\n [index] is out of bounds of this sequence.\n *\n * The operation is _terminal_.\n *\n * \n\n@sample\nsamples.collections.Collections.Elements.elementAt\n\n *\n\npublic fun <T> Sequence<T>.elementAt(index: Int): T\n {\n    return elementAtOrElse(index) { throw IndexOutOfBoundsException("\nSequence doesn't contain element at\nindex $index.\n") }\n}\n\n/**\n * Returns an element at the given [index] or the result of calling the [defaultValue]\n function if the [index]\n is out of bounds of this sequence.\n *\n * The operation is _terminal_.\n *\n * \n\n@sample\nsamples.collections.Collections.Elements.elementAtOrElse\n\n *\n\npublic fun <T>\nSequence<T>.elementAtOrElse(index: Int, defaultValue: (Int) -> T): T {\n    if (index < 0)\n        return\n        defaultValue(index)\n    val iterator = iterator()\n    var count = 0\n    while (iterator.hasNext()) {\n        val element\n        = iterator.next()\n        if (index == count++)\n            return element\n    }\n    return\n    defaultValue(index)\n}\n\n/**\n * Returns an element at the given [index] or `null` if the [index] is out of bounds of\n this sequence.\n *\n * The operation is _terminal_.\n *\n * \n\n@sample\nsamples.collections.Collections.Elements.elementAtOrNull\n\n *\n\npublic fun <T>\nSequence<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\n `null` if no such element was found.\n *\n * The operation is _terminal_.\n *\n * \n\n@kotlin.internal.InlineOnly\n\npublic\ninline 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\n operation is _terminal_.\n *\n * \n\n@kotlin.internal.InlineOnly\n\npublic inline fun <T> Sequence<T>.findLast(predicate:\n(T) -> Boolean): T? {\n    return lastOrNull(predicate)\n}\n\n/**\n * Returns first element.\n *\n * @throws\n [NoSuchElementException] if the sequence is empty.\n *\n * The operation is _terminal_.\n *\n * \n\npublic fun <T>\nSequence<T>.first(): T {\n    val iterator = iterator()\n    if (!iterator.hasNext())\n        throw\n        NoSuchElementException("\nSequence is empty.\n")\n    return iterator.next()\n}\n\n/**\n * Returns the\n first element matching the given [predicate].\n *\n * @throws [NoSuchElementException] if no such element is\n found.\n *\n * The operation is _terminal_.\n *\n * \n\npublic inline fun <T> Sequence<T>.first(predicate: (T) ->\nBoolean): T {\n    for (element in this) if (predicate(element)) return element\n    throw\n    NoSuchElementException("\nSequence contains no element matching the predicate.\n")\n}\n\n/**\n * Returns the first\n element, or `null` if the sequence is empty.\n *\n * The operation is _terminal_.\n *\n * \n\npublic fun <T>\nSequence<T>.firstOrNull(): T? {\n    val iterator = iterator()\n    if (!iterator.hasNext())\n        return null\n    return\n    iterator.next()\n}\n\n/**\n * Returns the first element matching the given [predicate], or `null` if element was not\n found.\n *\n * The operation is _terminal_.\n *\n * \n\npublic inline fun <T> Sequence<T>.firstOrNull(predicate: (T) ->\nBoolean): T? {\n    for (element in this) if (predicate(element)) return element\n    return null\n}\n\n/**\n * Returns\n first\n index of [element], or -1 if the sequence does not contain element.\n *\n * The operation is _terminal_.\n *\n * \n\npublic\nfun <@kotlin.internal.OnlyInputTypes T> Sequence<T>.indexOf(element: T): Int {\n    var index = 0\n    for (item\n    in this) {\n        checkIndexOverflow(index)\n        if (element == item)\n            return index\n        index++\n    }\n    return -1\n}\n\n/**\n * Returns index of the first element matching the given [predicate], or -1 if the sequence does\n not contain such element.\n *\n * The operation is _terminal_.\n *\n * \n\npublic inline fun <T>\nSequence<T>.indexOfFirst(predicate: (T) -> Boolean): Int {\n    var index = 0\n    for (item in this) {\n        checkIndexOverflow(index)\n        if (predicate(item))\n            return index\n        index++\n    }\n    return -\n
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l\n}\n\n/**\n * Returns index of the last element matching the given [predicate], or -1 if the sequence does not
contain such element.\n *\n * The operation is _terminal_.\n */\npublic inline fun
<T> Sequence<T>.indexOfLast(predicate: (T) -> Boolean): Int {\n    var lastIndex = -1\n    var index = 0\n    for
(item in this) {\n        checkIndexOverflow(index)\n        if (predicate(item))\n            lastIndex = index\n
index++\n    }\n    return lastIndex\n}\n\n/**\n * Returns the last element.\n * @throws [NoSuchElementException]
if the sequence is empty.\n *\n * The operation is _terminal_.\n */\npublic fun <T> Sequence<T>.last(): T {\n    val
iterator = iterator()\n    if (!iterator.hasNext())\n        throw NoSuchElementException("Sequence is empty.")\n
    var last = iterator.next()\n    while (iterator.hasNext())\n        last = iterator.next()\n    return last\n}\n\n/**\n *
Returns the last element matching the given [predicate].\n * @throws [NoSuchElementException] if no such
element is found.\n *\n * The operation is _terminal_.\n */\npublic inline fun <T> Sequence<T>.last(predicate: (T) -
> Boolean): T? {\n    var last: T? = null\n    var found = false\n
    for (element in this) {\n        if (predicate(element)) {\n            last = element\n            found = true\n        }\n    }\n
    if (!found) throw NoSuchElementException("Sequence contains no element matching the predicate.")\n
    @Suppress("UNCHECKED_CAST")\n    return last as T\n}\n\n/**\n * Returns last index of [element], or -1 if the
sequence does not contain element.\n *\n * The operation is _terminal_.\n */\npublic fun
<@kotlin.internal.OnlyInputTypes T> Sequence<T>.lastIndexOf(element: T): Int {\n    var lastIndex = -1\n    var
index = 0\n    for (item in this) {\n        checkIndexOverflow(index)\n        if (element == item)\n            lastIndex =
index\n        index++\n    }\n    return lastIndex\n}\n\n/**\n * Returns the last element, or `null` if the sequence is
empty.\n *\n * The operation is _terminal_.\n */\npublic fun <T> Sequence<T>.lastOrNull(): T? {\n    val iterator =
iterator()\n    if (!iterator.hasNext())\n        return null\n    var last = iterator.next()\n
    while (iterator.hasNext())\n        last = iterator.next()\n    return last\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 */\npublic inline fun <T> Sequence<T>.lastOrNull(predicate: (T) -> Boolean): T? {\n    var last: T? = null\n    for
(element in this) {\n        if (predicate(element)) {\n            last = element\n        }\n    }\n    return last\n}\n\n/**\n *
Returns the single element, or throws an exception if the sequence is empty or has more than one element.\n *\n *
The operation is _terminal_.\n */\npublic fun <T> Sequence<T>.single(): T {\n    val iterator = iterator()\n    if
(!iterator.hasNext())\n        throw NoSuchElementException("Sequence is empty.")\n    val single =
iterator.next()\n    if (iterator.hasNext())\n        throw IllegalArgumentException("Sequence has more than one
element.")\n    return single\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 * The
operation is _terminal_.\n */\npublic inline fun <T> Sequence<T>.single(predicate: (T) -> Boolean): T {\n    var
single: T? = null\n    var found = false\n    for (element in this) {\n        if (predicate(element)) {\n            if (found)
throw IllegalArgumentException("Sequence contains more than one matching element.")\n            single =
element\n            found = true\n        }\n    }\n    if (!found) throw NoSuchElementException("Sequence contains no
element matching the predicate.")\n    @Suppress("UNCHECKED_CAST")\n    return single as T\n}\n\n/**\n * Returns single element, or `null` if the sequence is empty or has more than one element.\n *\n * The operation is
_terminal_.\n */\npublic fun <T> Sequence<T>.singleOrNull(): T? {\n    val iterator = iterator()\n    if
(!iterator.hasNext())\n        return null\n    val single = iterator.next()\n
    if (iterator.hasNext())\n        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 *\n * The operation is
_terminal_.\n */\npublic inline fun <T> Sequence<T>.singleOrNull(predicate: (T) -> Boolean): T? {\n    var single:
T? = 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 sequence containing all elements except first [n] elements.\n *\n * The operation is
_intermediate_ and _stateless_.\n *\n * @throws IllegalArgumentException if [n] is negative.\n *\n * @sample
samples.collections.Collections.Transformations.drop\n */\npublic fun <T> Sequence<T>.drop(n: Int):
Sequence<T> {\n    require(n >= 0) { "Requested element count $n is less than

```





```

}
}

Returns a sequence containing first elements satisfying the given [predicate].
The operation is _intermediate_ and _stateless_.

@sample samples.collections.Collections.Transformations.take
public fun <T>
Sequence<T>.takeWhile(predicate: (T) -> Boolean): Sequence<T> {
    return TakeWhileSequence(this,
predicate)
}

Returns a sequence that yields elements of this sequence sorted according to their natural
sort order.
The sort is _stable_. It means that equal elements preserve their order relative to each other after
sorting.
The operation is _intermediate_ and _stateful_.
public 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()
        }
    }
}

Returns a sequence that yields elements of this sequence sorted
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.
The operation is
_intermediate_ and _stateful_.
public inline fun <T, R : Comparable<R>> Sequence<T>.sortedBy(crossinline
selector: (T) -> R?): Sequence<T> {
    return sortedWith(compareBy(selector))
}

Returns a sequence
that yields elements of this sequence sorted 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.
The operation is _intermediate_ and _stateful_.
public inline fun <T, R :
Comparable<R>> Sequence<T>.sortedByDescending(crossinline selector: (T) -> R?): Sequence<T> {
    return
sortedWith(compareByDescending(selector))
}

Returns a sequence that yields elements of this sequence
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.
The operation is _intermediate_
and _stateful_.
public fun <T : Comparable<T>> Sequence<T>.sortedDescending(): Sequence<T> {
    return
sortedWith(reverseOrder())
}

Returns a sequence that yields elements of this sequence sorted
according to the specified [comparator].
The sort is _stable_. It means that equal elements preserve their
order relative to each other after sorting.
The operation is _intermediate_ and _stateful_.
public 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()
        }
    }
}

Returns a [Map]
containing key-value pairs provided by [transform] function
applied to
elements of the given sequence.
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 sequence.
The operation is
_terminal_.
@sample samples.collections.Collections.Transformations.associate
public inline fun <T,
K, V> Sequence<T>.associate(transform: (T) -> Pair<K, V>): Map<K, V> {
    return
associateTo(LinkedHashMap<K, V>(), transform)
}

Returns a [Map] containing the elements from the
given sequence 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 sequence.
The operation is _terminal_.
@sample
samples.collections.Collections.Transformations.associateBy
public inline fun <T, K>
Sequence<T>.associateBy(keySelector:
(T) -> K): Map<K, T> {
    return associateByTo(LinkedHashMap<K, T>(), keySelector)
}

Returns a
[Map] containing the values provided by [valueTransform] and indexed by [keySelector] functions applied to
elements of the given sequence.
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
sequence.
The operation is _terminal_.
@sample
samples.collections.Collections.Transformations.associateByWithValueTransform
public inline fun <T, K, V>
Sequence<T>.associateBy(keySelector: (T) -> K, valueTransform: (T) -> V): Map<K, V> {
    return
associateByTo(LinkedHashMap<K, V>(), 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 sequence

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

The operation is `_terminal_`

`@sample`

```

samples.collections.Collections.Transformations.associateByTo
*/\npublic inline fun <T, K, M : MutableMap<in K, in T>> Sequence<T>.associateByTo(destination: M, keySelector: (T) -> K): M {
    for (element in this) {
        destination.put(keySelector(element), element)
    }
    return destination
}
*/\n
*/ 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 sequence.
If any two elements would have the same key returned by [keySelector] the last one gets added to the map.
The operation is _terminal_
*/\n
*/ @sample
samples.collections.Collections.Transformations.associateByToWithValueTransform
*/\npublic inline fun <T, K, V, M : MutableMap<in K, in V>> Sequence<T>.associateByTo(destination: M,
keySelector: (T) -> K, valueTransform: (T) -> V): M {
    for (element in this) {
        destination.put(keySelector(element), valueTransform(element))
    }
    return destination
}
*/\n
*/ Populates and returns the [destination] mutable map with key-value pairs
provided by [transform] function applied to each element of the given sequence.
If any of two pairs would have the same key the last one gets added to the map.
The operation is _terminal_
*/\n
*/ @sample
samples.collections.Collections.Transformations.associateTo
*/\npublic inline fun <T, K, V, M : MutableMap<in K, in V>> Sequence<T>.associateTo(destination: M, transform: (T) -> Pair<K, V>): M {
    for (element in this) {
        destination += transform(element)
    }
    return destination
}
*/\n
*/ Returns a [Map] where keys are elements from the given sequence 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 sequence.
The operation is _terminal_
*/\n
*/ @sample
samples.collections.Collections.Transformations.associateWith
*/\n@SinceKotlin("1.3")\npublic inline fun <K, V> Sequence<K>.associateWith(valueSelector: (K) -> V): Map<K, V> {
    val result = LinkedHashMap<K, V>()
    return associateWithTo(result, valueSelector)
}
*/\n
*/ Populates and returns the [destination] mutable map with key-value pairs for each element of the given sequence,
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.
The operation is _terminal_
*/\n
*/ @sample
samples.collections.Collections.Transformations.associateWithTo
*/\n@SinceKotlin("1.3")\npublic inline fun <K, V, M : MutableMap<in K, in V>>
Sequence<K>.associateWithTo(destination: M, valueSelector: (K) -> V): M {
    for (element in this) {
        destination.put(element, valueSelector(element))
    }
    return destination
}
*/\n
*/ Appends all elements to the given [destination] collection.
The operation is _terminal_
*/\n
*/\npublic fun <T, C : MutableCollection<in T>> Sequence<T>.toCollection(destination: C): C {
    for (item in this) {
        destination.add(item)
    }
    return destination
}
*/\n
*/ Returns a [HashSet] of all elements.
The operation is _terminal_
*/\n
*/\npublic fun <T> Sequence<T>.toHashSet(): HashSet<T> {
    return toCollection(HashSet<T>())
}
*/\n
*/ Returns a [List] containing all elements.
The operation is _terminal_
*/\n
*/\npublic fun <T> Sequence<T>.toList(): List<T> {
    return this.toMutableList().optimizeReadOnlyList()
}
*/\n
*/ Returns a [MutableList] filled with all elements of this sequence.
The operation is _terminal_
*/\n
*/\npublic fun <T> Sequence<T>.toMutableList(): MutableList<T> {
    return toCollection(ArrayList<T>())
}
*/\n
*/ Returns a [Set] of all elements.
The returned set preserves the element iteration order of the original sequence.
The operation is _terminal_
*/\n
*/\npublic fun <T> Sequence<T>.toSet(): Set<T> {
    return toCollection(LinkedHashSet<T>()).optimizeReadOnlySet()
}
*/\n
*/ Returns a single sequence of all elements from results of [transform] function being invoked on each element of original sequence.
The operation is _intermediate_ and _stateless_
*/\n
*/ @sample samples.collections.Collections.Transformations.flatMap

```

```

*\npublic 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\npublic 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 _terminal_.\n * \n * @sample
samples.collections.Collections.Transformations.groupBy\n */\n\npublic 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\npublic 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\npublic 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 * \n * @return The [destination] map.\n * \n * The operation is _terminal_.\n * \n * @sample
samples.collections.Collections.Transformations.groupByKeysAndValues\n */\n\npublic 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\n@SinceKotlin("1.1")\n\npublic 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\n * to each element in the original sequence.\n * \n * The operation is _intermediate_
and _stateless_.\n * \n * @sample samples.collections.Collections.Transformations.map\n */\n\npublic fun <T, R>
Sequence<T>.map(transform: (T) -> R): Sequence<R> {\n    return TransformingSequence(this,
transform)\n}\n\n/**\n * Returns a sequence containing the results of applying the given [transform] function\n * to
each element and its index in the original sequence.\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 \* The operation is `_intermediate_` and `_stateless_`.\n \*/\npublic fun <T, R> Sequence<T>.mapIndexed(transform: (index: Int, T) -> R): Sequence<R> {\n return TransformingIndexedSequence(this, transform)\n}\n\n/\*\*\n \* Returns a sequence containing only the non-null results of applying the given [transform] function\n \* to each element and its index in the original sequence.\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 \* The operation is `_intermediate_` and `_stateless_`.\n \*/\npublic fun <T, R : Any> Sequence<T>.mapIndexedNotNull(transform: (index: Int, T) -> R?): Sequence<R> {\n return TransformingIndexedSequence(this, transform).filterNotNull()\n}\n\n/\*\*\n \* Applies the given [transform] function to each element and its index in the original sequence\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 \* The operation is `_terminal_`.\n \*/\npublic inline fun <T, R : Any, C : MutableCollection<in R>> Sequence<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 sequence\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 \* The operation is `_terminal_`.\n \*/\npublic inline fun <T, R, C : MutableCollection<in R>> Sequence<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 sequence containing only the non-null results of applying the given [transform] function\n \* to each element in the original sequence.\n \* The operation is `_intermediate_` and `_stateless_`.\n \*/\npublic fun <T, R : Any> Sequence<T>.mapNotNull(transform: (T) -> R?): Sequence<R> {\n return TransformingSequence(this, transform).filterNotNull()\n}\n\n/\*\*\n \* Applies the given [transform] function to each element in the original sequence\n \* and appends only the non-null results to the given [destination].\n \* The operation is `_terminal_`.\n \*/\npublic inline fun <T, R : Any, C : MutableCollection<in R>> Sequence<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 sequence\n \* and appends the results to the given [destination].\n \* The operation is `_terminal_`.\n \*/\npublic inline fun <T, R, C : MutableCollection<in R>> Sequence<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 sequence that wraps each element of the original sequence\n \* into an [IndexedValue] containing the index of that element and the element itself.\n \* The operation is `_intermediate_` and `_stateless_`.\n \*/\npublic fun <T> Sequence<T>.withIndex(): Sequence<IndexedValue<T>> {\n return IndexingSequence(this)\n}\n\n/\*\*\n \* Returns a sequence containing only distinct elements from the given sequence.\n \* The elements in the resulting sequence are in the same order as they were in the source sequence.\n \* The operation is `_intermediate_` and `_stateful_`.  
 \* @sample samples.collections.Collections.Transformations.distinctAndDistinctBy\n \*/\npublic fun <T> Sequence<T>.distinct(): Sequence<T> {\n return this.distinctBy { it }\n}\n\n/\*\*\n \* Returns a sequence containing only elements from the given sequence\n \* having distinct keys returned by the given [selector] function.\n \* The elements in the resulting sequence are in the same order as they were in the source sequence.\n \* The operation is `_intermediate_` and `_stateful_`.  
 \* @sample samples.collections.Collections.Transformations.distinctAndDistinctBy\n \*/\npublic fun <T, K> Sequence<T>.distinctBy(selector: (T) -> K): Sequence<T> {\n return DistinctSequence(this, selector)\n}\n\n/\*\*\n \* Returns a mutable set containing all distinct elements from the given sequence.\n \* The returned set preserves the element iteration order of the original sequence.\n \* The operation is `_terminal_`.\n \*/\n



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(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 * The operation is _terminal_.\n
*\n * @public fun <T> Sequence<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 * The
operation is _terminal_.\n *\n * @SinceKotlin("1.1")\n * @public fun Sequence<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 * The operation
is _terminal_.\n *\n * @SinceKotlin("1.1")\n * @public fun Sequence<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 * The operation
is _terminal_.\n *\n * @public fun <T : Comparable<T>> Sequence<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 * The operation is _terminal_.\n *\n * @sample
samples.collections.Collections.Aggregates.minBy\n *\n * @public inline fun <T, R : Comparable<R>>
Sequence<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 * The
operation is _terminal_.\n *\n * @public fun <T> Sequence<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 sequence has no elements.\n *\n * The operation is _terminal_.\n *\n *
@sample samples.collections.Collections.Aggregates.none\n *\n * @public fun <T> Sequence<T>.none(): Boolean {\n    return
!iterator().hasNext()\n}\n\n/**\n * Returns `true` if no elements match the given [predicate].\n *\n * The
operation is _terminal_.\n *\n * @sample samples.collections.Collections.Aggregates.noneWithPredicate\n
*\n * @public inline fun <T> Sequence<T>.none(predicate: (T) -> Boolean): Boolean {\n    for (element in this) if
(predicate(element)) return false\n    return true\n}\n\n/**\n * Returns a sequence which performs the given [action]
on each element of 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 map {\n        action(it)\n        it\n    }\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 * The operation is _terminal_.\n *\n * @sample samples.collections.Collections.Aggregates.reduce\n *\n * @public
inline fun <S, T : S> Sequence<T>.reduce(operation: (acc: S, T) -> S): S {\n    val iterator = this.iterator()\n    if
(!iterator.hasNext()) throw UnsupportedOperationException("Empty sequence can't be reduced.")\n    var
accumulator: S = iterator.next()\n    while (iterator.hasNext()) {\n        accumulator = operation(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\n * to current accumulator value and each

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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_`.

```

@sample samples.collections.Collections.Aggregates.reduce
public inline fun <S, T : S> Sequence<T>.reduceIndexed(operation: (index: Int, acc: S, T) -> S): S {
    val iterator = this.iterator()
    if (!iterator.hasNext()) throw UnsupportedOperationException("Empty sequence 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 sequence is empty.

The operation is `_terminal_`.

`@sample samples.collections.Collections.Aggregates.reduceOrNull`

```

@SinceKotlin("1.3")
@ExperimentalStdlibApi
public inline fun <S, T : S> Sequence<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
}

```

Returns a sequence 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 sequence.

The `[initial]` value should also be immutable (or should not be mutated) as it may be passed to `[operation]` function later because of sequence's lazy nature.

`@param [operation]` function that takes current accumulator value and an element, and calculates the next accumulator value.

The operation is `_intermediate_` and `_stateless_`.

`@sample samples.collections.Collections.Aggregates.scan`

```

@SinceKotlin("1.3")
@ExperimentalStdlibApi
public fun <T, R> Sequence<T>.scan(initial: R, operation: (acc: R, T) -> R): Sequence<R> {
    return sequence {
        yield(initial)
        var accumulator = initial
        for (element in this@scan) {
            accumulator = operation(accumulator, element)
            yield(accumulator)
        }
    }
}

```

Returns a sequence containing successive accumulation values generated by applying `[operation]` from left to right to each element, its index in the original sequence 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 sequence.

The `[initial]` value should also be immutable (or should not be mutated) as it may be passed to `[operation]` function later because of sequence's lazy nature.

`@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 `_intermediate_` and `_stateless_`.

`@sample samples.collections.Collections.Aggregates.scanIndexed`

```

@SinceKotlin("1.3")
@ExperimentalStdlibApi
public fun <T, R> Sequence<T>.scanIndexed(initial: R, operation: (index: Int, acc: R, T) -> R): Sequence<R> {
    return sequence {
        yield(initial)
        var index = 0
        var accumulator = initial
        for (element in this@scanIndexed) {
            accumulator = operation(checkIndexOverflow(index++), accumulator, element)
            yield(accumulator)
        }
    }
}

```

Returns a sequence 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 sequence.

Note that ``acc`` value passed to `[operation]` function should not be mutated; otherwise it would affect the previous value in resulting sequence.

`@param [operation]` function that takes current accumulator value and the element, and calculates the next accumulator value.

The operation is `_intermediate_` and `_stateless_`.

`@sample samples.collections.Collections.Aggregates.scanReduce`

```

@SinceKotlin("1.3")
@ExperimentalStdlibApi
public fun <S, T : S> Sequence<T>.scanReduce(operation: (acc: S, T) -> S): Sequence<S> {
    return sequence {
        val iterator = iterator()
        if (iterator.hasNext()) {
            var accumulator: S = iterator.next()
            yield(accumulator)
            while (iterator.hasNext()) {
                accumulator = operation(accumulator,

```

```

iterator.next())\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 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
*/\n\n@SinceKotlin("1.3")\n@ExperimentalStdlibApi\npublic fun <S, T : S>
Sequence<T>.scanReduceIndexed(operation: (index: Int, 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            var index = 1\n            while (iterator.hasNext()) {\n                accumulator =
operation(checkIndexOverflow(index++), accumulator, iterator.next())\n                yield(accumulator)\n            }
}\n    }\n}\n\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\npublic inline fun <T> Sequence<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/**\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\npublic inline fun <T> Sequence<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/**\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\npublic fun <T : Any>
Sequence<T?>.requireNonNulls(): Sequence<T> {\n    return map { it ?: throw IllegalArgumentException("null
element found in $this.") }\n}\n\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
*/\n\n@SinceKotlin("1.2")\npublic fun <T>
Sequence<T>.chunked(size:
Int): Sequence<List<T>> {\n    return windowed(size, size, partialWindows = true)\n}\n\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
*/\n\n@SinceKotlin("1.2")\npublic fun <T, R>
Sequence<T>.chunked(size: Int, transform: (List<T>) -> R): Sequence<R> {\n    return windowed(size, size,
partialWindows = true, transform = transform)\n}\n\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\npublic operator fun <T> Sequence<T>.minus(element: T): Sequence<T> {\n    return object:
Sequence<T> {\n        override fun iterator(): Iterator<T> {\n            var removed = false\n            return
this@minus.filter { if (!removed && it == element) { removed = true; false } else true }.iterator()\n        }\n    }
}\n\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

```





```

*\n * The operation is _intermediate_ and _stateless_.\n *\npublic operator fun <T> Sequence<T>.plus(elements:
Sequence<T>): Sequence<T> {\n    return sequenceOf(this, elements).flatten()\n}\n\n/**\n * Returns a sequence
containing all elements of the original sequence and then the given [element].\n *\n * The operation is
_intermediate_ and _stateless_.\n *\n@kotlin.internal.InlineOnly\npublic inline fun <T>
Sequence<T>.plusElement(element:
T): Sequence<T> {\n    return plus(element)\n}\n\n/**\n * Returns a sequence of snapshots of the window of the
given [size]\n * sliding along this sequence with the given [step], where each\n * snapshot is a list.\n * \n * Several
last lists may have less elements than the given [size].\n * \n * Both [size] and [step] must be positive and can be
greater than the number of elements in this sequence.\n * @param size the number of elements to take in each
window\n * @param step the number of elements to move the window forward by on an each step, by default 1\n *
@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.takeWindows\n *\n@SinceKotlin("1.2")\npublic fun <T>
Sequence<T>.windowed(size: Int, step: Int = 1, partialWindows: Boolean = false): Sequence<List<T>> {\n    return
windowedSequence(size, step,
    partialWindows, reuseBuffer = false)\n}\n\n/**\n * Returns a sequence of results of applying the given [transform]
function to\n * an each list representing a view over the window of the given [size]\n * sliding along this sequence
with the given [step].\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 * Several last lists may have less elements than the given [size].\n * \n * Both [size] and [step] must be positive
and can be greater than the number of elements in this sequence.\n * @param size the number of elements to take in
each window\n * @param step the number of elements to move the window forward by on an each step, by default
1\n * @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")\npublic fun <T, R> Sequence<T>.windowed(size: Int, step: Int = 1, partialWindows:
Boolean = false, transform: (List<T>) -> R): Sequence<R> {\n    return windowedSequence(size, step,
    partialWindows, reuseBuffer = true).map(transform)\n}\n\n/**\n * Returns a sequence of values built from the
elements of `this` sequence and the [other] sequence with the same index.\n * The resulting sequence ends as soon
as the shortest input sequence ends.\n *\n * The operation is _intermediate_ and _stateless_.\n *\n * @sample
samples.collections.Sequences.Transformations.zip\n *\npublic infix fun <T, R> Sequence<T>.zip(other:
Sequence<R>): Sequence<Pair<T, R>> {\n    return MergingSequence(this, other) { t1, t2 -> t1 to t2 }\n}\n\n/**\n *
Returns a sequence of values built from the elements of `this` sequence and the [other] sequence with the same
index\n * using the provided [transform] function applied to each pair
of elements.\n * The resulting sequence ends as soon as the shortest input sequence ends.\n *\n * The operation is
_intermediate_ and _stateless_.\n *\n * @sample
samples.collections.Sequences.Transformations.zipWithTransform\n *\npublic fun <T, R, V>
Sequence<T>.zip(other: Sequence<R>, transform: (a: T, b: R) -> V): Sequence<V> {\n    return
MergingSequence(this, other, transform)\n}\n\n/**\n * Returns a sequence of pairs of each two adjacent elements in
this sequence.\n * \n * The returned sequence is empty if this sequence contains less than two elements.\n *\n * The
operation is _intermediate_ and _stateless_.\n *\n * @sample
samples.collections.Collections.Transformations.zipWithNext\n *\n@SinceKotlin("1.2")\npublic fun <T>
Sequence<T>.zipWithNext(): Sequence<Pair<T, T>> {\n    return zipWithNext { a, b -> a to b }\n}\n\n/**\n *
Returns a sequence containing the results of applying the given [transform] function\n * to an each pair of two
adjacent elements in this sequence.\n
*\n * The returned sequence is empty if this sequence contains less than two elements.\n *\n * The operation is
_intermediate_ and _stateless_.\n *\n * @sample
samples.collections.Collections.Transformations.zipWithNextToFindDeltas\n *\n@SinceKotlin("1.2")\npublic

```

```

fun <T, R> Sequence<T>.zipWithNext(transform: (a: T, b: T) -> R): Sequence<R> {
    return sequence result@
    {
        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
        }
    }
}

Append 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:
CharSequence = "\"\", limit: Int = -1, truncated: CharSequence = "...\", transform: ((T) -> CharSequence)? = null): A
{
    buffer.append(prefix)
    var count = 0
    for (element in this) {
        if (++count > 1)
            buffer.append(separator)
        if (limit < 0 || count <= limit) {
            buffer.appendElement(element, transform)
        } else break
    }
    if (limit >= 0 && count > limit) buffer.append(truncated)
    buffer.append(postfix)
    return buffer
}

Creates a 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.joinToString
public fun <T>
Sequence<T>.joinToString(separator: CharSequence = "\", \"", prefix: CharSequence = "\"\", postfix: CharSequence =
\"\", limit: Int = -1, truncated: CharSequence = "...\", transform: ((T) -> CharSequence)? = null): String {
    return
    joinTo(StringBuilder(), separator, prefix, postfix, limit, truncated, transform).toString()
}

Creates an
[Iterable] instance that wraps the original sequence returning its elements when being iterated.
public fun <T>
Sequence<T>.asIterable(): Iterable<T> {
    return Iterable { this.iterator() }
}

Returns this sequence as
a [Sequence].
@kotlin.internal.InlineOnly
public inline fun <T> Sequence<T>.asSequence(): Sequence<T>
{
    return this
}

Returns
an average value of elements in the sequence.
The operation is _terminal_.
@kotlin.jvm.JvmName("averageOfByte")
public fun Sequence<Byte>.average(): Double {
    var sum:
    Double = 0.0
    var count: Int = 0
    for (element in this) {
        sum += element
        checkCountOverflow(++count)
    }
    return if (count == 0) Double.NaN else sum / count
}

Returns
an average value of elements in the sequence.
The operation is _terminal_.
@kotlin.jvm.JvmName("averageOfShort")
public fun Sequence<Short>.average(): Double {
    var sum:
    Double = 0.0
    var count: Int = 0
    for (element in this) {
        sum += element
        checkCountOverflow(++count)
    }
    return if (count == 0) Double.NaN else sum / count
}

Returns
an average value of elements in the sequence.
The operation is _terminal_.
@kotlin.jvm.JvmName("averageOfInt")
public fun Sequence<Int>.average(): Double {
    var sum: Double
    = 0.0
    var count: Int = 0
    for (element in this) {
        sum += element
        checkCountOverflow(++count)
    }
    return if (count == 0) Double.NaN else sum / count
}

Returns
an average value of elements in the sequence.
The operation is _terminal_.
@kotlin.jvm.JvmName("averageOfLong")
public fun Sequence<Long>.average(): Double {
    var sum:
    Double = 0.0
    var count: Int = 0
    for (element in this) {
        sum += element
        checkCountOverflow(++count)
    }
    return if (count == 0) Double.NaN else sum / count
}

Returns
an average value of elements in the sequence.
The operation is _terminal_.
@kotlin.jvm.JvmName("averageOfFloat")
public fun Sequence<Float>.average(): Double {
    var sum:
    Double = 0.0
    var count: Int = 0
    for (element in this) {
        sum += element
        checkCountOverflow(++count)
    }
    return if (count == 0) Double.NaN else sum / count
}

```

```

* Returns an average value of elements in the sequence.\n * The operation is _terminal_.\n
*\n@kotlin.jvm.JvmName("\averageOfDouble")\npublic fun Sequence<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 sequence.\n * The operation is _terminal_.\n
*\n@kotlin.jvm.JvmName("\sumOfByte")\npublic fun Sequence<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
sequence.\n * The operation is _terminal_.\n
*\n@kotlin.jvm.JvmName("\sumOfShort")\npublic fun Sequence<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 sequence.\n * The operation is _terminal_.\n
*\n@kotlin.jvm.JvmName("\sumOfInt")\npublic fun Sequence<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 sequence.\n * The operation is _terminal_.\n
*\n@kotlin.jvm.JvmName("\sumOfLong")\npublic fun Sequence<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 sequence.\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 * 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/\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 a set containing all elements of the original
set except the given [element].\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)
{\n        if (!removed && it == element) {\n            removed = true; false\n        } else true\n    }\n}\n\n/**\n * Returns a set containing all
elements of the original set except the elements contained in the given [elements] array.\n * The returned set
preserves the element iteration order of the original set.\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 * The returned set preserves the element
iteration order of the original set.\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>()) {\n            it in other\n        }\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 * The returned set preserves the element
iteration order of the original set.\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.

```

public operator fun <T> Set<T>.minus(elements: Sequence<T>): Set<T> {
    val result =
        LinkedHashSet<T>(this)
    result.removeAll(elements)
    return result
}

```

\* Returns a set containing all elements of the original set except the given [element].

\* The returned set preserves the element iteration order of the original set.

```

@kotlin.internal.InlineOnly
public inline fun <T> Set<T>.minusElement(element: T): Set<T> {
    return minus(element)
}

```

\* Returns a set containing all elements of the original set and then the given [element] if it isn't already in this set.

\* The returned set preserves the element iteration order of the original set.

```

public operator fun <T> Set<T>.plus(element: T): Set<T> {
    val result =
        LinkedHashSet<T>(mapCapacity(size + 1))
    result.addAll(this)
    result.add(element)
    return result
}

```

\* Returns a set containing all elements of the original set and the given [elements] array, which aren't already in this set.

\* The returned set preserves the element iteration order of the original set.

```

public operator fun <T> Set<T>.plus(elements: Array<out T>): Set<T> {
    val result =
        LinkedHashSet<T>(mapCapacity(this.size + elements.size))
    result.addAll(this)
    result.addAll(elements)
    return result
}

```

\* Returns a set containing all elements of the original set and the given [elements] collection, which aren't already in this set.

\* The returned set preserves the element iteration order of the original set.

```

public operator fun <T> Set<T>.plus(elements: Iterable<T>): Set<T> {
    val result =
        LinkedHashSet<T>(mapCapacity(elements.collectionSizeOrNull()?.let { this.size + it } ?: this.size * 2))
    result.addAll(this)
    result.addAll(elements)
    return result
}

```

\* Returns a set containing all elements of the original set and the given [elements] sequence, which aren't already in this set.

\* The returned set preserves the element iteration order of the original set.

```

public operator fun <T> Set<T>.plus(elements: Sequence<T>): Set<T> {
    val result = LinkedHashSet<T>(mapCapacity(this.size * 2))
    result.addAll(this)
    result.addAll(elements)
    return result
}

```

\* Returns a set containing all elements of the original set and then the given [element] if it isn't already in this set.

\* The returned set preserves the element iteration order of the original set.

```

@kotlin.internal.InlineOnly
public inline fun <T> Set<T>.plusElement(element: T): Set<T> {
    return plus(element)
}

```

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\*@file:kotlin.jvm.JvmMultifileClass

\*@file:kotlin.jvm.JvmName("StringsKt")

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.random.*

```

\* 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.Elements.elementAt

```

public expect fun CharSequence.elementAt(index: Int): Char

\* 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.

@sample

```

samples.collections.Collections.Elements.elementAtOrElse

```

public inline fun CharSequence.elementAtOrElse(index: Int, defaultValue: (Int) -> Char): Char

return if (index >= 0 && index <= lastIndex) get(index) else defaultValue(index)

\* Returns a character at the given [index] or `null` if the [index] is out of bounds of this char sequence.

@sample

```

samples.collections.Collections.Elements.elementAtOrNull

```

public inline fun CharSequence.elementAtOrNull(index: Int): Char?

return this.getOrNull(index)

\* Returns the first character matching the given [predicate], or `null` if no such character was found.

```

@kotlin.internal.InlineOnly
public inline fun CharSequence.find(predicate: (Char) -> Boolean): Char? {
    return firstOrNull(predicate)
}

```

\* Returns the last character matching the given [predicate], or `null` if no such character was found.

```

@kotlin.internal.InlineOnly
public inline fun CharSequence.findLast(predicate: (Char) -> Boolean): Char? {
    return lastOrNull(predicate)
}

```

\* Returns first character.

@throws [NoSuchElementException] if the char sequence is empty.

```

public fun CharSequence.first(): Char {
    if (isEmpty())
        throw NoSuchElementException("Char sequence is empty.")
    return this[0]
}

```

\* 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@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.getOrElse(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    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@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@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@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@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 *\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 */\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    @Suppress("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 */\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 */\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
IllegalArgumentOutOfRangeException if [n] is negative.\n * \n * @sample samples.text.Strings.drop\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 */\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
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 */\npublic 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
IllegalArgumentOutOfRangeException if [n] is negative.\n * \n * @sample samples.text.Strings.drop\n */\npublic 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 */\npublic 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 */\npublic 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 */\npublic 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 */\npublic 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 */\npublic 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 */\npublic 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 */\npublic 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 */\npublic 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
*/\npublic inline fun <C : Appendable> CharSequence.filterIndexedTo(destination: C, predicate: (index: Int, Char) -
> Boolean): C {\n    forEachIndexed { index, element ->\n        if (predicate(index, element))
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 */\npublic 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 */\npublic 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 */\npublic 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 */\npublic inline fun <C : Appendable>
CharSequence.filterTo(destination: C, predicate: (Char) -> Boolean): C {\n    for (index in 0 until length) {\n        val
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 */\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\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    }\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@kotlin.internal\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 original char sequence.\n * \n * @sample
samples.text.Strings.associate\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 */\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 */\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 */\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 *\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 *\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@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/**\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@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 *\npublic fun <C :
MutableCollection<in Char>> CharSequence.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 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/**\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/**\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.groupByKeyAndValues\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.groupByKeyAndValues\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 * \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 * \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 * \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].

```

    * @param [transform] function that takes the index of a character and the
    character itself
    * and returns the result of the transform applied to the character.
    */
    public inline fun <R, C : MutableCollection<in R>> CharSequence.mapIndexedTo(destination: C, transform: (index: Int, Char)
    -> R): C {
        var index = 0
        for (item in this)
            destination.add(transform(index++, item))
        return destination
    }
    * Returns a list containing only the non-null results of applying the given [transform]
    function * to each character in the original char sequence.
    */
    public inline fun <R : Any> CharSequence.mapNotNull(transform: (Char) -> R?): List<R> {
        return mapNotNullTo(ArrayList<R>(), transform)
    }
    * Applies the given [transform] function to each character in the original char sequence
    * and appends only the non-null results to the given [destination].
    */
    public inline fun <R : Any, C : MutableCollection<in R>> CharSequence.mapNotNullTo(destination: C, transform: (Char) -> R?): C {
        forEach { element -> transform(element)?.let { destination.add(it) } }
        return destination
    }
    * Applies the given [transform] function to each character of the original char sequence
    * and appends the results to the given [destination].
    */
    public inline fun <R, C : MutableCollection<in R>> CharSequence.mapTo(destination: C, transform: (Char) -> R): C {
        for (item in this)
            destination.add(transform(item))
        return destination
    }
    * Returns a lazy [Iterable] that wraps each character of the original char sequence
    * into an [IndexedValue] containing the index of that character and the character itself.
    */
    public fun CharSequence.withIndex(): Iterable<IndexedValue<Char>> {
        return IndexingIterable { iterator() }
    }
    * Returns `true` if all characters match the given [predicate].
    * @sample samples.collections.Collections.Aggregates.all
    */
    public inline fun CharSequence.all(predicate: (Char) -> Boolean): Boolean {
        for (element in this) if (!predicate(element)) return false
        return true
    }
    * Returns `true` if char sequence has at least one character.
    * @sample samples.collections.Collections.Aggregates.any
    */
    public fun CharSequence.any(): Boolean {
        return !isEmpty()
    }
    * Returns `true` if at least one character matches the given [predicate].
    * @sample samples.collections.Collections.Aggregates.anyWithPredicate
    */
    public inline fun CharSequence.any(predicate: (Char) -> Boolean): Boolean {
        for (element in this) if (predicate(element)) return true
        return false
    }
    * Returns the length of this char sequence.
    */
    @kotlin.internal.InlineOnly
    public inline fun CharSequence.count(): Int {
        return length
    }
    * Returns the number of characters matching the given [predicate].
    */
    public inline fun CharSequence.count(predicate: (Char) -> Boolean): Int {
        var count = 0
        for (element in this) if (predicate(element)) ++count
        return count
    }
    * Accumulates value starting with [initial] value and applying [operation] from left to right to current accumulator value and each character.
    */
    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) ->

```

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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 character.\n */\npublic inline fun CharSequence.forEach(action:
(Char) -> Unit): Unit {\n  for (element in this) action(element)\n}\n\n/**\n * Performs the given [action] on each
character, providing sequential index with the character.\n * @param [action] function that takes the index of a
character and the character itself\n * and performs the desired action on the character.\n */\npublic inline fun
CharSequence.forEachIndexed(action: (index: Int, Char) -> Unit): Unit {\n  var index = 0\n  for (item in this)
action(index++, item)\n}\n\n/**\n * Returns the largest character or `null` if there are no characters.\n */\npublic fun
CharSequence.max(): Char? {\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 first character yielding the
largest value of the given function or `null` if there are no characters.\n * \n * @sample
samples.collections.Collections.Aggregates.maxBy\n */\npublic inline
fun <R : Comparable<R>> CharSequence.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
character having the largest value according to the provided [comparator] or `null` if there are no characters.\n
*/\npublic fun CharSequence.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 smallest character or `null` if there are no characters.\n */\npublic
fun CharSequence.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/**\n * Returns the first character yielding the smallest value of the given
function or `null` if there are no characters.\n * \n * @sample samples.collections.Collections.Aggregates.minBy\n
*/\npublic inline fun <R : Comparable<R>> CharSequence.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 character having the smallest value according to the provided [comparator] or `null` if there are no
characters.\n */\npublic fun CharSequence.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 char sequence has no characters.\n * \n * @sample samples.collections.Collections.Aggregates.none\n */\npublic
fun CharSequence.none(): Boolean {\n  return isEmpty()\n}\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

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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 * 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 * 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 * 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 * 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 * 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 * @sample
samples.collections.Collections.Aggregates.scan\n *\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 = 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\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) }
var accumulator = initial
for (index in indices) {
    accumulator = operation(index, accumulator, this[index])
    result.add(accumulator)
}
return result
}

Returns a list containing successive accumulation values generated by applying [operation] from left to right to each character and current accumulator value that starts with the first character of this char sequence. 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 a character, and calculates the next accumulator value.
@sample
samples.collections.Collections.Aggregates.scanReduce

Since Kotlin("1.3") ExperimentalStdlibApi public inline fun CharSequence.scanReduce(operation: (acc: Char, Char) -> Char): List<Char> {
    if (isEmpty())
        return emptyList()
    var accumulator = this[0]
    val result = ArrayList<Char>(length).apply { add(accumulator) }
    for (index in 1 until length) {
        accumulator = operation(accumulator, this[index])
        result.add(accumulator)
    }
    return result
}

Returns a list containing successive accumulation values generated by applying [operation] from left to right to each character, its index in the original char sequence and current accumulator value that starts with the first character of this char sequence. 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 a character, current accumulator value and the character itself, and calculates the next accumulator value.
@sample
samples.collections.Collections.Aggregates.scanReduce

Since Kotlin("1.3") ExperimentalStdlibApi public
inline fun CharSequence.scanReduceIndexed(operation: (index: Int, acc: Char, Char) -> Char): List<Char> {
    if (isEmpty()) return emptyList()
    var accumulator = this[0]
    val result = ArrayList<Char>(length).apply { add(accumulator) }
    for (index in 1 until length) {
        accumulator = operation(index, accumulator, this[index])
        result.add(accumulator)
    }
    return result
}

Returns the sum of all values produced by [selector] function applied to each character in the char sequence.
public inline fun CharSequence.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 character in the char sequence.
public inline fun CharSequence.sumByDouble(selector: (Char) -> Double): Double {
    var sum: Double = 0.0
    for (element in this) {
        sum += selector(element)
    }
    return sum
}

Splits this char sequence into a list of strings each not exceeding the given [size]. The last string in the resulting list 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

Since Kotlin("1.2") public fun CharSequence.chunked(size: Int): List<String> {
    return windowed(size, size, partialWindows = true)
}

Splits this char sequence into several char sequences 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 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.chunkedTransform

Since Kotlin("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

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```

*/\n@SinceKotlin("1.2")\npublic fun CharSequence.chunkedSequence(size: Int): Sequence<String> {\n    return
chunkedSequence(size) { it.toString() }\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 sequence 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.\n * You should not store it or allow it to
escape in some way, unless you made a snapshot of it.\n * The last char sequence may have less characters than the
given [size].\n * \n * @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.\n * \n * @sample
samples.text.Strings.chunkedTransformToSequence\n */\n@SinceKotlin("1.2")\npublic fun <R>
CharSequence.chunkedSequence(size:
Int, transform: (CharSequence) -> R): Sequence<R> {\n    return windowedSequence(size, size, partialWindows =
true, transform = transform)\n}\n\n/**\n * Splits the original char sequence into pair of char sequences,\n * where
*first* char sequence contains characters for which [predicate] yielded `true`,\n * while *second* char sequence
contains characters for which [predicate] yielded `false`.\n */\n\npublic inline fun CharSequence.partition(predicate:
(Char) -> Boolean): Pair<CharSequence, CharSequence> {\n    val first = StringBuilder()\n    val second =
StringBuilder()\n    for (element in this) {\n        if (predicate(element)) {\n            first.append(element)\n        } else
{\n            second.append(element)\n        }\n    }\n    return Pair(first, second)\n}\n\n/**\n * Splits the original string
into pair of strings,\n * where *first* string contains characters for which [predicate] yielded `true`,\n * while
*second* string contains characters for which
[predicate] yielded `false`.\n */\n\npublic inline fun String.partition(predicate: (Char) -> Boolean): Pair<String,
String> {\n    val first = StringBuilder()\n    val second = StringBuilder()\n    for (element in this) {\n        if
(predicate(element)) {\n            first.append(element)\n        } else {\n            second.append(element)\n        }\n    }\n    return Pair(first.toString(), second.toString())\n}\n\n/**\n * Returns a list of snapshots of the window of the
given [size]\n * sliding along this char sequence with the given [step], where each\n * snapshot is a string.\n * \n *
Several last strings may have less characters than the given [size].\n * \n * Both [size] and [step] must be positive
and can be greater than the number of elements in this char sequence.\n * \n * @param size the number of elements to
take in each window\n * @param step the number of elements to move the window forward by on an each step, by
default 1\n * @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.takeWindows\n */\n@SinceKotlin("1.2")\npublic
fun CharSequence.windowed(size: Int, step: Int = 1, partialWindows: Boolean = false): List<String> {\n    return
windowed(size, step, partialWindows) { it.toString() }\n}\n\n/**\n * Returns a list of results of applying the given
[transform] function to\n * an each char sequence representing a view over the window of the given [size]\n *
sliding along this char sequence with the given [step].\n * \n * Note that the char sequence 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 * Several last char sequences may have less characters than the given
[size].\n * \n * Both [size] and [step] must be positive and can be greater than the number
of elements in this char sequence.\n * \n * @param size the number of elements to take in each window\n * @param
step the number of elements to move the window forward by on an each step, by default 1\n * @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")\npublic fun <R>
CharSequence.windowed(size: Int, step: Int = 1, partialWindows: Boolean = false, transform: (CharSequence) -> R):
List<R> {\n    checkWindowSizeStep(size, step)\n    val thisSize = this.length\n    val resultCapacity = thisSize / step
+ if (thisSize % step == 0) 0 else 1\n    val result = ArrayList<R>(resultCapacity)\n    var index = 0\n    while (index
in 0 until thisSize) {\n        val end = index + size\n        val coercedEnd = if (end < 0 || end > thisSize) { if
(partialWindows) thisSize else break } else

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end\n    result.add(transform(subSequence(index, coercedEnd)))\n    index += step\n } \n return
result\n}\n\n/**\n * Returns a sequence of snapshots of the window of the given [size]\n * sliding along this char
sequence with the given [step], where each\n * snapshot is a string.\n * \n * Several last strings may have less
characters than the given [size].\n * \n * Both [size] and [step] must be positive and can be greater than the number
of elements in this char sequence.\n * @param size the number of elements to take in each window\n * @param step
the number of elements to move the window forward by on an each step, by default 1\n * @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.takeWindows\n
*\n@\n@SinceKotlin("1.2")\npublic fun CharSequence.windowedSequence(size: Int, step: Int = 1, partialWindows:
Boolean = false): Sequence<String> {\n    return windowedSequence(size, step, partialWindows) { it.toString()
}\n}\n\n/**\n * Returns a sequence of results of applying the given [transform] function to\n * an each char
sequence representing a view over the window of the given [size]\n * sliding along this char sequence with the given
[step].\n * \n * Note that the char sequence 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 *
Several last char sequences may have less characters than the given [size].\n * \n * Both [size] and [step] must be
positive and can be greater than the number of elements in this char sequence.\n * @param size the number of
elements to take in each window\n * @param step the number of elements to move the window forward by on an
each step, by default 1\n * @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@\n@SinceKotlin("1.2")\npublic fun <R>
CharSequence.windowedSequence(size: Int, step: Int = 1, partialWindows: Boolean = false, transform:
(CharSequence) -> R): Sequence<R> {\n    checkWindowSizeStep(size, step)\n    val windows = (if
(partialWindows) indices else 0 until length - size + 1) step step\n    return windows.asSequence().map { index ->\n
    val end = index + size\n    val coercedEnd = if (end < 0 || end > length) length else end\n
transform(subSequence(index, coercedEnd))\n    }\n}\n\n/**\n * Returns a list of pairs built from the characters of
`this` and the [other] char sequences with the same index\n * The returned list has length of the shortest char
sequence.\n * \n * @sample samples.text.Strings.zip\n
*\n@\npublic infix fun CharSequence.zip(other: CharSequence):
List<Pair<Char, Char>>
{\n    return zip(other) { c1, c2 -> c1 to c2 }\n}\n\n/**\n * Returns a list of values built from the characters of `this`
and the [other] char sequences with the same index\n * using the provided [transform] function applied to each pair
of characters.\n * The returned list has length of the shortest char sequence.\n * \n * @sample
samples.text.Strings.zipWithTransform\n
*\n@\npublic inline fun <V> CharSequence.zip(other: CharSequence,
transform: (a: Char, b: Char) -> V): List<V> {\n    val length = minOf(this.length, other.length)\n    val list =
ArrayList<V>(length)\n    for (i in 0 until length) {\n        list.add(transform(this[i], other[i]))\n    }\n    return
list\n}\n\n/**\n * Returns a list of pairs of each two adjacent characters in this char sequence.\n * The returned
list is empty if this char sequence contains less than two characters.\n * \n * @sample
samples.collections.Collections.Transformations.zipWithNext\n
*\n@\n@SinceKotlin("1.2")\npublic fun
CharSequence.zipWithNext():
List<Pair<Char, Char>> {\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 characters in this char
sequence.\n * The returned list is empty if this char sequence contains less than two characters.\n * \n *
@sample samples.collections.Collections.Transformations.zipWithNextToFindDeltas\n
*\n@\n@SinceKotlin("1.2")\npublic inline fun <R> CharSequence.zipWithNext(transform: (a: Char, b: Char) -> R):
List<R> {\n    val size = length - 1\n    if (size < 1) return emptyList()\n    val result = ArrayList<R>(size)\n    for
(index in 0 until size) {\n        result.add(transform(this[index], this[index + 1]))\n    }\n    return result\n}\n\n/**\n *
Creates an [Iterable] instance that wraps the original char sequence returning its characters when being iterated.\n
*\n@\npublic fun CharSequence.asIterable(): Iterable<Char> {\n    if (this is String && isEmpty())

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return emptyList()\n    return Iterable { this.iterator() }\n}\n\n/**\n * Creates a [Sequence] instance that wraps the
original char sequence returning its characters when being iterated.\n */\npublic fun CharSequence.asSequence():
Sequence<Char> {\n    if (this is String && isEmpty()) return emptySequence()\n    return Sequence { this.iterator()
}\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\nimport kotlin.contracts.contract\n\n/**\n * Returns a sub sequence of this char sequence having
leading and trailing characters matching the [predicate] removed.\n */\npublic inline fun
CharSequence.trim(predicate: (Char) -> Boolean): CharSequence {\n    var startIndex = 0\n    var endIndex = length
- 1\n    var startFound
= false\n\n    while (startIndex <= endIndex) {\n        val index = if (!startFound) startIndex else endIndex\n        val
match = predicate(this[index])\n\n        if (!startFound) {\n            if (!match)\n                startFound = true\n        }
else {\n            startIndex += 1\n        } else {\n            if (!match)\n                break\n            else\n
endIndex -= 1\n        }\n    }\n\n    return subSequence(startIndex, endIndex + 1)\n}\n\n/**\n * Returns a string
having leading and trailing characters matching the [predicate] removed.\n */\npublic inline fun
String.trim(predicate: (Char) -> Boolean): String =\n    (this as CharSequence).trim(predicate).toString()\n\n/**\n *
Returns a sub sequence of this char sequence having leading characters matching the [predicate] removed.\n
*/\npublic inline fun CharSequence.trimStart(predicate: (Char) -> Boolean): CharSequence {\n    for (index in
this.indices)\n        if (!predicate(this[index]))\n            return subSequence(index, length)\n}\n\n/**\n * Returns a string having leading characters
matching the [predicate] removed.\n */\npublic inline fun String.trimStart(predicate: (Char) -> Boolean): String =\n    (this as CharSequence).trimStart(predicate).toString()\n\n/**\n * Returns a sub sequence of this char sequence
having trailing characters matching the [predicate] removed.\n */\npublic inline fun
CharSequence.trimEnd(predicate: (Char) -> Boolean): CharSequence {\n    for (index in this.indices.reversed())\n        if (!predicate(this[index]))\n            return subSequence(0, index + 1)\n}\n\n/**\n * Returns a string
having trailing characters matching the [predicate] removed.\n */\npublic inline fun String.trimEnd(predicate: (Char)
-> Boolean): String =\n    (this as CharSequence).trimEnd(predicate).toString()\n\n/**\n * Returns a sub sequence of
this char sequence having leading and trailing characters from the [chars] array removed.\n
*/\npublic fun CharSequence.trim(vararg chars: Char): CharSequence = trim { it in chars }\n\n/**\n * Returns a
string having leading and trailing characters from the [chars] array removed.\n */\npublic fun String.trim(vararg
chars: Char): String = trim { it in chars }\n\n/**\n * Returns a sub sequence of this char sequence having leading
characters from the [chars] array removed.\n */\npublic fun CharSequence.trimStart(vararg chars: Char):
CharSequence = trimStart { it in chars }\n\n/**\n * Returns a string having leading characters from the [chars] array
removed.\n */\npublic fun String.trimStart(vararg chars: Char): String = trimStart { it in chars }\n\n/**\n * Returns a
sub sequence of this char sequence having trailing characters from the [chars] array removed.\n */\npublic fun
CharSequence.trimEnd(vararg chars: Char): CharSequence = trimEnd { it in chars }\n\n/**\n * Returns a string
having trailing characters from the [chars] array removed.\n */\npublic fun String.trimEnd(vararg
chars: Char): String = trimEnd { it in chars }\n\n/**\n * Returns a sub sequence of this char sequence having
leading and trailing whitespace removed.\n */\npublic fun CharSequence.trim(): CharSequence =
trim(Char::isWhitespace)\n\n/**\n * Returns a string having leading and trailing whitespace removed.\n
*/\n\n@kotlin.internal.InlineOnly\npublic inline fun String.trim(): String = (this as
CharSequence).trim().toString()\n\n/**\n * Returns a sub sequence of this char sequence having leading whitespace
removed.\n */\npublic fun CharSequence.trimStart(): CharSequence = trimStart(Char::isWhitespace)\n\n/**\n *
Returns a string having leading whitespace removed.\n */\n\n@kotlin.internal.InlineOnly\npublic inline fun
String.trimStart(): String = (this as CharSequence).trimStart().toString()\n\n/**\n * Returns a sub sequence of this
char sequence having trailing whitespace removed.\n */\npublic fun CharSequence.trimEnd(): CharSequence =
trimEnd(Char::isWhitespace)\n\n/**\n * Returns a

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string having trailing whitespace removed.\n */\n@kotlin.internal.InlineOnly\npublic inline fun String.trimEnd():
String = (this as CharSequence).trimEnd().toString()\n\n/**\n * Returns a char sequence with content of this char
sequence padded at the beginning\n * to the specified [length] with the specified character or space.\n */\n * @param
length the desired string length.\n * @param padChar the character to pad string with, if it has length less than the
[length] specified. Space is used by default.\n * @return Returns a char sequence of length at least [length]
consisting of `this` char sequence prepended with [padChar] as many times\n * as are necessary to reach that
length.\n * @sample samples.text.Strings.padStart\n */\npublic fun CharSequence.padStart(length: Int, padChar:
Char = ' '): CharSequence {\n    if (length < 0)\n        throw IllegalArgumentException("Desired length $length is
less than zero.")\n    if (length <= this.length)\n        return this.subSequence(0, this.length)\n\n    val sb =
StringBuilder(length)\n    for (i in 1..(length - this.length))\n        sb.append(padChar)\n    sb.append(this)\n    return sb\n}\n\n/**\n * Pads the string to the specified [length] at the beginning with the
specified character or space.\n */\n * @param length the desired string length.\n * @param padChar the character to
pad string with, if it has length less than the [length] specified. Space is used by default.\n * @return Returns a
string of length at least [length] consisting of `this` string prepended with [padChar] as many times\n * as are
necessary to reach that length.\n * @sample samples.text.Strings.padStart\n */\npublic fun String.padStart(length:
Int, padChar: Char = ' '): String =\n    (this as CharSequence).padStart(length, padChar).toString()\n\n/**\n * Returns
a char sequence with content of this char sequence padded at the end\n * to the specified [length] with the specified
character or space.\n */\n * @param length the desired string length.\n * @param padChar the character to pad string
with, if it has length less than the [length] specified. Space is used by default.\n * @return Returns a char
sequence of length at least [length] consisting of `this` char sequence appended
with [padChar] as many times\n * as are necessary to reach that length.\n * @sample samples.text.Strings.padEnd\n
*/\npublic fun CharSequence.padEnd(length: Int, padChar: Char = ' '): CharSequence {\n    if (length < 0)\n        throw
IllegalArgumentException("Desired length $length is less than zero.")\n    if (length <= this.length)\n        return
this.subSequence(0, this.length)\n\n    val sb = StringBuilder(length)\n    sb.append(this)\n    for (i in
1..(length - this.length))\n        sb.append(padChar)\n    return sb\n}\n\n/**\n * Pads the string to the specified
[length] at the end with the specified character or space.\n */\n * @param length the desired string length.\n *
@param padChar the character to pad string with, if it has length less
than the [length] specified. Space is used by default.\n * @return Returns a string of length at least [length]
consisting of `this` string appended with [padChar] as many times\n * as are necessary to reach that length.\n *
@sample samples.text.Strings.padEnd\n */\npublic fun String.padEnd(length: Int, padChar: Char = ' '): String =\n    (this
as CharSequence).padEnd(length, padChar).toString()\n\n/**\n * Returns `true` if this nullable char sequence is
either `null` or empty.\n */\n * @sample samples.text.Strings.stringIsNullOrEmpty\n\n*/\n@kotlin.internal.InlineOnly\npublic inline fun CharSequence?.isNullOrEmpty(): Boolean {\n    contract {\n        returns(false) implies (this@isNullOrEmpty != null)\n    }\n\n    return this == null || this.length == 0\n}\n\n/**\n * Returns `true` if this char sequence is empty (contains no characters).\n */\n * @sample
samples.text.Strings.stringIsEmpty\n */\n@kotlin.internal.InlineOnly\npublic inline fun CharSequence.isEmpty():
Boolean = length ==
0\n\n/**\n * Returns `true` if this char sequence is not empty.\n */\n * @sample
samples.text.Strings.stringIsNotEmpty\n */\n@kotlin.internal.InlineOnly\npublic inline fun
CharSequence.isNotEmpty(): Boolean = length > 0\n\n// implemented differently in JVM and JS\n//\npublic fun
String.isBlank(): Boolean = length() == 0 || all { it.isWhitespace() }\n\n/**\n * Returns `true` if this char sequence
is not empty and contains some characters except of whitespace characters.\n */\n * @sample
samples.text.Strings.stringIsNotBlank\n */\n@kotlin.internal.InlineOnly\npublic inline fun
CharSequence.isNotBlank(): Boolean = !isBlank()\n\n/**\n * Returns `true` if this nullable char sequence is either
`null` or empty or consists solely of whitespace characters.\n */\n * @sample
samples.text.Strings.stringIsNullOrBlank\n */\n@kotlin.internal.InlineOnly\npublic inline fun
CharSequence?.isNullOrBlank(): Boolean {\n    contract {\n        returns(false) implies (this@isNullOrBlank !=
null)\n    }\n\n    return

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this == null || this.isBlank()\n\n\n/**\n * Iterator for characters of the given char sequence.\n */\npublic operator
fun CharSequence.iterator(): CharIterator = object : CharIterator() {\n    private var index = 0\n    public override
fun nextChar(): Char = get(index++)\n    public override fun hasNext(): Boolean = index < length\n\n\n/**
Returns the string if it is not `null`, or the empty string otherwise. *\n@kotlin.internal.InlineOnly\npublic inline fun
String?.orEmpty(): String = this ?: ""\n\n\n/**\n * Returns this char sequence if it's not empty\n * or the result of
calling [defaultValue] function if the char sequence is empty.\n *\n * @sample samples.text.Strings.stringIfEmpty\n
*\n@SinceKotlin("1.3")\n@kotlin.internal.InlineOnly\npublic inline fun <C, R> C.ifEmpty(defaultValue: () ->
R): R where C : CharSequence, C : R =\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 * or the result of calling [defaultValue] function otherwise.\n *\n * @sample
samples.text.Strings.stringIfBlank\n *\n@SinceKotlin("1.3")\n@kotlin.internal.InlineOnly\npublic inline fun <C,
R> C.ifBlank(defaultValue: () -> R): R where C : CharSequence, C : R =\n    if (isBlank()) defaultValue() else
this\n\n\n/**\n * Returns the range of valid character indices for this char sequence.\n */\npublic val
CharSequence.indices: IntRange\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 */\npublic val CharSequence.lastIndex: Int\n    get() = this.length - 1\n\n\n/**\n *
Returns `true` if this CharSequence has Unicode surrogate pair at the specified [index].\n */\npublic fun
CharSequence.hasSurrogatePairAt(index: Int): Boolean {\n    return index in 0..length - 2\n        &&
this[index].isHighSurrogate()\n        && this[index + 1].isLowSurrogate()\n}\n\n\n/**\n * Returns a substring
specified by the
given [range] of indices.\n */\npublic 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 */\npublic 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 * This extension is chosen
only for invocation with old-named parameters.\n * Replace parameter names with the same as those of
[CharSequence.subSequence].\n
*\n@kotlin.internal.InlineOnly\n@Suppress("EXTENSION_SHADOWED_BY_MEMBER") // false
warning\n@Deprecated("Use parameters named startIndex and endIndex.", ReplaceWith("subSequence(startIndex
= start, endIndex = end)"))\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 * @param startIndex the start index (inclusive).\n * @param
endIndex the end index (exclusive). If not specified, the length of the char sequence is used.\n
*\n@kotlin.internal.InlineOnly\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 */\npublic 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 * If the string does not contain the delimiter, returns [missingDelimiterValue] which
defaults to the original string.\n */\npublic fun String.substringBefore(delimiter: Char, missingDelimiterValue:
String = this): String {\n    val index = indexOf(delimiter)\n    return if (index == -1) missingDelimiterValue else
substring(0,
index)\n}\n\n\n/**\n * Returns a substring before the first occurrence of [delimiter].\n * If the string does not contain
the delimiter, returns [missingDelimiterValue] which defaults to the original string.\n */\npublic fun
String.substringBefore(delimiter: String, missingDelimiterValue: String = this): String {\n    val index =
indexOf(delimiter)\n    return if (index == -1) missingDelimiterValue else substring(0, index)\n}\n\n\n/**\n * Returns
a substring after the first occurrence of [delimiter].\n * If the string does not contain the delimiter, returns
[missingDelimiterValue] which defaults to the original string.\n */\npublic fun String.substringAfter(delimiter:
Char, missingDelimiterValue: String = this): String {\n    val index = indexOf(delimiter)\n    return if (index == -1)
missingDelimiterValue else substring(index + 1, length)\n}\n\n\n/**\n * Returns a substring after the first occurrence

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of [delimiter].\n \* If the string does not contain the delimiter, returns [missingDelimiterValue] which defaults to the original string.\n \*/\npublic fun String.substringAfter(delimiter: String, missingDelimiterValue: String = this): String {\n val index = indexOf(delimiter)\n return if (index == -1) missingDelimiterValue else substring(index + delimiter.length, length)\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: Char, 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 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 \*/\npublic 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 \* 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] \* is replaced with the [replacement] char sequence.\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 \* \* 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 \* \* @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 \* \* [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 \* [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 \* The end index of the [range] is included in the removed part.\n \*/\npublic fun CharSequence.removeRange(range: IntRange): CharSequence =\n removeRange(range.start, range.endInclusive + 1)\n\n/\*\*\n \* Removes the part of a string at the given [range].\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 \* If this char sequence starts with the given [prefix], returns a new char sequence\n \* with the prefix removed. Otherwise, returns a new char sequence with the same characters.\n \*/\npublic fun CharSequence.removePrefix(prefix: CharSequence): CharSequence {\n if (startsWith(prefix)) {\n return subSequence(prefix.length, length)\n }\n return subSequence(0, length)\n}\n\n/\*\*\n \* If this string starts with the given [prefix], returns a copy of this string\n \* with the prefix removed. Otherwise, returns this string.\n \*/\npublic fun String.removePrefix(prefix: CharSequence): String {\n if (startsWith(prefix)) {\n return substring(prefix.length)\n }\n return this\n}\n\n/\*\*\n \* If this char sequence ends with the given [suffix], returns a new char sequence\n \* with the suffix removed. Otherwise, returns a new char sequence with the same characters.\n \*/\npublic fun CharSequence.removeSuffix(suffix: CharSequence): CharSequence {\n if (endsWith(suffix)) {\n return subSequence(0, length - suffix.length)\n }\n return subSequence(0, length)\n}\n\n/\*\*\n \* If this string ends with the given [suffix], returns a copy of this string\n \* with the suffix removed. Otherwise, returns this string.\n \*/\npublic fun String.removeSuffix(suffix: CharSequence): 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 sequence having both the given [prefix] and [suffix] removed.\n \* Otherwise returns a new char sequence with the same characters.\n \*/\npublic fun CharSequence.removeSurrounding(prefix: CharSequence, suffix: CharSequence): 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 the [suffix].\n \* Otherwise returns this string unchanged.\n \*/\npublic fun String.removeSurrounding(prefix: CharSequence, suffix: CharSequence): String {\n if ((length >= prefix.length + suffix.length) && 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 char sequence having this [delimiter] removed both from the start and end.\n \* Otherwise returns a new char sequence with the same characters.\n \*/\npublic fun CharSequence.removeSurrounding(delimiter: CharSequence): CharSequence =\n removeSurrounding(delimiter, delimiter)\n\n/\*\*\n \* Removes the given [delimiter] string from both the start and the end of this string\n \* if and only if it starts with and ends with the [delimiter].\n \* Otherwise returns 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 delimiter with the [replacement] string.\n \* If the string does not contain the delimiter, returns [missingDelimiterValue] which defaults to the original string.\n \*/\npublic fun String.replaceBefore(delimiter: Char, replacement: String, missingDelimiterValue: String = this): String {\n val index = indexOf(delimiter)\n return if (index == -1) missingDelimiterValue else replaceRange(0, index, replacement)\n}\n\n/\*\*\n \* Replace part of string before the first occurrence of given delimiter with the [replacement] string.\n \* If the string does not contain the delimiter, returns [missingDelimiterValue] which defaults to the original string.\n \*/\npublic fun String.replaceBefore(delimiter: String, replacement: String,

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missingDelimiterValue: String = this): String {\n    val index = indexOf(delimiter)\n    return if (index == -1)
missingDelimiterValue else replaceRange(0, index, replacement)\n}\n\n/**\n * Replace part of string after the first
occurrence of given delimiter with the [replacement] string.\n * If the string does not contain the delimiter, returns
[missingDelimiterValue] which defaults to the original string.\n */\npublic fun String.replaceAfter(delimiter: Char,
replacement: String, missingDelimiterValue: String = this): String {\n    val index = indexOf(delimiter)\n    return if
(index == -1) missingDelimiterValue else replaceRange(index + 1, length, replacement)\n}\n\n/**\n * Replace part
of string after the first occurrence of given delimiter with the [replacement] string.\n * If the string does not contain
the delimiter, returns [missingDelimiterValue] which defaults to the original string.\n */\npublic fun
String.replaceAfter(delimiter: String, replacement: String, missingDelimiterValue:
String = this): String {\n    val index = indexOf(delimiter)\n    return if (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 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 {\n    val index = lastIndexOf(delimiter)\n
return if (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 not contain the delimiter, returns [missingDelimiterValue] which defaults to the original
string.\n */\npublic fun String.replaceAfterLast(delimiter: Char, replacement:
String, missingDelimiterValue: String = this): String {\n    val index = lastIndexOf(delimiter)\n    return if (index ==
-1) missingDelimiterValue else replaceRange(index + 1, length, replacement)\n}\n\n/**\n * Replace part of string
before the last occurrence of given delimiter with the [replacement] string.\n * If the string does not contain the
delimiter, returns [missingDelimiterValue] which defaults to the original string.\n */\npublic fun
String.replaceBeforeLast(delimiter: Char, replacement: String, missingDelimiterValue: String = this): String {\n
val index = lastIndexOf(delimiter)\n    return if (index == -1) missingDelimiterValue else replaceRange(0, index,
replacement)\n}\n\n/**\n * Replace part of string before the last occurrence of given delimiter with the
[replacement] string.\n * If the string does not contain the delimiter, returns [missingDelimiterValue] which defaults
to the original string.\n */\npublic fun String.replaceBeforeLast(delimiter: String,
replacement: String, missingDelimiterValue: String = this): String {\n    val index = lastIndexOf(delimiter)\n
return if (index == -1) missingDelimiterValue else replaceRange(0, index, replacement)\n}\n\n// public fun
String.replace(oldChar: Char, newChar: Char, ignoreCase: Boolean): String // JVM- and JS-specific\n// public fun
String.replace(oldValue: String, newValue: String, ignoreCase: Boolean): String // JVM- and JS-specific\n\n/**\n *
Returns a new string obtained by replacing each substring of this char sequence that matches the given regular
expression\n * with the given [replacement].\n * The [replacement] can consist of any combination of literal text
and $-substitutions. To treat the replacement string\n * literally escape it with the
[kotlin.text.Regex.Companion.escapeReplacement] method.\n */\n@kotlin.internal.InlineOnly\npublic inline fun
CharSequence.replace(regex: Regex, replacement: String): String = regex.replace(this, replacement)\n\n/**\n *
Returns a new string
obtained by replacing each substring of this char sequence that matches the given regular expression\n * with the
result of the given function [transform] that takes [MatchResult] and returns a string to be used as a\n * replacement
for that match.\n */\n@kotlin.internal.InlineOnly\npublic inline fun CharSequence.replace(regex: Regex, noinline
transform: (MatchResult) -> CharSequence): String =\n    regex.replace(this, transform)\n\n/**\n * Replaces the first
occurrence of the given regular expression [regex] in this char sequence with specified [replacement] expression.\n
*\n * @param replacement A replacement expression that can include substitutions. See [Regex.replaceFirst] for
details.\n */\n@kotlin.internal.InlineOnly\npublic inline fun CharSequence.replaceFirst(regex: Regex, replacement:
String): String = regex.replaceFirst(this, replacement)\n\n/**\n * Returns `true` if this char sequence matches the
given regular expression.\n */\n@kotlin.internal.InlineOnly\npublic inline
infix fun CharSequence.matches(regex: Regex): Boolean = regex.matches(this)\n\n/**\n * Implementation of
[regionMatches] for CharSequences.\n * Invoked when it's already known that arguments are not Strings, so that no

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additional type checks are performed.\n */\ninternal fun CharSequence.regionMatchesImpl(thisOffset: Int, other:
CharSequence, otherOffset: Int, length: Int, ignoreCase: Boolean): Boolean {\n    if ((otherOffset < 0) || (thisOffset <
0) || (thisOffset > this.length - length) || (otherOffset > other.length - length)) {\n        return false\n    }\n    for
(index in 0 until length) {\n        if (!this[thisOffset + index].equals(other[otherOffset + index], ignoreCase))\n    return false\n    }\n    return true\n}\n\n/**\n * Returns `true` if this char sequence starts with the specified
character.\n */\npublic fun CharSequence.startsWith(char: Char, ignoreCase: Boolean = false): Boolean =\nthis.length > 0 && this[0].equals(char, ignoreCase)\n\n/**\n * Returns
`true` if this char sequence ends with the specified character.\n */\npublic fun CharSequence.endsWith(char: Char,
ignoreCase: Boolean = false): Boolean =\n    this.length > 0 && this[lastIndex].equals(char, ignoreCase)\n\n/**\n *
Returns `true` if this char sequence starts with the specified prefix.\n */\npublic fun CharSequence.startsWith(prefix:
CharSequence, ignoreCase: Boolean = false): Boolean {\n    if (!ignoreCase && this is String && prefix is String)\n        return this.startsWith(prefix)\n    else\n        return regionMatchesImpl(0, prefix, 0, prefix.length,
ignoreCase)\n}\n\n/**\n * Returns `true` if a substring of this char sequence starting at the specified offset
[startIndex] starts with the specified prefix.\n */\npublic fun CharSequence.startsWith(prefix: CharSequence,
startIndex: Int, ignoreCase: Boolean = false): Boolean {\n    if (!ignoreCase && this is String && prefix is String)\n        return this.startsWith(prefix, startIndex)\n    else\n        return 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/**\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 * @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 *
@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/**\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 * @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 */\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 * @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

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case when matching a character. By default `false`.
 * @return An index of the last occurrence of matched
character from [chars] or -1 if none of [chars] are found.
 *
 * public fun CharSequence.lastIndexOfAny(chars:
CharArray, startIndex: Int = lastIndex, ignoreCase: Boolean = false): Int {
    if (!ignoreCase && chars.size == 1
&& this is String) {
        val char = chars.single()
        return
        nativeLastIndexOf(char, startIndex)
    }
    for (index in startIndex.coerceAtMost(lastIndex) downTo 0) {
        val charAtIndex = get(index)
        if (chars.any { it.equals(charAtIndex, ignoreCase) })
            return index
    }
    return -1
}

private fun CharSequence.indexOf(other: CharSequence, startIndex: Int, endIndex: Int,
ignoreCase: Boolean, last: Boolean = false): Int {
    val indices = if (!last)
startIndex.coerceAtLeast(0)..endIndex.coerceAtMost(length)
else
startIndex.coerceAtMost(lastIndex)
downTo endIndex.coerceAtLeast(0)
    if (this is String && other is String) { // smart cast
        for (index in
indices) {
            if (other.regionMatches(0, this, index, other.length, ignoreCase))
                return index
        }
    } else {
        for (index in indices) {
            if (other.regionMatchesImpl(0, this, index, other.length,
ignoreCase))
                return index
        }
    }
    return
-1
}

private fun CharSequence.findAnyOf(strings: Collection<String>, startIndex: Int, ignoreCase: Boolean,
last: Boolean): Pair<Int, String>? {
    if (!ignoreCase && strings.size == 1) {
        val string = strings.single()
        val index = if (!last) indexOf(string, startIndex) else lastIndexOf(string, startIndex)
        return if (index < 0) null
else index to string
    }
    val indices = if (!last) startIndex.coerceAtLeast(0)..length else
startIndex.coerceAtMost(lastIndex) downTo 0
    if (this is String) {
        for (index in indices) {
            val
matchingString = strings.firstOrNull { it.regionMatches(0, this, index, it.length, ignoreCase) }
            if
(matchingString != null)
                return index to matchingString
        }
    } else {
        for (index in indices) {
            val matchingString = strings.firstOrNull { it.regionMatchesImpl(0, this, index, it.length, ignoreCase) }
            if
(matchingString != null)
                return index to matchingString
        }
    }
    return null
}

 * Finds the first occurrence of
any of the specified [strings] in this char sequence,
 * starting from the specified [startIndex] and optionally
ignoring the case.
 * @param ignoreCase `true` to ignore character case when matching a string. By default
`false`.
 * @return A pair of an index of the first occurrence of matched string from [strings] and the string
matched
 * or `null` if none of [strings] are found.
 * To avoid ambiguous results when strings in [strings]
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 [strings]
 * that matches this string at that position.
 *
 * public fun
CharSequence.findAnyOf(strings: Collection<String>, startIndex: Int = 0, ignoreCase: Boolean = false): Pair<Int,
String>? =
findAnyOf(strings, startIndex, ignoreCase, last = false)

 * Finds
the last occurrence of any of the specified [strings] in this char sequence,
 * starting from the specified [startIndex]
and optionally ignoring the case.
 * @param startIndex The index of character to start searching at. The search
proceeds backward toward the beginning of the string.
 * @param ignoreCase `true` to ignore character case when
matching a string. By default `false`.
 * @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.
 * To avoid ambiguous results when
strings in [strings] have characters in common, this method proceeds from
 * the end toward the beginning of this
string, and finds at each position the first element in [strings]
 * that matches this string at that position.
 *
 * public fun CharSequence.findLastAnyOf(strings: Collection<String>, startIndex: Int = lastIndex, ignoreCase:
Boolean = false): Pair<Int, String>? =
findAnyOf(strings, startIndex,
ignoreCase, last = true)

 * Finds the index of the first occurrence of any of the specified [strings] in this
char sequence,
 * starting from the specified [startIndex] and optionally ignoring the case.
 * @param
ignoreCase `true` to ignore character case when matching a string. By default `false`.
 * @return An index of the
first occurrence of matched string from [strings] or -1 if none of [strings] are found.
 * To avoid ambiguous
results when strings in [strings] 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 [strings]
 * that matches this string at that position.
 *
 * public fun CharSequence.indexOfAny(strings: Collection<String>, startIndex: Int = 0, ignoreCase: Boolean =
false): Int =
findAnyOf(strings, startIndex, ignoreCase, last = false)?.first ?: -1

 * Finds the index of the

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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 \*/\n\npublic fun CharSequence.lastIndexOfAny(strings: Collection<String>, startIndex: Int = lastIndex, ignoreCase: Boolean = false): Int =\n findAnyOf(strings, startIndex, ignoreCase, last = true)?.first ?: -1\n\n// indexOf\n\n/\*\*\n \* Returns the index within this string of the first occurrence of the specified character, starting from the specified [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 \*/\n\npublic fun CharSequence.indexOf(char: Char, startIndex: Int = 0, ignoreCase: Boolean = false): Int {\n return if (ignoreCase || this !is String)\n indexOfAny(charArrayOf(char), startIndex, ignoreCase)\n else\n nativeIndexOf(char, startIndex)\n}\n\n/\*\*\n \* Returns the index within this char sequence of the first occurrence of the specified [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 \*/\n\npublic fun CharSequence.indexOf(string: String, startIndex: 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 \* @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 [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 \* @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 [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 \* @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 \* Returns `true` if this char sequence contains the specified character [char].\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 \* 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 =\n regex.containsMatchIn(this)\n\n// rangesDelimitedBy\n\nprivate class DelimitedRangesSequence(\n private val input: CharSequence,\n private val startIndex:



```

{ 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()

/*
 * 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.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.\n \* \n \* @throws IndexOutOfBoundsException if either [offset] or [length] are less than zero\n \* or `offset + length` is out of [chars] array bounds.\n

```

*\n@SinceKotlin("1.2")\npublic actual fun String(chars: CharArray, offset: Int, length:
Int): String {\n    if (offset < 0 || length < 0 || chars.size - offset < length)\n        throw
IndexOutOfBoundsException("size: ${chars.size}; offset: $offset; length: $length")\n    var result = ""\n    for
(index in offset until offset + length) {\n        result += chars[index]\n    }\n    return result\n}\n\n/**\n *
Concatenates characters in this [CharArray] into a String.\n
*\n@SinceKotlin("1.3")\n@ExperimentalStdlibApi\npublic actual fun CharArray.concatToString(): String {\n
var result = ""\n    for (char in this) {\n        result += char\n    }\n    return result\n}\n\n/**\n * Concatenates
characters in this [CharArray] or its subrange into a String.\n * \n * @param startIndex the beginning (inclusive) of
the subrange of characters, 0 by default.\n * @param endIndex the end (exclusive) of the subrange of characters,
size of this array by default.\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
*\n@SinceKotlin("1.3")\n@Suppress("ACTUAL_FUNCTION_WITH_DEFAULT_ARGUMENTS")\n@Experi
mentalStdlibApi\npublic actual fun CharArray.concatToString(startIndex: Int = 0, endIndex: Int = this.size): String
{\n    AbstractList.checkBoundsIndexes(startIndex, endIndex, this.size)\n    var result = ""\n    for (index in
startIndex until endIndex) {\n        result += this[index]\n    }\n    return result\n}\n\n/**\n * Returns a [CharArray]
containing characters of this string.\n * \n * @SinceKotlin("1.3")\n@ExperimentalStdlibApi\npublic actual fun
String.toCharArray(): CharArray {\n    return CharArray(length) { get(it) }\n}\n\n/**\n * Returns a [CharArray]
containing characters of this string or its substring.\n * \n * @param startIndex the beginning (inclusive) of the
substring, 0 by default.\n * @param endIndex the end (exclusive) of the substring, length of this string by default.\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
*\n@SinceKotlin("1.3")\n@Suppress("ACTUAL_FUNCTION_WITH_DEFAULT_ARGUMENTS")\n@Experi
mentalStdlibApi\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 `\\uFFFF`.\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@Experi
mentalStdlibApi\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 *

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@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 * 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 * 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 * 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 * 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
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 * 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
UIntArray\n@Suppress("NON_PUBLIC_PRIMARY_CONSTRUCTOR_OF_INLINE_CLASS")\n@PublishedApi
internal 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 * 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): 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 * 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: 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 return
storage.contains(element.toInt())\n }\n\n override fun containsAll(elements: Collection<UInt>): Boolean {\n

```





```

inline class ULong @PublishedApi internal constructor(@PublishedApi internal val data: Long) :
Comparable<ULong> {\n\n companion object {\n\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 /** Adds the other value to
this value. *^\n @kotlin.internal.InlineOnly\n public inline operator fun plus(other: UByte): ULong =
this.plus(other.toULong())\n\n /** Adds the other value to this value. *^\n @kotlin.internal.InlineOnly\n public
inline operator fun plus(other: UShort): ULong = this.plus(other.toULong())\n\n /** Adds the other value to this
value. *^\n @kotlin.internal.InlineOnly\n public inline operator fun plus(other: UInt): ULong =
this.plus(other.toULong())\n\n /** Adds the other value to this value.
*^\n @kotlin.internal.InlineOnly\n public inline operator fun plus(other: ULong): ULong =
ULong(this.data.plus(other.data))\n\n /** Subtracts the other value from this value. *^\n
@kotlin.internal.InlineOnly\n public inline operator fun minus(other: UByte): ULong =
this.minus(other.toULong())\n\n /** Subtracts the other value from this value. *^\n @kotlin.internal.InlineOnly\n
public inline operator fun minus(other: UShort): ULong = this.minus(other.toULong())\n\n /** Subtracts the other
value from this value. *^\n @kotlin.internal.InlineOnly\n public inline operator fun minus(other: UInt): ULong =
this.minus(other.toULong())\n\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
/** 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 /** 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 /** 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 /** 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 /** 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 * 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 * The resulting `Byte` value is represented by the least significant 8 bits of this `ULong`
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 * Converts this [ULong] value to [Short].\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 * The resulting
`Short` value is represented by the least significant 16 bits of this `ULong` value.\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 * Converts this [ULong] value to [Int].\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 *
The resulting `Int` value is represented by the least significant 32 bits of this `ULong` value.\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 * 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 */\n
@kotlin.internal.InlineOnly\n public inline fun toLong(): Long = data\n\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
 * the same
numerical value as this `ULong`.
 *
 * The resulting `UInt` value is represented by the least significant 32
bits of this `ULong` value.
 *
 * @kotlin.internal.InlineOnly
public inline fun toUInt(): UInt =
data.toUInt()
 /** Returns this value.
 *
 * @kotlin.internal.InlineOnly
public inline fun toULong(): ULong
= this
 /**
 * Converts this [ULong] value to [Float].
 *
 * The resulting value is the closest `Float` to this `ULong` value.
 * In case when this `ULong` 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 [ULong] value to [Double].
 *
 * The resulting value is the closest `Double` to this `ULong` value.
 *
 * In case when this `ULong` value is exactly between two `Double`s,
 * the one with zero at least significant bit of
mantissa is selected.
 *
 * @kotlin.internal.InlineOnly
public inline fun toDouble(): Double =
ulongToDouble(data)
public override fun toString(): String = ulongToString(data)
}
 /**
 * Converts
this [Byte] value to [ULong].
 *
 * If this value is positive, the resulting `ULong` value represents the same
numerical value as this `Byte`.
 *
 * The least
significant 8 bits of the resulting `ULong` value are the same as the bits of this `Byte` value,
 * whereas the most
significant 56 bits are filled with the sign bit of this value.
 *
 * @SinceKotlin("1.3")
@ExperimentalUnsignedTypes
@kotlin.internal.InlineOnly
public inline fun
Byte.toULong(): ULong = ULong(this.toLong())
 /**
 * Converts this [Short] value to [ULong].
 *
 * If this
value is positive, the resulting `ULong` value represents the same numerical value as this `Short`.
 *
 * The least
significant 16 bits of the resulting `ULong` value are the same as the bits of this `Short` value,
 * whereas the most
significant 48 bits are filled with the sign bit of this value.
 *
 * @SinceKotlin("1.3")
@ExperimentalUnsignedTypes
@kotlin.internal.InlineOnly
public inline fun
Short.toULong(): ULong = ULong(this.toLong())
 /**
 * Converts this [Int] value to [ULong].
 *
 * If this value
is positive, the resulting `ULong` value represents the same numerical value as this
`Int`.
 *
 * The least significant 32 bits of the resulting `ULong` value are the same as the bits of this `Int`
value,
 * whereas the most significant 32 bits are filled with the sign bit of this value.
 *
 * @SinceKotlin("1.3")
@ExperimentalUnsignedTypes
@kotlin.internal.InlineOnly
public inline fun
Int.toULong(): ULong = ULong(this.toLong())
 /**
 * Converts this [Long] value to [ULong].
 *
 * If this value
is positive, the resulting `ULong` value represents the same numerical value as this `Long`.
 *
 * The resulting
`ULong` value has the same binary representation as this `Long` value.
 *
 * @SinceKotlin("1.3")
@ExperimentalUnsignedTypes
@kotlin.internal.InlineOnly
public inline fun
Long.toULong(): ULong = ULong(this)
 /**
 * Converts this [Float] value to [ULong].
 *
 * The fractional
part, if any, is rounded down towards zero.
 * Returns zero if this `Float` value is negative or `NaN`,
[ULong.MAX_VALUE] if it's bigger than `ULong.MAX_VALUE`.
 *
 * @SinceKotlin("1.3")
@ExperimentalUnsignedTypes
@kotlin.internal.InlineOnly
public
inline fun Float.toULong(): ULong = doubleToULong(this.toDouble())
 /**
 * Converts this [Double] value to
[ULong].
 *
 * The fractional part, if any, is rounded down towards zero.
 * Returns zero if this `Double` value is
negative or `NaN`, [ULong.MAX_VALUE] if it's bigger than `ULong.MAX_VALUE`.
 *
 * @SinceKotlin("1.3")
@ExperimentalUnsignedTypes
@kotlin.internal.InlineOnly
public inline fun
Double.toULong(): ULong = doubleToULong(this)
"
"
 /**
 * 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.
 *
 * // Auto-generated file. DO NOT EDIT!
}
package
kotlin
@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> {
 /** Creates a new array of the specified [size], with
all elements initialized to zero.
 *
 * public constructor(size: Int) : this(ShortArray(size))
 /**
 * Returns
the array element at the given [index]. This method can be called using the index operator.
 *
 * 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): UShort = storage[index].toUShort()\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: UShort)
{\n
 storage[index] = value.toShort()\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(): UShortIterator =
Iterator(storage)\n\n
 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
 }\n\n
 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\n\n
 return storage.contains(element.toShort())\n
 }\n\n
 override fun containsAll(elements:
Collection<UShort>): Boolean {\n
 return (elements
as Collection<*>).all { it is UShort && storage.contains(it.toShort()) }\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
 @SinceKotlin("1.3")\n
 @ExperimentalUnsignedTypes\n
 @kotlin.internal.InlineOnly\n
 public inline fun
UShortArray(size: Int, init: (Int) -> UShort): UShortArray {\n
 return UShortArray(ShortArray(size) { index ->
init(index).toShort()
})\n
}\n\n
 @SinceKotlin("1.3")\n
 @ExperimentalUnsignedTypes\n
 @kotlin.internal.InlineOnly\n
 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
 *^\n
 @file:kotlin.jvm.JvmMultifileClass\n
 @file:kotlin.jvm.JvmName("UArraysKt")\n
 @file:kotlin.jvm.JvmPacka
geName("kotlin.collections.unsigned")\n
\n
package 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
import kotlin.random.*\n
import
kotlin.ranges.contains\n
import kotlin.ranges.reversed\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\n
 public
inline operator fun UIntArray.component1(): UInt {\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\n
 public inline operator fun
ULongArray.component1(): ULong {\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\n
 public 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\n
 public 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 {  
 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.  
@SinceKotlin("1.3")  
@ExperimentalUnsignedTypes  
@kotlin.internal.InlineOnly  
public inline operator

fun ULongArray.component5(): ULong {  
 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.

@SinceKotlin("1.3")  
@ExperimentalUnsignedTypes  
@kotlin.internal.InlineOnly  
public inline operator fun

UByteArray.component5(): UByte {  
 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.

@SinceKotlin("1.3")  
@ExperimentalUnsignedTypes  
@kotlin.internal.InlineOnly  
public inline operator fun

UShortArray.component5(): UShort {  
 return get(4)  
}  
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

@SinceKotlin("1.3")  
@ExperimentalUnsignedTypes  
public expect fun UIntArray.elementAt(index: Int): UInt  
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

@SinceKotlin("1.3")  
@ExperimentalUnsignedTypes  
public expect fun ULongArray.elementAt(index: Int): ULong  
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

@SinceKotlin("1.3")  
@ExperimentalUnsignedTypes  
public expect fun UByteArray.elementAt(index: Int): UByte  
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

@SinceKotlin("1.3")  
@ExperimentalUnsignedTypes  
public expect fun UShortArray.elementAt(index: Int): UShort  
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.  
@sample  
samples.collections.Collections.Elements.elementAtOrElse

@SinceKotlin("1.3")  
@ExperimentalUnsignedTypes  
@kotlin.internal.InlineOnly  
public inline fun UIntArray.elementAtOrElse(index: Int, defaultValue: (Int) -> UInt): UInt {  
 return if (index >= 0 && index <= lastIndex) get(index) else 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 array.  
@sample  
samples.collections.Collections.Elements.elementAtOrElse

@SinceKotlin("1.3")  
@ExperimentalUnsignedTypes  
@kotlin.internal.InlineOnly  
public inline fun ULongArray.elementAtOrElse(index: Int, defaultValue: (Int) -> ULong): ULong {  
 return if (index >= 0 && index <= lastIndex) get(index) else 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 array.  
@sample  
samples.collections.Collections.Elements.elementAtOrElse

@SinceKotlin("1.3")  
@ExperimentalUnsignedTypes  
@kotlin.internal.InlineOnly  
public inline fun UByteArray.elementAtOrElse(index: Int, defaultValue: (Int) -> UByte): UByte {  
 return if (index >= 0 && index <= lastIndex) get(index) else 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 array.  
@sample  
samples.collections.Collections.Elements.elementAtOrElse

@SinceKotlin("1.3")  
@ExperimentalUnsignedTypes  
@kotlin.internal.InlineOnly  
public inline fun UShortArray.elementAtOrElse(index: Int, defaultValue: (Int) -> UShort): UShort {  
 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 array.  
@sample  
samples.collections.Collections.Elements.elementAtOrNull

```

*\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 UIntArray.first(): UInt {\n    return storage.first().toUInt()\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
ULongArray.first(): ULong {\n    return storage.first().toULong()\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
UByteArray.first(): UByte {\n    return storage.first().toUByte()\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 UShortArray.first(): UShort {\n    return storage.first().toUShort()\n}\n\n/**\n * Returns the first 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.first(predicate: (UInt) -> Boolean): UInt {\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
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun
ULongArray.first(predicate: (ULong) -> Boolean): ULong {\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
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun
UByteArray.first(predicate: (UByte) -> Boolean): UByte {\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
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun
UShortArray.first(predicate: (UShort) -> Boolean): UShort {\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
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\npublic
fun UIntArray.firstOrNull(): UInt? {\n    return if (isEmpty()) null else this[0]\n}\n\n/**\n * Returns the first
element, or `null` if the array is empty.\n
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\npublic fun
ULongArray.firstOrNull(): ULong? {\n    return if (isEmpty()) null else this[0]\n}\n\n/**\n * Returns the first
element, or `null` if the array is empty.\n
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\npublic fun
UByteArray.firstOrNull(): UByte? {\n    return if (isEmpty()) null else this[0]\n}\n\n/**\n * Returns the first
element, or `null` if the array is empty.\n
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\npublic fun
UShortArray.firstOrNull(): UShort? {\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
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline
fun UIntArray.firstOrNull(predicate: (UInt) -> Boolean): UInt? {\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
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun
ULongArray.firstOrNull(predicate: (ULong) -> Boolean): ULong? {\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
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun
UByteArray.firstOrNull(predicate: (UByte) -> Boolean): UByte? {\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
*\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 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
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
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
```

```
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun
```

```

UByteArray.last(predicate: (UByte) -> Boolean): UByte {
    for (index in this.indices.reversed()) {
        val element = this[index]
        if (predicate(element)) return element
    }
    throw NoSuchElementException("Array contains no element matching the predicate.")
}
/** Returns the last element matching the given [predicate].
 * @throws [NoSuchElementException] if no such element is found.
 */
@SinceKotlin("1.3")
@ExperimentalUnsignedTypes
@kotlin.internal.InlineOnly
public inline fun
UShortArray.last(predicate: (UShort) -> Boolean): UShort {
    for (index in this.indices.reversed()) {
        val element = this[index]
        if (predicate(element)) return element
    }
    throw NoSuchElementException("Array contains no element matching the predicate.")
}
/** Returns last index of [element], or -1 if the array does not contain element.
 */
@SinceKotlin("1.3")
@ExperimentalUnsignedTypes
@kotlin.internal.InlineOnly
public inline fun
UIntArray.lastIndexOf(element: UInt): Int {
    return storage.lastIndexOf(element.toInt())
}
/** Returns last index of [element], or -1 if the array does not contain element.
 */
@SinceKotlin("1.3")
@ExperimentalUnsignedTypes
@kotlin.internal.InlineOnly
public inline fun
ULongArray.lastIndexOf(element: ULong): Int {
    return storage.lastIndexOf(element.toLong())
}
/** Returns last index of [element], or -1 if the array does not contain element.
 */
@SinceKotlin("1.3")
@ExperimentalUnsignedTypes
@kotlin.internal.InlineOnly
public inline fun
UByteArray.lastIndexOf(element: UByte): Int {
    return storage.lastIndexOf(element.toByte())
}
/** Returns last index of [element], or -1 if the array does not contain element.
 */
@SinceKotlin("1.3")
@ExperimentalUnsignedTypes
@kotlin.internal.InlineOnly
public inline fun
UShortArray.lastIndexOf(element: UShort): Int {
    return storage.lastIndexOf(element.toShort())
}
/** Returns the last element, or `null` if the array is empty.
 */
@SinceKotlin("1.3")
@ExperimentalUnsignedTypes
public fun UIntArray.lastOrNull(): UInt? {
    return if (isEmpty()) null else this[size - 1]
}
/** Returns the last element, or `null` if the array is empty.
 */
@SinceKotlin("1.3")
@ExperimentalUnsignedTypes
public fun ULongArray.lastOrNull(): ULong? {
    return if (isEmpty()) null else this[size - 1]
}
/** Returns the last element, or `null` if the array is empty.
 */
@SinceKotlin("1.3")
@ExperimentalUnsignedTypes
public fun UByteArray.lastOrNull(): UByte? {
    return if (isEmpty()) null else this[size - 1]
}
/** Returns the last element, or `null` if the array is empty.
 */
@SinceKotlin("1.3")
@ExperimentalUnsignedTypes
public fun UShortArray.lastOrNull(): UShort? {
    return if (isEmpty()) null else this[size - 1]
}
/** Returns the last element matching the given [predicate], or `null` if no such element was found.
 */
@SinceKotlin("1.3")
@ExperimentalUnsignedTypes
@kotlin.internal.InlineOnly
public inline fun
UIntArray.lastOrNull(predicate: (UInt) -> Boolean): UInt? {
    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.
 */
@SinceKotlin("1.3")
@ExperimentalUnsignedTypes
@kotlin.internal.InlineOnly
public inline fun
ULongArray.lastOrNull(predicate: (ULong) -> Boolean): ULong? {
    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.
 */
@SinceKotlin("1.3")
@ExperimentalUnsignedTypes
@kotlin.internal.InlineOnly
public inline fun
UByteArray.lastOrNull(predicate: (UByte) -> Boolean): UByte? {
    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.
 */
@SinceKotlin("1.3")
@ExperimentalUnsignedTypes
@kotlin.internal.InlineOnly
public inline fun
UShortArray.lastOrNull(predicate: (UShort) -> Boolean): UShort? {
    for (index in this.indices.reversed()) {
        val element = this[index]
        if (predicate(element)) return element
    }
    return null
}

```

```

    } \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
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 using the specified source of randomness, 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

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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  
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
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```
*\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    }\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    }\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
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[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    }\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):
```

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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    }\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
than one element.\n
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\npublic fun
ULongArray.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
*\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
*\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
*\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
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun
ULongArray.singleOrNull(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) 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
*\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
*\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
*\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
*\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
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\npublic fun UByteArray.drop(n:

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*\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    }\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 =
ArrayList<ULong>()\n  for (item in this)\n    if (yielding)\n      list.add(item)\n    else if (!predicate(item))
{\n      list.add(item)\n    }\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
UByteArray.dropWhile(predicate: (UByte) -> Boolean): List<UByte>
{\n  var yielding = false\n  val list = ArrayList<UByte>()\n  for (item in this)\n    if (yielding)\n      list.add(item)\n    else if (!predicate(item)) {\n      list.add(item)\n    }\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
UShortArray.dropWhile(predicate: (UShort) -> Boolean): List<UShort> {\n  var yielding = false\n  val list =
ArrayList<UShort>()\n  for (item in this)\n    if (yielding)\n      list.add(item)\n    else if (!predicate(item))
{\n      list.add(item)\n    }\n  yielding = true\n  }\n  return list\n}\n\n/**\n * Returns a list containing only
elements matching the given [predicate].\n
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic
inline fun UIntArray.filter(predicate: (UInt) -> Boolean): List<UInt> {\n  return filterTo(ArrayList<UInt>(),
predicate)\n}\n\n/**\n * Returns a list containing only elements matching the given [predicate].\n
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun
ULongArray.filter(predicate: (ULong) -> Boolean): List<ULong> {\n  return filterTo(ArrayList<ULong>(),
predicate)\n}\n\n/**\n * Returns a list containing only elements matching the given [predicate].\n
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun
UByteArray.filter(predicate: (UByte) -> Boolean): List<UByte> {\n  return filterTo(ArrayList<UByte>(),
predicate)\n}\n\n/**\n * Returns a list containing only elements matching the given [predicate].\n
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun
UShortArray.filter(predicate:
(UShort) -> Boolean): List<UShort> {\n  return filterTo(ArrayList<UShort>(), 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
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun
UIntArray.filterIndexed(predicate: (index: Int, UInt) -> Boolean): List<UInt> {\n  return
filterIndexedTo(ArrayList<UInt>(), 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
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun
ULongArray.filterIndexed(predicate: (index: Int, ULong) -> Boolean):
List<ULong> {\n  return filterIndexedTo(ArrayList<ULong>(), 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
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun

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UByteArray.filterIndexed(predicate: (index: Int, UByte) -> Boolean): List<UByte> {\n  return
filterIndexedTo(ArrayList<UByte>(), 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
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun
UShortArray.filterIndexed(predicate: (index: Int, UShort) -> Boolean): List<UShort> {\n
  return filterIndexedTo(ArrayList<UShort>(), 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
*\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))
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))
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 UShort>> UShortArray.filterIndexedTo(destination: C, predicate: (index: Int, UShort) ->
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 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 \* 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 \* 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 \* 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 \* 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 \* 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 \* 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 \* 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 \* 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

```

    }
    return list
}

@SinceKotlin("1.3")@ExperimentalUnsignedTypes
public fun ULongArray.slice(indices: Iterable<Int>):
List<ULong> {
    val size = indices.collectionSizeOrDefault(10)
    if (size == 0) return emptyList()
    val list = ArrayList<ULong>(size)
    for (index in indices) {
        list.add(get(index))
    }
    return list
}

@SinceKotlin("1.3")@ExperimentalUnsignedTypes
public fun UByteArray.slice(indices: Iterable<Int>):
List<UByte> {
    val size = indices.collectionSizeOrDefault(10)
    if (size == 0) return emptyList()
    val list =
ArrayList<UByte>(size)
    for (index in indices) {
        list.add(get(index))
    }
    return list
}

@SinceKotlin("1.3")@ExperimentalUnsignedTypes
public fun UShortArray.slice(indices: Iterable<Int>):
List<UShort> {
    val size = indices.collectionSizeOrDefault(10)
    if (size == 0) return emptyList()
    val list =
ArrayList<UShort>(size)
    for (index in indices) {
        list.add(get(index))
    }
    return list
}

@SinceKotlin("1.3")@ExperimentalUnsignedTypes
public fun UIntArray.sliceArray(indices:
Collection<Int>): UIntArray {
    return UIntArray(storage.sliceArray(indices))
}

@SinceKotlin("1.3")@ExperimentalUnsignedTypes
public fun ULongArray.sliceArray(indices:
Collection<Int>): ULongArray {
    return ULongArray(storage.sliceArray(indices))
}

@SinceKotlin("1.3")@ExperimentalUnsignedTypes
public fun UByteArray.sliceArray(indices:
Collection<Int>): UByteArray {
    return UByteArray(storage.sliceArray(indices))
}

@SinceKotlin("1.3")@ExperimentalUnsignedTypes
public fun UShortArray.sliceArray(indices:
Collection<Int>): UShortArray {
    return UShortArray(storage.sliceArray(indices))
}

@SinceKotlin("1.3")@ExperimentalUnsignedTypes
public fun UIntArray.sliceArray(indices: IntRange):
UIntArray {
    return UIntArray(storage.sliceArray(indices))
}

@SinceKotlin("1.3")@ExperimentalUnsignedTypes
public fun ULongArray.sliceArray(indices: IntRange):
ULongArray {
    return
ULongArray(storage.sliceArray(indices))
}

@SinceKotlin("1.3")@ExperimentalUnsignedTypes
public fun UByteArray.sliceArray(indices: IntRange):
UByteArray {
    return
UByteArray(storage.sliceArray(indices))
}

@SinceKotlin("1.3")@ExperimentalUnsignedTypes
public fun UShortArray.sliceArray(indices:
IntRange): UShortArray {
    return UShortArray(storage.sliceArray(indices))
}

@SinceKotlin("1.3")@ExperimentalUnsignedTypes
public fun UIntArray.take(n: Int): List<UInt> {
    require(n >= 0) { "Requested element count $n is less than zero." }
    if (n == 0) return emptyList()
    if (n >=
size) return toList()
    if (n == 1) return listOf(this[0])
    var count = 0
    val list = ArrayList<UInt>(n)
    for (item in this) {
        list.add(item)
        if (++count == n)
            break
    }
    return list
}

@SinceKotlin("1.3")@ExperimentalUnsignedTypes
public fun ULongArray.take(n: Int): List<ULong> {
    require(n >= 0) { "Requested element count $n is less than zero." }
    if (n == 0) return emptyList()
    if (n >=
size) return toList()
    if (n == 1) return listOf(this[0])
    var count = 0
    val list = ArrayList<ULong>(n)
    for (item in this) {
        list.add(item)
        if (++count == n)
            break
    }
    return list
}

```

```

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

```

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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@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@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@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@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@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@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@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@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@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@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@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\npublic fun
UShortArray.reversed(): List<UShort> {\n  if (isEmpty()) return emptyList()\n  val list = toMutableList()\n

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list.reverse()\n    return list\n}\n\n/**\n * Returns an array with elements of this array in reversed order.\n *\n @SinceKotlin("1.3")\n @ExperimentalUnsignedTypes\n @kotlin.internal.InlineOnly\n public inline fun\n 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 @SinceKotlin("1.3")\n @ExperimentalUnsignedTypes\n @kotlin.internal.InlineOnly\n public inline fun\n 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 @SinceKotlin("1.3")\n @ExperimentalUnsignedTypes\n @kotlin.internal.InlineOnly\n public inline fun\n UByteArray.reversedArray(): UByteArray\n    {\n    return UByteArray(storage.reversedArray())\n}\n\n/**\n * Returns an array with elements of this array in\n reversed order.\n *\n @SinceKotlin("1.3")\n @ExperimentalUnsignedTypes\n @kotlin.internal.InlineOnly\n public\n inline fun UShortArray.reversedArray(): UShortArray {\n    return\n    UShortArray(storage.reversedArray())\n}\n\n/**\n * Sorts elements in the array in-place descending according to\n their natural sort order.\n *\n @SinceKotlin("1.3")\n @ExperimentalUnsignedTypes\n public fun\n UIntArray.sortDescending(): Unit {\n    if (size > 1) {\n        sort()\n        reverse()\n    }\n}\n\n/**\n * Sorts elements\n in the array in-place descending according to their natural sort order.\n *\n @SinceKotlin("1.3")\n @ExperimentalUnsignedTypes\n public fun ULongArray.sortDescending(): Unit {\n    if\n (size > 1) {\n        sort()\n        reverse()\n    }\n}\n\n/**\n * Sorts elements in the array in-place descending\n according to their natural sort order.\n *\n @SinceKotlin("1.3")\n @ExperimentalUnsignedTypes\n public\n fun UByteArray.sortDescending(): Unit {\n    if (size > 1) {\n        sort()\n        reverse()\n    }\n}\n\n/**\n * Sorts\n elements in the array in-place descending according to their natural sort order.\n *\n @SinceKotlin("1.3")\n @ExperimentalUnsignedTypes\n public fun UShortArray.sortDescending(): Unit {\n    if\n (size > 1) {\n        sort()\n        reverse()\n    }\n}\n\n/**\n * Returns a list of all elements sorted according to their\n natural sort order.\n *\n @SinceKotlin("1.3")\n @ExperimentalUnsignedTypes\n public fun UIntArray.sorted():\n List<UInt> {\n    return copyOf().apply { sort() }.asList()\n}\n\n/**\n * Returns a list of all elements sorted\n according to their natural sort order.\n *\n @SinceKotlin("1.3")\n @ExperimentalUnsignedTypes\n public fun\n ULongArray.sorted(): List<ULong> {\n    return copyOf().apply { sort() }.asList()\n}\n\n/**\n * Returns a list of all\n elements sorted according to their natural sort order.\n *\n @SinceKotlin("1.3")\n @ExperimentalUnsignedTypes\n public\n fun UByteArray.sorted(): List<UByte> {\n    return copyOf().apply { sort() }.asList()\n}\n\n/**\n * Returns a list of\n all elements sorted according to their natural sort order.\n *\n @SinceKotlin("1.3")\n @ExperimentalUnsignedTypes\n public fun UShortArray.sorted(): List<UShort> {\n    return\n copyOf().apply { sort() }.asList()\n}\n\n/**\n * Returns an array with all elements of this array sorted\n according to their natural sort order.\n *\n @SinceKotlin("1.3")\n @ExperimentalUnsignedTypes\n public fun\n UIntArray.sortedArray(): UIntArray {\n    if (isEmpty()) return this\n    return this.copyOf().apply { sort()\n    }\n}\n\n/**\n * Returns an array with all elements of this array sorted according to their natural sort order.\n *\n @SinceKotlin("1.3")\n @ExperimentalUnsignedTypes\n public fun ULongArray.sortedArray(): ULongArray\n    {\n    if (isEmpty()) return this\n    return this.copyOf().apply { sort() }\n}\n\n/**\n * Returns an array with all\n elements of\n this array sorted according to their natural sort order.\n *\n @SinceKotlin("1.3")\n @ExperimentalUnsignedTypes\n public fun UByteArray.sortedArray(): UByteArray {\n    if\n (isEmpty()) return this\n    return this.copyOf().apply { sort() }\n}\n\n/**\n * Returns an array with all elements\n of this array sorted according to their natural sort order.\n *\n @SinceKotlin("1.3")\n @ExperimentalUnsignedTypes\n public fun UShortArray.sortedArray(): UShortArray\n    {\n    if (isEmpty()) return this\n    return this.copyOf().apply { sort() }\n}\n\n/**\n * Returns an array with all\n elements of this array sorted descending according to their natural sort order.\n *\n @SinceKotlin("1.3")\n @ExperimentalUnsignedTypes\n public fun UIntArray.sortedArrayDescending():\n UIntArray {\n    if (isEmpty()) return this\n    return this.copyOf().apply { sortDescending() }\n}\n\n/**\n * Returns

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an array with all elements of this array sorted descending according to their natural sort order.

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*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\npublic
fun ULongArray.sortedArrayDescending(): ULongArray {\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
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\npublic fun UByteArray.sortedArrayDescending():
UByteArray {\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
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\npublic fun UShortArray.sortedArrayDescending():
UShortArray {\n if (isEmpty()) return this\n return this.copyOf().apply { sortDescending() }\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
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\npublic fun
UIntArray.sortedDescending(): List<UInt> {\n return copyOf().apply { sort() }.reversed()\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
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\npublic fun ULongArray.sortedDescending():
List<ULong> {\n return copyOf().apply { sort() }.reversed()\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
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\npublic
fun UByteArray.sortedDescending(): List<UByte> {\n return copyOf().apply { sort() }.reversed()\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
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\npublic fun UShortArray.sortedDescending():
List<UShort> {\n return copyOf().apply { sort() }.reversed()\n}\n\n**\n * Returns an array of type [ByteArray],
which is a view 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.asByteArray(): ByteArray {\n return storage\n}\n\n**\n * Returns an array of type [IntArray], which
is a view 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.asIntArray(): IntArray
{\n return storage\n}\n\n**\n * Returns a [List] that wraps the original array.\n
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\npublic expect fun UIntArray.asList():
List<UInt>\n\n**\n * Returns a [List] that wraps the original array.\n
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\npublic expect fun ULongArray.asList():
List<ULong>\n\n**\n * Returns a [List] that wraps the original array.\n
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\npublic expect fun UByteArray.asList():
List<UByte>\n\n**\n * Returns a [List] that wraps the original array.\n
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\npublic expect fun UShortArray.asList():
List<UShort>\n\n**\n * Returns an array of type [LongArray], which is a view 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.asLongArray():
LongArray {\n return storage\n}\n\n**\n * Returns an array of type [ShortArray], which is a view 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.asShortArray(): ShortArray {\n return storage\n}\n\n**\n * Returns an array of type [UByteArray],

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which is a view of this array where each element is an unsigned reinterpretation of the corresponding element of this array.

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*^@SinceKotlin("1.3")@ExperimentalUnsignedTypes@kotlin.internal.InlineOnly\npublic inline
fun ByteArray.asUByteArray(): UByteArray {n return UByteArray(this)\n}\n\n/**\n * Returns an array of type
[UIntArray], which is a view of this array where each element is an unsigned reinterpretation
of the
corresponding element of this array.\n
*^@SinceKotlin("1.3")@ExperimentalUnsignedTypes@kotlin.internal.InlineOnly\npublic
inline fun IntArray.asUIntArray(): UIntArray {n return UIntArray(this)\n}\n\n/**\n * 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.\n
*^@SinceKotlin("1.3")@ExperimentalUnsignedTypes@kotlin.internal.InlineOnly\npublic inline fun
LongArray.asULongArray(): ULongArray {n return ULongArray(this)\n}\n\n/**\n * 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.\n
*^@SinceKotlin("1.3")@ExperimentalUnsignedTypes@kotlin.internal.InlineOnly\npublic inline fun
ShortArray.asUShortArray(): UShortArray {n return UShortArray(this)\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
*^@SinceKotlin("1.3")@ExperimentalUnsignedTypes\npublic
infix fun UIntArray.contentEquals(other: UIntArray): Boolean {n return
storage.contentEquals(other.storage)\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
*^@SinceKotlin("1.3")@ExperimentalUnsignedTypes\npublic infix fun ULongArray.contentEquals(other:
ULongArray): Boolean {n return storage.contentEquals(other.storage)\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
*^@SinceKotlin("1.3")@ExperimentalUnsignedTypes\npublic infix fun
UByteArray.contentEquals(other: UByteArray): Boolean {n return
storage.contentEquals(other.storage)\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
*^@SinceKotlin("1.3")@ExperimentalUnsignedTypes\npublic infix fun
UShortArray.contentEquals(other: UShortArray): Boolean {n return
storage.contentEquals(other.storage)\n}\n\n/**\n * Returns a hash code based on the contents of this array as if it is
[List].\n
*^@SinceKotlin("1.3")@ExperimentalUnsignedTypes\npublic fun UIntArray.contentHashCode(): Int
{\n return storage.contentHashCode()\n}\n\n/**\n * Returns a hash code based on the contents of this array as if it
is [List].\n
*^@SinceKotlin("1.3")@ExperimentalUnsignedTypes\npublic fun
ULongArray.contentHashCode(): Int {\n return storage.contentHashCode()\n}\n\n/**\n * Returns a hash code
based on the contents of this array as if it is [List].\n
*^@SinceKotlin("1.3")@ExperimentalUnsignedTypes\npublic fun UByteArray.contentHashCode(): Int {\n
return storage.contentHashCode()\n}\n\n/**\n * Returns a hash code based on the contents of this array as if it is
[List].\n
*^@SinceKotlin("1.3")@ExperimentalUnsignedTypes\npublic
fun UShortArray.contentHashCode(): Int {\n return storage.contentHashCode()\n}\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
*^@SinceKotlin("1.3")@ExperimentalUnsignedTypes\npublic fun UIntArray.contentToString(): String {\n
return joinToString(", ", "[", "]")\n}\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
*^@SinceKotlin("1.3")@ExperimentalUnsignedTypes\npublic fun ULongArray.contentToString(): String {\n
return joinToString(", ", "[", "]")\n}\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
*^@SinceKotlin("1.3")@ExperimentalUnsignedTypes\npublic

```



```

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

// Since Kotlin 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.

// Since Kotlin 1.3
// ExperimentalUnsignedTypes
// @kotlin.internal.InlineOnly
// public inline fun UIntArray.copyInto(destination: UIntArray, destinationOffset: Int = 0, startIndex: Int = 0, endIndex: Int = size): UIntArray {
//     storage.copyInto(destination.storage, destinationOffset, startIndex, endIndex)
//     return destination
// }
// 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.

// Since Kotlin 1.3
// ExperimentalUnsignedTypes
// @kotlin.internal.InlineOnly
// public inline fun ULongArray.copyInto(destination: ULongArray, destinationOffset: Int = 0, startIndex: Int = 0, endIndex: Int = size): ULongArray {
//     storage.copyInto(destination.storage, destinationOffset, startIndex, endIndex)
//     return destination
// }
// 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.

// Since Kotlin 1.3
// ExperimentalUnsignedTypes
// @kotlin.internal.InlineOnly
// public inline fun UByteArray.copyInto(destination: UByteArray, destinationOffset: Int = 0, startIndex: Int = 0, endIndex: Int = size): UByteArray {
//     storage.copyInto(destination.storage, destinationOffset, startIndex, endIndex)
//     return destination
// }
// 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.\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.copyOfOf(newSize: Int): UIntArray {\n    return UIntArray(storage.copyOfOf(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@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun  

ULongArray.copyOfOf(newSize: Int): ULongArray {\n    return ULongArray(storage.copyOfOf(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@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun  

UByteArray.copyOfOf(newSize: Int): UByteArray {\n    return  

UByteArray(storage.copyOfOf(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 *\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline  

fun UShortArray.copyOfOf(newSize: Int): UShortArray {\n    return  

UShortArray(storage.copyOfOf(newSize))\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 * \n * @param toIndex the end (exclusive) of the range, must be in `0..array.size`\n * \n * @return the new array\n * \n * @sample samples.collections.Arrays.CopyOfOperations.copyOfOfRange\n
```

```

@param toIndex the end of the range (exclusive), must be in `fromIndex..array.size`
*/\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic
inline fun UIntArray.copyOfRange(fromIndex: Int, toIndex: Int): UIntArray {\n    return
UIntArray(storage.copyOfRange(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
*/\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun
ULongArray.copyOfRange(fromIndex: Int, toIndex: Int): ULongArray {\n    return
ULongArray(storage.copyOfRange(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
*/\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun
UByteArray.copyOfRange(fromIndex: Int, toIndex: Int): UByteArray {\n    return
UByteArray(storage.copyOfRange(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
*/\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun
UShortArray.copyOfRange(fromIndex: Int, toIndex: Int): UShortArray {\n    return
UShortArray(storage.copyOfRange(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
UIntArray.fill(element: UInt, fromIndex: Int = 0, toIndex: Int = size): Unit {\n    storage.fill(element.toInt(),
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
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@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic
inline 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@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline
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@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline
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@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline
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@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\npublic 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 * 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 * 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 * 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 *
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 \* 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 \* 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 \* 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 \* 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 \* 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 \* 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 \* 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 \* 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 \* 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 \* 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.copyOf()\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

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* 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>
ULongArray.flatMap(transform: (ULong) -> 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

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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> ULongArray.groupBy(keySelector: (ULong) -> K): Map<K, List<ULong>> {\n return
groupByTo(LinkedHashMap<K, MutableList<ULong>>(), 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

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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/**\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/**\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/**\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/**\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/**\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 *
\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/**\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

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[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] 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>>> UShortArray.groupByTo(destination: M, keySelector:
(UShort) -> K, valueTransform: (UShort) -> 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 * 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
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun <R>
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
array.\n * \n * @sample samples.collections.Collections.Transformations.map\n
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun <R>
ULongArray.map(transform:

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(ULong) -> 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
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun <R>
UByteArray.map(transform: (UByte) -> 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
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun <R>
UShortArray.map(transform: (UShort) -> 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 *\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline
fun <R> UIntArray.mapIndexed(transform: (index: Int, UInt) -> 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 *\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline
fun <R> ULongArray.mapIndexed(transform: (index: Int, ULong) -> 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
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun <R>
UByteArray.mapIndexed(transform: (index: Int, UByte) -> 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 *\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline
fun <R> UShortArray.mapIndexed(transform:
(index: Int, UShort) -> R): List<R> {\n    return mapIndexedTo(ArrayList<R>(size), transform)\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>> UIntArray.mapIndexedTo(destination: C, transform: (index: Int, UInt) -> 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>> 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

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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 * @sample\n * @SinceKotlin("1.3")\n * @ExperimentalUnsignedTypes\n * @kotlin.internal.InlineOnly\n *
public
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 * @sample\n * @SinceKotlin("1.3")\n * @ExperimentalUnsignedTypes\n * @kotlin.internal.InlineOnly\n *
public
inline fun UByteArray.count(predicate: (UByte)

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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
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic 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\npublic 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\npublic 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\npublic 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\npublic
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\npublic 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\npublic 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\npublic 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\npublic inline fun <R>
UShortArray.foldIndexed(initial: R, operation: (index: Int, acc: R, UShort) -> R): R { \n  var index = 0 \n  var

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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

\*\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\n/\*\*\n \* Accumulates value starting with [initial] value and applying [operation] from right to left to each element and current accumulator value.\n

\*\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\n/\*\*\n \* Accumulates value starting with [initial] value and applying [operation] from right to left to each element and current accumulator value.\n

\*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun <R>\nUByteArray.foldRight(initial: R, operation: (UByte, 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

\*\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\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@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\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@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\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@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun <R>\nUByteArray.foldRightIndexed(initial: R, operation: (index: Int, UByte, 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

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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@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 {\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
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun
UIntArray.forEach(action: (UInt) -> Unit): Unit {\n    for (element in this) action(element)\n}\n\n/**\n * Performs
the given [action] on each element.\n
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun
ULongArray.forEach(action: (ULong) -> Unit): Unit {\n    for (element in this) action(element)\n}\n\n/**\n *
Performs the given [action] on each element.\n
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun
UByteArray.forEach(action: (UByte) -> Unit): Unit {\n    for (element in this) action(element)\n}\n\n/**\n *
Performs the given [action] on each element.\n
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic
inline fun UShortArray.forEach(action: (UShort) -> 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
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun
UIntArray.forEachIndexed(action: (index: Int, UInt) -> Unit): Unit {\n    var index = 0\n    for (item in this)
action(index++, item)\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
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline
fun ULongArray.forEachIndexed(action: (index: Int, ULong) -> Unit): Unit {\n    var index = 0\n    for (item in this)
action(index++, item)\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
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun
UByteArray.forEachIndexed(action: (index: Int, UByte) -> Unit): Unit {\n    var index = 0\n    for (item in this)
action(index++, item)\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
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun
UShortArray.forEachIndexed(action:
(index: Int, UShort) -> Unit): Unit {\n    var index = 0\n    for (item in this) action(index++, item)\n}\n\n/**\n *
Returns the largest element or `null` if there are no elements.\n
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\npublic fun UIntArray.max(): UInt? {\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@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\npublic fun ULongArray.max(): ULong? {\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@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\npublic fun UByteArray.max(): UByte? {\n    if
(isEmpty()) return null\n    var max

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= 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@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\npublic fun UShortArray.max(): UShort? {\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 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>> 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]

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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 *\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,

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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
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
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*\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 *

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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
*\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

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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
(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

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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 *
@param 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.InlineOnl
y\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.InlineOnl
y\npublic inline fun <R> UIntArray.scan(initial: R, operation: (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 (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.InlineOnl
y\npublic inline fun <R> ULongArray.scan(initial: R, operation: (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 (element in this) {\n    accumulator = operation(accumulator, element)\n

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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@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
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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 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@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
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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
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*\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())\n return listOf(initial)\n val result = ArrayList<R>(size + 1).apply { add(initial) }\n var accumulator = initial\n for (index in indices) {\n
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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
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*\n@SinceKotlin("1.3")\n@ExperimentalStdlibApi\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic
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inline fun <R> ULongArray.scanIndexed(initial: R, operation: (index: Int, 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 (index in indices) {\n
```

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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@SinceKotlin("1.3")\n@ExperimentalStdlibApi\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnl
y\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**\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.InlineOnl
y\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**\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.InlineOnl
y\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
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.InlineOnl
y\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.InlineOnl
y\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 to each element and current accumulator value that starts with the first element of this array. 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.

```
*\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 {\n        add(accumulator) }\n    for (index in 1 until size) {\n        accumulator = operation(accumulator, this[index])\n        result.add(accumulator)\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 array and current accumulator value that starts with the first element of this array. 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.

```
*\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 {\n        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}
```

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. 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.

```
*\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 {\n        add(accumulator) }\n    for (index in 1 until size) {\n        accumulator = operation(index, accumulator, this[index])\n        result.add(accumulator)\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 array and current accumulator value that starts with the first element of this array. 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.

```
*\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 {\n        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}
```

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. 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.

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@sample samples.collections.Collections.Aggregates.scanReduce
*/n@SinceKotlin("1.3")n@ExperimentalStdlibApi\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly
ynpublic 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 = 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
ULongArray.sumBy(selector: (ULong) -> UInt): UInt {n var sum: UInt = 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.sumBy(selector: (UByte) -> UInt): UInt {n var sum: UInt = 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.sumBy(selector: (UShort) -> UInt): UInt {n var sum: UInt = 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
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
*/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 * @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 * @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

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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
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:

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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\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\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\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\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\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> {\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
*\n\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\npublic infix fun UIntArray.zip(other: UIntArray):
List<Pair<UInt, UInt>> {\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\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\npublic infix fun ULongArray.zip(other: ULongArray):
List<Pair<ULong, ULong>> {\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

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*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\npublic infix fun UByteArray.zip(other: UByteArray):
List<Pair<UByte, UByte>> {\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 UShortArray.zip(other:
UShortArray): List<Pair<UShort, UShort>> {\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
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun <V>
UIntArray.zip(other: UIntArray, transform: (a: UInt, b: UInt) -> 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
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun <V>
ULongArray.zip(other: ULongArray, transform: (a: ULong, b: ULong) -> 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
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun <V>
UByteArray.zip(other: UByteArray, transform:
(a: UByte, b: UByte) -> 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
*\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic inline fun <V>
UShortArray.zip(other: UShortArray, transform: (a: UShort, b: UShort) -> 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 the sum of all elements in the array.\n
*\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 {
    return storage.sum().toUInt()
}

@SinceKotlin("1.3")
@ExperimentalUnsignedTypes
@kotlin.internal.InlineOnly
public inline fun
ULongArray.sum(): ULong {
    return storage.sum().toULong()
}

@SinceKotlin("1.3")
@ExperimentalUnsignedTypes
@kotlin.internal.InlineOnly
public inline fun
UByteArray.sum(): UInt {
    return sumBy { it.toUInt() }
}

@SinceKotlin("1.3")
@ExperimentalUnsignedTypes
@kotlin.internal.InlineOnly
public inline fun
UShortArray.sum(): UInt {
    return sumBy {
        it.toUInt()
    }
}

/*
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 * license/LICENSE.txt file.
 */

@file:kotlin.jvm.JvmMultifileClass
@file:kotlin.jvm.JvmName("UCollectionsKt")
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.random.*
import kotlin.ranges.contains
import kotlin.ranges.reversed

/**
 * Returns an array of UByte containing all of the
 * elements of this collection.
 */
@SinceKotlin("1.3")
@ExperimentalUnsignedTypes
public fun
Collection<UByte>.toUByteArray(): UByteArray {
    val result = UByteArray(size)
    var index = 0
    for (element in this)
        result[index++] = element
    return result
}

/**
 * Returns an array of UInt containing
 * all of the elements
 * of this collection.
 */
@SinceKotlin("1.3")
@ExperimentalUnsignedTypes
public fun
Collection<UInt>.toUIntArray(): UIntArray {
    val result = UIntArray(size)
    var index = 0
    for (element in this)
        result[index++] = element
    return result
}

/**
 * Returns an array of ULong containing all of the
 * elements of this collection.
 */
@SinceKotlin("1.3")
@ExperimentalUnsignedTypes
public fun
Collection<ULong>.toULongArray(): ULongArray {
    val result = ULongArray(size)
    var index = 0
    for (element in this)
        result[index++] = element
    return result
}

/**
 * Returns an array of UShort
 * containing all of the elements of this collection.
 */
@SinceKotlin("1.3")
@ExperimentalUnsignedTypes
public fun Collection<UShort>.toUShortArray():
UShortArray {
    val result = UShortArray(size)
    var index = 0
    for (element in this)
        result[index++] =
        element
    return result
}

/**
 * Returns the sum of all elements
 * in the collection.
 */
@kotlin.jvm.JvmName("sumOfUInt")
@SinceKotlin("1.3")
@ExperimentalUnsignedTypes
public fun
Iterable<UInt>.sum(): UInt {
    var sum: UInt = 0u
    for (element in this) {
        sum += element
    }
    return sum
}

/**
 * Returns the sum of all elements in the collection.
 */
@kotlin.jvm.JvmName("sumOfULong")
@SinceKotlin("1.3")
@ExperimentalUnsignedTypes
public fun
Iterable<ULong>.sum(): ULong {
    var sum: ULong = 0uL
    for (element in this) {
        sum += element
    }
    return sum
}

/**
 * Returns the sum of all elements in the collection.
 */
@kotlin.jvm.JvmName("sumOfUByte")
@SinceKotlin("1.3")
@ExperimentalUnsignedTypes
public fun
Iterable<UByte>.sum(): UInt {
    var sum: UInt = 0u
    for (element in this) {
        sum += element
    }
    return sum
}

/**
 * Returns the sum of all elements in the collection.
 */
@kotlin.jvm.JvmName("sumOfUShort")
@SinceKotlin("1.3")
@ExperimentalUnsignedTypes
public fun
Iterable<UShort>.sum(): UInt {
    var sum: UInt = 0u
    for (element in this) {
        sum += element
    }
    return sum
}

/*
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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.
 */

@file:kotlin.jvm.JvmMultifileClass
@file:kotlin.jvm.JvmName("UComparisonsKt")
package
kotlin.comparisons

// NOTE: THIS FILE IS AUTO-GENERATED by the GenerateStandardLib.kt
// See:
// https://github.com/JetBrains/kotlin/tree/master/libraries/stdlib
import kotlin.random.*

/**
 * Returns the
 * greater of two values.
 */
@SinceKotlin("1.3")
@ExperimentalUnsignedTypes
public fun maxOf(a: UInt, b:
UInt): UInt {
    return if (a >= b) a else b
}

/**
 * Returns the greater of two values.
 */
@SinceKotlin("1.3")
@ExperimentalUnsignedTypes
public fun maxOf(a: ULong, b: ULong): ULong

```



```

the specified source of randomness.\n * \n * @throws IllegalArgumentException if this range is empty.\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@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@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@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@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@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@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@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@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@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@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@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@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
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 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]
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
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

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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
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 UShort.coerceIn(minimumValue: UShort,
maximumValue: UShort): UShort {\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.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 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.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 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"/\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// 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
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("sumOfUShort")\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\npublic fun

```

```

Sequence<UShort>.sum(): UInt {
    var sum: UInt = 0
    for (element in this) {
        sum += element
    }
    return sum
}

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 * software distributed under the License is distributed on an "AS IS"
 * BASIS, WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND,
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 * permissions and limitations under the License.
 */
package kotlin.collections
import kotlin.internal.PlatformDependent

/** Classes that inherit from this interface can
 * be represented as a sequence of elements that can
 * be iterated over.
 * @param T the type of element being iterated over.
 * The iterator is covariant on its element type.
 */
public interface Iterable<out T> {
    /** Returns an iterator over the elements of this object.
     */
    public operator fun iterator(): Iterator<T>
}

/** Classes that inherit from this interface can be represented as a sequence of elements that
 * can be iterated over and that supports removing elements during iteration.
 * @param T the type of element being iterated over.
 * The mutable iterator is invariant on its element type.
 */
public interface MutableIterable<out T> : Iterable<T> {
    /** Returns an iterator over the elements of this sequence that supports removing
     * elements during iteration.
     */
    override fun iterator(): MutableIterator<T>
}

/** A generic collection of elements. Methods in this interface support only read-only access to the collection;
 * read/write access is supported through the [MutableCollection] interface.
 * @param E the type of elements contained in the collection.
 * The collection is covariant on its element type.
 */
public interface Collection<out E> : Iterable<E> {
    /** Query Operations
     */
    /** Returns the size of the collection.
     */
    public val size: Int

    /** Returns `true` if the collection is empty (contains no elements), `false` otherwise.
     */
    public fun isEmpty(): Boolean

    /** Checks if the specified element is contained in this collection.
     */
    public operator fun contains(element: @UnsafeVariance E): Boolean

    /** override fun iterator(): Iterator<E>
     */
    /** Bulk Operations
     */
    /** Checks if all elements in the specified collection are contained in this collection.
     */
    public fun containsAll(elements: Collection<@UnsafeVariance E>): Boolean

    /** A generic collection of elements that supports adding and removing elements.
     * @param E the type of elements contained in the collection.
     * The mutable collection is invariant on its element type.
     */
    public interface MutableCollection<E> : Collection<E>, MutableIterable<E> {
        /** Query Operations
         */
        override fun iterator(): MutableIterator<E>
        /** Modification Operations
         */
        /** Adds the specified element to the collection.
         * @return `true` if the element has been added, `false` if the collection does not support
         * duplicates and the element is already contained in the collection.
         */
        public fun add(element: E): Boolean

        /** Removes a single instance of the specified element from this collection, if it is present.
         * @return `true` if the element has been successfully removed; `false` if it was not present
         * in the collection.
         */
        public fun remove(element: E): Boolean

        /** Bulk Modification Operations
         */
        /** Adds all of the elements of the specified collection to this collection.
         * @return `true` if any of the specified elements was added to the collection, `false` if the
         * collection was not modified.
         */
        public fun addAll(elements: Collection<E>): Boolean

        /** Removes all of this collection's elements that are also contained in the specified collection.
         * @return `true` if any of the specified elements was removed from the collection, `false` if
         * the collection was not modified.
         */
        public fun removeAll(elements: Collection<E>): Boolean

        /** Retains only the elements in this collection that are contained in the specified collection.
         * @return `true` if any element was removed from the collection, `false` if the collection was
         * not modified.
         */
        public fun retainAll(elements: Collection<E>): Boolean

        /** Removes all elements from this collection.
         */
        public fun clear(): Unit
    }

    /** A generic ordered collection of elements. Methods in this interface support only read-only access
     * to the list; read/write access is supported through the [MutableList] interface.
     * @param E the type of elements contained in the list.
     * The list is covariant on its element type.
     */
    public interface List<out E> : Collection<E> {
        /** Query Operations
         */
        override val size: Int

        /** override fun isEmpty(): Boolean
         */
        override fun isEmpty(): Boolean
    }
}

```

```

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   * 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   * 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\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 // 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 // Bulk Modification Operations\n  override fun removeAll(elements: Collection<E>): Boolean\n\n // Bulk Modification Operations\n  override fun retainAll(elements: Collection<E>): Boolean\n\n // Bulk Modification Operations\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  * \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 // List Iterators\n  override fun listIterator(index: Int): MutableListIterator<E>\n\n // View\n  override fun subList(fromIndex: Int, toIndex: Int): MutableList<E>\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\n // Query Operations\n  override val size: Int\n\n // Query Operations\n  override fun isEmpty(): Boolean\n\n // Query Operations\n  override fun contains(element: @UnsafeVariance E): Boolean\n\n // Bulk Operations\n  override fun containsAll(elements: Collection<@UnsafeVariance E>): Boolean\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\n // Query Operations\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 // Modification Operations\n  override fun remove(element: E): Boolean

```

```

Boolean\n\n // Bulk Modification Operations\n\n override fun addAll(elements: Collection<E>): Boolean\n
override fun removeAll(elements: Collection<E>): Boolean\n override fun retainAll(elements: Collection<E>):
Boolean\n override fun clear(): Unit\n}\n\n**\n * A collection that holds pairs of objects (keys and values) and
supports efficiently retrieving\n * the value corresponding to each key. Map keys are unique;
the map holds only one value for each key.\n * Methods in this interface support only read-only access to the map;
read-write access is supported through\n * the [MutableMap] interface.\n * @param K the type of map keys. The
map is invariant on its key type, as it\n * can accept key as a parameter (of [containsKey] for example) and
return it in [keys] set.\n * @param V the type of map values. The map is covariant on its value type.\n */\npublic
interface Map<K, out V> {\n // Query Operations\n /**\n * Returns the number of key/value pairs in the
map.\n */\n public val size: Int\n /**\n * Returns `true` if the map is empty (contains no elements), `false`
otherwise.\n */\n public fun isEmpty(): Boolean\n /**\n * Returns `true` if the map contains the specified
[key].\n */\n public fun containsKey(key: K): Boolean\n /**\n * Returns `true` if the map maps one or
more keys to the specified [value].\n */\n public
fun containsValue(value: @UnsafeVariance V): Boolean\n /**\n * Returns the value corresponding to the
given [key], or `null` if such a key is not present in the map.\n */\n public operator fun get(key: K): V?\n /**\n
* Returns the value corresponding to the given [key], or [defaultValue] if such a key is not present in the
map.\n */\n * @since JDK 1.8\n */\n @SinceKotlin("1.1")\n @PlatformDependent\n public fun
getOrDefault(key: K, defaultValue: @UnsafeVariance V): V {\n // See default implementation in JDK
sources\n return null as V\n }\n // Views\n /**\n * Returns a read-only [Set] of all keys in this map.\n
*/\n public val keys: Set<K>\n /**\n * Returns a read-only [Collection] of all values in this map. Note that
this collection may contain duplicate values.\n */\n public val values: Collection<V>\n /**\n * Returns a
read-only [Set] of all key/value pairs in this map.\n
*/\n public val entries: Set<Map.Entry<K, V>>\n /**\n * Represents a key/value pair held by a [Map].\n
*/\n public interface Entry<out K, out V> {\n /**\n * Returns the key of this key/value pair.\n */\n
public val key: K\n /**\n * Returns the value of this key/value pair.\n */\n public val value:
V\n }\n}\n\n**\n * A modifiable collection that holds pairs of objects (keys and values) and supports efficiently
retrieving\n * the value corresponding to each key. Map keys are unique; the map holds only one value for each
key.\n * @param K the type of map keys. The map is invariant on its key type.\n * @param V the type of map
values. The mutable map is invariant on its value type.\n */\npublic interface MutableMap<K, V> : Map<K, V> {\n
// Modification Operations\n /**\n * Associates the specified [value] with the specified [key] in the map.\n
*/\n * @return the previous value associated with
the key, or `null` if the key was not present in the map.\n */\n public fun put(key: K, value: V): V?\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 public fun remove(key: K):
V?\n /**\n * Removes the entry for the specified key only if it is mapped to the specified value.\n */\n *
@return true if entry was removed\n */\n @SinceKotlin("1.1")\n @PlatformDependent\n public fun
remove(key: K, value: V): Boolean {\n // See default implementation in JDK sources\n return true\n }\n // Bulk
Modification Operations\n /**\n * Updates this map with key/value pairs from the specified map
[from].\n */\n public fun putAll(from: Map<out K, V>): Unit\n /**\n * Removes all elements from this
map.\n */\n public fun clear(): Unit\n // Views\n
/**\n * Returns a [MutableSet] of all keys in this map.\n */\n override val keys: MutableSet<K>\n
/**\n * Returns a [MutableCollection] of all values in this map. Note that this collection may contain duplicate
values.\n */\n override val values: MutableCollection<V>\n /**\n * Returns a [MutableSet] of all
key/value pairs in this map.\n */\n override val entries: MutableSet<MutableMap.MutableEntry<K, V>>\n
/**\n * Represents a key/value pair held by a [MutableMap].\n */\n public interface MutableEntry<K, V> :
Map.Entry<K, V> {\n /**\n * Changes the value associated with the key of this entry.\n */\n *
@return the previous value corresponding to the key.\n */\n public fun setValue(newValue: V): V\n
}\n}\n", "\n * Copyright 2010-2019 JetBrains s.r.o. and Kotlin Programming Language contributors.\n * Use of

```

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```

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`. */
public abstract class CharIterator : Iterator<Char> {
    override final fun next() = nextChar()
    /** Returns
the next value in the sequence without boxing. */
    public abstract fun nextChar(): Char
}

/** An iterator over
a sequence of values of type `Short`. */
public abstract class ShortIterator : Iterator<Short> {
    override final fun
next() = nextShort()
    /** Returns the next value in the sequence without boxing. */
    public abstract fun
nextShort(): Short
}

/** An iterator over a sequence of values of type
`Int`. */
public abstract class IntIterator : Iterator<Int> {
    override final fun next() = nextInt()
    /** Returns
the next value in the sequence without boxing. */
    public abstract fun nextInt(): Int
}

/** An iterator over a
sequence of values of type `Long`. */
public abstract class LongIterator : Iterator<Long> {
    override final fun
next() = nextLong()
    /** Returns the next value in the sequence without boxing. */
    public abstract fun
nextLong(): Long
}

/** An iterator over a sequence of values of type `Float`. */
public abstract class
FloatIterator : Iterator<Float> {
    override final fun next() = nextFloat()
    /** Returns the next value in the
sequence without boxing. */
    public abstract fun nextFloat(): Float
}

/** An iterator over a sequence of
values of type `Double`. */
public abstract class DoubleIterator : Iterator<Double> {
    override final fun next() =
nextDouble()
    /** Returns the next value in the sequence
without boxing. */
    public abstract fun nextDouble(): Double
}

/** An iterator over a sequence of values of
type `Boolean`. */
public abstract class BooleanIterator : Iterator<Boolean> {
    override final fun next() =
nextBoolean()
    /** Returns the next value in the sequence without boxing. */
    public abstract fun
nextBoolean(): Boolean
}

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license/LICENSE.txt file.
*/
package kotlin.ranges

/** An
iterator over a progression of values of type `Char`.
* @property step the number by which the value is
incremented on each step.
*/
internal class CharProgressionIterator(first: Char, last: Char, val step: Int) :
CharIterator() {
    private val finalElement = last.toInt()
    private var hasNext: Boolean = if (step > 0) first
<= last else first >= last
    private var next = if (hasNext) first.toInt() else finalElement
    override fun
hasNext(): Boolean = hasNext
    override fun nextChar(): Char {
        val value = next
        if (value ==
finalElement) {
            if (!hasNext) throw kotlin.NoSuchElementException()
            hasNext = false
        }
        else {
            next += step
        }
        return value.toChar()
    }
}

/** An iterator over a progression
of values of type `Int`.
* @property step the number by which the value is incremented on each step.
*/
internal class IntProgressionIterator(first: Int, last: Int, val step: Int) : IntIterator() {
    private val finalElement = last
    private var hasNext: Boolean = if (step > 0) first <= last else first >= last
    private var next = if (hasNext) first else
finalElement
    override fun hasNext(): Boolean = hasNext
    override fun nextInt(): Int {
        val value =
next
        if (value
== finalElement) {
            if (!hasNext) throw kotlin.NoSuchElementException()
            hasNext = false
        }
        else {
            next += step
        }
        return value
    }
}

/** An iterator over a progression of
values of type `Long`.
* @property step the number by which the value is incremented on each step.
*/
internal class LongProgressionIterator(first: Long, last: Long, val step: Long) : LongIterator() {
    private val finalElement
= last
    private var hasNext: Boolean = if (step > 0) first <= last else first >= last
    private var next = if
(hasNext) first else finalElement
    override fun hasNext(): Boolean = hasNext
    override fun nextLong():
Long {
        val value = next
        if (value == finalElement) {
            if (!hasNext) throw
kotlin.NoSuchElementException()
            hasNext = false
        }
        else {
            next += step
        }
        return value
    }
}

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is governed by the Apache 2.0 license that can be found in the license/LICENSE.txt file.
*/

```

```

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)\n            throw kotlin.IllegalArgumentException("\nStep must be non-zero.\n")\n        if (step == Int.MIN_VALUE) throw\n            kotlin.IllegalArgumentException("\nStep must be greater than Int.MIN_VALUE to avoid overflow on negation.\n")\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:\n        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 =\n        CharProgressionIterator(first, last, step)\n\n    /** Checks if the progression is empty. */\n    public open fun\n        isEmpty(): Boolean = if (step > 0) first > last else first < last\n\n    override fun equals(other: Any?): Boolean =\n        if (other is CharProgression && (isEmpty() && other.isEmpty()) ||\n            first == other.first && last == other.last &&\n            step == other.step)\n        else if (isEmpty()) -1 else (31 * (31 * first.toInt() +\n            last.toInt()) + step)\n\n    override fun toString(): String = if (step > 0) \"$first..$last step $step\"\n        else \"$first downTo $last step ${-step}\"\n\n    companion object {\n        /**\n         * Creates CharProgression within the specified bounds of a closed range.\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 `Int.MIN_VALUE` and not equal to zero.\n         */\n        public fun fromClosedRange(rangeStart: Char, rangeEnd: Char, step: Int): CharProgression = CharProgression(rangeStart, rangeEnd, step)\n    }\n\n    /**\n     * A progression of values of type `Int`.\n     */\n    public open class IntProgression\n        internal constructor\n        (\n            start: Int,\n            endInclusive: Int,\n            step: Int\n        ): Iterable<Int> {\n        init {\n            if (step == 0) throw\n                kotlin.IllegalArgumentException("\nStep must be non-zero.\n")\n            if (step == Int.MIN_VALUE) throw\n                kotlin.IllegalArgumentException("\nStep must be greater than Int.MIN_VALUE to avoid overflow on negation.\n")\n        }\n\n        /**\n         * The first element in the progression.\n         */\n        public\n            val first: Int = start\n\n        /**\n         * The last element in the progression.\n         */\n        public val last: Int =\n            getProgressionLastElement(start.toInt(), endInclusive.toInt(), step).toInt()\n\n        /**\n         * The step of the progression.\n         */\n        public val step: Int = step\n\n        override fun iterator(): IntIterator =\n            IntProgressionIterator(first, last, step)\n\n        /** Checks if the progression is empty. */\n        public open fun\n            isEmpty(): Boolean = if (step > 0) first > last else first < last\n\n        override fun equals(other: Any?): Boolean =\n            if (other is IntProgression && (isEmpty() && other.isEmpty()) ||\n                first == other.first && last == other.last &&\n                step == other.step)\n            else if (isEmpty()) -1 else (31 * (31 * first + last) +\n                step)\n\n        override fun toString(): String = if (step > 0) \"$first..$last step $step\"\n            else \"$first downTo $last step ${-step}\"\n\n        companion object {\n            /**\n             * Creates IntProgression within the specified bounds of a closed range.\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 `Int.MIN_VALUE` and not equal to zero.\n             */\n            public fun fromClosedRange(rangeStart: Int, rangeEnd: Int, step: Int): IntProgression =\n                IntProgression(rangeStart, rangeEnd, step)\n        }\n\n        /**\n         * A progression of values of type `Long`.\n         */\n        public open class LongProgression\n            internal constructor\n            (\n                start: Long,\n                endInclusive: Long,\n                step: Long\n            ): Iterable<Long> {\n            init {\n                if (step == 0L) throw kotlin.IllegalArgumentException("\nStep\n                must be non-zero.\n")\n                if (step == Long.MIN_VALUE) throw kotlin.IllegalArgumentException("\nStep must be\n                greater than Long.MIN_VALUE to avoid overflow on\n                negation.\n")\n            }\n\n            /**\n             * The first element in the progression.\n             */\n            public val first: Long = start\n\n            /**\n             * The last element in the progression.\n             */\n            public val last: Long =\n                getProgressionLastElement(start.toLong(), endInclusive.toLong(), step).toLong()\n\n            /**\n             * The step of the progression.\n             */\n            public val step: Long = step\n\n            override fun iterator(): LongIterator =\n                LongProgressionIterator(first, last, step)\n\n            /** Checks if the progression is empty. */\n            public open fun

```





```

BINARY,\n  /** Annotation is stored in binary output and visible for reflection (default retention) */\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@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@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@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 *
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.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 * - 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 * @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("\nStep is zero.\n")\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\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
kotlin.IllegalArgumentException("\nStep is zero.\n")\n}\n\n"/*\n * Copyright 2010-2015 JetBrains s.r.o.\n *
Licensed under the Apache License, Version 2.0 (the "\nLicense\n");\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 "\nAS IS\n" 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.reflect\n\n/**\n * Represents a parameter passed to a function or a property getter/setter,\n *
including `this` and extension receiver parameters.\n * \npublic interface KParameter : KAnnotatedElement {\n
/\n * 0-based index of this parameter in the parameter list of its containing callable.\n    /\n    public val index:
Int\n    /\n    * Name of this parameter as it was declared in the source code,\n    * or `null` if the parameter has
no name or its name is not available at runtime.\n    * Examples of nameless parameters include `this` instance for
member functions,\n    * extension receiver for extension functions or properties, parameters of Java methods\n    *
compiled without the debug information, and others.\n    /\n    public val name: String?\n    /\n    * Type of
this parameter. For a `vararg` parameter, this is the
type of the corresponding array,\n    * not the individual element.\n    /\n    public val type: KType\n    /\n    *
Kind of this parameter.\n    /\n    public val kind: Kind\n    /\n    * Kind represents a particular position of the
parameter declaration in the source code,\n    * such as an instance, an extension receiver parameter or a value
parameter.\n    /\n    public enum class Kind {\n    /\n    /** Instance required to make a call to the member, or an
outer class instance for an inner class constructor. *\n        INSTANCE,\n    /\n    /** Extension receiver of an
extension function or property. *\n        EXTENSION_RECEIVER,\n    /\n    /** Ordinary named value parameter.
*\n        VALUE,\n    }\n    /\n    * `true` if this parameter is optional and can be omitted when making a call
via [KCallable.callBy], or `false` otherwise.\n    * \n    * A parameter is optional in any of the two cases:\n    * 1.
The default value is provided at the declaration
of this parameter.\n    * 2. The parameter is declared in a member function and one of the corresponding parameters
in the super functions is optional.\n    /\n    public val isOptional: Boolean\n    /\n    * `true` if this parameter is
`vararg`.\n    * See the [Kotlin language
documentation](https://kotlinlang.org/docs/reference/functions.html#variable-number-of-arguments-varargs)\n    *
for more information.\n    /\n    @SinceKotlin("1.1")\n    public val isVararg: 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\npackage kotlin.reflect\n\n/**\n
* Represents a type. Type is usually either a class with optional type arguments,\n * or a type parameter of some
declaration, plus nullability.\n * \npublic interface KType : KAnnotatedElement {\n    /\n    * The declaration of
the classifier used
in this type.\n    * For example, in the type `List<String>` the classifier would be the [KClass] instance for [List].\n
*\n    * Returns `null` if this type is not denotable in Kotlin, for example if it is an intersection type.\n    /\n
*\n    @SinceKotlin("1.1")\n    public val classifier: KClassifier?\n    /\n    * 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?,
 /** The type specified in the projection, or `null` if this is a star projection.
 */
 public val type: KType?) {
 public companion object {
 /** Star projection, denoted by the `*` character.
 * For example, in the type `KClass<*>`, `*` is the star projection.
 * See the [Kotlin language documentation](https://kotlinlang.org/docs/reference/generics.html#star-projections) for more information.
 */
 public val STAR: KTypeProjection = KTypeProjection(null, null)
 /** Creates an invariant projection of a given type. Invariant projection is just the type itself, without any use-site variance modifiers applied to it.
 * For example, in the type `Set<String>`, `String` is an invariant projection of the type represented by the class `String`.
 */
 public fun invariant(type: KType): KTypeProjection =
 KTypeProjection(KVariance.INVARIANT, type)
 /** Creates a contravariant projection of a given type, denoted by the `in` modifier applied to a type.
 * For example, in the type `MutableList<in Number>`, `in Number` is a contravariant projection of the type of class `Number`.
 */
 public fun contravariant(type: KType): KTypeProjection =
 KTypeProjection(KVariance.IN, type)
 /** Creates a covariant projection of a given type, denoted by the `out` modifier applied to a type.
 * For example, in the type `Array<out Number>`, `out Number` is a covariant projection of the type of class `Number`.
 */
 public fun covariant(type: KType): KTypeProjection =
 KTypeProjection(KVariance.OUT, type)
 }
 }
}

```

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```
package kotlin.reflect
 * Represents variance applied to a type parameter on the declaration site (*declaration-site variance*), or to a type in a projection (*use-site variance*).
 * See the [Kotlin language documentation](https://kotlinlang.org/docs/reference/generics.html#variance) for more information.
 * @see [KTypeParameter.variance]
 * @see [KTypeProjection]
@SinceKotlin("1.1")
enum class KVariance {
 /** The affected type parameter or type is *invariant*, which means it has no variance applied to it.
 */
}

```

`*\n INvariant,\n\n /**\n * The affected type parameter or type is *contravariant*. Denoted by the `in` modifier in the source code.\n *\n IN,\n\n /**\n * The affected type parameter or type is *covariant*. Denoted by the `out` modifier in the source code.\n *\n OUT,\n\n */\n * Copyright 2010-2016 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 \*\n package kotlin.reflect\n\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 \*\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 \*\n \* See the [Kotlin language documentation](<https://kotlinlang.org/docs/reference/visibility-modifiers.html>)\n

\* for more information.\n \*\n @SinceKotlin("1.1")\nenum class KVisibility {\n\n /\*\*\n \* Visibility of declarations marked with the `public` modifier, or with no modifier at all.\n \*\n PUBLIC,\n\n /\*\*\n \* Visibility of declarations marked with the `protected` modifier.\n \*\n PROTECTED,\n\n /\*\*\n \* Visibility of declarations marked with the `internal` modifier.\n \*\n INTERNAL,\n\n /\*\*\n \* Visibility of declarations marked with the `private` modifier.\n \*\n PRIVATE,\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 @JsName("arrayIterator")\ninternal fun arrayIterator(array: dynamic, type: String?) = when (type) {\n\n null -> {\n\n val arr: Array<dynamic> = array\n\n object : Iterator<dynamic>

{\n\n var index = 0\n\n override fun hasNext() = index < arr.size\n\n override fun next() = if (index < arr.size) arr[index++] else throw NoSuchElementException("\$index")\n\n }\n\n }\n\n "BooleanArray" ->

booleanArrayIterator(array)\n\n "ByteArray" -> byteArrayIterator(array)\n\n "ShortArray" ->

shortArrayIterator(array)\n\n "CharArray" -> charArrayIterator(array)\n\n "IntArray" -> intArrayIterator(array)\n\n "LongArray" -> longArrayIterator(array)\n\n "FloatArray" -> floatArrayIterator(array)\n\n "DoubleArray" ->

doubleArrayIterator(array)\n\n else -> throw IllegalStateException("Unsupported type argument for arrayIterator: \$type")\n\n }\n\n @JsName("booleanArrayIterator")\ninternal fun booleanArrayIterator(array: BooleanArray) =

object : BooleanIterator() {\n\n var index = 0\n\n override fun hasNext() = index < array.size\n\n override fun nextBoolean() = if (index < array.size) array[index++] else throw NoSuchElementException("\$index")\n\n }\n\n @JsName("byteArrayIterator")\ninternal fun byteArrayIterator(array: ByteArray) = object : ByteIterator() {\n\n var index = 0\n\n override fun hasNext() = index < array.size\n\n override fun nextByte() = if (index < array.size) array[index++] else throw NoSuchElementException("\$index")\n\n }\n\n @JsName("shortArrayIterator")\ninternal fun shortArrayIterator(array: ShortArray) = object : ShortIterator() {\n\n var index = 0\n\n override fun hasNext() = index < array.size\n\n override fun nextShort() = if (index < array.size) array[index++] else throw NoSuchElementException("\$index")\n\n }\n\n @JsName("charArrayIterator")\ninternal fun charArrayIterator(array: CharArray) = object : CharIterator() {\n\n var index = 0\n\n override fun hasNext() = index < array.size\n\n override fun nextChar() = if (index < array.size) array[index++] else throw NoSuchElementException("\$index")\n\n }\n\n @JsName("intArrayIterator")\ninternal fun intArrayIterator(array: IntArray) = object : IntIterator() {\n\n var index = 0\n\n override fun hasNext() = index < array.size\n\n override fun nextInt() = if (index < array.size) array[index++] else throw NoSuchElementException("\$index")\n\n }\n\n @JsName("floatArrayIterator")\ninternal fun floatArrayIterator(array: FloatArray) = object : FloatIterator() {\n\n var index = 0\n\n override fun hasNext() = index < array.size\n\n override fun nextFloat() = if (index < array.size) array[index++] else throw

object : BooleanIterator() {\n\n var index = 0\n\n override fun hasNext() = index < array.size\n\n override fun nextBoolean() = if (index < array.size) array[index++] else throw NoSuchElementException("\$index")\n\n }\n\n @JsName("byteArrayIterator")\ninternal fun byteArrayIterator(array: ByteArray) = object : ByteIterator() {\n\n var index = 0\n\n override fun hasNext() = index < array.size\n\n override fun nextByte() = if (index < array.size) array[index++] else throw NoSuchElementException("\$index")\n\n }\n\n @JsName("shortArrayIterator")\ninternal fun shortArrayIterator(array: ShortArray) = object : ShortIterator() {\n\n var index = 0\n\n override fun hasNext() = index < array.size\n\n override fun nextShort() = if (index < array.size) array[index++] else throw NoSuchElementException("\$index")\n\n }\n\n @JsName("charArrayIterator")\ninternal fun charArrayIterator(array: CharArray) = object : CharIterator() {\n\n var index = 0\n\n override fun hasNext() = index < array.size\n\n override fun nextChar() = if (index < array.size) array[index++] else throw NoSuchElementException("\$index")\n\n }\n\n @JsName("intArrayIterator")\ninternal fun intArrayIterator(array: IntArray) = object : IntIterator() {\n\n var index = 0\n\n override fun hasNext() = index < array.size\n\n override fun nextInt() = if (index < array.size) array[index++] else throw NoSuchElementException("\$index")\n\n }\n\n @JsName("floatArrayIterator")\ninternal fun floatArrayIterator(array: FloatArray) = object : FloatIterator() {\n\n var index = 0\n\n override fun hasNext() = index < array.size\n\n override fun nextFloat() = if (index < array.size) array[index++] else throw

object : BooleanIterator() {\n\n var index = 0\n\n override fun hasNext() = index < array.size\n\n override fun nextBoolean() = if (index < array.size) array[index++] else throw NoSuchElementException("\$index")\n\n }\n\n @JsName("byteArrayIterator")\ninternal fun byteArrayIterator(array: ByteArray) = object : ByteIterator() {\n\n var index = 0\n\n override fun hasNext() = index < array.size\n\n override fun nextByte() = if (index < array.size) array[index++] else throw NoSuchElementException("\$index")\n\n }\n\n @JsName("shortArrayIterator")\ninternal fun shortArrayIterator(array: ShortArray) = object : ShortIterator() {\n\n var index = 0\n\n override fun hasNext() = index < array.size\n\n override fun nextShort() = if (index < array.size) array[index++] else throw NoSuchElementException("\$index")\n\n }\n\n @JsName("charArrayIterator")\ninternal fun charArrayIterator(array: CharArray) = object : CharIterator() {\n\n var index = 0\n\n override fun hasNext() = index < array.size\n\n override fun nextChar() = if (index < array.size) array[index++] else throw NoSuchElementException("\$index")\n\n }\n\n @JsName("intArrayIterator")\ninternal fun intArrayIterator(array: IntArray) = object : IntIterator() {\n\n var index = 0\n\n override fun hasNext() = index < array.size\n\n override fun nextInt() = if (index < array.size) array[index++] else throw NoSuchElementException("\$index")\n\n }\n\n @JsName("floatArrayIterator")\ninternal fun floatArrayIterator(array: FloatArray) = object : FloatIterator() {\n\n var index = 0\n\n override fun hasNext() = index < array.size\n\n override fun nextFloat() = if (index < array.size) array[index++] else throw

object : BooleanIterator() {\n\n var index = 0\n\n override fun hasNext() = index < array.size\n\n override fun nextBoolean() = if (index < array.size) array[index++] else throw NoSuchElementException("\$index")\n\n }\n\n @JsName("byteArrayIterator")\ninternal fun byteArrayIterator(array: ByteArray) = object : ByteIterator() {\n\n var index = 0\n\n override fun hasNext() = index < array.size\n\n override fun nextByte() = if (index < array.size) array[index++] else throw NoSuchElementException("\$index")\n\n }\n\n @JsName("shortArrayIterator")\ninternal fun shortArrayIterator(array: ShortArray) = object : ShortIterator() {\n\n var index = 0\n\n override fun hasNext() = index < array.size\n\n override fun nextShort() = if (index < array.size) array[index++] else throw NoSuchElementException("\$index")\n\n }\n\n @JsName("charArrayIterator")\ninternal fun charArrayIterator(array: CharArray) = object : CharIterator() {\n\n var index = 0\n\n override fun hasNext() = index < array.size\n\n override fun nextChar() = if (index < array.size) array[index++] else throw NoSuchElementException("\$index")\n\n }\n\n @JsName("intArrayIterator")\ninternal fun intArrayIterator(array: IntArray) = object : IntIterator() {\n\n var index = 0\n\n override fun hasNext() = index < array.size\n\n override fun nextInt() = if (index < array.size) array[index++] else throw NoSuchElementException("\$index")\n\n }\n\n @JsName("floatArrayIterator")\ninternal fun floatArrayIterator(array: FloatArray) = object : FloatIterator() {\n\n var index = 0\n\n override fun hasNext() = index < array.size\n\n override fun nextFloat() = if (index < array.size) array[index++] else throw

object : BooleanIterator() {\n\n var index = 0\n\n override fun hasNext() = index < array.size\n\n override fun nextBoolean() = if (index < array.size) array[index++] else throw NoSuchElementException("\$index")\n\n }\n\n @JsName("byteArrayIterator")\ninternal fun byteArrayIterator(array: ByteArray) = object : ByteIterator() {\n\n var index = 0\n\n override fun hasNext() = index < array.size\n\n override fun nextByte() = if (index < array.size) array[index++] else throw NoSuchElementException("\$index")\n\n }\n\n @JsName("shortArrayIterator")\ninternal fun shortArrayIterator(array: ShortArray) = object : ShortIterator() {\n\n var index = 0\n\n override fun hasNext() = index < array.size\n\n override fun nextShort() = if (index < array.size) array[index++] else throw NoSuchElementException("\$index")\n\n }\n\n @JsName("charArrayIterator")\ninternal fun charArrayIterator(array: CharArray) = object : CharIterator() {\n\n var index = 0\n\n override fun hasNext() = index < array.size\n\n override fun nextChar() = if (index < array.size) array[index++] else throw NoSuchElementException("\$index")\n\n }\n\n @JsName("intArrayIterator")\ninternal fun intArrayIterator(array: IntArray) = object : IntIterator() {\n\n var index = 0\n\n override fun hasNext() = index < array.size\n\n override fun nextInt() = if (index < array.size) array[index++] else throw NoSuchElementException("\$index")\n\n }\n\n @JsName("floatArrayIterator")\ninternal fun floatArrayIterator(array: FloatArray) = object : FloatIterator() {\n\n var index = 0\n\n override fun hasNext() = index < array.size\n\n override fun nextFloat() = if (index < array.size) array[index++] else throw

object : BooleanIterator() {\n\n var index = 0\n\n override fun hasNext() = index < array.size\n\n override fun nextBoolean() = if (index < array.size) array[index++] else throw NoSuchElementException("\$index")\n\n }\n\n @JsName("byteArrayIterator")\ninternal fun byteArrayIterator(array: ByteArray) = object : ByteIterator() {\n\n var index = 0\n\n override fun hasNext() = index < array.size\n\n override fun nextByte() = if (index < array.size) array[index++] else throw NoSuchElementException("\$index")\n\n }\n\n @JsName("shortArrayIterator")\ninternal fun shortArrayIterator(array: ShortArray) = object : ShortIterator() {\n\n var index = 0\n\n override fun hasNext() = index < array.size\n\n override fun nextShort() = if (index < array.size) array[index++] else throw NoSuchElementException("\$index")\n\n }\n\n @JsName("charArrayIterator")\ninternal fun charArrayIterator(array: CharArray) = object : CharIterator() {\n\n var index = 0\n\n override fun hasNext() = index < array.size\n\n override fun nextChar() = if (index < array.size) array[index++] else throw NoSuchElementException("\$index")\n\n }\n\n @JsName("intArrayIterator")\ninternal fun intArrayIterator(array: IntArray) = object : IntIterator() {\n\n var index = 0\n\n override fun hasNext() = index < array.size\n\n override fun nextInt() = if (index < array.size) array[index++] else throw NoSuchElementException("\$index")\n\n }\n\n @JsName("floatArrayIterator")\ninternal fun floatArrayIterator(array: FloatArray) = object : FloatIterator() {\n\n var index = 0\n\n override fun hasNext() = index < array.size\n\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 (jsTypeOf(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\n    override fun
hashCode(): Int {\n        return c\n    }\n\n    override fun toString(): String {\n        return
js("this.c").unsafeCast<Char>().toString()\n    }\n\n    override fun compareTo(other: Int): Int {\n        return
js("this.c - other").unsafeCast<Int>()\n    }\n\n    @JsName("valueOf")\n    public fun valueOf(): Int {\n
return c\n    }\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
* 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@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@JsName("longArrayOf")\ninternal fun longArrayOf() =
withType("LongArray",
js("[]").slice.call(arguments))\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 * 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 *
Function corresponding to JavaScript's `typeof` operator\n
*/\n\n@kotlin.internal.InlineOnly\n@Suppress("\nUNUSED_PARAMETER\n")\npublic inline fun jsTypeOf(a: Any?):
String = js("\ntypeof a\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@file:Suppress("\nUNUSED_PARAMETER\n", "\nNOTHING_TO_INLINE\n")\n\npackage kotlin\n\n/**\n *
Returns an empty array of the specified type [T].\n */\n\npublic inline fun <T> emptyArray(): Array<T> =
js("\n[]\n")\n\n\n@library\n\npublic fun <T> arrayOf(vararg elements: T): Array<T> =
definedExternally\n\n\n@library\n\npublic fun doubleArrayOf(vararg elements: Double): DoubleArray =
definedExternally\n\n\n@library\n\npublic fun floatArrayOf(vararg elements: Float): FloatArray =
definedExternally\n\n\n@library\n\npublic fun longArrayOf(vararg elements: Long): LongArray =
definedExternally\n\n\n@library\n\npublic fun intArrayOf(vararg elements: Int): IntArray =
definedExternally\n\n\n@library\n\npublic fun charArrayOf(vararg elements: Char): CharArray =
definedExternally\n\n\n@library\n\npublic fun shortArrayOf(vararg elements: Short): ShortArray =
definedExternally\n\n\n@library\n\npublic fun byteArrayOf(vararg elements:
Byte): ByteArray = definedExternally\n\n\n@library\n\npublic fun booleanArrayOf(vararg elements: Boolean):
BooleanArray = definedExternally\n\n\n\n/**\n * Creates a new instance of the [Lazy] that uses the specified
initialization function [initializer].\n */\n\npublic actual fun <T> lazy(initializer: () -> T): Lazy<T> =
UnsafeLazyImpl(initializer)\n\n\n\n/**\n * Creates a new instance of the [Lazy] that uses the specified initialization
function [initializer].\n * The [mode] parameter is ignored.\n */\n\npublic actual fun <T> lazy(mode:
LazyThreadSafetyMode, initializer: () -> T): Lazy<T> = UnsafeLazyImpl(initializer)\n\n\n\n/**\n * Creates a new
instance of the [Lazy] that uses the specified initialization function [initializer].\n * The [lock] parameter is
ignored.\n */\n\npublic actual fun <T> lazy(lock: Any?, initializer: () -> T): Lazy<T> =
UnsafeLazyImpl(initializer)\n\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\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\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\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\n\n\ninternal inline fun copyArrayType(from: dynamic, to: dynamic) {\n  if (from.`$type$` != undefined)
{\n    to.`$type$` = from.`$type$`\n  }\n}\n\n\n\ninternal inline fun jsIsType(obj: dynamic, jsClass: dynamic) =
js("\nKotlin\n").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\n@SinceKotlin("1.3\n")\n\n@JsName("\nCoroutineImpl\n")\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_\n      ?: (context[ContinuationInterceptor]?.interceptContinuation(this) ?: this)\n      .also {\n
intercepted_ = it }\n\n override fun resumeWith(result: Result<Any?>) {\n      var current = this\n      var\n
currentResult: Any? = result.getOrNull()\n      var currentException: Throwable? = result.exceptionOrNull()\n\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\n      // Set result and\n
exception fields in the current continuation\n      if (currentException == null) {\n      this.result =\n
currentResult\n      } else {\n      state = exceptionState\n      exception\n
= currentException\n      }\n\n      try {\n      val outcome = doResume()\n      if\n
(outcome === COROUTINE_SUSPENDED) return\n      currentResult = outcome\n
currentException = null\n      } catch (exception: dynamic) { // Catch all exceptions\n
currentResult = null\n      currentException = exception.unsafeCast<Throwable>()\n      }\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-\n
level completion reached -- invoke and return\n      currentException?.let {\n
completion.resumeWithException(it)\n      } ?: completion.resume(currentResult)\n      return\n
}\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_ =\n
CompletedContinuation // just in case\n      }\n\n protected abstract fun doResume(): Any?\n\n\ninternal object\n
CompletedContinuation : Continuation<Any?> {\n      override val context: CoroutineContext\n      get() =\n
error("\nThis continuation is already complete")\n\n      override fun resumeWith(result: Result<Any?>) {\n
error("\nThis continuation is already complete")\n      }\n\n      override fun toString(): String = "\nThis continuation is\n
already complete"\n      }\n\n\n/*\n * Copyright 2010-2018 JetBrains s.r.o. and Kotlin Programming Language\n
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\n
file.\n *@\n\n@file:Suppress("UNCHECKED_CAST", "RedundantVisibilityModifier")\n\n\npackage\n
kotlin\n\nimport kotlin.contracts.*\nimport kotlin.internal.InlineOnly\nimport kotlin.jvm.JvmField\n\n/**\n * A\n
discriminated union that encapsulates a successful outcome with a value of type [T]\n * or a failure with an arbitrary\n
[Throwable] exception.\n
*\n\n@Suppress("NON_PUBLIC_PRIMARY_CONSTRUCTOR_OF_INLINE_CLASS")\n\n@SinceKotlin("1.3")\n\npublic inline class Result<out T> @PublishedApi internal constructor(\n
@PublishedApi\n      internal val value:\n
Any?>): Serializable {\n      // discovery\n\n      /**\n      * Returns `true` if this instance represents a successful\n
outcome.\n      * In this case [isFailure] returns `false`.\n      *\n      *\n      public val isSuccess: Boolean get() = value !is\n
Failure\n\n      /**\n      * Returns `true` if this instance represents a failed outcome.\n      * In this case [isSuccess]\n
returns `false`.\n      *\n      *\n      public val isFailure: Boolean get() = value is\n
Failure\n\n      // value & exception retrieval\n\n      /**\n      * Returns the encapsulated value if this instance represents\n
[success][Result.isSuccess] or `null`\n      * if it is [failure][Result.isFailure].\n      *\n      *\n      * This function is a\n
shorthand for `getOrElse { null }` (see [getOrElse]) or\n      * `fold(onSuccess = { it }, onFailure = { null })` (see\n
[fold]).\n      *\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\n
represents [failure][isFailure] or `null`\n      * if it is [success][isSuccess].\n      *\n      *\n      * This function is a shorthand\n
for `fold(onSuccess = { null }, onFailure = { it })` (see [fold]).\n      *\n      *\n      public fun exceptionOrNull(): Throwable?\n
=\n      when (value) {\n      is Failure -> value.exception\n      else -> null\n      }\n\n      /**\n      * Returns a\n
string\n
`Success(v)` if this instance represents [success][Result.isSuccess]\n      * where `v` is a string representation of the\n
value or a string `Failure(x)` if\n      * it is [failure][isFailure] where `x` is a string representation of the exception.\n
*\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  * 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\n       value.\n       */\n      @InlineOnly\n      public inline fun <T> success(value: T): Result<T> =\n      Result(value)\n      /**\n       * Returns an instance that encapsulates the given [Throwable] [exception] as\n       failure.\n       *\n       */\n      @InlineOnly\n      public inline fun <T> failure(exception: Throwable): Result<T> =\n      Result(createFailure(exception))\n      }\n      internal class Failure(\n          @JvmField\n          val exception:\n          Throwable\n      ): Serializable {\n          override fun equals(other: Any?): Boolean = other is Failure && exception\n          == other.exception\n          override fun hashCode(): Int = exception.hashCode()\n          override fun toString(): String\n          = \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\n      createFailure(exception: Throwable): Any =\n      Result.Failure(exception)\n      /**\n       * Throws exception if the result\n       is failure. This internal function minimizes\n       * inlined bytecode for [getOrThrow] and makes sure that in the future\n       we can\n       * add some exception-augmenting logic here (if needed).\n       *\n       */\n      @PublishedApi\n      @SinceKotlin("1.3")\n      internal\n      fun Result<*>.throwOnFailure() {\n          if (value is Result.Failure) throw value.exception\n      }\n      /**\n       * Calls the\n       specified function [block] and returns its encapsulated result if invocation was successful,\n       * catching any\n       [Throwable] exception that was thrown from the [block] function execution and encapsulating it as a failure.\n       *\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       * Calls the specified function [block] with `this` value as its receiver and returns its encapsulated result if invocation\n       was successful,\n       * catching any [Throwable] exception that was thrown from the [block] function execution and\n       encapsulating it as a failure.\n       */\n      @InlineOnly\n      @SinceKotlin("1.3")\n      public inline fun <T, R>\n      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       * Returns the encapsulated value if this instance represents [success][Result.isSuccess] or throws the\n       encapsulated [Throwable] exception\n       * if it is [failure][Result.isFailure].\n       */\n      * This function is a shorthand for\n       `getOrNull { throw it }` (see [getOrNull]).\n       */\n      @InlineOnly\n      @SinceKotlin("1.3")\n      public inline fun <T>\n      Result<T>.getOrThrow(): T {\n          throwOnFailure()\n          return value as T\n      }\n      /**\n       * Returns the encapsulated\n       value if this instance represents [success][Result.isSuccess] or the\n       * result of [onFailure] function for the\n       encapsulated [Throwable] exception if it is [failure][Result.isFailure].\n       */\n      * Note, that this function rethrows any\n       [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\n      inline fun <R, T : R> Result<T>.getOrNull(onFailure: (exception: Throwable) -> R): R {\n          contract {\n              callsInPlace(onFailure, InvocationKind.AT_MOST_ONCE)\n          }\n          return when (val exception =\n          exceptionOrNull()) {\n              null -> value as T\n              else -> onFailure(exception)\n          }\n      }\n      /**\n       * Returns the\n       encapsulated value if this instance represents [success][Result.isSuccess] or the\n       * [defaultValue] if it is\n       [failure][Result.isFailure].\n       */\n      * This function is a shorthand for `getOrNull { defaultValue }` (see [getOrNull]).\n       */\n      @InlineOnly\n      @SinceKotlin("1.3")\n      public inline fun <R, T : R> Result<T>.getOrDefault(defaultValue: R):\n      R {\n          if (isFailure) return defaultValue\n          return value as T\n      }\n      /**\n       * Returns the result of [onSuccess] for the\n       encapsulated value if this instance represents [success][Result.isSuccess]\n       * or the result of [onFailure] function for\n       the encapsulated [Throwable] exception if it is [failure][Result.isFailure].\n       */\n      * Note, that this function rethrows any [Throwable] exception thrown by [onSuccess] or by [onFailure] function.\n       *\n       */\n      @InlineOnly\n      @SinceKotlin("1.3")\n      public inline fun <R, T> Result<T>.fold(\n          onSuccess: (value: T) ->\n          R,\n          onFailure: (exception: Throwable) -> R\n      ): R {\n          contract {\n              callsInPlace(onSuccess,\n              InvocationKind.AT_MOST_ONCE)\n              callsInPlace(onFailure, InvocationKind.AT_MOST_ONCE)\n          }\n          return when (val exception = exceptionOrNull()) {\n              null -> onSuccess(value as T)\n              else ->

```

```

onFailure(exception)\n } \n\n// transformation\n\n/**\n * Returns the encapsulated result of the given
[transform] function applied to the encapsulated value\n * if this instance represents [success][Result.isSuccess] or
the\n * original encapsulated [Throwable] exception if it is [failure][Result.isFailure].\n *\n * Note, that this function
rethrows any [Throwable] exception thrown by [transform] function.\n * See [mapCatching] for an alternative that
encapsulates exceptions.\n *\n@InlineOnly\n@SinceKotlin("1.3")\npublic inline fun <R, T>
Result<T>.map(transform: (value: T) -> R): Result<R> {\n contract {\n callsInPlace(transform,
InvocationKind.AT_MOST_ONCE)\n } \n return when {\n isSuccess -> Result.success(transform(value as
T))\n else -> Result(value)\n } \n\n\n/**\n * Returns the encapsulated result of the given [transform] function
applied to the encapsulated value\n * if this instance represents [success][Result.isSuccess] or the\n * original
encapsulated [Throwable] exception if it is [failure][Result.isFailure].\n *\n * This function catches any [Throwable]
exception thrown by [transform] function and encapsulates it as a failure.\n * See [map] for an alternative that
rethrows exceptions from `transform` function.\n *\n@InlineOnly\n@SinceKotlin("1.3")\npublic inline fun <R,
T> Result<T>.mapCatching(transform: (value: T) -> R): Result<R> {\n return when {\n isSuccess ->
runCatching
{ transform(value as T) } \n else -> Result(value)\n } \n\n\n/**\n * Returns the encapsulated result of the
given [transform] function applied to the encapsulated [Throwable] exception\n * if this instance represents
[failure][Result.isFailure] or the\n * original encapsulated value if it is [success][Result.isSuccess].\n *\n * Note,
that this function rethrows any [Throwable] exception thrown by [transform] function.\n * See [recoverCatching] for
an alternative that encapsulates exceptions.\n *\n@InlineOnly\n@SinceKotlin("1.3")\npublic inline fun <R, T :
R> Result<T>.recover(transform: (exception: Throwable) -> R): Result<R> {\n contract {\n
callsInPlace(transform, InvocationKind.AT_MOST_ONCE)\n } \n return when (val exception =
exceptionOrNull()) {\n null -> this\n else -> Result.success(transform(exception))\n } \n\n\n/**\n * Returns the encapsulated result of the given [transform] function applied to the encapsulated [Throwable]
exception\n
* if this instance represents [failure][Result.isFailure] or the\n * original encapsulated value if it is
[success][Result.isSuccess].\n *\n * This function catches any [Throwable] exception thrown by [transform]
function and encapsulates it as a failure.\n * See [recover] for an alternative that rethrows exceptions.\n
*\n@InlineOnly\n@SinceKotlin("1.3")\npublic inline fun <R, T : R> Result<T>.recoverCatching(transform:
(exception: Throwable) -> R): Result<R> {\n val value = value // workaround for inline classes BE bug\n return
when (val exception = exceptionOrNull()) {\n null -> this\n else -> runCatching { transform(exception) } \n
} \n\n\n// "peek" onto value/exception and pipe\n\n/**\n * Performs the given [action] on the encapsulated
[Throwable] exception if this instance represents [failure][Result.isFailure].\n * Returns the original `Result`
unchanged.\n *\n@InlineOnly\n@SinceKotlin("1.3")\npublic inline fun <T> Result<T>.onFailure(action:
(exception: Throwable) -> Unit): Result<T> {\n contract {\n callsInPlace(action,
InvocationKind.AT_MOST_ONCE)\n } \n exceptionOrNull()?.let { action(it) } \n return this\n} \n\n\n/**\n * Performs the given [action] on the 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"/\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\nnimport 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<in 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/**\n * Classes and interfaces marked with this annotation are restricted when

```

used as receivers for extension `* suspend` functions. These `suspend` extensions can only invoke other member or extension `suspend` functions on this particular `* receiver` and are restricted from calling arbitrary suspension functions.

```
*\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@SinceKotlin("1.3")\n@InlineOnly\npublic inline fun <T> Continuation<T>.resume(value: T): Unit =\nresumeWith(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 =\nresumeWith(Result.failure(exception))\n\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\n): 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 *\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>)\n): Continuation<Unit> =\nSafeContinuation(createCoroutineUnintercepted(completion).intercepted(), COROUTINE_SUSPENDED)\n\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 *\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>)\n): Continuation<Unit> =\nSafeContinuation(createCoroutineUnintercepted(receiver, completion).intercepted(),
```

```
COROUTINE_SUSPENDED)\n\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
```

```
*\n@SinceKotlin("1.3")\n@Suppress("UNCHECKED_CAST")\npublic  
fun <T> (suspend () -> T).startCoroutine(\n completion: Continuation<T>)\n) {\ncreateCoroutineUnintercepted(completion).intercepted().resume(Unit)\n}\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.\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 <R, T> (suspend
```

```
R.() -> T).startCoroutine(\n receiver: R,\n completion: Continuation<T>)\n) {\ncreateCoroutineUnintercepted(receiver, completion).intercepted().resume(Unit)\n}\n\n\n/**\n * Obtains the current  
continuation instance inside suspend functions and suspends\n * the currently running coroutine.\n *\n * In this  
function both [Continuation.resume] and [Continuation.resumeWithException] can be used either synchronously
```

```
in\n * the same stack-frame  
where the suspension function is run or asynchronously later in the same thread or\n * from a different thread of  
execution. Subsequent invocation of any resume function will produce an [IllegalStateException].\n\n
```

```
*\n@SinceKotlin("1.3")\n@InlineOnly\npublic suspend inline fun <T> suspendCoroutine(crossinline block:
```

```

(Continuation<T>) -> Unit): T =\n    suspendCoroutineUninterceptedOrReturn { c: Continuation<T> ->\n        val
safe = SafeContinuation(c.intercepted())\n        block(safe)\n        safe.getOrThrow()\n    }\n\n/**\n * Returns the
context of the current coroutine.\n
*\n@SinceKotlin("1.3")\n@Suppress("WRONG_MODIFIER_TARGET")\n@InlineOnly\npublic suspend inline
val coroutineContext: CoroutineContext\n    get() {\n        throw NotImplementedError("Implemented as
intrinsic")\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\npackage kotlin.coroutines.intrinsics\n\nimport kotlin.coroutines.*\nimport
kotlin.internal.InlineOnly\n\n/**\n * Starts an unintercepted coroutine without a receiver and with result type [T]
and executes it until its first suspension.\n * Returns the result of the coroutine or throws its exception if it does not
suspend or [COROUTINE_SUSPENDED] if it suspends.\n * In the latter case, the [completion] continuation is
invoked when the coroutine completes with a result or an exception.\n * The coroutine is started directly in the
invoker's thread without going through the [ContinuationInterceptor] that might\n * be present in the completion's
[CoroutineContext]. It is the invoker's responsibility to ensure that a proper invocation\n * context is established.\n
*\n * This function is designed to be used from inside of [suspendCoroutineUninterceptedOrReturn] to resume the
execution of the suspended\n * coroutine using a reference to the suspending
function.\n
*\n@SinceKotlin("1.3")\n@InlineOnly\npublic actual inline fun <T> (suspend () ->
T).startCoroutineUninterceptedOrReturn(\n    completion: Continuation<T>)\n): Any? =
this.asDynamic()(completion, false)\n\n/**\n * Starts an unintercepted coroutine with receiver type [R] and result
type [T] and executes it until its first suspension.\n * Returns the result of the coroutine or throws its exception if it
does not suspend or [COROUTINE_SUSPENDED] if it suspends.\n * In the latter case, the [completion]
continuation is invoked when the coroutine completes with a result or an exception.\n * The coroutine is started
directly in the invoker's thread without going through the [ContinuationInterceptor] that might\n * be present in the
completion's [CoroutineContext]. It is the invoker's responsibility to ensure that a proper invocation\n * context is
established.\n * This function is designed to be used from inside of [suspendCoroutineUninterceptedOrReturn]
to resume the execution
of the suspended\n * coroutine using a reference to the suspending function.\n
*\n@SinceKotlin("1.3")\n@InlineOnly\npublic actual inline fun <R, T> (suspend R.() ->
T).startCoroutineUninterceptedOrReturn(\n    receiver: R,\n    completion: Continuation<T>)\n): Any? =
this.asDynamic()(receiver, completion, false)\n\n/**\n * Creates unintercepted coroutine without 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 coroutine completes with result or exception.\n * This
function returns unintercepted continuation.\n * Invocation of `resume(Unit)` starts coroutine immediately in
the invoker's call stack without going through the\n * [ContinuationInterceptor] that might be present in the
completion's [CoroutineContext].\n * It is the
invoker's responsibility to ensure that a proper invocation context is established.\n * Note that [completion] of this
function may get invoked in an arbitrary context.\n * [Continuation.intercepted] can be used to acquire the
intercepted continuation.\n * Invocation of `resume(Unit)` on intercepted continuation guarantees that execution of\n
* both the coroutine and [completion] happens in the invocation context established by\n *
[ContinuationInterceptor].\n * Repeated invocation of any resume function on the resulting continuation corrupts
the\n * state machine of the coroutine and may result in arbitrary behaviour or exception.\n
*\n@SinceKotlin("1.3")\npublic actual fun <T> (suspend () -> T).createCoroutineUnintercepted(\n    completion:
Continuation<T>)\n): Continuation<Unit> =\n    // Kotlin/JS suspend lambdas have an extra parameter `suspended`\n
if (this.asDynamic().length == 2) {\n        // When `suspended` is true the continuation is created, but not
executed\n
        this.asDynamic()(completion, true)\n    } else {\n        createCoroutineFromSuspendFunction(completion) {\n
this.asDynamic()(completion)\n        }\n    }\n\n/**\n * Creates unintercepted 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 coroutine completes with result or exception.\n \* This function returns unintercepted continuation.\n \* Invocation of `resume(Unit)` starts coroutine immediately in the invoker's call stack without going through the\n \* [ContinuationInterceptor] that might be present in the completion's [CoroutineContext].\n \* It is the invoker's responsibility to ensure that a proper invocation context is established.\n \* Note that [completion] of this function may get invoked in an arbitrary context.\n \* [Continuation.intercepted] can be used to acquire the intercepted continuation.\n \* Invocation of `resume(Unit)` on intercepted continuation guarantees that execution of\n \* both the coroutine and [completion] happens in the invocation context established by\n \* [ContinuationInterceptor].\n \* Repeated invocation of any resume function on the resulting continuation corrupts the\n \* state machine of the coroutine and may result in arbitrary behaviour or exception.\n \*/\n @SinceKotlin("1.3")\n public actual fun <R, T> (suspend R.() -> T).createCoroutineUnintercepted(\n receiver: R,\n completion: Continuation<T>)\n : Continuation<Unit> =\n // Kotlin/JS suspend lambdas have an extra parameter `suspended`\n if (this.asDynamic().length == 3) {\n // When `suspended` is true the continuation is created, but not executed\n this.asDynamic()(receiver, completion, true)\n } else {\n createCoroutineFromSuspendFunction(completion) {\n this.asDynamic()(receiver, completion)\n }\n }\n }\n }\n \* Intercepts this continuation with [ContinuationInterceptor].\n \* This function shall be used on the immediate result of [createCoroutineUnintercepted] or [suspendCoroutineUninterceptedOrReturn],\n \* in which case it checks for [ContinuationInterceptor] in the continuation's [context][Continuation.context],\n \* invokes [ContinuationInterceptor.interceptContinuation], caches and returns the result.\n \* If this function is invoked on other [Continuation] instances it returns `this` continuation unchanged.\n \*/\n @SinceKotlin("1.3")\n public actual fun <T> Continuation<T>.intercepted(): Continuation<T> =\n (this as? CoroutineImpl)?.intercepted() ?: this\n\n private inline fun <T> createCoroutineFromSuspendFunction(\n completion: Continuation<T>,\n crossinline block: () -> Any?)\n : Continuation<Unit> {\n @Suppress("UNCHECKED\_CAST")\n return object : CoroutineImpl(completion as Continuation<Any?>)\n {\n override fun doResume(): Any? {\n exception?.let { throw it }\n return block()\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 package kotlin.js\n\n // Mirrors signature from JS IR BE\n // Used for js.translator/testData/box/number/mulInt32.kt\n @library\n @JsName("imulEmulated")\n internal fun imul(x: Int, y: Int): Int = definedExternally\n\n internal inline fun isArrayish(o: dynamic) = js("Kotlin").isArrayish(o)\n\n /\*\n \* Copyright 2010-2019 JetBrains s.r.o. Use of this source code is governed by the Apache 2.0 license\n \* that can be found in the license/LICENSE.txt file.\n \*/\n\n @file:Suppress("UNUSED\_PARAMETER")\n\n package kotlin.js\n\n @kotlin.internal.InlineOnly\n internal inline fun jsDeleteProperty(obj: Any, property: Any) {\n js("delete obj[property]")\n }\n\n @kotlin.internal.InlineOnly\n internal inline fun jsBitwiseOr(lhs: Any?, rhs: Any?): Int =\n js("lhs | rhs").unsafeCast<Int>()\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 package kotlin.math\n\n /\*\n \* Returns this value with the sign bit same as of the [sign] value.\n \* If [sign] is `NaN` the sign of the result is undefined.\n \*/\n @SinceKotlin("1.2")\n public actual fun Double.withSign(sign: Double): Double {\n val thisSignBit = js("Kotlin").doubleSignBit(this).unsafeCast<Int>()\n val newSignBit = js("Kotlin").doubleSignBit(sign).unsafeCast<Int>()\n return if (thisSignBit == newSignBit) this else -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\n package kotlin\n\n /\*\n \* Returns a bit representation of the specified floating-point value as [Long]\n \* according to the IEEE 754 floating-point "double format" bit layout.\n \*/\n @SinceKotlin("1.2")\n @library("doubleToBits")\n public actual fun Double.toBits(): Long =

```

definedExternally\n\n/**\n * Returns a bit representation of the specified floating-point value as [Long]\n * according to the IEEE 754 floating-point \"double format\" bit layout,\n * preserving `NaN` values exact layout.\n *\n@SinceKotlin(\"1.2\")\n@library(\"doubleToRawBits\")\npublic actual fun Double.toRawBits(): Long =
definedExternally\n\n/**\n * Returns the [Double] value corresponding to a given bit representation.\n *\n@SinceKotlin(\"1.2\")\n@kotlin.internal.InlineOnly\npublic actual inline fun Double.Companion.fromBits(bits: Long): Double = js(\"Kotlin\").doubleFromBits(bits).unsafeCast<Double>()\n\n/**\n * Returns a bit representation of the specified floating-point value as [Int]\n * according to the IEEE 754 floating-point \"single format\" bit layout.\n *\n * Note that in Kotlin/JS [Float] range is wider than \"single format\" bit layout can represent,\n * so some [Float] values may overflow, underflow or loose their accuracy after conversion to bits and back.\n *\n@SinceKotlin(\"1.2\")\n@library(\"floatToBits\")\npublic actual fun Float.toBits(): Int =
definedExternally\n\n/**\n * Returns a bit representation of the specified floating-point value as [Int]\n * according to the IEEE 754 floating-point \"single format\" bit layout,\n * preserving `NaN` values exact layout.\n *\n * Note that in Kotlin/JS [Float] range is wider than \"single format\" bit layout can represent,\n * so some [Float] values may overflow, underflow or loose their accuracy after conversion to bits and back.\n *\n@SinceKotlin(\"1.2\")\n@library(\"floatToRawBits\")\npublic actual fun Float.toRawBits(): Int =
definedExternally\n\n/**\n * Returns the [Float] value corresponding to a given bit representation.\n *\n@SinceKotlin(\"1.2\")\n@kotlin.internal.InlineOnly\npublic actual inline fun Float.Companion.fromBits(bits: Int): Float =
js(\"Kotlin\").floatFromBits(bits).unsafeCast<Float>()\n\ninternal inline fun Long(low: Int, high: Int) =
js(\"Kotlin\").Long.fromBits(low, high).unsafeCast<Long>()\ninternal inline val Long.low: Int get() =
this.asDynamic().getLowBits().unsafeCast<Int>()\ninternal inline val Long.high: Int get() =
this.asDynamic().getHighBits().unsafeCast<Int>()\", /*\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@package kotlin.text\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(\"1.2\")\npublic actual fun Long.toString(radix: Int): String = asDynamic().toString(checkRadix(radix))\", /*\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@package 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.js.*\nimport kotlin.ranges.contains\nimport kotlin.ranges.reversed\n\n/**\n * Reverses elements in the list in-place.\n *\n@public actual fun <T> MutableList<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 * 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@package 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.js.*\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 *\n@public actual fun CharSequence.elementAt(index: Int): Char {\n    return elementAtOrElse(index) { throw IndexOutOfBoundsException(\"index: $index, length: $length\") }\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@package kotlin.collections\n\n/\n//

```



```

RandomAccess {
    override val size: Int get() = this@asList.size
    override fun isEmpty(): Boolean = this@asList.isEmpty()
    override fun contains(element: UShort): Boolean = this@asList.contains(element)
    override fun get(index: Int): UShort {
        AbstractList.checkElementIndex(index, size)
        return this@asList[index]
    }
    override fun indexOf(element: UShort): Int {
        if ((element as Any?) !is UShort) return -1
        return this@asList.indexOf(element)
    }
    override fun lastIndexOf(element: UShort): Int {
        if ((element as Any?) !is UShort) return -1
        return this@asList.lastIndexOf(element)
    }
}

"@file: Suppress("DEPRECATION")
package jquery.ui
import jquery.UI
import jquery.JQuery
import kotlin.js.Json
@Deprecated("Use declarations from 'https://bintray.com/kotlin/js-externals/kotlin-js-jquery' package instead.")
public inline fun JQuery.buttonset(): JQuery = asDynamic().buttonset()
@Deprecated("Use declarations from 'https://bintray.com/kotlin/js-externals/kotlin-js-jquery' package instead.")
public inline fun JQuery.dialog(): JQuery = asDynamic().dialog()
@Deprecated("Use declarations from 'https://bintray.com/kotlin/js-externals/kotlin-js-jquery' package instead.")
public inline fun JQuery.dialog(params: Json): JQuery = asDynamic().dialog(params)
@Deprecated("Use declarations from 'https://bintray.com/kotlin/js-externals/kotlin-js-jquery' package instead.")
public inline fun JQuery.dialog(mode: String, param: String): Any? = asDynamic().dialog(mode, param)
@Deprecated("Use declarations from 'https://bintray.com/kotlin/js-externals/kotlin-js-jquery' package instead.")
public inline fun JQuery.dialog(mode: String): JQuery = asDynamic().dialog(mode)
@Deprecated("Use declarations from 'https://bintray.com/kotlin/js-externals/kotlin-js-jquery' package instead.")
public inline fun JQuery.dialog(mode: String, param: String, value: Any?): JQuery = asDynamic().dialog(mode, param, value)
@Deprecated("Use declarations from 'https://bintray.com/kotlin/js-externals/kotlin-js-jquery' package instead.")
public inline fun JQuery.button(): JQuery = asDynamic().button()
@Deprecated("Use declarations from 'https://bintray.com/kotlin/js-externals/kotlin-js-jquery' package instead.")
public inline fun JQuery.accordion(): JQuery = asDynamic().accordion()
@Deprecated("Use declarations from 'https://bintray.com/kotlin/js-externals/kotlin-js-jquery' package instead.")
public inline fun JQuery.draggable(params: Json): JQuery = asDynamic().draggable(params)
@Deprecated("Use declarations from 'https://bintray.com/kotlin/js-externals/kotlin-js-jquery' package instead.")
public inline fun JQuery.selectable(): JQuery = asDynamic().selectable()

"/**
 * 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.js
import kotlin.annotation.AnnotationTarget.*
@Target(CLASS, FUNCTION, PROPERTY, CONSTRUCTOR, VALUE_PARAMETER, PROPERTY_GETTER, PROPERTY_SETTER)
@Deprecated("Use `external` modifier instead", level = DeprecationLevel.ERROR)
public annotation class native(public val name: String = "")
@Target(FUNCTION)
@Deprecated("Use inline extension function with body using dynamic")
public annotation class nativeGetter
@Target(FUNCTION)
@Deprecated("Use inline extension function with body using dynamic")
public annotation class nativeSetter
@Target(FUNCTION)
@Deprecated("Use inline extension function with body using dynamic")
public annotation class nativeInvoke
@Target(CLASS, FUNCTION, PROPERTY)
internal annotation class library(public val name: String = "")
@Target(CLASS)
internal annotation class marker

/**
 * Gives a declaration (a function, a property or a class) specific name in JavaScript.
 * This may be useful in the following cases:
 * * There are two functions for which the compiler gives same name in JavaScript, you can mark one with `@JsName(...)` to prevent the compiler from reporting error.
 * * You are writing a JavaScript library in Kotlin. The compiler produces mangled names for functions with parameters, which is unnatural for usual JavaScript developer. You can put `@JsName(...)` on functions you want to be available from JavaScript.
 * * For some reason you want to rename declaration, e.g. there's common term in JavaScript for a concept provided by the declaration, which is uncommon in Kotlin.
 * Example:
 * ```
 * kotlin
 * class Person(val name: String) {
 *     fun hello() {
 *         println("Hello $name!")
 *     }
 * }
 * ```
 */

```





```

*/\n@ExperimentalJsExport\n@SinceKotlin("1.3")\n@Retention(AnnotationRetention.BINARY)\n@Target(CLA
SS, PROPERTY, FUNCTION, FILE)\npublic annotation class JsExport\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.jvm\n\n// these are used in common generated code in stdlib\n\n// TODO: find how to deprecate these
ones\n\n@Target(AnnotationTarget.FIELD)\n@Retention(AnnotationRetention.SOURCE)\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 */\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 */\n\npublic actual abstract class AbstractMutableList<E> protected actual constructor() :
AbstractMutableCollection<E>(), MutableList<E> {\n\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\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\n    actual override fun iterator():
MutableIterator<E> = IteratorImpl()\n\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\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
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    * Compares this list with another list instance with the ordered structural equality.\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    return AbstractList.orderedEquals(this, other)\n    }\n    /**\n    * Returns the hash code value for this list.\n    */\n    override fun hashCode(): Int = AbstractList.orderedHashCode(this)\n\n    private open inner class IteratorImpl : MutableIterator<E> {\n    /**\n    the index of the item that will be returned on the next call to [next]`() `*\n    protected var index = 0\n    /**\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    override fun hasNext(): Boolean = index < size\n    override fun next(): E {\n    if (!hasNext()) throw NoSuchElementException()\n    last = index++\n    return get(last)\n    }\n    override fun remove()\n    {\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(), MutableListIterator<E> {\n    init {\n    AbstractList.checkPositionIndex(index, this@AbstractMutableList.size)\n    this.index = index\n    }\n    override fun hasPrevious(): Boolean = index > 0\n    override fun nextIndex(): Int = index\n    override fun previous(): E {\n    if (!hasPrevious()) throw NoSuchElementException()\n    last = --index\n    return get(last)\n    }\n    override fun previousIndex(): Int = index - 1\n    override fun add(element: E) {\n    add(index, element)\n    index++\n    last = -1\n    }\n    override fun set(element: E) {\n    check(last != -1) { \"Call next() or previous() before updating element value with the iterator.\" }\n    this@AbstractMutableList[last] = element\n    }\n    }\n    private class SubList<E>(private val list: AbstractMutableList<E>, private val 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 - fromIndex\n    }\n    override fun add(index: Int, element: E) {\n    AbstractList.checkPositionIndex(index, _size)\n    list.add(fromIndex + index, element)\n    _size++\n    }\n    override fun get(index: Int): E {\n    AbstractList.checkElementIndex(index, _size)\n    return list[fromIndex + index]\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    override fun set(index: Int, element: E): E {\n    AbstractList.checkElementIndex(index, _size)\n    return list.set(fromIndex + index, element)\n    }\n    override val size: Int get() = _size\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 AbstractMap\n    * Copyright 2007 Google Inc.\n    */\n    /**\n    * Provides a skeletal implementation of the [MutableMap] interface.\n    * The implementor is required to implement [entries] property, which should return mutable set of map entries, and [put] function.\n    * @param K the type of map keys. The map is invariant on its key type.\n    * @param V the type of map values. The map is invariant on its value type.\n    */\n    /**\n    * public actual abstract class AbstractMutableMap<K, V> protected actual constructor() : AbstractMap<K, V>(), MutableMap<K, V> {\n    /**\n    * A mutable [Map.Entry] shared by several [Map] implementations.\n    */\n    internal open class SimpleEntry<K, V>(override val key: K, value: V) : MutableMap.MutableEntry<K, V> {\n    constructor(entry: Map.Entry<K, V>) : this(entry.key, entry.value)\n    private var _value = value\n    override val value: V get() = _value\n    override fun setValue(newValue: V): V {\n    val oldValue = this._value\n    this._value = newValue\n    return oldValue\n    }\n    override fun

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hashCode(): Int = entryHashCode(this)\n      override fun toString(): String = entryToString(this)\n      override
fun equals(other: Any?): Boolean = entryEquals(this, other)\n\n    }\n\n    actual override fun clear() {\n
entries.clear()\n    }\n\n    private var _keys: MutableSet<K>? = null\n    actual override val keys: MutableSet<K>\n
    get() {\n        if (_keys == null) {\n            _keys = object : AbstractMutableSet<K>() {\n
override fun add(element: K): Boolean = throw UnsupportedOperationException("Add is not supported on
keys")\n            override fun clear() {\n                this@AbstractMutableMap.clear()\n            }\n\n
        override
operator fun contains(element: K): Boolean = containsKey(element)\n\n            override operator fun iterator():
MutableIterator<K> {\n                val entryIterator = entries.iterator()\n                return object :
MutableIterator<K> {\n                    override fun hasNext(): Boolean = entryIterator.hasNext()\n
                    override fun next(): K = entryIterator.next().key\n                    override fun remove() =
entryIterator.remove()\n                }\n            }\n\n            override fun remove(element: K): Boolean
{\n                if (containsKey(element)) {\n                    this@AbstractMutableMap.remove(element)\n
                }\n                return true\n            }\n\n            return false\n        }\n\n        override val
size: Int get() = this@AbstractMutableMap.size\n    }\n\n    }\n\n    actual abstract override fun put(key: K, value: V): V?\n\n    actual override fun
putAll(from: Map<out K, V>) {\n        for ((key, value) in from) {\n            put(key, value)\n        }\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 UnsupportedOperationException("Add is not supported on
values")\n            override fun clear() = this@AbstractMutableMap.clear()\n\n            override operator
fun contains(element: V): Boolean = containsValue(element)\n\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            override val size: Int get() = this@AbstractMutableMap.size\n        }\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 AbstractList.orderedEquals(this, other)\n        }\n\n        override fun
hashCode(): Int = AbstractList.orderedHashCode(this)\n    }\n\n    }\n\n    return _values!!\n    }\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    }\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    package kotlin.collections\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    *\n    public actual
abstract class AbstractMutableSet<E> protected 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
AbstractSet.setEquals(this, other)\n     }\n\n     /**\n     * Returns the hash code value for this set.\n     *\n     override
fun hashCode(): Int = AbstractSet.unorderedHashCode(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    package kotlin.collections\n    *\n    * Provides a [MutableList]
implementation, which uses a resizable array as its backing storage.\n    *\n    * This implementation doesn't provide a

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@Suppress("ACTUAL_FUNCTION_WITH_DEFAULT_ARGUMENTS")\n
    actual constructor(initialCapacity: Int, loadFactor: Float = 0.0f) {\n        map = HashMap<E,\nAny>(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 * @param map underlying map to use.\n */\n    internal constructor(map: HashMap<E, Any>) {\n        this.map =\nmap\n    }\n\n    actual override fun add(element: E): Boolean {\n        val old = map.put(element, this)\n        return\nold == null\n    }\n\n    actual override fun clear() {\n        map.clear()\n    }\n\n// public override fun clone(): Any\n{\n//     return HashSet<E>(this)\n// }\n\n    actual override operator fun contains(element: E): Boolean =\nmap.containsKey(element)\n\n    actual override fun isEmpty(): Boolean = map.isEmpty()\n\n    actual override fun\niterator(): MutableIterator<E>\n= 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 * Creates a new instance of the specialized\nimplementation of [HashSet] with the specified [String] elements,\n * which elements the keys as properties of JS\nobject without hashing them.\n */\npublic fun stringSetOf(vararg elements: String): HashSet<String> {\n    return\nHashSet(stringMapOf<Any>()).apply { addAll(elements) }\n}\n\n",\n/**\n * Copyright 2010-2018 JetBrains s.r.o. and\nKotlin Programming Language contributors.\n * Use of this source code is governed by the Apache 2.0 license that\ncan be found in the license/LICENSE.txt file.\n */\n\n * Based on GWT InternalHashMap\n * Copyright\n2008 Google Inc.\n */\n\npackage kotlin.collections\n\nimport\nkotlin.collections.MutableMap.MutableEntry\nimport kotlin.collections.AbstractMutableMap.SimpleEntry\n\n/**\n * A simple wrapper around JavaScriptObject\nto provide [java.util.Map]-like semantics for any\n * key type.\n * Implementation notes:\n * A key's\nhashCode is the index in backingMap which should contain that key. Since several keys may\n * have the same\nhash, each value in hashCodeMap is actually an array containing all entries whose\n * keys share the same hash.\n */\ninternal class InternalHashMap<K, V>(override val equality: EqualityComparator) : InternalMap<K, V>\n{\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\n= getChainOrEntryOrNull(hashCode)\n        if (chainOrEntry == null) {\n            // This is a new chain, put it to the\nmap.\n            backingMap[hashCode] = SimpleEntry(key, value)\n        } else {\n            if (chainOrEntry !is\nArray<*>) {\n                // It is an entry\n                val entry: SimpleEntry<K,\nV> = chainOrEntry\n                if (equality.equals(entry.key, key)) {\n                    return entry.setValue(value)\n                } else {\n                    backingMap[hashCode] = arrayOf(entry, SimpleEntry(key, value))\n                }\n            }\n            size++\n            return null\n        }\n    } else {\n        // Chain already exists, perhaps key also\nexists.\n        val chain: Array<MutableEntry<K, V>> = chainOrEntry\n        val entry =\nchain.findEntryInChain(key)\n        if (entry != null) {\n            return entry.setValue(value)\n        }\n        chain.asDynamic().push(SimpleEntry(key, value))\n    }\n\n    size++\n\n// structureChanged(host)\n    return null\n}\n\n    override fun remove(key: K): V? {\n        val hashCode =\nequality.getHashCode(key)\n        val chainOrEntry = getChainOrEntryOrNull(hashCode) ?: return null\n        if\n(chainOrEntry\n!is Array<*>) {\n            val entry: MutableEntry<K, V> = chainOrEntry\n            if (equality.equals(entry.key,\nkey)) {\n                jsDeleteProperty(backingMap, hashCode)\n                size--\n                return entry.value\n            }\n        } else {\n            return null\n        }\n    } else {\n        val chain: Array<MutableEntry<K, V>> =\nchainOrEntry\n        for (index in chain.indices) {\n            val entry = chain[index]\n            if\n(equality.equals(key, entry.key)) {\n                if (chain.size == 1) {\n                    chain.asDynamic().length =\n0\n                    // remove the whole array\n                    jsDeleteProperty(backingMap, hashCode)\n                }\n            } else {\n                // splice out the entry we're removing\n                chain.asDynamic().splice(index, 1)\n            }\n        }\n        size--\n\n// structureChanged(host)\n        return entry.value\n    }\n}\n\n    }\n\n    }\n\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) !=

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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.hashCode(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 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\n
return object : MutableIterator<MutableEntry<K, V>> {\n        var state = -1 // -1 not ready, 0 - ready, 1 -
done\n\n        val keys: Array<String> = js("Object").keys(backingMap)\n        var keyIndex = -1\n\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\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\n
state = -1\n            return lastEntry\n        }\n\n        override fun remove() {\n            checkNotNull(lastEntry)\n                this@InternalHashMap.remove(lastEntry!!.key)\n\n                lastEntry = null\n                // the chain being iterated just got modified by InternalHashMap.remove\n
                itemIndex--\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}\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 * The common interface of [InternalStringMap] and
[InternalHashMap].\n */\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"/*\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 InternalStringMap\n * Copyright 2008 Google Inc.\n
*/\n\npackage kotlin.collections\nimport kotlin.collections.MutableMap.MutableEntry\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
*/\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\nprivate var valueMod: Int = 0\n\n

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override operator fun contains(key: K): Boolean {
    if (key !is String) return false
    return backingMap[key] != undefined
}

override operator fun get(key: K): V? {
    if (key !is String) return null
    val value = backingMap[key]
    return if (value != undefined) value.unsafeCast<V>() else null
}

override fun put(key: K, value: V): V? {
    require(key is String)
    val oldValue = backingMap[key]
    backingMap[key] = value

    if (oldValue === undefined) {
        size++
        structureChanged(host)
        return null
    } else {
        valueMod++
        return oldValue.unsafeCast<V>()
    }
}

override fun remove(key: K): V? {
    if (key !is String) return null
    val value = backingMap[key]
    if (value != undefined) {
        jsDeleteProperty(backingMap, key)
        size--
        structureChanged(host)
        return value.unsafeCast<V>()
    } else {
        valueMod++
        return null
    }
}

override fun clear() {
    backingMap = createJsMap()
    size = 0
}

override fun iterator(): MutableIterator<MutableEntry<K, V>> {
    return object : MutableIterator<MutableEntry<K, V>> {
        private val keys: Array<String> = js("Object").keys(backingMap)
        private val iterator = keys.iterator()
        private var lastKey: String? = null

        override fun hasNext(): Boolean = iterator.hasNext()
        override fun next(): MutableEntry<K, V> {
            val key = iterator.next()
            lastKey = key
            @Suppress("UNCHECKED_CAST")
            return newMapEntry(key as K)
        }

        override fun remove() {
            @Suppress("UNCHECKED_CAST")
            this@InternalStringMap.remove(checkNotNull(lastKey) as K)
        }

        private fun newMapEntry(key: K): MutableEntry<K, V> = object : MutableEntry<K, V> {
            override val key: K get() = key
            override val value: V get() = this@InternalStringMap[key].unsafeCast<V>()
            override fun setValue(newValue: V): V = this@InternalStringMap.put(key, newValue).unsafeCast<V>()
            override fun hashCode(): Int = AbstractMap.entryHashCode(this)
            override fun toString(): String = AbstractMap.entryToString(this)
            override fun equals(other: Any?): Boolean = AbstractMap.entryEquals(this, other)
        }
    }
}

/*
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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.
 */
/*
 * Based on GWT LinkedHashMap
 * Copyright 2008 Google Inc.
 */
package kotlin.collections

import kotlin.collections.MutableMap.MutableEntry

/**
 * Hash table based implementation of the [MutableMap] interface, which additionally preserves the insertion order of entries during the iteration.
 * The insertion order is preserved by maintaining a doubly-linked list of all of its entries.
 */
public actual open class LinkedHashMap<K, V> : HashMap<K, V>, MutableMap<K, V> {
    /**
     * The entry we use includes next/prev pointers for a doubly-linked circular list with a head node. This reduces the special cases we have to deal with in the list operations.
     * Note that we duplicate the key from the underlying hash map so we can find the eldest entry. The alternative would have been to modify HashMap so more of the code was directly usable here, but this would have added some overhead to HashMap, or to reimplement most of the HashMap code here with small modifications. Paying a small storage cost only if you use LinkedHashMap and minimizing code size seemed like a better tradeoff.
     */
    private class ChainEntry<K, V>(key: K, value: V) : AbstractMutableMap.SimpleEntry<K, V>(key, value) {
        internal var next: ChainEntry<K, V>? = null
        internal var prev: ChainEntry<K, V>? = null
    }

    private inner class EntrySet : AbstractMutableSet<MutableEntry<K, V>>() {
        private inner class EntryIterator : MutableIterator<MutableEntry<K, V>> {
            // The last entry that was returned from this iterator.
            private var last: ChainEntry<K, V>? = null
            // The next entry to return from this iterator.
            private var next: ChainEntry<K, V>? = null

            init {
                next = head
                recordLastKnownStructure(map, this)
            }

            override fun hasNext(): Boolean {
                return next != null
            }

            override fun next(): MutableEntry<K, V> {
                checkStructuralChange(map, this)
                if (!hasNext()) throw
            }
        }
    }
}

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NoSuchElementException()\n\n        val current = next!!\n        last = current\n        next =
current.next.takeIf { it != head }\n        return current\n    }\n\n    override fun remove() {\n
check(last != null)\n//        checkStructuralChange(map, this)\n        last!!.remove()\n
        map.remove(last!!.key)\n//        recordLastKnownStructure(map, this)\n        last = null\n    }\n\n    }\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\n    override operator fun contains(element: MutableEntry<K, V>):
Boolean = containsEntry(element)\n\n    override operator fun iterator(): MutableIterator<MutableEntry<K, V>>
= EntryIterator()\n\n    override fun remove(element: MutableEntry<K, V>): Boolean {\n        if
(contains(element)) {\n            this@LinkedHashMap.remove(element.key)\n            return true\n        }\n
        return false\n    }\n\n    override val size: Int get() = this@LinkedHashMap.size\n    }\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        // 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    * @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) : super(initialCapacity, loadFactor) {\n        map = HashMap<K, ChainEntry<K,
V>>()\n    }\n\n    actual constructor(initialCapacity: Int) : this(initialCapacity, 0.0f)\n\n    /*\n    * Constructs an
instance of [LinkedHashMap] filled with the contents of the specified [original] map.\n    */\n    actual
constructor(original: Map<out K, V>) {\n        map = HashMap<K, ChainEntry<K, V>>()\n
this.putAll(original)\n    }\n\n    actual override fun clear() {\n        map.clear()\n        head = null\n    }\n\n\n    override fun clone(): Any {\n//        return LinkedHashMap(this)\n//
    }\n\n\n    actual override fun containsKey(key: K): Boolean = map.containsKey(key)\n\n    actual override fun
containsValue(value: V): Boolean {\n        var node: ChainEntry<K, V> = head ?: return false\n        do {\n            if
(node.value == value) {\n                return true\n            }\n            node = node.next!!\n        } while (node !=
head)\n        return false\n    }\n\n\n    override fun createEntrySet(): MutableSet<MutableMap.MutableEntry<K,
V>> = EntrySet()\n\n    actual override operator fun get(key: K): V? = map.get(key)?.value\n\n    actual override fun
put(key: K, value: V): V? {\n        val old = map.get(key)\n        if (old == null) {\n            val newEntry =
ChainEntry(key, value)\n            map.put(key, newEntry)\n            newEntry.addToEnd()\n            return null\n
        } else {\n            return old.setValue(value)\n        }\n    }\n\n    actual override fun remove(key: K): V? {\n        val

```

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entry = map.remove(key)\n
    if (entry != null) {\n        entry.remove()\n        return entry.value\n    }\n    return null\n}\n\n actual
override val size: Int get() = map.size\n}\n\n**\n * Constructs the specialized implementation of
[LinkedHashMap] with [String] keys, which stores the keys as properties of\n * JS object without hashing them.\n
*\n\npublic fun <V> linkedStringMapOf(vararg pairs: Pair<String, V>): LinkedHashMap<String, V> {\n    return
LinkedHashMap<String, V>(stringMapOf<Any>()).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 LinkedHashMap\n
* Copyright 2008 Google Inc.\n */\n\npackage kotlin.collections\n\n**\n * The implementation of the [MutableSet]
interface, backed by a [LinkedHashMap] instance.\n * \n * This implementation preserves the insertion order
of elements during the iteration.\n *\n\npublic actual open class LinkedHashMap<E> : HashSet<E>, MutableSet<E>
{\n\n    internal constructor(map: LinkedHashMap<E, Any>) : super(map)\n\n    /**\n     * Constructs a new empty
[LinkedHashSet].\n     *\n     * actual constructor() : super(LinkedHashMap<E, Any>())\n     */\n     * Constructs a
new [LinkedHashSet] filled with the elements of the specified collection.\n     *\n     * actual constructor(elements:
Collection<E>) : super(LinkedHashMap<E, Any>()) {\n        addAll(elements)\n    }\n\n    /**\n     * Constructs a
new empty [LinkedHashSet].\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) : super(LinkedHashMap<E, Any>(initialCapacity,
loadFactor))\n     * actual constructor(initialCapacity: Int) : this(initialCapacity, 0.0f)\n\n    // public override fun
clone(): Any {\n    //     return LinkedHashSet(this)\n    //     }\n}\n\n**\n * Creates a new instance of the specialized
implementation of [LinkedHashSet] with the specified [String] elements,\n * which elements the keys as properties
of JS object without hashing them.\n *\n\npublic fun linkedStringSetOf(vararg elements: String):
LinkedHashSet<String> {\n    return LinkedHashSet(linkedStringMapOf<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 * \n\npackage kotlin\n\nimport kotlin.contracts.*\n\n\n@Deprecated("Do not use Synchronized annotation in pure
Kotlin/JS code", level = DeprecationLevel.ERROR)\n\npublic typealias Synchronized =
kotlin.jvm.Synchronized\n\n\n@Deprecated("Do
not use Volatile annotation in pure Kotlin/JS code", level = DeprecationLevel.ERROR)\n\npublic typealias Volatile =
kotlin.jvm.Volatile\n\n\n@kotlin.internal.InlineOnly\n\npublic actual inline fun <R> synchronized(lock: Any, block:
() -> R): R {\n    contract {\n        callsInPlace(block, InvocationKind.EXACTLY_ONCE)\n    }\n    return
block()\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\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}\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** 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** 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

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fun flush() {\n    buffer = \"\"\n }\n\n/** JsName used to make the declaration available outside of module to
test it */\n@JsName(\"BufferedOutputToConsoleLog\")\ninternal class BufferedOutputToConsoleLog :
BufferedOutput() {\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/** JsName used to make the declaration available outside of module to test it and use at
try.kotl.in */\n@JsName(\"output\")\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\nprivate
inline fun String(value: Any?): String = js(\"String\")(value)\n\n/** Prints the line separator to the standard output
stream. */\npublic actual fun println() {\n    output.println()\n}\n\n/** Prints the given [message] and the line
separator to the standard output stream. */\npublic actual fun println(message: Any?) {\n
output.println(message)\n}\n\n/** Prints the given [message] to the standard output stream. */\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@SinceKotlin(\"1.3\")\ninternal
actual class SafeContinuation<in T>\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        }\n        return COROUTINE_SUSPENDED\n    }\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 * 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@SinceKotlin(\"1.3\")\ninternal val
EmptyContinuation = Continuation<Any?>(EmptyCoroutineContext) { result ->\n    result.getOrThrow()\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 [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\n    public constructor(dateString: String)\n\n    public constructor(year: Int, month: Int)\n\n    public
constructor(year: Int, month: Int, day: Int)\n\n    public constructor(year: Int, month: Int, day: Int, hour: Int)\n\n    public
constructor(year: Int, month: Int, day: Int, hour: Int, minute: Int)\n\n    public constructor(year: Int, month:
Int, day: Int, hour: Int, minute: Int, second: Int)\n\n    public constructor(year: Int, month: Int, day: Int, hour: Int,
minute: Int, second: Int, millisecond: Number)\n\n    public fun getDate(): Int\n\n    public fun getDay(): Int\n\n    public
fun getFullYear(): Int\n\n    public fun getHours(): Int\n\n    public fun getMilliseconds(): Int\n\n    public fun

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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 * Converts the string into a regular expression [Regex] with the default options.\n
*/\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\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\n@kotlin.internal.InlineOnly\npublic inline fun String.toRegex(options: Set<RegexOption>): Regex =
Regex(this, options)\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 * A mutable sequence of characters.\n */\n * String builder can be used to efficiently perform
multiple string manipulation operations.\n */\n\nexpect class StringBuilder : Appendable, CharSequence {\n    /**
Constructs an empty string builder. */\n    constructor()\n\n    /** Constructs an empty string builder with the
specified initial [capacity]. */\n    constructor(capacity: Int)\n\n    /** Constructs a string builder that contains
the same characters as the specified [content] char sequence. */\n    constructor(content: CharSequence)\n\n    /**
Constructs a string builder that contains the same characters as the specified [content] string. */\n
@SinceKotlin("1.3")\n// @ExperimentalStdlibApi\n    constructor(content: String)\n\n    override val length:
Int\n\n    override operator 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 */\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 */\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 */\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 */\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 */\n * Characters
are appended in order, starting at the index 0.\n */\n
@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

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    * If the current capacity is less than the [minimumCapacity], a new backing storage is allocated with
    greater capacity.
    * Otherwise, this method takes no action and simply returns.
    @SinceKotlin("1.3")
    @ExperimentalStdlibApi
    fun ensureCapacity(minimumCapacity: Int): Int {
        Returns the index within this string builder of the first occurrence of the specified [string].
        * Returns -1 if the specified [string] does not occur in this string builder.
    }
    @SinceKotlin("1.3")
    @ExperimentalStdlibApi
    fun indexOf(string: String): Int {
        Returns the index within this string builder of the first occurrence of the specified [string],
        * starting at the specified [startIndex].
        * Returns -1 if the specified [string] does not occur in this string builder starting at the specified [startIndex].
    }
    @SinceKotlin("1.3")
    @ExperimentalStdlibApi
    fun indexOf(string: String, startIndex: Int): Int {
        Returns the index within this string builder of the last occurrence of the specified [string].
        * The last occurrence of empty string "" is considered to be at the index equal to `this.length`.
        * Returns -1 if the specified [string] does not occur in this string builder.
    }
    @SinceKotlin("1.3")
    @ExperimentalStdlibApi
    fun lastIndexOf(string: String): Int {
        Returns the index within this string builder of the last occurrence of the specified [string],
        * starting from the specified [startIndex] toward the beginning.
        * Returns -1 if the specified [string] does not occur in this string builder starting at the specified [startIndex].
    }
    @SinceKotlin("1.3")
    @ExperimentalStdlibApi
    fun lastIndexOf(string: String, startIndex: Int): Int {
        Inserts the string representation of the specified boolean [value] into
        this string builder at the specified [index] and returns this instance.
        * The overall effect is exactly as if the [value] were converted to a string by the `value.toString()` method,
        * and then that string was inserted into this string builder at the specified [index].
        * @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: Boolean): StringBuilder {
        Inserts the specified character [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: Char): StringBuilder {
        Inserts characters in the specified character array [value] into this string builder at the specified [index] and returns this instance.
        * The inserted characters go in same order as in the [value] character array, starting at [index].
        * @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: CharArray): StringBuilder {
        Inserts characters in 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 characters are inserted. If [value] is `null`, then the four characters `null` are inserted.
        * @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: CharSequence?): StringBuilder {
        Inserts the string representation of the specified object [value] into this string builder at the specified [index] and returns this instance.
        * The overall effect is exactly as if the [value] were converted to a string by the `value.toString()` method,
        * and then that string was inserted into this string builder at the specified [index].
        * @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: Any?): StringBuilder {
        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].\n \* Otherwise, null characters '\u0000' are appended to this string builder until its length is less than the [newLength].\n \* Note that in Kotlin/JS [set] operator function has non-constant execution time complexity.\n \* Therefore, increasing length of this string builder and then updating each character by index may slow down your program.\n \* @throws IndexOutOfBoundsException or [IllegalArgumentException] if [newLength] is less than zero.\n \*/\n @SinceKotlin("1.3")\n @ExperimentalStdlibApi\n fun setLength(newLength: Int)\n /\*\*\n \* Returns a new [String] that contains characters in this string builder at [startIndex] (inclusive) and up to the [length] (exclusive).\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 fun substring(startIndex: Int): String\n /\*\*\n \* Returns a new [String] that contains characters in this string builder at [startIndex] (inclusive) and up to the [endIndex] (exclusive).\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 fun substring(startIndex: Int, endIndex: Int): String\n /\*\*\n \* Attempts to reduce storage used for this string builder.\n \* 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.\n \* Calling this method may, but is not required to, affect the value of the [capacity] property.\n \*/\n @SinceKotlin("1.3")\n @ExperimentalStdlibApi\n fun trimToSize()\n /\*\*\n \* Clears the content of this string builder making it empty and returns this instance.\n \* @sample samples.text.Strings.clearStringBuilder\n \*/\n @SinceKotlin("1.3")\n @ExperimentalStdlibApi\n public expect fun StringBuilder.clear(): StringBuilder\n /\*\*\n \* Sets the character at the specified [index] to the specified [value].\n \* @throws IndexOutOfBoundsException if [index] is out of bounds of this string builder.\n \*/\n @SinceKotlin("1.3")\n @ExperimentalStdlibApi\n public expect operator fun StringBuilder.set(index: Int, value: Char)\n /\*\*\n \* Replaces characters in the specified range of this string builder with characters in the specified string [value] and returns this instance.\n \* @param startIndex the beginning (inclusive) of the range to replace.\n \* @param endIndex the end (exclusive) of the range to replace.\n \* @param value the string to replace with.\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 expect fun StringBuilder.setRange(startIndex: Int, endIndex: Int, value: String): StringBuilder\n /\*\*\n \* Removes the character at the specified [index] from this string builder and returns this instance.\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 \* @param index the index of `Char` to remove.\n \* @throws IndexOutOfBoundsException if [index] is out of bounds of this string builder.\n \*/\n @SinceKotlin("1.3")\n @ExperimentalStdlibApi\n public expect fun StringBuilder.deleteAt(index: Int): StringBuilder\n /\*\*\n \* Removes characters in the specified range from this string builder and returns this instance.\n \* @param startIndex the beginning (inclusive) of the range to remove.\n \* @param endIndex the end (exclusive) of the range to remove.\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 expect fun StringBuilder.deleteRange(startIndex: Int, endIndex: Int): StringBuilder\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 public expect fun StringBuilder.toCharArray(destination: CharArray, destinationOffset: Int, startIndex: Int, endIndex: Int): CharArray

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\n public 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\n public 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 \*\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 public 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 \*\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 public 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\n public 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\n public inline fun  
buildString(builderAction: String Builder.() -> Unit): String =\n  
String Builder().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 @SinceKotlin("1.1")\n @kotlin.internal.InlineOnly\n public inline fun  
buildString(capacity: Int, builderAction:

```

StringBuilder() -> Unit): String =\n    StringBuilder(capacity).apply(builderAction).toString()\n\n/**\n * Appends
all arguments to the given StringBuilder.\n */\npublic fun StringBuilder.append(vararg value: String?):
StringBuilder {\n    for (item in value)\n        append(item)\n    return this\n}\n\n/**\n * Appends all arguments to
the given StringBuilder.\n */\npublic fun StringBuilder.append(vararg value: Any?): StringBuilder {\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\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)\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    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\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    return when {\n        this[\"iterator\"] != null -
->\n            this[\"iterator\"]()\n        isArrayish(r) ->\n            r.unsafeCast<Array<*>>().iterator()\n        else ->\n
(r as Iterable<*>).iterator()\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")\n\ninternal fun  
 throwNPE(message: String) {\n throw NullPointerException(message)\n}\n\n@JsName("throwCCE")\n\ninternal  
 fun throwCCE() {\n throw ClassCastException("Illegal cast")\n}\n\n@JsName("throwISE")\n\ninternal fun  
 throwISE(message: String) {\n throw IllegalStateException(message)\n}\n\n@JsName("throwUPAE")\n\ninternal  
 fun throwUPAE(propertyName: String) {\n throw UninitializedPropertyAccessException("lateinit property  
 \${propertyName} has not been initialized")\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\n// NOTE: Do not author your exceptions as they are written in this file, instead use  
 this template:\n\n/\*\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\n// TODO: remove workarounds for KT-22053 from  
 direct Throwable inheritors\n\n// TODO: remove primary constructors, make all secondary KT-  
 22055\n\n@Suppress("USELESS\_ELVIS\_RIGHT\_IS\_NULL")\n\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@Suppress("USELESS\_ELVIS\_RIGHT\_IS\_NULL")\n\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\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\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\n\npublic actual open class IndexOutOfBoundsException actual constructor(message: String?) :  
 RuntimeException(message) {\n actual constructor() : this(null)\n}\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\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\n\n\npublic  
 actual open class NumberFormatException actual constructor(message: String?) :  
 IllegalArgumentException(message) {\n actual constructor() : this(null)\n}\n\n\n\npublic actual open class  
 NullPointerException actual constructor(message: String?) : RuntimeException(message) {\n actual constructor() :  
 this(null)\n}\n\n\n\npublic actual open class ClassCastException actual constructor(message: String?) :

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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:
  String?) : this(message, null)\n  actual constructor(cause: Throwable?) : this(undefiend, cause)\n}\n\npublic actual
  open
  class UninitializedPropertyAccessException 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\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 * 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 element in the group.\n
  */\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] associating the key of each group with the count of element in
  the group.\n */\n\n@SinceKotlin("1.1")\npublic inline fun <T, K> Grouping<T, K>.eachSumOf(valueSelector: (T) -
  > Int): Map<K, Int> =\n  fold(0) { acc, e -> acc + valueSelector(e) }\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.JvmName("GroupingKt")\n@file:kotlin.jvm.JvmMultifileClass\n\npackage
  kotlin.collections\n\n/**\n * Represents a source of elements with a [keyOf] function, 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 get an instance of [Grouping] use one of `groupingBy` extension
  functions:\n * - [Iterable.groupingBy]\n * - [Sequence.groupingBy]\n * - [Array.groupingBy]\n * -
  [CharSequence.groupingBy]\n * For the list of group-and-fold operations available, see the [extension
  functions](#extension-functions) for `Grouping`.\n */\n\n@SinceKotlin("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.keyOf] 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 * @return a [Map] associating the key of
  each group with the result of aggregation of the group elements.\n * @sample samples.collections.Grouping.aggregateByRadix\n
  */\n\n@SinceKotlin("1.1")\npublic inline fun <T, K, R> Grouping<T, K>.aggregate(\n  operation: (key: K,
  accumulator: R?, element: T, first: Boolean) -> R): 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 sequentially,\n \* passing the previously accumulated value and the current element as arguments,\n \* and stores the results in the given [destination] map.\n \*\n \* The key for each element is provided by the [Grouping.keyOf] function.\n \*\n \* @param operation a function that 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 \* 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 \*\n \* @return the [destination] map associating the key of each group with the result of aggregation of the group elements.\n \*\n \* @sample samples.collections.Grouping.aggregateByRadixTo\n \*\n \*/\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 {\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 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 \*\n \* An initial value of accumulator is provided by [initialValueSelector] function.\n \*\n \* @param initialValueSelector a function that provides an initial value of accumulator for each group.\n \*\n \* It's invoked with parameters:\n \* - `key`: the key of the group;\n \* - `element`: the first element being encountered in that group.\n \*\n \* @param operation a function that 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;\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 \*\n \* @sample samples.collections.Grouping.foldByEvenLengthWithComputedInitialValue\n \*\n \*/\n\n@SinceKotlin("1.1")\npublic inline fun <T, K, R> Grouping<T, K>.fold(\n initialValueSelector: (key: K, element: T) -> R,\n operation: (key: K, accumulator: R, element: T) -> R\n): Map<K, R> =\n @Suppress("UNCHECKED\_CAST")\n aggregate {\n key, acc, e, first -> operation(key, if (first) initialValueSelector(key, e) else acc as R, e) }\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,\n \* and stores the results in the given [destination] map.\n \*\n \* An initial value of accumulator is provided by [initialValueSelector] function.\n \*\n \* @param initialValueSelector a function that provides an initial value of accumulator for each group.\n \*\n \* It's invoked with parameters:\n \* - `key`: the key of the group;\n \* - `element`: the first element being encountered in that group.\n \*\n \* If the [destination] map already has a value corresponding to some key, that value is used as an initial value of\n \* the accumulator for that group and the [initialValueSelector] function is not called for that group.\n \*\n \* @param operation a function that 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;\n \* - `element`: the element from the source being accumulated.\n \*\n \* @return the [destination] map associating the key of each group with the result of accumulating the group elements.\n \*\n \* @sample samples.collections.Grouping.foldByEvenLengthWithComputedInitialValueTo\n \*\n \*/\n\n@SinceKotlin("1.1")\npublic 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) {\n key, acc, e, first -> operation(key, if (first) initialValueSelector(key, e) else acc as R, e) }\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 \*\n \* An initial value of accumulator is the same [initialValue] for each group.\n \*\n \* @param operation a function that is

invoked on each element with

the following parameters:  
`accumulator`: the current value of the accumulator of the group;  
`element`: the element from the source being accumulated.  
@return a [Map] associating the key of each group with the result of accumulating the group elements.  
@sample

```
samples.collections.Grouping.foldByEvenLengthWithConstantInitialValue\n *^\n@SinceKotlin("1.1")\npublic inline fun <T, K, R> Grouping<T, K>.fold(\n  initialValue: R,\n  operation: (accumulator: R, element: T) -> R\n): Map<K, R> =\n  @Suppress("UNCHECKED_CAST")\n  aggregate { _, acc, e, first -> operation(if (first) initialValue else acc as R, e) }\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,\n * and stores the results in the given [destination] map.\n * An initial value of accumulator is the same [initialValue] for each group.
```

\* If the [destination] map already has a value corresponding to the key of some group, that value is used as an initial value of the accumulator for that group.  
@param operation a function that is invoked on each element with the following parameters:  
`accumulator`: the current value of the accumulator of the group;  
`element`: the element from the source being accumulated.  
@return the [destination] map associating the key of each group with the result of accumulating the group elements.  
@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\n * Groups elements from the
```

[Grouping] source by key and applies the reducing [operation] to the elements of each group sequentially starting from the second element of the group, passing the previously accumulated value and the current element as arguments, and stores the results in a new map. An initial value of accumulator is the first element of the group.  
@param operation a function that is invoked on each subsequent element of the group with the following parameters:  
`key`: the key of the group this element belongs to;  
`accumulator`: the current value of the accumulator of the group;  
`element`: the element from the source being accumulated.  
@return a [Map] associating the key of each group with the result of accumulating the group elements.  
@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 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.  
* If the [destination] map already has a value corresponding to the key of some group, that value is used as an initial value of the accumulator for that group and the first element of that group is also
```

subjected to the [operation].  
@param operation a function that is invoked on each subsequent element of the group with the following parameters:  
`accumulator`: the current value of the accumulator of the group;  
`element`: the element from the source being folded;  
@return the [destination] map associating the key of each group with the result of accumulating the group elements.  
@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.
```

\* If the [destination] map already has a value corresponding to the key of some group, that value is used as an initial value of the counter for that group.  
@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 * 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 * @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\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) -> Double): Map<K, Double> =\n    fold(0.0) { acc, e -> acc + valueSelector(e)}\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 [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\n    @Deprecated("Use kotlin.math.PI instead.", ReplaceWith("PI", "kotlin.math.PI"), level = DeprecationLevel.ERROR)\n    public val PI: Double\n\n    @Deprecated("Use Random.nextDouble instead", ReplaceWith("kotlin.random.Random.nextDouble()"), "kotlin.random.Random"), level = DeprecationLevel.WARNING)\n    public fun random(): Double\n\n    @Deprecated("Use kotlin.math.abs instead.", ReplaceWith("abs(value)", "kotlin.math.abs"), level = DeprecationLevel.ERROR)\n    public fun abs(value: Double): Double\n\n    @Deprecated("Use kotlin.math.acos instead.", ReplaceWith("acos(value)", "kotlin.math.acos"), level = DeprecationLevel.ERROR)\n    public fun acos(value: Double): Double\n\n    @Deprecated("Use kotlin.math.asin instead.", ReplaceWith("asin(value)", "kotlin.math.asin"), level = DeprecationLevel.ERROR)\n    public fun asin(value: Double): Double\n\n    @Deprecated("Use kotlin.math.atan instead.", ReplaceWith("atan(value)", "kotlin.math.atan"), level = DeprecationLevel.ERROR)\n    public fun atan(value: Double): Double\n\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\n    @Deprecated("Use kotlin.math.cos instead.", ReplaceWith("cos(value)", "kotlin.math.cos"), level = DeprecationLevel.ERROR)\n    public fun cos(value: Double): Double\n\n    @Deprecated("Use kotlin.math.sin instead.", ReplaceWith("sin(value)", "kotlin.math.sin"), level = DeprecationLevel.ERROR)\n    public fun sin(value: Double): Double\n\n    @Deprecated("Use kotlin.math.exp instead.", ReplaceWith("exp(value)", "kotlin.math.exp"), level = DeprecationLevel.ERROR)\n    public fun exp(value: Double): Double\n\n    @Deprecated("Use maxOf or kotlin.math.max instead", level = DeprecationLevel.ERROR)\n    public fun max(vararg values: Int): Int\n\n    @Deprecated("Use maxOf or kotlin.math.max instead", level = DeprecationLevel.ERROR)\n    public fun max(vararg values: Float): Float\n\n    @Deprecated("Use maxOf or kotlin.math.max instead", level = DeprecationLevel.ERROR)\n    public fun max(vararg values: Double): Double\n\n    @Deprecated("Use minOf or kotlin.math.min instead", level = DeprecationLevel.ERROR)\n    public fun min(vararg values: Int): Int\n\n    @Deprecated("Use minOf or kotlin.math.min instead", level = DeprecationLevel.ERROR)\n    public fun min(vararg values: Float): Float\n\n    @Deprecated("Use minOf or kotlin.math.min instead", level = DeprecationLevel.ERROR)\n    public fun min(vararg values: Double): Double\n\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: 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 */\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     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     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 */\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@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@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@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
    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")\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 * \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 * \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 * \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`y\n * - `atan2(-Inf, x)` is `-PI/2` for finite `x`\n
    * - `atan2(NaN, x)` and `atan2(y, NaN)` is `NaN`\n * \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 * \n * Special cases:\n * - `sinh(NaN)` is `NaN`\n * - `sinh(+Inf)` is `+Inf`\n * - `sinh(-Inf)` is `-
    Inf`\n * \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 * \n * Special cases:\n * - `cosh(NaN)` is `NaN`\n * - `cosh(+Inf|-Inf)` is `+Inf`\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 * \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 * \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 *\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 `+Inf`\n * \n @SinceKotlin("1.2")\n @InlineOnly\n public 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 `+Inf`\n * - `tanh(-1.0)` is `-Inf`\n
 * \n @SinceKotlin("1.2")\n @InlineOnly\n public 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 * \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")\n @InlineOnly\n public 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 * \n *
Special cases:\n * - `sqrt(x)` is `NaN` when `x < 0` or `x` is `NaN`\n
 * \n @SinceKotlin("1.2")\n @InlineOnly\n public 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 * \n *
Special
cases:\n * - `exp(NaN)` is `NaN`\n * - `exp(+Inf)` is `+Inf`\n * - `exp(-Inf)` is `0.0`\n
 * \n @SinceKotlin("1.2")\n @InlineOnly\n public actual inline fun exp(x: Double): Double =
nativeMath.exp(x)\n\n/**\n
 * Computes `exp(x) - 1`.\n * \n * This function can be implemented to produce more
precise result for [x] near zero.\n * \n * Special cases:\n * - `expm1(NaN)` is `NaN`\n * - `expm1(+Inf)` is `+Inf`\n
 * - `expm1(-Inf)` is `-1.0`\n * \n @see [exp] function.\n * \n @SinceKotlin("1.2")\n @InlineOnly\n public
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 * \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 * \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: Double, base: Double): Double { \n if (base <= 0.0 || base == 1.0) return Double.NaN\n return
nativeMath.log(x) / nativeMath.log(base)\n}\n\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: Double): Double = nativeMath.log(x)\n\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: Double): Double = nativeMath.log10(x)\n\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: Double): Double = nativeMath.log2(x)\n\n/**\n
 * Computes `ln(x + 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 * @see [expm1] function\n * \n @SinceKotlin("1.2")\n @InlineOnly\n public
actual inline fun ln1p(x: Double): Double = nativeMath.log1p(x)\n\n/**\n
 * Rounds the given value [x] to an integer towards positive infinity.\n * \n * @return the smallest double 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: Double): Double =
nativeMath.ceil(x).unsafeCast<Double>() // TODO: Remove unsafe cast after removing public js.math\n\n/**\n
 * Rounds the given value [x] to an integer towards negative infinity.\n * \n * @return the largest double 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: Double): Double =
nativeMath.floor(x).unsafeCast<Double>()\n\n/**\n
 * 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")@InlineOnly@public 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")@public actual inline 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")@InlineOnly@public 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")@InlineOnly@public 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")@InlineOnly@public 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")@InlineOnly@public actual inline fun max(a: Double, b: Double): Double = nativeMath.max(a, b)`  
`*@extensions`  
`*@Raises this value to the power [x].`  
Special cases:  
`- b.pow(0.0)` is `1.0`  
`- b.pow(1.0)` is `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")@InlineOnly@public 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")@InlineOnly@public actual inline fun Double.pow(n: Int): Double = nativeMath.pow(this, n.toDouble())`  
`*@Returns the absolute value of this value.`  
Special cases:  
`- NaN.absoluteValue` is `NaN`  
`*@see abs function`  
`*@SinceKotlin("1.2")@InlineOnly@public actual inline val Double.absoluteValue: Double get() = nativeMath.abs(this)`  
`*@Returns the sign of this value:`  
`- -1.0` if the value is negative,  
`- 0.0` 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 Double.sign: Double get() = nativeMath.sign(this)`  
`*@Returns this value with the sign bit same as of the [sign] value.`  
`*@SinceKotlin("1.2")@InlineOnly@public 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`  
`*@SinceKotlin("1.2")@public 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.`  
`*@SinceKotlin("1.2")@public 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.`  
`*@SinceKotlin("1.2")@public 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)` is `x`  
`*@SinceKotlin("1.2")@public actual fun Double.nextTowards(to: Double): Double = when { this.isNaN() || to.isNaN() -> NaN this == to -> this this < to -> this.nextUp() this > to -> this.nextDown() }`

Double): Double = when {  
 this.isNaN() || to.isNaN() -> Double.NaN  
 to == this -> to  
 to > this -> this.nextUp()  
 else /\* to < this \*/ -> this.nextDown()  
 }  
 \n\n/\*\*  
 \* 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 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()  
 }  
 \n\n/\*\*  
 \* 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 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()  
 }  
 \n\n// endregion  
 \n\n// region  
 ===== Float Math =====  
 \n\n/\*\*  
 \* Computes the sine of the angle [x] given in radians.  
 \* Special cases:  
 \* - `sin(NaN|+Inf|-Inf)` is `NaN`  
 \*/  
 @SinceKotlin("1.2")  
 @InlineOnly  
 public actual inline fun sin(x: Float): Float = nativeMath.sin(x.toDouble()).toFloat()  
 \n\n/\*\*  
 \* Computes the cosine of the angle [x] given in radians.  
 \* Special cases:  
 \* - `cos(NaN|+Inf|-Inf)` is `NaN`  
 \*/  
 @SinceKotlin("1.2")  
 @InlineOnly  
 public actual inline fun cos(x: Float): Float = nativeMath.cos(x.toDouble()).toFloat()  
 \n\n/\*\*  
 \* Computes the tangent of the angle [x] given in radians.  
 \* Special cases:  
 \* - `tan(NaN|+Inf|-Inf)` is `NaN`  
 \*/  
 @SinceKotlin("1.2")  
 @InlineOnly  
 public actual inline fun tan(x: Float): Float = nativeMath.tan(x.toDouble()).toFloat()  
 \n\n/\*\*  
 \* 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")  
 @InlineOnly  
 public actual inline fun asin(x: Float): Float = nativeMath.asin(x.toDouble()).toFloat()  
 \n\n/\*\*  
 \* 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")  
 @InlineOnly  
 public actual inline fun acos(x: Float): Float = nativeMath.acos(x.toDouble()).toFloat()  
 \n\n/\*\*  
 \* 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")  
 @InlineOnly  
 public actual inline fun atan(x: Float): Float = nativeMath.atan(x.toDouble()).toFloat()  
 \n\n/\*\*  
 \* 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  $-\pi < y < 0$   
 \* - `atan2(y, -Inf)` is  $\pi$  for  $0 < y < +Inf$  and  $-\pi$  for  $-\pi < y < 0$   
 \* - `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")  
 @InlineOnly  
 public actual inline fun atan2(y: Float, x: Float): Float = nativeMath.atan2(y.toDouble(), x.toDouble()).toFloat()  
 \n\n/\*\*  
 \* 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")  
 @InlineOnly  
 public actual inline fun sinh(x: Float): Float = nativeMath.sinh(x.toDouble()).toFloat()  
 \n\n/\*\*  
 \* Computes the hyperbolic cosine of the value [x].  
 \* Special cases:  
 \* - `cosh(NaN)` is `NaN`  
 \* - `cosh(+Inf|-Inf)` is  $+Inf$   
 \*/

```

*\n@SinceKotlin("1.2")\n@InlineOnly\npublic actual inline fun cosh(x: Float): Float =
nativeMath.cosh(x.toDouble()).toFloat()\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: Float): Float = nativeMath.tanh(x.toDouble()).toFloat()\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 `+Inf`\n * - `asinh(-Inf)` is `-Inf`\n */\n@SinceKotlin("1.2")\n@InlineOnly\npublic
actual inline fun asinh(x: Float): Float = nativeMath.asinh(x.toDouble()).toFloat()\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 `+Inf`\n */\n@SinceKotlin("1.2")\n@InlineOnly\npublic
actual inline fun acosh(x: Float): Float = nativeMath.acosh(x.toDouble()).toFloat()\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 `+Inf`\n *
- `tanh(-1.0)` is `-Inf`\n */\n@SinceKotlin("1.2")\n@InlineOnly\npublic actual inline fun atanh(x: Float): Float =
nativeMath.atanh(x.toDouble()).toFloat()\n\n/**\n * Computes `sqrt(x^2 + y^2)` without intermediate overflow or
underflow.\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")\n@InlineOnly\npublic actual inline fun
hypot(x: Float, y: Float): Float = nativeMath.hypot(x.toDouble(), y.toDouble()).toFloat()\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: Float): Float = nativeMath.sqrt(x.toDouble()).toFloat()\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 `+Inf`\n * -
`exp(-Inf)` is `0.0`\n */\n@SinceKotlin("1.2")\n@InlineOnly\npublic actual inline fun exp(x: Float): Float =
nativeMath.exp(x.toDouble()).toFloat()\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 * - `expm1(NaN)` is `NaN`\n * -
`expm1(+Inf)` is `+Inf`\n * - `expm1(-Inf)` is `-1.0`\n * @see [exp] function.\n */\n@SinceKotlin("1.2")\n@InlineOnly\npublic actual inline fun expm1(x: Float): Float =
nativeMath.expm1(x.toDouble()).toFloat()\n\n/**\n * Computes the logarithm of the value [x] to the given [base].\n
*\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\npublic actual inline fun log(x: Float, base: Float):
Float = log(x.toDouble(), base.toDouble()).toFloat()\n\n/**\n * Computes the natural logarithm (base `E`) of the
value [x].\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\npublic actual inline fun ln(x: Float):
Float = nativeMath.log(x.toDouble()).toFloat()\n\n/**\n * Computes the common logarithm (base 10) of the value
[x].\n * @see [ln] function for special cases.\n */\n@SinceKotlin("1.2")\n@InlineOnly\npublic actual inline fun log10(x: Float): Float =
nativeMath.log10(x.toDouble()).toFloat()\n\n/**\n * Computes the binary logarithm (base 2) of the value [x].\n *
@see [ln] function for special cases.\n */\n@SinceKotlin("1.2")\n@InlineOnly\npublic actual inline fun log2(x:
Float): Float = nativeMath.log2(x.toDouble()).toFloat()\n\n/**\n * Computes `ln(a + 1)`.\n * This function can
be implemented to produce more precise result for [x] near zero.\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 *
@see [ln] function\n * @see [expm1] function\n */\n@SinceKotlin("1.2")\n@InlineOnly\npublic actual inline fun
ln1p(x: Float): Float = nativeMath.log1p(x.toDouble()).toFloat()\n\n/**\n * Rounds the given value [x] to an integer
towards positive infinity.\n * @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")@InlineOnly
public actual inline fun ceil(x: Float): Float = nativeMath.ceil(x.toDouble()).toFloat()

```

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")@InlineOnly
public actual inline fun floor(x: Float): Float = nativeMath.floor(x.toDouble()).toFloat()

```

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")@InlineOnly
public actual inline fun truncate(x: Float): Float = truncate(x.toDouble()).toFloat()

```

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")@InlineOnly
public actual inline fun round(x: Float): Float = round(x.toDouble()).toFloat()

```

Returns the absolute value of the given value [x].

Special cases: `abs(NaN)` is `NaN`

@see `absoluteValue` extension property for [Float]

```

@SinceKotlin("1.2")@InlineOnly
public actual inline fun abs(x: Float): Float = nativeMath.abs(x.toDouble()).toFloat()

```

Returns the sign of the given value [x]:

- 1.0 if the value is negative,
- zero if the value is zero,
- 1.0 if the value is positive

Special case: `sign(NaN)` is `NaN`

```

@SinceKotlin("1.2")@InlineOnly
public actual inline fun sign(x: Float): Float = nativeMath.sign(x.toDouble()).toFloat()

```

Returns the smaller of two values.

If either value is `NaN`, then the result is `NaN`.

```

@SinceKotlin("1.2")@InlineOnly
public actual inline fun min(a: Float, b: Float): Float = nativeMath.min(a, b)

```

Returns the greater of two values.

If either value is `NaN`, then the result is `NaN`.

```

@SinceKotlin("1.2")@InlineOnly
public actual inline fun max(a: Float, b: Float): Float = nativeMath.max(a, b)

```

// extensions

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")@InlineOnly
public actual inline fun Float.pow(x: Float): Float = nativeMath.pow(this.toDouble(), x.toDouble()).toFloat()

```

Raises this value to the integer power [n].

See the other overload of [pow] for details.

```

@SinceKotlin("1.2")@InlineOnly
public actual inline fun Float.pow(n: Int): Float = nativeMath.pow(this.toDouble(), n.toDouble()).toFloat()

```

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()

```





```

+ (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@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@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@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

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ReplaceWith("\T::class.js\`"), level = DeprecationLevel.ERROR)\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)\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 */\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 */\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    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 $simpleName"\n
    } \n\n    internal class SimpleKClassImpl<T : Any>(jClass: JsClass<T>) : KClassImpl<T>(jClass) {\n    override val
simpleName: String? = jClass.asDynamic().$metadata$.simpleName.unsafeCast<String?>()\n\n    override fun
isInstance(value: Any?): Boolean {\n        return jsIsType(value, jClass)\n    } \n\n    internal 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    internal 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", "/*\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// 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\`")\ninternal fun createKType(\n    classifier: KClassifier,\n
arguments: Array<KTypeProjection>,\n    isMarkedNullable: Boolean\n) =\n    KTypeImpl(classifier,
arguments.asList(), isMarkedNullable)\n\n@JsName("\createDynamicKType\`")\ninternal fun
createDynamicKType(): KType = DynamicKType\n\n@JsName("\markKTypeNullable\`")\ninternal fun
markKTypeNullable(kType: KType) = KTypeImpl(kType.classifier!!, kType.arguments,
true)\n\n@JsName("\createKTypeParameter\`")\ninternal fun createKTypeParameter(\n    name: String,\n

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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  return\n  KTypeParameterImpl(name, upperBounds.asList(), kVariance,\n  false)\n}\n\n@JsName(\"getStarKTypeProjection\")\ninternal\n  fun getStarKTypeProjection(): KTypeProjection =\n  KTypeProjection.STAR\n\n@JsName(\"createCovariantKTypeProjection\")\ninternal fun\n  createCovariantKTypeProjection(type: KType): KTypeProjection =\n  KTypeProjection.covariant(type)\n\n@JsName(\"createInvariantKTypeProjection\")\ninternal fun\n  createInvariantKTypeProjection(type: KType): KTypeProjection =\n  KTypeProjection.invariant(type)\n\n@JsName(\"createContravariantKTypeProjection\")\ninternal fun\n  createContravariantKTypeProjection(type: KType): KTypeProjection =\n  KTypeProjection.contravariant(type)\n\n\"/*\n * Copyright 2010-2019 JetBrains s.r.o. and Kotlin Programming\n  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\npackage kotlin.reflect.js.internal\n\nimport kotlin.reflect.*\n\ninternal class\n  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    emptyList()\n\n  override fun equals(other: Any?): Boolean =\n    other is KTypeImpl &&\n      classifier\n    == other.classifier &&\n      arguments == other.arguments &&\n      isMarkedNullable == other.isMarkedNullable\n\n  override fun hashCode(): Int =\n    (classifier.hashCode() * 31 + arguments.hashCode()) * 31 +\n    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\n    -> kClass.simpleName\n    else -> \"(non-denotable type)\"\n    }\n\n    val args =\n      if\n        (arguments.isEmpty()) \"\"\n      else arguments.joinToString(\" \", \"<\", \">\") { it.asString() }\n\n    val\n      nullable = if (isMarkedNullable) \"?\" else \"\"\n\n    return\n      classifierName + args + nullable\n    }\n\n    // TODO: this should be the implementation of\n    KTypeProjection.toString, see KT-30071\n  private fun KTypeProjection.asString(): String {\n    if (variance ==\n    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() =\nwhen (this) {\n  KVariance.INVARIANT -> \"\"\n  KVariance.IN -> \"in \"\n  KVariance.OUT -> \"out\n  \"\n}\n\n\"/*\n * Copyright 2010-2019 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\n  file.\n */\n\npackage kotlin.reflect.js.internal\n\nimport kotlin.js.JsClass\n\n@JsName(\"PrimitiveClasses\")\ninternal\n  object PrimitiveClasses {\n    @JsName(\"anyClass\")\n    val anyClass =\n      PrimitiveKClassImpl(js(\"Object\").unsafeCast<JsClass<Any>>(), \"Any\", { it is Any })\n\n    @JsName(\"numberClass\")\n    val numberClass =\n      PrimitiveKClassImpl(js(\"Number\").unsafeCast<JsClass<Number>>(), \"Number\", { it is Number })\n\n    @JsName(\"nothingClass\")\n\n    val nothingClass = NothingKClassImpl\n\n    @JsName(\"booleanClass\")\n    val booleanClass =\n      PrimitiveKClassImpl(js(\"Boolean\").unsafeCast<JsClass<Boolean>>(), \"Boolean\", { it is Boolean })\n\n    @JsName(\"byteClass\")\n    val byteClass = PrimitiveKClassImpl(js(\"Number\").unsafeCast<JsClass<Byte>>(),\n    \"Byte\", { it is Byte })\n\n    @JsName(\"shortClass\")\n    val shortClass =

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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 -> 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 ->

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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          }.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\n@Suppress("NOT_DOCUMENTED")\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\n public var lastIndex: Int\n\n public
val global: Boolean\n\n public val ignoreCase: Boolean\n\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\n@Suppress("NOT_DOCUMENTED")\npublic external interface RegExpMatch {\n\n public val index: Int\n
public val input: String\n\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\n private var
sequenceRef: Sequence<T>? = sequence\n\n actual override fun iterator(): Iterator<T> {\n\n val sequence =
sequenceRef ?: throw IllegalStateException("This sequence can be consumed only once.")\n\n sequenceRef =
null\n\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\n@SinceKotlin("1.3")\n@ExperimentalStdlibApi\npublic actual open class
CharacterCodingException(message: String?) : Exception(message) {\n\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 */\n\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 /**\n * Constructs an empty string builder with the specified initial [capacity].\n
*/\n\n * In Kotlin/JS implementation of StringBuilder the initial capacity has no effect on the further performance

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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  *\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  *\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  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      }\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
*\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  *\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
*\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  *\n  * The capacity is
the maximum length this string builder can have before an allocation occurs.\n  *\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  *\n  * If
the current capacity is less than the [minimumCapacity], a new backing storage is allocated with greater capacity.\n
*\n  * Otherwise, this method takes no action and simply returns.\n  *\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

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this.asDynamic()._capacity = minimumCapacity\n    }\n }\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 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 *\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 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 *\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 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 *\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 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 *\n * The overall effect is exactly as if the [value]
were converted to a string by the `value.toString()` method,\n *\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
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 *\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 *\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 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 *\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 *\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 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 *\n * The overall effect is
exactly as if the [value] were converted to a string by the `value.toString()` method,\n *\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    actual fun insert(index: Int, value: Any?): StringBuilder {\n\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 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):\n    StringBuilder {\n    AbstractList.checkPositionIndex(index, length)\n\n    this.string = this.string.substring(0,\n    index) + value + this.string.substring(index)\n    return this\n    }\n\n    /**\n    * Sets the length of this string\n    builder to the specified [newLength].\n    *\n    * If the [newLength] is less than the current length, it is changed to\n    the specified [newLength].\n    * Otherwise, null characters '\\u0000' are appended to this string builder until its\n    length is less than the [newLength].\n\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\n    program.\n    *\n    * @throws IndexOutOfBoundsException or [IllegalArgumentException] if [newLength] is less\n    than zero.\n    */\n    @SinceKotlin("1.3")\n    @ExperimentalStdlibApi\n    actual fun setLength(newLength: Int)\n    {\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\n    in length until newLength) {\n    string += "\\u0000"\n    }\n    }\n    }\n\n    /**\n    * Returns a new\n    [String] that contains characters in this string builder at [startIndex] (inclusive) and up to the [length] (exclusive).\n\n    *\n    * @throws IndexOutOfBoundsException\n    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\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\n    [endIndex] (exclusive).\n    *\n    * @throws IndexOutOfBoundsException or [IllegalArgumentException] when\n    [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    {\n    AbstractList.checkBoundsIndexes(startIndex, endIndex, length)\n\n    return string.substring(startIndex,\n    endIndex)\n    }\n\n    /**\n    * Attempts to reduce storage\n    used for this string builder.\n    *\n    * If the backing storage of this string builder is larger than necessary to hold\n    its current contents,\n    * then it may be resized to become more space efficient.\n    * Calling this method may,\n    but is not required to, affect the value of the [capacity] property.\n    *\n    * In Kotlin/JS implementation of\n    StringBuilder 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\n    (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\n    returns this instance.\n    *\n    * @sample samples.text.Strings.clearStringBuilder\n    */\n    @SinceKotlin("1.3")\n    public fun clear(): StringBuilder {\n    string = ""\n\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\n    AbstractList.checkElementIndex(index, length)\n\n    string = string.substring(0, index) + value +\n    string.substring(index + 1)\n    }\n\n    /**\n    * Replaces characters in the specified range of this string builder with\n    characters in the specified string [value] and returns this instance.\n    *\n    * @param startIndex the beginning\n    (inclusive) of the range to replace.\n    * @param endIndex the end (exclusive) of the range to replace.\n    *\n    * @param value the string to replace with.\n    *\n    * @throws IndexOutOfBoundsException or\n    [IllegalArgumentException] if [startIndex] is less than zero, greater than the length of this string builder,\n
```

```

or `startIndex > endIndex`.
    @SinceKotlin("1.3")
    @ExperimentalStdlibApi
    public fun
    setRange(startIndex: Int, endIndex: Int, value: String): String Builder {
        checkReplaceRange(startIndex,
        endIndex, length)
        this.string = this.string.substring(0, startIndex) + value + this.string.substring(endIndex)
        return this
    }
    private fun checkReplaceRange(startIndex: Int, endIndex: Int, length: Int) {
        if (startIndex < 0 || startIndex > length) {
            throw IndexOutOfBoundsException("startIndex: $startIndex,
            length: $length")
        }
        if (startIndex > endIndex) {
            throw
            IllegalArgumentException("startIndex($startIndex) > endIndex($endIndex)")
        }
    }
    /**
     * 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 fun deleteAt(index: Int): String Builder {
        AbstractList.checkElementIndex(index, length)
        string = string.substring(0, index) + string.substring(index +
        1)
        return this
    }
    /**
     * 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
    fun deleteRange(startIndex: Int, endIndex: Int): String Builder {
        checkReplaceRange(startIndex, endIndex,
        length)
        string = string.substring(0, startIndex) + string.substring(endIndex)
        return this
    }
    /**
     * 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.
     */
    @SinceKotlin("1.3")
    @ExperimentalStdlibApi
    public fun toCharArray(destination: CharArray, destinationOffset: Int = 0, startIndex:
    Int = 0, endIndex: Int = this.length) {
        AbstractList.checkBoundsIndexes(startIndex, endIndex, length)
        AbstractList.checkBoundsIndexes(destinationOffset, destinationOffset + endIndex - startIndex, destination.size)
        var dstIndex = destinationOffset
        for (index in startIndex until endIndex) {
            destination[dstIndex++]
            = string[index]
        }
    }
    /**
     * Appends characters in a subarray of the specified character array
     * [value] to this string builder and returns this instance.
     * Characters are appended in order, starting at
     * specified [startIndex].
     * @param value the array from which characters are appended.
     * @param startIndex the beginning (inclusive)
     * of the subarray to append.
     * @param endIndex the end (exclusive) of the subarray to append.
     * @throws IndexOutOfBoundsException or [IllegalArgumentException] when [startIndex] or [endIndex] is out of
     * range of the [value] array indices or when `startIndex > endIndex`.
     */
    @SinceKotlin("1.3")
    @ExperimentalStdlibApi
    public fun appendRange(value: CharArray, startIndex: Int, endIndex: Int):
    String Builder {
        string += value.concatToString(startIndex, endIndex)
        return this
    }
    /**
     * Appends a subsequence of the specified character sequence [value] to this string builder and returns this instance.
     * @param value the character sequence from which a subsequence is appended. If [value] is `null`,
     * then characters are appended as if [value] contained the four characters `"\u0000"`.
     * @param startIndex the beginning (inclusive) of the subsequence to append.
     * @param endIndex the end (exclusive)
     * of the subsequence to append.
     * @throws IndexOutOfBoundsException or [IllegalArgumentException]
     * when [startIndex] or [endIndex] is out of range of the [value] character sequence indices or when `startIndex >
     * endIndex`.
     */
    @SinceKotlin("1.3")
    @ExperimentalStdlibApi
    public fun appendRange(value:

```

```

CharSequence?, startIndex: Int, endIndex: Int): StringBuilder {
    val stringCsq = value.toString()
    AbstractList.checkBoundsIndexes(startIndex, endIndex, stringCsq.length)
    string +=
    stringCsq.substring(startIndex, endIndex)
    return this
}

/**
 * Inserts characters in a subarray of
 the specified character array [value] into this string builder at the specified [index] and returns this instance.
 *
 * The inserted characters go in same order as in the [value] array, starting at [index].
 *
 * @param index
 the position in this string builder to insert at.
 * @param value the array from
 which characters are inserted.
 * @param startIndex the beginning (inclusive) of the subarray to insert.
 * @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): StringBuilder {
    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): StringBuilder {
    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 StringBuilder.clear(): StringBuilder = 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 StringBuilder.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 StringBuilder.setRange(startIndex: Int, endIndex: Int,
value: String): StringBuilder =
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.\n

```
*\n@SinceKotlin("1.3")\n@ExperimentalStdlibApi\n@Suppress("EXTENSION_SHADOWED_BY_MEMBER",\n"NOTHING_TO_INLINE")\npublic actual inline fun StringBuilder.deleteAt(index: Int): StringBuilder =\nthis.deleteAt(index)\n\n/**\n * Removes characters in the specified range from this string builder and returns this\n instance.\n * @param startIndex the beginning (inclusive) of the range to remove.\n * @param endIndex the end\n (exclusive) of the range to remove.\n * @throws IndexOutOfBoundsException or [IllegalArgumentException]\n when [startIndex] is out of range of this string builder indices or when `startIndex > endIndex`.\n
```

```
*\n@SinceKotlin("1.3")\n@ExperimentalStdlibApi\n@Suppress("EXTENSION_SHADOWED_BY_MEMBER",\n"NOTHING_TO_INLINE")\npublic actual inline fun StringBuilder.deleteRange(startIndex: Int, endIndex: Int):\nStringBuilder = this.deleteRange(startIndex, endIndex)\n\n/**\n * Copies characters from this string builder into the\n [destination] character array.\n * @param destination the array to copy to.\n * @param destinationOffset the\n position in the array to copy to, 0 by default.\n * @param startIndex the beginning (inclusive) of the range to copy, 0\n 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\n of range of this string builder indices or when `startIndex > endIndex`.\n * @throws IndexOutOfBoundsException\n 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",\n"NOTHING_TO_INLINE",\n"ACTUAL_FUNCTION_WITH_DEFAULT_ARGUMENTS")\npublic actual\n inline fun StringBuilder.toCharArray(destination: CharArray, destinationOffset: Int = 0, startIndex: Int = 0,\n 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\n instance.\n * Characters are appended in order, starting at specified [startIndex].\n * @param value the array\n 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\n [IllegalArgumentException] when [startIndex] or [endIndex]\n 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",\n"NOTHING_TO_INLINE")\npublic actual inline fun StringBuilder.appendRange(value: CharArray, startIndex:\nInt, endIndex: Int): StringBuilder =\n this.appendRange(value, startIndex, endIndex)\n\n/**\n * Appends a\n 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\n characters are appended as if [value] contained the four characters `\\null`.\n * @param startIndex the beginning\n (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\n of range of the [value] character sequence indices or\n when `startIndex > endIndex`.\n
```

```
*\n@SinceKotlin("1.3")\n@ExperimentalStdlibApi\n@Suppress("EXTENSION_SHADOWED_BY_MEMBER",\n"NOTHING_TO_INLINE")\npublic actual inline fun StringBuilder.appendRange(value: CharSequence?,\nstartIndex: Int, endIndex: Int): StringBuilder =\n this.appendRange(value, startIndex, endIndex)\n\n/**\n * Inserts\n characters in a subarray of the specified character array [value] into this string builder at the specified [index] and\n 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\n are inserted.\n * @param startIndex the beginning (inclusive) of the subarray to insert.\n * @param endIndex the\n end (exclusive) of the subarray to insert.\n * @throws IndexOutOfBoundsException or\n [IllegalArgumentException] when [startIndex] or [endIndex] is out of range of the [value] array\n indices or when `startIndex > endIndex`.\n * @throws IndexOutOfBoundsException if [index] is less than zero or\n 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`, then characters will be inserted as if [value] contained the four characters\n * `\\`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\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"/*\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// actually \\s is enough to match all whitespace, but \\xA0 added because of different regexp behavior of Rhino used in Selenium tests\npublic actual fun Char.isWhitespace(): Boolean =\n    toString().matches("[\\s\\xA0]")\n\n@kotlin.internal.InlineOnly\npublic actual inline fun Char.toLowerCase(): Char =\n    js("String.fromCharCode")(toInt()).toLowerCase().charCodeAt(0).unsafeCast<Int>().toChar()\n\n@kotlin.internal.InlineOnly\npublic actual inline fun Char.toUpperCase(): Char =\n    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\n    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\n    Char.MIN_LOW_SURROGATE..Char.MAX_LOW_SURROGATE\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 * 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() ?:\n    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) ?:\n    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() ?:\n    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) ?:\n    numberFormatError(this)\n\n/*\n * Parses the string as an [Int] number and returns the result.\n * @throws

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NumberFormatException if the string is not a valid representation of a number.\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 */\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 */\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 */\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 */\npublic
actual fun String.toDouble(): Double = (+ (this.asDynamic())).unsafeCast<Double>().also { \n    if (it.isNaN() &&
!this.isNaN() || it == 0.0 && this.isBlank())\n        numberFormatError(this)\n}\n\n/**\n * Parses the string as a
[Float] number and returns the result.\n * @throws NumberFormatException if the string is not a valid
representation of a number.\n */\n@kotlin.internal.InlineOnly\npublic actual inline fun String.toFloat(): Float =
toDouble().unsafeCast<Float>()\n\n/**\n * Parses the string as a [Double] number and returns the result\n * or `null`
if the string is not a valid representation of a number.\n */\npublic actual fun String.toDoubleOrNull(): Double? =
(+ (this.asDynamic())).unsafeCast<Double>().takeIf { \n    !(it.isNaN() && !this.isNaN() || it
    == 0.0 && this.isBlank())\n}\n\n/**\n * Parses the string as a [Float] number and returns the result\n * or `null` if
the string is not a valid representation of a number.\n */\n@kotlin.internal.InlineOnly\npublic actual inline fun
String.toFloatOrNull(): Float? = toDoubleOrNull().unsafeCast<Float?>()\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("1.2")\n@kotlin.internal.InlineOnly\npublic actual
inline fun Byte.toString(radix: Int): String = this.toInt().toString(radix)\n\n/**\n * Returns a string representation
of this [Short] value in the specified [radix].\n * @throws IllegalArgumentException when [radix] is not a valid
radix for number to string conversion.\n */\n@SinceKotlin("1.2")\n@kotlin.internal.InlineOnly\npublic actual
inline fun Short.toString(radix: Int): String = this.toInt().toString(radix)\n\n/**\n * Returns a string representation
of this [Int] value in the specified [radix].\n * @throws
IllegalArgumentException when [radix] is not a valid radix for number to string conversion.\n
*/\n@SinceKotlin("1.2")\npublic actual fun Int.toString(radix: Int): String =
asDynamic().toString(checkRadix(radix))\n\nprivate fun String.isNaN(): Boolean = when (this.toLowerCase()) { \n
    "nan", "+nan", "-nan" -> true\n    else -> false\n}\n\n/**\n * Checks whether the given [radix] is valid radix for
string to number and number to string conversion.\n */\n@PublishedApi\ninternal actual fun checkRadix(radix: Int):
Int { \n    if (radix !in 2..36) { \n        throw IllegalArgumentException("\nradix $radix was not in valid range
2..36")\n    }\n    return radix\n}\n\ninternal actual fun digitOf(char: Char, radix: Int): Int = when { \n    char >= '0' && char <=
'9' -> char - '0'\n    char >= 'A' && char <= 'Z' -> char - 'A' + 10\n    char >= 'a' && char <= 'z' -> char - 'a' + 10\n
else
    -> -1\n}.let { if (it >= radix) -1 else it }\n\n"/\n * Copyright 2010-2018 JetBrains s.r.o. and Kotlin Programming
Language contributors.\n * Use of this source code is governed by the Apache 2.0 license that can be found in the
license/LICENSE.txt file.\n */\n\npackage kotlin.text\n\nimport kotlin.js.RegExp\n\n/**\n * Provides enumeration
values to use to set regular expression options.\n */\npublic actual enum class RegexOptions(val value: String) { \n
    /** Enables case-insensitive matching. */\n    IGNORE_CASE("i"),\n    /** Enables multiline mode. */\n    MULTILINE("m")\n}\n\n/**\n * In multiline mode the expressions `^` and `$` match just after or just before,\n * respectively, a line terminator or
the end of the input sequence. */\n    MULTILINE("m")\n}\n\n/**\n * Represents the results from a single
capturing group within a [MatchResult] of [Regex].\n * @param value The value of captured group.\n */\npublic
actual data class MatchGroup(actual val value: String)\n\n/**\n * Represents

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foundMatch.next()\n    } while (lastStart < length && match != null)\n\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 * @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 * @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
$limit" }\n    val matches = findAll(input).let { if (limit == 0) it else it.take(limit - 1) }\n    val result =
mutableListOf<String>()\n    var lastStart = 0\n    for (match in matches) {\n
result.add(input.subSequence(lastStart, match.range.start).toString())\n        lastStart = match.range.endInclusive +
1\n    }\n    result.add(input.subSequence(lastStart, input.length).toString())\n    return result\n }\n\n
/**\n * Returns the string representation of this regular expression, namely the [pattern] of this regular
expression.\n * Note that another regular expression constructed from the same pattern string may have
different [options]\n
* and may match strings differently.\n */\n public override fun toString(): String =
nativePattern.toString()\n actual companion object {\n    /**\n     * Returns a regular expression that
matches the specified [literal] string literally.\n     * No characters of that string will have special meaning when
searching for an occurrence of the regular expression.\n     */\n     public actual fun fromLiteral(literal: String):
Regex = Regex(escape(literal))\n    /**\n     * Returns a regular expression pattern string that matches the
specified [literal] string literally.\n     * No characters of that string will have special meaning when searching for
an occurrence of the regular expression.\n     */\n     public actual fun escape(literal: String): String =
literal.nativeReplace(patternEscape, "\\|\\$&")\n    /**\n     * Returns a literal replacement expression for the
specified [literal] string.\n     * No characters
of that string will have special meaning when it is used as a replacement string in [Regex.replace] function.\n
*/\n     public actual fun escapeReplacement(literal: String): String = literal.nativeReplace(replacementEscape,
"$$$")\n    private val patternEscape = RegExp("\\\\\\"[-\\|\\^$*+?.()\\[\\]{}]|\\\\"|'g")\n    private val
replacementEscape = RegExp("\\\\"|\\$|'g")\n    }\n}\n\n
/** Creates a regular expression from the specified
[pattern] string and the specified single [option]. */\n@Deprecated("Provided for binary compatibility", level =
DeprecationLevel.HIDDEN)\n@jsName("Regex_sb3q2\\$")\npublic fun Regex_0(pattern: String, option:
RegexOption): Regex = Regex(pattern, setOf(option))\n\n
/** Creates a regular expression from the specified
[pattern] string and the default options. */\n@Deprecated("Provided for binary compatibility", level =
DeprecationLevel.HIDDEN)\n@jsName("Regex_61zpoe\\$")\npublic fun Regex_1(pattern: String): Regex
= Regex(pattern, emptySet())\n\n\n\nprivate fun RegExp.findNext(input: String, from: Int): MatchResult? {\n
this.lastIndex = from\n    val match = exec(input)\n    if (match == null) return null\n    val range =
match.index..lastIndex - 1\n    return object : MatchResult {\n        override val range: IntRange = range\n
override val value: String\n            get() = match[0]!!\n        override val groups: MatchGroupCollection = object :
MatchGroupCollection, AbstractCollection<MatchGroup?>() {\n            override val size: Int get() = match.length\n
override fun iterator(): Iterator<MatchGroup?> = indices.asSequence().map { this[it] }.iterator()\n
override fun get(index: Int): MatchGroup? = match[index]?.let { MatchGroup(it) }\n        }\n\n        private var
groupValues_: List<String>? = null\n        override val groupValues: List<String>\n            get() {\n                if
(groupValues_ == null) {\n                    groupValues_

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= object : AbstractList<String>() {
    override val size: Int get() = match.length
    override fun get(index: Int): String = match[index]
    groupValues_!
    override fun next(): MatchResult? = this@findNext.findNext(input, if
(range.isEmpty()) range.start + 1 else range.endInclusive + 1)
}
"/**
 * 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.text
import
kotlin.js.RegExp
@kotlin.internal.InlineOnly
internal actual inline fun String.nativeIndexOf(ch: Char,
fromIndex: Int): Int = nativeIndexOf(ch.toString(), fromIndex)
@kotlin.internal.InlineOnly
internal actual
inline fun String.nativeLastIndexOf(ch: Char, fromIndex: Int): Int = nativeLastIndexOf(ch.toString(),
fromIndex)
/**
 * Returns `true` if this string starts with the specified prefix.
 */
@Suppress("ACTUAL_FUNCTION_WITH_DEFAULT_ARGUMENTS")
public actual fun
String.startsWith(prefix: String, ignoreCase: Boolean = false): Boolean {
    if (!ignoreCase)
        return
        nativeStartsWith(prefix, 0)
    else
        return regionMatches(0, prefix, 0, prefix.length, ignoreCase)
}
/**
 * Returns `true` if a substring of this string starting at the specified offset [startIndex] starts with the specified prefix.
 */
@Suppress("ACTUAL_FUNCTION_WITH_DEFAULT_ARGUMENTS")
public actual fun
String.startsWith(prefix: String, startIndex: Int, ignoreCase: Boolean = false): Boolean {
    if (!ignoreCase)
        return nativeStartsWith(prefix, startIndex)
    else
        return regionMatches(startIndex, prefix, 0, prefix.length,
ignoreCase)
}
/**
 * Returns `true` if this string ends with the specified suffix.
 */
@Suppress("ACTUAL_FUNCTION_WITH_DEFAULT_ARGUMENTS")
public
actual fun String.endsWith(suffix: String, ignoreCase: Boolean = false): Boolean {
    if (!ignoreCase)
        return
        nativeEndsWith(suffix)
    else
        return regionMatches(length - suffix.length, suffix, 0, suffix.length,
ignoreCase)
}
public fun String.matches(regex: String): Boolean {
    val result = this.match(regex)
    return result != null && result.size != 0
}
public actual fun CharSequence.isBlank(): Boolean = length == 0 || (if
(this is String) this else
this.toString()).matches("^\\s+$")
@Suppress("ACTUAL_FUNCTION_WITH_DEFAULT_ARGU
MENTS")
public actual fun String?.equals(other: String?, ignoreCase: Boolean = false): Boolean =
    if (this ==
null)
        other == null
    else if (!ignoreCase)
        this == other
    else
        other != null &&
this.toLowerCase() ==
other.toLowerCase()
@Suppress("ACTUAL_FUNCTION_WITH_DEFAULT_ARGUMENTS")
public
actual fun CharSequence.regionMatches(thisOffset: Int,
other: CharSequence, otherOffset: Int, length: Int, ignoreCase: Boolean = false): Boolean =
regionMatchesImpl(thisOffset, other, otherOffset, length, ignoreCase)
/**
 * Returns a copy of this string
having its first letter uppercased, or the original string,
 * if it's empty or already starts with an upper case letter.
 */
@sample samples.text.Strings.capitalize
public actual fun String.capitalize(): String {
    return if
(isNotEmpty()) substring(0, 1).toUpperCase() + substring(1) else this
}
/**
 * Returns a copy of this string
having its first letter lowercased, or the original string,
 * if it's empty or already starts with a lower case letter.
 */
@sample samples.text.Strings.decitalize
public actual fun String.decitalize(): String {
    return if
(isNotEmpty()) substring(0, 1).toLowerCase() + substring(1) else this
}
/**
 * Returns a string containing this
char sequence repeated [n] times.
 * @throws [IllegalArgumentException] when
n < 0.
 */
public actual fun CharSequence.repeat(n: Int): String {
    require(n >= 0) { "Count 'n' must be non-
negative, but was $n." }
    return when (n) {
        0 -> ""
        1 -> this.toString()
        else -> {
            var
result = ""
            if (!isEmpty()) {
                var s = this.toString()
                var count = n
                while
(true) {
                    if ((count and 1) == 1)
                        result += s
                    count =
count ushr 1
                    if (count == 0)
                        break
                    s += s
                }
            }
            return result
        }
    }
}
@Suppress("ACTUAL_FUNCTION_WITH_DEFAULT_ARGUMENTS")
public actual fun
String.replace(oldValue: String, newValue: String, ignoreCase: Boolean = false): String =
nativeReplace(RegExp(Regex.escape(oldValue), if (ignoreCase) "gi" else "g"),

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Regex.escapeReplacement(newValue))\n\n@Suppress("ACTUAL_FUNCTION_WITH_DEFAULT_ARGUMENT
S")\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@Suppress("ACTUAL_FUNCTION_WITH_DEFAULT_ARGUMENTS")\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@Suppress("ACTUAL_FUNCTION_WITH_DEFAULT_ARGUMENT
S")\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 * 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/** Returns the negative [size] if [throwOnMalformed] is false, throws [CharacterCodingException]
otherwise. */\n@UseExperimental(ExperimentalStdlibApi::class)\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/** 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 */\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 +
((high and 0x3FF) shl 10) or (low and 0x3FF)\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 * @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 0xF8\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 *
@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/** 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 * @throws CharacterCodingException

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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  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    } 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  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 * 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
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 -> bytes[byteIndex++] = code.toByte()\n
      code < 0x800 -> bytes[byteIndex++] = ((code shr 6) or 0xC0).toByte()\n
      bytes[byteIndex++] = ((code and 0x3F) or 0x80).toByte()\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
* @throws CharacterCodingException if the array is malformed UTF-8 byte sequence and [throwOnMalformed] is true.\n
* internal 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 -> { 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
                } 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
                } 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
                } else -> {\n
                    malformed(0, byteIndex, throwOnMalformed)\n
                    stringBuilder.append(REPLACEMENT_CHAR)\n
                }\n
            }\n
        }\n
    }\n
    return stringBuilder.toString()\n
}"/\n
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*/\n
package kotlin.time\n
@SinceKotlin("1.3")\n
@ExperimentalTime\n
public 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
    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
@SinceKotlin("1.3")\n
@ExperimentalTime\n
internal 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
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*/\n
package kotlin.time\n
import org.w3c.performance.GlobalPerformance\n
import org.w3c.performance.Performance\n
@SinceKotlin("1.3")\n
@ExperimentalTime\n
internal 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
internal external interface Process {\n
    fun hrtime(time: Array<Double> = definedExternally): Array<Double>\n
}\n
@SinceKotlin("1.3")\n
@ExperimentalTime\n
internal

```

```

class HrTimeSource(val process: Process) : TimeSource {
    override fun markNow(): TimeMark = object :
    TimeMark() {
        val startedAt = process.hrtime()
        override fun elapsedNow(): Duration =
        process.hrtime(startedAt).let { (seconds, nanos) -> seconds.seconds + nanos.nanoseconds }
    }
    override fun
    toString(): String = "TimeSource(process.hrtime())"
}
@SinceKotlin("1.3")
@ExperimentalTime
internal
class PerformanceTimeSource(val performance: Performance) : AbstractDoubleTimeSource(unit =
DurationUnit.MILLISECONDS) {
    override fun read(): Double = performance.now()
    override fun toString():
    String = "TimeSource(self.performance.now())"
}
@SinceKotlin("1.3")
@ExperimentalTime
internal
object DateNowTimeSource : AbstractDoubleTimeSource(unit = DurationUnit.MILLISECONDS) {
    override
    fun read(): Double = kotlin.js.Date.now()
    override fun toString(): String = "TimeSource(Date.now())"
}

```

```

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by the Apache 2.0 license that can be found in the license/LICENSE.txt file.
package kotlin.time
import
kotlin.js.json
import kotlin.math.*
internal actual fun formatToExactDecimals(value: Double, decimals: Int):
String {
    val rounded = if (decimals == 0) {
        value
    } else {
        val pow = 10.0.pow(decimals)
        @Suppress("DEPRECATION", "DEPRECATION_ERROR")
        kotlin.js.Math.round(abs(value) * pow) /
        pow * sign(value)
    }
    return rounded.asDynamic().toFixed(decimals).unsafeCast<String>()
}
internal
actual fun formatUpToDecimals(value: Double, decimals: Int): String {
    return
    value.asDynamic().toLocaleString("en-us", json("maximumFractionDigits" to
    decimals)).unsafeCast<String>()
}
internal actual fun formatScientific(value: Double): String {
    return
    value.asDynamic().toExponential(2).unsafeCast<String>()
}

```

```

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package
org.w3c.dom
@Deprecated("Use UnionMessagePortOrWindowProxy instead.")
ReplaceWith("UnionMessagePortOrWindowProxy")
typealias UnionMessagePortOrWindow =
UnionMessagePortOrWindowProxy
@Deprecated("Use `as` instead.", ReplaceWith("`as`"))
nvar
HTMLLinkElement.as_ get() = `as` set(value) {
    `as` = value
}
@Deprecated("Use `is`
instead.", ReplaceWith("`is`"))
nvar ElementCreationOptions.is_ get() = `is` set(value) {
    `is` =
    value
}

```

```

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// NOTE: THIS FILE IS AUTO-GENERATED, DO NOT
EDIT!
// See github.com/kotlin/dukat for details
package org.khronos.webgl
import kotlin.js.*
import
org.w3c.css.masking.*
import org.w3c.dom.*
import org.w3c.dom.clipboard.*
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.*
public external interface
WebGLContextAttributes {
    var alpha: Boolean? /* = true */
    get() = definedExternally
    set(value) =
    definedExternally
    var depth: Boolean? /* = true */
    get() = definedExternally
    set(value) =
    definedExternally
    var stencil: Boolean? /* = false */
    get() = definedExternally
    set(value) =
    definedExternally
    var antialias: Boolean? /* = true */
    get()
    = definedExternally
    set(value) = definedExternally
    var premultipliedAlpha: Boolean? /* = true */
    get() = definedExternally
    set(value) = definedExternally
    var preserveDrawingBuffer: Boolean? /* = false
    */
    get() = definedExternally
    set(value) = definedExternally
    var
    preferLowPowerToHighPerformance: Boolean? /* = false */
    get() = definedExternally
    set(value) =
    definedExternally
    var failIfMajorPerformanceCaveat: Boolean? /* = false */
    get() = definedExternally
    set(value) = definedExternally
}
@kotlin.internal.InlineOnly
public inline fun
WebGLContextAttributes(alpha: Boolean? = true, depth: Boolean? = true, stencil: Boolean? = false, antialias:
Boolean? = true, premultipliedAlpha: Boolean? = true, preserveDrawingBuffer: Boolean? = false,

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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 */\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 */\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 */\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 */\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 */\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 */\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
*/\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 */\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 */\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@Suppress(\n"NESTED_CLASS_IN_EXTERNAL_INTERFACE")\n\npublic external interface
WebGLRenderingContextBase {\n  val canvas: HTMLCanvasElement\n  val drawingBufferWidth: Int\n  val
drawingBufferHeight: Int\n  fun getContextAttributes(): WebGLContextAttributes?\n  fun isContextLost():
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 bindBuffer(target: Int, buffer:
WebGLBuffer?)\n  fun bindFramebuffer(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,

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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(shader: Int, precision: 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: WebGLProgram?)\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 uniform1i(location:

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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 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 \* Exposes the JavaScript  
 [WebGLRenderingContext](https://developer.mozilla.org/en/docs/Web/API/WebGLRenderingContext) to Kotlin \n  
 \* \n public 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



```

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 {\n  constructor(length: Int)\n  constructor(array: Float32Array)\n

```

```

constructor(array: Array<Float>)\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: Float32Array, offset: Int = definedExternally)\n
  fun set(array: Array<Float>, offset: Int = definedExternally)\n  fun subarray(start: Int, end: Int):
Float32Array\n\n  companion object {\n    val BYTES_PER_ELEMENT: Int\n  }\n}\n\n@kotlin.internal.InlineOnly\npublic inline operator fun Float32Array.get(index: Int): Float =
asDynamic()[index]\n\n@kotlin.internal.InlineOnly\npublic inline operator fun Float32Array.set(index: Int, value:
Float) { asDynamic()[index] = value }\n\n/**\n * Exposes the JavaScript
[Float64Array](https://developer.mozilla.org/en/docs/Web/API/Float64Array) to Kotlin\n */\npublic external open
class Float64Array : ArrayBufferView {\n  constructor(length: Int)\n  constructor(array: Float64Array)\n
constructor(array: Array<Double>)\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: Float64Array,
offset: Int = definedExternally)\n  fun set(array: Array<Double>, offset: Int = definedExternally)\n  fun
subarray(start: Int, end: Int): Float64Array\n\n  companion object {\n    val BYTES_PER_ELEMENT: Int\n  }\n}\n\n@kotlin.internal.InlineOnly\npublic inline operator fun Float64Array.get(index: Int): Double =
asDynamic()[index]\n\n@kotlin.internal.InlineOnly\npublic inline operator fun Float64Array.set(index: Int, value:
Double) { asDynamic()[index] = value }\n\n/**\n * Exposes the JavaScript
[DataView](https://developer.mozilla.org/en/docs/Web/API/DataView) to Kotlin\n */\npublic external open class
DataView(buffer: ArrayBuffer, byteOffset: Int = definedExternally, byteLength: Int = definedExternally) :
ArrayBufferView {\n  override val buffer: ArrayBuffer\n  override val byteOffset: Int\n  override val
byteLength: Int\n  fun getInt8(byteOffset: Int): Byte\n  fun getUint8(byteOffset: Int): Byte\n  fun
getInt16(byteOffset: Int, littleEndian: Boolean
= definedExternally): Short\n  fun getUint16(byteOffset: Int, littleEndian: Boolean = definedExternally): Short\n
fun getInt32(byteOffset: Int, littleEndian: Boolean = definedExternally): Int\n  fun getUint32(byteOffset: Int,
littleEndian: Boolean = definedExternally): Int\n  fun getFloat32(byteOffset: Int, littleEndian: Boolean =
definedExternally): Float\n  fun getFloat64(byteOffset: Int, littleEndian: Boolean = definedExternally): Double\n
fun setInt8(byteOffset: Int, value: Byte)\n  fun setUint8(byteOffset: Int, value: Byte)\n  fun setInt16(byteOffset:
Int, value: Short, littleEndian: Boolean = definedExternally)\n  fun setUint16(byteOffset: Int, value: Short,
littleEndian: Boolean = definedExternally)\n  fun setInt32(byteOffset: Int, value: Int, littleEndian: Boolean =
definedExternally)\n  fun setUint32(byteOffset: Int, value: Int, littleEndian: Boolean = definedExternally)\n  fun
setFloat32(byteOffset: Int, value: Float, littleEndian: Boolean = definedExternally)\n
  fun setFloat64(byteOffset: Int, value: Double, littleEndian: Boolean = definedExternally)\n}\n\npublic external
interface BufferDataSource\n\npublic external interface TexImageSource", /*\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.clipboard\n\nimport
kotlin.js.*\nimport org.khronos.webgl.*\nimport org.w3c.css.masking.*\nimport org.w3c.dom.*\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 ClipboardEventInit : EventInit {\n  var clipboardData: DataTransfer? /*
= null */\n  get() = definedExternally\n  set(value) =
definedExternally\n}\n\n@kotlin.internal.InlineOnly\npublic inline fun ClipboardEventInit(clipboardData:
DataTransfer? = null, bubbles: Boolean? = false, cancelable: Boolean? = false, composed: Boolean? = false):
ClipboardEventInit {\n  val o = js("{}")\n  o["clipboardData"] = clipboardData\n  o["bubbles"] = bubbles\n
o["cancelable"] = cancelable\n  o["composed"] = composed\n  return o\n}\n\n/**\n * Exposes the JavaScript

```

```

[ClipboardEvent](https://developer.mozilla.org/en/docs/Web/API/ClipboardEvent) to Kotlin\n *\npublic external
open class ClipboardEvent(type: String, eventInitDict: ClipboardEventInit = definedExternally) : Event {\n  open
val clipboardData: 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\n**\n * Exposes the JavaScript
[Clipboard](https://developer.mozilla.org/en/docs/Web/API/Clipboard) to Kotlin\n *\npublic external abstract class
Clipboard : EventTarget {\n  fun read(): Promise<DataTransfer>\n  fun readText(): Promise<String>\n  fun
write(data: DataTransfer): Promise<Unit>\n  fun writeText(data: String): Promise<Unit>\n}\n\npublic external
interface ClipboardPermissionDescriptor {\n  var allowWithoutGesture: Boolean? /* = false */\n  get() =
definedExternally\n  set(value) = definedExternally\n}\n\n@kotlin.internal.InlineOnly\npublic inline fun
ClipboardPermissionDescriptor(allowWithoutGesture: Boolean? = false): ClipboardPermissionDescriptor {\n  val
o = js("\({})")\n  o["allowWithoutGesture"] = allowWithoutGesture\n  return o\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.dom.css\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.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
MediaList : ItemArrayLike<String> {\n  open var mediaText: String\n  fun appendMedium(medium: String)\n
fun deleteMedium(medium: String)\n  override fun item(index: Int):
String?\n}\n\n@kotlin.internal.InlineOnly\npublic inline operator fun MediaList.get(index: Int): String? =
asDynamic()[index]\n\n**\n
* Exposes the JavaScript [StyleSheet](https://developer.mozilla.org/en/docs/Web/API/StyleSheet) to Kotlin\n
*\npublic external abstract class StyleSheet {\n  open val type: String\n  open val href: String?\n  open val
ownerNode: UnionElementOrProcessingInstruction?\n  open val parentStyleSheet: StyleSheet?\n  open val title:
String?\n  open val media: MediaList\n  open var disabled: Boolean\n}\n\n**\n * Exposes the JavaScript
[CSSStyleSheet](https://developer.mozilla.org/en/docs/Web/API/CSSStyleSheet) to Kotlin\n *\npublic external
abstract class CSSStyleSheet : StyleSheet {\n  open val ownerRule: CSSRule?\n  open val cssRules:
CSSRuleList\n  fun insertRule(rule: String, index: Int): Int\n  fun deleteRule(index: Int)\n}\n\n**\n * Exposes the
JavaScript [StyleSheetList](https://developer.mozilla.org/en/docs/Web/API/StyleSheetList) to Kotlin\n *\npublic
external abstract class StyleSheetList : ItemArrayLike<StyleSheet> {\n  override fun item(index:
Int): StyleSheet?\n}\n\n@kotlin.internal.InlineOnly\npublic inline operator fun StyleSheetList.get(index: Int):
StyleSheet? = asDynamic()[index]\n\n**\n * Exposes the JavaScript
[LinkStyle](https://developer.mozilla.org/en/docs/Web/API/LinkStyle) to Kotlin\n *\npublic external interface
LinkStyle {\n  val sheet: StyleSheet?\n  get() = definedExternally\n}\n\n**\n * Exposes the JavaScript
[CSSRuleList](https://developer.mozilla.org/en/docs/Web/API/CSSRuleList) to Kotlin\n *\npublic external abstract
class CSSRuleList : ItemArrayLike<CSSRule> {\n  override fun item(index: Int):
CSSRule?\n}\n\n\n@kotlin.internal.InlineOnly\npublic inline operator fun CSSRuleList.get(index: Int): CSSRule? =
asDynamic()[index]\n\n**\n * Exposes the JavaScript
[CSSRule](https://developer.mozilla.org/en/docs/Web/API/CSSRule) to Kotlin\n *\npublic external abstract class
CSSRule {\n  open val type: Short\n  open var cssText: String\n  open val parentRule: CSSRule?\n  open val
parentStyleSheet:
CSSStyleSheet?\n\n  companion object {\n    val STYLE_RULE: Short\n    val CHARSET_RULE: Short\n
val IMPORT_RULE: Short\n    val MEDIA_RULE: Short\n    val FONT_FACE_RULE: Short\n    val
PAGE_RULE: Short\n    val MARGIN_RULE: Short\n    val NAMESPACE_RULE: Short\n  }\n}\n\n**\n *

```



Exposes the JavaScript [CSSStyleRule](https://developer.mozilla.org/en/docs/Web/API/CSSStyleRule) to Kotlin\n

```

*\npublic external abstract class CSSStyleRule : CSSRule {\n  open var selectorText: String\n  open val style: CSSStyleDeclaration\n\n  companion object {\n    val STYLE_RULE: Short\n    val CHARSET_RULE: Short\n    val IMPORT_RULE: Short\n    val MEDIA_RULE: Short\n    val FONT_FACE_RULE: Short\n    val PAGE_RULE: Short\n    val MARGIN_RULE: Short\n    val NAMESPACE_RULE: Short\n  }\n}\n\npublic external abstract class CSSImportRule : CSSRule {\n  open val href: String\n  open val media: MediaList\n  open val styleSheet: CSSStyleSheet\n\n  companion object {\n    val STYLE_RULE: Short\n    val CHARSET_RULE: Short\n    val IMPORT_RULE: Short\n    val MEDIA_RULE: Short\n    val FONT_FACE_RULE: Short\n    val PAGE_RULE: Short\n    val MARGIN_RULE: Short\n    val NAMESPACE_RULE: Short\n  }\n}\n\n*/\n

```

\* Exposes the JavaScript [CSSGroupingRule](https://developer.mozilla.org/en/docs/Web/API/CSSGroupingRule) to Kotlin\n

```

*\npublic external abstract class CSSGroupingRule : CSSRule {\n  open val cssRules: CSSRuleList\n  fun insertRule(rule: String, index: Int): Int\n  fun deleteRule(index: Int)\n\n  companion object {\n    val STYLE_RULE: Short\n    val CHARSET_RULE: Short\n    val IMPORT_RULE: Short\n    val MEDIA_RULE: Short\n    val FONT_FACE_RULE: Short\n    val PAGE_RULE: Short\n    val MARGIN_RULE: Short\n    val NAMESPACE_RULE: Short\n  }\n}\n\n*/\n

```

\* Exposes the JavaScript [CSSMediaRule](https://developer.mozilla.org/en/docs/Web/API/CSSMediaRule) to Kotlin\n

```

*\npublic external abstract class CSSMediaRule : CSSGroupingRule {\n  open val media: MediaList\n\n  companion object {\n    val STYLE_RULE: Short\n    val CHARSET_RULE: Short\n    val IMPORT_RULE: Short\n    val MEDIA_RULE: Short\n    val FONT_FACE_RULE: Short\n    val PAGE_RULE: Short\n    val MARGIN_RULE: Short\n    val NAMESPACE_RULE: Short\n  }\n}\n\n*/\n

```

\* Exposes the JavaScript [CSSPageRule](https://developer.mozilla.org/en/docs/Web/API/CSSPageRule) to Kotlin\n

```

*\npublic external abstract class CSSPageRule : CSSGroupingRule {\n  open var selectorText: String\n  open val style: CSSStyleDeclaration\n\n  companion object {\n    val STYLE_RULE: Short\n    val CHARSET_RULE: Short\n    val IMPORT_RULE: Short\n    val MEDIA_RULE: Short\n    val FONT_FACE_RULE: Short\n    val PAGE_RULE: Short\n    val MARGIN_RULE: Short\n    val NAMESPACE_RULE: Short\n  }\n}\n\npublic external abstract class CSSMarginRule : CSSRule {\n  open val name: String\n  open val style: CSSStyleDeclaration\n\n  companion object {\n    val STYLE_RULE: Short\n    val CHARSET_RULE: Short\n    val IMPORT_RULE: Short\n    val MEDIA_RULE: Short\n    val FONT_FACE_RULE: Short\n    val PAGE_RULE: Short\n    val MARGIN_RULE: Short\n    val NAMESPACE_RULE: Short\n  }\n}\n\n*/\n

```

\* Exposes the JavaScript [CSSNamespaceRule](https://developer.mozilla.org/en/docs/Web/API/CSSNamespaceRule) to Kotlin\n

```

*\npublic external abstract class CSSNamespaceRule : CSSRule {\n  open val namespaceURI: String\n  open val prefix: String\n\n  companion object {\n    val STYLE_RULE: Short\n    val CHARSET_RULE: Short\n    val IMPORT_RULE: Short\n    val MEDIA_RULE: Short\n    val FONT_FACE_RULE: Short\n    val PAGE_RULE: Short\n    val MARGIN_RULE: Short\n    val NAMESPACE_RULE: Short\n  }\n}\n\n*/\n

```

\* Exposes the JavaScript [CSSStyleDeclaration](https://developer.mozilla.org/en/docs/Web/API/CSSStyleDeclaration) to Kotlin\n

```

*\npublic external abstract class CSSStyleDeclaration : ItemArrayLike<String> {\n  open var cssText: String\n  open val parentRule: CSSRule?\n  open var cssFloat: String\n  open var alignContent: String\n  open var alignItems: String\n  open var alignSelf: String\n  open var animation: String\n  open var animationDelay: String\n  open var animationDirection: String\n  open var animationDuration: String\n  open var animationFillMode: String\n  open var animationIterationCount: String\n  open var animationName: String\n  open var animationPlayState: String\n  open var animationTimingFunction: String\n  open var backfaceVisibility: String\n  open var background: String\n  open var backgroundAttachment: String\n  open var backgroundClip: String\n  open var backgroundColor: String\n  open var backgroundImage: String\n  open var backgroundOrigin:

```

String\n open var backgroundPosition: String\n open var backgroundRepeat: String\n open var  
backgroundSize: String\n open var border: String\n open var borderBottom: String\n open var  
borderBottomColor: String\n open var borderBottomLeftRadius: String\n open var borderBottomRightRadius:  
String\n open var borderBottomStyle: String\n open var borderBottomWidth: String\n open var  
borderCollapse: String\n 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 {
    open val relatedTarget: EventTarget?
}
companion object {
    val NONE: Short
    val CAPTURING_PHASE: Short
    val AT_TARGET: Short
    val BUBBLING_PHASE: Short
}
public external interface FocusEventInit : UIEventInit {
    var relatedTarget: EventTarget? /* = null */
    get() = definedExternally
    set(value) = definedExternally
}
@kotlin.internal.InlineOnly
public inline fun FocusEventInit(relatedTarget: EventTarget? = null, view: Window? = null, detail: Int? = 0, bubbles: Boolean? = false, cancelable: Boolean? = false, composed: Boolean? = false): FocusEventInit {
    val o = js("{}")
    o["relatedTarget"] = relatedTarget
    o["view"] = view
    o["detail"] = detail
    o["bubbles"] = bubbles
    o["cancelable"] = cancelable
    o["composed"] = composed
    return o
}
/** Exposes the JavaScript [MouseEvent](https://developer.mozilla.org/en/docs/Web/API/MouseEvent) to Kotlin
 */
public external open class MouseEvent(type: String, eventInitDict: MouseEventInit = definedExternally) : UIEvent, UnionElementOrMouseEvent {
    open val screenX: Int
    open val screenY: Int
    open val clientX: Int
    open val clientY: Int
    open val ctrlKey: Boolean
    open val shiftKey: Boolean
    open val altKey: Boolean
    open val metaKey: Boolean
    open val button: Short
    open val buttons: Short
    open val relatedTarget: EventTarget?
    open val region: String?
    open val pageX: Double
    open val pageY: Double
    open val x: Double
    open val y: Double
    open val offsetX: Double
    open val offsetY: Double
    fun getModifierState(keyArg: String): Boolean
}
companion object {
    val NONE: Short
    val CAPTURING_PHASE: Short
    val AT_TARGET: Short
    val BUBBLING_PHASE: Short
}
public external interface MouseEventInit : EventModifierInit {
    var screenX: Int? /* = 0 */
    get() = definedExternally
    set(value) = definedExternally
    var screenY: Int? /* = 0 */
    get() = definedExternally
    set(value) = definedExternally
    var clientX: Int? /* = 0 */
    get() = definedExternally
    set(value) = definedExternally
    var clientY: Int? /* = 0 */
    get() = definedExternally
    set(value) = definedExternally
    var button: Short? /* = 0 */
    get() = definedExternally
    set(value) = definedExternally
    var buttons: Short? /* = 0 */
    get() = definedExternally
    set(value) = definedExternally
    var relatedTarget: EventTarget? /* = null */
    get() = definedExternally
    set(value) = definedExternally
    var region: String? /* = null */
    get() = definedExternally
    set(value) = definedExternally
}
@kotlin.internal.InlineOnly
public 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 {
    val o = js("{}")
    o["screenX"] = screenX
    o["screenY"] = screenY
    o["clientX"] = clientX
    o["clientY"] = clientY
    o["button"] = button
    o["buttons"] = buttons
    o["relatedTarget"] = relatedTarget
    o["region"] = region
    o["ctrlKey"] = ctrlKey
    o["shiftKey"] = shiftKey
    o["altKey"] = altKey
    o["metaKey"] = metaKey
    o["modifierAltGraph"] = modifierAltGraph
    o["modifierCapsLock"] = modifierCapsLock
    o["modifierFn"] = modifierFn
    o["modifierFnLock"] = modifierFnLock
    o["modifierHyper"] = modifierHyper
    o["modifierNumLock"] = modifierNumLock
    o["modifierScrollLock"] = modifierScrollLock
    o["modifierSuper"] = modifierSuper
    o["modifierSymbol"] = modifierSymbol
    o["modifierSymbolLock"] = modifierSymbolLock
    o["view"] = view
    o["detail"] = detail
    o["bubbles"] = bubbles
    o["cancelable"] = cancelable
    o["composed"] = composed
    return o
}
public external interface EventModifierInit : UIEventInit {
    var ctrlKey: Boolean? /* = false */
    get() = definedExternally
    set(value) = definedExternally
    var shiftKey: Boolean? /* = false */
    get() = definedExternally
    set(value) = definedExternally
}

```

```

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    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

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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 *\npublic 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: Short\n    val
CAPTURING_PHASE: Short\n    val AT_TARGET: Short\n    val BUBBLING_PHASE: Short\n
  }\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}\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

```

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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}\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
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 * 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.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 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 `*\npublic external abstract class HTMLUnknownElement : HTMLInputElement {\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 `*\npublic external abstract class DOMStringMap\n\n@kotlin.internal.InlineOnly\npublic inline operator fun DOMStringMap.get(name: String): String? = asDynamic()[name]\n\n@kotlin.internal.InlineOnly\npublic inline operator fun DOMStringMap.set(name: String, value: String) { asDynamic()[name] = value }\n\n/**\n * Exposes the JavaScript`

[HTMLHtmlElement](https://developer.mozilla.org/en/docs/Web/API/HTMLHtmlElement) to Kotlin\n `*\npublic external abstract class HTMLHtmlElement : HTMLInputElement {\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 */\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        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 var referrerPolicy: String\n    open var charset:

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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
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:

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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 : 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
[HTMLParagraphElement](https://developer.mozilla.org/en/docs/Web/API/HTMLParagraphElement) to Kotlin\n
*/\npublic external abstract class HTMLParagraphElement : 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 [HTMLHRElement](https://developer.mozilla.org/en/docs/Web/API/HTMLHRElement) to Kotlin\n
*/\npublic external abstract class HTMLHRElement : HTMLInputElement {\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
*/\npublic external abstract class HTMLPreElement : HTMLInputElement {\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:

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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 \*/\npublic external abstract class HTMLQuoteElement : HTMLElement {\n open var cite: String\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 \*/\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 val DOCUMENT\_POSITION\_CONTAINED\_BY: Short\n val DOCUMENT\_POSITION\_IMPLEMENTATION\_SPECIFIC: Short\n }\n}\n\n/\*\*\n \* Exposes the JavaScript [HTMLLUListElement](https://developer.mozilla.org/en/docs/Web/API/HTMLLUListElement) to Kotlin\n \*/\npublic external abstract class HTMLLUListElement : HTMLElement {\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 : HTMLElement {\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 [HTMLDLListElement](https://developer.mozilla.org/en/docs/Web/API/HTMLDLListElement) to

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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 * 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 * 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 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 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 * Exposes the JavaScript
[HTMLDataElement](https://developer.mozilla.org/en/docs/Web/API/HTMLDataElement)
to Kotlin\n */\npublic external abstract class HTMLDataElement : HTMLInputElement {\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 * Exposes the JavaScript

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longDesc: String\n  open var marginHeight: String\n  open var marginWidth: String\n
  fun getSVGDocument(): Document?\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 [HTMLEmbedElement](https://developer.mozilla.org/en/docs/Web/API/HTMLEmbedElement) to Kotlin\n\n  * public external abstract class HTMLEmbedElement : HTMLElement {\n    open var src: String\n    open var type: String\n    open var width: String\n    open var height: String\n    open var align: String\n    open var name: String\n    fun getSVGDocument(): Document?\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 [HTMLObjectElement](https://developer.mozilla.org/en/docs/Web/API/HTMLObjectElement) to Kotlin\n\n    * public external abstract class HTMLObjectElement : HTMLElement {\n      open var data: String\n      open var type: String\n      open var typeMustMatch: Boolean\n      open var name: String\n      open var useMap: String\n      open var 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      * Exposes the JavaScript [HTMLParamElement](https://developer.mozilla.org/en/docs/Web/API/HTMLParamElement) to Kotlin\n\n      * public 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

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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 * \n public 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
* \n public external abstract class HTMLAudioElement : HTMLMediaElement { \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
[HTMLTrackElement](https://developer.mozilla.org/en/docs/Web/API/HTMLTrackElement) to Kotlin \n
* \n public external abstract class HTMLTrackElement : HTMLMediaElement { \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

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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\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 [HTMLElement](https://developer.mozilla.org/en/docs/Web/API/HTMLElement) to Kotlin\n *\npublic external
abstract class HTMLElement : 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

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DOCUMENT_POSITION_IMPLEMENTATION_SPECIFIC: Short\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 : HTMLElement {\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 : HTMLElement {\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): HTMLElement\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 : HTMLElement {\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): HTMLElement\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
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
*\npublic 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:

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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
[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 \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

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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 val
DOCUMENT_POSITION_IMPLEMENTATION_SPECIFIC: Short\n }\n}\n\n/**\n * Exposes the JavaScript
[HTMLButtonElement](https://developer.mozilla.org/en/docs/Web/API/HTMLButtonElement)
to Kotlin\n *\n\npublic external abstract class HTMLButtonElement : HTMLInputElement {\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 val
DOCUMENT_POSITION_IMPLEMENTATION_SPECIFIC: Short\n }\n}\n}\n\n/**\n * Exposes the JavaScript
[HTMLSelectElement](https://developer.mozilla.org/en/docs/Web/API/HTMLSelectElement) to Kotlin\n *\n\npublic
external abstract class HTMLSelectElement : HTMLInputElement, ItemArrayLike<Element> {\n open var
autocomplete: String\n open var autofocus: Boolean\n open var disabled: Boolean\n open val form:
HTMLFormElement?\n open var multiple: Boolean\n open var name: String\n open var required:
Boolean\n open var size: Int\n open val type: String\n open val options: HTMLOptionsCollection\n override
var length: Int\n open val selectedOptions: HTMLCollection\n open var selectedIndex: Int\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 namedItem(name: String): HTMLOptionElement?\n fun add(element:
UnionHTMLOptGroupElementOrHTMLOptionElement, before: dynamic = definedExternally)\n fun
remove(index: Int)\n fun checkValidity(): Boolean\n fun reportValidity(): Boolean\n fun

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setCustomValidity(error: String)\n  override fun item(index: Int): 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@kotlin.internal.InlineOnly\npublic inline operator fun HTMLSelectElement.get(index: Int): Element? =
asDynamic()[index]\n\n@kotlin.internal.InlineOnly\npublic inline operator fun HTMLSelectElement.set(index: Int,
option: HTMLOptionElement?) { asDynamic()[index] = option }\n\n/**\n * Exposes the JavaScript
[HTMLDataListElement](https://developer.mozilla.org/en/docs/Web/API/HTMLDataListElement) to Kotlin\n
*/\npublic external abstract class HTMLDataListElement : HTMLElement
{\n  open val options: 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
[HTMLOptGroupElement](https://developer.mozilla.org/en/docs/Web/API/HTMLOptGroupElement) to Kotlin\n
*/\npublic external abstract class HTMLOptGroupElement
: HTMLElement, UnionHTMLOptGroupElementOrHTMLOptionElement {\n  open var disabled: Boolean\n
open var label: 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
[HTMLOptionElement](https://developer.mozilla.org/en/docs/Web/API/HTMLOptionElement)
to Kotlin\n */\npublic external abstract class HTMLOptionElement : HTMLElement,
UnionHTMLOptGroupElementOrHTMLOptionElement {\n  open var disabled: Boolean\n  open val form:
HTMLFormElement?\n  open var label: String\n  open var defaultSelected: Boolean\n  open var selected:
Boolean\n  open var value: String\n  open var text: String\n  open val 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
[HTMLTextAreaElement](https://developer.mozilla.org/en/docs/Web/API/HTMLTextAreaElement) to Kotlin\n
*\n\npublic external abstract class HTMLTextAreaElement : HTMLInputElement {\n    open var autocomplete: String\n
open var autofocus: Boolean\n    open var cols: Int\n    open var dirName: String\n    open var disabled: Boolean\n
open val form: HTMLFormElement?\n    open var inputMode: String\n    open var maxLength: Int\n    open var
minLength: Int\n    open var name: String\n    open var placeholder: String\n    open var readOnly: Boolean\n    open
var required: Boolean\n    open var rows: Int\n    open var wrap: String\n    open val type: String\n    open var
defaultValue: String\n    open var value: String\n    open val textLength: 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    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    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
[HTMLKeygenElement](https://developer.mozilla.org/en/docs/Web/API/HTMLKeygenElement) to Kotlin\n
*\n\npublic external abstract class HTMLKeygenElement : HTMLInputElement {\n    open var autofocus: Boolean\n
open var challenge: String\n    open var disabled: Boolean\n    open val form: HTMLFormElement?\n    open var
keytype: String\n    open var name: String\n    open val type: 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
[HTMLOutputElement](https://developer.mozilla.org/en/docs/Web/API/HTMLOutputElement) to Kotlin\n
*\n\npublic external
abstract class HTMLOutputElement : HTMLInputElement {\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

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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 [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 HTMLMenuItemElement : 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 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

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    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\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 : HTMLInputElement { \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 : HTMLInputElement, 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 : HTMLInputElement { \n    open val content:
DocumentFragment\n\n    companion object { \n        val ELEMENT_NODE: Short\n        val ATTRIBUTE_NODE:

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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
[HTMLSlotElement](https://developer.mozilla.org/en/docs/Web/API/HTMLSlotElement) to Kotlin\n */\npublic
external abstract class HTMLSlotElement : HTMLElement {\n    open var name: String\n    fun
assignedNodes(options: AssignedNodesOptions = definedExternally): Array<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
AssignedNodesOptions {\n    var flatten: Boolean? /* = false */\n    get() = definedExternally\n    set(value) =
definedExternally\n}\n\n@kotlin.internal.InlineOnly\npublic inline fun AssignedNodesOptions(flatten: Boolean? =
false): AssignedNodesOptions {\n    val o = js("{}")\n    o["flatten"] = flatten\n    return o\n}\n\n/**\n * Exposes
the JavaScript [HTMLCanvasElement](https://developer.mozilla.org/en/docs/Web/API/HTMLCanvasElement) to
Kotlin\n */\npublic external abstract class HTMLCanvasElement : HTMLElement, CanvasImageSource,
TexImageSource {\n    open var width: Int\n    open var height: Int\n    fun getContext(contextId: String, vararg
arguments: Any?): RenderingContext?\n    fun toDataURL(type: String = definedExternally, quality: Any? =
definedExternally): String\n    fun toBlob(_callback:
(Blob?) -> Unit, type: String = definedExternally, quality: Any? = 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\npublic external interface
CanvasRenderingContext2DSettings {\n    var alpha: Boolean? /* = true */\n    get() = definedExternally\n
set(value) = definedExternally\n}\n\n@kotlin.internal.InlineOnly\npublic inline fun
CanvasRenderingContext2DSettings(alpha: Boolean? = true): CanvasRenderingContext2DSettings {\n    val o =
js("{}")\n    o["alpha"] = alpha\n    return o\n}\n\n/**\n * Exposes the JavaScript
[CanvasRenderingContext2D](https://developer.mozilla.org/en/docs/Web/API/CanvasRenderingContext2D) to
Kotlin\n */\npublic 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\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\npublic external interface
CanvasImageSmoothing {\n var imageSmoothingEnabled: Boolean\n var imageSmoothingQuality:
ImageSmoothingQuality}\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\npublic external interface CanvasFilters {\n var filter:
String}\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\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\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\npublic external interface CanvasTextDrawingStyles {\n var font: String\n var textAlign:
CanvasTextAlign\n var textBaseline: CanvasTextBaseline\n var direction: CanvasDirection}\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

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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: 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 * 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 *\n\npublic external abstract class ImageBitmapRenderingContext {\n    open val canvas:
HTMLCanvasElement\n    fun transferFromImageBitmap(bitmap:
ImageBitmap?)\n}\n\n\npublic external interface ImageBitmapRenderingContextSettings {\n    var alpha: Boolean? /*
= true */\n    get() = definedExternally\n    set(value) =
definedExternally\n}\n\n\n@kotlin.internal.InlineOnly\n\npublic inline fun
ImageBitmapRenderingContextSettings(alpha: Boolean? = true): ImageBitmapRenderingContextSettings {\n    val o
= js(\{"{}\")\n    o["alpha"] = alpha\n    return o\n}\n\n\n/**\n * Exposes the JavaScript
[CustomElementRegistry](https://developer.mozilla.org/en/docs/Web/API/CustomElementRegistry) to Kotlin\n
*\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\n\npublic external interface ElementDefinitionOptions {\n    var
extends: String?\n    get() = definedExternally\n    set(value) =
definedExternally\n}\n\n\n@kotlin.internal.InlineOnly\n\npublic
inline fun ElementDefinitionOptions(extends: String? = undefined): ElementDefinitionOptions {\n    val o =
js(\{"{}\")\n    o["extends"] = extends\n    return o\n}\n\n\npublic external interface ElementContentEditable {\n
var contentEditable: String\n    val isContentEditable: Boolean\n}\n\n\n/**\n * Exposes the JavaScript
[DataTransfer](https://developer.mozilla.org/en/docs/Web/API/DataTransfer) to Kotlin\n *\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/**\n * Exposes the JavaScript
[DataTransferItemList](https://developer.mozilla.org/en/docs/Web/API/DataTransferItemList) to Kotlin\n *\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\n@kotlin.internal.InlineOnly\n\npublic inline operator fun DataTransferItemList.get(index: Int):
DataTransferItem? = asDynamic()[index]\n\n\n/**\n * Exposes the JavaScript
[DataTransferItem](https://developer.mozilla.org/en/docs/Web/API/DataTransferItem) to Kotlin\n *\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/**\n * Exposes the JavaScript
[DragEvent](https://developer.mozilla.org/en/docs/Web/API/TouchEvent) to Kotlin\n *\n\npublic external open class
TouchEvent(type: String, eventInitDict: TouchEventInit = definedExternally) : MouseEvent {\n    open val
dataTransfer: DataTransfer?\n}\n\n\ncompanion object {\n
val NONE: Short\n    val CAPTURING_PHASE: Short\n    val AT_TARGET: Short\n    val
BUBBLING_PHASE: Short\n    }\n}\n\n\npublic external interface TouchEventInit : MouseEventInit {\n    var
dataTransfer: DataTransfer? /* = null */\n    get() = definedExternally\n    set(value) =
definedExternally\n}\n\n\n@kotlin.internal.InlineOnly\n\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@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 * 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\npublic external interface PopStateEventInit
: EventInit {\n  var state: Any? /* = null */\n    get() = definedExternally\n    set(value) =
definedExternally\n}\n\n@kotlin.internal.InlineOnly\npublic 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 {\n  open val oldURL: String\n  open val newURL: 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 HashChangeEventInit : EventInit {\n  var
oldURL: String? /* = \\\\" */\n    get() = definedExternally\n    set(value) = definedExternally\n  var newURL:
String? /* = \\\\" */\n    get() = definedExternally\n    set(value) =
definedExternally\n}\n\n@kotlin.internal.InlineOnly\npublic
inline fun HashChangeEventInit(oldURL: String? = \\\\", newURL: String? = \\\\", bubbles: Boolean? = false,
cancelable: Boolean? = false, composed: Boolean? = false): HashChangeEventInit {\n  val o = js(\\"(\{\})\")\n
o[\"oldURL\"] = oldURL\n  o[\"newURL\"] = newURL\n  o[\"bubbles\"] = bubbles\n  o[\"cancelable\"] =
cancelable\n  o[\"composed\"] = composed\n  return o\n}\n\n/**\n * Exposes the JavaScript
[PageTransitionEvent](https://developer.mozilla.org/en/docs/Web/API/PageTransitionEvent) to Kotlin\n *\npublic
external open class PageTransitionEvent(type: String, eventInitDict: PageTransitionEventInit = definedExternally) :
Event {\n  open val persisted: 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 PageTransitionEventInit : EventInit {\n  var persisted: Boolean? /* = false */\n
get() = definedExternally\n
set(value) = definedExternally\n}\n\n@kotlin.internal.InlineOnly\npublic inline fun
PageTransitionEventInit(persisted: Boolean? = false, bubbles: Boolean? = false, cancelable: Boolean? = false,
composed: Boolean? = false): PageTransitionEventInit {\n  val o = js(\\"(\{\})\")\n  o[\"persisted\"] = persisted\n
o[\"bubbles\"] = bubbles\n  o[\"cancelable\"] = cancelable\n  o[\"composed\"] = composed\n  return
o\n}\n\n/**\n * Exposes the JavaScript
[BeforeUnloadEvent](https://developer.mozilla.org/en/docs/Web/API/BeforeUnloadEvent) to Kotlin\n *\npublic
external open class BeforeUnloadEvent : Event {\n  var returnValue: 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 abstract class ApplicationCache : EventTarget {\n  open
val status: Short\n  open var onchecking: ((Event) -> dynamic)?\n  open var onerror: ((Event)
-> dynamic)?\n  open var onnoupdate: ((Event) -> dynamic)?\n  open var ondownloading: ((Event) ->
dynamic)?\n  open var onprogress: ((ProgressEvent) -> dynamic)?\n  open var onupdateready: ((Event) ->
dynamic)?\n  open var oncached: ((Event) -> dynamic)?\n  open var onobsolete: ((Event) -> dynamic)?\n  fun
update()\n  fun abort()\n  fun swapCache()\n\n  companion object {\n    val UNCACHED: Short\n    val
IDLE: Short\n    val CHECKING: Short\n    val DOWNLOADING: Short\n    val UPDATEREADY:
Short\n    val OBSOLETE: Short\n  }\n}\n\n/**\n * Exposes the JavaScript
[NavigatorOnLine](https://developer.mozilla.org/en/docs/Web/API/NavigatorOnLine) to Kotlin\n *\npublic
external interface NavigatorOnLine {\n  val onLine: Boolean\n}\n\n/**\n * Exposes the JavaScript
[ErrorEvent](https://developer.mozilla.org/en/docs/Web/API/ErrorEvent) to Kotlin\n *\npublic 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 */
public external open class PromiseRejectionEvent(type: String, eventInitDict: PromiseRejectionEventInit) : Event {
    open val promise: Promise<Any?>
    open val reason: Any?
    companion object {
        val NONE: Short
        val CAPTURING_PHASE: Short
        val AT_TARGET: Short
        val BUBBLING_PHASE: Short
    }
}
public external interface PromiseRejectionEventInit : EventInit {
    var promise: Promise<Any?>?
    get() = definedExternally
    set(value) = definedExternally
    var reason: Any?
    get() = definedExternally
    set(value) = definedExternally
}
@kotlin.internal.InlineOnly
public inline fun PromiseRejectionEventInit(promise: Promise<Any?>?, reason: Any? = undefined, bubbles: Boolean? = false, cancelable: Boolean? = false, composed: Boolean? = false): PromiseRejectionEventInit {
    val o = js("{}")
    o["promise"] = promise
    o["reason"] = reason
    o["bubbles"] = bubbles
    o["cancelable"] = cancelable
    o["composed"] = composed
    return o
}
/** Exposes the JavaScript [GlobalEventHandlers](https://developer.mozilla.org/en/docs/Web/API/GlobalEventHandlers) to Kotlin */
public external interface GlobalEventHandlers {
    var onabort: ((Event) -> dynamic)?
    get() = definedExternally
    set(value) = definedExternally
    var onblur: ((FocusEvent) -> dynamic)?
    get() = definedExternally
    set(value) = definedExternally
    var oncancel: ((Event) -> dynamic)?
    get() = definedExternally
    set(value) = definedExternally
    var oncanplay: ((Event) -> dynamic)?
    get() = definedExternally
    set(value) = definedExternally
    var oncanplaythrough: ((Event) -> dynamic)?
    get() = definedExternally
    set(value) = definedExternally
    var onchange: ((Event) -> dynamic)?
    get() = definedExternally
    set(value) = definedExternally
    var onclick: ((MouseEvent) -> dynamic)?
    get() = definedExternally
    set(value) = definedExternally
    var onclose: ((Event) -> dynamic)?
    get() = definedExternally
    set(value) = definedExternally
    var oncontextmenu: ((MouseEvent) -> dynamic)?
    get() = definedExternally
    set(value) = definedExternally
    var oncuechange: ((Event) -> dynamic)?
    get() = definedExternally
    set(value) = definedExternally
    var ondblclick: ((MouseEvent) -> dynamic)?
    get() = definedExternally
    set(value) = definedExternally
    var ondrag: ((DragEvent) -> dynamic)?
    get() = definedExternally
    set(value) = definedExternally
    var ondragend: ((DragEvent) -> dynamic)?
    get() = definedExternally
    set(value) = definedExternally
    var ondragenter: ((DragEvent) -> dynamic)?
    get() = definedExternally
    set(value) = definedExternally
    var ondragexit: ((DragEvent) -> dynamic)?
    get() = definedExternally
    set(value) = definedExternally
    var ondragleave: ((DragEvent) -> dynamic)?
    get() = definedExternally
    set(value) = definedExternally
    var ondragover: ((DragEvent) -> dynamic)?
    get() = definedExternally
    set(value) = definedExternally
    var ondragstart: ((DragEvent) -> dynamic)?
    get() = definedExternally
}

```

```

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

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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
*\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
*\npublic external abstract class Navigator : NavigatorID, NavigatorLanguage, NavigatorOnLine, NavigatorContentUtils, NavigatorCookies,

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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\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\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:
MimeTypeArray\n  fun javaEnabled(): Boolean\n}\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\n@kotlin.internal.InlineOnly\n\npublic
inline operator fun PluginArray.get(index: Int): Plugin? =
asDynamic()[index]\n\n\n@kotlin.internal.InlineOnly\n\npublic inline operator fun PluginArray.get(name: String):
Plugin? = asDynamic()[name]\n\n\n/**\n * Exposes the JavaScript
[MimeTypeArray](https://developer.mozilla.org/en/docs/Web/API/MimeTypeArray) to Kotlin\n */\n\npublic external
abstract class MimeTypeArray : ItemArrayLike<MimeType>
{\n  override fun item(index: Int): MimeType?\n  fun namedItem(name: String):
MimeType?\n}\n\n\n@kotlin.internal.InlineOnly\n\npublic inline operator fun MimeTypeArray.get(index: Int):
MimeType? = asDynamic()[index]\n\n\n@kotlin.internal.InlineOnly\n\npublic inline operator fun
MimeTypeArray.get(name: String): MimeType? = asDynamic()[name]\n\n\n/**\n * Exposes the JavaScript
[Plugin](https://developer.mozilla.org/en/docs/Web/API/Plugin) to Kotlin\n */\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\n@kotlin.internal.InlineOnly\n\npublic inline operator fun Plugin.get(index: Int): MimeType? =
asDynamic()[index]\n\n\n@kotlin.internal.InlineOnly\n\npublic inline operator fun Plugin.get(name: String):
MimeType? = asDynamic()[name]\n\n\n/**\n * Exposes the JavaScript
[MimeType](https://developer.mozilla.org/en/docs/Web/API/MimeType)
to Kotlin\n */\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/**\n * Exposes the JavaScript
[ImageBitmap](https://developer.mozilla.org/en/docs/Web/API/ImageBitmap) to Kotlin\n */\n\npublic external
abstract class ImageBitmap : CanvasImageSource, TexImageSource {\n  open val width: Int\n  open val height:
Int\n  fun close()\n}\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

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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 *\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\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\n\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/**\n * Exposes the JavaScript
[MessageChannel](https://developer.mozilla.org/en/docs/Web/API/MessageChannel) to Kotlin\n *\n\npublic external
open class MessageChannel {\n    open val port1: MessagePort\n    open val port2: MessagePort\n}\n\n\n/**\n *
Exposes the JavaScript [MessagePort](https://developer.mozilla.org/en/docs/Web/API/MessagePort) to Kotlin\n
*\n\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/**\n * Exposes the JavaScript
[BroadcastChannel](https://developer.mozilla.org/en/docs/Web/API/BroadcastChannel) to Kotlin\n *\n\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/**\n * Exposes the
JavaScript [WorkerGlobalScope](https://developer.mozilla.org/en/docs/Web/API/WorkerGlobalScope) to Kotlin\n
*\n\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 online: ((Event) -> dynamic)?\n    open var onrejectionhandled: ((Event) -> dynamic)?\n    open var
onunhandledrejection: ((PromiseRejectionEvent) -> dynamic)?\n    fun importScripts(vararg urls:
String)\n}\n\n\n/**\n * Exposes the JavaScript
[DedicatedWorkerGlobalScope](https://developer.mozilla.org/en/docs/Web/API/DedicatedWorkerGlobalScope) to
Kotlin\n *\n\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/**\n * Exposes the JavaScript
[SharedWorkerGlobalScope](https://developer.mozilla.org/en/docs/Web/API/SharedWorkerGlobalScope) to
Kotlin\n *\n\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/**\n * Exposes
the JavaScript [AbstractWorker](https://developer.mozilla.org/en/docs/Web/API/AbstractWorker) to Kotlin\n
*\n\n\npublic external interface AbstractWorker {\n    var onerror: ((Event) -> dynamic)?\n    get() =
definedExternally\n    set(value) = definedExternally\n}\n\n\n/**\n * Exposes the JavaScript
[Worker](https://developer.mozilla.org/en/docs/Web/API/Worker) to Kotlin\n *\n\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\n\n\npublic external interface
WorkerOptions {\n    var type: WorkerType? /* = WorkerType.CLASSIC */\n    get() = definedExternally\n

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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 * 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\n */\npublic external interface WindowLocalStorage {\n  val localStorage: Storage\n}\n\n/**\n * Exposes
the JavaScript [StorageEvent](https://developer.mozilla.org/en/docs/Web/API/StorageEvent) to Kotlin\n */\npublic
external open class StorageEvent(type: String, eventInitDict: StorageEventInit = definedExternally) : Event {\n
open
val key: String?\n  open val oldValue: String?\n  open val newValue: String?\n  open val url: String\n  open val
storageArea: Storage?\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
StorageEventInit : EventInit {\n  var key: String? /* = null */\n  get() = definedExternally\n  set(value) =
definedExternally\n  var oldValue: String? /* = null */\n  get() = definedExternally\n  set(value) =
definedExternally\n  var newValue: String? /* = null */\n  get() = definedExternally\n  set(value) =
definedExternally\n  var url: String? /* = "" */\n  get() = definedExternally\n  set(value) =
definedExternally\n  var storageArea: Storage? /* = null */\n  get() = definedExternally\n  set(value) =
definedExternally\n}\n\n@kotlin.internal.InlineOnly\npublic 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 {\n  val o
= js("{}")\n  o["key"] = key\n  o["oldValue"] = oldValue\n  o["newValue"] = newValue\n  o["url"] =
url\n  o["storageArea"] = storageArea\n  o["bubbles"] = bubbles\n  o["cancelable"] = cancelable\n
o["composed"] = composed\n  return o}\n\npublic external abstract class HTMLAppletElement :

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HTMLDivElement {
    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 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
    }
}

public external abstract class HTMLFrameElement : HTMLElement {
    open var name: String
    open var scrolling: String
    open var src: String
    open var frameBorder: String
    open var longDesc: String
    open var noResize: Boolean
    open val contentDocument: Document?
    open val contentWindow: Window?
    open var marginHeight: String
    open var marginWidth: 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\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) =
definedExternally \n} \n\n@kotlin.internal.InlineOnly \n\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 * \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    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 \n\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 \n\npublic inline fun EventListenerOptions(capture: Boolean? =

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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\npublic 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 */\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 */\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\npublic 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 */\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
*/\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 */\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:
String): Element? = asDynamic()[name]\n\n/**\n * Exposes the JavaScript
[MutationObserver](https://developer.mozilla.org/en/docs/Web/API/MutationObserver)
to Kotlin\n */\n\npublic 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
*/\n\npublic 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

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MutationObserverInit(childList: Boolean? = false, attributes: Boolean? = undefined, characterData: Boolean? =
undefined, subtree: Boolean? = false, attributeOldValue: Boolean? = undefined, characterDataOldValue: Boolean? =
undefined, attributeFilter: Array<String>? = undefined): MutationObserverInit {
    val o = js("{}")
    o["childList"] = childList
    o["attributes"] = attributes
    o["characterData"] = characterData
    o["subtree"] = subtree
    o["attributeOldValue"] = attributeOldValue
    o["characterDataOldValue"] = characterDataOldValue
    o["attributeFilter"] = attributeFilter
    return o
}

/**
 * Exposes the JavaScript [MutationRecord](https://developer.mozilla.org/en/docs/Web/API/MutationRecord) to Kotlin
 */
public external abstract class MutationRecord {
    open val type: String
    open val target: Node
    open val addedNodes: NodeList
    open val removedNodes: NodeList
    open val previousSibling: Node?
    open val nextSibling: Node?
    open val attributeName: String?
    open val attributeNamespace: String?
    open val oldValue: String?
}

/**
 * Exposes the JavaScript [Node](https://developer.mozilla.org/en/docs/Web/API/Node) to Kotlin
 */
public external abstract class Node :
    EventTarget {
    open val nodeType: Short
    open val nodeName: String
    open val baseURI: String
    open val isConnected: Boolean
    open val ownerDocument: Document?
    open val parentNode: Node?
    open val parentElement: Element?
    open val childNodes: NodeList
    open val firstChild: Node?
    open val lastChild: Node?
    open val previousSibling: Node?
    open val nextSibling: Node?
    open var nodeValue: String?
    open var textContent: String?
    fun
    getRootNode(options: GetRootNodeOptions = definedExternally): Node
    fun hasChildNodes(): Boolean
    fun
    normalize()
    fun cloneNode(deep: Boolean = definedExternally): Node
    fun isEqualNode(otherNode: Node?): Boolean
    fun
    isSameNode(otherNode: Node?): Boolean
    fun compareDocumentPosition(other: Node): Short
    fun
    contains(other: Node?): Boolean
    fun lookupPrefix(namespace: String?): String?
    fun
    lookupNamespaceURI(prefix: String?): String?
    fun isDefaultNamespace(namespace: String?): Boolean
    fun
    insertBefore(node: Node, child: Node?): Node
    fun appendChild(node: Node): Node
    fun replaceChild(node:
    Node, child: Node): Node
    fun removeChild(child: Node): 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
    val
    DOCUMENT_POSITION_IMPLEMENTATION_SPECIFIC: Short
}

/**
 */
public external interface
GetRootNodeOptions {
    var composed: Boolean? /* = false */
    get() = definedExternally
    set(value) =
    definedExternally
}

@kotlin.internal.InlineOnly
public inline fun GetRootNodeOptions(composed: Boolean?
= 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

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val embeds: HTMLCollection\n open val plugins: HTMLCollection\n open val links: HTMLCollection\n
open val forms: HTMLCollection\n open val scripts: HTMLCollection\n open val currentScript:
HTMLOrSVGScriptElement?\n open val defaultView: Window?\n open val activeElement: Element?\n var
designMode: String\n var onreadystatechange: ((Event) -> dynamic)?\n var fgColor: String\n var linkColor:
String\n var vlinkColor: String\n var alinkColor: String\n var bgColor: String\n open val anchors:
HTMLCollection\n open val applets: HTMLCollection\n open val all: HTMLAllCollection\n open val
scrollingElement: Element?\n open val styleSheets: StyleSheetList\n open val rootElement:
SVGSVGElement?\n open val fullscreenEnabled: Boolean\n open val fullscreen: Boolean\n var
onfullscreenchange: ((Event) -> dynamic)?\n var onfullscreenerror: ((Event) -> dynamic)?\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

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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
getElementsByTagName(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: 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

```

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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: 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
[ShadowRoot](https://developer.mozilla.org/en/docs/Web/API/ShadowRoot) to Kotlin\n\n*\npublic 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*\npublic 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():
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

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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 interface
ShadowRootInit {\n    var mode: ShadowRootMode?\n    get() = definedExternally\n    set(value) =
definedExternally\n}\n\n@kotlin.internal.InlineOnly\n\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 */\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\n\npublic inline operator fun NamedNodeMap.get(index: Int): Attr?
= asDynamic()[index]\n\n@kotlin.internal.InlineOnly\n\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 */\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    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 [CharacterData](https://developer.mozilla.org/en/docs/Web/API/CharacterData) to Kotlin\n
*/\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    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
[Text](https://developer.mozilla.org/en/docs/Web/API/Text) to Kotlin\n */\n\npublic external open class Text(data:
String = definedExternally) : CharacterData, Slotable, GeometryUtils {\n    open val wholeText: String\n

```



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  
 [Range](https://developer.mozilla.org/en/docs/Web/API/Range) to Kotlin \n \* \n public external open class Range { \n open val startContainer: Node \n open val startOffset: Int \n  
 open val endContainer: Node \n open val endOffset: Int \n open val collapsed: Boolean \n open val  
 commonAncestorContainer: Node \n fun setStart(node: Node, offset: Int) \n fun setEnd(node: Node, offset: Int) \n  
 fun setStartBefore(node: Node) \n fun setStartAfter(node: Node) \n fun setEndBefore(node: Node) \n fun  
 setEndAfter(node: Node) \n fun collapse(toStart: Boolean = definedExternally) \n fun selectNode(node: Node) \n  
 fun selectNodeContents(node: Node) \n fun compareBoundaryPoints(how: Short, sourceRange: Range): Short \n  
 fun deleteContents() \n fun extractContents(): DocumentFragment \n fun cloneContents(): DocumentFragment \n  
 fun insertNode(node: Node) \n fun surroundContents(newParent: Node) \n fun cloneRange(): Range \n fun  
 detach() \n fun isPointInRange(node:  
 Node, offset: Int): Boolean \n fun comparePoint(node: Node, offset: Int): Short \n fun intersectsNode(node:  
 Node): Boolean \n fun getClientRects(): Array<DOMRect> \n fun getBoundingClientRect(): DOMRect \n fun  
 createContextualFragment(fragment: String): DocumentFragment \n \n companion object { \n val  
 START\_TO\_START: Short \n val START\_TO\_END: Short \n val END\_TO\_END: Short \n val  
 END\_TO\_START: Short \n } \n} \n \n /\*\* \n \* Exposes the JavaScript  
 [NodeIterator](https://developer.mozilla.org/en/docs/Web/API/NodeIterator) to Kotlin \n \* \n public external abstract  
 class NodeIterator { \n open val root: Node \n open val referenceNode: Node \n open val  
 pointerBeforeReferenceNode: Boolean \n open val whatToShow: Int \n open val filter: NodeFilter? \n fun  
 nextNode(): Node? \n fun previousNode(): Node? \n fun detach() \n} \n \n /\*\* \n \* Exposes the JavaScript  
 [TreeWalker](https://developer.mozilla.org/en/docs/Web/API/TreeWalker) to Kotlin \n \* \n public  
 external abstract class TreeWalker { \n open val root: Node \n open val whatToShow: Int \n open val filter:  
 NodeFilter? \n open var currentNode: Node \n fun parentNode(): Node? \n fun firstChild(): Node? \n fun  
 lastChild(): Node? \n fun previousSibling(): Node? \n fun nextSibling(): Node? \n fun previousNode(): Node? \n  
 fun nextNode(): Node? \n} \n \n /\*\* \n \* Exposes the JavaScript  
 [NodeFilter](https://developer.mozilla.org/en/docs/Web/API/NodeFilter) to Kotlin \n  
 \* \n @Suppress("NESTED\_CLASS\_IN\_EXTERNAL\_INTERFACE") \n public external interface NodeFilter { \n  
 fun acceptNode(node: Node): Short \n \n companion object { \n val FILTER\_ACCEPT: Short \n val  
 FILTER\_REJECT: Short \n val FILTER\_SKIP: Short \n val SHOW\_ALL: Int \n val  
 SHOW\_ELEMENT: Int \n val SHOW\_ATTRIBUTE: Int \n val SHOW\_TEXT: Int \n val  
 SHOW\_CDATA\_SECTION: Int \n val SHOW\_ENTITY\_REFERENCE: Int \n val SHOW\_ENTITY: Int \n  
 val SHOW\_PROCESSING\_INSTRUCTION:  
 Int \n val SHOW\_COMMENT: Int \n val SHOW\_DOCUMENT: Int \n val  
 SHOW\_DOCUMENT\_TYPE: Int \n val SHOW\_DOCUMENT\_FRAGMENT: Int \n val  
 SHOW\_NOTATION: Int \n } \n} \n \n /\*\* \n \* Exposes the JavaScript  
 [DOMTokenList](https://developer.mozilla.org/en/docs/Web/API/DOMTokenList) to Kotlin \n \* \n public external  
 abstract class DOMTokenList : ItemArrayLike<String> { \n open var value: String \n fun contains(token: String):  
 Boolean \n fun add(vararg tokens: String) \n fun remove(vararg tokens: String) \n fun toggle(token: String,  
 force: Boolean = definedExternally): Boolean \n fun replace(token: String, newToken: String) \n fun  
 supports(token: String): Boolean \n override fun item(index: Int):  
 String? \n} \n \n @kotlin.internal.InlineOnly \n public inline operator fun DOMTokenList.get(index: Int): String? =

```

asDynamic()[index]\n\n/**\n * Exposes the JavaScript
[DOMPointReadOnly](https://developer.mozilla.org/en/docs/Web/API/DOMPointReadOnly) to Kotlin\n
*\npublic external open class DOMPointReadOnly(x: Double, y: Double, z: Double, w: Double) {\n  open val x:
Double\n  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/DOMPoint) 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/DOMPointInit) 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/DOMRect) 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/DOMRectReadOnly) 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/DOMQuad) 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/DOMMatrixReadOnly) 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

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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):

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DOMMatrix\n fun scale3d(scale: Double, originX: Double = definedExternally, originY: Double =
definedExternally, originZ: 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():

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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:

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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,

```

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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

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[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

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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 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:

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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/\*\*\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) : HTMLElement {\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



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    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

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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 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

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the JavaScript [Option](https://developer.mozilla.org/en/docs/Web/API/Option) to Kotlin\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: ((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

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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 interface UnionElementOrHTMLCollection\n  public external interface
UnionElementOrRadioNodeList\n  public external interface
UnionHTMLOptGroupElementOrHTMLOptionElement\n  public external interface
UnionAudioTrackOrTextTrackOrVideoTrack\n  public external interface UnionElementOrMouseEvent\n  public
external interface RenderingContext\n  public external interface HTMLOrSVGImageElement :
CanvasImageSource\n  public external interface CanvasImageSource : ImageBitmapSource\n  public external
interface ImageBitmapSource\n  public external interface UnionMessagePortOrWindowProxy\n  public external
interface HTMLOrSVGScriptElement\n  /* please, don't implement this interface!
*\n@Suppress("NESTED_CLASS_IN_EXTERNAL_INTERFACE")\n  public external interface
DocumentReadyState {\n    companion object\n  }\n  public inline val DocumentReadyState.Companion.LOADING:
DocumentReadyState get() = "loading".asDynamic().unsafeCast<DocumentReadyState>()\n  public
inline val DocumentReadyState.Companion.INTERACTIVE: DocumentReadyState get() =
"interactive".asDynamic().unsafeCast<DocumentReadyState>()\n  public inline val
DocumentReadyState.Companion.COMPLETE: DocumentReadyState get() =
"complete".asDynamic().unsafeCast<DocumentReadyState>()\n  /* please, don't implement this interface!
*\n@Suppress("NESTED_CLASS_IN_EXTERNAL_INTERFACE")\n  public external interface
CanPlayTypeResult {\n    companion object\n  }\n  public inline val CanPlayTypeResult.Companion.EMPTY:
CanPlayTypeResult get() = "".asDynamic().unsafeCast<CanPlayTypeResult>()\n  public inline val
CanPlayTypeResult.Companion.MAYBE: CanPlayTypeResult get() =
"maybe".asDynamic().unsafeCast<CanPlayTypeResult>()\n  public inline val
CanPlayTypeResult.Companion.PROBABLY: CanPlayTypeResult get() =
"probably".asDynamic().unsafeCast<CanPlayTypeResult>()\n  /* please, don't implement this interface!
*\n@Suppress("NESTED_CLASS_IN_EXTERNAL_INTERFACE")\n  public external interface
TextTrackMode {\n    companion object\n  }\n  public inline val TextTrackMode.Companion.DISABLED:
TextTrackMode get() = "disabled".asDynamic().unsafeCast<TextTrackMode>()\n  public inline val
TextTrackMode.Companion.HIDDEN: TextTrackMode get() =
"hidden".asDynamic().unsafeCast<TextTrackMode>()\n  public inline val
TextTrackMode.Companion.SHOWING: TextTrackMode get() =
"showing".asDynamic().unsafeCast<TextTrackMode>()\n  /* please, don't implement this interface!
*\n@Suppress("NESTED_CLASS_IN_EXTERNAL_INTERFACE")\n  public external interface TextTrackKind
{\n    companion object\n  }\n  public inline val TextTrackKind.Companion.SUBTITLES: TextTrackKind get() =

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\"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 companion 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 companion 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
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:

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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() =
"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() =

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\"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
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\npackage org.w3c.fetch\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

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org.w3c.dom.svg.*\nimport org.w3c.dom.url.*\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
[Headers](https://developer.mozilla.org/en/docs/Web/API/Headers) to Kotlin\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 * Exposes the JavaScript [Body](https://developer.mozilla.org/en/docs/Web/API/Body) to
Kotlin\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 * Exposes the JavaScript
[Request](https://developer.mozilla.org/en/docs/Web/API/Request) to Kotlin\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\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) = 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 *\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

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    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()
= \"\".asDynamic().unsafeCast<RequestType>()\n\npublic inline val RequestType.Companion.AUDIO:
RequestType get() = \"audio\".asDynamic().unsafeCast<RequestType>()\n\npublic inline val
RequestType.Companion.FONT:
RequestType get() = \"font\".asDynamic().unsafeCast<RequestType>()\n\npublic inline val
RequestType.Companion.IMAGE: RequestType get() =
\"image\".asDynamic().unsafeCast<RequestType>()\n\npublic inline val RequestType.Companion.SCRIPT:
RequestType get() = \"script\".asDynamic().unsafeCast<RequestType>()\n\npublic inline val
RequestType.Companion.STYLE: RequestType get() =
\"style\".asDynamic().unsafeCast<RequestType>()\n\npublic inline val RequestType.Companion.TRACK:
RequestType get() = \"track\".asDynamic().unsafeCast<RequestType>()\n\npublic inline val
RequestType.Companion.VIDEO: RequestType get() = \"video\".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() = \"\".asDynamic().unsafeCast<RequestDestination>()\n\npublic inline val
RequestDestination.Companion.DOCUMENT:
RequestDestination get() = \"document\".asDynamic().unsafeCast<RequestDestination>()\n\npublic inline val
RequestDestination.Companion.EMBED: RequestDestination get() =
\"embed\".asDynamic().unsafeCast<RequestDestination>()\n\npublic inline val
RequestDestination.Companion.FONT: RequestDestination get() =
\"font\".asDynamic().unsafeCast<RequestDestination>()\n\npublic inline val
RequestDestination.Companion.IMAGE: RequestDestination get() =
\"image\".asDynamic().unsafeCast<RequestDestination>()\n\npublic inline val
RequestDestination.Companion.MANIFEST: RequestDestination get() =
\"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

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RequestDestination.Companion.XSLT: RequestDestination get() =
`"xslt".asDynamic().unsafeCast<RequestDestination>()\n\n/* please, don't implement this
interface! *\n@Suppress("NESTED_CLASS_IN_EXTERNAL_INTERFACE")\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@Suppress("NESTED_CLASS_IN_EXTERNAL_INTERFACE")\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@Suppress("NESTED_CLASS_IN_EXTERNAL_INTERFACE")\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@Suppress("NESTED_CLASS_IN_EXTERNAL_INTERFACE")\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:
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@Suppress("NESTED_CLASS_IN_EXTERNAL_INTERFACE")\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// NOTE: THIS FILE IS AUTO-GENERATED, DO NOT
EDIT!\n// See github.com/kotlin/dukat for details\n\npackage org.w3c.dom.mediacapture\n\nimport

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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() = 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

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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
*\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() =
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 * 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  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 MediaStreamTrackEventInit : EventInit {\n  var track: MediaStreamTrack?\n
get() = definedExternally\n  set(value) = definedExternally\n}\n\n@kotlin.internal.InlineOnly\npublic 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\npublic external open class OverconstrainedErrorEvent(type: String, eventInitDict:
OverconstrainedErrorEventInit) : Event {\n  open val error: dynamic\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 OverconstrainedErrorEventInit : EventInit {\n  var error: dynamic /* =
null */\n  get() = definedExternally\n  set(value) =
definedExternally\n}\n\n@kotlin.internal.InlineOnly\npublic 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 * Exposes the JavaScript
[MediaDevices](https://developer.mozilla.org/en/docs/Web/API/MediaDevices) to Kotlin\n */\npublic 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 */\npublic
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\npublic 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\npublic external interface
ConstrainablePattern {\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 *
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\n@kotlin.internal.InlineOnly\npublic inline fun Settings(): Settings {\n val o = js("{}")\n return
o\n}\n\npublic external
interface ConstraintSet\n\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\npublic 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\n@Suppress("NESTED_CLASS_IN_EXTERNAL_INTERFACE")\npublic external interface

```

```

MediaStreamTrackState {
    companion object
}
public inline val MediaStreamTrackState.Companion.LIVE:
MediaStreamTrackState get() = "live".asDynamic().unsafeCast<MediaStreamTrackState>()
public inline val
MediaStreamTrackState.Companion.ENDED: MediaStreamTrackState get() =
"ended".asDynamic().unsafeCast<MediaStreamTrackState>()
/*
please, don't implement this interface!
*/
@Suppress("NESTED_CLASS_IN_EXTERNAL_INTERFACE")
public external interface
VideoFacingModeEnum {
    companion object
}
public inline val
VideoFacingModeEnum.Companion.USER: VideoFacingModeEnum get() =
"user".asDynamic().unsafeCast<VideoFacingModeEnum>()
public inline val
VideoFacingModeEnum.Companion.ENVIRONMENT: VideoFacingModeEnum get() =
"environment".asDynamic().unsafeCast<VideoFacingModeEnum>()
public inline val
VideoFacingModeEnum.Companion.LEFT: VideoFacingModeEnum get() =
"left".asDynamic().unsafeCast<VideoFacingModeEnum>()
public inline val
VideoFacingModeEnum.Companion.RIGHT: VideoFacingModeEnum get() =
"right".asDynamic().unsafeCast<VideoFacingModeEnum>()
/* please, don't implement this interface!
*/
@Suppress("NESTED_CLASS_IN_EXTERNAL_INTERFACE")
public external interface
VideoResizeModeEnum {
    companion object
}
public inline val
VideoResizeModeEnum.Companion.NONE: VideoResizeModeEnum get()
= "none".asDynamic().unsafeCast<VideoResizeModeEnum>()
public inline val
VideoResizeModeEnum.Companion.CROP_AND_SCALE: VideoResizeModeEnum get() = "crop-and-
scale".asDynamic().unsafeCast<VideoResizeModeEnum>()
/* please, don't implement this interface!
*/
@Suppress("NESTED_CLASS_IN_EXTERNAL_INTERFACE")
public external interface
MediaDeviceKind {
    companion object
}
public inline val MediaDeviceKind.Companion.AUDIOINPUT:
MediaDeviceKind get() = "audioinput".asDynamic().unsafeCast<MediaDeviceKind>()
public inline val
MediaDeviceKind.Companion.AUDIOOUTPUT: MediaDeviceKind get() =
"audiooutput".asDynamic().unsafeCast<MediaDeviceKind>()
public inline val
MediaDeviceKind.Companion.VIDEOINPUT: MediaDeviceKind get() =
"videoinput".asDynamic().unsafeCast<MediaDeviceKind>()
/*
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Kotlin Programming Language contributors.
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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.pointerevents
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.css.*
import org.w3c.dom.events.*
import org.w3c.dom.mediacapture.*
import org.w3c.dom.parsing.*
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 interface PointerEventInit : MouseEventInit {
    var pointerId: Int? /* = 0 */
get() = definedExternally
set(value) = definedExternally
    var width: Double? /* = 1.0 */
get() =
definedExternally
set(value) = definedExternally
    var height: Double? /* = 1.0 */
get() =
definedExternally
set(value)
= definedExternally
    var pressure: Float? /* = 0f */
get() = definedExternally
set(value) =
definedExternally
    var tangentialPressure: Float? /* = 0f */
get() = definedExternally
set(value) =
definedExternally
    var tiltX: Int? /* = 0 */
get() = definedExternally
set(value) = definedExternally
    var tiltY: Int? /* = 0 */
get() = definedExternally
set(value) = definedExternally
    var twist: Int? /* =
0 */
get() = definedExternally
set(value) = definedExternally
    var pointerType: String? /* = "" */
get() = definedExternally
set(value) = definedExternally
    var isPrimary: Boolean? /* = false */
get() = definedExternally
set(value) = definedExternally
}
@kotlin.internal.InlineOnly
public inline fun
PointerEventInit(pointerId: Int? = 0, width: Double? = 1.0, height: Double? = 1.0, pressure: Float? = 0f,

```



```

tangentialPressure: Float? =
Of, 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 {
    val o = js("{}")
    o["pointerId"] = pointerId
    o["width"] = width
    o["height"] = height
    o["pressure"] = pressure
    o["tangentialPressure"] = tangentialPressure
    o["tiltX"] = tiltX
    o["tiltY"] = tiltY
    o["twist"] = twist
    o["pointerType"] = pointerType
    o["isPrimary"] = isPrimary
    o["screenX"] = screenX
    o["screenY"] = screenY
    o["clientX"] = clientX
    o["clientY"] = clientY
    o["button"] = button
    o["buttons"] = buttons
    o["relatedTarget"] = relatedTarget
    o["region"] = region
    o["ctrlKey"] = ctrlKey
    o["shiftKey"] = shiftKey
    o["altKey"] = altKey
    o["metaKey"] = metaKey
    o["modifierAltGraph"] = modifierAltGraph
    o["modifierCapsLock"] = modifierCapsLock
    o["modifierFn"] = modifierFn
    o["modifierFnLock"] = modifierFnLock
    o["modifierHyper"] = modifierHyper
    o["modifierNumLock"] = modifierNumLock
    o["modifierScrollLock"] = modifierScrollLock
    o["modifierSuper"] = modifierSuper
    o["modifierSymbol"] = modifierSymbol
    o["modifierSymbolLock"] = modifierSymbolLock
    o["view"] = view
    o["detail"] = detail
    o["bubbles"] = bubbles
    o["cancelable"] = cancelable
    o["composed"] = composed
    return o
}

```

Exposes the JavaScript [PointerEvent](https://developer.mozilla.org/en/docs/Web/API/PointerEvent) to Kotlin

```

public external open class PointerEvent(type: String, eventInitDict: PointerEventInit = definedExternally) : MouseEvent {
    open val pointerId: Int
    open val width: Double
    open val height: Double
    open val pressure: Float
    open val tangentialPressure: Float
    open val tiltX: Int
    open val tiltY: Int
    open val twist: Int
    open val pointerType: String
    open val isPrimary: Boolean
    companion object {
        val NONE: Short
        val CAPTURING_PHASE: Short
        val AT_TARGET: Short
        val BUBBLING_PHASE: Short
    }
}

```

\* 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](https://github.com/kotlin/dukat) for details

```

package org.w3c.dom.svg
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.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.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.*

```

\* Exposes the JavaScript [SVGELEMENT](https://developer.mozilla.org/en/docs/Web/API/SVGELEMENT) to Kotlin

```

public external abstract class SVGELEMENT : Element, ElementCSSInlineStyle, GlobalEventHandlers, SVGELEMENTInstance {
    open val

```

```

    dataset: DOMStringMap
    open val ownerSVGELEMENT: SVGSVGELEMENT?
    open val viewportElement: SVGELEMENT?
    open var tabIndex: Int
    fun focus()
    fun blur()
    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\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
*/\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
*/\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
*/\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
*/\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:

```



[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: SVGSVGElement?): NodeList\n fun getEnclosureList(rect:`





```

    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
*\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
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\npublic external open class
ShadowAnimation(source: dynamic, newTarget: dynamic) {\n    open val sourceAnimation: dynamic\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 * 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 \* Exposes the JavaScript  
[SVGTransform](https://developer.mozilla.org/en/docs/Web/API/SVGTransform) to Kotlin\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  
setSkewY(angle: Float)\n\n companion object {\n val SVG\_TRANSFORM\_UNKNOWN: Short\n val  
SVG\_TRANSFORM\_MATRIX: Short\n val SVG\_TRANSFORM\_TRANSLATE: Short\n val  
SVG\_TRANSFORM\_SCALE: Short\n val SVG\_TRANSFORM\_ROTATE: Short\n val  
SVG\_TRANSFORM\_SKEWX: Short\n val SVG\_TRANSFORM\_SKEWY: Short\n }n}\n\n/\*\*\n \* Exposes  
the JavaScript [SVGTransformList](https://developer.mozilla.org/en/docs/Web/API/SVGTransformList) to Kotlin\n  
\*\npublic external abstract class SVGTransformList {\n open val length: Int\n open val numberOfItems: Int\n  
fun clear()\n fun initialize(newItem: SVGTransform): SVGTransform\n fun insertItemBefore(newItem:  
SVGTransform, index: Int): SVGTransform\n fun replaceItem(newItem: SVGTransform,  
index: Int): SVGTransform\n fun removeItem(index: Int): SVGTransform\n fun appendItem(newItem:  
SVGTransform): SVGTransform\n fun createSVGTransformFromMatrix(matrix: DOMMatrixReadOnly):  
SVGTransform\n fun consolidate(): SVGTransform?\n fun getItem(index: Int):  
SVGTransform\n }n\n@kotlin.internal.InlineOnly\npublic inline operator fun SVGTransformList.get(index: Int):  
SVGTransform? = asDynamic()[index]\n\n@kotlin.internal.InlineOnly\npublic inline operator fun  
SVGTransformList.set(index: Int, newItem: SVGTransform) { asDynamic()[index] = newItem }\n\n/\*\*\n \* Exposes  
the JavaScript  
[SVGAnimatedTransformList](https://developer.mozilla.org/en/docs/Web/API/SVGAnimatedTransformList) to  
Kotlin\n \*\npublic external abstract class SVGAnimatedTransformList {\n open val baseVal:  
SVGTransformList\n open val animVal: SVGTransformList\n }n\n\n/\*\*\n \* Exposes the JavaScript  
[SVGPreserveAspectRatio](https://developer.mozilla.org/en/docs/Web/API/SVGPreserveAspectRatio) to Kotlin\n  
\*\npublic external abstract class SVGPreserveAspectRatio {\n open var align: Short\n open var meetOrSlice:  
Short\n\n companion object {\n val SVG\_PRESERVEASPECTRATIO\_UNKNOWN: Short\n val  
SVG\_PRESERVEASPECTRATIO\_NONE: Short\n val SVG\_PRESERVEASPECTRATIO\_XMINYMIN:  
Short\n val SVG\_PRESERVEASPECTRATIO\_XMIDYMIN: Short\n val  
SVG\_PRESERVEASPECTRATIO\_XMAXYMIN: Short\n val  
SVG\_PRESERVEASPECTRATIO\_XMINYMID: Short\n val  
SVG\_PRESERVEASPECTRATIO\_XMIDYMID: Short\n val  
SVG\_PRESERVEASPECTRATIO\_XMAXYMID: Short\n val  
SVG\_PRESERVEASPECTRATIO\_XMINYMAX: Short\n val  
SVG\_PRESERVEASPECTRATIO\_XMIDYMAX: Short\n val  
SVG\_PRESERVEASPECTRATIO\_XMAXYMAX: Short\n val SVG\_MEETORSLICE\_UNKNOWN: Short\n  
val SVG\_MEETORSLICE\_MEET: Short\n val SVG\_MEETORSLICE\_SLICE: Short\n }n}\n\n/\*\*\n \*  
Exposes the JavaScript  
[SVGAnimatedPreserveAspectRatio](https://developer.mozilla.org/en/docs/Web/API/SVGAnimatedPreserveAspect  
Ratio)  
Ratio) to Kotlin\n \*\npublic external abstract class SVGAnimatedPreserveAspectRatio {\n open val baseVal:  
SVGPreserveAspectRatio\n open val animVal: SVGPreserveAspectRatio\n }n\n\n/\*\*\n \* Exposes the JavaScript  
[SVGPathElement](https://developer.mozilla.org/en/docs/Web/API/SVGPathElement) to Kotlin\n \*\npublic  
external abstract class SVGPathElement : SVGGeometryElement {\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 [SVGRectElement](https://developer.mozilla.org/en/docs/Web/API/SVGRectElement) to Kotlin\n
*/\npublic external abstract class SVGRectElement : SVGGeometryElement {\n    open val x:
SVGAnimatedLength\n    open 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 {
    open val x1: SVGAnimatedLength
    open val y1: SVGAnimatedLength
    open val x2: SVGAnimatedLength
    open val y2: SVGAnimatedLength
    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 [SVGMeshElement](https://developer.mozilla.org/en/docs/Web/API/SVGMeshElement) to Kotlin */
@public external abstract class SVGMeshElement : SVGGeometryElement, SVGURIReference {
    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 [SVGAnimatedPoints](https://developer.mozilla.org/en/docs/Web/API/SVGAnimatedPoints) to Kotlin */
@public external interface SVGAnimatedPoints {
    val points: SVGPointList
    val animatedPoints: SVGPointList
}

@public external abstract class SVGPointList {
    open val length: Int
    open val numberOfItems: Int
    fun clear()
    fun initialize(newItem: DOMPoint): DOMPoint
    fun insertItemBefore(newItem: DOMPoint, index: Int): DOMPoint
    fun replaceItem(newItem: DOMPoint, index: Int): DOMPoint
    fun removeItem(index: Int): DOMPoint
    fun appendItem(newItem: DOMPoint): DOMPoint
    fun getItem(index: Int): DOMPoint
}

@kotlin.internal.InlineOnly
@public inline operator fun SVGPointList.get(index: Int): DOMPoint? = asDynamic()[index]

@kotlin.internal.InlineOnly
@public inline operator fun SVGPointList.set(index: Int, newItem: DOMPoint) { asDynamic()[index] = newItem }

/** Exposes the JavaScript [SVGPolylineElement](https://developer.mozilla.org/en/docs/Web/API/SVPolylineElement) to Kotlin */
@public external abstract class SVGPolylineElement : SVGGeometryElement, SVGAnimatedPoints {
    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 [SVGPolygonElement](https://developer.mozilla.org/en/docs/Web/API/SVGPolygonElement) to Kotlin */
@public external abstract class SVGPolygonElement : SVGGeometryElement, SVGAnimatedPoints {

```

```

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 [SVGTextContentElement](https://developer.mozilla.org/en/docs/Web/API/SVGTextContentElement) to Kotlin */
public external abstract class SVGTextContentElement : SVGGraphicsElement {
    open val textLength: SVGAnimatedLength
    open val lengthAdjust: SVGAnimatedEnumeration

    fun getNumberOfChars(): Int
    fun getComputedTextLength(): Float
    fun getSubStringLength(charnum: Int, nchars: Int): Float
    fun getStartPositionOfChar(charnum: Int): DOMPoint
    fun getEndPositionOfChar(charnum: Int): DOMPoint
    fun getExtentOfChar(charnum: Int): DOMRect
    fun getRotationOfChar(charnum: Int): Float
    fun getCharNumAtPosition(point: DOMPoint): Int
    fun selectSubString(charnum: Int, nchars: Int)

    companion object {
        val LENGTHADJUST_UNKNOWN: Short
        val LENGTHADJUST_SPACING: Short
        val LENGTHADJUST_SPACINGANDGLYPHS: Short
        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 [SVGTextPositioningElement](https://developer.mozilla.org/en/docs/Web/API/SVGTextPositioningElement) to Kotlin */
    public external abstract class SVGTextPositioningElement : SVGTextContentElement {
        open val x: SVGAnimatedLengthList
        open val y: SVGAnimatedLengthList
        open val dx: SVGAnimatedLengthList
        open val dy: SVGAnimatedLengthList
        open val rotate: SVGAnimatedNumberList

        companion object {
            val LENGTHADJUST_UNKNOWN: Short
            val LENGTHADJUST_SPACING: Short
            val LENGTHADJUST_SPACINGANDGLYPHS: Short
            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 [SVGTextElement](https://developer.mozilla.org/en/docs/Web/API/SVGTextElement) to Kotlin */
        public external abstract class SVGTextElement : SVGTextPositioningElement {
            companion object {
                val LENGTHADJUST_UNKNOWN: Short
            }
        }
    }
}

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    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 * \n public
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
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
* \n public 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 * \n public
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

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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 */\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    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
[SVGLinearGradientElement](https://developer.mozilla.org/en/docs/Web/API/SVGLinearGradientElement) to
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:

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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
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
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/**\n * Exposes the JavaScript
[SVGStopElement](https://developer.mozilla.org/en/docs/Web/API/SVGStopElement)
to Kotlin\n */\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 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 \*\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 public  
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  
[SVGElement](https://developer.mozilla.org/en/docs/Web/API/SVGElement) to Kotlin \n \* \n public external  
abstract class SVGElement : 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  
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  
\* \n public 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    /* = \"\" */\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
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 */\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\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.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
*/\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  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? = false, data: Any? = null, actions: Array<NotificationAction>? = arrayOf()):
NotificationOptions {\n  val o = js(\"({})\")\n  o[\"dir\"] = dir\n  o[\"lang\"] = lang\n  o[\"body\"] = body\n
o[\"tag\"] = tag\n  o[\"image\"] = image\n  o[\"icon\"] = icon\n  o[\"badge\"] = badge\n  o[\"sound\"] = sound\n
o[\"vibrate\"] = vibrate\n  o[\"timestamp\"] = timestamp\n  o[\"renotify\"] = renotify\n  o[\"silent\"] = silent\n
o[\"noscreen\"] = noscreen\n  o[\"requireInteraction\"] = requireInteraction\n  o[\"sticky\"] = sticky\n  o[\"data\"]
= data\n  o[\"actions\"] = actions\n  return o\n}\n\npublic external interface NotificationAction {\n  var action:
String?\n  get() = definedExternally\n  set(value) = definedExternally\n  var title: String?\n  get() =
definedExternally\n  set(value) = definedExternally\n  var icon: String?\n  get() = definedExternally\n
set(value) = definedExternally\n}\n\n@kotlin.internal.InlineOnly\npublic
inline fun NotificationAction(action: String?, title: String?, icon: String? = undefined): NotificationAction {\n  val
o = js(\"({})\")\n  o[\"action\"] = action\n  o[\"title\"] = title\n  o[\"icon\"] = icon\n  return o\n}\n\npublic
external interface GetNotificationOptions {\n  var tag: String? /* = \"\" */\n  get() = definedExternally\n
set(value) = definedExternally\n}\n\n@kotlin.internal.InlineOnly\npublic inline fun GetNotificationOptions(tag:
String? = \"\"): GetNotificationOptions {\n  val o = js(\"({})\")\n  o[\"tag\"] = tag\n  return o\n}\n\n/**\n *
Exposes the JavaScript [NotificationEvent](https://developer.mozilla.org/en/docs/Web/API/NotificationEvent) to

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```

Kotlin\n *\npublic external open class NotificationEvent(type: String, eventInitDict: NotificationEventInit) :
ExtendableEvent {\n  open val notification: Notification\n  open val action: 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 NotificationEventInit : ExtendableEventInit {\n  var notification: Notification?\n
get() = definedExternally\n  set(value) = definedExternally\n  var action: String? /* = \"\" */\n  get() =
definedExternally\n  set(value) = definedExternally\n}\n\n@kotlin.internal.InlineOnly\npublic inline fun
NotificationEventInit(notification: Notification?, action: String? = \"\", bubbles: Boolean? = false, cancelable:
Boolean? = false, composed: Boolean? = false): NotificationEventInit {\n  val o = js(\"({})\")\n  o[\"notification\"]
= notification\n  o[\"action\"] = action\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\n@Suppress(\"NESTED_CLASS_IN_EXTERNAL_INTERFACE\")\npublic external interface
NotificationPermission
{\n  companion object\n}\n\npublic inline val NotificationPermission.Companion.DEFAULT:
NotificationPermission get() = \"default\".asDynamic().unsafeCast<NotificationPermission>()\n\npublic inline val
NotificationPermission.Companion.DENIED: NotificationPermission get() =
\"denied\".asDynamic().unsafeCast<NotificationPermission>()\n\npublic inline val
NotificationPermission.Companion.GRANTED: NotificationPermission get() =
\"granted\".asDynamic().unsafeCast<NotificationPermission>()\n\n/* please, don't implement this interface!
*\n\n@Suppress(\"NESTED_CLASS_IN_EXTERNAL_INTERFACE\")\npublic external interface
NotificationDirection {\n  companion object\n}\n\npublic inline val NotificationDirection.Companion.AUTO:
NotificationDirection get() = \"auto\".asDynamic().unsafeCast<NotificationDirection>()\n\npublic inline val
NotificationDirection.Companion.LTR: NotificationDirection get() =
\"ltr\".asDynamic().unsafeCast<NotificationDirection>()\n\npublic inline val
NotificationDirection.Companion.RTL:
NotificationDirection get() = \"rtl\".asDynamic().unsafeCast<NotificationDirection>()\"/*\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.workers\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.notifications.*\nimport org.w3c.performance.*\nimport org.w3c.xr.*\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

```

```

*  

public external abstract class ServiceWorkerContainer : EventTarget {  

    open val controller: ServiceWorker?  

    open val ready: Promise<ServiceWorkerRegistration>  

    open var oncontrollerchange: ((Event) -> dynamic)?  

    open var onmessage: ((MessageEvent) -> dynamic)?  

    fun register(scriptURL: String, options: RegistrationOptions = definedExternally): Promise<ServiceWorkerRegistration>  

    fun getRegistration(clientURL: String = definedExternally): Promise<Any?>  

    fun getRegistrations(): Promise<Array<ServiceWorkerRegistration>>  

    fun startMessages()  

}
public external interface RegistrationOptions {  

    var scope: String?  

    get() = definedExternally  

    set(value) = definedExternally  

    var type: WorkerType? /* = WorkerType.CLASSIC */  

    get() = definedExternally  

    set(value) = definedExternally  

}
@kotlin.internal.InlineOnly  

public inline fun RegistrationOptions(scope: String? = undefined, type: WorkerType? = WorkerType.CLASSIC): RegistrationOptions {  

    val o = js("{}")  

    o["scope"] = scope  

    o["type"] = type  

    return o  

}
/**  

 * Exposes the JavaScript [ServiceWorkerMessageEvent](https://developer.mozilla.org/en/docs/Web/API/ServiceWorkerMessageEvent) to Kotlin  

 */
public external open class ServiceWorkerMessageEvent(type: String, eventInitDict: ServiceWorkerMessageEventInit = definedExternally) : Event {  

    open val data: Any?  

    open val origin: String  

    open val lastEventId: String  

    open val source: UnionMessagePortOrServiceWorker?  

    open val ports: Array<out MessagePort>?  

    companion object {  

        val NONE: Short  

        val CAPTURING_PHASE: Short  

        val AT_TARGET: Short  

        val BUBBLING_PHASE: Short  

    }  

}
public external interface ServiceWorkerMessageEventInit : EventInit {  

    var data: Any?  

    get() = definedExternally  

    set(value) = definedExternally  

    var origin: String?  

    get() = definedExternally  

    set(value) = definedExternally  

    var lastEventId: String?  

    get() = definedExternally  

    set(value) = definedExternally  

    var source: UnionMessagePortOrServiceWorker?  

    get() = definedExternally  

    set(value) = definedExternally  

    var ports: Array<MessagePort>?  

    get() = definedExternally  

    set(value) = definedExternally  

}
@kotlin.internal.InlineOnly  

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 {  

    val o = js("{}")  

    o["data"] = data  

    o["origin"] = origin  

    o["lastEventId"] = lastEventId  

    o["source"] = source  

    o["ports"] = ports  

    o["bubbles"] = bubbles  

    o["cancelable"] = cancelable  

    o["composed"] = composed  

    return o  

}
/**  

 * Exposes the JavaScript [ServiceWorkerGlobalScope](https://developer.mozilla.org/en/docs/Web/API/ServiceWorkerGlobalScope) to Kotlin  

 */
public external abstract class ServiceWorkerGlobalScope : WorkerGlobalScope {  

    open val clients: Clients  

    open val registration: ServiceWorkerRegistration  

    open var oninstall: ((Event) -> dynamic)?  

    open var onactivate: ((Event) -> dynamic)?  

    open var onfetch: ((FetchEvent) -> dynamic)?  

    open var onforeignfetch: ((Event) -> dynamic)?  

    open var onmessage: ((MessageEvent) -> dynamic)?  

    open var onnotificationclick: ((NotificationEvent) -> dynamic)?  

    open var onnotificationclose: ((NotificationEvent) -> dynamic)?  

    open var onfunctionalevent: ((Event) -> dynamic)?  

    fun skipWaiting(): Promise<Unit>  

}
/**  

 * Exposes the JavaScript [Client](https://developer.mozilla.org/en/docs/Web/API/Client) to Kotlin  

 */
public external abstract class Client : UnionClientOrMessagePortOrServiceWorker {  

    open val url: String  

    open val frameType: FrameType  

    open val id: String  

    fun postMessage(message: Any?, transfer: Array<dynamic> = definedExternally)  

}
/**  

 * Exposes the JavaScript [WindowClient](https://developer.mozilla.org/en/docs/Web/API/WindowClient) to Kotlin  

 */
public external abstract class WindowClient : Client {  

    open val visibilityState: dynamic  

    open val focused: Boolean  

    fun focus(): Promise<WindowClient>  

    fun navigate(url: String): Promise<WindowClient>  

}
/**  

 * Exposes the JavaScript [Clients](https://developer.mozilla.org/en/docs/Web/API/Clients) to Kotlin  

 */
public 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  public external interface
ExtendableEventInit : EventInit\n\n  @kotlin.internal.InlineOnly\n  public 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   */\n  public 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  public 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\n  public 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   */\n  public 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  public 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\n  public 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
o["cancelable"] = cancelable\n  o["composed"] = composed\n  return o\n}\n\n  public 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  public 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\n  public 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*/\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\*/\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 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}
```





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\ncompanion 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 \* 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\ncompanion 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

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.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 * Any declaration annotated with that marker is
considered an experimental declaration\n * and its call sites should accept the experimental aspect of it
either by using [UseExperimental],\n * or by being annotated with that marker themselves, effectively causing
further propagation of that experimental aspect.\n * This class is deprecated in favor of a more general approach
provided by [RequiresOptIn]/[OptIn].\n
*/\n\n@Target(ANNOTATION_CLASS)\n@Retention(BINARY)\n@SinceKotlin("1.2")\n@RequireKotlin("1.2.50")
\n, versionKind = RequireKotlinVersionKind.COMPILER_VERSION)\n@Deprecated("Please use RequiresOptIn
instead.")\npublic 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     * 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/**\n * Allows to use experimental API denoted by the given markers in the annotated file, declaration, or expression.\n * If
a declaration is annotated with [UseExperimental], its usages are not required to opt-in to that experimental
API.\n * This class is deprecated in favor of a more general approach provided by [RequiresOptIn]/[OptIn].\n
*/\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")\n, versionKind =
RequireKotlinVersionKind.COMPILER_VERSION)\n@Deprecated("Please use OptIn instead.")
\nReplaceWith("OptIn(*markerClass)", "kotlin.OptIn"))\npublic annotation class UseExperimental(\n    vararg val
markerClass: KClass<out Annotation>)\n\n\n@Target(CLASS, PROPERTY, CONSTRUCTOR, FUNCTION,
TYPEALIAS)\n\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 * > 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 * 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\n@Suppress("DEPRECATION")\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
CONSTRUCTOR,\n    FUNCTION,\n    PROPERTY_GETTER,\n    PROPERTY_SETTER,\n

```

TYPEALIAS\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@Target(VALUE\_PARAMETER, FUNCTION, PROPERTY)\n@Retention(AnnotationRetention.BINARY)\n@SinceKotlin("1.3")\n@ExperimentalTypeInference\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 \* @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 \* @Retention(AnnotationRetention.BINARY)\n \* @RequireKotlin("1.2.50", versionKind = RequireKotlinVersionKind.COMPILER\_VERSION)\n \*/\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 \*\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@Target(ANNOTATION\_CLASS)\n@Retention(AnnotationRetention.BINARY)\n@ExperimentalMultiplatform\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 *` This class requires opt-in itself and can only be used with the compiler argument ``-Xopt-in=kotlin.RequiresOptIn``. `\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'\n * or '@OptIn(Marker::class)`, where `Marker` is the opt-in requirement marker. \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 opted 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/**\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 * 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\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"/*\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 = 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")\nprotected 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 *\nprotected 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


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        override fun next(): V = entryIterator.next().value\n                }\n                }\n                override val
size: Int get() = this@AbstractMap.size\n                }\n                }\n                return _values!!\n                }\n
@kotlin.jvm.Volatile\n    private var _values: Collection<V>? = null\n    private fun implFindEntry(key: K):
Map.Entry<K, V>? = entries.firstOrNull { it.key == key }\n    internal companion object {\n        internal fun
entryHashCode(e: Map.Entry<*, *>): Int = with(e) { (key?.hashCode() ?: 0) xor (value?.hashCode() ?: 0) }\n
internal fun entryToString(e: Map.Entry<*, *>): String = with(e) { \"$key=$value\" }\n        internal fun
entryEquals(e: Map.Entry<*, *>, other: Any?): Boolean {\n            if (other !is Map.Entry<*, *>) return false\n
            return e.key == other.key && e.value == other.value\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
*/\npackage kotlin.collections\n\n/**\n * Provides a skeletal implementation of the read-only [Set] interface.\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")\n */\npublic abstract class AbstractSet<out E> protected constructor() :
AbstractCollection<E>(), Set<E> {\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    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        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
*/\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 * The name deque is short for \"double ended queue\" and is usually pronounced
\"deck\".\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 */\n@ExperimentalStdlibApi\npublic class ArrayDeque<E> : AbstractMutableList<E> {\n
private var head: Int = 0\n    private var elementData: Array<Any?>\n    override var size: Int = 0\n    private
set\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        }\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/**\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()) elementData = emptyElementData\n    }\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     * Otherwise,
this method takes no action and simply returns.\n     *\n     * private fun ensureCapacity(minCapacity: Int) {\n        if
(minCapacity < 0) throw IllegalStateException(\"Deque

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is too big.\") // overflow\n    if (minCapacity <= elementData.size) return\n        if (elementData ===
emptyElementData) {\n        elementData = arrayOfNulls(minCapacity.coerceAtLeast(defaultMinCapacity))\n
return\n    }\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    @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\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

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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    // 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    // 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    // 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        val internalIndex = internalIndex(index)\n        if (index < (size + 1) shr 1) {\n            // closer to the first element -> shift preceding elements\n            val decrementedInternalIndex = decremented(internalIndex)\n            val decrementedHead = decremented(head)\n            if (decrementedInternalIndex >= head) {\n                elementData[decrementedHead] = elementData[head] // head can be zero\n                elementData.copyInto(elementData, head, head + 1, decrementedInternalIndex + 1)\n            } else { // head > tail\n                elementData.copyInto(elementData, head - 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            elementData[decrementedInternalIndex] = element\n            head = decrementedHead\n        } else {\n            // closer to the last element -> shift succeeding elements\n            val tail = internalIndex(size)\n            if (internalIndex < tail) {\n                elementData.copyInto(elementData, internalIndex + 1, internalIndex, tail)\n            } else { // head > tail\n                elementData.copyInto(elementData, 1, 0, tail)\n                elementData[0] = elementData[elementData.size - 1]\n                elementData.copyInto(elementData, internalIndex + 1, internalIndex, elementData.size - 1)\n            }\n            elementData[internalIndex] = element\n        }\n        size += 1\n    }\n    private fun copyCollectionElements(internalIndex: Int, elements: Collection<E>) {\n        val iterator = elements.iterator()\n        for (index in internalIndex until elementData.size) {\n            if (!iterator.hasNext()) break\n            elementData[index] = iterator.next()\n        }\n        for (index in 0 until head) {\n            if (!iterator.hasNext()) break\n            elementData[index] = iterator.next()\n        }\n        size += elements.size\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    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 (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 = elements.size\n        if (index < (size + 1) shr 1) {\n            // closer to the first element -> shift preceding elements\n            var shiftedHead = head - elementsSize\n            if (internalIndex >= head) {\n                if (shiftedHead >= 0) {\n                    elementData.copyInto(elementData, shiftedHead, head, internalIndex)\n                } else {\n                    // head < tail, insertion leads to head >= tail\n                    shiftedHead += elementData.size\n                    val elementsToShift = internalIndex - head\n                    val shiftToBack = elementData.size - shiftedHead\n                    if (shiftToBack >= elementsToShift) {\n                        elementData.copyInto(elementData, shiftedHead, head, internalIndex)\n                    } else {\n                        elementData.copyInto(elementData, shiftedHead, head, head + shiftToBack)\n                        elementData.copyInto(elementData, 0, head + shiftToBack, internalIndex)\n                    }\n                }\n            } else { // head > tail, internalIndex < tail\n                elementData.copyInto(elementData, shiftedHead, head, elementData.size)\n                if (elementsSize >= internalIndex) {\n
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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        }\n        head =
shiftedHead\n        copyCollectionElements(negativeMod(internalIndex - elementsSize), elements)\n    } else
{\n        // closer to the last element -> shift succeeding elements\n        val shiftedInternalIndex =
internalIndex + elementsSize\n        if (internalIndex < tail) {\n            if (tail + elementsSize <=
elementData.size) {\n                elementData.copyInto(elementData, shiftedInternalIndex, internalIndex, tail)\n
            } else { // head < tail, insertion leads to head >= tail\n                if (shiftedInternalIndex >= elementData.size)
{\n                    elementData.copyInto(elementData, shiftedInternalIndex - elementData.size, internalIndex, tail)\n
                } else {\n
                    val shiftToFront = tail + elementsSize - elementData.size\n
elementData.copyInto(elementData, 0, tail - shiftToFront, tail)\n                elementData.copyInto(elementData,
shiftedInternalIndex, internalIndex, tail - shiftToFront)\n                }\n                }\n            } else { // head > tail,
internalIndex > head\n                elementData.copyInto(elementData, elementsSize, 0, tail)\n                if
(shiftedInternalIndex >= elementData.size) {\n                    elementData.copyInto(elementData, shiftedInternalIndex
- 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            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

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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        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\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\n        newTail = positiveMod(newTail)\n\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        }\n        if (modified)\n            size = negativeMod(newTail -
head)\n\n        return modified\n        }\n\n public override fun clear() {\n    val tail = internalIndex(size)\n    if
(head < tail) {\n        elementData.fill(null, head, tail)\n        } else if (isEmpty()) {\n
elementData.fill(null, head, elementData.size)\n        elementData.fill(null, 0, tail)\n        }\n    head = 0\n
size =
0\n    }\n\n // For testing only\n    internal fun internalStructure(structure: (head: Int, elements: Array<Any?>) ->
Unit) {\n        val tail = internalIndex(size)\n        if (isEmpty()) {\n            structure(head, emptyArray())\n
return\n        }\n        val elements = arrayOfNulls<Any?>(size)\n        if (head < tail) {\n
elementData.copyInto(elements, startIndex = head, endIndex = tail)\n            structure(head, elements)\n        } else
{\n            elementData.copyInto(elements, startIndex = head)\n            elementData.copyInto(elements,
elementData.size - head, startIndex = 0, endIndex = tail)\n            structure(head - elementData.size, 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@file:kotlin.jvm.JvmMultifileClass\n@file:kotlin.jvm.JvmName(\"ArraysKt\")\n\npackage
kotlin.collections\n\nimport kotlin.contracts.*\n\n/**\n * Returns a single list of all elements from all arrays in the
given array.\n * @sample samples.collections.Arrays.Transformations.flattenArray\n */\n\npublic fun <T> Array<out
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
the first values of each pair from this array,\n * *second* list is built from the second values of each pair from this
array.\n * @sample samples.collections.Arrays.Transformations.unzipArray\n */\n\npublic fun <T, R> Array<out
Pair<T, R>>.unzip(): Pair<List<T>, List<R>> {\n    val listT = ArrayList<T>(size)\n    val listR =
ArrayList<R>(size)\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 *
Returns `true` if this nullable array is either null or empty.\n * @sample
samples.collections.Arrays.Usage.arrayIsNullOrEmpty\n
*/\n\n@SinceKotlin(\"1.3\")\n@kotlin.internal.InlineOnly\npublic inline fun Array<*>?.isNullOrEmpty(): Boolean
{\n    contract {\n        returns(false) implies (this@isNullOrEmpty != null)\n    }\n    return this == null ||
this.isEmpty()\n}\n\n/**\n * Returns this array if it's not empty\n * or the result of calling [defaultValue] function if

```



```

index the index of the value in the collection or sequence.\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 * @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") (getOrNull(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 * @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\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") (getOrNull(property.name) as
V1)\n\n@Deprecated("Use getValue() with two type parameters instead", level =
DeprecationLevel.ERROR)\n\n@kotlin.jvm.JvmName("getVarContravariant")\n\n@kotlin.internal.LowPriorityInOver
loadResolution\n\n@kotlin.internal.InlineOnly\npublic inline fun <V> MutableMap<in String, in
V>.getValue(thisRef: Any?, property: KProperty<*>): V =\n    @Suppress("UNCHECKED_CAST")
(getOrNull(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    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\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\n@kotlin.jvm.JvmName("getOrNull")\n\n@PublishedApi\ninternal fun <K,
V> Map<K, V>.getOrNull(key: K): V {\n    if (this is MapWithDefault)\n        return
this.getOrNull(key)\n    return getOrNull(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 * @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 * 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].

\* This implicit default value is used when the original map doesn't contain a value for the key specified and a value is obtained with [Map.getValue] function, for example when properties are delegated to the map.

\* When this map already has an implicit default value provided with a former call to [withDefault], it is being replaced by this call.

```

@kotlin.jvm.JvmName("withDefaultMutable")
public fun <K, V>
MutableMap<K, V>.withDefault(defaultValue: (key: K) -> V): MutableMap<K, V> =
    when (this) {
        is MutableMapWithDefault -> this.map.withDefault(defaultValue)
        else -> MutableMapWithDefaultImpl(this,
            defaultValue)
    }

private interface MapWithDefault<K, out V> : Map<K, V> {
    public val map: Map<K, V>
    public fun getOrElse(key: K): V
}

private interface MutableMapWithDefault<K, V> :
MutableMap<K, V>,
MapWithDefault<K, V> {
    public override val map: MutableMap<K, V>
}

private class
MapWithDefaultImpl<K, out V>(public override val map: Map<K, V>, private val default: (key: K) -> V) :
MapWithDefault<K, V> {
    override fun equals(other: Any?): Boolean = map.equals(other)
    override fun hashCode(): Int = map.hashCode()
    override fun toString(): String = map.toString()
    override val size: Int get() = map.size
    override fun isEmpty(): Boolean = map.isEmpty()
    override fun containsKey(key: K): Boolean = map.containsKey(key)
    override fun containsValue(value: @UnsafeVariance V): Boolean = map.containsValue(value)
    override fun get(key: K): V? = map.get(key)
    override val keys: Set<K> get() = map.keys
    override val values: Collection<V> get() = map.values
    override val entries: Set<Map.Entry<K, V>> get() = map.entries
    override fun getOrElse(key: K): V = map.getOrElseOrNull(key, { default(key) })
}

private class MutableMapWithDefaultImpl<K, V>(public override val map: MutableMap<K, V>, private val default: (key: K) -> V) : MutableMapWithDefault<K, V> {
    override fun equals(other: Any?): Boolean = map.equals(other)
    override fun hashCode(): Int = map.hashCode()
    override fun toString(): String = map.toString()
    override val size: Int get() = map.size
    override fun isEmpty(): Boolean = map.isEmpty()
    override fun containsKey(key: K): Boolean = map.containsKey(key)
    override fun containsValue(value: @UnsafeVariance V): Boolean = map.containsValue(value)
    override fun get(key: K): V? = map.get(key)
    override val keys: MutableSet<K> get() = map.keys
    override val values: MutableCollection<V> get() = map.values
    override val entries: MutableSet<MutableMap.MutableEntry<K, V>> get() = map.entries
    override fun put(key: K, value: V): V? = map.put(key, value)
    override fun remove(key: K): V? = map.remove(key)
    override fun putAll(from: Map<out K, V>) = map.putAll(from)
    override fun clear() = map.clear()
    override fun getOrElse(key: K): V = map.getOrElseOrNull(key, { default(key) })
}

n" , "/" *
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n

*
n @file:kotlin.jvm.JvmMultifileClass
n @file:kotlin.jvm.JvmName("CollectionsKt")
n package kotlin.collections
n import kotlin.random.Random
n /**
n * Removes a single instance of the specified element from this
n * collection, if it is present.
n * Allows to overcome type-safety restriction of `remove` that requires to pass an element of type `E`.
n * @return `true` if the element has been successfully removed; `false` if it was not present in the collection.
n */
n @kotlin.internal.InlineOnly
n public inline fun <@kotlin.internal.OnlyInputTypes T> MutableCollection<out T>.remove(element: T): Boolean =
    @Suppress("UNCHECKED_CAST") (this as MutableCollection<T>).remove(element)
n /**
n * Removes all of this collection's elements that are also contained in the specified collection.
n * Allows to overcome type-safety restriction of `removeAll` that requires to pass a collection of type `Collection<E>`.
n * @return `true` if any of the specified elements was removed from the collection, `false` if the collection was not modified.
n */
n @kotlin.internal.InlineOnly
n public inline fun <@kotlin.internal.OnlyInputTypes T> MutableCollection<out T>.removeAll(elements: Collection<T>): Boolean =
    @Suppress("UNCHECKED_CAST") (this as MutableCollection<T>).removeAll(elements)
n /**
n * Retains only the elements in this collection that are contained in the specified collection.
n * Allows to overcome type-safety restriction of `retainAll` that requires

```

```

to pass a collection of type `Collection<E>`. \n * \n * @return `true` if any element was removed from the collection,
`false`
if the collection was not modified. \n * \n @kotlin.internal.InlineOnly \n public inline fun
<@kotlin.internal.OnlyInputTypes T> MutableCollection<out T>.retainAll(elements: Collection<T>): Boolean = \n
@Suppress("UNCHECKED_CAST") (this as MutableCollection<T>).retainAll(elements) \n \n * \n * Adds the
specified [element] to this mutable collection. \n * \n @kotlin.internal.InlineOnly \n public inline operator fun <T>
MutableCollection<in T>.plusAssign(element: T) { \n this.add(element) \n } \n \n * \n * Adds all elements of the
given [elements] collection to this mutable collection. \n * \n @kotlin.internal.InlineOnly \n public inline operator fun
<T> MutableCollection<in T>.plusAssign(elements: Iterable<T>) { \n this.addAll(elements) \n } \n \n * \n * Adds
all elements of the given [elements] array to this mutable collection. \n * \n @kotlin.internal.InlineOnly \n public inline
operator fun <T> MutableCollection<in T>.plusAssign(elements: Array<T>) { \n
this.addAll(elements) \n } \n \n * \n * Adds all
elements of the given [elements] sequence to this mutable collection. \n * \n @kotlin.internal.InlineOnly \n public
inline operator fun <T> MutableCollection<in T>.plusAssign(elements: Sequence<T>) { \n
this.addAll(elements) \n } \n \n * \n * Removes a single instance of the specified [element] from this mutable
collection. \n * \n @kotlin.internal.InlineOnly \n public inline operator fun <T> MutableCollection<in
T>.minusAssign(element: T) { \n this.remove(element) \n } \n \n * \n * Removes all elements contained in the given
[elements] collection from this mutable collection. \n * \n @kotlin.internal.InlineOnly \n public inline operator fun
<T> MutableCollection<in T>.minusAssign(elements: Iterable<T>) { \n this.removeAll(elements) \n } \n \n * \n *
Removes all elements contained in the given [elements] array from this mutable collection. \n
* \n @kotlin.internal.InlineOnly \n public inline operator fun <T> MutableCollection<in T>.minusAssign(elements:
Array<T>) { \n this.removeAll(elements) \n } \n \n * \n *
Removes all elements contained in the given [elements] sequence from this mutable collection. \n
* \n @kotlin.internal.InlineOnly \n public inline operator fun <T> MutableCollection<in T>.minusAssign(elements:
Sequence<T>) { \n this.removeAll(elements) \n } \n \n * \n * Adds all elements of the given [elements] collection to
this [MutableCollection]. \n * \n public fun <T> MutableCollection<in T>.addAll(elements: Iterable<T>): Boolean
{ \n when (elements) { \n is Collection -> return addAll(elements) \n else -> { \n var result: Boolean
= false \n for (item in elements) \n if (add(item)) result = true \n return result \n } \n
} \n } \n \n * \n * Adds all elements of the given [elements] sequence to this [MutableCollection]. \n * \n public fun
<T> MutableCollection<in T>.addAll(elements: Sequence<T>): Boolean { \n var result: Boolean = false \n for
(item in elements) { \n if (add(item)) result = true \n } \n return result \n } \n \n * \n * Adds all elements of the given [elements] array to this [MutableCollection]. \n * \n public fun <T>
MutableCollection<in T>.addAll(elements: Array<out T>): Boolean { \n return
addAll(elements.asList()) \n } \n \n * \n * Removes all elements from this [MutableCollection] that are also contained
in the given [elements] collection. \n * \n public fun <T> MutableCollection<in T>.removeAll(elements:
Iterable<T>): Boolean { \n return removeAll(elements.convertToSetForSetOperationWith(this)) \n } \n \n * \n *
Removes all elements from this [MutableCollection] that are also contained in the given [elements] sequence. \n
* \n public fun <T> MutableCollection<in T>.removeAll(elements: Sequence<T>): Boolean { \n val set =
elements.toHashSet() \n return set.isNotEmpty() && removeAll(set) \n } \n \n * \n * Removes all elements from this
[MutableCollection] that are also contained in the given [elements] array. \n * \n public fun <T>
MutableCollection<in T>.removeAll(elements: Array<out T>): Boolean
{ \n return elements.isNotEmpty() && removeAll(elements.toHashSet()) \n } \n \n * \n * Retains only elements of
this [MutableCollection] that are contained in the given [elements] collection. \n * \n public fun <T>
MutableCollection<in T>.retainAll(elements: Iterable<T>): Boolean { \n return
retainAll(elements.convertToSetForSetOperationWith(this)) \n } \n \n * \n * Retains only elements of this
[MutableCollection] that are contained in the given [elements] array. \n * \n public fun <T> MutableCollection<in
T>.retainAll(elements: Array<out T>): Boolean { \n if (elements.isNotEmpty()) \n return
retainAll(elements.toHashSet()) \n else \n return retainNothing() \n } \n \n * \n * Retains only elements of this

```

```

[MutableCollection] that are contained in the given [elements] sequence.\n *\npublic fun <T>
MutableCollection<in T>.retainAll(elements: Sequence<T>): Boolean {\n    val set = elements.toHashSet()\n    if
(set.isNotEmpty())\n        return retainAll(set)\n    else\n
return retainNothing()\n}\n\nprivate fun MutableCollection<*>.retainNothing(): Boolean {\n    val result =
isNotEmpty()\n    clear()\n    return result\n}\n\n/**\n * Removes all elements from this [MutableIterable] that
match the given [predicate].\n *\n * @return `true` if any element was removed from this collection, or `false` when
no elements were removed and collection was not modified.\n *\npublic fun <T>
MutableIterable<T>.removeAll(predicate: (T) -> Boolean): Boolean = filterInPlace(predicate, true)\n\n/**\n *
Retains only elements of this [MutableIterable] that match the given [predicate].\n *\n * @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> MutableIterable<T>.retainAll(predicate: (T) -> Boolean): Boolean =
filterInPlace(predicate, false)\n\nprivate fun <T> MutableIterable<T>.filterInPlace(predicate: (T) -> Boolean,
predicateResultToRemove: Boolean): Boolean
{\n    var result = false\n    with(iterator()) {\n        while (hasNext())\n            if (predicate(next()) ==
predicateResultToRemove) {\n                remove()\n                result = true\n            }\n        }\n    return
result\n}\n\n/**\n * Returns a new list with the elements of this list randomly shuffled\n * using the specified
[random] instance as the source of randomness.\n *\n@SinceKotlin("1.3")\npublic fun <T>
Iterable<T>.shuffled(random: Random): List<T> = toMutableList().apply { shuffle(random) }\n\n/**\n *
Removes the element at the specified [index] from this list.\n * In Kotlin one should use the
[MutableList.removeAt] function instead.\n *\n@Deprecated("Use removeAt(index) instead.",
ReplaceWith("removeAt(index)"), level = DeprecationLevel.ERROR)\n@kotlin.internal.InlineOnly\npublic inline
fun <T> MutableList<T>.remove(index: Int): T = removeAt(index)\n\n/**\n * Removes the first element from this
mutable list and returns that removed element, or throws
[NoSuchElementException] if this list is empty.\n *\n@SinceKotlin("1.3")\n@ExperimentalStdlibApi\npublic
fun <T> MutableList<T>.removeFirst(): T = if (isEmpty()) throw NoSuchElementException("List is empty.") else
removeAt(0)\n\n/**\n * Removes the first element from this mutable list and returns that removed element, or
returns `null` if this list is empty.\n *\n@SinceKotlin("1.3")\n@ExperimentalStdlibApi\npublic fun <T>
MutableList<T>.removeFirstOrNull(): T? = if (isEmpty()) null else removeAt(0)\n\n/**\n * Removes the last
element from this mutable list and returns that removed element, or throws [NoSuchElementException] if this list is
empty.\n *\n@SinceKotlin("1.3")\n@ExperimentalStdlibApi\npublic fun <T> MutableList<T>.removeLast(): T =
if (isEmpty()) throw NoSuchElementException("List is empty.") else removeAt(lastIndex)\n\n/**\n * Removes the
last element from this mutable list and returns that removed element, or returns `null` if this list is empty.\n
*\n@SinceKotlin("1.3")\n@ExperimentalStdlibApi\npublic
fun <T> MutableList<T>.removeLastOrNull(): T? = if (isEmpty()) null else removeAt(lastIndex)\n\n/**\n *
Removes all elements from this [MutableList] that match the given [predicate].\n *\n * @return `true` if any element
was removed from this collection, or `false` when no elements were removed and collection was not modified.\n
*\npublic fun <T> MutableList<T>.removeAll(predicate: (T) -> Boolean): Boolean = filterInPlace(predicate,
true)\n\n/**\n * Retains only elements of this [MutableList] that match the given [predicate].\n *\n * @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        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 *\n * See: https://en.wikipedia.org/wiki/Fisher%E2%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\n        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 * Copyright 2010-2018 JetBrains s.r.o. and Kotlin\nProgramming Language contributors.\n * Use of this source code is governed by the Apache 2.0 license that can be\nfound in the license/LICENSE.txt file.\n
*\n@file:kotlin.jvm.JvmMultifileClass\n@file:kotlin.jvm.JvmName("CollectionsKt")\n\npackage\nkotlin.collections\n\nprivate open class ReversedListReadOnly<out T>(private val delegate: List<T>) :\nAbstractList<T>() {\n    override val size: Int get() = delegate.size\n    override fun get(index: Int): T =\ndelegate[reverseElementIndex(index)]\n}\n\nprivate class ReversedList<T>(private val delegate: MutableList<T>) :\nAbstractMutableList<T>() {\n    override val size: Int get() = delegate.size\n    override fun get(index: Int): T =\ndelegate[reverseElementIndex(index)]\n    override fun clear() = delegate.clear()\n    override fun removeAt(index:\nInt): T = delegate.removeAt(reverseElementIndex(index))\n    override\n    fun set(index: Int, element: T): T = delegate.set(reverseElementIndex(index), element)\n    override fun add(index:\nInt, element: T) {\n        delegate.add(reversePositionIndex(index), element)\n    }\n}\n\nprivate fun\nList<*>.reverseElementIndex(index: Int) =\n    if (index in 0..lastIndex) lastIndex - index else throw\nIndexOutOfBoundsException("Element index $index must be in range [0..lastIndex].")\n\nprivate fun\nList<*>.reversePositionIndex(index: Int) =\n    if (index in 0..size) size - index else throw\nIndexOutOfBoundsException("Position index $index must be in range [0..size].")\n\n"/*\n * Returns a\nreversed read-only view of the original List.\n * All changes made in the original list will be reflected in the reversed\none.\n * @sample samples.collections.ReversedViews.asReversedList\n *\npublic fun <T> List<T>.asReversed():\nList<T> = ReversedListReadOnly(this)\n"/*\n *\nReturns a reversed mutable view of the original mutable List.\n * All changes made in\nthe original list will be reflected in the reversed one and vice versa.\n * @sample\nsamples.collections.ReversedViews.asReversedMutableList\n
*\n@kotlin.jvm.JvmName("asReversedMutable")\n\npublic fun <T> MutableList<T>.asReversed():\nMutableList<T> = ReversedList(this)\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@file:kotlin.jvm.JvmMultifileClass\n@file:kotlin.jvm.JvmName("SequencesKt")\n@file:UseExperimental(\nExperimentalTypeInference::class)\n\npackage kotlin.sequences\n\nimport kotlin.coroutines.*\nimport\nkotlin.coroutines.intrinsics.*\nimport kotlin.experimental.ExperimentalTypeInference\n\n"/*\n * Builds a\n[Sequence] lazily yielding values one by one.\n * @see kotlin.sequences.generateSequence\n *\n * @sample\nsamples.collections.Sequences.Building.buildSequenceYieldAll\n * @sample\nsamples.collections.Sequences.Building.buildFibonacciSequence\n
*\n@SinceKotlin("1.3")\n\npublic fun <T> sequence(@BuilderInference block: suspend SequenceScope<T>.() ->\nUnit): Sequence<T> = Sequence { iterator(block) }\n\n@SinceKotlin("1.3")\n@Deprecated("Use 'sequence { }'\nfunction instead.", ReplaceWith("sequence(builderAction)"), level =\nDeprecationLevel.ERROR)\n@kotlin.internal.InlineOnly\n\npublic inline fun <T> buildSequence(@BuilderInference\nnoinline builderAction: suspend SequenceScope<T>.() -> Unit): Sequence<T> = Sequence { iterator(builderAction)\n}\n\n"/*\n * Builds an [Iterator] lazily yielding values one by one.\n *\n * @sample\nsamples.collections.Sequences.Building.buildIterator\n * @sample samples.collections.Iterables.Building.iterable\n
*\n@SinceKotlin("1.3")\n\npublic fun <T> iterator(@BuilderInference block: suspend SequenceScope<T>.() ->\nUnit): Iterator<T> {\n    val iterator = SequenceBuilderIterator<T>()\n    iterator.nextStep =\nblock.createCoroutineUnintercepted(receiver = iterator,\n    completion = iterator)\n    return iterator\n}\n\n@SinceKotlin("1.3")\n@Deprecated("Use 'iterator { }' function\ninstead.", ReplaceWith("iterator(builderAction)"), level =\nDeprecationLevel.ERROR)\n@kotlin.internal.InlineOnly\n\npublic inline fun <T> buildIterator(@BuilderInference

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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\n * @sample
samples.collections.Sequences.Building.buildFibonacciSequence\n
*\n@RestrictsSuspension\n@SinceKotlin("1.3")\npublic abstract class SequenceScope<in T> internal
constructor() {\n\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 * @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\n if (elements is Collection && elements.isEmpty()) return\n\n return
yieldAll(elements.iterator())\n\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 * @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\n\nprivate const
val State_ManyNotReady: State = 1\n\nprivate const val State_ManyReady: State = 2\n\nprivate const val State_Ready:
State = 3\n\nprivate const val State_Done: State = 4\n\nprivate const val State_Failed: State = 5\n\nprivate class
SequenceBuilderIterator<T> : SequenceScope<T>(),
Iterator<T>, Continuation<Unit> {\n\n private var state = State_NotReady\n\n private var nextValue: T? = null\n\n
private var nextIterator: Iterator<T>? = null\n\n private var nextStep: Continuation<Unit>? = null\n\n\n override fun
hasNext(): Boolean {\n\n while (true) {\n\n when (state) {\n\n State_NotReady -> {\n\n
State_ManyNotReady ->\n\n if (nextIterator!!.hasNext()) {\n\n state = State_ManyReady\n\n
return true\n\n } else {\n\n nextIterator = null\n\n }\n\n State_Done -> return false\n\n State_Ready, State_ManyReady -> return true\n\n else -> throw
exceptionalState()\n\n }\n\n state = State_Failed\n\n val step = nextStep!!\n\n nextStep = null\n\n
step.resume(Unit)\n\n }\n\n }\n\n\n override fun next(): T {\n\n when (state) {\n\n
State_NotReady, State_ManyNotReady -> return nextNotReady()\n\n State_ManyReady -> {\n\n
state = State_ManyNotReady\n\n return nextIterator!!.next()\n\n }\n\n State_Ready -> {\n\n
state = State_NotReady\n\n @Suppress("UNCHECKED_CAST")\n\n val result = nextValue as
T\n\n nextValue = null\n\n return result\n\n }\n\n else -> throw exceptionalState()\n\n }\n\n
}\n\n\n private fun nextNotReady(): T {\n\n if (!hasNext()) throw NoSuchElementException() else return
next()\n\n }\n\n\n private fun exceptionalState(): Throwable = when (state) {\n\n State_Done ->
NoSuchElementException()\n\n State_Failed -> IllegalStateException("Iterator has failed.")\n\n else ->
IllegalStateException("Unexpected state of the iterator: $state")\n\n }\n\n\n\n override suspend fun yield(value: T)
{\n\n nextValue = value\n\n state = State_Ready\n\n return suspendCoroutineUninterceptedOrReturn { c ->\n\n
nextStep = c\n\n COROUTINE_SUSPENDED\n\n }\n\n }\n\n\n override suspend fun yieldAll(iterator: Iterator<T>) {\n\n if
(!iterator.hasNext()) return\n\n nextIterator = iterator\n\n state = State_ManyReady\n\n return
suspendCoroutineUninterceptedOrReturn { c ->\n\n nextStep = c\n\n COROUTINE_SUSPENDED\n

```

```

}\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\n override val context:
CoroutineContext\n get() = EmptyCoroutineContext\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\ninternal
fun 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
zero.\"\n }\n}\n\ninternal fun <T> Sequence<T>.windowedSequence(size: Int, step: Int, partialWindows: Boolean,
reuseBuffer: Boolean): Sequence<List<T>> {\n checkWindowSizeStep(size, step)\n return Sequence {\n
windowedIterator(iterator(), size, step, partialWindows, reuseBuffer) }\n}\n\ninternal fun <T>
windowedIterator(iterator: Iterator<T>, size: Int, step: Int, partialWindows: Boolean, reuseBuffer: Boolean):
Iterator<List<T>> {\n if (!iterator.hasNext()) return EmptyIterator\n return iterator<List<T>> {\n val
bufferInitialCapacity = size.coerceAtMost(1024)\n val gap = step - size\n if (gap >= 0) {\n var buffer
= ArrayList<T>(bufferInitialCapacity)\n var skip = 0\n
for (e in iterator) {\n if (skip > 0) { 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 }\n if (buffer.isNotEmpty()) {\n if
(partialWindows || buffer.size == size) yield(buffer)\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 = buffer.expanded(maxCapacity = size); continue
}\n\n yield(if (reuseBuffer) buffer else ArrayList(buffer))\n buffer.removeFirst(step)\n
}\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\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 -
fromIndex\n }\n\n override fun get(index: Int): E {\n checkElementIndex(index, _size)\n\n return
list[fromIndex + index]\n }\n\n override val size: Int get() = _size\n}\n\n\n/**\n * Provides ring buffer
implementation.\n * Buffer overflow is not allowed so [add] doesn't overwrite tail but raises an exception.\n
*/\n\nprivate class RingBuffer<T>(private val buffer: Array<Any?>, filledSize:
Int) : AbstractList<T>(), RandomAccess {\n init {\n require(filledSize >= 0) { \"ring buffer filled size should
not be negative but it is $filledSize\" }\n require(filledSize <= buffer.size) { \"ring buffer filled size: $filledSize
cannot be larger than the buffer size: ${buffer.size}\" }\n }\n\n constructor(capacity: Int) :
this(arrayOfNulls<Any?>(capacity), 0)\n private val capacity = buffer.size\n private var startIndex: Int = 0\n\n
override var size: Int = filledSize\n private set\n\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\n fun isFull() = size == capacity\n\n override fun iterator():
Iterator<T> = object : AbstractIterator<T>() {\n private var count = size\n private var index = startIndex\n\n
override fun computeNext() {\n if (count == 0) {\n done()\n
}\n\n @Suppress(\"UNCHECKED_CAST\")\n setNext(buffer[index] as T)\n\n index = index.forward(1)\n count--\n }\n }\n\n @Suppress(\"UNCHECKED_CAST\")\n\n
override fun <T> toArray(array: Array<T>): Array<T> {\n val result: Array<T?> =\n if (array.size <
this.size) array.copyOf(this.size) else array as Array<T?>\n\n val size = this.size\n\n var widx = 0\n var
idx = startIndex\n\n while (widx < size && idx < capacity) {\n result[widx] = buffer[idx] as T\n
widx++\n idx++\n }\n\n idx = 0\n while (widx < size) {\n result[widx] = buffer[idx] as
T\n widx++\n idx++\n }\n\n if (result.size > this.size) result[this.size] = null\n\n return
result as Array<T>\n }\n\n\n override fun toArray(): Array<Any?> {\n return toArray(arrayOfNulls(size))\n
}

```



```
quickSort(\n    array: ULongArray, 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//
```

Interfaces

```
=====\n/**\n * Sorts the given array using qsort algorithm.\n * \n * @ExperimentalUnsignedTypes\n * internal fun sortArray(array: UByteArray) = quickSort(array, 0, array.size - 1)\n * @ExperimentalUnsignedTypes\n * internal fun sortArray(array: UShortArray) = quickSort(array, 0, array.size - 1)\n * @ExperimentalUnsignedTypes\n * internal fun sortArray(array: UIntArray) = quickSort(array, 0, array.size - 1)\n * @ExperimentalUnsignedTypes\n * internal fun sortArray(array: ULongArray) = quickSort(array, 0, array.size - 1)"\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 * @package kotlin.contracts\n * \n * import kotlin.internal.ContractsDsl\n * \n * import kotlin.internal.InlineOnly\n * \n * \n * \n * This marker distinguishes the experimental contract declaration API and is used to opt-in for that feature\n * when declaring contracts of user functions.\n * \n * Any usage of a declaration annotated with `@ExperimentalContracts` must be accepted either by\n * annotating that usage with the [OptIn] annotation, e.g. `@OptIn(ExperimentalContracts::class)`\n * or by using the compiler argument `-Xopt-in=kotlin.contracts.ExperimentalContracts`.\n * \n * \n * @Suppress("DEPRECATION")\n * @Retention(AnnotationRetention.BINARY)\n * @SinceKotlin("1.3")\n * @Experimental\n * @RequiresOptIn\n * @MustBeDocumented\n * public annotation class ExperimentalContracts\n * \n * \n * Provides a scope, where the functions of the contract DSL, such as [returns], [callsInPlace], etc.,\n * can be used to describe the contract of a function.\n * \n * This type is used as a receiver type of the lambda function passed to the [contract] function.\n * \n * @see contract\n * \n * \n * @ContractsDsl\n * @ExperimentalContracts\n * @SinceKotlin("1.3")\n * public interface ContractBuilder {\n * \n * \n * \n * Describes a situation when a function returns normally, without any exceptions thrown.\n * \n * Use [SimpleEffect.implies] function to describe a conditional effect that happens in such case.\n * \n * \n * \n * // @sample samples.contracts.returnsContract\n * @ContractsDsl public fun returns(): Returns\n * \n * \n * \n * Describes a situation when a function returns normally with the specified return [value].\n * \n * The possible values of [value] are limited to `true`, `false` or `null`.\n * \n * \n * Use [SimpleEffect.implies] function to describe a conditional effect that happens in such case.\n * \n * \n * \n * // @sample samples.contracts.returnsTrueContract\n * // @sample samples.contracts.returnsFalseContract\n * // @sample samples.contracts.returnsNullContract\n * @ContractsDsl public fun returns(value: Any?): Returns\n * \n * \n * \n * Describes a situation when a function returns normally with any value that is not `null`.\n * \n * Use [SimpleEffect.implies] function to describe a conditional effect that happens in such case.\n * \n * \n * \n * // @sample samples.contracts.returnsNotNullContract\n * @ContractsDsl public fun returnsNotNull(): ReturnsNotNull\n * \n * \n * \n * Specifies that the function parameter [lambda] is invoked in place.\n * \n * This contract specifies that:\n * \n * 1. the function [lambda] can only be invoked during the call of the owner function,\n * and it won't be invoked after that owner function call is completed;\n * \n * 2. _(optionally)_ the function [lambda] is invoked the amount of times specified by the [kind] parameter,\n * see the [InvocationKind] enum for possible values.\n * \n * \n * A function declaring the `callsInPlace` effect must be _inline_.\n * \n * \n * \n * // @sample samples.contracts.callsInPlaceAtMostOnceContract\n * @sample samples.contracts.callsInPlaceAtLeastOnceContract\n * @sample samples.contracts.callsInPlaceExactlyOnceContract\n * @sample samples.contracts.callsInPlaceUnknownContract\n * \n * \n * @ContractsDsl public fun <R> callsInPlace(lambda: Function<R>, kind: InvocationKind = InvocationKind.UNKNOWN): CallsInPlace\n * \n * \n * \n * Specifies how many times a function invokes its function parameter in place.\n * \n * See [ContractBuilder.callsInPlace] for the details of the call-in-place function contract.\n * \n * \n * \n * @ContractsDsl\n * @ExperimentalContracts\n * @SinceKotlin("1.3")\n * public enum class InvocationKind {\n * \n * \n * \n * A function
```

```

parameter will be invoked one time or not invoked at all.\n    */\n    // @sample
samples.contracts.callsInPlaceAtMostOnceContract\n    @ContractsDsl AT_MOST_ONCE,\n\n    /**\n    * A
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*/\n* The contract description must be at the beginning of a function and have at least one
effect.\n*/\n* Only the top-level functions can have a contract for now.\n*/\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* 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@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    /**\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    */\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/**\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    */\n    * Default implementation does nothing.\n    */\n
*/\n* @param continuation Continuation instance returned by this interceptor's [interceptContinuation] invocation.\n
*/\n\npublic fun releaseInterceptedContinuation(continuation: Continuation<*>) {\n    /* do nothing by default
*/\n}\n\npublic override operator fun <E : CoroutineContext.Element> get(key: CoroutineContext.Key<E>):
E? {\n    // getPolymorphicKey specialized for ContinuationInterceptor key\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

```

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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
// minusPolymorphicKey specialized for ContinuationInterceptor key\n
@OptIn(ExperimentalStdlibApi::class)\n    if (key is AbstractCoroutineContextKey<*, *>) {\n        return if
(key.isSubKey(this.key) && key.tryCast(this) != null) EmptyCoroutineContext else this\n    }\n    return if
(ContinuationInterceptor === key) EmptyCoroutineContext else 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.coroutines\n\n/**\n *
Persistent context for the coroutine. It is an indexed set of [Element] instances.\n * An indexed set is a mix between
a set and a map.\n * Every element in this set has a unique [Key].\n */\n@SinceKotlin(\"1.3\")\npublic interface
CoroutineContext\n
{\n    /**\n     * Returns the element with the given [key] from this context or `null`.\n     */\n    public operator fun
<E : Element> get(key: Key<E>): E?\n\n    /**\n     * Accumulates entries of this context starting with [initial] value
and applying [operation]\n     * from left to right to current accumulator value and each element of this context.\n
*/\n    public fun <R> fold(initial: R, operation: (R, Element) -> R): R\n\n    /**\n     * Returns a context containing
elements from this context and elements from other [context].\n     * The elements from this context with the same
key as in the other one are dropped.\n     */\n    public operator fun plus(context: CoroutineContext):
CoroutineContext =\n        if (context === EmptyCoroutineContext) this else // fast path -- avoid lambda creation\n
context.fold(this) { acc, element ->\n            val removed = acc.minusKey(element.key)\n            if
(removed === EmptyCoroutineContext) element
else {\n                // make sure interceptor is always last in the context (and thus is fast to get when present)\n
val interceptor = removed[ContinuationInterceptor]\n                if (interceptor == null)\n
CombinedContext(removed, element) else {\n                    val left =
removed.minusKey(ContinuationInterceptor)\n                    if (left === EmptyCoroutineContext)\n
CombinedContext(element, interceptor) else\n                        CombinedContext(CombinedContext(left, element),
interceptor)\n                }\n            }\n\n    /**\n     * Returns a context containing elements from this
context, but without an element with\n     * the specified [key].\n     */\n    public fun minusKey(key: Key<*>):
CoroutineContext\n\n    /**\n     * Key for the elements of [CoroutineContext]. [E] is a type of element with this
key.\n     */\n    public interface Key<E : Element>\n\n    /**\n     * An element of the [CoroutineContext].\n
An element of the coroutine context is a singleton context by itself.\n     */\n    public interface Element :
CoroutineContext {\n        /**\n         * A key of this coroutine context element.\n         */\n        public val key:
Key<*>\n\n        public override operator fun <E : Element> get(key: Key<E>): E? =\n
@Suppress(\"UNCHECKED_CAST\")\n            if (this.key == key) this as E else null\n\n        public override fun
<R> fold(initial: R, operation: (R, Element) -> R): R =\n            operation(initial, this)\n\n        public override fun
minusKey(key: Key<*>): CoroutineContext =\n            if (this.key == key) EmptyCoroutineContext else this\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.coroutines\n\nimport kotlin.coroutines.CoroutineContext.Element\nimport
kotlin.coroutines.CoroutineContext.Key\n\n/**\n * Base class for [CoroutineContext.Element] implementations.\n
*/\n@SinceKotlin(\"1.3\")\npublic abstract class AbstractCoroutineContextElement(public override val key:
Key<*>) : Element\n\n/**\n * Base class for [CoroutineContext.Key] associated with polymorphic
[CoroutineContext.Element] implementation.\n * Polymorphic element implementation implies delegating its
[get][Element.get] and [minusKey][Element.minusKey]\n * to [getPolymorphicElement] and
[minusPolymorphicKey] respectively.\n */\n * Polymorphic elements can be extracted from the coroutine context
using both element key and its supertype key.\n * Example of polymorphic elements:\n * ```\n * open class
BaseElement : CoroutineContext.Element {\n *     companion object Key : CoroutineContext.Key<BaseElement>\n *
override val key: CoroutineContext.Key<*> get() = Key\n *     // It is important to use getPolymorphicKey and
minusPolymorphicKey\n *     override fun <E :

```

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CoroutineContext.Element> get(key: CoroutineContext.Key<E>): E? = getPolymorphicElement(key)\n *
override fun minusKey(key: CoroutineContext.Key<*>): CoroutineContext = minusPolymorphicKey(key)\n * }\n
*\n * class DerivedElement : BaseElement() {\n *     companion object Key :
AbstractCoroutineContextKey<BaseElement, DerivedElement>(BaseElement, { it as? DerivedElement })\n * }\n *
// Now it is possible to query both `BaseElement` and `DerivedElement`\n * someContext[BaseElement] // Returns
BaseElement?, non-null both for BaseElement and DerivedElement 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 *\n * @SinceKotlin("1.3")\n * @ExperimentalStdlibApi\n * public 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 * 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 *\n * @SinceKotlin("1.3")\n * @ExperimentalStdlibApi\n * public 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 * 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 *\n * @SinceKotlin("1.3")\n * @ExperimentalStdlibApi\n * public 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 * An empty coroutine context.\n * \n *\n * @SinceKotlin("1.3")\n * public 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 * \n *\n * @SinceKotlin("1.3")\n * internal 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\n private fun size(): Int {\n     var cur = this\n     var size = 2\n\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 =\n     "[" + fold("") { acc, element ->\n         if (acc.isEmpty()) element.toString() else\n         "$acc, $element"\n     } + "]\n\n private fun writeReplace(): Any {\n     val n = size()\n     val elements =\n     arrayOfNulls<CoroutineContext>(n)\n     var index = 0\n     fold(Unit) { _, element -> elements[index++] =\n     element }\n     check(index == n)\n     @Suppress("UNCHECKED_CAST")\n     return Serialized(elements\n     as Array<CoroutineContext>)\n }\n\n private class Serialized(val elements: Array<CoroutineContext>) :\n     Serializable {\n     companion object {\n         private const val serialVersionUID: Long = 0L\n     }\n\n     private fun readResolve(): Any = elements.fold(EmptyCoroutineContext, CoroutineContext::plus)\n }\n\n", /*\n * Copyright 2010-2018 JetBrains s.r.o. and Kotlin Programming Language contributors.\n * Use of this source code\n 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("IntrinsicsKt")\n @file:kotlin.jvm.JvmMultifileClass\n\n package\n kotlin.coroutines.intrinsics\n\n import\n kotlin.coroutines.*\n\n import kotlin.internal.InlineOnly\n\n /**\n * Obtains the current continuation instance inside\n suspend functions and either suspends\n * currently running coroutine or returns result immediately without\n suspension.\n * If the [block] returns the special [COROUTINE_SUSPENDED] value, it means that suspend\n function did suspend the execution and will\n * not return any result immediately. In this case, the [Continuation]\n provided to the [block] shall be\n * resumed by invoking [Continuation.resumeWith] at some moment in the\n * future when the result becomes available to resume the computation.\n * Otherwise, the return value of the\n [block] must have a type assignable to [T] and represents the result of this suspend function.\n * It means that the\n execution was not suspended and the [Continuation] provided to the [block] shall not be invoked.\n * As the result\n type of the [block] is declared as `Any?` and cannot be correctly type-checked,\n * its proper\n return type remains on the conscience of the suspend function's author.\n * Invocation of\n [Continuation.resumeWith] resumes coroutine directly in the invoker's thread without going through the\n * [ContinuationInterceptor] that might be present in the coroutine's [CoroutineContext].\n * It is the invoker's\n responsibility to ensure that a proper invocation context is established.\n * [Continuation.intercepted] can be used to\n acquire the intercepted continuation.\n * Note that it is not recommended to call either [Continuation.resume]\n nor [Continuation.resumeWithException] functions synchronously\n * in the same stackframe where suspension\n function is run. Use [suspendCoroutine] as a safer way to obtain current\n * continuation instance.\n */\n\n @SinceKotlin("1.3")\n @InlineOnly\n @Suppress("UNUSED_PARAMETER",\n "RedundantSuspendModifier")\n public suspend inline fun <T>\n suspendCoroutineUninterceptedOrReturn(crossinline block: (Continuation<T>) -> Any?): T =\n     throw\n     NotImplementedError("Implementation\n     of suspendCoroutineUninterceptedOrReturn is intrinsic")\n\n /**\n * This value is used as a return value of\n [suspendCoroutineUninterceptedOrReturn] `block` argument to state that\n * the execution was suspended and will\n not return any result immediately.\n * Note: this value should not be used in general code. Using it outside\n of the context of\n * `suspendCoroutineUninterceptedOrReturn` function return value (including, but not limited\n to,\n * storing this value in other properties, returning it from other functions, etc)\n * can lead to unspecified\n behavior of the code.\n */\n\n // It is implemented as property with getter to avoid ProGuard <clinit> problem with\n multifile IntrinsicsKt class\n @SinceKotlin("1.3")\n public val COROUTINE_SUSPENDED: Any get() =

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CoroutineSingletons.COROUTINE\_SUSPENDED\n\n// Using enum here ensures two important properties:\n// 1. It makes SafeContinuation serializable with all kinds of serialization frameworks (since all of them natively support enums)\n// 2. It improves debugging experience, since you clearly see toString() value of those objects and what package they come from\n\n@SinceKotlin("1.3")\n\n@PublishedApi // This class is Published API via serialized representation of SafeContinuation, don't rename/move\n\ninternal enum class CoroutineSingletons { COROUTINE\_SUSPENDED, UNDECIDED, RESUMED } \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/\*\* Performs a bitwise AND operation between the two values. \*/\n\n@SinceKotlin("1.1")\n\n@kotlin.internal.InlineOnly\n\npublic inline infix fun Byte.and(other: Byte): Byte = (this.toInt() and other.toInt()).toByte()\n\n/\*\* Performs a bitwise OR operation between the two values. \*/\n\n@SinceKotlin("1.1")\n\n@kotlin.internal.InlineOnly\n\npublic 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\n@SinceKotlin("1.1")\n\n@kotlin.internal.InlineOnly\n\npublic inline infix fun Byte.xor(other: Byte): Byte = (this.toInt() xor other.toInt()).toByte()\n\n/\*\* Inverts the bits in this value. \*/\n\n@SinceKotlin("1.1")\n\n@kotlin.internal.InlineOnly\n\npublic inline fun Byte.inv(): Byte = (this.toInt().inv()).toByte()\n\n/\*\* Performs a bitwise AND operation between the two values. \*/\n\n@SinceKotlin("1.1")\n\n@kotlin.internal.InlineOnly\n\npublic inline infix fun Short.and(other: Short): Short = (this.toInt() and other.toInt()).toShort()\n\n/\*\* Performs a bitwise OR operation between the two values. \*/\n\n@SinceKotlin("1.1")\n\n@kotlin.internal.InlineOnly\n\npublic inline infix fun Short.or(other: Short): Short = (this.toInt() or other.toInt()).toShort()\n\n/\*\* Performs a bitwise XOR operation between the two values. \*/\n\n@SinceKotlin("1.1")\n\n@kotlin.internal.InlineOnly\n\npublic inline infix fun Short.xor(other: Short): Short = (this.toInt() xor other.toInt()).toShort()\n\n/\*\* Inverts the bits in this value. \*/\n\n@SinceKotlin("1.1")\n\n@kotlin.internal.InlineOnly\n\npublic inline fun Short.inv(): Short = (this.toInt().inv()).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.experimental\n\n/\*\*\n \* The experimental marker for type inference augmenting annotations.\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 \* @Suppress("DEPRECATION")\n \* @Experimental(level = Experimental.Level.ERROR)\n \* @RequiresOptIn(level = RequiresOptIn.Level.ERROR)\n \* @MustBeDocumented\n \* @Retention(AnnotationRetention.BINARY)\n \* @Target(AnnotationTarget.ANNOTATION\_CLASS)\n \*/\n\n@SinceKotlin("1.3")\n\npublic annotation class ExperimentalTypeInference\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.internal\n\n/\*\* Specifies that the corresponding type should be ignored during type inference. \*/\n\n@Target(AnnotationTarget.TYPE)\n\n@Retention(AnnotationRetention.BINARY)\n\ninternal annotation class NoInfer\n\n/\*\* Specifies that the constraint built for the type during type inference should be an equality one. \*/\n\n@Target(AnnotationTarget.TYPE)\n\n@Retention(AnnotationRetention.BINARY)\n\ninternal annotation class Exact\n\n/\*\* Specifies that a corresponding member has the lowest priority in overload resolution. \*/\n\n@Target(AnnotationTarget.FUNCTION, AnnotationTarget.PROPERTY)\n\n@Retention(AnnotationRetention.BINARY)\n\ninternal annotation class LowPriorityInOverloadResolution\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,

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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@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@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 *\n * The Kotlin compiler of an earlier version is going to
report a diagnostic on usages of this declaration.\n *\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 *\n * [versionKind]
specifies which version should be compared with the [version] value, when compiling the usage of the annotated
declaration.\n *\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 *\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 *\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 * 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 * 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\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():

```

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ReadWriteProperty<Any?, T> = NotNullVar()\n\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\n
    the change of the property is made. The value of the property\n    * has already been changed when this callback is\n
    invoked.\n    *\n    * @sample samples.properties.Delegates.observableDelegate\n    */\n    public inline fun <T>\n
observable(initialValue: T, crossinline onChange: (property: KProperty<*>, oldValue: T, newValue: T) -> Unit):\n
    ReadWriteProperty<Any?, T> =\n        object : ObservableProperty<T>(initialValue) {\n            override fun\n
afterChange(property: KProperty<*>, oldValue: T, newValue: T) = onChange(property, oldValue, newValue)\n
        }\n\n /**\n
    * Returns a property delegate for a read/write property that calls a specified callback function when\n
    changed,\n    * allowing the callback to veto the modification.\n
    *\n    * @param initialValue the initial value of the property.\n    * @param onChange the callback which is called\n
    before a change to the property value is attempted.\n    * The value of the property hasn't been changed yet, when\n
    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    *\n
    * @sample samples.properties.Delegates.vetoableDelegate\n    * @sample\n
samples.properties.Delegates.throwVetoableDelegate\n    */\n    public inline fun <T> vetoable(initialValue: T,\n
crossinline onChange: (property: KProperty<*>, oldValue: T, newValue: T) -> Boolean):\n
    ReadWriteProperty<Any?, T> =\n        object : ObservableProperty<T>(initialValue) {\n            override fun\n
beforeChange(property: KProperty<*>, oldValue: T, newValue: T): Boolean = onChange(property, oldValue,\n
newValue)\n
        }\n\n\nprivate class NotNullVar<T : Any>(): ReadWriteProperty<Any?, T> {\n    private var value: T? =\n
null\n    public override fun getValue(thisRef: Any?, property: KProperty<*>): T {\n        return value ?: throw\n
IllegalStateException("\nProperty ${property.name} should be initialized before get.")\n    }\n    public override\n
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\n
kotlin.properties\n\nimport kotlin.reflect.KProperty\n\n/**\n
    * Implements the core logic of a property delegate for a\n
    read/write property that calls callback functions when changed.\n
    * @param initialValue the initial value of the\n
    property.\n
    */\n    public abstract class ObservableProperty<T>(initialValue: T) : ReadWriteProperty<Any?,\n
    T> {\n        private var value = initialValue\n\n        /**\n
            * The callback which is called before a change to the\n
            property value is attempted.\n
            * The value of the property hasn't been changed yet, when this callback is\n
            invoked.\n
            * If the callback returns `true` the value of the property is being set to the new value,\n
            * and if the\n
            callback returns `false` the new value is discarded and the property remains its old value.\n
            */\n        protected open\n
fun beforeChange(property: KProperty<*>, oldValue: T, newValue: T): Boolean = true\n\n        /**\n
            * The callback\n
            which is called after the change of the property is made. The value of the property\n
            * has already been changed\n
            when this callback is invoked.\n
            */\n        protected open fun afterChange(property: KProperty<*>, oldValue: T,\n
newValue: T): Unit {\n        }\n\n        public override fun getValue(thisRef: Any?, property: KProperty<*>): T {\n            return\n
value\n        }\n\n        public override fun setValue(thisRef:\n
Any?, property: KProperty<*>, value: T) {\n            val oldValue = this.value\n            if (!beforeChange(property,\n
oldValue, value)) {\n                return\n            }\n            this.value = value\n            afterChange(property, oldValue, value)\n
        }\n    }\n\n"/*\n
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source code is governed by the Apache 2.0 license that can be found in the license/LICENSE.txt file.\n
*/\n\npackage\n
kotlin.random\n\nimport kotlin.math.nextDown\n\n/**\n
    * An abstract class that is implemented by\n
    random number generator algorithms.\n
    */\n    * The companion object [Random.Default] is the default instance of\n
    [Random].\n
    * To get a seeded instance of random generator use [Random] function.\n
    */\n    * @sample\n
samples.random.Randoms.defaultRandom\n    */\n    @SinceKotlin("1.3")\n    public abstract class Random {\n\n        /**\n
            * Gets the next random [bitCount] number of bits.\n
            */\n        * Generates an `Int` whose

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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
 * 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
 * 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
 * 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
 * Gets the
next random `Long` from the 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
 * 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
 * \n
 public open fun nextLong(until: Long): Long = nextLong(0, until)\n
 /** \n
 * Gets the next random
`Long` from the random number generator in the specified range.\n
 * \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
 * \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
                }\n
                else -> {\n
                    val
bitCount = fastLog2(nHigh)\n
                    nextBits(bitCount).toLong().shl(32) + nextInt()\n
                }\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
 * Gets the next random [Boolean] value.\n
 * \n
 public open fun nextBoolean():
Boolean = nextBits(1) != 0\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
 * 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
 * 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

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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) {\n
        "fromIndex ($fromIndex) or toIndex ($toIndex) are out of range: 0..${array.size}.\n
    }\n
    require(fromIndex <=
toIndex) {\n
        "fromIndex ($fromIndex) must be not greater than toIndex ($toIndex).\n
    }\n\n
    val steps = (toIndex -
fromIndex) / 4\n\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\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
/** \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
    @Suppress("DEPRECATION_ERROR")\n
    @kotlin.jvm.JvmField\n
    public val Companion: Random.Companion
= Random.Companion\n
}\n\n
@Deprecated("Use Default companion object instead", level =
DeprecationLevel.HIDDEN)\n
public object Companion : Random() {\n
    override fun nextBits(bitCount: Int):
Int = Default.nextBits(bitCount)\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
 @SinceKotlin("1.3")\n
public 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@SinceKotlin("1.3")\npublic fun Random(seed: Long): Random = XorWowRandom(seed.toInt(),
seed.shr(32).toInt())\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@SinceKotlin("1.3")\npublic fun Random.nextInt(range: IntRange): Int = when {\n range.isEmpty() -> throw
IllegalArgumentException("Cannot get random in empty range: $range")\n range.last < Int.MAX_VALUE ->
nextInt(range.first, range.last + 1)\n
range.first > Int.MIN_VALUE -> nextInt(range.first - 1, range.last) + 1\n else -> nextInt()\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@SinceKotlin("1.3")\npublic fun
Random.nextLong(range: LongRange): Long = when {\n range.isEmpty() -> throw
IllegalArgumentException("Cannot get random in empty range: $range")\n range.last < Long.MAX_VALUE ->
nextLong(range.first, range.last + 1)\n range.first > Long.MIN_VALUE -> nextLong(range.first - 1, range.last) +
1\n else -> nextLong()\n}\n\ninternal expect fun defaultPlatformRandom(): Random\ninternal expect fun
doubleFromParts(hi26: Int, low27: Int): Double\n\n@UseExperimental(ExperimentalStdlibApi::class)\ninternal fun
fastLog2(value: Int): Int
= 31 - value.countLeadingZeroBits()\n\n**\n * Takes upper [bitCount] bits (0..32) from this number. *\ninternal fun
Int.takeUpperBits(bitCount: Int): Int =\n this.ushr(32 - bitCount) and (-bitCount).shr(31)\n\ninternal fun
checkRangeBounds(from: Int, until: Int) = require(until > from) { boundsErrorMessage(from, until) }\ninternal fun
checkRangeBounds(from: Long, until: Long) = require(until > from) { boundsErrorMessage(from, until) }\ninternal
fun checkRangeBounds(from: Double, until: Double) = require(until > from) { boundsErrorMessage(from, until)
}\n\ninternal fun boundsErrorMessage(from: Any, until: Any) = "Random range is empty: [$from,
$until)."\n\n", "/*\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\n val
signedFrom = from.toInt() xor Int.MIN_VALUE\n val signedUntil = until.toInt() xor Int.MIN_VALUE\n\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 * from `range.start` inclusive to
`range.endInclusive` inclusive.\n *\n * @throws IllegalArgumentException if [range] is empty.\n

```

```

*^@SinceKotlin("1.3")^@ExperimentalUnsignedTypes^public fun Random.nextUInt(range: UIntRange): UInt
= when {^   range.isEmpty() -> throw IllegalArgumentException("Cannot get random in empty range: $range")^   range.last < UInt.MAX_VALUE -> nextUInt(range.first, range.last + 1u)^   range.first > UInt.MIN_VALUE -> nextUInt(range.first - 1u, range.last) + 1u^   else -> nextUInt()}^n/n/**^ * Gets the next random [ULong] from the random number generator.^ *^ * Generates a [ULong] random value uniformly distributed between [ULong.MIN_VALUE] and [ULong.MAX_VALUE] (inclusive).^ *^@SinceKotlin("1.3")^@ExperimentalUnsignedTypes^public fun Random.nextULong(): ULong = nextLong().toULong()^n/n/**^ * Gets the next random [ULong] from the random number generator less than the specified [until] bound.^ *^ * Generates a [ULong] random value uniformly distributed between `0` (inclusive) and the specified [until] bound (exclusive).^ *^ * @throws IllegalArgumentException if [until] is zero.^ *^@SinceKotlin("1.3")^@ExperimentalUnsignedTypes^public fun Random.nextULong(until: ULong): ULong = nextULong(0uL, until)^n/n/**^ * Gets the next random [ULong] from the random number generator in the specified range.^ *^ * Generates a [ULong] random value uniformly distributed between the specified [from] (inclusive) and [until] (exclusive) bounds.^ *^ * @throws IllegalArgumentException if [from] is greater than or equal to [until].^ *^@SinceKotlin("1.3")^@ExperimentalUnsignedTypes^public fun Random.nextULong(from: ULong, until: ULong): ULong {^   checkULongRangeBounds(from, until)^   val signedFrom = from.toLong() xor Long.MIN_VALUE^   val signedUntil = until.toLong() xor Long.MIN_VALUE^   val signedResult = nextLong(signedFrom, signedUntil) xor Long.MIN_VALUE^   return signedResult.toULong()}^n/n/**^ * Gets the next random [ULong] from the random number generator in the specified [range].^ *^ * Generates a [ULong] random value uniformly distributed in the specified [range]:^ * from `range.start` inclusive to `range.endInclusive` inclusive.^ *^ * @throws IllegalArgumentException if [range] is empty.^ *^@SinceKotlin("1.3")^@ExperimentalUnsignedTypes^public fun Random.nextULong(range: ULongRange): ULong = when {^   range.isEmpty() -> throw IllegalArgumentException("Cannot get random in empty range: $range")^   range.last < ULong.MAX_VALUE -> nextULong(range.first, range.last + 1u)^   range.first > ULong.MIN_VALUE -> nextULong(range.first - 1u, range.last) + 1u^   else -> nextULong()}^n/n/**^ * Fills the specified unsigned byte [array] with random bytes and returns it.^ *^ * @return [array] filled with random bytes.^ *^@SinceKotlin("1.3")^@ExperimentalUnsignedTypes^public fun Random.nextUBytes(array: UByteArray): UByteArray {^   nextBytes(array.asByteArray())^   return array}^n/n/**^ * Creates an unsigned byte array of the specified [size], filled with random bytes.^ *^@SinceKotlin("1.3")^@ExperimentalUnsignedTypes^public fun Random.nextUBytes(size: Int): UByteArray = nextBytes(size).asUByteArray()^n/n/**^ * Fills a subrange of the specified `UByte` [array] starting from [fromIndex] inclusive and ending [toIndex] exclusive with random UBytes.^ *^ * @return [array] with the subrange filled with random bytes.^ *^@SinceKotlin("1.3")^@ExperimentalUnsignedTypes^public fun Random.nextUBytes(array: UByteArray, fromIndex: Int = 0, toIndex: Int = array.size): UByteArray {^   nextBytes(array.asByteArray(), fromIndex, toIndex)^   return array}^n/n^@ExperimentalUnsignedTypes^internal fun checkUIntRangeBounds(from: UInt, until: UInt) = require(until > from) { boundsErrorMessage(from, until) }^@ExperimentalUnsignedTypes^internal fun checkULongRangeBounds(from: ULong, until: ULong) = require(until > from) { boundsErrorMessage(from, until) }^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.^ *^@npackage kotlin.random^ *^ * Random number generator, using Marsaglia's "xorwow" algorithm^ *^ * Cycles after 2^192 - 2^32 repetitions.^ *^ * For more details, see Marsaglia, George (July 2003). "Xorshift RNGs".^ *^ * Journal of Statistical Software. 8 (14). doi:10.18637/jss.v008.i14^ *^ * Available at https://www.jstatsoft.org/v08/i14/paper^ *^ *^@ninternal class XorWowRandom^@ninternal constructor(^   private var x: Int,^   private var y: Int,^   private var z: Int,^   private var w: Int,^   private var v: Int,^   private var

```



```

addend: Int) : Random() {
    internal constructor(seed1: Int, seed2: Int) :
        this(seed1, seed2, 0, 0,
            seed1.inv(), (seed1 shl 10) xor (seed2 ushr 4))
    init {
        require((x or y or z or w or v) != 0) {
            "Initial state must have at least one non-zero element."
        }
        // some trivial seeds can produce several values with zeroes in
        // upper bits, so we discard first 64
        repeat(64) { nextInt() }
        override fun nextInt(): Int {
            // Equivalent to the xorxow algorithm
            // From Marsaglia, G. 2003. Xorshift RNGs. J. Statis. Soft. 8, 14, p. 5
            var t = x
            t = t xor (t ushr 2)
            x = y
            y = z
            z = w
            val v0 = v
            w = v0
            t = (t xor (t shl 1)) xor v0 xor (v0 shl 4)
            v = t
            addend += 362437
            return t + addend
        }
        override fun nextBits(bitCount: Int): Int =
            nextInt().takeUpperBits(bitCount)
    }
}
/*
 * 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("RangesKt")
package
kotlin.ranges
/**
 * Represents a range of [Comparable] values.
 */
private open class ComparableRange<T> :
    Comparable<T>> {
    override val start: T,
    override val endInclusive: T) : ClosedRange<T> {
    override
    fun equals(other: Any?): Boolean {
        return other is ComparableRange<*> && (isEmpty() && other.isEmpty())
    }
    start == other.start && endInclusive
    == other.endInclusive)
    override fun hashCode(): Int {
        return if (isEmpty()) -1 else 31 *
        start.hashCode() + endInclusive.hashCode()
    }
    override fun toString(): String =
        "$start..$endInclusive"
}
/**
 * Creates a range from this [Comparable] value to the specified [that] value.
 *
 * This value needs to be smaller than [that] value, otherwise the returned range will be empty.
 *
 * @sample
 * samples.ranges.Ranges.rangeFromComparable
 */
public operator fun <T> Comparable<T>> T.rangeTo(that: T):
    ClosedRange<T> = ComparableRange(this, that)
/**
 * Represents a range of floating point numbers.
 *
 * Extends [ClosedRange] interface providing custom operation [lessThanOrEquals] for comparing values of range
 * domain type.
 *
 * This interface is implemented by floating point ranges returned by [Float.rangeTo] and
 * [Double.rangeTo] operators to
 * achieve IEEE-754 comparison order instead of total order of floating point
 * numbers.
 */
@SinceKotlin("1.1")
public
interface ClosedFloatingPointRange<T> : Comparable<T>> : ClosedRange<T> {
    override fun contains(value:
    T): Boolean = lessThanOrEquals(start, value) && lessThanOrEquals(value, endInclusive)
    override fun
    isEmpty(): Boolean = !lessThanOrEquals(start, endInclusive)
}
/**
 * Compares two values of range domain
 * type and returns true if first is less than or equal to second.
 */
fun lessThanOrEquals(a: T, b: T):
    Boolean
}
/**
 * A closed range of values of type `Double`.
 *
 * Numbers are compared with the ends of
 * this range according to IEEE-754.
 */
private class ClosedDoubleRange(
    start: Double,
    endInclusive:
    Double) : ClosedFloatingPointRange<Double> {
    private val _start = start
    private val _endInclusive =
    endInclusive
    override val start: Double get() = _start
    override val endInclusive: Double get() =
    _endInclusive
    override fun lessThanOrEquals(a: Double, b: Double): Boolean = a <= b
    override fun
    contains(value: Double): Boolean = value >= _start && value <= _endInclusive
    override fun
    isEmpty(): Boolean = !(_start <= _endInclusive)
    override fun equals(other: Any?): Boolean {
        return
        other is ClosedDoubleRange && (isEmpty() && other.isEmpty())
    }
    _start == other._start &&
    _endInclusive == other._endInclusive)
    override fun hashCode(): Int {
        return if (isEmpty()) -1 else
        31 * _start.hashCode() + _endInclusive.hashCode()
    }
    override fun toString(): String =
        "$_start..$_endInclusive"
}
/**
 * Creates a range from this [Double] value to the specified [that] value.
 *
 * Numbers are compared with the ends of this range according to IEEE-754.
 *
 * @sample
 * samples.ranges.Ranges.rangeFromDouble
 */
@SinceKotlin("1.1")
public operator fun Double.rangeTo(that:
    Double): ClosedFloatingPointRange<Double> = ClosedDoubleRange(this, that)
/**
 * A closed range of
 * values of type `Float`.
 *
 * Numbers are compared with the ends of this range according to IEEE-754.
 */
private class ClosedFloatRange(
    start: Float,
    endInclusive:
    Float) : ClosedFloatingPointRange<Float> {
    private val _start = start
    private
    val _endInclusive = endInclusive
    override val start: Float get() = _start
    override val endInclusive: Float get() =
    _endInclusive
}

```

```

= _endInclusive\n\n override fun lessThanOrEquals(a: Float, b: Float): Boolean = a <= b\n\n override fun
contains(value: Float): Boolean = value >= _start && value <= _endInclusive\n\n override fun isEmpty(): Boolean =
!(_start <= _endInclusive)\n\n override fun equals(other: Any?): Boolean {\n\n return other is ClosedFloatRange
&& (isEmpty() && other.isEmpty()) ||\n\n _start == other._start && _endInclusive == other._endInclusive)\n
}\n\n override fun hashCode(): Int {\n\n return if (isEmpty()) -1 else 31 * _start.hashCode() +
_endInclusive.hashCode()\n\n }\n\n override fun toString(): String
= \"$_start..$_endInclusive\"\n}\n\n/**\n * Creates a range from this [Float] value to the specified [that] value.\n
*\n * Numbers are compared with the ends of this range according to IEEE-754.\n * @sample
samples.ranges.Ranges.rangeFromFloat\n *^n@SinceKotlin("1.1")\npublic operator fun Float.rangeTo(that:
Float): ClosedFloatingPointRange<Float> = ClosedFloatRange(this, that)\n\n/**\n * Returns `true` if this iterable
range contains the specified [element].\n *^n * Always returns `false` if the [element] is `null`.\n
*\n *^n@SinceKotlin("1.3")\n@kotlin.internal.InlineOnly\npublic inline operator fun <T, R> R.contains(element: T?):
Boolean where T : Any, R : Iterable<T>, R : ClosedRange<T> =\n\n element != null &&
contains(element)\n\n\ninternal fun checkStepIsPositive(isPositive: Boolean, step: Number) {\n\n if (!isPositive)
throw IllegalArgumentException("Step must be positive, was: $step.")\n}\n\n"/*\n * Copyright 2010-2019
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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("KClasses")\n@file:Suppress("UNCHECKED_CAST")\n\npackage
kotlin.reflect\n\nimport kotlin.internal.LowPriorityInOverloadResolution\n\n/**\n * Casts the given [value] to the
class represented by this [KClass] object.\n * Throws an exception if the value is `null` or if it is not an instance of
this class.\n *^n * This is an experimental function that behaves as a similar function from kotlin.reflect.full on
JVM.\n *^n * @see [KClass.isInstance]\n *^n * @see [KClass.safeCast]\n
*\n *^n@SinceKotlin("1.3")\n@ExperimentalStdlibApi\n@LowPriorityInOverloadResolution\nfun <T : Any>
KClass<T>.cast(value: Any?): T {\n\n if (!isInstance(value)) throw ClassCastException("Value cannot be cast to
$qualifiedName")\n\n return value as T\n}\n\n/**\n * Casts the given [value] to the class represented by this
[KClass] object.\n * Returns
`null` if the value is `null` or if it is not an instance of this class.\n *^n * This is an experimental function that
behaves as a similar function from kotlin.reflect.full on JVM.\n *^n * @see [KClass.isInstance]\n *^n * @see
[KClass.cast]\n *^n@SinceKotlin("1.3")\n@ExperimentalStdlibApi\n@LowPriorityInOverloadResolution\nfun
<T : Any> KClass<T>.safeCast(value: Any?): T? {\n\n return if (isInstance(value)) value as T else 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@file:kotlin.jvm.JvmMultifileClass\n@file:kotlin.jvm.JvmName("StringsKt")\n\npackage
kotlin.text\n\n/**\n * An object to which char sequences and values can be appended.\n *^n *^nextpect interface
Appendable {\n\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 `\"null\"` are appended to this
Appendable.\n *^n * fun append(value: CharSequence?): Appendable\n\n

```



```

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 {
require(marginPrefix.isNotBlank()) { "marginPrefix must be non-blank string." }
val lines = lines()
return lines.reindent(length + newIndent.length * lines.size, getIndentFunction(newIndent), { line ->
val
firstNonWhitespaceIndex = line.indexOfFirst { !it.isWhitespace() })
when {
firstNonWhitespaceIndex == -1 -> null
line.startsWith(marginPrefix, firstNonWhitespaceIndex) ->
line.substring(firstNonWhitespaceIndex + marginPrefix.length)
else -> null
})
})
}\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/**
 * Detects a common minimal indent like it
does [trimIndent] and replaces it with the specified [newIndent].\n *\npublic fun String.replaceIndent(newIndent:
String = `|`): String {
val lines = lines()
val minCommonIndent = lines
.filter(String::isNotBlank)
.map(String::indentWidth)
.min() ?: 0
return lines.reindent(length + newIndent.length * lines.size,
getIndentFunction(newIndent), { line -> line.drop(minCommonIndent) })
})
}\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 =
lineSequence()
.map {
when {
it.isBlank() -> {
when {
it.length < indent.length ->
indent
else -> it
}
}
else -> indent + it
}
}
}
.joinToString("\n")
private fun String.indentWidth(): Int = indexOfFirst { !it.isWhitespace() }.let { if (it == -1)
length else it }
private fun getIndentFunction(indent: String) = when {
indent.isEmpty() -> { line: String ->
line }
else -> { line: String -> indent + line }
}
private inline fun List<String>.reindent(
resultSizeEstimate: Int,
indentAddFunction: (String) -> String,
indentCutFunction: (String) -> String?):
String {
val lastIndex = lastIndex
return mapIndexedNotNull { index, value ->
if ((index == 0 || index
== lastIndex) && value.isBlank())
null
else
indentCutFunction(value)?.let(indentAddFunction)?: value
}
}
.joinTo(StringBuilder(resultSizeEstimate),
`|`)\n
.toString()
}\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.text\n\n/**
 * Defines names for Unicode symbols used in proper
Typography.\n *\npublic object Typography {
/** 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 = "\u003E"
/** The non-breaking space character
*\n public const val nbsp: Char = "\u00A0"
/** The character &#xD7; *\n public const val times: Char =
"\u00D7"
/** The character &#xA2; *\n public const val cent: Char = "\u00A2"
/** The character &#xA3;
*\n public const val pound: Char = "\u00A3"
/** The character &#xA7; *\n public const val section: Char =
"\u00A7"
/** The character &#xA9; *\n public const val copyright: Char = "\u00A9"
/** The character
&#xAB; *\n public const val leftGuillemete: Char = "\u00AB"
/** The character &#xBB; *\n public const
val rightGuillemete: Char = "\u00BB"
/** The character &#xAE; *\n public const val registered: Char =
"\u00AE"
/** The character &#xB0; *\n public const val degree: Char = "\u00B0"
/** The character
&#xB1; *\n public const val plusMinus: Char = "\u00B1"
/**

```

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The character &#xB6; * public const val paragraph: Char = "\u00B6"n /** The character &#xB7; * public const val middleDot: Char = "\u00B7"n /** The character &#xBD; * public const val half: Char = "\u00BD"n /** The character &#x2013; * public const val ndash: Char = "\u2013"n /** The character &#x2014; * public const val mdash: Char = "\u2014"n /** The character &#x2018; * public const val leftSingleQuote: Char = "\u2018"n /** The character &#x2019; * public const val rightSingleQuote: Char = "\u2019"n /** The character &#x201A; * public const val lowSingleQuote: Char = "\u201A"n /** The character &#x201C; * public const val leftDoubleQuote: Char = "\u201C"n /** The character &#x201D; * public const val rightDoubleQuote: Char = "\u201D"n /** The character &#x201E; * public const val lowDoubleQuote: Char = "\u201E"n /** The character &#x2020; * public const val dagger: Char = "\u2020"n /** The character &#x2021; * public const val doubleDagger: Char = "\u2021"n /** The character &#x2022; * public const val bullet: Char = "\u2022"n /** The character &#x2026; * public const val ellipsis: Char = "\u2026"n /** The character &#x2032; * public const val prime: Char = "\u2032"n /** The character &#x2033; * public const val doublePrime: Char = "\u2033"n /** The character &#x20AC; * public const val euro: Char = "\u20AC"n /** The character &#x2122; * public const val tm: Char = "\u2122"n /** The character &#x2248; * public const val almostEqual: Char = "\u2248"n /** The character &#x2260; * public const val notEqual: Char = "\u2260"n /** The character &#x2264; * public const val lessOrEqual: Char = "\u2264"n /** The character &#x2265; * 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 */\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 there was no match captured by that group.\n *\n * public 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 corresponds to the entire match.\n *\n * public operator fun get(index: Int): MatchGroup?\n *\n * Extends [MatchGroupCollection] by introducing a way to get matched groups by name, when regex supports it.\n *\n * @SinceKotlin("1.1")\n *\n * public interface MatchNamedGroupCollection : MatchGroupCollection {\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 * public operator fun get(name: String): MatchGroup?\n *\n * Represents the results from a single regular expression match.\n *\n * public 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 * 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 * public val groups: 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 *\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, corresponding item in [groupValues] is an empty string.\n *\n * @sample samples.text.Regexps.matchDestructuringToGroupValues\n *\n * public val groupValues: List<String>\n *\n * An instance of [MatchResult.Destructured] wrapper providing components for destructuring assignment

```

of group values.  
`* component1` corresponds to the value of the first group, `component2` of the second, and so on.  
`@sample samples.text.Regexps.matchDestructuringToGroupValues`  
`public val destructured: Destructured` `get() = Destructured(this)`  
`/** Returns a new [MatchResult] with the results for the next match, starting at the position`  
`at which the last match ended (at the character after the last matched character).`  
`public fun next(): MatchResult?`  
`/** Provides components for destructuring assignment of group values.`  
`[component1]` corresponds to the value of the first group, `[component2]`

of the second, and so on.  
`If the group in the regular expression is optional and there were no match captured by that group,`  
`corresponding component value is an empty string.`  
`@sample samples.text.Regexps.matchDestructuringToGroupValues`  
`public class Destructured` `internal constructor(public val match: MatchResult) {`  
`@kotlin.internal.InlineOnly` `public operator inline fun component1(): String = match.groupValues[1]`  
`@kotlin.internal.InlineOnly` `public operator inline fun component2(): String = match.groupValues[2]`  
`@kotlin.internal.InlineOnly` `public operator inline fun component3(): String = match.groupValues[3]`  
`@kotlin.internal.InlineOnly` `public operator inline fun component4(): String = match.groupValues[4]`  
`@kotlin.internal.InlineOnly` `public operator inline fun component5(): String = match.groupValues[5]`  
`@kotlin.internal.InlineOnly` `public operator inline fun component6(): String = match.groupValues[6]`  
`@kotlin.internal.InlineOnly` `public operator inline fun component7(): String = match.groupValues[7]`  
`@kotlin.internal.InlineOnly` `public operator inline fun component8(): String = match.groupValues[8]`  
`@kotlin.internal.InlineOnly` `public operator inline fun component9(): String = match.groupValues[9]`  
`@kotlin.internal.InlineOnly` `public operator inline fun component10(): String = match.groupValues[10]`  
`/** Returns destructured group values as a list of strings.`  
`First value in the returned list corresponds to the value of the first group, and so on.`  
`@sample samples.text.Regexps.matchDestructuringToGroupValues`  
`public fun toList(): List<String> = match.groupValues.subList(1, match.groupValues.size)`  
`} }`  
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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.time`  
`import kotlin.math.abs`  
`@UseExperimental(ExperimentalTime::class)`  
`private inline val storageUnit get() = DurationUnit.NANOSECONDS`  
`/** Represents the amount of time one instant of time is away from another instant.`  
`A negative duration is possible in a situation when the second instant is earlier than the first one.`  
`An infinite duration value [Duration.INFINITE] can be used to represent infinite timeouts.`  
`To construct a duration use either the extension function [toDuration],`  
`or the extension properties [hours], [minutes], [seconds], and so on,`  
`available on [Int], [Long], and [Double] numeric types.`  
`To get the value of this duration expressed in a particular [duration units][DurationUnit]`  
`use the functions [toInt], [toLong], and [toDouble]`  
`or the properties`

`[inHours], [inMinutes], [inSeconds], [inNanoseconds], and so on.`  
`@SinceKotlin("1.3")`  
`@ExperimentalTime`  
`@Suppress("NON_PUBLIC_PRIMARY_CONSTRUCTOR_OF_INLINE_CLASS")`  
`public inline class Duration` `internal constructor(internal val value: Double) : Comparable<Duration> {`  
`// TODO: backend fails on init block, wait for KT-28055`  
`init {`  
`require(_value.isNaN().not())`  
`} }`  
`companion object {`  
`/** The duration equal to exactly 0 seconds.`  
`public val ZERO: Duration = Duration(0.0)`  
`/** The duration whose value is positive infinity. It is useful for representing timeouts that should never expire.`  
`public val INFINITE: Duration = Duration(Double.POSITIVE_INFINITY)`  
`/** Converts the given time duration [value] expressed in the specified [sourceUnit] into the specified [targetUnit].`  
`public fun convert(value: Double, sourceUnit: DurationUnit, targetUnit: DurationUnit): Double =`  
`convertDurationUnit(value, sourceUnit, targetUnit)`  
`} }`  
`// arithmetic operators`  
`/** Returns the negative of this value.`  
`public operator fun unaryMinus(): Duration = Duration(-value)`  
`/** Returns a duration whose value is the sum of this and [other] duration values.`  
`public operator fun plus(other: Duration):`

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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\n public inline fun <T> toComponents(action: (days: Int, hours: Int, minutes: Int, seconds: Int, nanoseconds: Int) -> T): T =\n\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\n public inline fun <T> toComponents(action:
(hours: Int, minutes: Int, seconds: Int, nanoseconds: Int) -> T): T =\n\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\n public inline fun <T> toComponents(action: (minutes: Int, seconds: Int, nanoseconds: Int) -> T): T =\n\n action(inMinutes.toInt(), secondsComponent, nanosecondsComponent)\n\n /**\n * Splits this duration into
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

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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
 @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
 // conversion to units\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
 * 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
 * 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
 /** The value of this duration expressed as a [Double] number of days. *^\n
 public val inDays: Double get() = toDouble(DurationUnit.DAYS)\n
 /** The value of this duration expressed as a [Double] number of hours. *^\n
 public val inHours: Double get() = toDouble(DurationUnit.HOURS)\n
 /** The value of this duration expressed as a [Double] number of minutes. *^\n
 public val inMinutes: Double get() = toDouble(DurationUnit.MINUTES)\n
 /** The value of this duration expressed as a [Double] number of seconds. *^\n
 public val inSeconds: Double get() = toDouble(DurationUnit.SECONDS)\n
 /** The value of this duration expressed as a [Double] number of milliseconds. *^\n
 public val inMilliseconds: Double get() = toDouble(DurationUnit.MILLISECONDS)\n
 /** The value of this duration expressed as a [Double] number of microseconds. *^\n
 public val inMicroseconds: Double get() = toDouble(DurationUnit.MICROSECONDS)\n
 /** The value of this duration expressed as a [Double] number of nanoseconds. *^\n
 public val inNanoseconds: Double get() = toDouble(DurationUnit.NANOSECONDS)\n
 // shortcuts\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
 * 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
 * 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 ->

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DurationUnit.NANOSECONDS\n          absNs < 1e6 -> DurationUnit.MICROSECONDS\n          absNs <
1e9 -> DurationUnit.MILLISECONDS\n          absNs < 1000e9 -> DurationUnit.SECONDS\n          absNs
< 60_000e9 -> DurationUnit.MINUTES\n          absNs < 3600_000e9 -> DurationUnit.HOURS\n
absNs < 86400e9 * 1e7 -> DurationUnit.DAYS\n          else -> DurationUnit.DAYS.also { scientific = true }\n
          }\n          val value = toDouble(unit)\n          when {\n          scientific -> formatScientific(value)\n
maxDecimals > 0 -> formatUpToDecimals(value, maxDecimals)\n          else -> formatToExactDecimals(value,
precision(abs(value)))\n          } + unit.shortName()\n          }\n          }\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          /**\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          *\n          * Special cases:\n          * - the infinite duration is
formatted as `\"Infinity\"`
without unit\n          *\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          *\n          * @throws IllegalArgumentException if [decimals] is less than
zero.\n          *\n          * @sample samples.time.Durations.toStringDecimals\n          */\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          }\n          /**\n          * Returns an ISO-8601 based string
representation of this duration.\n          *\n          * The returned value is presented in the format `PTHmMs.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          *\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          *\n          * Negative durations are indicated with the
sign `-` in the beginning of the returned string, for example, `\"-PT5M30S\"`.\n          *\n          * @sample
samples.time.Durations.toIsoString\n          */\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
          constructing from number of units\n          // extension functions\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          // constructing from number of
units\n          // extension properties\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\npublic val Double.nanoseconds get() = toDuration(DurationUnit.NANOSECONDS)\n\n/** Returns a [Duration] equal to this [Int] number of microseconds. *\n@SinceKotlin("1.3")\n@ExperimentalTime\npublic 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`

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*\/n\n@file:kotlin.jvm.JvmMultifileClass()\n@file:kotlin.jvm.JvmName("\DurationUnitKt()")\n\npackage
kotlin.time\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
[HOURLS].\n *\n@SinceKotlin("1.3")\n@ExperimentalTime\npublic expect enum class DurationUnit {\n  /**\n
* 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 -> "\nus"\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/**\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 *\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\n@SinceKotlin("1.3")\npublic annotation class
ExperimentalTime"/**\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 * 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  /**\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  /**\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     \n  }\n}\n\n/**\n * Represents a time point notched on a particular [TimeSource].
Remains bound to the time source

```

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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\npublic abstract class TimeMark {\n /**\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 /**\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 /**\n * Returns a 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\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"))\n\npublic typealias Clock =
TimeSource\n\n\n@SinceKotlin("1.3")\n@ExperimentalTime\n@Deprecated("Use TimeMark class instead.",
ReplaceWith("TimeMark", "kotlin.time.TimeMark"))\n\npublic typealias ClockMark = TimeMark\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@SinceKotlin("1.3")\n@ExperimentalTime\n\ninternal expect object MonotonicTimeSource :
TimeSource\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@SinceKotlin("1.3")\n@ExperimentalTime\n\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 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

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plus(duration: Duration): TimeMark = LongTimeMark(startedAt, timeSource, offset + duration)\n } \n\n override
fun markNow(): TimeMark
= LongTimeMark(read(), this, Duration.ZERO)\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 @SinceKotlin("1.3")\n @ExperimentalTime\n public 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 protected abstract fun read(): Double\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 override fun markNow(): TimeMark = DoubleTimeMark(read(), this,
Duration.ZERO)\n}\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 * ```\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
*\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\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 * 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\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 @npackage kotlin.time\n nimport kotlin.contracts.*\n\n /**\n * Executes the given function [block] and returns the

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the provided [major], [minor] and [patch] components.\n    */\n    public fun isAtLeast(major: Int, minor: Int, patch:
Int): Boolean = // this.version >= versionOf(major, minor, patch)\n        this.major > major || (this.major == major
&&\n            (this.minor > minor || this.minor == minor &&\n                this.patch >= patch))\n\n
companion object {\n    /**\n     * Maximum value
a version component can have, a constant value 255.\n    */\n    // NOTE: Must be placed before CURRENT
because its initialization requires this field being initialized in JS\n    public const val
MAX_COMPONENT_VALUE = 255\n    /**\n     * Returns the current version of the Kotlin standard
library.\n    */\n    @kotlin.jvm.JvmField\n    public val CURRENT: KotlinVersion = KotlinVersion(1, 3,
70) // value is written here automatically during build\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.JvmName("LateinitKt")\n@file:Suppress("unused")\n\npackage kotlin\n\nimport
kotlin.internal.InlineOnly\nimport kotlin.internal.AccessibleLateinitPropertyLiteral\nimport
kotlin.reflect.KProperty0\n\n/**\n * Returns `true` if this lateinit property has been assigned
a value, and `false` otherwise.\n * Cannot be used in an inline function, to avoid binary compatibility issues.\n
*/\n@SinceKotlin("1.2")\n@InlineOnly\ninline val @receiver:AccessibleLateinitPropertyLiteral
KProperty0<*>.isInitialized: Boolean\n    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 * 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    /**\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 * This extension allows to use instances of Lazy for property delegation:\n * `val property: String by
lazy { initializer }`\n */\n\n@kotlin.internal.InlineOnly\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    /**\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    /**\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    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

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```
*\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 * @SinceKotlin("1.3")\n * @ExperimentalStdlibApi\n * public 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 * @SinceKotlin("1.3")\n * @ExperimentalStdlibApi\n * public 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 * @SinceKotlin("1.3")\n * @ExperimentalStdlibApi\n * public 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 * @SinceKotlin("1.3")\n * @ExperimentalStdlibApi\n * public 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 * @SinceKotlin("1.3")\n * @ExperimentalStdlibApi\n * public 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 *\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 [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\n * public 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 *\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 [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\n * public 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\n * public 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\n * public 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\n * public 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\n * public 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\n * public 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 *\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 [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\n * public 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 *\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:  
`number.rotateRight(-n) == number.rotateLeft(n)`  
 Rotating by a multiple of [Long.SIZE\_BITS] (64) returns the same number, or more generally  
`number.rotateRight(n) == number.rotateRight(n % 64)`  
`@SinceKotlin("1.3") @ExperimentalStdlibApi public expect fun Long.rotateRight(bitCount: Int): Long`  
 Counts the number of set bits in the binary representation of this [Byte] number.  
`@SinceKotlin("1.3") @ExperimentalStdlibApi @kotlin.internal.InlineOnly public inline fun Byte.countOneBits(): Int = (toInt() and 0xFF).countOneBits()`  
 Counts the number of consecutive most significant bits that are zero in the binary representation of this [Byte] number.  
`@SinceKotlin("1.3") @ExperimentalStdlibApi @kotlin.internal.InlineOnly public inline fun Byte.countLeadingZeroBits(): Int = (toInt() and 0xFF).countLeadingZeroBits() - (Int.SIZE_BITS - Byte.SIZE_BITS)`  
 Counts the number of consecutive least significant bits that are zero in the binary representation of this [Byte] number.  
`@SinceKotlin("1.3") @ExperimentalStdlibApi @kotlin.internal.InlineOnly public inline fun Byte.countTrailingZeroBits(): Int = (toInt() or 0x100).countTrailingZeroBits()`  
 Returns a number having a single bit set in the position of the most significant set bit of this [Byte] number, or zero, if this number is zero.  
`@SinceKotlin("1.3") @ExperimentalStdlibApi @kotlin.internal.InlineOnly public inline fun Byte.takeHighestOneBit(): Byte = (toInt() and 0xFF).takeHighestOneBit().toByte()`  
 Returns a number having a single bit set in the position of the least significant set bit of this [Byte] number, or zero, if this number is zero.  
`@SinceKotlin("1.3") @ExperimentalStdlibApi @kotlin.internal.InlineOnly public inline fun Byte.takeLowestOneBit(): Byte = toInt().takeLowestOneBit().toByte()`  
 Rotates the binary representation of this [Byte] 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)`  
 Rotating by a multiple of [Byte.SIZE\_BITS] (8) returns the same number, or more generally  
`number.rotateLeft(n) == number.rotateLeft(n % 8)`  
`@SinceKotlin("1.3") @ExperimentalStdlibApi public fun Byte.rotateLeft(bitCount: Int): Byte = (toInt().shl(bitCount and 7) or (toInt() and 0xFF).ushr(8 - (bitCount and 7))).toByte()`  
 Rotates the binary representation of this [Byte] 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)`  
 Rotating by a multiple of [Byte.SIZE\_BITS] (8) returns the same number, or more generally  
`number.rotateRight(n) == number.rotateRight(n % 8)`  
`@SinceKotlin("1.3") @ExperimentalStdlibApi public fun Byte.rotateRight(bitCount: Int): Byte = (toInt().shl(8 - (bitCount and 7)) or (toInt() and 0xFF).ushr(bitCount and 7)).toByte()`  
 Counts the number of set bits in the binary representation of this [Short] number.  
`@SinceKotlin("1.3") @ExperimentalStdlibApi @kotlin.internal.InlineOnly public inline fun Short.countOneBits(): Int = (toInt() and 0xFFFF).countOneBits()`  
 Counts the number of consecutive most significant bits that are zero in the binary representation of this [Short] number.  
`@SinceKotlin("1.3") @ExperimentalStdlibApi @kotlin.internal.InlineOnly public inline fun Short.countLeadingZeroBits(): Int = (toInt() and 0xFFFF).countLeadingZeroBits() - (Int.SIZE_BITS - Short.SIZE_BITS)`  
 Counts the number of consecutive least significant bits that are zero in the binary representation of this [Short] number.  
`@SinceKotlin("1.3") @ExperimentalStdlibApi @kotlin.internal.InlineOnly public inline fun Short.countTrailingZeroBits(): Int = (toInt() or 0x10000).countTrailingZeroBits()`  
 Returns a number having a single bit set in the position of the most significant set bit of this [Short] number, or zero, if this number is zero.  
`@SinceKotlin("1.3") @ExperimentalStdlibApi @kotlin.internal.InlineOnly public inline`

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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 @SinceKotlin("1.3")\n @ExperimentalStdlibApi\n @kotlin.internal.InlineOnly\n public 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 * \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 [Short.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 public 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 * \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 [Short.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 public 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
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by the Apache 2.0 license that can be found in the license/LICENSE.txt file.\n * \n @package kotlin\n @import
kotlin.internal.RequireKotlin\n @import
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)\n public inline fun
<R> suspend(noinline
block: suspend () -> R): suspend () -> R = block\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("TuplesKt")\n @package
kotlin\n\n/**\n * Represents a generic pair of two values.\n * \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 * \n * An example of decomposing it into values:\n * @sample samples.misc.Tuples.pairDestructuring\n
*\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 * \n public data class Pair<out
A, out B>(\n   public val first: A,\n   public val second: B\n ) : Serializable {\n\n   /**\n
Returns string representation of the [Pair] including its [first] and [second] values.\n   *\n   public override fun
toString(): String = "$first, $second"\n }\n\n/**\n * Creates a tuple of type [Pair] from this and [that].\n * \n * This
can be useful for creating [Map] literals with less noise, for example:\n * @sample
samples.collections.Maps.instantiation.mapFromPairs\n * \n public infix fun <A, B> A.to(that: B): Pair<A, B> =
Pair(this, that)\n\n/**\n * Converts this pair into a list.\n * @sample samples.misc.Tuples.pairToList\n * \n public
fun <T> Pair<T, T>.toList(): List<T> = listOf(first, second)\n\n/**\n * Represents a triad of values\n * \n * There is
no meaning attached to values in this class, it can be used for any purpose.\n * Triple exhibits value semantics, i.e.
two triples are equal if all three components are equal.\n * \n * An example of decomposing it into values:\n * @sample
samples.misc.Tuples.tripleDestructuring\n * \n * @param A type of the first value.\n * @param B
type of the second value.\n * @param C type of the third value.\n * @property first First value.\n * @property
second Second value.\n * @property third Third value.\n * \n public data class Triple<out A, out B, out C>(\n
public val first: A,\n public val second: B,\n public val third: C\n ) : Serializable {\n\n   /**\n
Returns string representation of the [Triple] including its [first], [second] and [third] values.\n   *\n   public override fun
toString(): String = "$first, $second, $third"\n }\n\n/**\n * Converts this triple into a list.\n * @sample

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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//
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@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  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@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\npublic open class
UIntProgression(\n  internal 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() && 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.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 UIntProgression within the specified
bounds of a closed range.\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     *\n     * [step] must be greater than `Int.MIN_VALUE` and not equal to zero.\n     *\n  public fun fromClosedRange(rangeStart:
UInt, rangeEnd: UInt, step: Int): UIntProgression = UIntProgression(rangeStart, rangeEnd, step)\n  }\n}\n\n/**\n * An iterator over a progression of values of type `UInt`.\n * @property step the number by which the value is
incremented on each step.\n *\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\nprivate class
UIntProgressionIterator(first: UInt, last: UInt, step: Int) : UIntIterator() {\n  private val finalElement = last\n
private var hasNext: Boolean = if (step > 0) first <= last else first >= last\n  private val step = step.toInt() // 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 nextUInt(): UInt {\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 * 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.collections\n\n/**\n * An iterator over a sequence of values of type `UByte`.\n *\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\npublic abstract class UByteIterator : Iterator<UByte>
{\n  override final fun next() = nextUByte()\n\n  /** Returns the next value in the sequence without boxing. *\n  public abstract fun nextUByte(): UByte\n}\n\n/**\n * An iterator over a sequence of values of type `UShort`.\n *\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\npublic abstract class UShortIterator : Iterator<UShort>
{\n  override final fun next() = nextUShort()\n\n  /** Returns the next value in the sequence without boxing. *\n

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public abstract fun nextUShort(): UShort {
    override fun next(): UShort = nextUShort()
}

public abstract class UIntIterator : Iterator<UInt> {
    override fun next(): UInt = nextUInt()
}

public abstract class ULongIterator :
    Iterator<ULong> {
    override fun next(): ULong = nextULong()
}

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that can be found in the license/LICENSE.txt file.
package
kotlin.ranges
import kotlin.internal.*

* A range of values of type `ULong`.
@SinceKotlin("1.3")@ExperimentalUnsignedTypes
public
class ULongRange(start: ULong, endInclusive: ULong) : ULongProgression(start, endInclusive, 1),
    ClosedRange<ULong> {
    override val start: ULong get() = first
    override val endInclusive: ULong get() = last
    override fun contains(value: ULong): Boolean = first <= value && value <= last
    override fun isEmpty(): Boolean = first > last
    override fun equals(other: Any?): Boolean =
        other is ULongRange &&
        (isEmpty() && other.isEmpty() ||
            first == other.first && last == other.last)
    override fun hashCode(): Int =
        if (isEmpty()) -1 else (31 * (first xor (first shr 32)).toInt() + (last xor (last shr
        32)).toInt())
    override fun toString(): String = "$first..$last"
    companion object {
        /** An empty
        range of values of type ULong.
        public val EMPTY: ULongRange = ULongRange(ULong.MAX_VALUE,
        ULong.MIN_VALUE)
    }
}

* A progression of values of
type `ULong`.
@SinceKotlin("1.3")@ExperimentalUnsignedTypes
public open class
ULongProgression(
    start: ULong,
    endInclusive: ULong,
    step: Long
) :
    Iterable<ULong> {
    init {
        if (step == 0.toLong()) throw kotlin.IllegalArgumentException("Step must be
        non-zero.")
        if (step == Long.MIN_VALUE) throw kotlin.IllegalArgumentException("Step must be greater
        than Long.MIN_VALUE to avoid overflow on negation.")
    }
    /**
    * The first element in the
    progression.
    public val first: ULong = start
    /**
    * The last element in the progression.
    public val last: ULong = getProgressionLastElement(start, endInclusive, step)
    /**
    * The step of the
    progression.
    public val step: Long = step
    override fun iterator(): ULongIterator =
    ULongProgressionIterator(first, last, step)
    /** Checks if the progression is empty.
    public open fun
    isEmpty():
    Boolean = if (step > 0) first > last else first < last
    override fun equals(other: Any?): Boolean =
        other is
        ULongProgression && (isEmpty() && other.isEmpty() ||
            first == other.first && last == other.last &&
            step == other.step)
    override fun hashCode(): Int =
        if (isEmpty()) -1 else (31 * (31 * (first xor (first shr
        32)).toInt() + (last xor (last shr 32)).toInt()) + (step xor (step ushr 32)).toInt())
    override fun toString(): String =
        if (step > 0) "$first..$last step $step" else "$first downTo $last step ${-step}"
    companion object {
        /**
        * Creates ULongProgression within the specified bounds of a closed range.
        * The progression
        starts with the [rangeStart] value and goes toward the [rangeEnd] value not excluding it, with the specified [step].
        * In order to go backwards the [step] must be negative.
        * [step] must be greater than
        `Long.MIN_VALUE` and not equal to
        zero.
        public fun fromClosedRange(rangeStart: ULong, rangeEnd: ULong, step: Long):
        ULongProgression = ULongProgression(rangeStart, rangeEnd, step)
    }
}

* An iterator over a
progression of values of type `ULong`.
* @property step the number by which the value is incremented on each
step.
@SinceKotlin("1.3")@ExperimentalUnsignedTypes
private class ULongProgressionIterator(first:
    ULong, last: ULong, step: Long) : ULongIterator() {
    private val finalElement = last
    private var hasNext:
    Boolean = if (step > 0) first <= last else first >= last
    private val step = step.toULong() // use 2-complement math
    for negative steps
    private var next = if (hasNext) first else finalElement
    override fun hasNext(): Boolean =
    hasNext
    override fun nextULong(): ULong {
        val value = next
        if (value == finalElement) {
            if (!hasNext) throw kotlin.NoSuchElementException()
            hasNext = false
        }
    }
}

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    } else {
        next += step
    }
    return value
}

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*/

package kotlin.math

Returns the
smaller of two values.

@SinceKotlin("1.3")@ExperimentalUnsignedTypes@kotlin.internal.InlineOnly
public inline fun min(a:
UInt, b: UInt): UInt {
    return minOf(a, b)
}

Returns the smaller of two values.

@SinceKotlin("1.3")@ExperimentalUnsignedTypes@kotlin.internal.InlineOnly
public inline fun min(a:
ULong, b: ULong): ULong {
    return minOf(a, b)
}

Returns the greater of two values.

@SinceKotlin("1.3")@ExperimentalUnsignedTypes@kotlin.internal.InlineOnly
public inline fun max(a:
UInt, b: UInt): UInt {
    return maxOf(a, b)
}

Returns the greater of two values.

@SinceKotlin("1.3")@ExperimentalUnsignedTypes@kotlin.internal.InlineOnly
public
inline fun max(a: ULong, b: ULong): ULong {
    return maxOf(a, b)
}

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license that can be found in the license/LICENSE.txt file.

@file:kotlin.jvm.JvmName("UNumbersKt")
package kotlin

Counts the number of set bits in the
binary representation of this [UInt] number.

@SinceKotlin("1.3")@ExperimentalStdlibApi@ExperimentalUnsignedTypes@kotlin.internal.InlineOnl
y
public inline fun UInt.countOneBits(): Int = toInt().countOneBits()

Counts the number of consecutive
most significant bits that are zero in the binary representation of this [UInt] number.

@SinceKotlin("1.3")@ExperimentalStdlibApi@ExperimentalUnsignedTypes@kotlin.internal.InlineOnl
y
public inline fun UInt.countLeadingZeroBits(): Int = toInt().countLeadingZeroBits()

Counts the number of consecutive least significant bits that are zero in the binary representation of this [UInt]
number.

@SinceKotlin("1.3")@ExperimentalStdlibApi@ExperimentalUnsignedTypes@kotlin.internal.InlineOnl
y
public inline fun UInt.countTrailingZeroBits(): Int = toInt().countTrailingZeroBits()

Returns a number
having a single bit set in the position of the most significant set bit of this [UInt] number,
or zero, if this number
is zero.

@SinceKotlin("1.3")@ExperimentalStdlibApi@ExperimentalUnsignedTypes@kotlin.internal.InlineOnl
y
public inline fun UInt.takeHighestOneBit(): UInt = toInt().takeHighestOneBit().toUInt()

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.

@SinceKotlin("1.3")@ExperimentalStdlibApi@ExperimentalUnsignedTypes@kotlin.internal.InlineOnl
y
public inline fun
UInt.takeLowestOneBit(): UInt = toInt().takeLowestOneBit().toUInt()

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)

Rotating by a multiple of [UInt.SIZE_BITS] (32) returns the same number, or more
generally
number.rotateLeft(n) == number.rotateLeft(n % 32)

@SinceKotlin("1.3")@ExperimentalStdlibApi@ExperimentalUnsignedTypes@kotlin.internal.InlineOnl
y
public inline fun UInt.rotateLeft(bitCount: Int): UInt = toInt().rotateLeft(bitCount).toUInt()

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)

Rotating by a multiple of [UInt.SIZE_BITS] (32) returns the same number, or more
generally
number.rotateRight(n) == number.rotateRight(n % 32)

@SinceKotlin("1.3")@ExperimentalStdlibApi@ExperimentalUnsignedTypes@kotlin.internal.InlineOnl

```

```

y\npublic inline fun UInt.rotateRight(bitCount: Int): UInt = toInt().rotateRight(bitCount).toUInt()\n\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.InlineOnl
y\npublic inline fun ULong.countOneBits(): Int = toLong().countOneBits()\n\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.InlineOnl
y\npublic inline fun ULong.countLeadingZeroBits(): Int = toLong().countLeadingZeroBits()\n\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.InlineOnl
y\npublic inline fun ULong.countTrailingZeroBits(): Int = toLong().countTrailingZeroBits()\n\n/**\n * Returns a
number having a single bit set in the position of the most significant set bit of this [ULong] number,\n * or zero, if
this number is zero.\n
*\n@SinceKotlin("1.3")\n@ExperimentalStdlibApi\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnl
y\npublic inline fun ULong.takeHighestOneBit(): ULong = toLong().takeHighestOneBit().toULong()\n\n/**\n *
Returns a number having a single bit set in the position of the least
significant set bit of this [ULong] number,\n * or zero, if this number is zero.\n
*\n@SinceKotlin("1.3")\n@ExperimentalStdlibApi\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnl
y\npublic inline fun ULong.takeLowestOneBit(): ULong = toLong().takeLowestOneBit().toULong()\n\n/**\n *
Rotates the binary representation of this [ULong] 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 [ULong.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\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnl
y\npublic inline fun ULong.rotateLeft(bitCount:
Int): ULong = toLong().rotateLeft(bitCount).toULong()\n\n/**\n * Rotates the binary representation of this
[ULong] 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 [ULong.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\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnl
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@SinceKotlin("1.3")\n@ExperimentalStdlibApi\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnl
y\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@SinceKotlin("1.3")\n@ExperimentalStdlibApi\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnl
y\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@SinceKotlin("1.3")\n@ExperimentalStdlibApi\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnl
y\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@SinceKotlin("1.3")\n@ExperimentalStdlibApi\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnl
y\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 @SinceKotlin("1.3")\n @ExperimentalStdlibApi\n @ExperimentalUnsignedTypes\n @kotlin.internal.InlineOnl
y\n public inline fun UByte.takeLowestOneBit(): UByte = toInt().takeLowestOneBit().toUByte()\n\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 * 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 @SinceKotlin("1.3")\n @ExperimentalStdlibApi\n @ExperimentalUnsignedTypes\n @kotlin.internal.InlineOnl
y\n public inline fun UByte.rotateLeft(bitCount: Int): UByte = toByte().rotateLeft(bitCount).toUByte()\n\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 * 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 @SinceKotlin("1.3")\n @ExperimentalStdlibApi\n @ExperimentalUnsignedTypes\n @kotlin.internal.InlineOnl
y\n public inline fun UByte.rotateRight(bitCount:
Int): UByte = toByte().rotateRight(bitCount).toUByte()\n\n\n/**\n * Counts the number of set bits in the binary
representation of this [UShort] number.\n
*\n @SinceKotlin("1.3")\n @ExperimentalStdlibApi\n @ExperimentalUnsignedTypes\n @kotlin.internal.InlineOnl
y\n public inline fun UShort.countOneBits(): Int = toUInt().countOneBits()\n\n\n/**\n * Counts the number of
consecutive most significant bits that are zero in the binary representation of this [UShort] number.\n
*\n @SinceKotlin("1.3")\n @ExperimentalStdlibApi\n @ExperimentalUnsignedTypes\n @kotlin.internal.InlineOnl
y\n public inline fun UShort.countLeadingZeroBits(): Int = toShort().countLeadingZeroBits()\n\n\n/**\n * Counts the
number of consecutive least significant bits that are zero in the binary representation of this [UShort] number.\n
*\n @SinceKotlin("1.3")\n @ExperimentalStdlibApi\n @ExperimentalUnsignedTypes\n @kotlin.internal.InlineOnl
y\n public inline fun UShort.countTrailingZeroBits(): Int = toShort().countTrailingZeroBits()\n\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 @SinceKotlin("1.3")\n @ExperimentalStdlibApi\n @ExperimentalUnsignedTypes\n @kotlin.internal.InlineOnl
y\n public inline fun UShort.takeHighestOneBit(): UShort = toInt().takeHighestOneBit().toUShort()\n\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 @SinceKotlin("1.3")\n @ExperimentalStdlibApi\n @ExperimentalUnsignedTypes\n @kotlin.internal.InlineOnl
y\n public inline fun UShort.takeLowestOneBit(): UShort = toInt().takeLowestOneBit().toUShort()\n\n\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.InlineOnl
y\n public inline fun UShort.rotateLeft(bitCount: Int): UShort = toShort().rotateLeft(bitCount).toUShort()\n\n\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 *\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\n@SinceKotlin("1.3")\n@ExperimentalStdlibApi\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\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\n@file:UseExperimental(ExperimentalUnsignedTypes::class)\npackage kotlin.internal\n\n// (a - b) mod
c\nprivate 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\nprivate 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 * 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 * @suppress\n
*/\n\n@PublishedApi\n@SinceKotlin("1.3")\ninternal 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 *\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 * @suppress\n
*/\n\n@PublishedApi\n@SinceKotlin("1.3")\ninternal 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"/*\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("UStringsKt") // string representation
of unsigned numbers\n\npackage kotlin.text\n\n}/*\n * Returns a string representation of this [Byte] value in the
specified [radix].\n *\n * @throws IllegalArgumentException when [radix] is not a valid radix for number to string
conversion.\n *\n */\n\n@SinceKotlin("1.3")\n@ExperimentalUnsignedTypes\n@kotlin.internal.InlineOnly\npublic
/*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\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}/*\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\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}/*\n * Returns a string representation of this
[Long] value in the specified [radix].\n *\n * @throws IllegalArgumentException when [radix] is not a valid radix

```





```

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\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\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\n        val beforeAdding = result\n        result += digit.toUInt()\n        if (result < beforeAdding) return null // overflow has
happened\n    }\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 * @throws IllegalArgumentException when [radix] is not a
valid radix for string to number conversion.\n */\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\n
val limitForMaxRadix = 512409557603043100uL // limit / 36\n\n    var limitBeforeMul = limitForMaxRadix\n\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\n        val beforeAdding = result\n        result += digit.toUInt()\n        if (result < beforeAdding) return null // overflow
has happened\n    }\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")\n\npackage kotlin\n\nimport kotlin.annotation.AnnotationTarget.*\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\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,
TYPEALIAS)\n@Retention(AnnotationRetention.BINARY)\n@RequireKotlin("1.2.50", versionKind =
RequireKotlinVersionKind.COMPILER_VERSION)\n\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.Constants, can't use them from nativeMath as they are not constants there
** Ratio of the circumference of a circle to its diameter, approximately 3.14159.
@SinceKotlin("1.2")\npublic const val PI: Double = 3.141592653589793
** Base of the natural logarithms, approximately 2.71828.
@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 * Special cases:
\n * - `sin(NaN|+Inf|-Inf)` is `NaN`
\n * @SinceKotlin("1.2")\npublic expect fun sin(x: Double): Double\n\n** Computes the cosine of the angle [x] given in radians.
\n * Special cases:
\n * - `cos(NaN|+Inf|-Inf)` is `NaN`
\n * @SinceKotlin("1.2")\npublic expect fun cos(x: Double): Double\n\n** Computes the tangent of the angle [x] given in radians.
\n * Special cases:
\n * - `tan(NaN|+Inf|-Inf)` is `NaN`
\n * @SinceKotlin("1.2")\npublic expect fun tan(x: Double): Double\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 * Special cases:
\n * - `asin(x)` is `NaN`, when  $abs(x) > 1$  or  $x$  is `NaN`
\n * @SinceKotlin("1.2")\npublic expect fun asin(x: Double): Double\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 * @SinceKotlin("1.2")\npublic expect fun acos(x: Double): Double\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 * @SinceKotlin("1.2")\npublic expect fun atan(x: Double): Double\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  $-Inf < y < 0$ 
\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  $x \neq 0$ 
\n * - `atan2(-Inf, x)` is  $-\pi/2$  for finite  $x \neq 0$ 
\n * - `atan2(NaN, x)` and `atan2(y, NaN)` is `NaN`
\n * @SinceKotlin("1.2")\npublic expect fun atan2(y: Double, x: Double): Double\n\n** Computes the hyperbolic sine of the value [x].
\n * Special cases:
\n * - `sinh(NaN)` is `NaN`
\n * - `sinh(+Inf)` is  $+Inf$ 
\n * - `sinh(-Inf)` is  $-Inf$ 
\n * @SinceKotlin("1.2")\npublic expect fun sinh(x: Double): Double\n\n** Computes the hyperbolic cosine of the value [x].
\n * Special cases:
\n * - `cosh(NaN)` is `NaN`
\n * - `cosh(+Inf|-Inf)` is  $+Inf$ 
\n * @SinceKotlin("1.2")\npublic expect fun cosh(x: Double): Double\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 * @SinceKotlin("1.2")\npublic expect fun tanh(x: Double): Double\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  $+Inf$ 
\n * - `asinh(-Inf)` is  $-Inf$ 
\n * @SinceKotlin("1.2")\npublic expect fun asinh(x: Double): Double\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  $+Inf$ 
\n * @SinceKotlin("1.2")\npublic expect fun acosh(x: Double): Double\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 * - `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 * @SinceKotlin("1.2")\npublic expect fun atanh(x: Double): Double\n\n** Computes  $\sqrt{x^2 + y^2}$  without intermediate overflow or underflow.
\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 * @SinceKotlin("1.2")\npublic expect fun hypot(x: Double, y: Double): Double\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 * @SinceKotlin("1.2")\npublic expect fun sqrt(x: Double): Double\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  $+Inf$ 

```

\* `-exp(-Inf)` is `0.0`.  
`public 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:  
`-expm1(NaN)` is `NaN`  
`-expm1(+Inf)` is `+Inf`  
`-expm1(-Inf)` is `-1.0`  
 @see `[exp]` function.  
`public 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 <= 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]`.  
`public expect fun log(x: Double, base: Double): Double`  
 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`  
`public expect fun ln(x: Double): Double`  
 Computes the common logarithm (base 10) of the value `[x]`.  
 @see `[ln]` function for special cases.  
`public expect fun log10(x: Double): Double`  
 Computes the binary logarithm (base 2) of the value `[x]`.  
 @see `[ln]` function for special cases.  
`public 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(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  
`public 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:  
`-ceil(x)` is `x` where `x` is `NaN` or `+Inf` or `-Inf` or already a mathematical integer.  
`public 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:  
`-floor(x)` is `x` where `x` is `NaN` or `+Inf` or `-Inf` or already a mathematical integer.  
`public 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:  
`-truncate(x)` is `x` where `x` is `NaN` or `+Inf` or `-Inf` or already a mathematical integer.  
`public expect fun truncate(x: Double): Double`  
 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.  
`public expect fun round(x: Double): Double`  
 Returns the absolute value of the given value `[x]`.  
 Special cases:  
`-abs(NaN)` is `NaN`  
 @see `absoluteValue` extension property for `[Double]`  
`public 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:  
`-sign(NaN)` is `NaN`  
`public expect fun sign(x: Double): Double`  
 Returns the smaller of two values.  
 If either value is `NaN`, then the result is `NaN`.  
`public expect fun min(a: Double, b: Double): Double`  
 Returns the greater of two values.  
 If either value is `NaN`, then the result is `NaN`.  
`public expect fun max(a: Double, b: Double): Double`  
 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  
`public expect fun Double.pow(x: Double): Double`  
 Raises this value to the integer power `[n]`.  
 See the other overload of `[pow]` for details.  
`public expect fun Double.pow(n: Int): Double`  
 Returns the absolute value of this value.  
 Special cases:  
`-NaN.absoluteValue` is `NaN`  
 @see `abs` function  
`public expect val Double.absoluteValue: Double`  
 Returns the sign of this value:  
`-1.0` if the value is negative,  
`0` if the value is

zero,  $\text{ulp}$  if the value is positive  
 \* Special case:  $\text{ulp}$  is  $\text{NaN}$   
 \* `@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  $\text{NaN}$  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:  $\text{ulp}$  is  $\text{NaN}$   
 $\text{ulp}$  is  $\text{NaN}$   
 $\text{ulp}$  is  $+\text{Inf}$  when  $x$  is  $+\text{Inf}$  or  $-\text{Inf}$   
 $\text{ulp}$  is  $\text{Double.MIN\_VALUE}$   
 \* `@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:  $\text{nextTowards}(y)$  is  $\text{NaN}$  if either  $x$  or  $y$  are  $\text{NaN}$   
 $\text{nextTowards}(x) == x$   
 \* `@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:  
 $\text{roundToInt}() == \text{Int.MAX\_VALUE}$  when  $x > \text{Int.MAX\_VALUE}$   
 $\text{roundToInt}() == \text{Int.MIN\_VALUE}$  when  $x < \text{Int.MIN\_VALUE}$   
 \* @throws IllegalArgumentException when this value is  $\text{NaN}$   
 \* `@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:  
 $\text{roundToLong}() == \text{Long.MAX\_VALUE}$  when  $x > \text{Long.MAX\_VALUE}$   
 $\text{roundToLong}() == \text{Long.MIN\_VALUE}$  when  $x < \text{Long.MIN\_VALUE}$   
 \* @throws IllegalArgumentException when this value is  $\text{NaN}$   
 \* `@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:  $\text{sin}(\text{NaN}|+\text{Inf}|-\text{Inf})$  is  $\text{NaN}$   
 \* `@SinceKotlin("1.2")` public expect fun sin(x: Float): Float  
 \* `Computes the cosine of the angle [x] given in radians.`  
 \* Special cases:  $\text{cos}(\text{NaN}|+\text{Inf}|-\text{Inf})$  is  $\text{NaN}$   
 \* `@SinceKotlin("1.2")` public expect fun cos(x: Float): Float  
 \* `Computes the tangent of the angle [x] given in radians.`  
 \* Special cases:  $\text{tan}(\text{NaN}|+\text{Inf}|-\text{Inf})$  is  $\text{NaN}$   
 \* `@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  $-\text{PI}/2$  to  $\text{PI}/2$  radians.`  
 \* Special cases:  $\text{asin}(x)$  is  $\text{NaN}$ , when  $\text{abs}(x) > 1$  or  $x$  is  $\text{NaN}$   
 \* `@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  $\text{PI}$  radians.`  
 \* Special cases:  $\text{acos}(x)$  is  $\text{NaN}$ , when  $\text{abs}(x) > 1$  or  $x$  is  $\text{NaN}$   
 \* `@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  $-\text{PI}/2$  to  $\text{PI}/2$  radians.`  
 \* Special cases:  $\text{atan}(\text{NaN})$  is  $\text{NaN}$   
 \* `@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  $-\text{PI}$  to  $\text{PI}$  radians.`  
 \* Special cases:  $\text{atan2}(0.0, 0.0)$  is  $0.0$   
 $\text{atan2}(0.0, x)$  is  $0.0$  for  $x > 0$  and  $\text{PI}$  for  $x < 0$   
 $\text{atan2}(-0.0, x)$  is  $-0.0$  for  $x > 0$  and  $-\text{PI}$  for  $x < 0$   
 $\text{atan2}(y, +\text{Inf})$  is  $0.0$  for  $0 < y < +\text{Inf}$  and  $-0.0$  for  $-\text{Inf} < y < 0$   
 $\text{atan2}(y, -\text{Inf})$  is  $\text{PI}$  for  $0 < y < +\text{Inf}$  and  $-\text{PI}$  for  $-\text{Inf} < y < 0$   
 $\text{atan2}(y, 0.0)$  is  $\text{PI}/2$  for  $y > 0$  and  $-\text{PI}/2$  for  $y < 0$   
 $\text{atan2}(+\text{Inf}, x)$  is  $\text{PI}/2$  for finite  $x$   
 $\text{atan2}(-\text{Inf}, x)$  is  $-\text{PI}/2$  for finite  $x$   
 $\text{atan2}(\text{NaN}, x)$  and  $\text{atan2}(y, \text{NaN})$  is  $\text{NaN}$   
 \* `@SinceKotlin("1.2")` public expect fun atan2(y: Float, x: Float): Float  
 \* `Computes the hyperbolic sine of the value [x].`  
 \* Special cases:  $\text{sinh}(\text{NaN})$  is  $\text{NaN}$

`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` \*  
`@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:  
\* `atanh(NaN)` is `NaN` \* `atanh(x)` is `NaN` when `x > 1` or `x < -1` \* `atanh(1.0)` is `+Inf` \* `atanh(-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)`  
- 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. \*  
`@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.

`@SinceKotlin("1.2")`  
`public expect fun round(x: Float): Float`  
Returns the absolute value of the given value [x].

`@SinceKotlin("1.2")`  
`public expect 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

`@SinceKotlin("1.2")`  
`public expect fun sign(x: Float): Float`  
Returns the smaller of two values.

`@SinceKotlin("1.2")`  
`public expect fun min(a: Float, b: Float): Float`  
Returns the greater of two values.

`@SinceKotlin("1.2")`  
`public expect fun max(a: Float, b: Float): Float`  
Raises this value to the power [x].

`@SinceKotlin("1.2")`  
`public expect fun Float.pow(x: Float): Float`  
Raises this value to the integer power [n].

`@SinceKotlin("1.2")`  
`public expect fun Float.pow(n: Int): Float`  
Returns the absolute value of this value.

`@SinceKotlin("1.2")`  
`public expect 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

`@SinceKotlin("1.2")`  
`public expect val Float.sign: Float`  
Returns this value with the sign bit same as of the [sign] value.

`@SinceKotlin("1.2")`  
`public expect fun Float.withSign(sign: Float): Float`  
Returns this value with the sign bit same as of the [sign] value.

`@SinceKotlin("1.2")`  
`public expect fun Float.withSign(sign: Int): Float`  
Rounds this [Float] value to the nearest integer and converts the result to [Int].

`@SinceKotlin("1.2")`  
`public expect fun Float.roundToInt(): Int`  
Rounds this [Float] value to the nearest integer and converts the result to [Long].

`@SinceKotlin("1.2")`  
`public expect fun Float.roundToLong(): Long`  
Returns the absolute value of the given value [n].

`@SinceKotlin("1.2")`  
`public expect fun abs(n: Int): Int`  
Returns the smaller of two values.

`@SinceKotlin("1.2")`  
`public expect fun min(a: Int, b: Int): Int`  
Returns the greater of two values.

`@SinceKotlin("1.2")`  
`public expect fun max(a: Int, b: Int): Int`  
Returns the absolute value of this value.

`@SinceKotlin("1.2")`  
`public expect 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

`@SinceKotlin("1.2")`  
`public expect val Int.sign: Int`  
Returns the absolute value of the given value [n].

`@SinceKotlin("1.2")`  
`public expect fun abs(n: Long): Long`  
Returns the

smaller of two values.\n \*/\n@SinceKotlin("1.2")\npublic expect fun min(a: Long, b: Long): Long\n\n\*/\n \* Returns the greater of two values.\n \*/\n@SinceKotlin("1.2")\npublic expect fun max(a: Long, b: Long): Long\n\n\*/\n \* Returns the absolute value of this value.\n \*/\n \* Special cases:\n \* - `Long.MIN\_VALUE.absoluteValue` is `Long.MIN\_VALUE` due to an overflow\n \*/\n \* @see abs function\n \*/\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@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 AO,MAAO,KAAI,UAAW,IAAG,MAAM,IAA1C,C;IACI,MAAM,CAAC,QAAD,EAAW,CAAC,SAAD,CAAX,E AAwB,OAAxB,C;SAEL,IAAI,OAAO,OAAQ,KAAI,QAAvB,C;IACD,OAAO,CAAC,MAAM,QAAP,C;;IAGP,IA AI,OAAQ,GAAE,E;IACd,OAAO,CAAC,IAAI,OAAL,C;;CAEd,CAAC,IAAD,EAAO,kB;EACJ,IAAI,IAAI,M;EC PZ,MAAM,eAAgB,GAAE,a;IACpB,OAAoD,CAA5C,KAAK,QAAQ,CAAC,CAAD,CAAI,IAAG,CAAE,YAAW, SAAW,KAAg,CAAC,OAAQ,KAAI,c;G;EAGxE,MAAM,YAAa,GAAE,a;IACjB,OAAO,CAAE,YAAW,SAAU,I AAG,CAAC,OAAQ,KAAI,c;G;EAGID,MAAM,aAAc,GAAE,a;IACIB,OAAO,CAAE,YAAW,U;G;EAGxB,MAA M,YAAa,GAAE,a;IACjB,OAAO,CAAE,YAAW,WAAY,IAAG,CAAC,OAAQ,KAAI,W;G;EAGpD,MAAM,WAA Y,GAAE,a;IACbB,OAAO,CAAE,YAAW,U;G;EAGxB,MAAM,aAAc,GAAE,a;IACIB,OAAO,CAAE,YAAW,Y;G ;EAGxB,MAAM,cAAe,GAAE,a;IACnB,OAAO,CAAE,YAAW,Y;G;EAGxB,MAAM,YAAa,GAAE,a;IACjB,OAA O,KAAK,QAAQ,CAAC,CAAD,CAAI,IAAG,CAAC,OAAQ,KAAI,W;G;EAG5C,MAAM,QAAS,GAAE,a;IACb,O AAO,KAAK,QAAQ,CAAC,CAAD,CAAI,IAAG,CAAC,CAAC,O;G;EAGjC,MAAM,WAAY,GAAE,a;IACbB,OA AO,KAAK,QAAQ,CAAC,CAAD,CAAI,IAAG,WAAY,OAAO,CAAC,CAAD,C;G;EAGjD,MAAM,cAAe,GAAE, a;IACnB,IAAI,WAAY,MAAM,YAAQ,CAAC,CAAD,CAAI,GAAE,MAAM,aAAR,GAAwB,MAAM,S;IACnE,O AAO,GAAI,GAAE,KAAK,UAAU,IAAI,KAAK,CAAC,CAAD,EAAI,a;MAAc,OAAO,QAAQ,CAAC,CAAD,C;K AAjC,CAAwC,KAAK,CAAC,IAAD,CAAO,GAAE,G;G;EAG/F,MAAM,kBAAmB,GAAE,e;IACvB,OAAO,MAA M,OAAO,YAAQ,wBAAwB,CAAC,GAAD,C;G;EAG5D,MAAM,YAAa,GAAE,gB;IACjB,IAAI,CAAE,KAAI,CA AV,C;MACI,OAAO,I;KAEX,IAAI,CAAC,MAAM,WAAY,CAAC,CAAD,CAAI,IAAG,CAAC,OAAQ,KAAI,CA AC,OAA3C,C;MACI,OAAO,K;KAGX,KAAK,IAAI,IAAI,CAAR,EAAW,IAAI,CAAC,OAArB,EAA8B,CAAE,G AAe,CAAIC,EAAqC,CAAC,EAAtC,C;MACI,IAAI,CAAC,MAAM,OAAO,CAAC,CAAC,CAAC,CAAD,CAAF, EAAO,CAAC,CAAC,CAAD,CAAR,CAAI,B,C;QACI,OAAO,K;;IAGf,OAAO,I;G;EAGX,MAAM,gBAAiB,GAAE ,gB;IACrB,OAAO,MAAM,OAAO,YAAQ,sBAAsB,CAAC,CAAD,EAAI,CAAJ,C;G;EAG1D,MAAM,cAAe,GAA E,e;IACnB,IAAI,SAAS,C;IACb,KAAK,IAAI,IAAI,CAAR,EAAW,IAAI,GAAG,OAAvB,EAAGC,CAAE,GAAE,C AApC,EAAuC,CAAC,EAAxC,C;MACI,MAAO,GAAqB,CAAjB,EAAG,GAAE,MAAO,GAAE,CAAG,IAAE,MA AM,SAAS,CAAC,GAAG,CAAC,CAAD,CAAJ,CAAU,GAAE,C;;IAE7D,OAAO,M;G;EAGX,MAAM,kBAAmB, GAAE,e;IACvB,OAAO,MAAM,OAAO,YAAQ,wBAAwB,CAAC,GAAD,C;G;EAG5D,MAAM,mBAAoB,GAAE, iB;IACxB,KAAK,KAAK,CAAC,MAAM,gBAAP,C;G;ECIFd,MAAM,eAAgB,GAAE,mB;IACpB,CAAC,aAAc,G AAe,I;IACjB,OAAO,C;G;EAGX,MAAM,uBAAwB,GAAE,4C;IAC5B,MAAM,IAAK,GAAE,M;IACb,MAAM,IA AK,GAAE,M;IACb,MAAM,aAAc,GAAE,I;IACtB,OAAO,mBAAmB,CAAC,MAAD,EAAS,MAAT,EAAiB,6BA A6B,CAAC,UAAD,CAA9C,C;G;EAG9B,iD;IACI,GAAG,WAAY,GAAE,sBAAsB,CAAC,OAAO,MAAO,KAAI, UAAW,GAAE,KAAK,QAAP,GAakB,KAAK,UAArD,C;IACvC,GAAG,YAAa,GAAE,G;IACIB,OAAO,G;G;EA GX,IAAI,gCAAgC,CACHc,UACa,QAAS,IAAT,wBAAqC,Y;IAC1C,OAAO,MAAM,OAAO,QAAQ,kB;GADvB, CADb,aAIe,QAAS,IAAT,wBAAqC,Y;IAC5C,OAAO,MAAM,OAAO,QAAQ,W;GADrB,CAJf,CADgC,EAShC,U ACa,QAAS,IAAT,wBAAqC,Y;IAC1C,OAAO,MAAM,OAAO,QAAQ,kB;GADvB,CADb,aAIe,QAAS,IAAT,wBA AqC,Y;IAC5C,OAAO,MAAM,OAAO,QAAQ,W;GADrB,CAJf,CATgC,C;EAmBpC,uC;IACI,IAAI,KAAK,MAA O,KAAI,IAApB,C;MACI,KAAK,MAAO,GAAE,aACE,CAAC,KAAK,qBAAqB,EAA3B,CADF,aAEC,IAFD,aAG C,EAHD,cAIE,EAJF,SAKH,EALG,iBAMK,EANL,C;KASIB,OAAO,KAAK,M;G;EChDhB,MAAM,QAAS,GAA E,a;IACb,OAAoB,CAAZ,CAAE,GAAE,KAAQ,KAAg,EAAG,IAAG,E;G;EAGjC,MAAM,OAAQ,GAAE,a;IACZ, OAAkB,CAAV,CAAE,GAAE,GAAM,KAAg,EAAG,IAAG,E;G;EAG/B,MAAM,OAAQ,GAAE,a;IACZ,OAAO,C AAE,GAAE,K;G;EAGf,MAAM,aAAc,GAAE,a;IACIB,OAAO,CAAE,YAAW,MAAM,KAAm,GAAE,CAAF,GA AM,MAAM,KAAK,WAAY,CAAC,CAAD,C;G;EAGhE,MAAM,YAAa,GAAE,a;IACjB,OAAO,CAAE,YAAW,



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GOrpRhC,EAAS,MAAT,C;YACA,e;;YAEA,c;;UPkpRA,iB;UACA,IAAK,WA3RyD,cA2RrD,CAAE,OAaf,CAAJ,  
C;;QA3RT,OA6RO,W;O;KAvSX,C;uFAaA,yB;MAAA,wE;MA6RA,+D;MA7RA,yD;QAUW,kBAAU,oB;QA6RD  
,Q;QAAhB,iD;UAAgB,cAAhB,e;UACI,UA9RiD,WA8RvC,CAAY,OAAZ,C;UOxqRP,U;UADP,YP0qRe,W01qR  
H,Wp0qRwB,GO1qRxB,C;UACL,IAAI,aAAJ,C;YACH,aPwqRuC,gB;YAA5B,W0vqRX,aPuqRgC,GOvqRhC,EA  
AS,MAAT,C;YACA,e;;YAEA,c;;UPoqRA,iB;UACA,IAAK,WahSyD,cAgSrD,CAAE,OAaf,CAAJ,C;;QAhST,O  
AkSO,W;O;KA5SX,C;uFAaA,yB;MAAA,wE;MAkSA,+D;MAISA,yD;QAUW,kBAAU,oB;QAKSD,Q;QAAhB,iD;  
UAAgB,cAAhB,e;UACI,UAnSiD,WAmSvC,CAAY,OAAZ,C;UO1rRP,U;UADP,YP4rRe,W05rRH,Wp4rRwB,G  
O5rRxB,C;UACL,IAAI,aAAJ,C;YACH,aP0rRuC,gB;YAA5B,W0zrRX,aPyrRgC,GOzrRhC,EAAS,MAAT,C;YA  
CA,e;;YAEA,c;;UPSrRA,iB;UACA,IAAK,WArSyD,cAqSrD,CAAE,OAaf,CAAJ,C;;QArST,OAuSO,W;O;KAjTX,  
C;uFAaA,yB;MAAA,wE;MAuSA,+D;MAvSA,yD;QAUW,kBAAU,oB;QAUdS,Q;QAAhB,iD;UAAgB,cAAhB,e;  
UACI,UAXSiD,WAwSvC,CAAY,OAAZ,C;UO5sRP,U;UADP,YP8sRe,W09sRH,Wp8sRwB,GO9sRxB,C;UACL,I  
AAI,aAAJ,C;YACH,aP4sRuC,gB;YAA5B,W03sRX,aP2sRgC,GO3sRhC,EAAS,MAAT,C;YACA,e;;YAEA,c;;UP  
wsRA,iB;UACA,IAAK,WA1SyD,cA0SrD,CAAE,OAaf,CAAJ,C;;QA1ST,OA4SO,W;O;KAfTX,C;uFAaA,yB;MA  
AA,wE;MA4SA,+D;MA5SA,yD;QAUW,kBAAU,oB;QA4SD,Q;QAAhB,iD;UAAgB,cAAhB,e;UACI,UA7SiD,W  
A6SvC,CAAY,OAAZ,C;UO9tRP,U;UADP,YPguRe,W0huRH,WpguRwB,GOhuRxB,C;UACL,IAAI,aAAJ,C;YA  
CH,aP8tRuC,gB;YAA5B,W07tRX,aP6tRgC,GO7tRhC,EAAS,MAAT,C;YACA,e;;YAEA,c;;UP0tRA,iB;UACA,I  
AAK,WA/SyD,cA+SrD,CAAE,OAaf,CAAJ,C;;QA/ST,OaiTO,W;O;KA3TX,C;uFAaA,yB;MAAA,wE;MAiTA,+  
D;MAjTA,yD;QAUW,kBAAU,oB;QaiTD,Q;QAAhB,iD;UAAgB,cAAhB,e;UACI,UAITiD,WakTvC,CAAY,OA  
AZ,C;UOhvRP,U;UADP,YPkvRe,W0lvRH,WpkvRwB,GOlvRxB,C;UACL,IAAI,aAAJ,C;YACH,aPgvRuC,gB;Y  
AA5B,W0uRX,aP+uRgC,GOuRhC,EAAS,MAAT,C;YACA,e;;YAEA,c;;UP4uRA,iB;UACA,IAAK,WApTyD,c  
AoTrD,CAAE,OAaf,CAAJ,C;;QApTT,OAsTO,W;O;KAhUX,C;uFAaA,yB;MAAA,wE;MAStA,oC;MAAA,+D;M  
AAA,gC;MAfTA,yD;QAUW,kBAAU,oB;QAsTD,Q;QAAhB,iD;UAAgB,cAAhB,0B;UACI,UAvTiD,WauTvC,C  
AAY,oBAAZ,C;UOlwRP,U;UADP,YPowRe,WOpwRH,WpowRwB,GOpwRxB,C;UACL,IAAI,aAAJ,C;YACH,aP  
kwRuC,gB;YAA5B,W0jwRX,aPiwRgC,GOjwRhC,EAAS,MAAT,C;YACA,e;;YAEA,c;;UP8vRA,iB;UACA,IAA  
K,WAZTyD,cAyTrD,CAAE,oBAaf,CAAJ,C;;QAZTT,OA2TO,W;O;KArUX,C;wFAaA,yB;MAAA,+D;MAAA,sD;  
QASoB,Q;QAAhB,wBAAgB,SAAhB,gB;UAAgB,cAAA,SAAhB,M;UACI,UAAU,YAAY,OAAZ,C;UOx9QP,U;U  
ADP,YP09Qe,W019QH,Wp09QwB,GO19QxB,C;UACL,IAAI,aAAJ,C;YACH,aPw9QuC,gB;YAA5B,W0v9QX,a  
Pu9QgC,GOv9QhC,EAAS,MAAT,C;YACA,e;;YAEA,c;;UP09QA,iB;UACA,IAAK,WAAI,OAAJ,C;;QAET,OAA  
O,W;O;KAdX,C;0FAiBA,yB;MAAA,+D;MAAA,sD;QASoB,Q;QAAhB,wBAAgB,SAAhB,gB;UAAgB,cAAA,SA  
AhB,M;UACI,UAAU,YAAY,OAAZ,C;UOz+QP,U;UADP,YP2+Qe,W03+QH,Wp2+QwB,GO3+QxB,C;UACL,I

AAI,aAAJ,C;YACH,aPy+QuC,gB;YAA5B,Wox+QX,aPw+QgC,GOx+QhC,EAAS,MAAT,C;YACA,e;;YAEA,c;;  
UPq+QA,iB;UACA,IAAK,WAAI,OAAJ,C;;QAET,OAAO,W;O;KAdX,C;0FAiBA,yB;MAAA,+D;MAAA,sD;QA  
SoB,Q;QAAhB,wBAAgB,SAAhB,gB;UAAgB,cAAA,SAAhB,M;UACI,UAAU,YAAAY,OAAZ,C;UO1/QP,U;UAD  
P,YP4/Qe,WO5/QH,WP4/QwB,GO5/QxB,C;UACL,IAAI,aAAJ,C;YACH,aP0/QuC,gB;YAA5B,Woz/QX,aPy/Qg  
C,GOz/QhC,EAAS,MAAT,C;YACA,e;;YAEA,c;;UPs/QA,iB;UACA,IAAK,WAAI,OAAJ,C;;QAET,OAAO,W;O;  
KAdX,C;0FAiBA,yB;MAAA,+D;MAAA,sD;QASoB,Q;QAAhB,wBAAgB,SAAhB,gB;UAAgB,cAAA,SAAhB,M;  
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,C;YACH,aP2gRuC,gB;YAA5B,WO1gRX,aP0gRgC,GO1gRhC,EAAS,MAAT,C;YACA,e;;YAEA,c;;UPugRA,iB;  
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B,wBAAgB,SAAhB,gB;UAAgB,cAAA,SAAhB,M;UACI,UAAU,YAAAY,OAAZ,C;UO5hRP,U;UADP,YP8hRe,W  
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C,EAAS,MAAT,C;YACA,e;;YAEA,c;;UPwhRA,iB;UACA,IAAK,WAAI,OAAJ,C;;QAET,OAAO,W;O;KAdX,C;  
0FAiBA,yB;MAAA,+D;MAAA,sD;QASoB,Q;QAAhB,wBAAgB,SAAhB,gB;UAAgB,cAAA,SAAhB,M;UACI,U  
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P6iRuC,gB;YAA5B,WO5iRX,aP4iRgC,GO5iRhC,EAAS,MAAT,C;YACA,e;;YAEA,c;;UPyiRA,iB;UACA,IAAK,  
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,C;YACA,e;;YAEA,c;;UP0jRA,iB;UACA,IAAK,WAAI,OAAJ,C;;QAET,OAAO,W;O;KAdX,C;0FAiBA,yB;MAA  
A,+D;MAAA,sD;QASoB,Q;QAAhB,wBAAgB,SAAhB,gB;UAAgB,cAAA,SAAhB,M;UACI,UAAU,YAAAY,OAA  
Z,C;UO/kRP,U;UADP,YPiRe,WOjIRH,WPiRwB,GOjIRxB,C;UACL,IAAI,aAAJ,C;YACH,aP+kRuC,gB;YAA5B  
,WO9kRX,aP8kRgC,GO9kRhC,EAAS,MAAT,C;YACA,e;;YAEA,c;;UP2kRA,iB;UACA,IAAK,WAAI,OAAJ,C;;  
QAET,OAAO,W;O;KAdX,C;0FAiBA,yB;MAAA,oC;MAAA,+D;MAAA,gC;MAAA,sD;QASoB,Q;QAAhB,wBA  
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e,WOlRH,WPkmRwB,GOlmRxB,C;UACL,IAAI,aAAJ,C;YACH,aPgmRuC,gB;YAA5B,WO/IRX,aP+IRgC,GO/  
RhC,EAAS,MAAT,C;YACA,e;;YAEA,c;;UP4IRA,iB;UACA,IAAK,WAAI,oBAAJ,C;;QAET,OAAO,W;O;KAdX,  
C;0FAiBA,yB;MAAA,+D;MAAA,sE;QAUoB,Q;QAAhB,wBAAgB,SAAhB,gB;UAAgB,cAAA,SAAhB,M;UACI,  
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CH,aPknRuC,gB;YAA5B,WOjnRX,aPinRgC,GOjnRhC,EAAS,MAAT,C;YACA,e;;YAEA,c;;UP8mRA,iB;UACA,  
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Re,WotoRH,WPsoRwB,GOtoRxB,C;UACL,IAAI,aAAJ,C;YACH,aPooRuC,gB;YAA5B,WOnoRX,aPmoRgC,GO  
noRhC,EAAS,MAAT,C;YACA,e;;YAEA,c;;UPgoRA,iB;UACA,IAAK,WAAI,eAAe,OAAf,CAAJ,C;;QAET,OAA  
O,W;O;KafX,C;2FAkBA,yB;MAAA,+D;MAAA,sE;QAUoB,Q;QAAhB,wBAAgB,SAAhB,gB;UAAgB,cAAA,SA  
AhB,M;UACI,UAAU,YAAAY,OAAZ,C;UOtpRP,U;UADP,YPwpRe,WoxpRH,WPwpRwB,GOxpRxB,C;UACL,IA  
AI,aAAJ,C;YACH,aPspRuC,gB;YAA5B,WOrpRX,aPqpRgC,GOrpRhC,EAAS,MAAT,C;YACA,e;;YAEA,c;;UPk  
pRA,iB;UACA,IAAK,WAAI,eAAe,OAAf,CAAJ,C;;QAET,OAAO,W;O;KafX,C;2FAkBA,yB;MAAA,+D;MAAA  
,sE;QAUoB,Q;QAAhB,wBAAgB,SAAhB,gB;UAAgB,cAAA,SAAhB,M;UACI,UAAU,YAAAY,OAAZ,C;UOxqRP,  
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X,aPwqRgC,GOvqRhC,EAAS,MAAT,C;YACA,e;;YAEA,c;;UPoqRA,iB;UACA,IAAK,WAAI,eAAe,OAAf,CAAJ,  
C;;QAET,OAAO,W;O;KafX,C;2FAkBA,yB;MAAA,+D;MAAA,sE;QAUoB,Q;QAAhB,wBAAgB,SAAhB,gB;UA  
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,C;UACL,IAAI,aAAJ,C;YACH,aP0rRuC,gB;YAA5B,WOzrRX,aPyrRgC,GOzrRhC,EAAS,MAAT,C;YACA,e;;Y  
AEA,c;;UPsrRA,iB;UACA,IAAK,WAAI,eAAe,OAAf,CAAJ,C;;QAET,OAAO,W;O;KafX,C;2FAkBA,yB;MAAA  
,+D;MAAA,sE;QAUoB,Q;QAAhB,wBAAgB,SAAhB,gB;UAAgB,cAAA,SAAhB,M;UACI,UAAU,YAAAY,OAAZ,  
C;UO5sRP,U;UADP,YP8sRe,WO9sRH,WP8sRwB,GO9sRxB,C;UACL,IAAI,aAAJ,C;YACH,aP4sRuC,gB;YAA5  
B,WO3sRX,aP2sRgC,GO3sRhC,EAAS,MAAT,C;YACA,e;;YAEA,c;;UPwsRA,iB;UACA,IAAK,WAAI,eAAe,OA  
Af,CAAJ,C;;QAET,OAAO,W;O;KafX,C;2FAkBA,yB;MAAA,+D;MAAA,sE;QAUoB,Q;QAAhB,wBAAgB,SA

hB,gB;UAAgB,cAAA,SAAhB,M;UACI,UAAU,YAAY,OAAZ,C;UO9tRP,U;UADP,YPguRe,WOhuRH,WPguRw  
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YACA,e;;YAEA,c;;UP0tRA,iB;UACA,IAAK,WAAI,eAAe,OAAf,CAAJ,C;;QAET,OAAO,W;O;KafX,C;2FAkBA  
,yB;MAAA,+D;MAAA,sE;QAUoB,Q;QAAhB,wBAAgB,SAAhB,gB;UAAgB,cAAA,SAAhB,M;UACI,UAAU,YA  
AY,OAAZ,C;UOhvRP,U;UADP,YPkvRe,WOlvrh,WPkvRwB,GOlvRxB,C;UACL,IAAI,aAAJ,C;YACH,aPgvRu  
C,gB;YAA5B,WO/uRX,aP+uRgC,GO/uRhC,EAAS,MAAT,C;YACA,e;;YAEA,c;;UP4uRA,iB;UACA,IAAK,WA  
AI,eAAe,OAAf,CAAJ,C;;QAET,OAAO,W;O;KafX,C;2FAkBA,yB;MAAA,oC;MAAA,+D;MAAA,gC;MAAA,sE  
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OlwRP,U;UADP,YPowRe,WOpwRH,WPowRwB,GOpwRxB,C;UACL,IAAI,aAAJ,C;YACH,aPkwRuC,gB;YAA5  
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;O;MARX,oDASQ,Y;QAA6C,OAAgB,qBAAhB,oBAAgB,C;O;MATrE,iDAUQ,mB;QAAoC,gCAAY,OAAZ,C;O  
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C;QA6UA,Q;QAAb,iD;UAAa,WAAb,e;UACI,WAAy,WA9UiB,SA8Ub,CAAU,IAAV,CAAJ,C;;QA9UhB,OA+U  
O,W;O;KATVX,C;8EAUA,yB;MAAA,gE;MAAA,uC;QAOW,kBAAM,eAAa,gBAAb,C;QA6UA,Q;QAAb,iD;UA  
Aa,WAAb,e;UACI,WAAy,WA9UiB,SA8Ub,CAAU,IAAV,CAAJ,C;;QA9UhB,OA+UO,W;O;KATVX,C;8EAUA,  
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AV,CAAJ,C;;QA9UhB,OA+UO,W;O;KATVX,C;8EAUA,yB;MAAA,gE;MAAA,uC;QAOW,kBAAM,eAAa,gBA  
Ab,C;QA6UA,Q;QAAb,iD;UAAa,WAAb,e;UACI,WAAy,WA9UiB,SA8Ub,CAAU,IAAV,CAAJ,C;;QA9UhB,OA+  
UO,W;O;KATVX,C;8EAUA,yB;MAAA,gE;MAAA,uC;QAOW,kBAAM,eAAa,gBAAb,C;QA6UA,Q;QAAb,iD;U  
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BAAV,CAAJ,C;;QA9UhB,OA+UO,W;O;KATVX,C;0FAUA,yB;MAAA,gE;MAAA,uC;QAOW,kBAaA,eAAa,gB  
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SAoHpB,EAAU,cAAV,EAAU,sBAAV,WAAmB,IAAnB,CAAJ,C;;QApHhB,OAqHO,W;O;KA5HX,C;4FAUA,yB  
;MAAA,gE;MAAA,uC;QAOW,kBAaA,eAAa,gBAAb,C;QAsHP,gB;QADb,YAAY,C;QACZ,iD;UAAa,WAAb,e;U  
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O;KA/HX,C;4FAUA,yB;MAAA,gE;MAAA,uC;QAOW,kBAaA,eAAa,gBAAb,C;QayHP,gB;QADb,YAAY,C;QA  
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V,K;;QAAP,W;OAMJ,OAA4B,qBAAhB,gBAAL,SAAK,CAAGB,C;K;IAGhC,oC;MAII,IAAI,oCAAJ,C;QACI,O  
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BnfhC,6B;e+BmfgC,6B;UAAA,qB;YAAE,yB/BzeK,c+ByeK,E/BzeL,C+ByeL,C;W;S;OAAF,C;MAPhC,uC;QAO  
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eA,+B;MEueA,0BAOGC,yB;QF9ehC,+B;eE8egC,6B;UAAA,qB;YAAE,yBFpeQ,eEoeE,EFpeF,CEoeR,C;W;S;OA  
AF,C;MAPhC,uC;QAOmB,kBAAR,iB;QAAQ,uB;;UICwwBf,0D;YACI,IkCzwB0B,UFpeQ,ehC6uCpB,YAAK,KA  
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;QAOmB,kBAAR,iB;QAAQ,uB;;UIC4tBf,0D;YACI,IkC7tB0B,U9B5hBW,gBjyvCvB,YAAK,KAAL,CiZvCuB,C8  
B4hBX,CiC6tB1B,C;cACI,sBAAO,K;cAAP,wB;;UAGR,sBAAO,E;;;QkCjuBP,0B;O;KAPJ,C;+FAUA,yB;MAAA,  
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+B;eEshB+B,6B;UAAA,qB;YAAE,yBF5gBS,eE4gBC,EF5gBD,CE4gBT,C;W;S;OAAF,C;MAP/B,uC;QAOmB,k  
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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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,uB;UACV,cAAc,sBAAK,KAAL,C;UACd,IAAI,UAAU,OAAs,CAAJ,C;YAAwB,OAAO,O;;QAEEnC,MAAM,gC  
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EzD,EoBu+EqE,QpBv+ErE,C;QoBw+EA,OAAO,W;O;KArBX,C;wFAwBA,yB;MpBv+EA,8C;MoBu+EA,kF;QA  
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Ab,C;QAAa,sB;QACT,WAAY,WAAI,WAAU,cAAV,EAAU,sBAAV,WAAmB,IAAnB,CAAJ,C;;MACHB,OAAO,  
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YAA0B,MAAa,MAAK,qCAAL,C;MACvC,gBA Ae,E;MAEf,oBAA4B,I;MAC5B,eAAc,K;MACd,iBAAgB,E;MAChB,iBAAqC,I;K;yEAERc,Y;MACl,IAAI,6BAAwB,YAA5B,C;QACl,gBAAqB,iBAAqD,O;QAC1E,IAAI,4DAAC,SAAlB,C;UACl,OAAO,C;OAGf,IAAI,yDAAa,SAAK,OAAtB,C;QACl,oBAAe,2CAAW,UAAK,aAAL,CAAX,C;QACf,eAAU,iC;QACV,iBAAy,C;QACZ,OAAO,C;;QAEP,oBAAe,I;QACf,OAAO,C;;K;mEAlf,Y;MACl,IAAI,eAAS,EAAb,C;QACl,AAQ,oB;MACZ,OAAO,eAAS,C;K;gEAGpB,Y;MAEOB,Q;MADhB,IAAI,CAAC,cAAL,C;QAAgB,MAAM,6B;MACN,IAAI,YAAJ,C;QACZ,yBAAqD,cAArD,C;;QAEa,OAAb,iB;;MAHJ,oB;MAKA,iBAAiB,S;MACjB,AAQ,E;MACR,OAAO,S;K;kEAGX,Y;MnE/CR,ImEgDyB,cnEhDrB,QAAJ,C;QACl,cAhByB,OB;QAiBzB,MAAM,6BAAsB,OAAQ,WAA9B,C;OmE+CE,6BAAyB,cAAO,6BAAy,IAAnB,C;MACzB,iBAAy,I;MAEZ,uC;K;;6CAtdZ,Y;MAEI,2D;K;4DAyDJ,oB;MACl,mBAAmB,kBAAW,QAAX,C;MACnB,OAAW,iBAAiB,SAArB,GAAgC,IAAhC,GAAOC,Y;K;;;wCCtKrD,Y;MACl,aAAR,MAAM,OAAe,CAAP,IAAO,C;MAEb,OAAO,KAAp,IAAgB,C;MrBXpB,OqBYqB,MrBzf,CqBYuB,KrBZvB,C;MqBaF,OAAO,M;K;;ICNuB,qC;MAAC,kC;MAEnC,oBAAkC,kB;MACiC,sBAAyB,C;K;yEAHU,Y;MAAA,8B;K;qEAGnC,Y;MAAA,OB;K,OAAA,gB;MAAA,OB;K;;iDAWA,e;MACl,IAAI,0BAAJ,C;QAAoB,OAAO,K;MAC3B,OAAO,kBAAW,GAAX,MAAoB,S;K;4CAG/B,e;MACl,IAAI,0BAAJ,C;QAAoB,OAAO,I;MAC3B,YAAy,kBAAW,GAAX,C;MACZ,OAAW,UAAU,SAArB,GAAgC,KAAhC,GAA2D,I;K;8CAI/D,sB;MrEVA,IAAI,EqEWQ,uBrEXR,CAAJ,C;QACl,cAda,qB;QAEb,MAAM,gCAAyB,OAAQ,WAAjC,C;OqEUN,eAAe,kBAAW,GAAX,C;MACf,kBAAW,GAAX,IAAkB,K;MAEiB,IAAI,aAAa,SAAjB,C;QACl,6B;QAEA,OAAO,I;;QAGP,OAAO,Q;;K;+CAIf,e;MACl,IAAI,0BAAJ,C;QAAoB,OAAO,I;MAC3B,YAAy,kBAAW,GAAX,C;MACZ,IAAI,UAAU,SAAd,C;QtBnDJ,OsBoDyB,iBtBpDnB,CsBoD+B,GtBpD/B,C;QsBqDE,6B;QAEA,OAAO,K;;QAGP,OAAO,I;;K;wCAKf,Y;MACl,oBAAa,kB;MACb,YAAO,C;K;IAKA,OE;MAAA,oD;MACH,cAAkC,MAAa,MAAK,mCAAL,C;MAC/C,kBAA4B,qBAAL,WAAK,C;MAC5B,iBAA+B,I;K;iEAE/B,Y;MAAkC,OAAA,eAAS,U;K;8DAE3C,Y;MAIuB,gB;MAHnB,UAAU,eAAS,O;MACnB,iBAAU,G;MAES,+E;MAAnB,OAAO,iD;K;gEAGX,Y;MAEKc,UAA9B,M;MAAA,oC;MAA8B,YAAa,c;MrEchD,uB;MAEP,IAfoB,KAehB,QAAJ,C;QACl,cAhByB,OB;QAiBzB,MAAM,6BAAsB,OAAQ,WAA9B,C;;QAEN,sBAnBgB,K;;MqEde,oBAAO,sFAAP,C;K;;2CAjBnC,Y;MACl,yD;K;IAqBkD,OF;MAAA,8B;MAAA,oD;K;8FAC9B,Y;MAAQ,uB;K;gGACN,Y;MAAQ,6CAAuB,gBAAvB,C;K;2EAE9B,oB;MAAwC,OAAA,2BAAuB,aAAI,gBAAJ,EAAS,QAAT,C;K;qEAE/D,Y;MAA+B,OAAA,mCAAY,uBAAc,IAAd,C;K;qEAC3C,Y;MAAkC,OAAA,mCAAY,uBAAc,IAAd,C;K;mEAC9C,iB;MAA4C,OAAA,mCAAY,qBAAy,IAAZ,EAkB,KAAIB,C;K;;gDAR5D,e;MAAsD,iE;K;;;MCNtD,sBAOsC,I;MA6CtC,yB;;IArH8B,8C;MAAqB,0CAAqC,GAArC,EAA0C,KAA1C,C;MAC/C,oBAAuC,I;MACvC,oBAAuC,I;K;;IAG3C,wC;MAAA,oB;MAA+B,6B;K;IAE3B,sD;MAAA,oB;MACl,cACsC,I;MAEtC,cACsC,I;MAGlC,cAAO,iC;K;6DAIX,Y;MACl,OAAO,gBAAS,I;K;0DAGpB,Y;MAEI,IAAI,CAAC,cAAL,C;QAAGB,MAAM,6B;MAEtB,cAAc,OB;MACd,cAAO,O;MACa,gBAAb,OAAQ,a;;MAAf,cIE8DS,SkE9DoB,KAAO,iCIE8DzC,GAAqB,SAArB,GAA+B,I;MkE7D1B,OAAO,O;K;4DAGX,Y;MIE8BR,IAAI,EsE7Bc,eAAQ,IE6BtB,CAAJ,C;QACl,cAdW,e;QAeX,MAAM,6BAAsB,OAAQ,WAA9B,C;OsE5BS,oCAAP,0BAAO,C;MACP,gCAAI,cAAO,0BAAO,IAAd,C;MAEJ,cAAO,I;K;;iDAIf,mB;MAAyD,MAAM,qCAA8B,iCAA9B,C;K;6CAC/D,Y;MACl,WAAmB,Q;K;sDAGvB,mB;MAAuE,yCAAc,OAAc,C;K;gDAEvE,Y;MAAwE,qD;K;oDAExE,mB;MACl,IAAI,oBAAS,OAAT,CAAJ,C;QACl,WAAmB,cAAO,OAAQ,IAAf,C;QACnB,OAAO,I;OAEX,OAAO,K;K;0EAGY,Y;MAAQ,OAAA,WAAmB,K;K;;iDAatD,qB;MtEXA,IAAI,EsEgBM,0BAAQ,IAAR,IAAgB,0BAAQ,IEhB9B,CAAJ,C;QACl,cAdW,e;QAeX,MAAM,6BAAsB,OAAQ,WAA9B,C;OsEgBN,YAAy,mB;MACZ,IAAI,SAAS,IAAb,C;QACl,sBAAO,S;QACP,yBAAO,S;QACP,yBAAO,S;;QAGK,YAAa,KAAM,a;QTERhC,uB;QAEP,IAfoB,KAehB,QAAJ,C;UACl,gBAhByB,OB;UAiBzB,MAAM,6BAAsB,SAAQ,WAA9B,C;;UAEN,sBAnBgB,K;;QsEQZ,+B;QAEA,yBAAO,K;QACP,yBAAO,K;QAEP,qBAAa,S;QACb,qBAAa,S;;K;+CAIrB,qB;MAII,IAAI,SAAK,aAAL,KAAc,SAAlB,C;QAEI,sBAAO,I;;QAEP,IAAI,wBAAS,SAAb,C;UAEL,sBAAO,sB;SAEX,qDAAc,sB;QACd,qDAAc,sB;;MAEIB,yBAAO,I;MACP,yBAAO,I;K;oCA6CX,Y;MACl,kBAAI,Q;MACJ,sBAAO,I;K;gDASX,e;MAAmD,OAAA,kBAAI,mBAAy,GAAZ,C;K;kDAEvD,iB;MACiC,Q;MAAA,OB;MAAA,iB;QAAQ,OAAO,K;OAA5C,WAA6B,I;;QAEzB,IAAI,OAAA,IAAK,MAAL,EAAc,KAAc,CAAJ,C;UACl,OAAO,I;SAEX,OAAO,cAAA,IAAK,aAAL,C;;MACF,iBAAS,mBAAT,C;MACT,OAAO,K;K;6CAIX,Y;MAA2E,uC;K;wCAE3E,e;MAAmD,Q;MAAJ,QAAI,OAAJ,kBAAI,WAAI,GAJJ,CAAJ,6B;K;0CAE/C,sB;MACl,UAAU,kBAAI,WAAI,GAJJ,C;MACd,IAAI,OAAO,IAAX,C;QACl,eAAe,6BAAW,GAAX,EAAgB,KAAhB,C;QACf,kBAAI,aAAI,GAJJ,EAAS,QAAT,C;QACK,wBAAT,QAAS,C;QACT,OAA

O,I;;QAEP,OAAO,GAAl,gBAAS,KAAT,C;;K;2CAInB,e;MACI,YAAy,kBAAl,cAAO,GAAP,C;MACHB,IAAl,S  
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uD;MAAoD,qB;MAvJxD,yB;MAyJc,Q;MAAN,sBAAM,+D;MAFV,Y;K;IAKA,kE;MASyC,0B;QAAA,aAAoB,G;  
MAT7D,uD;MASqE,eAAM,eAAN,EAAuB,UAAvB,Q;MArKzE,yB;MAskQ,sBAAM,gB;MAVV,Y;K;IAaA,sD;  
MAAA,uD;MAA2C,qBAAK,eAAL,EAAsB,GAAtB,Q;MAA3C,Y;K;IAEA,+C;MAAA,uD;MAG2C,qB;MA9K/C,  
yB;MA+KQ,sBAAM,gB;MACN,KAak,gBAAO,QAAP,C;MALT,Y;K;IA8DJ,kC;MAKwD,gBAA7C,qBAAYB,e  
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AOI,Y;K;IAEA,qC;MAAA,uD;MAGuB,eAAM,oBAAN,Q;MAZ3B,yB;MASI,Y;K;IAKA,+C;MAAA,uD;MAG8C  
,eAAM,oBAAN,Q;MAjBID,yB;MAkBQ,qBAAO,QAAP,C;MAJJ,Y;K;IAOA,kE;MASyC,0B;QAAA,aAAoB,G;M  
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A,uD;MAA2C,qBAAK,eAAL,EAAsB,GAAtB,Q;MAA3C,Y;K;IAQJ,qC;MAKMD,gBAAXC,mBAAC,qBAAD,C;M  
AAgD,6B;MAAvD,OnE2BO,S;K;;;kFoEnEX,uB;MAKI,OAAO,O;K;ICdX,sB;K;mCACI,Y;MACI,mBAAM,IAA  
N,C;K;2CAGJ,mB;MACI,mBAAM,OAAN,C;MACA,c;K;iCAKJ,Y;K;;IAKuB,oC;MAA8B,qB;MAA7B,gC;K;2C  
ACxB,mB;MAEI,oBA+DyC,OA/Dd,OA+Dc,C;MA9DzC,iBAAa,OAAM,aAAN,C;K;;IAIrB,8B;MAEOC,qB;K;iD  
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Q,KAAl,EAAJ,C;K;;IAIhB,0B;MAEqC,qB;MACjC,cAAa,E;K;6CAEb,mB;MACI,eAoCyC,OApCxB,OAoCwB,C;  
K;qCAjC7C,Y;MACI,cAAS,E;K;;IAIjB,sC;MAE4C,yB;K;yDACxC,mB;MACI,QAwByC,OAxB1B,OAwb0B,C;  
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yB;MACiD,cAAa,KAAb,C;K;IAEjD,mB;MAEI,MAAO,U;K;IAGX,4B;MAEI,MAAO,iBAAQ,OAAR,C;K;IAGX,  
wB;MAEI,MAAO,eAAM,OAAN,C;K;IC3FX,mD;MACI,0B;MASA,gBAA2B,a;K;uEAFvB,Y;MAAQ,OAAA,eA  
AS,Q;K;oDAIrB,kB;MACI,UAAU,IAAK,S;MAEX,YAAQ,2CAAR,C;QACI,gBAAC,MAAO,M;WAEzB,YAAQ,y  
BAAR,C;QACI,gBAAC,yC;QACd,eAAS,oBAAW,MAAX,C;;QAEI,MAAM,6BAAsB,iBAAtB,C;K;4CAItB,Y;M  
AOW,Q;MALP,IAAl,kBAAW,2CAAf,C;QACI,gBAAS,yB;QACT,OAAO,yB;OAEX,aAAa,IAAK,S;MAEd,eAA  
W,yCAAX,C;QAAsB,gC;WACtB,0C;QAA4B,MAAM,MAAO,U;;QACjC,a;MAHZ,W;K;;IA7BJ,gD;MAAA,0D;  
MACyD,6BAAK,QAAL,EAAe,2CAAf,C;MADzD,Y;K;I9BsCJ,yE;MASI,sC;MAAA,4C;K;IATJ,6EAWY,Y;MA  
AQ,2B;KAXpB,E;IAAA,0DAaQ,kB;MACI,wBAAW,MAAX,C;K;IAdZ,sF;I+B3C2E,0C;MhC4JhE,Q;MADP,egC  
1JA,MhC0JA,C;MACO,QgC3JP,MhC2JO,+D;MgC1JX,W;K;;+FCuHA,gB;MACI,aAAa,IAAb,MAAA,E;MACb,K  
AAK,MAAL,C;MACA,OAAO,M;K;IC/HX,8C;MAKyG,kBAApB,wBAAC,IAAd,C;MAA0B,IzEoE3G,a;MyEpEiF  
,OzEqE1E,W;K;IyEnEX,8C;MAM8C,kBAA1B,cAAhB,sCAAgB,EAAC,IAAd,EAAoB,IAApB,C;MAAiC,sBzE2E  
3C,WyE3E2C,C;MAAjD,OzE4EO,W;K;I0EzFX,uC;MACkD,8B;MAAA,OCIN,aDJwB,yBAAa,QAAb,mCCIxB,C  
jE+rBgC,sB;K;IgejsB5E,yC;M3FywHW,kBAAY,gB;MA8EH,Q;MAAhB,wB2Fj1HqB,U3Fi1HrB,gB;QAAGB,c2F  
j1HK,U3Fi1HrB,M;QAAsB,IAAl,C2Fj1HkB,oB3Fi1HP,O2Fj1HO,C3Fi1HtB,C;UAAyB,WAAy,WAAI,OAAJ,C;;  
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GyD,OAAtB,+BgEnGd,mBhEmGc,uBAAsB,CAAO,W;QkE2RpD,kBAAhB,sB;QF5XQ,0C;QACA,IAAl,EhEkNo  
C,0BAAU,CgEIN9C,CAAJ,C;UACI,2BAAO,GAAP,C;SAEW,sCAAa,GAAb,C;QALnB,sB1E8DG,W4E+T8B,W;  
QFtXjC,OAAO,I;OAGX,OAAO,K;K;IAGX,4C;MAMmB,c;;Q3F47UC,Q;QAaHb,wB2F57UI,U3F47UJ,gB;UAA  
gB,c2F57UZ,U3F47UJ,M;UAAsB,I2F57UD,oB3F47Ue,O2F57Uf,C3F47UC,C;YAAwB,aAAO,I;YAAP,e;;QAC9  
C,aAAO,K;;M2F77UP,e;QACI,kBAA6B,MAAX,UAAW,C;QhE8EM,U;QgE7Eb,ahE6EmC,OAAtB,+BgE7EvB,  
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BAAS,gB;QAYEA,U;QAAA,+B;QAaHb,OAAGB,gBAAhB,C;UAAgB,6B;UAAM,IwE9tB4C,4BxE8tB9B,SwE9t  
B8B,CxE8tB5C,C;YAAwB,WAAy,WAAI,SAAJ,C;;QwE9tBtD,sBAAMF,exE+tBhF,WwE/tBgF,EAAa,GAAb,C;  
QACnF,OAAO,I;OAGX,OAAO,K;K;IGjCP,+B;MAAQ,8BAAY,IAAK,UAAjB,IAA8B,uBAAY,IAAK,mB;K;IA  
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iB;MACI,eAAQ,KAAR,C;K;8CAGJ,Y;MAAYC,iCAAuB,cAAvB,M;K;;ICCO,6C;MAAA,8B;MAAS,uB;K;0EACI  
C,Y;MAAQ,OAAA,gBAAY,O;K;mDAE3C,iB;MACI,IADoC,KACpC,IAAG,CAAH,IADoC,KACpC,IAAM,sBA

AN,C;QAD8B,OACX,gBAAY,MAAK,KAAL,C;;QACvB,MAAM,8BAA0B,WAAQ,KAAR,6BAAmC,sBAAnC,  
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C;MAMI,sBAAY,sCAAgB,gBAAe,IAAf,CAA5B,C;MACA,OAAO,S;K;+EChBX,qB;MAI8C,gB;K;iFAE9C,qB;  
MAIsE,OAAK,S;K;kFAE3E,qB;MAMyE,gB;K;IAEzE,6B;MAiBa,UAPF,M;MAFP,QAAc,S;MAGV,cAAK,UAA  
L,U;QACI,mBAAK,UAAAL,G;;QACJ,IvC3BqC,MAAA,YuC2BvC,CvC3BuC,CuC2BID,C;UAC6B,8BAAzB,CAAy  
B,C;;UAGN,UAAIB,uDAaKB,Y;;MAP3B,a;K;IC9BJ,2B;MAEI,MAAM,yBAaQB,OAArB,C;K;IAGV,sB;MAEI,  
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,uBAAqB,YAArB,8BAArC,C;K;ICFqB,iC;;MAA6E,Q;MAAA,+BAAS,I;sCAAIB,O,2DAAA,O;;;K;;IAC/F,2  
B;MAAA,iD;MAAuB,oBAAK,IAAL,EAaw,IAAX,C;MACH,0BAAY,MAAK,KAAL,EAaw,IAAX,EAaiB,IAA  
jB,C;MADhC,Y;K;IAIA,sC;MAAA,iD;MAAuC,oBAAK,OAAL,EAac,IAAd,C;MACnB,0BAAY,MAAK,KAAL,  
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MACpB,0BAAY,MAAK,KAAL,EAaw,SAAX,EAAsB,KAAtB,C;MADhC,Y;K;IAM+B,mC;;MAA6E,Q;MAAA,  
+BAAS,I;sCAAIB,O,2DAAA,O;;;K;;IACnG,+B;MAAA,mD;MAAuB,sBAAK,IAAL,EAaw,IAAX,C;MACC  
,4BAAY,MAAK,KAAL,EAaw,IAAX,EAaiB,IAAjB,C;MADpC,Y;K;IAIA,0C;MAAA,mD;MAAuC,sBAAK,OA  
AL,EAac,IAAd,C;MACf,4BAAY,MAAK,KAAL,EAaw,OAAX,EAaOB,IAApB,C;MADpC,Y;K;IAIA,wC;MAA  
A,mD;MAAwC,sBAAK,SAAL,EAagB,KAahB,C;MACHb,4BAAY,MAAK,KAAL,EAaw,SAAX,EAAsB,KAAt  
B,C;MADpC,Y;K;IAKsC,0C;MAA0D,qBAAU,OAAV,EAAMB,KAAAnB,C;;K;;IACHG,sC;MAAA,0D;MAAuB,6B  
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,Y;K;IACA,+C;MAAA,0D;MAAwC,6BAAK,SAAL,EAagB,KAahB,C;MAAxC,Y;K;IAG8C,kD;MAA0D,4BAA  
iB,OAAjB,EAa0B,KAA1B,C;;K;;IACxG,8C;MAAA,kE;MAAuB,qCAAK,IAAL,EAaw,IAAX,C;MAAvB,Y;K;I  
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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,O8DG3B,CAAf,C;aACI,Q;UAA6B,OAAjB,8BAAiB,Y;UAA7B,K;aAC  
A,Q;UAAy,OAAI,CAAY,CvDAhC,GuDAmC,CAAf,MAAkC,CAAtC,GAAYC,8BAAiB,SAaID,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;YAAsC,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  
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B;MAI8D,gB;K;ICIDb,2C;MAC7C,qBAAwC,Q;K;iDAExC,Y;MACmB,Q;MAAA,yB;MAAA,iB;QAAe,MAAM,6  
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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

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B,C;;UAGf,gCAAY,GAAZ,C;;MAGR,gBAAS,Q;MACT,OAAO,I;K;6CAGX,iB;MAOI,iBAAgB,SAAN,KAAM,  
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D,E2FW3D,K3FX2D,C2FW/E,YAA6B,KAA7B,IAAqC,a3Fd2B,W2FcV,K3FdU,C;M2FezE,OAAO,I;K;6CAGX,  
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,EAA8B,QAA9B,EAAwC,WAAxC,C;MAEA,gBAAS,a3FzP+E,W2FyP9D,C3FzP8D,E2FyP3D,U3FzP2D,C2FyP/  
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A,gB;MAAA,8B;M/F9HA,wE;M+F8HA,uC;QA3IW,kB/FqBiD,oB;Q+FM9C,Q;QAAA,OAAK,0B;QAAf,OAAU,  
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GAKIX,EAAe,UAIIC,WAKID,6DAAf,EAII6B,CAK17B,C;;UAIIB,W/F6JJ,a+F7JgB,G/F6JhB,mB;;Q+F7BA,OA9  
HO,W;O;KA2GX,C;sFAwBA,yB;MAAA,gB;MAAA,8B;MAAA,oD;QAxIc,Q;QAAA,OAAK,0B;QAAf,OAAU,c  
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B,UA9JW,GA8JX,EAAe,UA9JC,WA8JD,6DAAf,EA9J6B,CA8J7B,C;;UAFV,W/FCZ,a+F7JgB,G/F6JhB,mB;;Q+  
FDA,OAAy,W;O;KAvBhB,C;IA6BA,6C;MArKc,Q;MAAA,OAAK,0B;MAAf,OAAU,cAAV,C;QAAU,mB;QAC  
N,UAAU,sBAAM,CAAN,C;QACV,kBA+KG,WA/Ke,WAAy,GAAZ,C;QA2GgE,U;QAOe/E,W/FjBP,a+F7JgB,G  
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B;K;;wCAN7D,Y;MAMsC,iB;K;wCANtC,Y;MAM6D,iB;K;0CAN7D,wB;MAAA,wBAMsC,qCANtC,EAM6D,q  
CAN7D,C;K;sCAA,Y;MAAA,OAMsC,mDANtC,IAM6D,wCAN7D,O;K;sCAA,Y;MAAA,c;MAMsC,sD;MA  
AuB,sD;MAN7D,a;K;oCAA,iB;MAAA,4IAMsC,sCANtC,IAM6D,sCAN7D,I;K;wF/IEA,yB;MAAA,kC;MAAA,  
4C;MAAA,kD;QAMuF,wC;O;MANvF,4CAOI,Y;QAAuC,8B;O;MAP3C,8E;MAAA,2B;QAMuF,2C;O;KANvF,C;  
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+B,sBAA/B,GAAgD,S;;QALpE,OAoY,sB;K;IAGhB,gD;MAGQ,kBADE,SACF,O;QADJ,OACc,S;WACV,kBAF  
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AP,C;;MAEX,OAAO,M;K;IAGX,4B;MAUiB,Q;MAHb,mBAAmB,mCAAwB,EAAXB,C;MACnB,YAAY,iBAAa,  
YAAb,C;MACZ,YAAY,iBAAa,YAAb,C;MACC,2B;MAAb,OAAa,cAAb,C;QAAa,sB;QACT,KAAM,WAAI,IAA  
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;MAMqD,QAAM,cAAN,C;aAcjD,C;UADiD,OAC5C,U;aACL,C;UAFiD,Oalb8B,uB;gBbkb9B,OAGzC,uB;K;IA  
GZ,iC;MAMmE,4BAAC,SAAd,C;K;IAEnE,yC;MAKI,WAAoB,0B;MAAPB,kB;K;IAEJ,kC;MAOI,Q;MAAA,IAA

I,SAAK,UAAT,C;QAAA,OAAoB,MAAM,IAAN,C;;QAAqC,kBAAPb,qBAAC,SAAd,C;QAA4B,wBAAS,UAAT, EAAqB,WAArB,C;QAAjE,OUthBO,W;;MVshBP,W;K;IAEJ,mC;MAOI,Q;MAAA,IAAI,SAAK,UAAT,C;QAAA, OAA0B,MAAN,KAAM,C;;QAAiC,kBAAPb,qBAAC,SAAd,C;QAA4B,4B;QAAAnE,OU/hBO,W;;MV+hBP,W;K;I A E J , m C ; M A O I , Q ; M A A A , I A A I , S A A K , U A A T , C ; Q A A A , O A A 0 B , Q A A N , K A A M , C ; ; Q A A i C , k B A A P b , q B A A C , S A A d , C ; Q A A 4 B , 0 B ; Q A A n E , O U x i B O , W ; ; M V w i B P , W ; K ; I A E J , m C ; M A O w B , k B A A P b , q B A A C , S A A d , C ; M A A 4 B , 4 B ; M A A 5 B , O A A 4 C , o B U j j B r C , W V i j B q C , C ; K ; I A E h D , i C ; M A O w B , k B A A P b , q B A A C , S A A d , C ; M A A 4 B , + B ; M A A 5 B , O U I j B O , W ; K ; 0 F V 6 j B X , 2 B ; M A K I , s B A A I , I A A K , M A A T , E A A g B , I A A K , O A A r B , C ; K ; 4 F A G J , y B ; M A A A , g D ; M A A A , m C ; Q A K I , k B A A O , K A A P , C ; O ; K A L J , C ; 4 F A Q A , y B ; M A A A , g D ; M A A A , m C ; Q A K I , k B A A O , K A A P , C ; O ; K A L J , C ; 4 F A Q A , 0 B ; M A K I , y B A A O , G A A P , C ; K ; I A G J , k C ; M A O w B , k B A A f , a A A L , S A A K , C ; M A s C L , 6 B ; M A t C A , O A A + C , o B U 5 m B x C , W V 4 m B w C , C ; K ; I A E n D , m C ; M A Q w B , k B A A f , a A A L , S A A K , C ; M A q C K , Y A A L , g B A A K , O ; M A r C V , O A A g D , o B U t n B z C , W V s n B y C , C ; K ; I A E p D , m C ; M A Q w B , k B A A f , a A A L , S A A K , C ; M A o C K , Y A A L , g B A A K , O ; M A p C V , O A A g D , o B U h o B z C , W V g o B y C , C ; K ; I A E p D , m C ; M A Q w B , k B A A f , a A A L , S A A K , C ; M A m C K , Y A A L , g B A A K , O ; M A n C V , O A A g D , o B U 1 o B z C , W V 0 o B y C , C ; K ; 4 F A E p D , 0 B ; M A M I , u B A A O , G A A P , C ; K ; 8 F A G J , y B ; M A A A , s D ; M A A A , k C ; Q A M c , U A A V , S A A K , K A A K , E A A U , I A A V , C ; O ; K A N d , C ; 8 F A S A , y B ; M A A A , s D ; M A A A , k C ; Q A M c , U A A V , S A A K , K A A K , E A A U , I A A V , C ; O ; K A N d , C ; I A U A , w C ; M A C s D , Q A A M , c A A N , C ; a A C I D , C ; U A D k D , O A C 7 C , U ; a A C L , C ; U A F k D , g B ; g B A A A , O A G 1 C , S ; ; K ; o F s J 5 v B Z , y B ; M A A A , 8 D ; M A A A , 8 B ; M A A A , q C ; Q A U i C , Q ; Q A A 7 B , O A A 2 D , C A A 9 B , s E A A 8 B , e A A O , O A A P , C ; O ; K A V / D , C ; w F A Y A , y B ; M A A A , 8 D ; M A A A , 8 B ; M A A A , s C ; Q A S i C , Q ; Q A A 7 B , O A A 2 D , C A A 9 B , s E A A 8 B , o B A A U , Q A A V , C ; O ; K A T / D , C ; w F A W A , y B ; M A A A , 8 D ; M A A A , 8 B ; M A A A , s C ; Q A S i C , Q ; Q A A 7 B , O A A 2 D , C A A 9 B , s E A A 8 B , o B A A U , Q A A V , C ; O ; K A T / D , C ; 4 F A W A , 8 B ; M A K I , S A A K , W A A I , O A A J , C ; K ; 4 F A G T , y B ; M A A A , g D ; M A A A , s C ; Q A K S , O A A L , S A A K , E A A O , Q A A P , C ; O ; K A L T , C ; 4 F A Q A , y B ; M A A A , g D ; M A A A , s C ; Q A K S , O A A L , S A A K , E A A O , Q A A P , C ; O ; K A L T , C ; 8 F A Q A , 8 B ; M A K I , S A A K , c A A O , O A A P , C ; K ; 8 F A G T , y B ; M A A A , s D ; M A A A , s C ; Q A K S , U A A L , S A A K , E A A U , Q A A V , C ; O ; K A L T , C ; 8 F A Q A , y B ; M A A A , s D ; M A A A , s C ; Q A K S , U A A L , S A A K , E A A U , Q A A V , C ; O ; K A L T , C ; 8 F A Q A , y B ; M A A A , s D ; M A A A , s C ; Q A K S , U A A L , S A A K , E A A U , Q A A V , C ; O ; K A L T , C ; I A Q A , q C ; M A I U , I A I e , I ; M A H j B , k B A D E , Q A C F , c ; Q A A i B , O A A O , y B A A O , Q A A P , C ; ; Q A E p B , a A A s B , K ; Q A C T , 0 B ; Q A A b , O A A a , c A A b , C ; U A A a , s B ; U A C T , I A A I , o B A A I , I A A J , C A A J , C ; Y A A e , S A A S , I ; ; Q A C 5 B , O A A O , M ; ; K ; I A K n B , u C ; M A K i B , Q ; M A D b , a A A s B , K ; M A C T , 0 B ; M A A b , O A A a , c A A b , C ; Q A A a , s B ; Q A C T , I A A I , o B A A I , I A A J , C A A J , C ; U A A e , S A A S , I ; ; M A E 5 B , O A A O , M ; K ; I A G X , u C ; M A I I , O A A O , y B A A g B , O A A T , Q A A S , C A A h B , C ; K ; I A G X , 0 C ; M A I W , i B A A m B , g C A A T , Q A A S , E A A g C , S A A h C , C ; M A I H G , Q ; M A K H 7 B , O A I H 2 D , C A A 9 B , s E A A 8 B , o B A A U , U A A V , C ; K ; I A q H / D , 0 C ; M A I I , U A A m B , Y A A T , Q A A S , C ; M A C n B , O v J 6 D w D , C u J 7 D j D , G v J 6 D k D , U u J 7 D i D , I A A o B , 4 B A A U , G A A V , C ; K ; I A G / B , 0 C ; M A I I , 0 7 J q I N O , E 6 J r I N A , Q 7 J 6 g N A , Y A A Q , C A w E R , C 6 J r I N A , I A A y B , 4 B A A m B , U A A T , Q A A S , C A A n B , C ; K ; I A G p C , 0 C ; M A I W , i B A A m B , g C A A T , Q A A S , E A A g C , S A A h C , C ; M A 7 H G , Q ; M A 6 H 7 B , O A 7 H 2 D , C A A 9 B , s E A A 8 B , o B A A U , U A A V , C ; K ; I A g I / D , 0 C ; M A I I , I 7 J u k N O , E 6 J v k N H , Q 7 J + / M G , Y A A Q , C A w E R , C 6 J v k N P , C ; Q A C I , O A A O , 4 B A A m B , U A A T , Q A A S , C A A n B , C ; ; Q A E P , O A A O , w B ; K ; I A G f , 0 C ; M A I I , U A A m B , Y A A T , Q A A S , C ; M A C n B , I v J 6 B w D , C u J 7 B p D , G v J 6 B q D , U u J 7 B z D , C ; Q A C I , O A A O , 4 B A A U , G A A V , C ; ; Q A E P , O A A O , w B ; K ; I A G f , k C ; M A C I , a v J s B w D , C A A C , m B ; M u J r B z D , i B ; M A C A , O A A O , M ; K ; I A I X , 2 C ; M A K k F , g C A A c , S A A d , E A A y B , I A A z B , C ; K ; I A E I F , 2 C ; M A K k F , g C A A c , S A A d , E A A y B , K A A z B , C ; K ; I A E I F , s E ; M A C I , i B A A a , K A A b , C ; M 5 I I j B , k B 4 I m J X , o B ; M A C D , O A A O , q B A A P , C ; Q A C I , I A A I , U A A U , k B A A V , 6 B A A J , C ; U A C I , o B ; U A C A , W A A S , I ; S A G r B , O A A O , Q ; K ; I A I X , u C ; M A K + E , k B A A h B , 0 B ; M A A w B , 8 B ; M A A x B , 0 5 I r J p D , W ; K ; o F 4 I w J X , 4 B ; M A M 6 D , k C A A S , K A A T , C ; K ; I A E 7 D , g C ; M A K i D , I A A I , m B A A J , C ; Q A A e , M A A M , 2 B A A u B , g B A A v B , C ; ; Q A A r B , O A A m E , 2 B A A S , C A A T , C ; K ; I A E p H , s C ; M A K w D , O A A I , m B A A J , G A A e , I A A f , G A A y B , 2 B A A S , C A A T , C ; K ; I A E j F , + B ; M A K g D , I A A I , m B A A J , C ; Q A A e , M A A M , 2 B A A u B , g B A A v B , C ; ; Q A A r B , O A A m E , 2 B A A S , 2 B A A T , C ; K ; I A E n H , q C ; M A K u D , O A A I , m B A A J , G A A e , I A A f , G A A y B , 2 B A A S , 2 B A A T , C ; K ; I A E h F , 2 C ; M A K 8 E , k C A A c , S A A d , E A A y B , I A A z B , C ; K ; I A E 9 E , 2 C ; M A K 8 E , k C A A c , S A A d , E A A y B , K A A z B , C ; K ; I A E 9 E , w E ; M A E g B , U A G S , M A H T , E A c Y , M A d Z , E A c 6 B , M ; M A f z C , I A A I , u C A A J , C ; Q A C I , O A A o C , c A A 5 B , s E A A 4 B , E A A c , S A A d , E A A y B , u B A A z B , C ; M A E x C , i B A A s B , C ; M A C D , o C ; M A A r B , q B A A k B , C A A I B , m C ; Q A C I , c A A c , s B A A K , S A A L , C ; Q A C d , I A A I , U A A U , O A A V , M A A s B , u B A A 1 B , C ; U A C I , Q ; Q A E J , I A A I , e A A c , S A A I B , C ; U A C I , s B A A

K,UAAAL,EAAMb,OAAnB,C;QAEJ,+B;;MAEJ,IAAI,aAAa,cAAjB,C;QACwB,oC;QAAiB,mB;QAARc,oE;UACI,2BAAS,WAAT,C;QAEJ,OAAO,I;;QAEp,OAAO,K;;K;IAIf,sC;MAOI,aAAU,2BAAV,OAA2B,CAA3B,M;QACI,QAAQ,MAAO,iBAAQ,IAAI,CAAJ,IAAR,C;QACf,WAAW,sBAAK,CAAL,C;QACX,sBAAK,CAAL,EAAU,sBA AK,CAAL,CAAV,C;QACA,sBAAK,CAAL,EAAU,IAAV,C;;K;ICvTsC,wC;MAAkC,uB;MAAJC,OB;K;wEACpB, Y;MAAQ,OAAA,eAAS,K;K;iDACxC,iB;MAAkC,mCAAS,OBAAoB,KAApB,CAAT,C;K;;IAGT,gC;MAAyC,8B; MAAXC,OB;K;gEACH,Y;MAAQ,OAAA,eAAS,K;K;yCACxC,iB;MAAkC,mCAAS,OBAAoB,KAApB,CAAT,C;K ;mCAEIC,Y;MAAuB,eAAS,Q;K;8CACChC,iB;MAAuC,OAAA,eAAS,kBAAS,OBAAoB,KAApB,CAAT,C;K;yCA EhD,OB;MAA8C,OAAA,eAAS,aAAI,OBAAoB,KAApB,CAAJ,EAAgC,OAAhC,C;K;yCACvD,OB;MACI,eAAS,a AAI,2BAAqB,KAArB,CAAJ,EAAiC,OAAjC,C;K;;IAIjB,+C;MACoB,Q;MAAA,kC;MAAhB,IAAa,CAAT,OBAAJ ,C;QAAA,OAA2B,8BAAy,KAAZ,I;;QAAuB,MAAM,8BAA0B,mBAAgB,KAAhB,2BAA0C,gBAAG,2BAAH,C AA1C,OAA1B,C;K;IAE5D,gD;MACoB,Q;MAAA,qB;MAAhB,IAAa,CAAT,OBAAJ,C;QAAA,OAA5B,iBAAO,K AAP,I;;QAAkB,MAAM,8BAA0B,oBAAiB,KAAjB,2BAA2C,gBAAG,cAAH,CAA3C,OAA1B,C;K;IAGID,+B;M 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;IAThY,yB;MASqG,oCAAS,sB AAT,C;K;8FAErG,yB;MAAA,kD;MnJhBA,kC;MAAA,0C;MAAA,kD;QAQuF,wC;O;MARvF,4CASI,Y;QAAuC, 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 AAA,K;eACA,C;YACI,IAAI,kCAAe,UAAAnB,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,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; K;yDANR,kC;MACI,IAAI,CAAC,QAAS,UAAaD,C;QAAyB,M;MACzB,sBAAe,Q;MACf,eAAQ,C;MACR,OAA6 C,6CAAtC,c;K;2DAMX,kB;MvGvBO,Q;MADP,euG0BI,MvG1BJ,C;MACO,QuGyBH,MvGzBG,+D;MuG0BH,e AAQ,C;K;8EAIR,Y;MAAQ,0C;K;;InJ5LhB,oD;MAQuF,wC;K;IARvF,8CASI,Y;MAAuC,8B;K;IAT3C,gF;sFAA 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, uCAAT,C;K;IACb,4B;MAAE,OAAA,EAAG,W;K;IAL3E,8B;MAK8D,4BAAQ,cAAR,C;K;IAQQ,8B;MAAE,OA AA,EAAG,W;K;IAN3E,8B;MAM8D,4BAAQ,gBAAR,C;K;IAM1B,8B;MAAE,S;K;IAJtC,wC;MAEgB,Q;MADZ, IAAI,8CAAJ,C;QACI,OAA4C,CAApC,2EAAoC,kBAAQ,QAAR,C;OAEhD,OAAO,uBAAmB,SAAnB,EAAyB,g BAAzB,EAAiC,QAAjC,C;K;IAGX,4B;MAUiB,Q;MAFb,YAAy,gB;MACZ,YAAy,gB;MACC,2B;MAAb,OAAA, cAAb,C;QAAa,sB;QACT,KAAM,WAAI,IAAK,MAAT,C;QACN,KAAM,WAAI,IAAK,OAAT,C;;MAEV,OAAO, UAAS,KAAT,C;K;IAUwB,OD;MAE/B,wB;QAAA,WAAgC,I;MADhC,OB;MACA,OB;MACA,4B;K;IAGuC,OE;M

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B;K;;IAOA,6C;K;;IA+BuC,wE;MAEnC,uB;QAAA,UAA sB,E;MACtB,qB;QAAA,8B;MACA,2B;QAAA,qE;MAC  
A,yB;QAAA,YAAqB,E;MAJrB,sB;MACA,sB;MACA,kB;MACA,8B;MACA,0B;K;;IAGJ,iD;MAAA,e;MAAA,iB  
;MAAA,uB;K;IAAA,+C;MAAA,kD;O;MAKI,wG;MACA,wG;MACA,8F;K;;IAFA,iE;MAAA,qC;MAAA,yD;K;;I  
ACA,iE;MAAA,qC;MAAA,yD;K;;IACA,4D;MAAA,qC;MAAA,oD;K;;IAPJ,2C;MAAA,6K;K;;IAAA,gD;MAAA,  
a;aaaa,kB;UAAA,8D;aAAA,kB;UAAA,8D;aAAA,a;UAAA,yD;gBAAA,6E;;K;;IAUA,wB;K;;ICjGA,qB;MAAA,  
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4E;QAcI,wC;QAAS,6C;O;MAdB,kEAeQ,wC;QAAuF,6BAAS,QAAT,EAAMb,QAAnB,EAA6B,QAA7B,C;O;MA  
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B,wC;MAM6F,W;K;uD AE7F,wC;K;oDAMA,6B;MACI,OAAO,oB;K;oDAGX,oC;MACI,eAAe,IAAK,gB;MACp  
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+CZ,IjM/CyC,KAA7B,CiM+CrB,KAA7C,GjM/CkE,YiM+CF,KjM/CmB,KAAjB,EiM+CO,IjM/CsB,KAA7B,CiM  
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+B;MAAA,wB;QAEuD,sBAAM,IAAK,KAAK,KAAK,KAAM,KAAX,CAAhB,C;O;KAFvD,C;8FAIA,yB;M9B4I  
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7D,+B;M4B1GA,8C;MANA,wB;QAEuD,OAMD,YAAY,IAAZ,E5BiHjB,eAAW,oB4BvHgB,K5BuHrB,KAAK,C  
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## 1.102 picocli 4.6.1

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\* /opt/cola/permits/1177083937\_1625028998.96/0/picocli-4-6-1-sources-jar/picocli/AutoComplete.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

## 1.103 jakarta xml bind api 2.3.3

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```
* /opt/cola/permits/1183834240_1627488405.61/0/asm-9-2-sources-jar/org/objectweb/asm/ConstantDynamic.java
* /opt/cola/permits/1183834240_1627488405.61/0/asm-9-2-sources-jar/org/objectweb/asm/Label.java
* /opt/cola/permits/1183834240_1627488405.61/0/asm-9-2-sources-
jar/org/objectweb/asm/signature/SignatureVisitor.java
*
/opt/cola/permits/1183834240_1627488405.61/0/asm-9-2-sources-jar/org/objectweb/asm/ClassVisitor.java
* /opt/cola/permits/1183834240_1627488405.61/0/asm-9-2-sources-jar/org/objectweb/asm/CurrentFrame.java
* /opt/cola/permits/1183834240_1627488405.61/0/asm-9-2-sources-
jar/org/objectweb/asm/signature/SignatureWriter.java
* /opt/cola/permits/1183834240_1627488405.61/0/asm-9-2-sources-jar/org/objectweb/asm/ClassReader.java
* /opt/cola/permits/1183834240_1627488405.61/0/asm-9-2-sources-
jar/org/objectweb/asm/ClassTooLargeException.java
* /opt/cola/permits/1183834240_1627488405.61/0/asm-9-2-sources-jar/org/objectweb/asm/AnnotationWriter.java
* /opt/cola/permits/1183834240_1627488405.61/0/asm-9-2-sources-jar/org/objectweb/asm/FieldVisitor.java
* /opt/cola/permits/1183834240_1627488405.61/0/asm-9-2-sources-jar/org/objectweb/asm/Attribute.java
* /opt/cola/permits/1183834240_1627488405.61/0/asm-9-2-sources-jar/org/objectweb/asm/Opcodes.java
*
/opt/cola/permits/1183834240_1627488405.61/0/asm-9-2-sources-jar/org/objectweb/asm/Context.java
* /opt/cola/permits/1183834240_1627488405.61/0/asm-9-2-sources-jar/org/objectweb/asm/SymbolTable.java
* /opt/cola/permits/1183834240_1627488405.61/0/asm-9-2-sources-
jar/org/objectweb/asm/RecordComponentWriter.java
* /opt/cola/permits/1183834240_1627488405.61/0/asm-9-2-sources-jar/org/objectweb/asm/ModuleVisitor.java
* /opt/cola/permits/1183834240_1627488405.61/0/asm-9-2-sources-
jar/org/objectweb/asm/MethodTooLargeException.java
* /opt/cola/permits/1183834240_1627488405.61/0/asm-9-2-sources-jar/org/objectweb/asm/FieldWriter.java
* /opt/cola/permits/1183834240_1627488405.61/0/asm-9-2-sources-jar/org/objectweb/asm/ModuleWriter.java
* /opt/cola/permits/1183834240_1627488405.61/0/asm-9-2-sources-jar/org/objectweb/asm/AnnotationVisitor.java
* /opt/cola/permits/1183834240_1627488405.61/0/asm-9-2-sources-jar/org/objectweb/asm/Handler.java
* /opt/cola/permits/1183834240_1627488405.61/0/asm-9-2-sources-jar/org/objectweb/asm/MethodWriter.java
*
/opt/cola/permits/1183834240_1627488405.61/0/asm-9-2-sources-jar/org/objectweb/asm/ByteVector.java
* /opt/cola/permits/1183834240_1627488405.61/0/asm-9-2-sources-jar/org/objectweb/asm/Frame.java
* /opt/cola/permits/1183834240_1627488405.61/0/asm-9-2-sources-jar/org/objectweb/asm/TypeReference.java
* /opt/cola/permits/1183834240_1627488405.61/0/asm-9-2-sources-jar/org/objectweb/asm/Edge.java
* /opt/cola/permits/1183834240_1627488405.61/0/asm-9-2-sources-jar/org/objectweb/asm/Symbol.java
* /opt/cola/permits/1183834240_1627488405.61/0/asm-9-2-sources-jar/org/objectweb/asm/MethodVisitor.java
* /opt/cola/permits/1183834240_1627488405.61/0/asm-9-2-sources-jar/org/objectweb/asm/Type.java
* /opt/cola/permits/1183834240_1627488405.61/0/asm-9-2-sources-jar/org/objectweb/asm/TypePath.java
```

\* /opt/cola/permits/1183834240\_1627488405.61/0/asm-9-2-sources-jar/org/objectweb/asm/signature/SignatureReader.java  
\* /opt/cola/permits/1183834240\_1627488405.61/0/asm-9-2-sources-jar/org/objectweb/asm/RecordComponentVisitor.java  
\*  
/opt/cola/permits/1183834240\_1627488405.61/0/asm-9-2-sources-jar/org/objectweb/asm/Handle.java  
\* /opt/cola/permits/1183834240\_1627488405.61/0/asm-9-2-sources-jar/org/objectweb/asm/ClassWriter.java  
\* /opt/cola/permits/1183834240\_1627488405.61/0/asm-9-2-sources-jar/org/objectweb/asm/Constants.java  
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Found in path(s):

\* /opt/cola/permits/1183834240\_1627488405.61/0/asm-9-2-sources-jar/org/objectweb/asm/signature/package.html  
\* /opt/cola/permits/1183834240\_1627488405.61/0/asm-9-2-sources-jar/org/objectweb/asm/package.html

## 1.106 jcl-over-slf4j 1.7.32

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\* /opt/cola/permits/1192230980\_1629146682.85/0/jcl-over-slf4j-1-7-32-sources-jar/org/apache/commons/logging/package.html

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Found in path(s):

\* /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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Found in path(s):

\* /opt/cola/permits/1192230980\_1629146682.85/0/jcl-over-slf4j-1-7-32-sources-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
```

## 1.107 okhttp 4.5.0

### 1.107.1 Available under license :

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## 1.108 kerberos 1.19

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```
cmd/krb5/ipropl/ipropl.x
cmd/krb5/ipropl/ipropl_hdr.h
cmd/krb5/kadmin/server/ipropld_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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## 1.113 jackson 2.14.1

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## 1.114 junit-jupiter-engine 5.7.2

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# 1.115 junit-platform-engine 1.7.2

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## 1.116 junit-jupiter-api 5.7.2

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Aleksey Gurtovoy (agurtovoy@meta-comm.com)  
Andrei Alexandrescu (andrewalex - at - hotmail.com) (See Boost list message of August 12, 2004 11:06:58 AM EST)  
Andrew Lumsdaine ()  
Anthony Williams (anthony -at- justsoftwaresolutions.co.uk)  
Beman Dawes (bdawes@acm.org)  
Brad King (brad.king -at- kitware.com) (See Boost list message of Wed, 21 Jul 2004 11:15:46 -0400)  
Brian Osman (osman -at- vvisions.com) (See CVS log)  
Bruce Barr (schmoost -at- yahoo.com) (See Boost list of Mon, 16 Aug 2004 15:06:43 -0500)  
Bruno da Silva de Oliveira (bruno - at - esss.com.br)  
Christain Engstrom (christian.engstrom -at- glindra.org) (See Boost list message of Mon, 30 Aug 2004 14:31:49 +0200)  
Cromwell D Enage (sponage -at- yahoo.com) (See Boost list message of August 12, 2004 11:49:13 AM EST)  
Dan Gohman (djg -at- cray.com) (See Boost list message of Sat, 21 Aug 2004 10:54:59 +0100)  
Dan Nuffer (dan -at- nuffer.name)  
Daniel Frey (d.frey -at- gmx.de, daniel.frey -at- aixigo.de)  
Daniel Nuffer (dan -at- nuffer.name)  
Darin Adler (darin -at- bentspoon.com) (Email to Andreas Huber, see change log)  
Daryle Walker (darylew - at - hotmail.com)  
Dave Abrahams (dave@boost-consulting.com)  
Dave Moore (dmoore -at- viefinancial.com) (See Boost list message of 18 Dec 2003 15:35:50 -0500)  
David Abrahams (dave@boost-consulting.com)  
Dietmar Kuehl (dietmar\_kuehl -at- yahoo.com) (Email to Andreas Huber, see change log)  
Douglas Gregor (gregod -at- cs.rpi.edu, dgregor -at- cs.indiana.edu, doug.gregor -at- gmail.com)  
Dr John Maddock (john - at - johnmaddock.co.uk)  
Edward D. Brey (brey -at- ductape.net) (Email to Andreas Huber, see change log)  
Eric Ford (un5o6n902 -at- sneakemail.com) (See Boost list message of Sun, 15 Aug 2004 10:29:13 +0100)  
Eric Friedman (ebf@users.sourceforge.net)  
Eric Niebler (eric@boost-consulting.com)  
Fernando  
Cacciola (fernando\_cacciola@ciudad.com.ar)  
Fernando Luis Cacciola Carballal (fernando\_cacciola@ciudad.com.ar)  
Francois Faure (Francois.Faure -at- imag.fr) (See CVS log)  
Gary Powell (powellg - at - amazon.com) (See Boost list message of 10 Feb 2004 14:22:46 -0800)  
Gennadiy Rozental (rogeeff -at- mail.com) (Email to Andreas Huber, see change log)  
Gottfried Ganssaue (Gottfried.Ganssaue -at- HAUF.DE) (See Boost List message of Mon, 16 Aug 2004 10:09:19 +0200)  
Gottfried Ganaue (Gottfried.Ganssaue -at- HAUF.DE) (Alternative spelling of Gottfried Ganssaue)  
Greg Colvin (gregory.colvin -at- oracle.com) (See Boost list message of Sat, 14 Aug 2004 10:57:00 +0100)  
Gregory Colvin (gregory.colvin -at- oracle.com) (See Boost list message of Sat, 14 Aug 2004 10:57:00 +0100)  
Gunter Winkler (gunter.winkler -at- unibw-muenchen.de) (See Boost List message of Mon, 16 Aug 2004 10:24:17 +0200)  
Hartmut Kaiser (hartmut.kaiser -at- gmail.com)  
Herve Bronnimann (hbr -at- poly.edu)  
Herv

Brnnimann (hbr -at- poly.edu)  
Housemarque Oy (Ilari Kuittinen ilari.kuittinen -at- housemarque.fi)  
Howard Hinnant (hinnant -at- twcnny.rr.com) (See Boost list message of July 25, 2004 3:44:49 PM EST)  
Hubert Holin (hubert\_holin -at- users.sourceforge.net)  
Indiana University ()  
Itay Maman (imaman -at- users.sourceforge.net)  
Jaakko Jrv (jajarvi -at- osl.iu.edu)  
Jaap Suter (j.suter -at- student.utwente.nl) (See Boost list message of Thu, 16 Sep 2004 09:32:43 -0700)  
Jeff Garland (jeff - at - crystalclearsoftware.com) (see Boost list post of July 25, 2004 19:31:09 -0700)  
Jens Maurer (Jens.Maurer@gmx.net)  
Jeremy G Siek (jsiek@osl.iu.edu)  
Jeremy Siek (jsiek@osl.iu.edu)  
Joel de Guzman (joel -at- boost-consulting.com) (See Boost list message of July 25, 2004 8:32:00 PM EST)  
John Bandela (jbandela-at-ufl.edu)  
John Maddock (john - at - johnmaddock.co.uk)  
John R Bandela (jbandela-at-ufl.edu)  
Jonathan Turkanis (turkanis -at- coderage dot com)  
Juergen Hunold (hunold -at- ive.uni-hannover.de) (See Boost List Message of Fri, 13 Aug 2004 19:39:55 +0200)  
Kevlin Henney (kevin -at- curbralan.com) (See Boost list message of Wed, 15 Sep 2004 18:15:17 +0200)  
Kresimir Fresl (fresl -at- master.grad.hr) (See Boost List message of August 16, 2004 8:23:35 AM EST)  
Lars Gullik Bjnnes (larsbj -at- lyx.org) (See Boost list message of Tue, 17 Aug 2004 15:49:02 +0100)  
Lie-Quan Lee (liequan - at - slac.stanford.edu, llee - at - cs.indiana.edu)  
Maarten Keijzer (mkeijzer -at- cs.vu.nl) (See Boost list message of Wed, 18 Aug 2004 21:43:18 +0100)  
Mac Murrett (mmurrett -at- mac.com)  
Marc Wintermantel (wintermantel -at- imes.mavt.ethz.ch, wintermantel -at- even-ag.ch) (See CVS log)  
Michael Glassford (glassfordm - at - hotmail.com)  
Michael Stevens (Michael.Stevens - at - epost.de)  
Multi Media Ltd. (pdimov@mmltd.net)  
Nicolai M Josuttis (solutions -at- josuttis.com) (See Boost list message of Mon, 30 Aug 2004 10:52:00 +0100)  
Nikolay Mladenov (nickm -at- sitius.com) (See Boost list message of Tue, 17 Aug 2004 15:45:33 +0100)  
Paul Mensonides (pmenso57 -at- comcast.net) (See Boost list message of July 21, 2004 1:12:21 AM EST)  
Pavol Droba (droba -at- topmail.sk)  
Peter Dimov (pdimov@mmltd.net)  
R W Grosse-Kunsteleve (RWGrosse-Kunsteleve@lbl.gov)  
Ralf W. Grosse-Kunsteleve (RWGrosse-Kunsteleve@lbl.gov)  
Rational Discovery LLC (Greg Landrum Landrum -at- RationalDiscovery.com) (See Boost list post of Tue, 17 Aug 2004 10:35:36 +0100)  
Rene Rivera (grafik/redshift-software.com, rrivera/acm.org)  
Robert Ramey (ramey@www.rrsd.com)  
Roland Richter (roland -at- fill.jku.at) (See Boost list post of Mon, 16 Aug 2004 22:16:55 +0200)  
Roland Schwarz (roland.schwarz -at- chello.at)  
Ronald Garcia (garcia -at- cs.indiana.edu) (Email to Andreas Huber, see change log)  
Samuel Krempp (krempp -at- crans.ens-cachan.fr) (See Boost list message of Mon, 27 Sep 2004 13:18:36 +0200)  
Stefan Seefeld (seefeld -at- sympatico.ca)  
Stephen Cleary (scleary -at- jerviswebb.com) (See Boost list message of Tue, 28 Sep 2004 13:11:46 +0100)  
Steve

Cleary (Variant of Stephen Cleary)  
Sylvain Pion (Sylvain.Pion - at - sophia.inria.fr)  
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Thomas Witt (witt - at - ive.uni-hannover.de, witt - at - acm.org, witt - at - styleadvisor.com)  
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Vladimir Prus (ghost@cs.msu.su)  
William E. Kempf () (email to Beman Dawes, 9/14/2006 4:18 PM)  
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```
////
```

```
[#mpl]  
# MPL Support, <boost/mp11/mpl.hpp>  
:toc:  
:toc-title:  
:idprefix:
```

The header `<boost/mp11/mpl.hpp>`, when included, defines the necessary support infrastructure for `mp_list` and `std::tuple` to be valid link:../../../../libs/mpl[MPL] sequences.

NOTE: `mpl.hpp` is not included by `<boost/mp11.hpp>`.

It's also possible to only enable support for `mp_list` by including `<boost/mp11/mpl_list.hpp>`, and for `std::tuple` by including `<boost/mp11/mpl_tuple.hpp>`. This may be required because some libraries, such as Boost.Fusion, contain their own MPL support for `std::tuple`, which conflicts with Mp11's one.

```
<!DOCTYPE html>
```

```
<html>  
<head></head>  
<body>  
<h3>  
  Copyright Test  
</h3>  
<p class="copyright">  
  1963, 1964, 1965 Jane Doe  
</p>  
<p class="copyright">  
  2018 Joe Blow, John Coe  
</p>  
<p class="copyright">  
  1977, 1985 Someone else  
</p>  
</body>  
</html>
```

```
////
```

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```
<?xml version="1.0" encoding="UTF-8"?>
<!DOCTYPE article PUBLIC "-//Boost//DTD BoostBook XML V1.0//EN"
"http://www.boost.org/tools/boostbook/dtd/boostbook.dtd">
<article id="copyright_test" last-revision="DEBUG MODE Date: 2000/12/20 12:00:00 $"
xmlns:xi="http://www.w3.org/2001/XInclude">
<title>Copyright Test</title>
<articleinfo>
<copyright>
<year>1963</year> <year>1964</year> <year>1965</year> <holder>Jane Doe</holder>
</copyright>
<copyright>
<year>2018</year> <holder>Joe Blow, John Coe</holder>
</copyright>
<copyright>
<year>1977</year> <year>1985</year> <holder>Someone else</holder>
</copyright>
</articleinfo>
</article>
```

```
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Copyright (c) 2007-2011 Barend Gehrels, Amsterdam, the Netherlands.
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## 1.120 groovy 3.0.9

### 1.120.1 Available under license :

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# Format: one extension on each line without the leading "\*."  
# Listed below are default groovy source file extensions.

# NOTE: This implementation  
of supporting multiple file extensions is experimental and  
# the exact implementation details may vary when modularization gets introduced in  
# groovy 2.0. However, in terms of the behavior, this support will remain intact.  
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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Found in path(s):

\* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/org.codehaus.groovy/vmplugin/v5/package.html

\*

/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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```

```
# 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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```

Found in path(s):

```
* /opt/cola/permits/1223665761_1635937334.8/0/groovy-3-0-9-sources-jar/org/codehaus/groovy/antlr/java/java.g
* /opt/cola/permits/1223665761_1635937334.8/0/groovy-3-0-9-sources-jar/org/codehaus/groovy/antlr/groovy.g
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```

```
/*
```

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*/
```

Found in path(s):

\* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-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.]

\*

\* Contributing authors:

\* John Mitchell johnm@non.net

\* Terence Parr parrt@magelang.com

\* John Lilley jlilley@empathy.com

\* Scott Stanchfield thetick@magelang.com

\* Markus Mohren mohnen@informatik.rwth-aachen.de

\* Peter Williams pete.williams@sun.com

\* Allan Jacobs Allan.Jacobs@eng.sun.com

\* Steve Messick messick@redhills.com

\* James Strachan jstrachan@protique.com

\* John Pybus john@pybus.org

\* John Rose rose00@mac.com

\* Jeremy Rayner

groovy@ross-rayner.com

\* Alex Popescu the.mindstorm@gmail.com

\* Martin Kempf mkempf@hsr.ch

\* 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.
- \*
  - 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)
- \*
  - o Terence ended up reorganizing 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



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\*/

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\* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-  
jar/org/codehaus/groovy/antlr/parser/GroovyRecognizer.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>

\*/

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
| WHILE expressionInPar nls statement
| DO nls statement nls WHILE expressionInPar
;

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
| conditionalStatement
| loopStatement
| tryCatchStatement
| SYNCHRONIZED expressionInPar nls block
| RETURN expression?
| THROW expression
| breakStatement
| continueStatement
| identifier COLON nls statement
| assertStatement
| localVariableDeclaration
| statementExpression
| SEMI
;

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

No license file was found, but licenses were detected in source scan.

/\*

```
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*/
```

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-

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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
* /opt/cola/permits/1223665761_1635937334.8/0/groovy-3-0-9-sources-
jar/org/codehaus/groovy/ast/CompileUnit.java
*
/opt/cola/permits/1223665761_1635937334.8/0/groovy-3-0-9-sources-
jar/org/codehaus/groovy/runtime/dgmimpl/arrays/ArrayPutAtMetaMethod.java
* /opt/cola/permits/1223665761_1635937334.8/0/groovy-3-0-9-sources-
jar/org/codehaus/groovy/runtime/IOGroovyMethods.java
* /opt/cola/permits/1223665761_1635937334.8/0/groovy-3-0-9-sources-
jar/org/codehaus/groovy/ast/MethodCallTransformation.java
* /opt/cola/permits/1223665761_1635937334.8/0/groovy-3-0-9-sources-jar/groovy/transform/NamedParam.java
* /opt/cola/permits/1223665761_1635937334.8/0/groovy-3-0-9-sources-
jar/org/apache/groovy/parser/antlr4/util/PositionConfigureUtils.java
* /opt/cola/permits/1223665761_1635937334.8/0/groovy-3-0-9-sources-
jar/org/codehaus/groovy/util/ManagedConcurrentLinkedQueue.java
* /opt/cola/permits/1223665761_1635937334.8/0/groovy-3-0-9-sources-
jar/org/codehaus/groovy/transform/ToStringASTTransformation.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/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-

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jar/org/codehaus/groovy/util/IntArrayIterable.java  
 \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/groovy/transform/Immutable.groovy  
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 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  
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 jar/org/apache/groovy/antlr/LexerFrame.java  
 \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-  
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 jar/org/codehaus/groovy/tools/javac/JavaCompilerFactory.java  
 \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-  
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 jar/groovy/lang/groovydoc/GroovydocHolder.java  
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 \* /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-  
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 \* /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  
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\* /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  
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jar/org/codehaus/groovy/ast/stmt/AssertStatement.java  
\* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-  
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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  
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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  
\* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-  
jar/org/codehaus/groovy/transform/BaseScriptASTTransformation.java  
\* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-  
jar/org/codehaus/groovy/runtime/dgmimpl/arrays/CharArrayPutAtMetaMethod.java  
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\* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-  
jar/groovy/beans/BindableASTTransformation.java  
\* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-  
jar/org/codehaus/groovy/runtime/dgmimpl/arrays/FloatArrayGetAtMetaMethod.java  
\* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/groovy/io/LineColumnReader.java  
\* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-  
jar/org/codehaus/groovy/antlr/PrimitiveHelper.java  
\* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/org/codehaus/groovy/ast/FieldNode.java



\* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-  
 jar/org/codehaus/groovy/ast/expr/ExpressionTransformer.java  
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 jar/org/codehaus/groovy/ast/stmt/BreakStatement.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/runtime/powerassert/ValueRecorder.java  
 \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-  
 jar/org/codehaus/groovy/runtime/DefaultGroovyMethodsSupport.java  
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 jar/org/codehaus/groovy/transform/stc/SignatureCodec.java  
 \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/groovy/lang/ObjectRange.java  
 \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-  
 jar/org/codehaus/groovy/ast/MixinNode.java  
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 \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/groovy/lang/Tuple8.java  
 \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-  
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 jar/org/codehaus/groovy/classgen/ClassCompletionVerifier.java  
 \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-  
 jar/org/codehaus/groovy/util/LockableObject.java

\* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-  
 jar/org/codehaus/groovy/ast/expr/NotExpression.java  
 \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/groovy/lang/Tuple12.java  
 \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-  
 jar/groovy/time/DatumDependentDuration.java  
 \*  
 /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-  
 jar/org/codehaus/groovy/ast/stmt/SwitchStatement.java  
 \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-  
 jar/org/codehaus/groovy/runtime/IteratorClosureAdapter.java  
 \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/groovy/util/Proxy.java  
 \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-  
 jar/org/codehaus/groovy/ast/expr/ElvisOperatorExpression.java  
 \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-  
 jar/org/codehaus/groovy/reflection/stdclasses/StringCachedClass.java  
 \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-  
 jar/org/codehaus/groovy/transform/stc/UnionTypeClassNode.java  
 \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-  
 jar/org/apache/groovy/parser/antlr4/internal/atnmanager/LexerAtnManager.java  
 \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-  
 jar/org/codehaus/groovy/runtime/wrappers/LongWrapper.java  
 \*  
 /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-  
 jar/org/codehaus/groovy/ast/expr/ConstructorCallExpression.java  
 \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-  
 jar/org/codehaus/groovy/transform/DelegateASTTransformation.java  
 \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-  
 jar/org/codehaus/groovy/runtime/callsite/CallSite.java  
 \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-  
 jar/org/codehaus/groovy/vmplugin/v7/Java7.java  
 \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-  
 jar/org/codehaus/groovy/transform/TupleConstructorASTTransformation.java  
 \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-  
 jar/groovy/transform/TimedInterrupt.groovy  
 \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-  
 jar/org/apache/groovy/util/concurrent/LazyInitializable.java  
 \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-  
 jar/org/codehaus/groovy/ast/expr/SpreadExpression.java  
 \*  
 /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-  
 jar/org/codehaus/groovy/transform/stc/SignatureCodecVersion1.java  
 \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-  
 jar/org/codehaus/groovy/runtime/DefaultGroovyStaticMethods.java  
 \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-  
 jar/org/codehaus/groovy/classgen/asm/BinaryLongExpressionHelper.java  
 \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-  
 jar/org/codehaus/groovy/ast/AnnotatedNode.java  
 \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-

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jar/org/codehaus/groovy/transform/BuilderASTTransformation.java
* /opt/cola/permits/1223665761_1635937334.8/0/groovy-3-0-9-sources-
jar/groovy/transform/options/LegacyHashMapPropertyHandler.java
* /opt/cola/permits/1223665761_1635937334.8/0/groovy-3-0-9-sources-
jar/org/apache/groovy/parser/antlr4/SemanticPredicates.java
* /opt/cola/permits/1223665761_1635937334.8/0/groovy-3-0-9-sources-
jar/groovy/lang/MetaArrayLengthProperty.java
*
/opt/cola/permits/1223665761_1635937334.8/0/groovy-3-0-9-sources-
jar/org/codehaus/groovy/tools/GrapeUtil.java
* /opt/cola/permits/1223665761_1635937334.8/0/groovy-3-0-9-sources-
jar/groovy/transform/options/DefaultPropertyHandler.java
* /opt/cola/permits/1223665761_1635937334.8/0/groovy-3-0-9-sources-
jar/org/codehaus/groovy/reflection/GroovyClassValueFactory.java
* /opt/cola/permits/1223665761_1635937334.8/0/groovy-3-0-9-sources-
jar/org/codehaus/groovy/runtime/powerassert/AssertionRenderer.java
* /opt/cola/permits/1223665761_1635937334.8/0/groovy-3-0-9-sources-jar/groovy/transform/Sortable.java
* /opt/cola/permits/1223665761_1635937334.8/0/groovy-3-0-9-sources-
jar/org/codehaus/groovy/ast/expr/MapExpression.java
* /opt/cola/permits/1223665761_1635937334.8/0/groovy-3-0-9-sources-
jar/org/codehaus/groovy/transform/tailrec/StatementReplacer.groovy
* /opt/cola/permits/1223665761_1635937334.8/0/groovy-3-0-9-sources-
jar/org/codehaus/groovy/control/customizers/builder/ImportCustomizerFactory.java
*
/opt/cola/permits/1223665761_1635937334.8/0/groovy-3-0-9-sources-jar/groovy/lang/Tuple2.java
* /opt/cola/permits/1223665761_1635937334.8/0/groovy-3-0-9-sources-
jar/org/codehaus/groovy/ast/AnnotationNode.java
* /opt/cola/permits/1223665761_1635937334.8/0/groovy-3-0-9-sources-jar/groovy/transform/AutoFinal.java
* /opt/cola/permits/1223665761_1635937334.8/0/groovy-3-0-9-sources-
jar/groovy/cli/internal/CliBuilderInternal.groovy
* /opt/cola/permits/1223665761_1635937334.8/0/groovy-3-0-9-sources-jar/groovy/lang/Buildable.java
* /opt/cola/permits/1223665761_1635937334.8/0/groovy-3-0-9-sources-
jar/org/codehaus/groovy/classgen/asm/StatementWriter.java
* /opt/cola/permits/1223665761_1635937334.8/0/groovy-3-0-9-sources-
jar/org/apache/groovy/ast/tools/ClassNodeUtils.java
* /opt/cola/permits/1223665761_1635937334.8/0/groovy-3-0-9-sources-
jar/org/codehaus/groovy/tools/shell/util/Logger.java
* /opt/cola/permits/1223665761_1635937334.8/0/groovy-3-0-9-sources-
jar/org/codehaus/groovy/classgen/asm/util/LoggableClassVisitor.java
*
/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-

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jar/org/codehaus/groovy/syntax/SyntaxException.java
* /opt/cola/permits/1223665761_1635937334.8/0/groovy-3-0-9-sources-
jar/org/codehaus/groovy/control/io/FileReaderSource.java
* /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
*
/opt/cola/permits/1223665761_1635937334.8/0/groovy-3-0-9-sources-jar/groovy/util/ObservableSet.java
* /opt/cola/permits/1223665761_1635937334.8/0/groovy-3-0-9-sources-
jar/org/codehaus/groovy/vmplugin/v7/MethodHandleWrapper.java
* /opt/cola/permits/1223665761_1635937334.8/0/groovy-3-0-9-sources-jar/groovy/lang/Interceptor.java
* /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
* /opt/cola/permits/1223665761_1635937334.8/0/groovy-3-0-9-sources-
jar/groovy/transform/AutoExternalize.groovy
* /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
* /opt/cola/permits/1223665761_1635937334.8/0/groovy-3-0-9-sources-
jar/org/codehaus/groovy/classgen/asm/sc/StaticTypesMethodReferenceExpressionWriter.java
* /opt/cola/permits/1223665761_1635937334.8/0/groovy-3-0-9-sources-
jar/org/codehaus/groovy/runtime/memoize/Memoize.java
* /opt/cola/permits/1223665761_1635937334.8/0/groovy-3-0-9-sources-
jar/org/codehaus/groovy/classgen/asm/sc/StaticTypesWriterControllerFactoryImpl.java
* /opt/cola/permits/1223665761_1635937334.8/0/groovy-3-0-9-sources-
jar/org/codehaus/groovy/runtime/typehandling/DefaultTypeTransformation.java
* /opt/cola/permits/1223665761_1635937334.8/0/groovy-3-0-9-sources-
jar/org/codehaus/groovy/classgen/asm/VariableSlotLoader.java
*
/opt/cola/permits/1223665761_1635937334.8/0/groovy-3-0-9-sources-
jar/org/codehaus/groovy/transform/trait/TraitHelpersTuple.java
* /opt/cola/permits/1223665761_1635937334.8/0/groovy-3-0-9-sources-
jar/org/codehaus/groovy/tools/GrapeMain.groovy
* /opt/cola/permits/1223665761_1635937334.8/0/groovy-3-0-9-sources-
jar/org/codehaus/groovy/runtime/metaclass/DefaultMetaClassInfo.java
* /opt/cola/permits/1223665761_1635937334.8/0/groovy-3-0-9-sources-jar/groovy/lang/Category.java
* /opt/cola/permits/1223665761_1635937334.8/0/groovy-3-0-9-sources-jar/groovy/lang/Tuple10.java
* /opt/cola/permits/1223665761_1635937334.8/0/groovy-3-0-9-sources-
jar/org/codehaus/groovy/ast/ClassCodeExpressionTransformer.java
* /opt/cola/permits/1223665761_1635937334.8/0/groovy-3-0-9-sources-
jar/org/codehaus/groovy/runtime/StringGroovyMethods.java

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* /opt/cola/permits/1223665761_1635937334.8/0/groovy-3-0-9-sources-
jar/org/codehaus/groovy/runtime/metaclass/MixinInstanceMetaProperty.java
* /opt/cola/permits/1223665761_1635937334.8/0/groovy-3-0-9-sources-
jar/org/codehaus/groovy/runtime/wrappers/ByteWrapper.java
*
/opt/cola/permits/1223665761_1635937334.8/0/groovy-3-0-9-sources-
jar/org/apache/groovy/plugin/GroovyRunnerRegistry.java
* /opt/cola/permits/1223665761_1635937334.8/0/groovy-3-0-9-sources-
jar/groovy/beans/DefaultPropertyAccessor.java
* /opt/cola/permits/1223665761_1635937334.8/0/groovy-3-0-9-sources-
jar/org/codehaus/groovy/runtime/dgmimpl/arrays/ShortArrayPutAtMetaMethod.java
* /opt/cola/permits/1223665761_1635937334.8/0/groovy-3-0-9-sources-
jar/org/codehaus/groovy/ast/PropertyNode.java
* /opt/cola/permits/1223665761_1635937334.8/0/groovy-3-0-9-sources-
jar/org/codehaus/groovy/runtime/wrappers/PojoWrapper.java
* /opt/cola/permits/1223665761_1635937334.8/0/groovy-3-0-9-sources-jar/groovy/lang/GrabConfig.java
* /opt/cola/permits/1223665761_1635937334.8/0/groovy-3-0-9-sources-
jar/org/codehaus/groovy/ast/MixinASTTransformation.java
* /opt/cola/permits/1223665761_1635937334.8/0/groovy-3-0-9-sources-
jar/org/codehaus/groovy/tools/javac/JavacCompilerFactory.java
*
/opt/cola/permits/1223665761_1635937334.8/0/groovy-3-0-9-sources-
jar/org/codehaus/groovy/ast/ClassCodeVisitorSupport.java
* /opt/cola/permits/1223665761_1635937334.8/0/groovy-3-0-9-sources-
jar/org/codehaus/groovy/ast/expr/ArrayExpression.java
* /opt/cola/permits/1223665761_1635937334.8/0/groovy-3-0-9-sources-
jar/org/codehaus/groovy/transform/stc/DelegationMetadata.java
* /opt/cola/permits/1223665761_1635937334.8/0/groovy-3-0-9-sources-
jar/org/codehaus/groovy/runtime/FlushingStreamWriter.java
* /opt/cola/permits/1223665761_1635937334.8/0/groovy-3-0-9-sources-
jar/org/codehaus/groovy/ast/decompiled/FormalParameterParser.java
* /opt/cola/permits/1223665761_1635937334.8/0/groovy-3-0-9-sources-
jar/org/codehaus/groovy/transform/tailrec/TernaryToIfStatementConverter.groovy
* /opt/cola/permits/1223665761_1635937334.8/0/groovy-3-0-9-sources-jar/groovy/util/logging/Commons.java
* /opt/cola/permits/1223665761_1635937334.8/0/groovy-3-0-9-sources-
jar/org/codehaus/groovy/runtime/dgmimpl/arrays/ArrayMetaMethod.java
*
/opt/cola/permits/1223665761_1635937334.8/0/groovy-3-0-9-sources-
jar/org/codehaus/groovy/ast/stmt/Statement.java
* /opt/cola/permits/1223665761_1635937334.8/0/groovy-3-0-9-sources-
jar/org/codehaus/groovy/transform/InheritConstructorsASTTransformation.java
* /opt/cola/permits/1223665761_1635937334.8/0/groovy-3-0-9-sources-
jar/org/codehaus/groovy/control/customizers/builder/PostCompletionFactory.java
* /opt/cola/permits/1223665761_1635937334.8/0/groovy-3-0-9-sources-
jar/org/codehaus/groovy/control/customizers/builder/CustomizersFactory.java
* /opt/cola/permits/1223665761_1635937334.8/0/groovy-3-0-9-sources-
jar/org/codehaus/groovy/ast/expr/EmptyExpression.java
* /opt/cola/permits/1223665761_1635937334.8/0/groovy-3-0-9-sources-

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jar/org/codehaus/groovy/classgen/ClassGeneratorException.java  
 \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-  
 jar/org/codehaus/groovy/antlr/SourceBuffer.java  
 \*  
 /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-  
 jar/org/codehaus/groovy/transform/sc/transformers/CompareToNullExpression.java  
 \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-  
 jar/org/codehaus/groovy/ast/stmt/WhileStatement.java  
 \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-  
 jar/org/codehaus/groovy/classgen/asm/LambdaWriter.java  
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 jar/org/codehaus/groovy/ast/stmt/ReturnStatement.java  
 \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-  
 jar/org/codehaus/groovy/runtime/dgmimpl/arrays/ArrayGetAtMetaMethod.java  
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 jar/org/codehaus/groovy/classgen/asm/BytecodeVariable.java  
 \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-  
 jar/org/codehaus/groovy/vmplugin/v7/IndyInterface.java  
 \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-  
 jar/org/codehaus/groovy/transform/StaticTypesTransformation.java  
 \*  
 /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-  
 jar/org/codehaus/groovy/runtime/callsite/DummyCallSite.java  
 \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-  
 jar/org/codehaus/groovy/util/ManagedReference.java  
 \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-  
 jar/org/codehaus/groovy/transform/tailrec/CollectRecursiveCalls.groovy  
 \*  
 /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/groovy/beans/DefaultPropertyReader.java  
 \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-  
 jar/org/apache/groovy/util/ScriptRunner.java  
 \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-  
 jar/org/codehaus/groovy/reflection/GroovyClassValue.java  
 \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-  
 jar/org/codehaus/groovy/ast/expr/PrefixExpression.java  
 \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-  
 jar/org/codehaus/groovy/util/ComplexKeyHashMap.java  
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 \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-  
 jar/org/codehaus/groovy/util/AbstractConcurrentMapBase.java  
 \*  
 /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-  
 jar/org/codehaus/groovy/runtime/dgmimpl/NumberNumberMinus.java  
 \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-  
 jar/org/codehaus/groovy/transform/ErrorCollecting.java  
 \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-  
 jar/org/codehaus/groovy/classgen/asm/util/TypeUtil.java  
 \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-  
 jar/org/codehaus/groovy/ast/stmt/CaseStatement.java  
 \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-  
 jar/org/codehaus/groovy/transform/AutoCloneASTTransformation.java  
 \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-  
 jar/org/codehaus/groovy/vmplugin/v6/Java6.java  
 \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-  
 jar/org/codehaus/groovy/util/ReferenceManager.java  
 \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-  
 jar/org/codehaus/groovy/ast/decompiled/LazyConstructorNode.java  
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 jar/org/codehaus/groovy/classgen/BytecodeInstruction.java  
 \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-  
 jar/org/codehaus/groovy/vmplugin/v5/PluginDefaultGroovyMethods.java  
 \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-  
 jar/org/codehaus/groovy/transform/AnnotationCollectorTransform.java  
 \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-  
 jar/org/codehaus/groovy/control/customizers/SecureASTCustomizer.java  
 \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-  
 jar/org/codehaus/groovy/runtime/memoize/UnlimitedConcurrentCache.java  
 \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-  
 jar/org/codehaus/groovy/vmplugin/v8/IndyInterface.java  
 \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-  
 jar/org/codehaus/groovy/tools/javac/JavaAwareResolveVisitor.java  
 \*  
 /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/groovy/beans/ListenerList.groovy  
 \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-  
 jar/org/codehaus/groovy/ast/stmt/CatchStatement.java  
 \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/groovy/transform/Undefined.java  
 \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/groovy/beans/PropertyAccessor.java  
 \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-  
 jar/org/codehaus/groovy/control/messages/ExceptionMessage.java  
 \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-  
 jar/org/codehaus/groovy/transform/CategoryASTTransformation.java  
 \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-  
 jar/org/codehaus/groovy/runtime/NullObject.java

\* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/org/codehaus/groovy/ast/ConstructorNode.java  
 \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/groovy/lang/MetaClassRegistryChangeEvent.java  
 \*  
 /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/groovy/transform/builder/ExternalStrategy.java  
 \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/org/codehaus/groovy/classgen/InnerClassVisitor.java  
 \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/groovy/lang/Newify.java  
 \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/org/codehaus/groovy/control/StaticVerifier.java  
 \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/org/codehaus/groovy/control/messages/LocatedMessage.java  
 \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/org/codehaus/groovy/transform/stc/GroovyTypeCheckingExtensionSupport.java  
 \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/org/codehaus/groovy/runtime/CurriedClosure.java  
 \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/org/codehaus/groovy/runtime/metaclass/ClosureStaticMetaMethod.java  
 \*  
 /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/org/codehaus/groovy/runtime/dgmimpl/NumberNumberMultiply.java  
 \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/org/codehaus/groovy/transform/sc/transformers/BinaryExpressionTransformer.java  
 \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/org/codehaus/groovy/classgen/asm/AssertionWriter.java  
 \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/groovy/transform/AutoImplement.java  
 \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/org/codehaus/groovy/classgen/asm/indy/IndyBinHelper.java  
 \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/org/codehaus/groovy/runtime/WritableFile.java  
 \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/org/codehaus/groovy/ast/ASTNode.java  
 \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/org/apache/groovy/parser/antlr4/GroovyLangLexer.java  
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 /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/groovy/io/PlatformLineWriter.java  
 \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/org/codehaus/groovy/util/ByteArrayIterator.java  
 \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/org/codehaus/groovy/util/Reference.java  
 \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/org/codehaus/groovy/ast/expr/BooleanExpression.java  
 \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/org/codehaus/groovy/reflection/CachedField.java  
 \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/groovy/transform/stc/SimpleType.java  
 \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/org/codehaus/groovy/control/io/AbstractReaderSource.java  
 \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/groovy/transform/options/Visibility.java



\* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/org/codehaus/groovy/transform/stc/StaticTypesMarker.java

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/opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/groovy/transform/WithReadLock.java

\* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/org/codehaus/groovy/runtime/metaclass/MethodSelectionException.java

\* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/org/codehaus/groovy/runtime/ReflectionMethodInvoker.java

\* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/groovy/cli/UnparsedField.groovy

\* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/org/codehaus/groovy/vmplugin/v8/TypeTransformers.java

\* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/org/codehaus/groovy/runtime/callsite/StaticMetaMethodSite.java

\* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/org/codehaus/groovy/runtime/powerassert/SourceText.java

\* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/org/apache/groovy/parser/antlr4/SyntaxErrorReportable.java

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/opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/org/codehaus/groovy/vmplugin/v8/IndyMath.java

\* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/org/codehaus/groovy/runtime/metaclass/ClosureMetaClass.java

\* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/groovy/cli/Unparsed.java

\* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/org/codehaus/groovy/ast/stmt/ContinueStatement.java

\* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/groovy/lang/GroovyRuntimeException.java

\* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/groovy/transform/stc/ClosureParams.java

\* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/org/codehaus/groovy/vmplugin/v7/IndyMath.java

\* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/org/codehaus/groovy/ast/PackageNode.java

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/opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/org/codehaus/groovy/ast/tools/ParameterUtils.java

\* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/org/codehaus/groovy/vmplugin/v8/TypeHelper.java

\* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/org/codehaus/groovy/classgen/asm/BinaryBooleanExpressionHelper.java

\* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/org/codehaus/groovy/vmplugin/v7/TypeHelper.java

\* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/org/apache/groovy/io/StringBuilderWriter.java

\* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/org/codehaus/groovy/syntax/TokenUtil.java

\* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/groovy/transform/Synchronized.java

\* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-

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jar/org/codehaus/groovy/tools/javac/JavacJavaCompiler.java
* /opt/cola/permits/1223665761_1635937334.8/0/groovy-3-0-9-sources-
jar/org/codehaus/groovy/classgen/asm/OperandStack.java
*
/opt/cola/permits/1223665761_1635937334.8/0/groovy-3-0-9-sources-
jar/org/codehaus/groovy/control/ErrorCollector.java
* /opt/cola/permits/1223665761_1635937334.8/0/groovy-3-0-9-sources-
jar/org/codehaus/groovy/ast/decompiled/ClassStub.java
* /opt/cola/permits/1223665761_1635937334.8/0/groovy-3-0-9-sources-
jar/org/codehaus/groovy/classgen/asm/CallSiteWriter.java
* /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-

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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
* /opt/cola/permits/1223665761_1635937334.8/0/groovy-3-0-9-sources-
jar/org/codehaus/groovy/ast/expr/MethodPointerExpression.java
* /opt/cola/permits/1223665761_1635937334.8/0/groovy-3-0-9-sources-
jar/org/codehaus/groovy/ast/expr/PostfixExpression.java
* /opt/cola/permits/1223665761_1635937334.8/0/groovy-3-0-9-sources-
jar/org/codehaus/groovy/transform/IndexedPropertyASTTransformation.java
*
/opt/cola/permits/1223665761_1635937334.8/0/groovy-3-0-9-sources-
jar/org/codehaus/groovy/control/GenericsVisitor.java
* /opt/cola/permits/1223665761_1635937334.8/0/groovy-3-0-9-sources-jar/groovy/cli/Option.java
* /opt/cola/permits/1223665761_1635937334.8/0/groovy-3-0-9-sources-jar/groovy/lang/MetaClassRegistry.java
* /opt/cola/permits/1223665761_1635937334.8/0/groovy-3-0-9-sources-
jar/org/codehaus/groovy/plugin/GroovyRunner.java
* /opt/cola/permits/1223665761_1635937334.8/0/groovy-3-0-9-sources-
jar/org/codehaus/groovy/classgen/asm/ExpressionAsVariableSlot.java
* /opt/cola/permits/1223665761_1635937334.8/0/groovy-3-0-9-sources-
jar/org/codehaus/groovy/antlr/EnumHelper.java
* /opt/cola/permits/1223665761_1635937334.8/0/groovy-3-0-9-sources-
jar/org/codehaus/groovy/reflection/stdclasses/DoubleCachedClass.java
* /opt/cola/permits/1223665761_1635937334.8/0/groovy-3-0-9-sources-
jar/org/codehaus/groovy/transform/LazyASTTransformation.java
* /opt/cola/permits/1223665761_1635937334.8/0/groovy-3-0-9-sources-
jar/org/codehaus/groovy/transform/tailrec/ReturnAdderForClosures.groovy
*
/opt/cola/permits/1223665761_1635937334.8/0/groovy-3-0-9-sources-
jar/org/codehaus/groovy/reflection/CachedConstructor.java
* /opt/cola/permits/1223665761_1635937334.8/0/groovy-3-0-9-sources-jar/org/codehaus/groovy/ast/Variable.java
* /opt/cola/permits/1223665761_1635937334.8/0/groovy-3-0-9-sources-
jar/groovy/lang/GeneratedGroovyProxy.java
* /opt/cola/permits/1223665761_1635937334.8/0/groovy-3-0-9-sources-
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-
jar/org/codehaus/groovy/reflection/stdclasses/NumberCachedClass.java
* /opt/cola/permits/1223665761_1635937334.8/0/groovy-3-0-9-sources-jar/groovy/beans/PropertyReader.java

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/opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/org/codehaus/groovy/tools/javac/JavaStubCompilationUnit.java  
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\* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/org/codehaus/groovy/antlr/java/Java2GroovyProcessor.java  
\* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/org/codehaus/groovy/classgen/asm/sc/StaticTypesStatementWriter.java  
\* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/org/codehaus/groovy/transform/AbstractInterruptibleASTTransformation.java  
\* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/org/codehaus/groovy/runtime/ScriptBytecodeAdapter.java  
\* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/org/codehaus/groovy/util/Finalizable.java  
\*  
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\* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-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-jar/groovy/lang/MissingPropertyException.java  
\* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/org/codehaus/groovy/control/customizers/builder/ASTTransformationCustomizerFactory.groovy  
\* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/org/codehaus/groovy/runtime/dgmimpl/NumberNumberDiv.java  
\* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/org/codehaus/groovy/ast/builder/AstBuilderTransformation.java  
\* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/org/codehaus/groovy/runtime/metaclass/ClosureMetaMethod.java  
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\* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/groovy/transform/NullCheck.java  
\* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/org/codehaus/groovy/control/io/URLReaderSource.java  
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\* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/groovy/util/Factory.java  
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\* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/groovy/lang/Groovydoc.java  
\* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/org/apache/groovy/internal/util/UnicodeConst.java  
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/opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/groovy/lang/PropertyValue.java  
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 \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/org/codehaus/groovy/transform/sc/transformers/ClosureExpressionTransformer.java  
 \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/org/codehaus/groovy/transform/sc/transformers/CompareIdentityExpression.java  
 \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/groovy/lang/SpreadMap.java  
 \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/org/codehaus/groovy/runtime/metaclass/MixedInMetaClass.java  
 \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/org/apache/groovy/ast/tools/AnnotatedNodeUtils.java  
 \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/org/codehaus/groovy/runtime/EncodingGroovyMethodsSupport.java  
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 \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/groovy/lang/Grab.java  
 \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/groovy/transform/ThreadInterrupt.groovy  
 \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/org/codehaus/groovy/ast/expr/TupleExpression.java  
 \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/org/codehaus/groovy/util/TripleKeyHashMap.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/vmplugin/v5/Java5.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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* /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/util/BufferedIterator.java  
\* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/groovy/lang/Writable.java  
\* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/org/codehaus/groovy/antlr/treewalker/NodePrinter.java  
\* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/org/codehaus/groovy/runtime/powerassert/SourceTextNotAvailableException.java  
\* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/org/codehaus/groovy/transform/trait/TraitReceiverTransformer.java  
\*  
/opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/org/codehaus/groovy/ast/stmt/ExpressionStatement.java  
\* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/groovy/transform/stc/FromAbstractTypeMethods.java  
\* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/groovy/lang/TracingInterceptor.java  
\* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/org/codehaus/groovy/ast/decompiled/LazyFieldNode.java  
\* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/org/codehaus/groovy/runtime/DefaultCachedMethodKey.java  
\* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/org/codehaus/groovy/ast/ClassHelper.java  
\* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/org/codehaus/groovy/vmplugin/v8/IndyGuardsFiltersAndSignatures.java  
\* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/groovy/transform/stc/SingleSignatureClosureHint.java  
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/opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/org/codehaus/groovy/runtime/Reflector.java  
\* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/org/codehaus/groovy/vmplugin/v8/PluginDefaultGroovyMethods.java  
\* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/org/codehaus/groovy/ast/expr/AnnotationConstantExpression.java  
\* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/org/codehaus/groovy/vmplugin/v7/Selector.java  
\* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/groovy/transform/ImmutableBase.java  
\* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/org/codehaus/groovy/util/ManagedLinkedList.java  
\* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/org/codehaus/groovy/syntax/TokenException.java  
\* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/org/codehaus/groovy/reflection/ClassLoaderForClassArtifacts.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-
jar/org/codehaus/groovy/transform/ASTTransformation.java
* /opt/cola/permits/1223665761_1635937334.8/0/groovy-3-0-9-sources-
jar/org/codehaus/groovy/classgen/asm/ClosureWriter.java
* /opt/cola/permits/1223665761_1635937334.8/0/groovy-3-0-9-sources-
jar/org/codehaus/groovy/transform/stc/AbstractExtensionMethodCache.java
* /opt/cola/permits/1223665761_1635937334.8/0/groovy-3-0-9-sources-
jar/org/codehaus/groovy/runtime/metaclass/NewInstanceMetaMethod.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/groovy/transform/builder/InitializerStrategy.java
* /opt/cola/permits/1223665761_1635937334.8/0/groovy-3-0-9-sources-jar/groovy/util/ResourceException.java
* /opt/cola/permits/1223665761_1635937334.8/0/groovy-3-0-9-sources-jar/org/codehaus/groovy/antlr/Main.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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* /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/groovy/time/TimeCategory.java
* /opt/cola/permits/1223665761_1635937334.8/0/groovy-3-0-9-sources-
jar/org/codehaus/groovy/transform/sc/StaticCompileTransformation.java
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 \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/org/codehaus/groovy/runtime/memoize/CommonCache.java  
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 \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/org/codehaus/groovy/tools/gse/StringSetMap.java  
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 \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/groovy/security/GroovyCodeSourcePermission.java  
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 \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/groovy/beans/VetoableASTTransformation.java  
 \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/org/apache/groovy/parser/antlr4/GroovydocManager.java  
 \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/org/codehaus/groovy/runtime/callsite/CallSiteAwareMetaMethod.java  
 \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/groovy/transform/TypeCheckingMode.java  
 \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/groovy/lang/GString.java  
 \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/org/codehaus/groovy/vmplugin/v8/Java8.java  
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 \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/org/codehaus/groovy/runtime/RegexSupport.java  
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 \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/groovy/lang/Binding.java  
 \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/org/codehaus/groovy/vmplugin/v9/ClassFindFailedException.java  
 \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/org/codehaus/groovy/transform/stc/EnumTypeCheckingExtension.java  
 \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/org/codehaus/groovy/classgen/asm/indy/IndyCallSiteWriter.java  
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 \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/groovy/lang/MetaExpandoProperty.java  
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 \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/org/codehaus/groovy/tools/shell/util/Preferences.java  
 \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/org/codehaus/groovy/antlr/treewalker/CompositeVisitor.java  
 \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/org/codehaus/groovy/ast/expr/ConstantExpression.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-
jar/org/codehaus/groovy/classgen/DummyClassGenerator.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/control/customizers/ASTTransformationCustomizer.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-
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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/DelegatesTo.java
* /opt/cola/permits/1223665761_1635937334.8/0/groovy-3-0-9-sources-
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jar/org/codehaus/groovy/antlr/GroovySourceAST.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/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/groovy/inspect/Inspector.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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jar/groovy/lang/IllegalPropertyAccessException.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-  
 jar/groovy/lang/IncorrectClosureArgumentsException.java  
 \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-  
 jar/org/codehaus/groovy/ast/expr/ClosureExpression.java  
 \* /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  
 \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-  
 jar/org/codehaus/groovy/runtime/metaclass/MissingMethodExecutionFailed.java  
 \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-  
 jar/org/codehaus/groovy/ast/stmt/IfStatement.java  
 \*  
 /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-  
 jar/org/codehaus/groovy/runtime/DateGroovyMethods.java  
 \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-  
 jar/org/codehaus/groovy/transform/TimedInterruptibleASTTransformation.groovy  
 \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-  
 jar/org/codehaus/groovy/runtime/dgmimpl/NumberNumberPlus.java  
 \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-  
 jar/org/codehaus/groovy/classgen/asm/sc/StaticCompilationMopWriter.java  
 \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-  
 jar/org/codehaus/groovy/antlr/treewalker/SourcePrinter.java  
 \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-  
 jar/org/codehaus/groovy/transform/trait/TraitComposer.java  
 \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-  
 jar/org/codehaus/groovy/ast/InterfaceHelperClassNode.java  
 \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-  
 jar/org/codehaus/groovy/transform/stc/ExtensionMethodCache.java  
 \*  
 /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-  
 jar/org/codehaus/groovy/ast/NodeMetaDataHandler.java  
 \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-  
 jar/org/codehaus/groovy/vmplugin/VMPlugin.java  
 \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-  
 jar/org/codehaus/groovy/classgen/asm/BinaryObjectExpressionHelper.java  
 \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-  
 jar/groovy/io/EncodingAwareBufferedWriter.java  
 \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-  
 jar/org/codehaus/groovy/util/DoubleArrayIterable.java  
 \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-  
 jar/org/codehaus/groovy/runtime/callsite/GetEffectivePogoPropertySite.java  
 \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-  
 jar/org/codehaus/groovy/transform/sc/StaticCompilationMetadataKeys.java  
 \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-  
 jar/org/codehaus/groovy/classgen/asm/sc/StaticTypesUnaryExpressionHelper.java  
 \*  
 /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-  
 jar/org/codehaus/groovy/classgen/asm/sc/StaticPropertyAccessHelper.java

\* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/groovy/lang/MetaBeanProperty.java  
 \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/org/codehaus/groovy/antlr/LineColumn.java  
 \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/org/codehaus/groovy/runtime/memoize/StampedCommonCache.java  
 \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/groovy/lang/Tuple0.java  
 \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/org/codehaus/groovy/runtime/DefaultGroovyMethods.java  
 \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/org/codehaus/groovy/ast/decompiled/DecompiledClassNode.java  
 \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/org/codehaus/groovy/runtime/dgmimpl/arrays/LongArrayGetAtMetaMethod.java  
 \*  
 /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/org/codehaus/groovy/ast/expr/AttributeExpression.java  
 \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/groovy/grape/GrabAnnotationTransformation.java  
 \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/org/codehaus/groovy/antlr/treewalker/VisitorAdapter.java  
 \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/groovy/util/ClosureComparator.java  
 \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/org/codehaus/groovy/runtime/InvokerHelper.java  
 \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/org/codehaus/groovy/control/ResolveVisitor.java  
 \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/org/codehaus/groovy/util/LongArrayIterable.java  
 \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/org/codehaus/groovy/vmplugin/v8/MethodHandleWrapper.java  
 \*  
 /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/org/codehaus/groovy/ast/expr/ClassExpression.java  
 \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/org/codehaus/groovy/runtime/callsite/PogoMetaMethodSite.java  
 \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/org/codehaus/groovy/antlr/GroovySourceToken.java  
 \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/groovy/util/PermutationGenerator.java  
 \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/org/codehaus/groovy/classgen/asm/indy/sc/IndyStaticTypesMultiTypeDispatcher.java  
 \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/org/codehaus/groovy/classgen/asm/indy/InvokeDynamicWriter.java  
 \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/org/codehaus/groovy/reflection/GroovyClassValuePreJava7.java  
 \* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/groovy/lang/Tuple11.java  
 \*  
 /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-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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 * limitations under the License.
 */
```

Found in path(s):

```
* /opt/cola/permits/1223665761_1635937334.8/0/groovy-3-0-9-sources-
jar/org/apache/groovy/util/concurrent/concurrentlinkedhashmap/package-info.java
* /opt/cola/permits/1223665761_1635937334.8/0/groovy-3-0-9-sources-
jar/org/apache/groovy/util/concurrent/concurrentlinkedhashmap/LinkedDeque.java
No license file was found, but licenses were detected in source scan.
```

```
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 */
```

Found in path(s):

```
* /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  
\* /opt/cola/permits/1223665761\_1635937334.8/0/groovy-3-0-9-sources-jar/org/apache/groovy/util/concurrent/concurrentlinkedhashmap/EvictionListener.java  
No license file was found, but licenses were detected in source scan.

/\*\* 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:

\* Jeremy Rayner groovy@ross-rayner.com

\* John Mitchell johnm@non.net

\* Terence Parr parrt@magelang.com

\* John Lilley jlilley@empathy.com

\* Scott Stanchfield thetick@magelang.com

\* Markus Mohnen mohnen@informatik.rwth-aachen.de

\* Peter Williams pete.williams@sun.com

\* Allan Jacobs Allan.Jacobs@eng.sun.com

\* 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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```
/*
 * This file is adapted from the Antlr4 Java grammar which has the following license
 *
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 * KIND, either express or implied. See the License for the
 * specific language governing permissions and limitations
 * under the License.
 */
```

```
/**
 * 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.parserantlr4.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

: [LiGg]

;

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  
TsQStringQuotationMark  
: "\\\"  
;

```

;

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

```

# 1.121 groovy-json 3.0.9

## 1.121.1 Available under license :

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```

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#
org.apache.groovy.json.DefaultFastStringServiceFactory

```

Found in path(s):

```

* /opt/cola/permits/1223665998_1635937393.33/0/groovy-json-3-0-9-sources-jar/META-INF/services/org.apache.groovy.json.FastStringServiceFactory

```

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\* under the License.  
\*/

Found in path(s):

\* /opt/cola/permits/1223665998\_1635937393.33/0/groovy-json-3-0-9-sources-jar/org/apache/groovy/json/internal/CharacterSource.java  
\*  
/opt/cola/permits/1223665998\_1635937393.33/0/groovy-json-3-0-9-sources-jar/groovy/json/JsonBuilder.java  
\* /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

## 1.122 groovy-xml 3.0.9

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Found in path(s):

\* /opt/cola/permits/1223666021\_1635937383.64/0/groovy-xml-3-0-9-sources-jar/groovy/xml/package.html  
\*  
/opt/cola/permits/1223666021\_1635937383.64/0/groovy-xml-3-0-9-sources-jar/groovy/xml/streamingmarkupsupport/package.html  
\* /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  
 \*  
 /opt/cola/permits/1223666021\_1635937383.64/0/groovy-xml-3-0-9-sources-jar/groovy/xml/streamingmarkupsupport/BaseMarkupBuilder.java

\* /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  
 \* /opt/cola/permits/1223666021\_1635937383.64/0/groovy-xml-3-0-9-sources-jar/groovy/xml/dom/DOMCategory.java  
 \* /opt/cola/permits/1223666021\_1635937383.64/0/groovy-xml-3-0-9-sources-jar/groovy/xml/StreamingDOMBuilder.groovy  
 \* /opt/cola/permits/1223666021\_1635937383.64/0/groovy-xml-3-0-9-sources-jar/groovy/xml/slurpersupport/NodeParents.java  
 \* /opt/cola/permits/1223666021\_1635937383.64/0/groovy-xml-3-0-9-sources-jar/groovy/xml/slurpersupport/FilteredAttributes.java  
 \* /opt/cola/permits/1223666021\_1635937383.64/0/groovy-xml-3-0-9-sources-jar/groovy/util/XmlParser.java  
 \*  
 /opt/cola/permits/1223666021\_1635937383.64/0/groovy-xml-3-0-9-sources-jar/groovy/xml/slurpersupport/NodeIterator.java  
 \* /opt/cola/permits/1223666021\_1635937383.64/0/groovy-xml-3-0-9-sources-jar/groovy/xml/XmlParser.java  
 \* /opt/cola/permits/1223666021\_1635937383.64/0/groovy-xml-3-0-9-sources-jar/groovy/util/slurpersupport/NodeParents.java  
 \* /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
```

## 1.123 groovy-nio 3.0.9

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```

Found in path(s):

```
* /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
```

## 1.124 libffi 3.4.2

## 1.124.1 Available under license :

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```

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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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* /opt/cola/permits/1252774624_1641970131.11/0/jna-5-10-0-sources-jar/com/sun/jna/win32/StdCallLibrary.java
* /opt/cola/permits/1252774624_1641970131.11/0/jna-5-10-0-sources-jar/com/sun/jna/ptr/FloatByReference.java
* /opt/cola/permits/1252774624_1641970131.11/0/jna-5-10-0-sources-jar/com/sun/jna/WString.java
* /opt/cola/permits/1252774624_1641970131.11/0/jna-5-10-0-sources-
jar/com/sun/jna/win32/W32APITypeMapper.java
* /opt/cola/permits/1252774624_1641970131.11/0/jna-5-10-0-sources-jar/com/sun/jna/FromNativeContext.java
* /opt/cola/permits/1252774624_1641970131.11/0/jna-5-10-0-sources-jar/com/sun/jna/StructureReadContext.java
* /opt/cola/permits/1252774624_1641970131.11/0/jna-5-10-0-sources-jar/com/sun/jna/ptr/LongByReference.java
* /opt/cola/permits/1252774624_1641970131.11/0/jna-5-10-0-sources-jar/com/sun/jna/TypeConverter.java
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/opt/cola/permits/1252774624\_1641970131.11/0/jna-5-10-0-sources-jar/com/sun/jna/AltCallingConvention.java  
\* /opt/cola/permits/1252774624\_1641970131.11/0/jna-5-10-0-sources-jar/com/sun/jna/win32/StdCallFunctionMapper.java  
\* /opt/cola/permits/1252774624\_1641970131.11/0/jna-5-10-0-sources-jar/com/sun/jna/ptr/ByteByReference.java  
\* /opt/cola/permits/1252774624\_1641970131.11/0/jna-5-10-0-sources-jar/com/sun/jna/ptr/NativeLongByReference.java  
\* /opt/cola/permits/1252774624\_1641970131.11/0/jna-5-10-0-sources-jar/com/sun/jna/Callback.java  
\* /opt/cola/permits/1252774624\_1641970131.11/0/jna-5-10-0-sources-jar/com/sun/jna/ptr/ByReference.java  
\* /opt/cola/permits/1252774624\_1641970131.11/0/jna-5-10-0-sources-jar/com/sun/jna/CallbackParameterContext.java  
\* /opt/cola/permits/1252774624\_1641970131.11/0/jna-5-10-0-sources-jar/com/sun/jna/NativeMappedConverter.java  
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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/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
* /opt/cola/permits/1252774624_1641970131.11/0/jna-5-10-0-sources-jar/com/sun/jna/NativeLong.java
* /opt/cola/permits/1252774624_1641970131.11/0/jna-5-10-0-sources-jar/com/sun/jna/CallbackProxy.java
* /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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/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  
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\* /opt/cola/permits/1255880306\_1642609938.26/0/javassist-3-28-0-ga-sources-jar/javassist/ByteArrayClassPath.java  
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\*



/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  
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/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  
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/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  
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\* /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  
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\* /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  
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/opt/cola/permits/1255880306\_1642609938.26/0/javassist-3-28-0-ga-sources-jar/javassist/bytecode/stackmap/MapMaker.java  
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\* /opt/cola/permits/1255880306\_1642609938.26/0/javassist-3-28-0-ga-sources-jar/javassist/runtime/Inner.java  
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\* /opt/cola/permits/1255880306\_1642609938.26/0/javassist-3-28-0-ga-sources-jar/javassist/util/proxy/DefineClassHelper.java  
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 \* /opt/cola/permits/1255880306\_1642609938.26/0/javassist-3-28-0-ga-sources-jar/javassist/expr/FieldAccess.java  
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 jar/javassist/CtNewWrappedMethod.java  
 \* /opt/cola/permits/1255880306\_1642609938.26/0/javassist-3-28-0-ga-sources-  
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 jar/javassist/bytecode/ClassFileWriter.java  
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 jar/javassist/compiler/NoFieldException.java  
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 \* /opt/cola/permits/1255880306\_1642609938.26/0/javassist-3-28-0-ga-sources-  
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 \* /opt/cola/permits/1255880306\_1642609938.26/0/javassist-3-28-0-ga-sources-jar/javassist/compiler/Parser.java  
 \* /opt/cola/permits/1255880306\_1642609938.26/0/javassist-3-28-0-ga-sources-  
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 \* /opt/cola/permits/1255880306\_1642609938.26/0/javassist-3-28-0-ga-sources-  
 jar/javassist/bytecode/ExceptionTable.java  
 \* /opt/cola/permits/1255880306\_1642609938.26/0/javassist-3-28-0-ga-sources-jar/javassist/bytecode/ClassFile.java  
 \* /opt/cola/permits/1255880306\_1642609938.26/0/javassist-3-28-0-ga-sources-jar/javassist/expr/NewArray.java  
 \* /opt/cola/permits/1255880306\_1642609938.26/0/javassist-3-28-0-ga-sources-jar/javassist/tools/framedump.java  
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 /opt/cola/permits/1255880306\_1642609938.26/0/javassist-3-28-0-ga-sources-  
 jar/javassist/bytecode/annotation/NoSuchClassError.java  
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jar/javassist/bytecode/AttributeInfo.java
* /opt/cola/permits/1255880306_1642609938.26/0/javassist-3-28-0-ga-sources-jar/javassist/tools/Callback.java
* /opt/cola/permits/1255880306_1642609938.26/0/javassist-3-28-0-ga-sources-
jar/javassist/convert/TransformAfter.java
* /opt/cola/permits/1255880306_1642609938.26/0/javassist-3-28-0-ga-sources-
jar/javassist/bytecode/InstructionPrinter.java
* /opt/cola/permits/1255880306_1642609938.26/0/javassist-3-28-0-ga-sources-
jar/javassist/tools/reflect/ClassMetaobject.java
* /opt/cola/permits/1255880306_1642609938.26/0/javassist-3-28-0-ga-sources-
jar/javassist/bytecode/analysis/ControlFlow.java
* /opt/cola/permits/1255880306_1642609938.26/0/javassist-3-28-0-ga-sources-
jar/javassist/compiler/ast/StringL.java
*
/opt/cola/permits/1255880306_1642609938.26/0/javassist-3-28-0-ga-sources-
jar/javassist/compiler/ast/DoubleConst.java
* /opt/cola/permits/1255880306_1642609938.26/0/javassist-3-28-0-ga-sources-
jar/javassist/util/proxy/ProxyFactory.java
* /opt/cola/permits/1255880306_1642609938.26/0/javassist-3-28-0-ga-sources-
jar/javassist/compiler/ast/ASTList.java
* /opt/cola/permits/1255880306_1642609938.26/0/javassist-3-28-0-ga-sources-
jar/javassist/bytecode/Descriptor.java
* /opt/cola/permits/1255880306_1642609938.26/0/javassist-3-28-0-ga-sources-jar/javassist/compiler/ast/Stmnt.java
* /opt/cola/permits/1255880306_1642609938.26/0/javassist-3-28-0-ga-sources-jar/javassist/SerialVersionUID.java
* /opt/cola/permits/1255880306_1642609938.26/0/javassist-3-28-0-ga-sources-jar/javassist/Modifier.java
* /opt/cola/permits/1255880306_1642609938.26/0/javassist-3-28-0-ga-sources-jar/javassist/util/proxy/Proxy.java
*
/opt/cola/permits/1255880306_1642609938.26/0/javassist-3-28-0-ga-sources-
jar/javassist/convert/TransformAccessArrayField.java
* /opt/cola/permits/1255880306_1642609938.26/0/javassist-3-28-0-ga-sources-
jar/javassist/compiler/ast/ASTree.java
* /opt/cola/permits/1255880306_1642609938.26/0/javassist-3-28-0-ga-sources-
jar/javassist/bytecode/StackMapTable.java
* /opt/cola/permits/1255880306_1642609938.26/0/javassist-3-28-0-ga-sources-
jar/javassist/tools/reflect/CannotReflectException.java
* /opt/cola/permits/1255880306_1642609938.26/0/javassist-3-28-0-ga-sources-
jar/javassist/convert/TransformReadField.java
* /opt/cola/permits/1255880306_1642609938.26/0/javassist-3-28-0-ga-sources-
jar/javassist/bytecode/SignatureAttribute.java
* /opt/cola/permits/1255880306_1642609938.26/0/javassist-3-28-0-ga-sources-jar/javassist/compiler/ast/Pair.java
* /opt/cola/permits/1255880306_1642609938.26/0/javassist-3-28-0-ga-sources-
jar/javassist/bytecode/AccessFlag.java
* /opt/cola/permits/1255880306_1642609938.26/0/javassist-3-28-0-ga-sources-
jar/javassist/expr/ConstructorCall.java
*
/opt/cola/permits/1255880306_1642609938.26/0/javassist-3-28-0-ga-sources-
jar/javassist/scopedpool/ScopedClassPoolRepository.java
* /opt/cola/permits/1255880306_1642609938.26/0/javassist-3-28-0-ga-sources-
jar/javassist/convert/TransformNewClass.java

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\* /opt/cola/permits/1255880306\_1642609938.26/0/javassist-3-28-0-ga-sources-jar/javassist/compiler/TypeChecker.java  
\* /opt/cola/permits/1255880306\_1642609938.26/0/javassist-3-28-0-ga-sources-jar/javassist/bytecode/annotation/AnnotationsWriter.java  
\* /opt/cola/permits/1255880306\_1642609938.26/0/javassist-3-28-0-ga-sources-jar/javassist/CtNewConstructor.java  
\* /opt/cola/permits/1255880306\_1642609938.26/0/javassist-3-28-0-ga-sources-jar/javassist/bytecode/Bytecode.java  
\* /opt/cola/permits/1255880306\_1642609938.26/0/javassist-3-28-0-ga-sources-jar/javassist/compiler/ast/FieldDecl.java  
\* /opt/cola/permits/1255880306\_1642609938.26/0/javassist-3-28-0-ga-sources-jar/javassist/bytecode/annotation/AnnotationImpl.java  
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/opt/cola/permits/1255880306\_1642609938.26/0/javassist-3-28-0-ga-sources-jar/javassist/expr/Cast.java  
\* /opt/cola/permits/1255880306\_1642609938.26/0/javassist-3-28-0-ga-sources-jar/javassist/scopedpool/ScopedClassPool.java  
\* /opt/cola/permits/1255880306\_1642609938.26/0/javassist-3-28-0-ga-sources-jar/javassist/util/proxy/DefinePackageHelper.java  
\* /opt/cola/permits/1255880306\_1642609938.26/0/javassist-3-28-0-ga-sources-jar/javassist/bytecode/SourceFileAttribute.java  
\* /opt/cola/permits/1255880306\_1642609938.26/0/javassist-3-28-0-ga-sources-jar/javassist/bytecode/stackmap/TypedBlock.java  
\* /opt/cola/permits/1255880306\_1642609938.26/0/javassist-3-28-0-ga-sources-jar/javassist/bytecode/LocalVariableTypeAttribute.java  
\* /opt/cola/permits/1255880306\_1642609938.26/0/javassist-3-28-0-ga-sources-jar/javassist/bytecode/NestMembersAttribute.java  
\* /opt/cola/permits/1255880306\_1642609938.26/0/javassist-3-28-0-ga-sources-jar/javassist/util/proxy/MethodFilter.java  
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/opt/cola/permits/1255880306\_1642609938.26/0/javassist-3-28-0-ga-sources-jar/javassist/bytecode/analysis/Analyzer.java  
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\* /opt/cola/permits/1255880306\_1642609938.26/0/javassist-3-28-0-ga-sources-jar/javassist/util/HotSwapAgent.java  
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\* /opt/cola/permits/1255880306\_1642609938.26/0/javassist-3-28-0-ga-sources-jar/javassist/CtClassType.java  
\* /opt/cola/permits/1255880306\_1642609938.26/0/javassist-3-28-0-ga-sources-jar/javassist/bytecode/Opcodes.java  
\* /opt/cola/permits/1255880306\_1642609938.26/0/javassist-3-28-0-ga-sources-jar/javassist/compiler/JvstTypeChecker.java  
\* /opt/cola/permits/1255880306\_1642609938.26/0/javassist-3-28-0-ga-sources-jar/javassist/compiler/CodeGen.java  
\* /opt/cola/permits/1255880306\_1642609938.26/0/javassist-3-28-0-ga-sources-jar/javassist/bytecode/analysis/Type.java  
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/opt/cola/permits/1255880306\_1642609938.26/0/javassist-3-28-0-ga-sources-jar/javassist/compiler/ast/Keyword.java  
\* /opt/cola/permits/1255880306\_1642609938.26/0/javassist-3-28-0-ga-sources-jar/javassist/tools/web/Viewer.java  
\* /opt/cola/permits/1255880306\_1642609938.26/0/javassist-3-28-0-ga-sources-jar/javassist/compiler/ast/Member.java  
\* /opt/cola/permits/1255880306\_1642609938.26/0/javassist-3-28-0-ga-sources-

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jar/javassist/compiler/JvstCodeGen.java
* /opt/cola/permits/1255880306_1642609938.26/0/javassist-3-28-0-ga-sources-jar/javassist/expr/MethodCall.java
* /opt/cola/permits/1255880306_1642609938.26/0/javassist-3-28-0-ga-sources-
jar/javassist/convert/TransformCall.java
* /opt/cola/permits/1255880306_1642609938.26/0/javassist-3-28-0-ga-sources-jar/javassist/tools/rmi/Sample.java
* /opt/cola/permits/1255880306_1642609938.26/0/javassist-3-28-0-ga-sources-
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jar/javassist/util/proxy/SerializedProxy.java
*
/opt/cola/permits/1255880306_1642609938.26/0/javassist-3-28-0-ga-sources-
jar/javassist/compiler/SymbolTable.java
* /opt/cola/permits/1255880306_1642609938.26/0/javassist-3-28-0-ga-sources-
jar/javassist/bytecode/AnnotationsAttribute.java
* /opt/cola/permits/1255880306_1642609938.26/0/javassist-3-28-0-ga-sources-jar/javassist/tools/Dump.java
* /opt/cola/permits/1255880306_1642609938.26/0/javassist-3-28-0-ga-sources-
jar/javassist/bytecode/ByteArray.java
* /opt/cola/permits/1255880306_1642609938.26/0/javassist-3-28-0-ga-sources-jar/javassist/URLClassPath.java
* /opt/cola/permits/1255880306_1642609938.26/0/javassist-3-28-0-ga-sources-
jar/javassist/tools/rmi/RemoteException.java
* /opt/cola/permits/1255880306_1642609938.26/0/javassist-3-28-0-ga-sources-
jar/javassist/compiler/ast/Visitor.java
* /opt/cola/permits/1255880306_1642609938.26/0/javassist-3-28-0-ga-sources-
jar/javassist/bytecode/LongVector.java
* /opt/cola/permits/1255880306_1642609938.26/0/javassist-3-28-0-ga-sources-
jar/javassist/tools/rmi/RemoteRef.java
*
/opt/cola/permits/1255880306_1642609938.26/0/javassist-3-28-0-ga-sources-
jar/javassist/convert/TransformFieldAccess.java
* /opt/cola/permits/1255880306_1642609938.26/0/javassist-3-28-0-ga-sources-
jar/javassist/bytecode/LocalVariableAttribute.java
* /opt/cola/permits/1255880306_1642609938.26/0/javassist-3-28-0-ga-sources-
jar/javassist/scopedpool/ScopedClassPoolRepositoryImpl.java
* /opt/cola/permits/1255880306_1642609938.26/0/javassist-3-28-0-ga-sources-

```

```

jar/javassist/tools/web/BadHttpRequest.java
* /opt/cola/permits/1255880306_1642609938.26/0/javassist-3-28-0-ga-sources-jar/javassist/bytecode/FieldInfo.java
* /opt/cola/permits/1255880306_1642609938.26/0/javassist-3-28-0-ga-sources-
jar/javassist/tools/reflect/Metalevel.java
* /opt/cola/permits/1255880306_1642609938.26/0/javassist-3-28-0-ga-sources-
jar/javassist/NotFoundException.java
* /opt/cola/permits/1255880306_1642609938.26/0/javassist-3-28-0-ga-sources-jar/javassist/expr/NewExpr.java
*
/opt/cola/permits/1255880306_1642609938.26/0/javassist-3-28-0-ga-sources-jar/javassist/bytecode/Mnemonic.java
* /opt/cola/permits/1255880306_1642609938.26/0/javassist-3-28-0-ga-sources-
jar/javassist/util/proxy/RuntimeSupport.java
* /opt/cola/permits/1255880306_1642609938.26/0/javassist-3-28-0-ga-sources-
jar/javassist/convert/TransformNew.java
* /opt/cola/permits/1255880306_1642609938.26/0/javassist-3-28-0-ga-sources-
jar/javassist/util/proxy/ProxyObjectInputStream.java
* /opt/cola/permits/1255880306_1642609938.26/0/javassist-3-28-0-ga-sources-jar/javassist/tools/reflect/Loader.java
* /opt/cola/permits/1255880306_1642609938.26/0/javassist-3-28-0-ga-sources-
jar/javassist/convert/TransformWriteField.java
* /opt/cola/permits/1255880306_1642609938.26/0/javassist-3-28-0-ga-sources-
jar/javassist/bytecode/ExceptionsAttribute.java
* /opt/cola/permits/1255880306_1642609938.26/0/javassist-3-28-0-ga-sources-jar/javassist/CtPrimitiveType.java
* /opt/cola/permits/1255880306_1642609938.26/0/javassist-3-28-0-ga-sources-
jar/javassist/bytecode/analysis/SubroutineScanner.java

```

## 1.141 javax-el 3.0.0

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jar/net/sourceforge/argparse4j/impl/type/ReflectArgumentType.java
* /opt/cola/permits/1257333064_1642801966.95/0/argparse4j-0-8-1-sources-
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jar/net/sourceforge/argparse4j/impl/type/EnumStringArgumentType.java
* /opt/cola/permits/1257333064_1642801966.95/0/argparse4j-0-8-1-sources-
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\* /opt/cola/permits/1257333064\_1642801966.95/0/argparse4j-0-8-1-sources-  
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 jar/net/sourceforge/argparse4j/inf/ArgumentAction.java  
 \* /opt/cola/permits/1257333064\_1642801966.95/0/argparse4j-0-8-1-sources-  
 jar/net/sourceforge/argparse4j/helper/PrefixPattern.java  
 \* /opt/cola/permits/1257333064\_1642801966.95/0/argparse4j-0-8-1-sources-  
 jar/net/sourceforge/argparse4j/internal/SubparserImpl.java  
 \* /opt/cola/permits/1257333064\_1642801966.95/0/argparse4j-0-8-1-sources-  
 jar/net/sourceforge/argparse4j/impl/type/ConstructorArgumentType.java  
 \* /opt/cola/permits/1257333064\_1642801966.95/0/argparse4j-0-8-1-sources-  
 jar/net/sourceforge/argparse4j/inf/ArgumentGroup.java  
 \* /opt/cola/permits/1257333064\_1642801966.95/0/argparse4j-0-8-1-sources-  
 jar/net/sourceforge/argparse4j/impl/action/VersionArgumentAction.java  
 \*  
 /opt/cola/permits/1257333064\_1642801966.95/0/argparse4j-0-8-1-sources-  
 jar/net/sourceforge/argparse4j/internal/UnrecognizedArgumentException.java  
 \* /opt/cola/permits/1257333064\_1642801966.95/0/argparse4j-0-8-1-sources-  
 jar/net/sourceforge/argparse4j/inf/Subparsers.java  
 \* /opt/cola/permits/1257333064\_1642801966.95/0/argparse4j-0-8-1-sources-  
 jar/net/sourceforge/argparse4j/impl/action/AppendConstArgumentAction.java  
 \* /opt/cola/permits/1257333064\_1642801966.95/0/argparse4j-0-8-1-sources-  
 jar/net/sourceforge/argparse4j/annotation/Arg.java  
 \* /opt/cola/permits/1257333064\_1642801966.95/0/argparse4j-0-8-1-sources-  
 jar/net/sourceforge/argparse4j/internal/UnrecognizedCommandException.java  
 \* /opt/cola/permits/1257333064\_1642801966.95/0/argparse4j-0-8-1-sources-  
 jar/net/sourceforge/argparse4j/inf/ArgumentType.java  
 \* /opt/cola/permits/1257333064\_1642801966.95/0/argparse4j-0-8-1-sources-  
 jar/net/sourceforge/argparse4j/helper/CJKTextWidthCounter.java  
 \* /opt/cola/permits/1257333064\_1642801966.95/0/argparse4j-0-8-1-sources-  
 jar/net/sourceforge/argparse4j/helper/TextWidthCounter.java  
 \*  
 /opt/cola/permits/1257333064\_1642801966.95/0/argparse4j-0-8-1-sources-  
 jar/net/sourceforge/argparse4j/impl/action/StoreArgumentAction.java  
 \* /opt/cola/permits/1257333064\_1642801966.95/0/argparse4j-0-8-1-sources-  
 jar/net/sourceforge/argparse4j/inf/Namespace.java  
 \* /opt/cola/permits/1257333064\_1642801966.95/0/argparse4j-0-8-1-sources-  
 jar/net/sourceforge/argparse4j/impl/action/StoreFalseArgumentAction.java  
 \* /opt/cola/permits/1257333064\_1642801966.95/0/argparse4j-0-8-1-sources-  
 jar/net/sourceforge/argparse4j/inf/FeatureControl.java  
 \* /opt/cola/permits/1257333064\_1642801966.95/0/argparse4j-0-8-1-sources-  
 jar/net/sourceforge/argparse4j/impl/choice/CollectionArgumentChoice.java  
 \* /opt/cola/permits/1257333064\_1642801966.95/0/argparse4j-0-8-1-sources-  
 jar/net/sourceforge/argparse4j/inf/ArgumentChoice.java  
 \* /opt/cola/permits/1257333064\_1642801966.95/0/argparse4j-0-8-1-sources-  
 jar/net/sourceforge/argparse4j/internal/ArgumentGroupImpl.java  
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 /opt/cola/permits/1257333064\_1642801966.95/0/argparse4j-0-8-1-sources-  
 jar/net/sourceforge/argparse4j/impl/type/FileVerification.java  
 \* /opt/cola/permits/1257333064\_1642801966.95/0/argparse4j-0-8-1-sources-



jar/net/sourceforge/argparse4j/impl/type/EnumArgumentType.java  
\* /opt/cola/permits/1257333064\_1642801966.95/0/argparse4j-0-8-1-sources-  
jar/net/sourceforge/argparse4j/inf/ArgumentParserException.java  
\* /opt/cola/permits/1257333064\_1642801966.95/0/argparse4j-0-8-1-sources-  
jar/net/sourceforge/argparse4j/inf/Subparser.java  
\* /opt/cola/permits/1257333064\_1642801966.95/0/argparse4j-0-8-1-sources-  
jar/net/sourceforge/argparse4j/helper/ASCIITextWidthCounter.java  
\* /opt/cola/permits/1257333064\_1642801966.95/0/argparse4j-0-8-1-sources-  
jar/net/sourceforge/argparse4j/helper/ReflectHelper.java  
\* /opt/cola/permits/1257333064\_1642801966.95/0/argparse4j-0-8-1-sources-  
jar/net/sourceforge/argparse4j/internal/ParseState.java  
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jar/net/sourceforge/argparse4j/helper/TextHelper.java

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/opt/cola/permits/1257333064\_1642801966.95/0/argparse4j-0-8-1-sources-  
jar/net/sourceforge/argparse4j/impl/action/StoreTrueArgumentAction.java  
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jar/net/sourceforge/argparse4j/ArgumentParsers.java  
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jar/net/sourceforge/argparse4j/internal/SubparsersImpl.java  
\* /opt/cola/permits/1257333064\_1642801966.95/0/argparse4j-0-8-1-sources-  
jar/net/sourceforge/argparse4j/inf/Argument.java  
\* /opt/cola/permits/1257333064\_1642801966.95/0/argparse4j-0-8-1-sources-  
jar/net/sourceforge/argparse4j/internal/ArgumentParserImpl.java  
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jar/net/sourceforge/argparse4j/impl/choice/RangeArgumentChoice.java  
\* /opt/cola/permits/1257333064\_1642801966.95/0/argparse4j-0-8-1-sources-  
jar/net/sourceforge/argparse4j/impl/Arguments.java

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jar/net/sourceforge/argparse4j/impl/action/AppendArgumentAction.java  
\* /opt/cola/permits/1257333064\_1642801966.95/0/argparse4j-0-8-1-sources-  
jar/net/sourceforge/argparse4j/impl/type/StringArgumentType.java  
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jar/net/sourceforge/argparse4j/inf/ArgumentParser.java  
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jar/net/sourceforge/argparse4j/impl/action/HelpArgumentAction.java  
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jar/net/sourceforge/argparse4j/impl/action/StoreConstArgumentAction.java  
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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
```

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```
/*!
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* http://jquery.com/
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*
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*
```

\* Date: Thu Jun 30 14:16:56 2011 -0400

\*/

Found in path(s):

\* /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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\* jQuery Templates Plugin 1.0.0pre

\* <http://github.com/jquery/jquery-tmpl>

\* Requires jQuery 1.4.2

\*

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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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Found in path(s):

\* /opt/cola/permits/1257333100\_1642801922.15/0/gae-mini-profiler-1-1-1-sources-

```
jar/com/google/appengine/tools/appstats/MiniProfilerAppstats.java
* /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
```

## 1.145 jackson-module-afterburner 2.10.5

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## 1.146 hppc 0.8.1

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\* /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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## 1.154 groovy-test 3.0.9

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```
* /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

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## 1.155 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

## 1.156 ant-antlr 1.10.11

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jar/org/jutils/jhardware/model/DisplayInfo.java  
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jar/org/jutils/jhardware/HardwareInfo.java  
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jar/org/jutils/jhardware/model/MotherboardInfo.java  
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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  
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/opt/cola/permits/1268278445_1675380984.0905662/0/jhardware-0-8-6-sources-
jar/org/jutils/jhardware/util/TemperatureUtils.java
* /opt/cola/permits/1268278445_1675380984.0905662/0/jhardware-0-8-6-sources-
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## 1.158 groovy-sql 3.0.9

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\* /opt/cola/permits/1268277660\_1644387356.91/0/groovy-sql-3-0-9-sources-jar/groovy/sql/InOutParameter.java  
\* /opt/cola/permits/1268277660\_1644387356.91/0/groovy-sql-3-0-9-sources-jar/groovy/sql/InParameter.java  
\* /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  
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Found in path(s):

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

# 1.159 groovy-docgenerator 3.0.9

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\* /opt/cola/permits/1268275768\_1644387006.67/0/groovy-docgenerator-3-0-9-sources-jar/org/apache/groovy/docgenerator/template.index-all.html

\*

/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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jar/org/apache/groovy/docgenerator/stylessheet.css

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\* /opt/cola/permits/1268275768\_1644387006.67/0/groovy-docgenerator-3-0-9-sources-jar/org/apache/groovy/docgenerator/DocGenerator.properties

## 1.160 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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* /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-
jar/org/codehaus/groovy/tools/groovydoc/antlr4/GroovyDocParser.java
* /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  
 \* /opt/cola/permits/1268276226\_1644386929.71/0/groovy-groovydoc-3-0-9-sources-  
 jar/org/codehaus/groovy/groovydoc/GroovyDocErrorReporter.java  
 \*  
 /opt/cola/permits/1268276226\_1644386929.71/0/groovy-groovydoc-3-0-9-sources-  
 jar/org/codehaus/groovy/tools/groovydoc/SimpleGroovyPackageDoc.java  
 \* /opt/cola/permits/1268276226\_1644386929.71/0/groovy-groovydoc-3-0-9-sources-  
 jar/org/codehaus/groovy/tools/groovydoc/SimpleGroovyAbstractableElementDoc.java  
 \* /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-

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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
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```
* /opt/cola/permits/1268276226_1644386929.71/0/groovy-groovydoc-3-0-9-sources-
```

jar/org/codehaus/groovy/tools/groovydoc/Main.properties

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```

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# 1.161 groovy-swing 3.0.9

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/opt/cola/permits/1268277696\_1644386512.94/0/groovy-swing-3-0-9-sources-jar/groovy/swing/binding/package.html

\* /opt/cola/permits/1268277696\_1644386512.94/0/groovy-swing-3-0-9-sources-jar/groovy/model/package.html

\* /opt/cola/permits/1268277696\_1644386512.94/0/groovy-swing-3-0-9-sources-jar/groovy/swing/impl/package.html

\* /opt/cola/permits/1268277696\_1644386512.94/0/groovy-swing-3-0-9-sources-jar/groovy/swing/model/package.html

\* /opt/cola/permits/1268277696\_1644386512.94/0/groovy-swing-3-0-9-sources-jar/org/apache/groovy/swing/binding/package.html

\* /opt/cola/permits/1268277696\_1644386512.94/0/groovy-swing-3-0-9-sources-jar/groovy/swing/package.html

\* /opt/cola/permits/1268277696\_1644386512.94/0/groovy-swing-3-0-9-sources-



jar/org/codehaus/groovy/binding/package.html

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```
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 */
```

Found in path(s):

```
* /opt/cola/permits/1268277696_1644386512.94/0/groovy-swing-3-0-9-sources-
jar/groovy/swing/binding/JListProperties.groovy
*
/opt/cola/permits/1268277696_1644386512.94/0/groovy-swing-3-0-9-sources-
jar/org/apache/groovy/swing/binding/ClosureSourceBinding.java
* /opt/cola/permits/1268277696_1644386512.94/0/groovy-swing-3-0-9-sources-
jar/groovy/swing/factory/BindFactory.groovy
* /opt/cola/permits/1268277696_1644386512.94/0/groovy-swing-3-0-9-sources-
jar/groovy/swing/table/TableSorter.java
* /opt/cola/permits/1268277696_1644386512.94/0/groovy-swing-3-0-9-sources-
jar/groovy/swing/factory/RootPaneContainerFactory.groovy
* /opt/cola/permits/1268277696_1644386512.94/0/groovy-swing-3-0-9-sources-
jar/groovy/swing/impl/TableLayoutCell.java
* /opt/cola/permits/1268277696_1644386512.94/0/groovy-swing-3-0-9-sources-
jar/groovy/swing/factory/BoxFactory.groovy
* /opt/cola/permits/1268277696_1644386512.94/0/groovy-swing-3-0-9-sources-
jar/groovy/swing/binding/JTableProperties.java
* /opt/cola/permits/1268277696_1644386512.94/0/groovy-swing-3-0-9-sources-
jar/groovy/swing/factory/ComponentFactory.groovy
*
/opt/cola/permits/1268277696_1644386512.94/0/groovy-swing-3-0-9-sources-
jar/groovy/swing/binding/AbstractButtonProperties.java
* /opt/cola/permits/1268277696_1644386512.94/0/groovy-swing-3-0-9-sources-
jar/groovy/swing/factory/SwingBorderFactory.groovy
* /opt/cola/permits/1268277696_1644386512.94/0/groovy-swing-3-0-9-sources-
```

```

jar/groovy/swing/factory/TableModelFactory.groovy
* /opt/cola/permits/1268277696_1644386512.94/0/groovy-swing-3-0-9-sources-
jar/groovy/swing/factory/ImageIconFactory.groovy
* /opt/cola/permits/1268277696_1644386512.94/0/groovy-swing-3-0-9-sources-
jar/groovy/swing/binding/JComboBoxProperties.java
* /opt/cola/permits/1268277696_1644386512.94/0/groovy-swing-3-0-9-sources-
jar/groovy/swing/binding/JScrollBarProperties.java
* /opt/cola/permits/1268277696_1644386512.94/0/groovy-swing-3-0-9-sources-
jar/org/apache/groovy/swing/binding/BindingProxy.java
* /opt/cola/permits/1268277696_1644386512.94/0/groovy-swing-3-0-9-sources-
jar/groovy/swing/factory/WidgetFactory.groovy
*
/opt/cola/permits/1268277696_1644386512.94/0/groovy-swing-3-0-9-sources-
jar/groovy/swing/factory/SplitPaneFactory.groovy
* /opt/cola/permits/1268277696_1644386512.94/0/groovy-swing-3-0-9-sources-
jar/groovy/swing/factory/BindProxyFactory.groovy
* /opt/cola/permits/1268277696_1644386512.94/0/groovy-swing-3-0-9-sources-
jar/org/codehaus/groovy/runtime/SwingGroovyMethods.java
* /opt/cola/permits/1268277696_1644386512.94/0/groovy-swing-3-0-9-sources-
jar/groovy/swing/binding/JTableMetaMethods.groovy
* /opt/cola/permits/1268277696_1644386512.94/0/groovy-swing-3-0-9-sources-
jar/groovy/swing/binding/JComponentProperties.java
* /opt/cola/permits/1268277696_1644386512.94/0/groovy-swing-3-0-9-sources-
jar/groovy/inspect/swingui/TableSorter.java
* /opt/cola/permits/1268277696_1644386512.94/0/groovy-swing-3-0-9-sources-
jar/groovy/swing/LookAndFeelHelper.groovy
* /opt/cola/permits/1268277696_1644386512.94/0/groovy-swing-3-0-9-sources-
jar/groovy/swing/binding/AbstractSyntheticBinding.java
* /opt/cola/permits/1268277696_1644386512.94/0/groovy-swing-3-0-9-sources-
jar/groovy/inspect/swingui/TableMap.java
*
/opt/cola/permits/1268277696_1644386512.94/0/groovy-swing-3-0-9-sources-jar/groovy/model/ValueHolder.java
* /opt/cola/permits/1268277696_1644386512.94/0/groovy-swing-3-0-9-sources-
jar/groovy/swing/factory/TableFactory.groovy
* /opt/cola/permits/1268277696_1644386512.94/0/groovy-swing-3-0-9-sources-
jar/groovy/swing/model/NestedValueModel.java
* /opt/cola/permits/1268277696_1644386512.94/0/groovy-swing-3-0-9-sources-
jar/groovy/swing/factory/ColumnFactory.groovy
* /opt/cola/permits/1268277696_1644386512.94/0/groovy-swing-3-0-9-sources-
jar/org/codehaus/groovy/binding/ClosureTriggerBinding.java
* /opt/cola/permits/1268277696_1644386512.94/0/groovy-swing-3-0-9-sources-
jar/groovy/swing/impl/ListWrapperListModel.java
* /opt/cola/permits/1268277696_1644386512.94/0/groovy-swing-3-0-9-sources-
jar/groovy/swing/binding/JComboBoxMetaMethods.groovy
* /opt/cola/permits/1268277696_1644386512.94/0/groovy-swing-3-0-9-sources-jar/groovy/model/FormModel.java
*
/opt/cola/permits/1268277696_1644386512.94/0/groovy-swing-3-0-9-sources-
jar/groovy/swing/factory/TabbedPaneFactory.groovy

```

\* /opt/cola/permits/1268277696\_1644386512.94/0/groovy-swing-3-0-9-sources-  
 jar/groovy/swing/factory/BeanFactory.groovy  
 \* /opt/cola/permits/1268277696\_1644386512.94/0/groovy-swing-3-0-9-sources-  
 jar/org/apache/groovy/swing/binding/MutualPropertyBinding.java  
 \* /opt/cola/permits/1268277696\_1644386512.94/0/groovy-swing-3-0-9-sources-  
 jar/groovy/swing/impl/DefaultAction.java  
 \* /opt/cola/permits/1268277696\_1644386512.94/0/groovy-swing-3-0-9-sources-  
 jar/groovy/model/DefaultTableColumn.java  
 \* /opt/cola/permits/1268277696\_1644386512.94/0/groovy-swing-3-0-9-sources-  
 jar/groovy/swing/model/PropertyModel.java  
 \* /opt/cola/permits/1268277696\_1644386512.94/0/groovy-swing-3-0-9-sources-  
 jar/org/codehaus/groovy/binding/EventTriggerBinding.java  
 \* /opt/cola/permits/1268277696\_1644386512.94/0/groovy-swing-3-0-9-sources-  
 jar/groovy/swing/factory/RendererFactory.groovy  
 \*  
 /opt/cola/permits/1268277696\_1644386512.94/0/groovy-swing-3-0-9-sources-  
 jar/org/codehaus/groovy/binding/BindingProxy.java  
 \* /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

```

## 1.162 junit-platform-launcher 1.7.2

## 1.162.1 Available under license :

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## 1.163 groovy-dateutil 3.0.9

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- \* /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

## 1.164 wmi4java 1.6.2

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## 1.165 qdox 1.12.1

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## 1.166 auto-common 0.10

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\* /opt/cola/permits/1275989236\_1645584374.25/0/auto-common-0-10-sources-  
jar/com/google/auto/common/AnnotationMirrors.java  
\* /opt/cola/permits/1275989236\_1645584374.25/0/auto-common-0-10-sources-  
jar/com/google/auto/common/BasicAnnotationProcessor.java  
\* /opt/cola/permits/1275989236\_1645584374.25/0/auto-common-0-10-sources-  
jar/com/google/auto/common/AnnotationValues.java  
\*  
/opt/cola/permits/1275989236\_1645584374.25/0/auto-common-0-10-sources-  
jar/com/google/auto/common/MoreTypes.java  
\* /opt/cola/permits/1275989236\_1645584374.25/0/auto-common-0-10-sources-  
jar/com/google/auto/common/SuperficialValidation.java  
\* /opt/cola/permits/1275989236\_1645584374.25/0/auto-common-0-10-sources-  
jar/com/google/auto/common/Visibility.java  
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jar/com/google/auto/common/Overrides.java  
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jar/com/google/auto/common/GeneratedAnnotations.java  
\* /opt/cola/permits/1275989236\_1645584374.25/0/auto-common-0-10-sources-  
jar/com/google/auto/common/GeneratedAnnotationSpecs.java  
\* /opt/cola/permits/1275989236\_1645584374.25/0/auto-common-0-10-sources-  
jar/com/google/auto/common/SimpleTypeAnnotationValue.java  
\*  
/opt/cola/permits/1275989236\_1645584374.25/0/auto-common-0-10-sources-  
jar/com/google/auto/common/SimpleAnnotationMirror.java  
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jar/com/google/auto/common/MoreElements.java

# 1.167 libjpeg 9e

## 1.167.1 Available under license :

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```
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 * jdatadst.c
 *
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 * 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
```

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```
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 * jmemansi.c
 *
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 *
 * 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):

```
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```

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```
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 * jcmaint.c
 *
```

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\*  
\* 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):

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\* 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.  
\*/

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\* 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.  
\*/

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\*  
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\*  
\* 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:  
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\* rdgif.c

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\*

\* 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

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\* jdmerge.c

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\*

```

* 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

```

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```

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*
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*
* 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.
*/

```

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\* djpeg.c

\*

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\*

\* 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.

/\*

\* 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.

/\*

\* 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.

/\*

\* 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.

/\*

\* 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.

/\*

\* 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.

/\*

\* 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/djpegt.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.
```

```
/*
 * 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.
```

```
/*
 * 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.

/\*

\* 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.

/\*

\* 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.

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 wrjpgcom.

\*.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

=====

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

=====

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

=====

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/jpegsr9e.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: ftp://rtfm.mit.edu/pub/usenet/news.answers/jpeg-faq/](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.

Thank to Thomas Wiegand and Gary Sullivan for inviting me to the Joint Video Team (MPEG & ITU) meeting in Geneva, Switzerland.

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.

Thank to John Korejwa and Massimo Ballerini for inviting me to fruitful consultations in Boston, MA and Milan, Italy.

Thank to Hendrik Elstner, Roland Fassauer, Simone Zuck, Guenther Maier-Gerber, Walter Stoeber, Fred Schmitz, and Norbert Braunagel for corresponding business development.

Thank to Nico Zschach and Dirk Stelling of the technical support team at the Digital Images company in Halle for providing me with extra equipment for configuration tests.

Thank to Richard F. Lyon (then of Foveon Inc.) for fruitful communication about JPEG configuration in Sigma Photo Pro software.

Thank to Andrew Finkenstadt for hosting the [ijg.org](http://ijg.org) site.

Thank to Thomas G. Lane for the original design and development

of this singular software package.

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

=====

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.

/\*

\* 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.

/\*

\* 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.

/\*

\* 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.

/\*

\* 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.

```
/*
 * 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.

```
/*
 * 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.

```
/*
 * 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.

## 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 jmorecfg.h. (You can also change the RGB pixel layout, say to B,G,R order, by modifying jmorecfg.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 `JSAMPLE`s, 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 JPEG 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 YCCCK 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. `jpegcolor.c` currently supports the following transformations:

RGB  $\Rightarrow$  YCbCr

RGB  $\Rightarrow$  GRAYSCALE

RGB  $\Rightarrow$  BG\_YCC

YCbCr  $\Rightarrow$  GRAYSCALE

YCbCr  $\Rightarrow$  BG\_YCC

CMYK  $\Rightarrow$  YCCK

plus the null transforms: GRAYSCALE  $\Rightarrow$  GRAYSCALE, RGB  $\Rightarrow$  RGB, BG\_RGB  $\Rightarrow$  BG\_RGB, YCbCr  $\Rightarrow$  YCbCr, BG\_YCC  $\Rightarrow$  BG\_YCC, CMYK  $\Rightarrow$  CMYK, YCCK  $\Rightarrow$  YCCK, and UNKNOWN  $\Rightarrow$  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 `jcparam.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<=>YCCK 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-YCCK 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 YCCK 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 `jerror.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.  
`jdatsrc.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 `jdatsrc.c` and `jdatdst.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

```
completed_passes + (pass_counter/pass_limit)
-----
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 `jmorcfcfg.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.

/\*

\* 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.

/\*

\* 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.

#### 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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Hints for specific systems

## 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.

`testimg.ppm` The output of `djpeg testorig.jpg`

`testimg.gif` The output of `djpeg -gif testorig.jpg`

`testimg.bmp` The output of `djpeg -bmp -colors 256 testorig.jpg`

`testimg.jpg` The output of `cjpeg testimg.ppm`

`testprog.jpg` Progressive-mode equivalent of `testorig.jpg`.

`testimgp.jpg` The output of `cjpeg -progressive -optimize testimg.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 testing.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. 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 makljpeg.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 pcfltlb.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 pcfltlb.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) l;
```

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" 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 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 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

No license file was found, but licenses were detected in source scan.

/\*

\* 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

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.

## 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.

/\*

\* 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

No license file was found, but licenses were detected in source scan.

/\*

\* jdhuft.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 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/jdhuff.c

No license file was found, but licenses were detected in source scan.

/\*

\* jmehsys.h

\*

\* 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 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/jmehsys.h

No license file was found, but licenses were detected in source scan.

/\*

\* rdrle.c

\*

\* Copyright (C) 1991-1996, 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 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.  
\*/

Found in path(s):

\* /opt/cola/permits/1276844147\_1645692341.61/0/jpegsr9e-zip/jpeg-9e/rdrle.c  
No license file was found, but licenses were detected in source scan.

/\*  
\* rdppm.c  
\*  
\* Copyright (C) 1991-1997, Thomas G. Lane.  
\* Modified 2009-2020 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 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:  
\*\*  
\*\* 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/rdppm.c  
No license file was found, but licenses were detected in source scan.

/\*  
\* jquant1.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 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.  
\*/

Found in path(s):

\* /opt/cola/permits/1276844147\_1645692341.61/0/jpegsr9e-zip/jpeg-9e/jquant1.c  
No license file was found, but licenses were detected in source scan.

/\*  
\* jdcoefct.c  
\*  
\* Copyright (C) 1994-1997, 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 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.  
\*/

Found in path(s):

\* /opt/cola/permits/1276844147\_1645692341.61/0/jpegsr9e-zip/jpeg-9e/jdcoefct.c  
No license file was found, but licenses were detected in source scan.

/\*  
\* 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.

\*/

Found in path(s):

\* /opt/cola/permits/1276844147\_1645692341.61/0/jpegsr9e-zip/jpeg-9e/jcarith.c

No license file was found, but licenses were detected in source scan.

/\*

\* 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.

\*/

Found in path(s):

\* /opt/cola/permits/1276844147\_1645692341.61/0/jpegsr9e-zip/jpeg-9e/jmorecfg.h

No license file was found, but licenses were detected in source scan.

/\*

\* jdmarker.c

\*

\* Copyright (C) 1991-1998, 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 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.

\*/

Found in path(s):

\* /opt/cola/permits/1276844147\_1645692341.61/0/jpegsr9e-zip/jpeg-9e/jdmarker.c

No license file was found, but licenses were detected in source scan.

/\*

\* jversion.h

\*

\* Copyright (C) 1991-2022, 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 software version identification.  
\*/

Found in path(s):

\* /opt/cola/permits/1276844147\_1645692341.61/0/jpegsr9e-zip/jpeg-9e/jversion.h  
No license file was found, but licenses were detected in source scan.

/\*

\* jpeglib.h

\*

\* Copyright (C) 1991-1998, 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 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  
No license file was found, but licenses were detected in source scan.

/\*

\* 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.  
\*/

Found in path(s):

\* /opt/cola/permits/1276844147\_1645692341.61/0/jpegsr9e-zip/jpeg-9e/jmemnobs.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.
```

```
/*
 * jconfig.txt
 *
 * Copyright (C) 1991-1994, Thomas G. Lane.
 * Modified 2009-2013 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 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 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 */
#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.
*/

#ifdef 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.
 */

#ifdef 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.

## 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.  
jdpim.c Application program interface: core routines for decompression.  
jdpstd.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.  
jdrans.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.  
rdrlc.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.  
wrrlc.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.

/\*

\* 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.

```
/*
 * jtparam.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/jtparam.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.

```
/*
 * 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.

```
/*
 * 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.

```
/*
 * 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.

/\*

\* 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.

/\*

\* 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.

/\*

\* 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.

/\*

\* jdsample.c

\*

\* Copyright (C) 1991-1996, 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 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.

\*/

Found in path(s):

\* /opt/cola/permits/1276844147\_1645692341.61/0/jpegsr9e-zip/jpeg-9e/jdsample.c

No license file was found, but licenses were detected in source scan.

/\*

\* jcprepct.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/jcprept.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.

/\*

\* 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

Copyright (C) 1991-1996, 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.

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.

/\*

\* 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.

/\*

\* 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.

/\*

\* 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.

```
/*
 * 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.
```

```
/*
 * 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.
```

```
/*
 * 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.

/\*

\* 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.

/\*

\* 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.

/\*  
\* 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.

## 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:

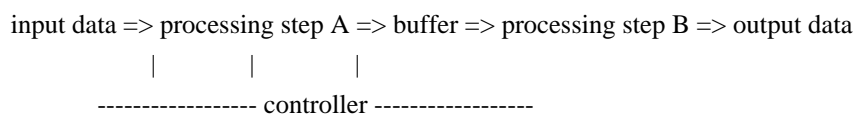
1A. Startup initialization at the beginning of image processing. The individual processing modules to be used in this run are selected and given initialization calls.

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.

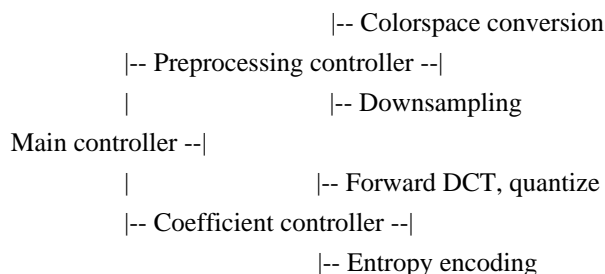
A considerable amount of flexibility can be had by replacing implementations of a control module. For example:

- \* 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:



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:

```

                                |-- Entropy decoding
|-- Coefficient controller --|
|                               |-- Dequantize, Inverse DCT
Main controller --|
|                               |-- Upsampling
|-- Postprocessing controller --| |-- Colorspace conversion
                                |-- Color quantization
                                |-- Color precision reduction
```



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 JBLOCKS, 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
```

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```
/*
```

```
* 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
```

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```
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 *
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 *
 * 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
```

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```
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 * wrtle.c
 *
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 *
 * 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
```

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```
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 * 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

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```
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 * jdct.h
 *
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 *
 * 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
```

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```
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 * wrgif.c
 *
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 *
 * 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.
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 * implied warranty.
 */
```

\*/

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/\*

\* jmemmac.c

\*

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\*

\* 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 (gylid@in-touch.com).

\*/

Found in path(s):

\* /opt/cola/permits/1276844147\_1645692341.61/0/jpegsr9e-zip/jpeg-9e/jmemmac.c

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/\*

\* jidctfst.c

\*

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\*

\* 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

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/\*

\* jcmaster.c

\*

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\*

\* 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

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/\*

\* jpegint.h

\*

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\*

\* 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

## 1.168 slf4j 1.7.36

### 1.168.1 Available under license :

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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/1292116189\_1647933632.95/0/guava-31-1-jre-sources-

jar/com/google/common/primitives/DoublesMethodsForWeb.java

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\* /opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-

jar/com/google/common/collect/SortedMultiset.java

\* /opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-

jar/com/google/common/collect/SortedMultisets.java

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jar/com/google/common/collect/RowSortedTable.java  
\* /opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-  
jar/com/google/common/collect/ForwardingSortedSetMultimap.java  
\* /opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-  
jar/com/google/common/collect/ForwardingSetMultimap.java  
\*  
/opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-  
jar/com/google/common/collect/MinMaxPriorityQueue.java  
\* /opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-  
jar/com/google/common/collect/AbstractSequentialIterator.java  
\* /opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-  
jar/com/google/common/collect/UnmodifiableListIterator.java  
\* /opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-  
jar/com/google/common/collect/ForwardingListMultimap.java  
\* /opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-  
jar/com/google/common/collect/SortedMapDifference.java  
\* /opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-  
jar/com/google/common/collect/ForwardingImmutableCollection.java  
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jar/com/google/common/primitives/Platform.java

\* /opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-

jar/com/google/common/util/concurrent/Internal.java

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jar/com/google/common/collect/JdkBackedImmutableMultiset.java

\* /opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-

jar/com/google/common/hash/ImmutableSupplier.java

\* /opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-

jar/com/google/common/util/concurrent/ExecutionSequencer.java

\*

/opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-

jar/com/google/common/collect/JdkBackedImmutableSet.java

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\* This method was rewritten in Java from an intermediate step of the Murmur hash function in



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jar/com/google/common/base/SmallCharMatcher.java
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*/opt/cola/permits/1292116189_1647933632.95/0/guava-31-1-jre-sources-jar/com/google/common/hash/package-
info.java
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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):

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jar/com/google/common/util/concurrent/Striped.java
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jar/com/google/common/graph/AbstractGraphBuilder.java
```

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*/opt/cola/permits/1292116189_1647933632.95/0/guava-31-1-jre-sources-
jar/com/google/common/collect/Comparators.java
```

```
*/opt/cola/permits/1292116189_1647933632.95/0/guava-31-1-jre-sources-
jar/com/google/common/collect/ImmutableMultisetGwtSerializationDependencies.java
```

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```
*/opt/cola/permits/1292116189_1647933632.95/0/guava-31-1-jre-sources-
jar/com/google/common/graph/StandardMutableNetwork.java
```

```
*/opt/cola/permits/1292116189_1647933632.95/0/guava-31-1-jre-sources-
jar/com/google/common/graph/NetworkConnections.java
```

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*/opt/cola/permits/1292116189_1647933632.95/0/guava-31-1-jre-sources-
jar/com/google/common/graph/StandardMutableValueGraph.java
```

```
*/opt/cola/permits/1292116189_1647933632.95/0/guava-31-1-jre-sources-
jar/com/google/common/graph/GraphConstants.java
```

```
*/opt/cola/permits/1292116189_1647933632.95/0/guava-31-1-jre-sources-
jar/com/google/common/graph/ElementOrder.java
```

\* /opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-  
 jar/com/google/common/collect/RangeGwtSerializationDependencies.java  
 \* /opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-  
 jar/com/google/common/collect/ArrayListMultimapGwtSerializationDependencies.java  
 \* /opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-  
 jar/com/google/common/graph/DirectedNetworkConnections.java  
 \*  
 /opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-  
 jar/com/google/common/graph/UndirectedMultiNetworkConnections.java  
 \* /opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-  
 jar/com/google/common/graph/AbstractGraph.java  
 \* /opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-  
 jar/com/google/common/collect/HashMultimapGwtSerializationDependencies.java  
 \* /opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-  
 jar/com/google/common/graph/StandardMutableGraph.java  
 \* /opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-  
 jar/com/google/common/graph/UndirectedNetworkConnections.java  
 \* /opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-  
 jar/com/google/common/graph/AbstractUndirectedNetworkConnections.java  
 \* /opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-  
 jar/com/google/common/graph/ValueGraphBuilder.java  
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 /opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-  
 jar/com/google/common/graph/MapRetrievalCache.java  
 \* /opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-  
 jar/com/google/common/graph/ForwardingNetwork.java  
 \* /opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-  
 jar/com/google/common/graph/MutableValueGraph.java  
 \* /opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-  
 jar/com/google/common/graph/GraphConnections.java  
 \* /opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-  
 jar/com/google/common/graph/NetworkBuilder.java  
 \* /opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-  
 jar/com/google/common/graph/EndpointPair.java  
 \* /opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-  
 jar/com/google/common/graph/AbstractDirectedNetworkConnections.java  
 \* /opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-  
 jar/com/google/common/graph/StandardValueGraph.java  
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 /opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-  
 jar/com/google/common/graph/StandardNetwork.java  
 \* /opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-  
 jar/com/google/common/graph/AbstractValueGraph.java  
 \* /opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-  
 jar/com/google/common/graph/UndirectedGraphConnections.java  
 \* /opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-  
 jar/com/google/common/graph/ValueGraph.java  
 \* /opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-

```
jar/com/google/common/graph/MultiEdgesConnecting.java
* /opt/cola/permits/1292116189_1647933632.95/0/guava-31-1-jre-sources-
jar/com/google/common/graph/DirectedMultiNetworkConnections.java
* /opt/cola/permits/1292116189_1647933632.95/0/guava-31-1-jre-sources-
jar/com/google/common/graph/ForwardingValueGraph.java
* /opt/cola/permits/1292116189_1647933632.95/0/guava-31-1-jre-sources-
jar/com/google/common/graph/MapIteratorCache.java
* /opt/cola/permits/1292116189_1647933632.95/0/guava-31-1-jre-sources-
jar/com/google/common/graph/AbstractNetwork.java
*
/opt/cola/permits/1292116189_1647933632.95/0/guava-31-1-jre-sources-
jar/com/google/common/collect/CollectCollectors.java
* /opt/cola/permits/1292116189_1647933632.95/0/guava-31-1-jre-sources-
jar/com/google/common/graph/DirectedGraphConnections.java
* /opt/cola/permits/1292116189_1647933632.95/0/guava-31-1-jre-sources-
jar/com/google/common/collect/MoreCollectors.java
* /opt/cola/permits/1292116189_1647933632.95/0/guava-31-1-jre-sources-
jar/com/google/common/graph/ImmutableValueGraph.java
* /opt/cola/permits/1292116189_1647933632.95/0/guava-31-1-jre-sources-
jar/com/google/common/graph/GraphBuilder.java
* /opt/cola/permits/1292116189_1647933632.95/0/guava-31-1-jre-sources-
jar/com/google/common/collect/LinkedHashMultimapGwtSerializationDependencies.java
* /opt/cola/permits/1292116189_1647933632.95/0/guava-31-1-jre-sources-
jar/com/google/common/graph/ForwardingGraph.java
* /opt/cola/permits/1292116189_1647933632.95/0/guava-31-1-jre-sources-
jar/com/google/common/graph/EndpointPairIterator.java
*
/opt/cola/permits/1292116189_1647933632.95/0/guava-31-1-jre-sources-
jar/com/google/common/graph/EdgesConnecting.java
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jar/com/google/common/eventbus/Dispatcher.java  
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jar/com/google/common/math/Quantiles.java  
\* /opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-  
jar/com/google/common/util/concurrent/TrustedListenableFutureTask.java  
\*  
/opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-  
jar/com/google/common/util/concurrent/ListenerCallQueue.java  
\* /opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-  
jar/com/google/common/eventbus/Subscriber.java  
\* /opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-  
jar/com/google/common/base/MoreObjects.java  
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jar/com/google/common/eventbus/SubscriberRegistry.java  
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- \* /opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-jar/com/google/common/io/MoreFiles.java
- \* /opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-jar/com/google/common/collect/MultimapBuilder.java

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- \* /opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-jar/com/google/common/io/RecursiveDeleteOption.java
- \* /opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-jar/com/google/common/graph/Network.java
- \*
- \* /opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-jar/com/google/common/graph/PredecessorsFunction.java
- \* /opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-jar/com/google/common/graph/ImmutableNetwork.java
- \* /opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-jar/com/google/common/io/InsecureRecursiveDeleteException.java
- \* /opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-jar/com/google/common/graph/MutableGraph.java
- \* /opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-jar/com/google/common/graph/ImmutableGraph.java

\* /opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-jar/com/google/common/collect/TopKSelector.java  
\* /opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-jar/com/google/common/graph/Graphs.java  
\* /opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-jar/com/google/common/graph/MutableNetwork.java  
\* /opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-jar/com/google/common/graph/SuccessorsFunction.java

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\* /opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-jar/com/google/common/collect/RegularImmutableSortedSet.java

\* /opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-jar/com/google/common/collect/ComparisonChain.java

\* /opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-jar/com/google/common/collect/ImmutableSortedSetFauxverideShim.java

\*

/opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-jar/com/google/common/collect/ImmutableSortedMap.java

\* /opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-jar/com/google/common/collect/TableCollectors.java

\* /opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-jar/com/google/common/collect/RegularImmutableList.java

\* /opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-jar/com/google/common/collect/SingletonImmutableList.java

\* /opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-jar/com/google/common/collect/ArrayTable.java

\* /opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-jar/com/google/common/collect/ImmutableEnumSet.java

\* /opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-jar/com/google/common/collect/DiscreteDomain.java

\* /opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-jar/com/google/common/collect/ForwardingTable.java

\*

/opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-jar/com/google/common/collect/ImmutableClassToInstanceMap.java

\* /opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-jar/com/google/common/collect/ComputationException.java

\* /opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-jar/com/google/common/collect/SingletonImmutableTable.java

\* /opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-jar/com/google/common/collect/ImmutableAsList.java

\* /opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-jar/com/google/common/collect/EmptyImmutableSetMultimap.java

\* /opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-jar/com/google/common/collect/AbstractIndexedListIterator.java

\* /opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-jar/com/google/common/collect/ImmutableTable.java

\* /opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-jar/com/google/common/collect/ImmutableSetMultimap.java

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\* /opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-jar/com/google/common/primitives/Longs.java

\* /opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-jar/com/google/common/primitives/Chars.java

\*

/opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-jar/com/google/common/base/Converter.java

\* /opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-jar/com/google/common/net/PercentEscaper.java



\* /opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-jar/com/google/common/primitives/Bytes.java  
\* /opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-jar/com/google/common/escape/UnicodeEscaper.java  
\* /opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-jar/com/google/common/base/Stopwatch.java  
\* /opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-jar/com/google/common/io/MultiReader.java  
\* /opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-jar/com/google/common/escape/Escaper.java  
\* /opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-jar/com/google/common/io/FileBackedOutputStream.java  
\* /opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-jar/com/google/common/base/CharMatcher.java  
\*  
/opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-jar/com/google/common/primitives/Floats.java  
\* /opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-jar/com/google/common/primitives/Ints.java  
\* /opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-jar/com/google/common/net/InetAddresses.java  
\* /opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-jar/com/google/common/base/internal/Finalizer.java  
\* /opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-jar/com/google/common/primitives/Shorts.java  
\* /opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-jar/com/google/common/primitives/Booleans.java  
\* /opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-jar/com/google/common/util/concurrent/ListenableFutureTask.java  
\* /opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-jar/com/google/thirdparty/publicsuffix/TrieParser.java  
\*  
/opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-jar/com/google/common/primitives/Doubles.java  
\* /opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-jar/com/google/common/util/concurrent/SequentialExecutor.java  
\* /opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-jar/com/google/common/base/Joiner.java  
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\* /opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-jar/com/google/common/base/Java8Compatibility.java  
\* /opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-jar/com/google/common/util/concurrent/OverflowAvoidingLockSupport.java  
\* /opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-jar/com/google/common/math/ToDoubleRounder.java  
\*  
/opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-jar/com/google/common/io/Java8Compatibility.java  
\* /opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-jar/com/google/common/math/BigDecimalMath.java  
\* /opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-jar/com/google/common/hash/Java8Compatibility.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

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\* /opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-jar/com/google/common/io/CharSequenceReader.java

\* /opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-jar/com/google/thirdparty/publicsuffix/PublicSuffixType.java

\*

/opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-jar/com/google/common/hash/HashingInputStream.java  
\* /opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-jar/com/google/common/base/Utf8.java  
\* /opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-jar/com/google/common/util/concurrent/WrappingScheduledExecutorService.java  
\* /opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-jar/com/google/common/base/Verify.java  
\* /opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-jar/com/google/common/base/VerifyException.java  
\* /opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-jar/com/google/common/reflect/TypeVisitor.java  
\* /opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-jar/com/google/common/collect/AbstractTable.java  
\* /opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-jar/com/google/common/eventbus/SubscriberExceptionContext.java  
\*  
/opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-jar/com/google/common/eventbus/SubscriberExceptionHandler.java  
\* /opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-jar/com/google/common/util/concurrent/Runnables.java  
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\* /opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-jar/com/google/common/collect/SortedIterables.java

\* /opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-jar/com/google/common/collect/AbstractRangeSet.java

\*

/opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-jar/com/google/common/collect/Count.java

\* /opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-

jar/com/google/common/collect/SortedIterable.java  
\* /opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-  
jar/com/google/common/collect/ForwardingSortedMultiset.java  
\* /opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-  
jar/com/google/common/collect/ImmutableSortedMultiset.java  
\* /opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-  
jar/com/google/common/collect/RegularImmutableSortedMultiset.java  
\* /opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-  
jar/com/google/common/collect/RangeSet.java  
\* /opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-  
jar/com/google/common/collect/ImmutableSortedMultisetFauxverideShim.java  
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jar/com/google/common/collect/JdkBackedImmutableMap.java  
\* /opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-  
jar/com/google/common/collect/BaseImmutableMultimap.java  
\* /opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-  
jar/com/google/common/collect/IndexedImmutableSet.java  
\*  
/opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-  
jar/com/google/common/collect/JdkBackedImmutableBiMap.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/1292116189_1647933632.95/0/guava-31-1-jre-sources-
jar/com/google/common/collect/ObjectArrays.java
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jar/com/google/common/collect/ImmutableEnumMap.java
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* /opt/cola/permits/1292116189_1647933632.95/0/guava-31-1-jre-sources-
jar/com/google/common/collect/FilteredSetMultimap.java
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* /opt/cola/permits/1292116189_1647933632.95/0/guava-31-1-jre-sources-
jar/com/google/common/collect/ForwardingNavigableMap.java
*
/opt/cola/permits/1292116189_1647933632.95/0/guava-31-1-jre-sources-
jar/com/google/common/collect/RangeMap.java
* /opt/cola/permits/1292116189_1647933632.95/0/guava-31-1-jre-sources-
jar/com/google/common/collect/CompactLinkedHashSet.java
* /opt/cola/permits/1292116189_1647933632.95/0/guava-31-1-jre-sources-
jar/com/google/common/collect/RegularImmutableAsList.java
* /opt/cola/permits/1292116189_1647933632.95/0/guava-31-1-jre-sources-
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jar/com/google/common/collect/TreeTraverser.java
* /opt/cola/permits/1292116189_1647933632.95/0/guava-31-1-jre-sources-
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jar/com/google/common/collect/UnmodifiableSortedMultiset.java
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jar/com/google/common/collect/SortedMultisetBridge.java
* /opt/cola/permits/1292116189_1647933632.95/0/guava-31-1-jre-sources-
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jar/com/google/common/collect/FilteredKeyListMultimap.java
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* /opt/cola/permits/1292116189_1647933632.95/0/guava-31-1-jre-sources-
jar/com/google/common/collect/CompactHashMap.java
* /opt/cola/permits/1292116189_1647933632.95/0/guava-31-1-jre-sources-
jar/com/google/common/collect/ForwardingNavigableSet.java
* /opt/cola/permits/1292116189_1647933632.95/0/guava-31-1-jre-sources-
jar/com/google/common/collect/ForwardingBlockingDeque.java
* /opt/cola/permits/1292116189_1647933632.95/0/guava-31-1-jre-sources-

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jar/com/google/common/collect/FilteredEntrySetMultimap.java  
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jar/com/google/common/collect/TreeRangeMap.java  
\* /opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-  
jar/com/google/common/collect/DescendingMultiset.java  
\*  
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jar/com/google/common/collect/FilteredEntryMultimap.java  
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jar/com/google/common/util/concurrent/ForwardingBlockingDeque.java  
\* /opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-  
jar/com/google/common/collect/FilteredKeySetMultimap.java  
\* /opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-  
jar/com/google/common/collect/ForwardingImmutableMap.java  
\* /opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-  
jar/com/google/common/collect/TransformedListIterator.java  
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\* /opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-  
jar/com/google/common/graph/Traverser.java  
\* /opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-  
jar/com/google/common/graph/BaseGraph.java  
\* /opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-  
jar/com/google/common/util/concurrent/ClosingFuture.java  
\*  
/opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-  
jar/com/google/common/graph/AbstractBaseGraph.java



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```
* /opt/cola/permits/1292116189_1647933632.95/0/guava-31-1-jre-sources-
jar/com/google/common/collect/ImmutableBiMapFauxverideShim.java
* /opt/cola/permits/1292116189_1647933632.95/0/guava-31-1-jre-sources-jar/com/google/common/graph/package-
info.java
* /opt/cola/permits/1292116189_1647933632.95/0/guava-31-1-jre-sources-
jar/com/google/common/collect/CollectSpliterators.java
```

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```
* /opt/cola/permits/1292116189_1647933632.95/0/guava-31-1-jre-sources-
jar/com/google/common/hash/Fingerprint2011.java
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- \* /opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-jar/com/google/common/collect/Queues.java
- \* /opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-jar/com/google/common/base/Optional.java
- \* /opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-jar/com/google/common/collect/AbstractSortedMultiset.java
- \*
- /opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-jar/com/google/common/collect/RegularContiguousSet.java
- \* /opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-jar/com/google/common/primitives/ParseRequest.java
- \* /opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-jar/com/google/common/cache/LoadingCache.java
- \* /opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-jar/com/google/common/net/HttpHeaders.java
- \* /opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-jar/com/google/common/util/concurrent/FutureCallback.java
- \* /opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-jar/com/google/common/util/concurrent/Uninterruptibles.java
- \* /opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-jar/com/google/common/hash/Crc32cHashFunction.java
- \* /opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-jar/com/google/common/base/Enums.java
- \*
- /opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-jar/com/google/common/util/concurrent/ListeningScheduledExecutorService.java
- \* /opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-jar/com/google/common/math/LongMath.java
- \* /opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-jar/com/google/common/cache/RemovalListener.java
- \* /opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-jar/com/google/common/util/concurrent/AbstractScheduledService.java
- \* /opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-jar/com/google/common/primitives/UnsignedInts.java
- \* /opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-jar/com/google/common/cache/RemovalCause.java
- \* /opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-jar/com/google/common/base/Ticker.java
- \* /opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-jar/com/google/common/hash/Hasher.java
- \* /opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-jar/com/google/common/base/PairwiseEquivalence.java
- \*
- /opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-jar/com/google/common/hash/BloomFilterStrategies.java
- \* /opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-

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jar/com/google/common/util/concurrent/WrappingExecutorService.java
* /opt/cola/permits/1292116189_1647933632.95/0/guava-31-1-jre-sources-
jar/com/google/common/math/DoubleMath.java
* /opt/cola/permits/1292116189_1647933632.95/0/guava-31-1-jre-sources-
jar/com/google/common/reflect/Types.java
* /opt/cola/permits/1292116189_1647933632.95/0/guava-31-1-jre-sources-
jar/com/google/common/cache/CacheBuilderSpec.java
* /opt/cola/permits/1292116189_1647933632.95/0/guava-31-1-jre-sources-
jar/com/google/common/math/IntMath.java
* /opt/cola/permits/1292116189_1647933632.95/0/guava-31-1-jre-sources-
jar/com/google/common/collect/BoundType.java
* /opt/cola/permits/1292116189_1647933632.95/0/guava-31-1-jre-sources-
jar/com/google/common/hash/AbstractNonStreamingHashFunction.java
*
/opt/cola/permits/1292116189_1647933632.95/0/guava-31-1-jre-sources-jar/com/google/common/hash/Funnel.java
* /opt/cola/permits/1292116189_1647933632.95/0/guava-31-1-jre-sources-
jar/com/google/common/hash/BloomFilter.java
* /opt/cola/permits/1292116189_1647933632.95/0/guava-31-1-jre-sources-
jar/com/google/common/util/concurrent/UncheckedExecutionException.java
* /opt/cola/permits/1292116189_1647933632.95/0/guava-31-1-jre-sources-
jar/com/google/common/math/BigIntegerMath.java
* /opt/cola/permits/1292116189_1647933632.95/0/guava-31-1-jre-sources-
jar/com/google/common/collect/EmptyContiguousSet.java
* /opt/cola/permits/1292116189_1647933632.95/0/guava-31-1-jre-sources-
jar/com/google/common/cache/AbstractLoadingCache.java
* /opt/cola/permits/1292116189_1647933632.95/0/guava-31-1-jre-sources-
jar/com/google/common/collect/TreeRangeSet.java
* /opt/cola/permits/1292116189_1647933632.95/0/guava-31-1-jre-sources-
jar/com/google/common/cache/CacheLoader.java
*
/opt/cola/permits/1292116189_1647933632.95/0/guava-31-1-jre-sources-
jar/com/google/common/hash/AbstractCompositeHashFunction.java
* /opt/cola/permits/1292116189_1647933632.95/0/guava-31-1-jre-sources-
jar/com/google/common/util/concurrent/AbstractListeningExecutorService.java
* /opt/cola/permits/1292116189_1647933632.95/0/guava-31-1-jre-sources-
jar/com/google/common/util/concurrent/ExecutionError.java
* /opt/cola/permits/1292116189_1647933632.95/0/guava-31-1-jre-sources-
jar/com/google/common/util/concurrent/CycleDetectingLockFactory.java
* /opt/cola/permits/1292116189_1647933632.95/0/guava-31-1-jre-sources-
jar/com/google/common/hash/Murmur3_32HashFunction.java
* /opt/cola/permits/1292116189_1647933632.95/0/guava-31-1-jre-sources-
jar/com/google/common/util/concurrent/AsyncFunction.java
* /opt/cola/permits/1292116189_1647933632.95/0/guava-31-1-jre-sources-jar/com/google/common/math/package-
info.java
* /opt/cola/permits/1292116189_1647933632.95/0/guava-31-1-jre-sources-
jar/com/google/common/cache/CacheStats.java
*

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/opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-jar/com/google/common/primitives/UnsignedInteger.java  
\* /opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-jar/com/google/common/primitives/UnsignedLong.java  
\* /opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-jar/com/google/common/hash/HashFunction.java  
\* /opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-jar/com/google/common/cache/Weigher.java  
\* /opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-jar/com/google/common/util/concurrent/ForwardingListeningExecutorService.java  
\* /opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-jar/com/google/common/hash/AbstractStreamingHasher.java  
\* /opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-jar/com/google/common/cache/AbstractCache.java  
\* /opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-jar/com/google/common/net/MediaType.java  
\*  
/opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-jar/com/google/common/cache/Cache.java  
\* /opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-jar/com/google/common/base/Present.java  
\* /opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-jar/com/google/common/primitives/UnsignedLongs.java  
\* /opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-jar/com/google/common/base/FunctionalEquivalence.java  
\* /opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-jar/com/google/common/math/MathPreconditions.java  
\* /opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-jar/com/google/common/hash/HashCode.java  
\* /opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-jar/com/google/common/cache/ForwardingCache.java  
\* /opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-jar/com/google/common/collect/DescendingImmutableSortedMultiset.java  
\* /opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-jar/com/google/common/hash/Murmur3\_128HashFunction.java  
\*  
/opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-jar/com/google/common/base/Absent.java  
\* /opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-jar/com/google/common/cache/ForwardingLoadingCache.java  
\* /opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-jar/com/google/common/collect/RegularImmutableMultiset.java  
\* /opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-jar/com/google/common/hash/Funnels.java  
\* /opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-jar/com/google/common/net/HostAndPort.java  
\* /opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-jar/com/google/common/cache/RemovalListeners.java  
\* /opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-jar/com/google/common/hash/PrimitiveSink.java

```
* /opt/cola/permits/1292116189_1647933632.95/0/guava-31-1-jre-sources-
jar/com/google/common/reflect/TypeParameter.java
*
/opt/cola/permits/1292116189_1647933632.95/0/guava-31-1-jre-sources-
jar/com/google/common/hash/AbstractHasher.java
* /opt/cola/permits/1292116189_1647933632.95/0/guava-31-1-jre-sources-
jar/com/google/common/hash/MessageDigestHashFunction.java
* /opt/cola/permits/1292116189_1647933632.95/0/guava-31-1-jre-sources-
jar/com/google/common/math/DoubleUtils.java
* /opt/cola/permits/1292116189_1647933632.95/0/guava-31-1-jre-sources-
jar/com/google/common/util/concurrent/ForwardingExecutorService.java
* /opt/cola/permits/1292116189_1647933632.95/0/guava-31-1-jre-sources-
jar/com/google/common/hash/HashingOutputStream.java
* /opt/cola/permits/1292116189_1647933632.95/0/guava-31-1-jre-sources-
jar/com/google/common/cache/RemovalNotification.java
* /opt/cola/permits/1292116189_1647933632.95/0/guava-31-1-jre-sources-
jar/com/google/common/hash/Hashing.java
* /opt/cola/permits/1292116189_1647933632.95/0/guava-31-1-jre-sources-jar/com/google/common/cache/package-
info.java
```

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```
*/
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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:
```

```
*
```

```
* Written by Doug Lea with assistance from members of JCP JSR-166 Expert Group and released to
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*
```

```
* Other contributors include Andrew Wright, Jeffrey Hayes, Pat Fisher, Mike Judd.
```

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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):

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\* /opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-jar/com/google/common/graph/ParametricNullness.java

\* /opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-

jar/com/google/common/eventbus/ElementTypesAreNonnullByDefault.java  
\* /opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-  
jar/com/google/common/reflect/ElementTypesAreNonnullByDefault.java  
\*  
/opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-  
jar/com/google/common/base/ElementTypesAreNonnullByDefault.java  
\* /opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-  
jar/com/google/common/cache/ParametricNullness.java  
\* /opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-  
jar/com/google/common/xml/ElementTypesAreNonnullByDefault.java  
\* /opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-  
jar/com/google/common/graph/ElementTypesAreNonnullByDefault.java  
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jar/com/google/common/primitives/ParametricNullness.java  
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jar/com/google/common/util/concurrent/ParametricNullness.java  
\* /opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-  
jar/com/google/common/primitives/ElementTypesAreNonnullByDefault.java  
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/opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-  
jar/com/google/common/net/ParametricNullness.java  
\* /opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-  
jar/com/google/common/collect/ParametricNullness.java  
\* /opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-  
jar/com/google/common/math/ParametricNullness.java  
\* /opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-  
jar/com/google/common/xml/ParametricNullness.java  
\* /opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-  
jar/com/google/common/cache/ElementTypesAreNonnullByDefault.java  
\* /opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-  
jar/com/google/common/escape/ParametricNullness.java  
\* /opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-  
jar/com/google/common/math/ElementTypesAreNonnullByDefault.java  
\* /opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-  
jar/com/google/common/io/ParametricNullness.java  
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jar/com/google/common/html/ParametricNullness.java  
\* /opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-  
jar/com/google/common/reflect/ParametricNullness.java  
\* /opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-  
jar/com/google/common/hash/ElementTypesAreNonnullByDefault.java  
\* /opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-  
jar/com/google/common/io/ElementTypesAreNonnullByDefault.java  
\* /opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-  
jar/com/google/common/base/ParametricNullness.java  
\* /opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-  
jar/com/google/common/html/ElementTypesAreNonnullByDefault.java

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* /opt/cola/permits/1292116189_1647933632.95/0/guava-31-1-jre-sources-
jar/com/google/common/escape/ElementTypesAreNonnullByDefault.java
* /opt/cola/permits/1292116189_1647933632.95/0/guava-31-1-jre-sources-
jar/com/google/common/util/concurrent/ElementTypesAreNonnullByDefault.java
*
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/opt/cola/permits/1292116189_1647933632.95/0/guava-31-1-jre-sources-
jar/com/google/common/net/ElementTypesAreNonnullByDefault.java
* /opt/cola/permits/1292116189_1647933632.95/0/guava-31-1-jre-sources-
jar/com/google/common/eventbus/ParametricNullness.java
* /opt/cola/permits/1292116189_1647933632.95/0/guava-31-1-jre-sources-
jar/com/google/common/collect/ElementTypesAreNonnullByDefault.java
* /opt/cola/permits/1292116189_1647933632.95/0/guava-31-1-jre-sources-
jar/com/google/common/hash/ParametricNullness.java
```

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* /opt/cola/permits/1292116189_1647933632.95/0/guava-31-1-jre-sources-
jar/com/google/common/collect/UnmodifiableIterator.java
```

```
* /opt/cola/permits/1292116189_1647933632.95/0/guava-31-1-jre-sources-
jar/com/google/common/collect/StandardRowSortedTable.java
```

```
* /opt/cola/permits/1292116189_1647933632.95/0/guava-31-1-jre-sources-
jar/com/google/common/collect/ImmutableMapKeySet.java
```

```
*
```

```
/opt/cola/permits/1292116189_1647933632.95/0/guava-31-1-jre-sources-
jar/com/google/common/collect/PeekingIterator.java
```

```
* /opt/cola/permits/1292116189_1647933632.95/0/guava-31-1-jre-sources-
jar/com/google/common/collect/Tables.java
```

```
* /opt/cola/permits/1292116189_1647933632.95/0/guava-31-1-jre-sources-
jar/com/google/common/collect/Serialization.java
```

```
* /opt/cola/permits/1292116189_1647933632.95/0/guava-31-1-jre-sources-
jar/com/google/common/collect/Platform.java
```

```
* /opt/cola/permits/1292116189_1647933632.95/0/guava-31-1-jre-sources-
```



jar/com/google/common/collect/ImmutableBiMap.java  
\* /opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-  
jar/com/google/common/collect/RegularImmutableBiMap.java  
\* /opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-  
jar/com/google/common/collect/ImmutableCollection.java  
\* /opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-  
jar/com/google/thirdparty/publicsuffix/PublicSuffixPatterns.java  
\*  
/opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-  
jar/com/google/common/collect/ImmutableMapValues.java  
\* /opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-  
jar/com/google/common/collect/Collections2.java  
\* /opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-  
jar/com/google/common/collect/ImmutableMap.java  
\* /opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-  
jar/com/google/common/collect/CollectPreconditions.java  
\* /opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-  
jar/com/google/common/collect/ImmutableEntry.java  
\* /opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-  
jar/com/google/common/collect/SingletonImmutableBiMap.java  
\* /opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-  
jar/com/google/common/collect/ImmutableMultimap.java  
\* /opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-  
jar/com/google/common/collect/StandardTable.java  
\*  
/opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-  
jar/com/google/common/collect/TreeBasedTable.java  
\* /opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-  
jar/com/google/common/collect/Table.java  
\* /opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-  
jar/com/google/common/collect/ImmutableMapEntrySet.java  
\* /opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-  
jar/com/google/common/collect/ImmutableListMultimap.java  
\* /opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-  
jar/com/google/common/collect/RegularImmutableMap.java  
\* /opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-  
jar/com/google/common/collect/ImmutableMultiset.java  
\* /opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-  
jar/com/google/common/collect/Range.java  
\* /opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-  
jar/com/google/common/collect/HashBasedTable.java  
\* /opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-  
jar/com/google/common/collect/ImmutableSortedSet.java  
\*  
/opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-  
jar/com/google/common/collect/EmptyImmutableListMultimap.java  
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jar/com/google/common/util/concurrent/NullnessCasts.java
* /opt/cola/permits/1292116189_1647933632.95/0/guava-31-1-jre-sources-
jar/com/google/common/collect/NullnessCasts.java
* /opt/cola/permits/1292116189_1647933632.95/0/guava-31-1-jre-sources-
jar/com/google/common/base/NullnessCasts.java
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jar/com/google/common/primitives/ImmutableDoubleArray.java
* /opt/cola/permits/1292116189_1647933632.95/0/guava-31-1-jre-sources-
jar/com/google/common/util/concurrent/ForwardingCondition.java
* /opt/cola/permits/1292116189_1647933632.95/0/guava-31-1-jre-sources-
jar/com/google/common/primitives/ImmutableLongArray.java
*
```

/opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-jar/com/google/common/util/concurrent/ForwardingLock.java  
\* /opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-jar/com/google/common/hash/AbstractHashFunction.java  
\* /opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-jar/com/google/common/primitives/ImmutableIntArray.java  
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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
 * compiler to autostrip the normal server method in order to expose the special, inherited GWT
 * version.
 */
```

Found in path(s):  
\* /opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-jar/com/google/common/util/concurrent/Partially.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/1292116189_1647933632.95/0/guava-31-1-jre-sources-
jar/com/google/common/primitives/FloatsMethodsForWeb.java
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jar/com/google/common/util/concurrent/ListeningExecutorService.java
* /opt/cola/permits/1292116189_1647933632.95/0/guava-31-1-jre-sources-
jar/com/google/common/primitives/package-info.java
* /opt/cola/permits/1292116189_1647933632.95/0/guava-31-1-jre-sources-jar/com/google/common/net/package-
info.java
*
/opt/cola/permits/1292116189_1647933632.95/0/guava-31-1-jre-sources-
jar/com/google/common/collect/SortedLists.java
* /opt/cola/permits/1292116189_1647933632.95/0/guava-31-1-jre-sources-
jar/com/google/common/util/concurrent/UncaughtExceptionHandler.java
* /opt/cola/permits/1292116189_1647933632.95/0/guava-31-1-jre-sources-
jar/com/google/common/base/Strings.java
* /opt/cola/permits/1292116189_1647933632.95/0/guava-31-1-jre-sources-
jar/com/google/common/util/concurrent/ThreadFactoryBuilder.java
* /opt/cola/permits/1292116189_1647933632.95/0/guava-31-1-jre-sources-
jar/com/google/common/annotations/package-info.java
```

```
* /opt/cola/permits/1292116189_1647933632.95/0/guava-31-1-jre-sources-
jar/com/google/common/collect/ContiguousSet.java
* /opt/cola/permits/1292116189_1647933632.95/0/guava-31-1-jre-sources-
jar/com/google/common/util/concurrent/ForwardingBlockingQueue.java
* /opt/cola/permits/1292116189_1647933632.95/0/guava-31-1-jre-sources-
jar/com/google/common/util/concurrent/Atomics.java
*
/opt/cola/permits/1292116189_1647933632.95/0/guava-31-1-jre-sources-
jar/com/google/common/annotations/Beta.java
* /opt/cola/permits/1292116189_1647933632.95/0/guava-31-1-jre-sources-
jar/com/google/common/base/Equivalence.java
* /opt/cola/permits/1292116189_1647933632.95/0/guava-31-1-jre-sources-
jar/com/google/common/util/concurrent/Monitor.java
* /opt/cola/permits/1292116189_1647933632.95/0/guava-31-1-jre-sources-jar/com/google/common/base/Ascii.java
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express
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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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```
* /opt/cola/permits/1292116189_1647933632.95/0/guava-31-1-jre-sources-
jar/com/google/common/base/ExtraObjectsMethodsForWeb.java
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jar/com/google/common/collect/CompactHashing.java

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jar/com/google/common/base/PatternCompiler.java  
\* /opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-  
jar/com/google/common/base/JdkPattern.java  
\* /opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-  
jar/com/google/common/base/CommonMatcher.java

\*

/opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-  
jar/com/google/common/base/CommonPattern.java

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\* /opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-jar/com/google/common/io/ByteProcessor.java  
\* /opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-jar/com/google/common/io/ByteArrayDataOutput.java  
\*  
/opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-jar/com/google/common/xml/XmlEscapers.java  
\* /opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-jar/com/google/common/io/LineProcessor.java  
\* /opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-jar/com/google/common/collect/DenseImmutableTable.java  
\* /opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-jar/com/google/common/cache/LocalCache.java  
\* /opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-jar/com/google/common/util/concurrent/JdkFutureAdapters.java  
\* /opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-jar/com/google/common/escape/Escapers.java  
\* /opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-jar/com/google/common/annotations/GwtIncompatible.java  
\* /opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-jar/com/google/common/escape/Platform.java  
\* /opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-jar/com/google/common/util/concurrent/AbstractIdleService.java  
\*  
/opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-jar/com/google/common/primitives/UnsignedBytes.java  
\* /opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-jar/com/google/common/net/HostSpecifier.java  
\* /opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-jar/com/google/common/net/InternetDomainName.java  
\* /opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-jar/com/google/common/escape/ArrayBasedCharEscaper.java  
\* /opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-jar/com/google/common/base/Splitter.java  
\* /opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-jar/com/google/common/net/UrlEscapers.java

\* /opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-jar/com/google/common/base/Platform.java

\* /opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-jar/com/google/common/escape/ArrayBasedUnicodeEscaper.java

\*

/opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-jar/com/google/common/collect/MapMaker.java

\* /opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-jar/com/google/common/html/HtmlEscapers.java

\* /opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-jar/com/google/common/io/ByteArrayDataInput.java

\* /opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-jar/com/google/common/escape/ArrayBasedEscaperMap.java

\* /opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-jar/com/google/common/collect/MapMakerInternalMap.java

\* /opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-jar/com/google/common/util/concurrent/Callables.java

\* /opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-jar/com/google/common/reflect/TypeResolver.java

\* /opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-jar/com/google/common/util/concurrent/AbstractExecutionThreadService.java

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/opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-jar/com/google/common/util/concurrent/Service.java

\* /opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-jar/com/google/common/util/concurrent/ForwardingFluentFuture.java

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\* /opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-jar/com/google/common/annotations/GwtCompatible.java

\* /opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-jar/com/google/common/cache/CacheBuilder.java

\* /opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-jar/com/google/common/primitives/SignedBytes.java

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Found in path(s):

```
* /opt/cola/permits/1292116189_1647933632.95/0/guava-31-1-jre-sources-
jar/com/google/common/util/concurrent/AbstractCatchingFuture.java
* /opt/cola/permits/1292116189_1647933632.95/0/guava-31-1-jre-sources-
jar/com/google/common/reflect/TypeToken.java
* /opt/cola/permits/1292116189_1647933632.95/0/guava-31-1-jre-sources-
jar/com/google/common/util/concurrent/AggregateFuture.java
*
 /opt/cola/permits/1292116189_1647933632.95/0/guava-31-1-jre-sources-
jar/com/google/common/util/concurrent/UncheckedTimeoutException.java
* /opt/cola/permits/1292116189_1647933632.95/0/guava-31-1-jre-sources-
jar/com/google/common/escape/CharEscaperBuilder.java
* /opt/cola/permits/1292116189_1647933632.95/0/guava-31-1-jre-sources-
jar/com/google/common/util/concurrent/Futures.java
* /opt/cola/permits/1292116189_1647933632.95/0/guava-31-1-jre-sources-
jar/com/google/common/base/CaseFormat.java
* /opt/cola/permits/1292116189_1647933632.95/0/guava-31-1-jre-sources-
jar/com/google/common/util/concurrent/SimpleTimeLimiter.java
* /opt/cola/permits/1292116189_1647933632.95/0/guava-31-1-jre-sources-
jar/com/google/common/util/concurrent/TimeoutFuture.java
* /opt/cola/permits/1292116189_1647933632.95/0/guava-31-1-jre-sources-
jar/com/google/common/io/AppendableWriter.java
* /opt/cola/permits/1292116189_1647933632.95/0/guava-31-1-jre-sources-
jar/com/google/common/util/concurrent/AbstractTransformFuture.java
*
 /opt/cola/permits/1292116189_1647933632.95/0/guava-31-1-jre-sources-
jar/com/google/common/util/concurrent/TimeLimiter.java
* /opt/cola/permits/1292116189_1647933632.95/0/guava-31-1-jre-sources-
jar/com/google/common/annotations/VisibleForTesting.java
* /opt/cola/permits/1292116189_1647933632.95/0/guava-31-1-jre-sources-
jar/com/google/common/util/concurrent/CollectionFuture.java
* /opt/cola/permits/1292116189_1647933632.95/0/guava-31-1-jre-sources-
jar/com/google/common/util/concurrent/FuturesGetChecked.java
```

\* /opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-jar/com/google/common/util/concurrent/GwtFluentFutureCatchingSpecialization.java  
\* /opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-jar/com/google/common/util/concurrent/FakeTimeLimiter.java  
\* /opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-jar/com/google/common/escape/CharEscaper.java  
\* /opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-jar/com/google/common/util/concurrent/GwtFuturesCatchingSpecialization.java

\*  
/opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-jar/com/google/common/util/concurrent/FluentFuture.java  
\* /opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-jar/com/google/common/util/concurrent/ImmediateFuture.java  
\* /opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-jar/com/google/common/io/PatternFilenameFilter.java

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Found in path(s):

\* /opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-jar/com/google/common/base/AbstractIterator.java  
\* /opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-jar/com/google/common/base/Function.java  
\* /opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-jar/com/google/common/eventbus/Subscribe.java

\*

/opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-jar/com/google/common/io/ByteStreams.java  
\* /opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-jar/com/google/common/base/Predicates.java  
\* /opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-jar/com/google/common/eventbus/AsyncEventBus.java  
\* /opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-jar/com/google/common/io/LittleEndianDataOutputStream.java

```

* /opt/cola/permits/1292116189_1647933632.95/0/guava-31-1-jre-sources-
jar/com/google/common/base/Supplier.java
* /opt/cola/permits/1292116189_1647933632.95/0/guava-31-1-jre-sources-
jar/com/google/common/base/Preconditions.java
* /opt/cola/permits/1292116189_1647933632.95/0/guava-31-1-jre-sources-
jar/com/google/common/base/Charsets.java
* /opt/cola/permits/1292116189_1647933632.95/0/guava-31-1-jre-sources-
jar/com/google/common/io/LineBuffer.java
* /opt/cola/permits/1292116189_1647933632.95/0/guava-31-1-jre-sources-
jar/com/google/common/io/MultiInputStream.java
*
/opt/cola/permits/1292116189_1647933632.95/0/guava-31-1-jre-sources-
jar/com/google/common/base/Functions.java
* /opt/cola/permits/1292116189_1647933632.95/0/guava-31-1-jre-sources-
jar/com/google/common/base/FinalizablePhantomReference.java
* /opt/cola/permits/1292116189_1647933632.95/0/guava-31-1-jre-sources-
jar/com/google/common/io/Flushables.java
* /opt/cola/permits/1292116189_1647933632.95/0/guava-31-1-jre-sources-
jar/com/google/common/base/FinalizableReference.java
* /opt/cola/permits/1292116189_1647933632.95/0/guava-31-1-jre-sources-
jar/com/google/common/util/concurrent/DirectExecutor.java
* /opt/cola/permits/1292116189_1647933632.95/0/guava-31-1-jre-sources-
jar/com/google/common/io/LineReader.java
* /opt/cola/permits/1292116189_1647933632.95/0/guava-31-1-jre-sources-
jar/com/google/common/util/concurrent/AbstractFuture.java
* /opt/cola/permits/1292116189_1647933632.95/0/guava-31-1-jre-sources-
jar/com/google/common/collect/EnumMultiset.java
*
/opt/cola/permits/1292116189_1647933632.95/0/guava-31-1-jre-sources-
jar/com/google/common/collect/HashBiMap.java
* /opt/cola/permits/1292116189_1647933632.95/0/guava-31-1-jre-sources-
jar/com/google/common/base/Objects.java
* /opt/cola/permits/1292116189_1647933632.95/0/guava-31-1-jre-sources-
jar/com/google/common/base/Throwables.java
* /opt/cola/permits/1292116189_1647933632.95/0/guava-31-1-jre-sources-
jar/com/google/common/io/CharStreams.java
* /opt/cola/permits/1292116189_1647933632.95/0/guava-31-1-jre-sources-
jar/com/google/common/util/concurrent/package-info.java
* /opt/cola/permits/1292116189_1647933632.95/0/guava-31-1-jre-sources-
jar/com/google/common/eventbus/AllowConcurrentEvents.java
* /opt/cola/permits/1292116189_1647933632.95/0/guava-31-1-jre-sources-
jar/com/google/common/io/CountingOutputStream.java
* /opt/cola/permits/1292116189_1647933632.95/0/guava-31-1-jre-sources-
jar/com/google/common/collect/Interners.java
* /opt/cola/permits/1292116189_1647933632.95/0/guava-31-1-jre-sources-
jar/com/google/common/base/Predicate.java
*

```

/opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-jar/com/google/common/io/Closeables.java  
\* /opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-jar/com/google/common/io/Resources.java  
\* /opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-jar/com/google/common/base/FinalizableSoftReference.java  
\* /opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-jar/com/google/common/io/LittleEndianDataInputStream.java  
\* /opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-jar/com/google/common/base/FinalizableWeakReference.java  
\* /opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-jar/com/google/common/base/FinalizableReferenceQueue.java  
\* /opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-jar/com/google/common/base/Suppliers.java  
\* /opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-jar/com/google/common/base/package-info.java  
\*  
/opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-jar/com/google/common/eventbus/DeadEvent.java  
\* /opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-jar/com/google/common/util/concurrent/ExecutionList.java  
\* /opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-jar/com/google/common/util/concurrent/ListenableFuture.java  
\* /opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-jar/com/google/common/eventbus/package-info.java  
\* /opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-jar/com/google/common/io/Files.java  
\* /opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-jar/com/google/common/eventbus/EventBus.java  
\* /opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-jar/com/google/common/io/package-info.java  
\* /opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-jar/com/google/common/io/CountingInputStream.java  
\* /opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-jar/com/google/common/base/Defaults.java  
\*  
/opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-jar/com/google/common/primitives/Primitives.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/1292116189\_1647933632.95/0/guava-31-1-jre-sources-jar/com/google/common/collect/ImmutableSortedMapFauxverideShim.java  
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\* /opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-  
jar/com/google/common/collect/ImmutableSortedAsList.java

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jar/com/google/common/hash/MacHashFunction.java

\* /opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-  
jar/com/google/common/collect/ConsumingQueueIterator.java

\* /opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-  
jar/com/google/common/util/concurrent/CombinedFuture.java

\*

/opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-  
jar/com/google/common/util/concurrent/AggregateFutureState.java

\* /opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-  
jar/com/google/common/hash/LittleEndianByteArray.java

\* /opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-  
jar/com/google/common/util/concurrent/InterruptibleTask.java

\* /opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-  
jar/com/google/common/util/concurrent/AsyncCallable.java

\* /opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-  
jar/com/google/common/util/concurrent/Platform.java

\* /opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-

jar/com/google/common/hash/FarmHashFingerprint64.java  
\* /opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-  
jar/com/google/common/io/ReaderInputStream.java  
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*/  
/**  
* Holder for web specializations of methods of { @code Ints }. Intended to be empty for regular  
* version.  
*/
```

Found in path(s):  
\* /opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-  
jar/com/google/common/primitives/IntsMethodsForWeb.java  
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Found in path(s):  
\* /opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-  
jar/com/google/common/base/StandardSystemProperty.java  
\* /opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-

```

jar/com/google/common/util/concurrent/RateLimiter.java
* /opt/cola/permits/1292116189_1647933632.95/0/guava-31-1-jre-sources-
jar/com/google/common/reflect/Invokable.java
*
/opt/cola/permits/1292116189_1647933632.95/0/guava-31-1-jre-sources-
jar/com/google/common/reflect/AbstractInvocationHandler.java
* /opt/cola/permits/1292116189_1647933632.95/0/guava-31-1-jre-sources-
jar/com/google/common/collect/ImmutableRangeMap.java
* /opt/cola/permits/1292116189_1647933632.95/0/guava-31-1-jre-sources-
jar/com/google/common/reflect/Parameter.java
* /opt/cola/permits/1292116189_1647933632.95/0/guava-31-1-jre-sources-
jar/com/google/common/io/ByteSink.java
* /opt/cola/permits/1292116189_1647933632.95/0/guava-31-1-jre-sources-jar/com/google/common/math/Stats.java
* /opt/cola/permits/1292116189_1647933632.95/0/guava-31-1-jre-sources-jar/com/google/common/reflect/package-
info.java
* /opt/cola/permits/1292116189_1647933632.95/0/guava-31-1-jre-sources-
jar/com/google/common/hash/LongAddables.java
* /opt/cola/permits/1292116189_1647933632.95/0/guava-31-1-jre-sources-
jar/com/google/common/cache/LongAddables.java
* /opt/cola/permits/1292116189_1647933632.95/0/guava-31-1-jre-sources-
jar/com/google/common/collect/CartesianList.java
*
/opt/cola/permits/1292116189_1647933632.95/0/guava-31-1-jre-sources-jar/com/google/common/io/CharSink.java
* /opt/cola/permits/1292116189_1647933632.95/0/guava-31-1-jre-sources-
jar/com/google/common/reflect/ClassPath.java
* /opt/cola/permits/1292116189_1647933632.95/0/guava-31-1-jre-sources-
jar/com/google/common/collect/ImmutableRangeSet.java
* /opt/cola/permits/1292116189_1647933632.95/0/guava-31-1-jre-sources-
jar/com/google/common/io/BaseEncoding.java
* /opt/cola/permits/1292116189_1647933632.95/0/guava-31-1-jre-sources-
jar/com/google/common/util/concurrent/ListenableScheduledFuture.java
* /opt/cola/permits/1292116189_1647933632.95/0/guava-31-1-jre-sources-
jar/com/google/common/hash/AbstractByteHasher.java
* /opt/cola/permits/1292116189_1647933632.95/0/guava-31-1-jre-sources-jar/com/google/common/io/Closer.java
* /opt/cola/permits/1292116189_1647933632.95/0/guava-31-1-jre-sources-
jar/com/google/common/reflect/ImmutableTypeToInstanceMap.java
*
/opt/cola/permits/1292116189_1647933632.95/0/guava-31-1-jre-sources-
jar/com/google/common/math/StatsAccumulator.java
* /opt/cola/permits/1292116189_1647933632.95/0/guava-31-1-jre-sources-
jar/com/google/common/math/PairedStats.java
* /opt/cola/permits/1292116189_1647933632.95/0/guava-31-1-jre-sources-
jar/com/google/common/hash/SipHashFunction.java
* /opt/cola/permits/1292116189_1647933632.95/0/guava-31-1-jre-sources-
jar/com/google/common/util/concurrent/ServiceManager.java
* /opt/cola/permits/1292116189_1647933632.95/0/guava-31-1-jre-sources-
jar/com/google/common/hash/ChecksumHashFunction.java
* /opt/cola/permits/1292116189_1647933632.95/0/guava-31-1-jre-sources-

```



```

jar/com/google/common/io/ByteSource.java
* /opt/cola/permits/1292116189_1647933632.95/0/guava-31-1-jre-sources-jar/com/google/common/html/package-
info.java
* /opt/cola/permits/1292116189_1647933632.95/0/guava-31-1-jre-sources-
jar/com/google/common/reflect/TypeCapture.java
*
/opt/cola/permits/1292116189_1647933632.95/0/guava-31-1-jre-sources-jar/com/google/common/xml/package-
info.java
* /opt/cola/permits/1292116189_1647933632.95/0/guava-31-1-jre-sources-
jar/com/google/common/util/concurrent/SmoothRateLimiter.java
* /opt/cola/permits/1292116189_1647933632.95/0/guava-31-1-jre-sources-
jar/com/google/common/escape/package-info.java
* /opt/cola/permits/1292116189_1647933632.95/0/guava-31-1-jre-sources-
jar/com/google/common/collect/FilteredKeyMultimap.java
* /opt/cola/permits/1292116189_1647933632.95/0/guava-31-1-jre-sources-
jar/com/google/common/hash/LongAddable.java
* /opt/cola/permits/1292116189_1647933632.95/0/guava-31-1-jre-sources-
jar/com/google/common/cache/LongAddable.java
* /opt/cola/permits/1292116189_1647933632.95/0/guava-31-1-jre-sources-
jar/com/google/common/reflect/TypeToInstanceMap.java
* /opt/cola/permits/1292116189_1647933632.95/0/guava-31-1-jre-sources-
jar/com/google/common/math/PairedStatsAccumulator.java
* /opt/cola/permits/1292116189_1647933632.95/0/guava-31-1-jre-sources-
jar/com/google/common/reflect/MutableTypeToInstanceMap.java
*
/opt/cola/permits/1292116189_1647933632.95/0/guava-31-1-jre-sources-
jar/com/google/common/io/CharSource.java
* /opt/cola/permits/1292116189_1647933632.95/0/guava-31-1-jre-sources-
jar/com/google/common/io/FileWriteMode.java
* /opt/cola/permits/1292116189_1647933632.95/0/guava-31-1-jre-sources-
jar/com/google/common/math/LinearTransformation.java
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Found in path(s):

```

* /opt/cola/permits/1292116189_1647933632.95/0/guava-31-1-jre-sources-
jar/com/google/common/cache/Striped64.java
* /opt/cola/permits/1292116189_1647933632.95/0/guava-31-1-jre-sources-
jar/com/google/common/cache/LongAdder.java
* /opt/cola/permits/1292116189_1647933632.95/0/guava-31-1-jre-sources-
jar/com/google/common/util/concurrent/AtomicDoubleArray.java
* /opt/cola/permits/1292116189_1647933632.95/0/guava-31-1-jre-sources-
jar/com/google/common/hash/Striped64.java

```

\* /opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-jar/com/google/common/hash/LongAdder.java

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\*/

Found in path(s):

\* /opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-jar/com/google/common/collect/TreeMultiset.java

\* /opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-jar/com/google/common/collect/LexicographicalOrdering.java

\* /opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-jar/com/google/common/collect/EnumHashBiMap.java

\*

/opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-jar/com/google/common/collect/AbstractListMultimap.java

\* /opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-jar/com/google/common/collect/NaturalOrdering.java

\* /opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-jar/com/google/common/collect/Interner.java

\* /opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-jar/com/google/common/collect/package-info.java

\* /opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-jar/com/google/common/collect/ForwardingMultiset.java

\* /opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-jar/com/google/common/collect/Multiset.java

\* /opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-jar/com/google/common/collect/AbstractMapBasedMultimap.java

\* /opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-jar/com/google/common/collect/AbstractMapEntry.java

\*

/opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-jar/com/google/common/collect/ForwardingMap.java

\* /opt/cola/permits/1292116189\_1647933632.95/0/guava-31-1-jre-sources-

```

jar/com/google/common/collect/TreeMultimap.java
* /opt/cola/permits/1292116189_1647933632.95/0/guava-31-1-jre-sources-
jar/com/google/common/collect/SetMultimap.java
* /opt/cola/permits/1292116189_1647933632.95/0/guava-31-1-jre-sources-
jar/com/google/common/collect/CompoundOrdering.java
* /opt/cola/permits/1292116189_1647933632.95/0/guava-31-1-jre-sources-
jar/com/google/common/collect/ClassToInstanceMap.java
* /opt/cola/permits/1292116189_1647933632.95/0/guava-31-1-jre-sources-
jar/com/google/common/collect/UsingToStringOrdering.java
* /opt/cola/permits/1292116189_1647933632.95/0/guava-31-1-jre-sources-
jar/com/google/common/collect/SingletonImmutableSet.java
* /opt/cola/permits/1292116189_1647933632.95/0/guava-31-1-jre-sources-
jar/com/google/common/collect/LinkedHashMultimap.java
*
/opt/cola/permits/1292116189_1647933632.95/0/guava-31-1-jre-sources-jar/com/google/common/collect/Lists.java
* /opt/cola/permits/1292116189_1647933632.95/0/guava-31-1-jre-sources-
jar/com/google/common/collect/NullsLastOrdering.java
* /opt/cola/permits/1292116189_1647933632.95/0/guava-31-1-jre-sources-
jar/com/google/common/collect/SortedSetMultimap.java
* /opt/cola/permits/1292116189_1647933632.95/0/guava-31-1-jre-sources-
jar/com/google/common/collect/Iterators.java
* /opt/cola/permits/1292116189_1647933632.95/0/guava-31-1-jre-sources-
jar/com/google/common/collect/Sets.java
* /opt/cola/permits/1292116189_1647933632.95/0/guava-31-1-jre-sources-
jar/com/google/common/collect/Multimaps.java
* /opt/cola/permits/1292116189_1647933632.95/0/guava-31-1-jre-sources-
jar/com/google/common/collect/ImmutableSet.java
* /opt/cola/permits/1292116189_1647933632.95/0/guava-31-1-jre-sources-
jar/com/google/common/collect/ReverseOrdering.java
* /opt/cola/permits/1292116189_1647933632.95/0/guava-31-1-jre-sources-
jar/com/google/common/collect/ComparatorOrdering.java
*
/opt/cola/permits/1292116189_1647933632.95/0/guava-31-1-jre-sources-
jar/com/google/common/collect/ForwardingMapEntry.java
* /opt/cola/permits/1292116189_1647933632.95/0/guava-31-1-jre-sources-
jar/com/google/common/collect/Multisets.java
* /opt/cola/permits/1292116189_1647933632.95/0/guava-31-1-jre-sources-
jar/com/google/common/collect/Maps.java
* /opt/cola/permits/1292116189_1647933632.95/0/guava-31-1-jre-sources-
jar/com/google/common/collect/MutableClassToInstanceMap.java
* /opt/cola/permits/1292116189_1647933632.95/0/guava-31-1-jre-sources-
jar/com/google/common/collect/ConcurrentHashMultiset.java
* /opt/cola/permits/1292116189_1647933632.95/0/guava-31-1-jre-sources-
jar/com/google/common/collect/AbstractMultiset.java
* /opt/cola/permits/1292116189_1647933632.95/0/guava-31-1-jre-sources-
jar/com/google/common/collect/Iterables.java
* /opt/cola/permits/1292116189_1647933632.95/0/guava-31-1-jre-sources-
jar/com/google/common/collect/Synchronized.java

```

```

*
/opt/cola/permits/1292116189_1647933632.95/0/guava-31-1-jre-sources-
jar/com/google/common/collect/ImmutableList.java
* /opt/cola/permits/1292116189_1647933632.95/0/guava-31-1-jre-sources-
jar/com/google/common/collect/AbstractSetMultimap.java
* /opt/cola/permits/1292116189_1647933632.95/0/guava-31-1-jre-sources-
jar/com/google/common/collect/ForwardingConcurrentMap.java
* /opt/cola/permits/1292116189_1647933632.95/0/guava-31-1-jre-sources-
jar/com/google/common/collect/HashMultimap.java
* /opt/cola/permits/1292116189_1647933632.95/0/guava-31-1-jre-sources-
jar/com/google/common/collect/Ordering.java
* /opt/cola/permits/1292116189_1647933632.95/0/guava-31-1-jre-sources-
jar/com/google/common/collect/AbstractSortedSetMultimap.java
* /opt/cola/permits/1292116189_1647933632.95/0/guava-31-1-jre-sources-
jar/com/google/common/collect/EnumBiMap.java
* /opt/cola/permits/1292116189_1647933632.95/0/guava-31-1-jre-sources-
jar/com/google/common/collect/MapDifference.java
* /opt/cola/permits/1292116189_1647933632.95/0/guava-31-1-jre-sources-
jar/com/google/common/collect/ForwardingSortedMap.java
*
/opt/cola/permits/1292116189_1647933632.95/0/guava-31-1-jre-sources-
jar/com/google/common/collect/Multimap.java
* /opt/cola/permits/1292116189_1647933632.95/0/guava-31-1-jre-sources-
jar/com/google/common/collect/ForwardingMultimap.java
* /opt/cola/permits/1292116189_1647933632.95/0/guava-31-1-jre-sources-
jar/com/google/common/collect/RegularImmutableSet.java
* /opt/cola/permits/1292116189_1647933632.95/0/guava-31-1-jre-sources-
jar/com/google/common/collect/NullsFirstOrdering.java
* /opt/cola/permits/1292116189_1647933632.95/0/guava-31-1-jre-sources-
jar/com/google/common/collect/BiMap.java
* /opt/cola/permits/1292116189_1647933632.95/0/guava-31-1-jre-sources-
jar/com/google/common/collect/ForwardingSortedSet.java
* /opt/cola/permits/1292116189_1647933632.95/0/guava-31-1-jre-sources-
jar/com/google/common/collect/AbstractIterator.java
* /opt/cola/permits/1292116189_1647933632.95/0/guava-31-1-jre-sources-
jar/com/google/common/collect/AbstractMapBasedMultiset.java
*
/opt/cola/permits/1292116189_1647933632.95/0/guava-31-1-jre-sources-
jar/com/google/common/collect/ReverseNaturalOrdering.java
* /opt/cola/permits/1292116189_1647933632.95/0/guava-31-1-jre-sources-
jar/com/google/common/collect/ForwardingCollection.java
* /opt/cola/permits/1292116189_1647933632.95/0/guava-31-1-jre-sources-
jar/com/google/common/collect/AbstractBiMap.java
* /opt/cola/permits/1292116189_1647933632.95/0/guava-31-1-jre-sources-
jar/com/google/common/collect/ForwardingObject.java
* /opt/cola/permits/1292116189_1647933632.95/0/guava-31-1-jre-sources-
jar/com/google/common/collect/ListMultimap.java
* /opt/cola/permits/1292116189_1647933632.95/0/guava-31-1-jre-sources-

```

```
jar/com/google/common/collect/ForwardingListIterator.java
* /opt/cola/permits/1292116189_1647933632.95/0/guava-31-1-jre-sources-
jar/com/google/common/collect/ExplicitOrdering.java
* /opt/cola/permits/1292116189_1647933632.95/0/guava-31-1-jre-sources-
jar/com/google/common/collect/LinkedHashMultiset.java
*
/opt/cola/permits/1292116189_1647933632.95/0/guava-31-1-jre-sources-
jar/com/google/common/collect/ByFunctionOrdering.java
* /opt/cola/permits/1292116189_1647933632.95/0/guava-31-1-jre-sources-
jar/com/google/common/collect/ForwardingList.java
* /opt/cola/permits/1292116189_1647933632.95/0/guava-31-1-jre-sources-
jar/com/google/common/collect/LinkedListMultimap.java
* /opt/cola/permits/1292116189_1647933632.95/0/guava-31-1-jre-sources-
jar/com/google/common/collect/ArrayListMultimap.java
* /opt/cola/permits/1292116189_1647933632.95/0/guava-31-1-jre-sources-
jar/com/google/common/collect/HashMultiset.java
* /opt/cola/permits/1292116189_1647933632.95/0/guava-31-1-jre-sources-
jar/com/google/common/collect/ForwardingSet.java
* /opt/cola/permits/1292116189_1647933632.95/0/guava-31-1-jre-sources-
jar/com/google/common/collect/ForwardingQueue.java
* /opt/cola/permits/1292116189_1647933632.95/0/guava-31-1-jre-sources-
jar/com/google/common/collect/ForwardingIterator.java
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Found in path(s):

```
* /opt/cola/permits/1292116189_1647933632.95/0/guava-31-1-jre-sources-
jar/com/google/common/util/concurrent/AtomicLongMap.java
* /opt/cola/permits/1292116189_1647933632.95/0/guava-31-1-jre-sources-
jar/com/google/common/collect/GwtTransient.java
```

# 1.172 metrics-annotation 4.2.9

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## 1.173 javaip 0.17

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Java IPv6

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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

# 1.175 error\_prone\_annotations 2.11.0

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Found in path(s):

\* /opt/cola/permits/1295545178\_1648483747.7/0/error-prone-annotations-2-11-0-1-jar/META-INF/maven/com.google.errorprone/error\_prone\_annotations/pom.xml

# 1.176 libxslt 1.1.35

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## 1.177 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

## 1.178 sqlite 3.37.2

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## 1.179 dropwizard-auth-ldap 1.0.4

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Found in path(s):

\* /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

## 1.180 icu 71

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```
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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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-----  
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Section: pkg.m4 - Macros to locate and utilise pkg-config.

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2006-Jan-27

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#

builds/unix/pkg.m4

#

docs/FTL.TXT

docs/GPLv2.TXT

#

include/freetype/internal/fthash.h

#

src/base/fthash.c

src/base/md5.c

src/base/md5.h

#

src/bdf/bdf.c

src/bdf/bdf.h

src/bdf/bdfdrivr.c

src/bdf/bdfdrivr.h

src/bdf/bdferror.h

src/bdf/bdflib.c

src/bdf/module.mk

src/bdf/README

```
src/bdf/rules.mk
#
src/pcf/module.mk
src/pcf/pcf.c
src/pcf/pcf.h
src/pcf/pcfdrivr.c
src/pcf/pcfdrivr.h
src/pcf/pcferror.h
src/pcf/pcfread.c
src/pcf/pcfread.h
src/pcf/pcfutil.c
src/pcf/pcfutil.h
src/pcf/README
src/pcf/rules.mk
#
src/gzip/adler32.c
src/gzip/infblock.c
src/gzip/infblock.h
src/gzip/infcodes.c
src/gzip/infcodes.h
src/gzip/inffixed.h
src/gzip/inflate.c
src/gzip/inftrees.c
src/gzip/inftrees.h
src/gzip/infutil.c
src/gzip/infutil.h
src/gzip/zconf.h
src/gzip/zlib.h
src/gzip/zutil.c
src/gzip/zutil.h
#
src/tools/apinames.c
src/tools/ftandom/ftandom.c
#
subprojects/dlg
#
#
```

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## 1.184 activation-api 1.2.2

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JUnit (4.12)

# 1.185 listenablefuture 9999.0-empty-to-avoid-conflict-with-guava

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# 1.186 gstreamer 1.20.1

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Any executables

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## 1.187 jsoup 1.15.3

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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>
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```

Found in path(s):

```
*/opt/cola/permits/1427131089_1664278353.0883758/0/snakeyaml-1-33-sources-
jar/org/yaml/snakeyaml/external/biz/base64Coder/Base64Coder.java
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\* /opt/cola/permits/1460265720\_1667461690.2601388/0/opencsv-5-7-1-sources-jar/com/opencsv/bean/MappingStrategy.java

\* /opt/cola/permits/1460265720\_1667461690.2601388/0/opencsv-5-7-1-sources-jar/com/opencsv/bean/CsvToBean.java

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jar/com/opencsv/bean/HeaderColumnNameMappingStrategy.java  
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INF/maven/com.opencsv/opencsv/pom.xml

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jar/com/opencsv/bean/CsvToBeanFilter.java
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* /opt/cola/permits/1460265720_1667461690.2601388/0/opencsv-5-7-1-sources-
jar/com/opencsv/bean/AbstractMappingStrategy.java
* /opt/cola/permits/1460265720_1667461690.2601388/0/opencsv-5-7-1-sources-
jar/com/opencsv/bean/AbstractFieldMap.java
* /opt/cola/permits/1460265720_1667461690.2601388/0/opencsv-5-7-1-sources-
jar/com/opencsv/bean/CsvNumber.java
*
/opt/cola/permits/1460265720_1667461690.2601388/0/opencsv-5-7-1-sources-
jar/com/opencsv/bean/HeaderIndex.java
* /opt/cola/permits/1460265720_1667461690.2601388/0/opencsv-5-7-1-sources-
jar/com/opencsv/bean/ConverterNumber.java
* /opt/cola/permits/1460265720_1667461690.2601388/0/opencsv-5-7-1-sources-
jar/com/opencsv/bean/comparator/LiteralComparator.java
* /opt/cola/permits/1460265720_1667461690.2601388/0/opencsv-5-7-1-sources-
jar/com/opencsv/bean/RegexToBeanField.java
* /opt/cola/permits/1460265720_1667461690.2601388/0/opencsv-5-7-1-sources-
jar/com/opencsv/bean/BeanFieldJoinIntegerIndex.java
* /opt/cola/permits/1460265720_1667461690.2601388/0/opencsv-5-7-1-sources-
jar/com/opencsv/bean/PositionToBeanField.java
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jar/com/opencsv/bean/comparator/package-info.java
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jar/com/opencsv/bean/FieldMap.java
*
/opt/cola/permits/1460265720_1667461690.2601388/0/opencsv-5-7-1-sources-
jar/com/opencsv/bean/FieldMapByPosition.java
* /opt/cola/permits/1460265720_1667461690.2601388/0/opencsv-5-7-1-sources-
jar/com/opencsv/bean/AbstractFieldMapEntry.java
* /opt/cola/permits/1460265720_1667461690.2601388/0/opencsv-5-7-1-sources-
jar/com/opencsv/bean/FieldMapByPositionEntry.java
* /opt/cola/permits/1460265720_1667461690.2601388/0/opencsv-5-7-1-sources-
```

jar/com/opencsv/bean/ComplexFieldMapEntry.java  
\* /opt/cola/permits/1460265720\_1667461690.2601388/0/opencsv-5-7-1-sources-  
jar/com/opencsv/bean/BeanFieldJoinStringIndex.java  
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\* This just implements splitting a single line into fields.</p>

\*

\* <p>The purpose of the CSVParser is to take a single string and parse it into

\* its elements based on the delimiter, quote and escape characters.</p>

\*

\* <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

\* the RFC4180Parser for less configurability but closer match to the RFC4180 requirements.</p>

\*

\* @author Glen Smith

\* @author Rainer Pruy

\*/

Found in path(s):

\* /opt/cola/permits/1460265720\_1667461690.2601388/0/opencsv-5-7-1-sources-jar/com/opencsv/CSVParser.java

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\* /opt/cola/permits/1460265720\_1667461690.2601388/0/opencsv-5-7-1-sources-jar/com/opencsv/exceptions/CsvRequiredFieldEmptyException.java

\* /opt/cola/permits/1460265720\_1667461690.2601388/0/opencsv-5-7-1-sources-jar/com/opencsv/bean/CsvBindByPosition.java

\*

/opt/cola/permits/1460265720\_1667461690.2601388/0/opencsv-5-7-1-sources-jar/com/opencsv/bean/AbstractBeanField.java

\* /opt/cola/permits/1460265720\_1667461690.2601388/0/opencsv-5-7-1-sources-jar/com/opencsv/bean/ConverterDate.java



\* /opt/cola/permits/1460265720\_1667461690.2601388/0/opencsv-5-7-1-sources-jar/com/opencsv/bean/CsvToBeanBuilder.java  
 \* /opt/cola/permits/1460265720\_1667461690.2601388/0/opencsv-5-7-1-sources-jar/com/opencsv/bean/util/OpencsvUtils.java  
 \* /opt/cola/permits/1460265720\_1667461690.2601388/0/opencsv-5-7-1-sources-jar/com/opencsv/exceptions/CsvMalformedLineException.java  
 \* /opt/cola/permits/1460265720\_1667461690.2601388/0/opencsv-5-7-1-sources-jar/com/opencsv/exceptions/CsvException.java  
 \* /opt/cola/permits/1460265720\_1667461690.2601388/0/opencsv-5-7-1-sources-jar/com/opencsv/bean/ConverterPrimitiveTypes.java  
 \* /opt/cola/permits/1460265720\_1667461690.2601388/0/opencsv-5-7-1-sources-jar/com/opencsv/bean/customconverter/package-info.java  
 \*  
 /opt/cola/permits/1460265720\_1667461690.2601388/0/opencsv-5-7-1-sources-jar/com/opencsv/bean/CsvCustomBindByName.java  
 \* /opt/cola/permits/1460265720\_1667461690.2601388/0/opencsv-5-7-1-sources-jar/com/opencsv/bean/CsvDate.java  
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 \* /opt/cola/permits/1460265720\_1667461690.2601388/0/opencsv-5-7-1-sources-jar/com/opencsv/exceptions/CsvDataTypeMismatchException.java  
 \* /opt/cola/permits/1460265720\_1667461690.2601388/0/opencsv-5-7-1-sources-jar/com/opencsv/bean/StatefulBeanToCsvBuilder.java  
 \* /opt/cola/permits/1460265720\_1667461690.2601388/0/opencsv-5-7-1-sources-jar/com/opencsv/stream/reader/package-info.java  
 \* /opt/cola/permits/1460265720\_1667461690.2601388/0/opencsv-5-7-1-sources-jar/com/opencsv/bean/CsvBindByName.java  
 \* /opt/cola/permits/1460265720\_1667461690.2601388/0/opencsv-5-7-1-sources-jar/com/opencsv/exceptions/CsvConstraintViolationException.java  
 \*  
 /opt/cola/permits/1460265720\_1667461690.2601388/0/opencsv-5-7-1-sources-jar/com/opencsv/bean/package-info.java  
 \* /opt/cola/permits/1460265720\_1667461690.2601388/0/opencsv-5-7-1-sources-jar/com/opencsv/exceptions/CsvRuntimeException.java  
 \* /opt/cola/permits/1460265720\_1667461690.2601388/0/opencsv-5-7-1-sources-jar/com/opencsv/exceptions/CsvMultilineLimitBrokenException.java  
 \* /opt/cola/permits/1460265720\_1667461690.2601388/0/opencsv-5-7-1-sources-jar/com/opencsv/bean/customconverter/ConvertGermanToBoolean.java  
 \* /opt/cola/permits/1460265720\_1667461690.2601388/0/opencsv-5-7-1-sources-jar/com/opencsv/beans/package-info.java  
 \* /opt/cola/permits/1460265720\_1667461690.2601388/0/opencsv-5-7-1-sources-jar/com/opencsv/exceptions/package-info.java  
 \* /opt/cola/permits/1460265720\_1667461690.2601388/0/opencsv-5-7-1-sources-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/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
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- \* /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

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* /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
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Upstream-Name: liblz4

Upstream-Contact: Yann Collet <Cyan4973@github.com>

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

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## 1.203 jackson-databind 2.14.1

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# Jackson JSON processor

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# 1.204 bouncy-castle 1.72

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```
/**
```

```
* The Bouncy Castle License
```

```
*
```

```
* Copyright (c) 2000-2022 The Legion Of The Bouncy Castle Inc. (https://www.bouncycastle.org)
```

```
* <p>
```

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```
*/
```

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```

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```
/**
```

```
* Copyright (c) 2011 Tim Bukt (tbukt@hotmail.com)
```

```
*
```

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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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/\*\*

\* Magic value for proprietary OpenSSH private key.  
\*\*/

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zip/org/bouncycastle/crypto/util/OpenSSHPrivateKeyUtil.java  
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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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/\*\*

\* 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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```
// now keep space is free to use
```

Found in path(s):

```
* /opt/cola/permits/1487838996_1674089109.076011/0/src-116-zip/org/bouncycastle/pqc/legacy/crypto/gmss/GMSSPrivateKeyParameters.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>
```

```
* 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>
*
* @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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```
/**
* 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>
*/
```

Found in path(s):

```
* /opt/cola/permits/1487838996_1674089109.076011/0/src-116-
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```

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# 1.207 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.jackson.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

## 1.208 jackson-datatype-joda 2.14.1

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## 1.210 juel 2.6.0

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icon-general.png (originally preferences-desktop.png)  
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icon-network.png (originally applications-internet.png)  
icon-security.png (originally dialog-warning.png)  
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media-playback-pause.png  
media-playback-start.png  
process-stop.png  
redo.png (modified version of edit-redo.png)  
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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-
jar/org/apache/groovy/plugin/testng/TestNgRunner.java
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```

org.apache.groovy.plugin.testng.TestNgRunner

Found in path(s):

```
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```

## 1.225 jackson-module-afterburner 2.14.1

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```
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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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```
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```
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### ASM

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\*

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

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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

\* /opt/cola/permits/1551849020\_1675381023.6764045/0/groovy-ant-3-0-9-sources-2-jar/org/codehaus/groovy/ant/CompileTaskSupport.java

\* /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

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\* /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

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/opt/cola/permits/1551849020\_1675381023.6764045/0/groovy-ant-3-0-9-sources-2-jar/org/codehaus/groovy/ant/GroovycTask.java

# 1.227 groovy-macro 3.0.9

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```
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org.codehaus.groovy.transform.MacroTransformation
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```

```
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* /opt/cola/permits/1551848967_1675381009.5169692/0/groovy-macro-3-0-9-sources-1-jar/META-
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/opt/cola/permits/1551848967\_1675381009.5169692/0/groovy-macro-3-0-9-sources-1-jar/org/codehaus/groovy/macro/transform/MacroTransformation.java

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\* /opt/cola/permits/1551848967\_1675381009.5169692/0/groovy-macro-3-0-9-sources-1-jar/org/codehaus/groovy/macro/matcher/internal/AnyTokenMatch.groovy

\* /opt/cola/permits/1551848967\_1675381009.5169692/0/groovy-macro-3-0-9-sources-1-jar/org/codehaus/groovy/macro/matcher/ContextualClassCodeVisitor.java

\* /opt/cola/permits/1551848967\_1675381009.5169692/0/groovy-macro-3-0-9-sources-1-jar/org/codehaus/groovy/macro/matcher/TreeContextAction.java

\* /opt/cola/permits/1551848967\_1675381009.5169692/0/groovy-macro-3-0-9-sources-1-

jar/org/codehaus/groovy/macro/runtime/MacroBuilder.java  
\* /opt/cola/permits/1551848967\_1675381009.5169692/0/groovy-macro-3-0-9-sources-1-  
jar/org/codehaus/groovy/macro/matcher/MatchingConstraints.groovy

## 1.228 gson 2.10.1

### 1.228.1 Available under license :

No license file was found, but licenses were detected in source scan.

Manifest-Version: 1.0  
Created-By: 11.0.16.1 (Azul Systems, Inc.)  
Build-Jdk-Spec: 11  
Bnd-LastModified: 1673019830620  
Bundle-ContactAddress: <https://github.com/google/gson>  
Bundle-Description: Gson JSON library  
Bundle-Developers: google;organization=Google;organizationUrl="https://www.google.com"  
Bundle-DocURL: <https://github.com/google/gson/gson>  
Bundle-License: "Apache-2.0";link="https://www.apache.org/licenses/LICENSE-2.0.txt"  
Bundle-ManifestVersion: 2  
Bundle-Name: Gson  
Bundle-RequiredExecutionEnvironment: JavaSE-1.7, JavaSE-1.8  
Bundle-SCM: url="https://github.com/google/gson/gson",connection="scm:git:https://github.com/google/gson.git/gson",developer-connection="scm:git:git@github.com:google/gson.git/gson",tag="gson-parent-2.10.1"  
Bundle-SymbolicName: com.google.gson  
Bundle-Vendor: Google Gson Project  
Bundle-Version: 2.10.1  
Export-Package: com.google.gson;uses:="com.google.gson.reflect,com.google.gson.stream";version="2.10.1",com.google.gson.annotations;version="2.10.1",com.google.gson.reflect;version="2.10.1",com.google.gson.stream;version="2.10.1"  
Import-Package: sun.misc;resolution:=optional,com.google.gson.annotations  
Require-Capability: osgi.ee;filter:="(&(osgi.ee=JavaSE)(version=1.7))"  
Tool: Bnd-6.4.0.202211291949  
Multi-Release: true

Found in path(s):

\* /opt/cola/permits/1570533427\_1676891842.8285189/0/gson-2-10-1-jar/META-INF/MANIFEST.MF

## 1.229 apache-log4j 2.20.0

## 1.229.1 Available under license :

Apache Log4j Core  
Copyright 1999-2012 Apache Software Foundation

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ResolverUtil.java  
Copyright 2005-2006 Tim Fennell

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# 1.230 snake-yaml 2.0

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```
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```

```
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```
*
```

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* in compliance with the License. You may obtain a copy of the License at
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*
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```
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*
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```

```
* the License.
```

\*/

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-jar/org/yaml/snakeyaml/nodes/ScalarNode.java  
\* /opt/cola/permits/1584157893\_1677999786.1262538/0/snakeyaml-2-0-sources-jar/org/yaml/snakeyaml/tokens/ValueToken.java  
\* /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-jar/org/yaml/snakeyaml/constructor/AbstractConstruct.java  
\* /opt/cola/permits/1584157893\_1677999786.1262538/0/snakeyaml-2-0-sources-jar/org/yaml/snakeyaml/events/CollectionEndEvent.java  
\* /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-jar/org/yaml/snakeyaml/events/ScalarEvent.java  
\*  
/opt/cola/permits/1584157893\_1677999786.1262538/0/snakeyaml-2-0-sources-jar/org/yaml/snakeyaml/emitter/EmitterState.java  
\* /opt/cola/permits/1584157893\_1677999786.1262538/0/snakeyaml-2-0-sources-jar/org/yaml/snakeyaml/tokens/DirectiveToken.java  
\* /opt/cola/permits/1584157893\_1677999786.1262538/0/snakeyaml-2-0-sources-jar/org/yaml/snakeyaml/events/StreamStartEvent.java  
\* /opt/cola/permits/1584157893\_1677999786.1262538/0/snakeyaml-2-0-sources-jar/org/yaml/snakeyaml/events/CommentEvent.java  
\* /opt/cola/permits/1584157893\_1677999786.1262538/0/snakeyaml-2-0-sources-jar/org/yaml/snakeyaml/tokens/AliasToken.java  
\* /opt/cola/permits/1584157893\_1677999786.1262538/0/snakeyaml-2-0-sources-jar/org/yaml/snakeyaml/constructor/Construct.java  
\* /opt/cola/permits/1584157893\_1677999786.1262538/0/snakeyaml-2-0-sources-jar/org/yaml/snakeyaml/events/ImplicitTuple.java  
\* /opt/cola/permits/1584157893\_1677999786.1262538/0/snakeyaml-2-0-sources-jar/org/yaml/snakeyaml/constructor/CustomClassLoaderConstructor.java  
\*  
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\* /opt/cola/permits/1584157893\_1677999786.1262538/0/snakeyaml-2-0-sources-jar/org/yaml/snakeyaml/parser/Production.java

\* /opt/cola/permits/1584157893\_1677999786.1262538/0/snakeyaml-2-0-sources-jar/org/yaml/snakeyaml/resolver/ResolverTuple.java  
\* /opt/cola/permits/1584157893\_1677999786.1262538/0/snakeyaml-2-0-sources-jar/org/yaml/snakeyaml/scanner/Scanner.java  
\* /opt/cola/permits/1584157893\_1677999786.1262538/0/snakeyaml-2-0-sources-jar/org/yaml/snakeyaml/composer/ComposerException.java  
\* /opt/cola/permits/1584157893\_1677999786.1262538/0/snakeyaml-2-0-sources-jar/org/yaml/snakeyaml/nodes/MappingNode.java  
\* /opt/cola/permits/1584157893\_1677999786.1262538/0/snakeyaml-2-0-sources-jar/org/yaml/snakeyaml/emitter/Emitable.java  
\* /opt/cola/permits/1584157893\_1677999786.1262538/0/snakeyaml-2-0-sources-jar/org/yaml/snakeyaml/tokens/FlowMappingEndToken.java  
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/opt/cola/permits/1584157893\_1677999786.1262538/0/snakeyaml-2-0-sources-jar/org/yaml/snakeyaml/DumperOptions.java  
\* /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  
\* /opt/cola/permits/1584157893\_1677999786.1262538/0/snakeyaml-2-0-sources-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  
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\* /opt/cola/permits/1584157893\_1677999786.1262538/0/snakeyaml-2-0-sources-jar/org/yaml/snakeyaml/reader/ReaderException.java  
\* /opt/cola/permits/1584157893\_1677999786.1262538/0/snakeyaml-2-0-sources-jar/org/yaml/snakeyaml/constructor/SafeConstructor.java  
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/opt/cola/permits/1584157893\_1677999786.1262538/0/snakeyaml-2-0-sources-jar/org/yaml/snakeyaml/scanner/Constant.java  
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\* /opt/cola/permits/1584157893\_1677999786.1262538/0/snakeyaml-2-0-sources-jar/org/yaml/snakeyaml/tokens/DocumentEndToken.java  
\* /opt/cola/permits/1584157893\_1677999786.1262538/0/snakeyaml-2-0-sources-jar/org/yaml/snakeyaml/parser/ParserImpl.java  
\* /opt/cola/permits/1584157893\_1677999786.1262538/0/snakeyaml-2-0-sources-jar/org/yaml/snakeyaml/tokens/ScalarToken.java  
\* /opt/cola/permits/1584157893\_1677999786.1262538/0/snakeyaml-2-0-sources-jar/org/yaml/snakeyaml/introspector/MethodProperty.java  
\* /opt/cola/permits/1584157893\_1677999786.1262538/0/snakeyaml-2-0-sources-jar/org/yaml/snakeyaml/events/CollectionStartEvent.java  
\*

/opt/cola/permits/1584157893\_1677999786.1262538/0/snakeyaml-2-0-sources-jar/org/yaml/snakeyaml/util/UriEncoder.java  
\* /opt/cola/permits/1584157893\_1677999786.1262538/0/snakeyaml-2-0-sources-jar/org/yaml/snakeyaml/reader/UnicodeReader.java  
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\* /opt/cola/permits/1584157893\_1677999786.1262538/0/snakeyaml-2-0-sources-jar/org/yaml/snakeyaml/constructor/ConstructorException.java  
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\* /opt/cola/permits/1584157893\_1677999786.1262538/0/snakeyaml-2-0-sources-jar/org/yaml/snakeyaml/representer/BaseRepresenter.java  
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\* /opt/cola/permits/1584157893\_1677999786.1262538/0/snakeyaml-2-0-sources-jar/org/yaml/snakeyaml/util/PlatformFeatureDetector.java  
\* /opt/cola/permits/1584157893\_1677999786.1262538/0/snakeyaml-2-0-sources-jar/org/yaml/snakeyaml/parser/VersionTagsTuple.java  
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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/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/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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INF/maven/org.yaml/snakeyaml/pom.xml

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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.
 */
```

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```
* /opt/cola/permits/1584157893_1677999786.1262538/0/snakeyaml-2-0-sources-
jar/org/yaml/snakeyaml/external/biz/base64Coder/Base64Coder.java
```

## 1.231 jcodings 1.0.44

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

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* /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
* /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

```

## 1.232 joni 2.1.29

### 1.232.1 Available under license :

No license file was found, but licenses were detected in source scan.

```

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Found in path(s):

\* /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

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* /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
```

## 1.233 jinjava 2.6.0

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```
* /opt/cola/permits/1613098423_1679654368.0746422/0/jinjava-2-6-0-sources-2-
jar/com/hubspot/jinjava/lib/filter/AbstractFilter.java
```

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\* /opt/cola/permits/1613098423\_1679654368.0746422/0/jinjava-2-6-0-sources-2-jar/com/hubspot/jinjava/JinjavaConfig.java

\* /opt/cola/permits/1613098423\_1679654368.0746422/0/jinjava-2-6-0-sources-2-jar/com/hubspot/jinjava/lib/tag/IncludeTag.java

\*

/opt/cola/permits/1613098423\_1679654368.0746422/0/jinjava-2-6-0-sources-2-jar/com/hubspot/jinjava/lib/tag/IfTag.java

\* /opt/cola/permits/1613098423\_1679654368.0746422/0/jinjava-2-6-0-sources-2-jar/com/hubspot/jinjava/lib/tag/CycleTag.java

\* /opt/cola/permits/1613098423\_1679654368.0746422/0/jinjava-2-6-0-sources-2-jar/com/hubspot/jinjava/util/HelperStringTokenizer.java

\* /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

\* /opt/cola/permits/1613098423\_1679654368.0746422/0/jinjava-2-6-0-sources-2-jar/com/hubspot/jinjava/interpret/JinjavaInterpreter.java

\* /opt/cola/permits/1613098423\_1679654368.0746422/0/jinjava-2-6-0-sources-2-jar/com/hubspot/jinjava/util/Variable.java

\* /opt/cola/permits/1613098423\_1679654368.0746422/0/jinjava-2-6-0-sources-2-jar/com/hubspot/jinjava/lib/tag/IfchangedTag.java

\* /opt/cola/permits/1613098423\_1679654368.0746422/0/jinjava-2-6-0-sources-2-jar/com/hubspot/jinjava/lib/tag/ExtendsTag.java

\* /opt/cola/permits/1613098423\_1679654368.0746422/0/jinjava-2-6-0-sources-2-jar/com/hubspot/jinjava/tree/TagNode.java

\* /opt/cola/permits/1613098423\_1679654368.0746422/0/jinjava-2-6-0-sources-2-jar/com/hubspot/jinjava/lib/tag/BlockTag.java

\* /opt/cola/permits/1613098423\_1679654368.0746422/0/jinjava-2-6-0-sources-2-jar/com/hubspot/jinjava/lib/tag/Tag.java

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/opt/cola/permits/1613098423\_1679654368.0746422/0/jinjava-2-6-0-sources-2-jar/com/hubspot/jinjava/util/ObjectIterator.java

\* /opt/cola/permits/1613098423\_1679654368.0746422/0/jinjava-2-6-0-sources-2-jar/com/hubspot/jinjava/tree/RootNode.java

\* /opt/cola/permits/1613098423\_1679654368.0746422/0/jinjava-2-6-0-sources-2-jar/com/hubspot/jinjava/lib/tag/ForTag.java  
\* /opt/cola/permits/1613098423\_1679654368.0746422/0/jinjava-2-6-0-sources-2-jar/com/hubspot/jinjava/lib/filter/FilterLibrary.java  
\* /opt/cola/permits/1613098423\_1679654368.0746422/0/jinjava-2-6-0-sources-2-jar/com/hubspot/jinjava/Jinjava.java  
\* /opt/cola/permits/1613098423\_1679654368.0746422/0/jinjava-2-6-0-sources-2-jar/com/hubspot/jinjava/lib/tag/SetTag.java  
\* /opt/cola/permits/1613098423\_1679654368.0746422/0/jinjava-2-6-0-sources-2-jar/com/hubspot/jinjava/lib/filter/CutFilter.java  
\* /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-jar/com/hubspot/jinjava/lib/filter/Filter.java

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\* /opt/cola/permits/1613098423\_1679654368.0746422/0/jinjava-2-6-0-sources-2-jar/com/hubspot/jinjava/lib/filter/LowerFilter.java

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\* /opt/cola/permits/1613098423\_1679654368.0746422/0/jinjava-2-6-0-sources-2-jar/com/hubspot/jinjava/lib/filter/DivisibleFilter.java

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\* /opt/cola/permits/1613098423\_1679654368.0746422/0/jinjava-2-6-0-sources-2-jar/com/hubspot/jinjava/lib/filter/AddFilter.java

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\* /opt/cola/permits/1613098423\_1679654368.0746422/0/jinjava-2-6-0-sources-2-jar/com/hubspot/jinjava/tree/parse/NoteToken.java

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\* /opt/cola/permits/1613098423\_1679654368.0746422/0/jinjava-2-6-0-sources-2-jar/com/hubspot/jinjava/lib/Importable.java  
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\* /opt/cola/permits/1613098423\_1679654368.0746422/0/jinjava-2-6-0-sources-2-jar/com/hubspot/jinjava/tree/parse/TokenScannerSymbols.java  
\* /opt/cola/permits/1613098423\_1679654368.0746422/0/jinjava-2-6-0-sources-2-jar/com/hubspot/jinjava/lib/filter/DefaultFilter.java  
\* /opt/cola/permits/1613098423\_1679654368.0746422/0/jinjava-2-6-0-sources-2-jar/com/hubspot/jinjava/lib/filter/AdvancedFilter.java  
\* /opt/cola/permits/1613098423\_1679654368.0746422/0/jinjava-2-6-0-sources-2-jar/com/hubspot/jinjava/lib/filter/MultiplyFilter.java  
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\* /opt/cola/permits/1613098423\_1679654368.0746422/0/jinjava-2-6-0-sources-2-jar/com/hubspot/jinjava/lib/tag/ElseTag.java  
\* /opt/cola/permits/1613098423\_1679654368.0746422/0/jinjava-2-6-0-sources-2-jar/com/hubspot/jinjava/lib/filter/RandomFilter.java  
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\* /opt/cola/permits/1613098423\_1679654368.0746422/0/jinjava-2-6-0-sources-2-jar/com/hubspot/jinjava/lib/filter/TruncateFilter.java  
\* /opt/cola/permits/1613098423\_1679654368.0746422/0/jinjava-2-6-0-sources-2-jar/com/hubspot/jinjava/util/ObjectTruthValue.java  
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/opt/cola/permits/1613098423\_1679654368.0746422/0/jinjava-2-6-0-sources-2-jar/com/hubspot/jinjava/interpret/InterpretException.java  
\* /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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jar/com/hubspot/jinja/tree/parse/TokenScanner.java

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jar/com/hubspot/jinja/lib/filter/BoolFilter.java

\* /opt/cola/permits/1613098423\_1679654368.0746422/0/jinja-2-6-0-sources-2-  
jar/com/hubspot/jinja/interpret/DynamicVariableResolver.java

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 \* /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  
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 \* /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

## 1.235 auto-service-annotations 1.0-rc6

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*/
```

Found in path(s):

```
* /opt/cola/permits/1613098325_1680160344.6102023/0/auto-service-annotations-1-0-rc6-sources-1-
jar/com/google/auto/service/AutoService.java
```

## 1.236 auto-service 1.0-rc6

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```

Found in path(s):

```
* /opt/cola/permits/1613098386_1679654443.4759493/0/auto-service-1-0-rc6-sources-1-
jar/com/google/auto/service/processor/package-info.java
```

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- \* /opt/cola/permits/1613098386\_1679654443.4759493/0/auto-service-1-0-rc6-sources-1-jar/com/google/auto/service/processor/AutoServiceProcessor.java
- \* /opt/cola/permits/1613098386\_1679654443.4759493/0/auto-service-1-0-rc6-sources-1-jar/com/google/auto/service/processor/ServicesFiles.java

## 1.237 javaparser-core 3.23.0

## 1.238 log4j2-ecs-layout 1.2.0

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ecs-logging-java

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## 1.239 ecs-logging-core 1.2.0

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Jackson is a high-performance, Free/Open Source JSON processing library.

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-----  
#####

# 1.240 swagger-annotations 2.0.7

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Found in path(s):

```
* /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

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## 1.241 dropwizard-validation 2.0.28

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\* /opt/cola/permits/1635342750\_1681276708.9974823/0/dropwizard-validation-2-0-28-sources-1-jar/io/dropwizard/validation/InterpolationHelper.java

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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

# 1.243 jest 0.1.1

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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/package-info.java
```

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\* /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

\* /opt/cola/permits/1638411436\_1681425252.2254884/0/grpc-stub-1-24-0-sources-1-jar/io/grpc/stub/StreamObserver.java

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\* /opt/cola/permits/1638411436\_1681425252.2254884/0/grpc-stub-1-24-0-sources-1-  
jar/io/grpc/stub/ClientResponseObserver.java  
\* /opt/cola/permits/1638411436\_1681425252.2254884/0/grpc-stub-1-24-0-sources-1-  
jar/io/grpc/stub/ClientCallStreamObserver.java  
\* /opt/cola/permits/1638411436\_1681425252.2254884/0/grpc-stub-1-24-0-sources-1-  
jar/io/grpc/stub/CallStreamObserver.java  
\*

/opt/cola/permits/1638411436\_1681425252.2254884/0/grpc-stub-1-24-0-sources-1-  
jar/io/grpc/stub/ServerCallStreamObserver.java

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jar/io/grpc/stub/StreamObservers.java

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## 1.246 jsr305 3.0.2

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*/
```

Found in path(s):

```
* /opt/cola/permits/1656638364_1682593601.2844107/0/jsr305-3-0-2-sources-9-jar/javax/annotation/concurrent/ThreadSafe.java  
* /opt/cola/permits/1656638364_1682593601.2844107/0/jsr305-3-0-2-sources-9-jar/javax/annotation/concurrent/NotThreadSafe.java  
* /opt/cola/permits/1656638364_1682593601.2844107/0/jsr305-3-0-2-sources-9-jar/javax/annotation/concurrent/Immutable.java  
* /opt/cola/permits/1656638364_1682593601.2844107/0/jsr305-3-0-2-sources-9-jar/javax/annotation/concurrent/GuardedBy.java
```

## 1.247 jackson-annotations 2.15.0

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It was originally written by Tatu Saloranta ([tatu.saloranta@iki.fi](mailto:tatu.saloranta@iki.fi)), and has been in development since 2007.

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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/1670772660\_1683726510.4201603/0/dropwizard-logging-2-0-28-sources-1-jar/io/dropwizard/logging/ResilientOutputStreamBase.java

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```

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```
* /opt/cola/permits/1681312840_1684484792.055749/0/jakarta-servlet-api-4-0-4-sources-
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*/
/**
 * Constructor to establish non-empty getRolesAllowed and/or <tt>TransportGuarantee.CONFIDENTIAL</tt>.
 *
 * @param guarantee <tt>TransportGuarantee.NONE</tt> or <tt>TransportGuarantee.CONFIDENTIAL</tt>
 * @param roleNames the names of the roles that are to be allowed access
 */
```

Found in path(s):

```
* /opt/cola/permits/1681312840_1684484792.055749/0/jakarta-servlet-api-4-0-4-sources-
jar/javax/servlet/HttpConstraintElement.java
```

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```
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```

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```
-->
```

```
<![CDATA[
Comments to: <a href="mailto:servlet-dev@eclipse.org">servlet-dev@eclipse.org</a>.<br>
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target="_top">license terms</a>.]>
```

Found in path(s):

```
* /opt/cola/permits/1681312840_1684484792.055749/0/jakarta-servlet-api-4-0-4-sources-jar/pom.xml
```

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```
/*
```

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Found in path(s):

\* /opt/cola/permits/1681312840\_1684484792.055749/0/jakarta-servlet-api-4-0-4-sources-jar/javax/servlet/SessionCookieConfig.java  
\* /opt/cola/permits/1681312840\_1684484792.055749/0/jakarta-servlet-api-4-0-4-sources-jar/javax/servlet/ServletRegistration.java  
\*  
/opt/cola/permits/1681312840\_1684484792.055749/0/jakarta-servlet-api-4-0-4-sources-jar/javax/servlet/ServletSecurityElement.java  
\* /opt/cola/permits/1681312840\_1684484792.055749/0/jakarta-servlet-api-4-0-4-sources-jar/javax/servlet/annotation/HttpMethodConstraint.java  
\* /opt/cola/permits/1681312840\_1684484792.055749/0/jakarta-servlet-api-4-0-4-sources-jar/javax/servlet/annotation/ServletSecurity.java  
\* /opt/cola/permits/1681312840\_1684484792.055749/0/jakarta-servlet-api-4-0-4-sources-jar/javax/servlet/descriptor/JspPropertyGroupDescriptor.java  
\* /opt/cola/permits/1681312840\_1684484792.055749/0/jakarta-servlet-api-4-0-4-sources-jar/javax/servlet/annotation/WebFilter.java  
\* /opt/cola/permits/1681312840\_1684484792.055749/0/jakarta-servlet-api-4-0-4-sources-jar/javax/servlet/AsyncContext.java  
\* /opt/cola/permits/1681312840\_1684484792.055749/0/jakarta-servlet-api-4-0-4-sources-jar/javax/servlet/FilterRegistration.java  
\* /opt/cola/permits/1681312840\_1684484792.055749/0/jakarta-servlet-api-4-0-4-sources-jar/javax/servlet/http/PushBuilder.java  
\*  
/opt/cola/permits/1681312840\_1684484792.055749/0/jakarta-servlet-api-4-0-4-sources-jar/javax/servlet/MultipartConfigElement.java  
\* /opt/cola/permits/1681312840\_1684484792.055749/0/jakarta-servlet-api-4-0-4-sources-jar/javax/servlet/ServletContainerInitializer.java  
\* /opt/cola/permits/1681312840\_1684484792.055749/0/jakarta-servlet-api-4-0-4-sources-jar/javax/servlet/HttpMethodConstraintElement.java  
\* /opt/cola/permits/1681312840\_1684484792.055749/0/jakarta-servlet-api-4-0-4-sources-jar/javax/servlet/annotation/WebInitParam.java  
\* /opt/cola/permits/1681312840\_1684484792.055749/0/jakarta-servlet-api-4-0-4-sources-jar/javax/servlet/ReadListener.java  
\* /opt/cola/permits/1681312840\_1684484792.055749/0/jakarta-servlet-api-4-0-4-sources-jar/javax/servlet/Registration.java  
\* /opt/cola/permits/1681312840\_1684484792.055749/0/jakarta-servlet-api-4-0-4-sources-jar/javax/servlet/descriptor/JspConfigDescriptor.java  
\*

```
/opt/cola/permits/1681312840_1684484792.055749/0/jakarta-servlet-api-4-0-4-sources-
jar/javax/servlet/DispatcherType.java
* /opt/cola/permits/1681312840_1684484792.055749/0/jakarta-servlet-api-4-0-4-sources-
jar/javax/servlet/AsyncListener.java
* /opt/cola/permits/1681312840_1684484792.055749/0/jakarta-servlet-api-4-0-4-sources-
jar/javax/servlet/annotation/MultipartConfig.java
* /opt/cola/permits/1681312840_1684484792.055749/0/jakarta-servlet-api-4-0-4-sources-
jar/javax/servlet/http/HttpSessionIdListener.java
* /opt/cola/permits/1681312840_1684484792.055749/0/jakarta-servlet-api-4-0-4-sources-
jar/javax/servlet/http/HttpUpgradeHandler.java
* /opt/cola/permits/1681312840_1684484792.055749/0/jakarta-servlet-api-4-0-4-sources-
jar/javax/servlet/http/WebConnection.java
* /opt/cola/permits/1681312840_1684484792.055749/0/jakarta-servlet-api-4-0-4-sources-
jar/javax/servlet/SessionTrackingMode.java
* /opt/cola/permits/1681312840_1684484792.055749/0/jakarta-servlet-api-4-0-4-sources-
jar/javax/servlet/annotation/HandlesTypes.java
*
/opt/cola/permits/1681312840_1684484792.055749/0/jakarta-servlet-api-4-0-4-sources-
jar/javax/servlet/annotation/HttpConstraint.java
* /opt/cola/permits/1681312840_1684484792.055749/0/jakarta-servlet-api-4-0-4-sources-
jar/javax/servlet/annotation/WebServlet.java
* /opt/cola/permits/1681312840_1684484792.055749/0/jakarta-servlet-api-4-0-4-sources-
jar/javax/servlet/WriteListener.java
* /opt/cola/permits/1681312840_1684484792.055749/0/jakarta-servlet-api-4-0-4-sources-
jar/javax/servlet/descriptor/TaglibDescriptor.java
* /opt/cola/permits/1681312840_1684484792.055749/0/jakarta-servlet-api-4-0-4-sources-
jar/javax/servlet/annotation/WebListener.java
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\* /opt/cola/permits/1681312840\_1684484792.055749/0/jakarta-servlet-api-4-0-4-sources-jar/javax/servlet/http/package.html

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\* /opt/cola/permits/1681312840\_1684484792.055749/0/jakarta-servlet-api-4-0-4-sources-jar/javax/servlet/GenericFilter.java

\*

/opt/cola/permits/1681312840\_1684484792.055749/0/jakarta-servlet-api-4-0-4-sources-jar/javax/servlet/AsyncEvent.java

\* /opt/cola/permits/1681312840\_1684484792.055749/0/jakarta-servlet-api-4-0-4-sources-jar/javax/servlet/http/MappingMatch.java

\* /opt/cola/permits/1681312840\_1684484792.055749/0/jakarta-servlet-api-4-0-4-sources-jar/javax/servlet/http/Part.java

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\* /opt/cola/permits/1681312840\_1684484792.055749/0/jakarta-servlet-api-4-0-4-sources-jar/javax/servlet/GenericServlet.java

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\* /opt/cola/permits/1681312840\_1684484792.055749/0/jakarta-servlet-api-4-0-4-sources-  
 jar/javax/servlet/ServletRequestAttributeEvent.java  
 \* /opt/cola/permits/1681312840\_1684484792.055749/0/jakarta-servlet-api-4-0-4-sources-  
 jar/javax/servlet/http/HttpSessionListener.java  
 \*  
 /opt/cola/permits/1681312840\_1684484792.055749/0/jakarta-servlet-api-4-0-4-sources-  
 jar/javax/servlet/RequestDispatcher.java  
 \* /opt/cola/permits/1681312840\_1684484792.055749/0/jakarta-servlet-api-4-0-4-sources-  
 jar/javax/servlet/ServletRequestWrapper.java  
 \* /opt/cola/permits/1681312840\_1684484792.055749/0/jakarta-servlet-api-4-0-4-sources-  
 jar/javax/servlet/FilterChain.java  
 \* /opt/cola/permits/1681312840\_1684484792.055749/0/jakarta-servlet-api-4-0-4-sources-  
 jar/javax/servlet/ServletException.java  
 \* /opt/cola/permits/1681312840\_1684484792.055749/0/jakarta-servlet-api-4-0-4-sources-  
 jar/javax/servlet/ServletContextAttributeListener.java  
 \* /opt/cola/permits/1681312840\_1684484792.055749/0/jakarta-servlet-api-4-0-4-sources-  
 jar/javax/servlet/http/HttpSessionActivationListener.java  
 \* /opt/cola/permits/1681312840\_1684484792.055749/0/jakarta-servlet-api-4-0-4-sources-  
 jar/javax/servlet/http/HttpSessionAttributeListener.java  
 \* /opt/cola/permits/1681312840\_1684484792.055749/0/jakarta-servlet-api-4-0-4-sources-  
 jar/javax/servlet/Servlet.java  
 \*  
 /opt/cola/permits/1681312840\_1684484792.055749/0/jakarta-servlet-api-4-0-4-sources-  
 jar/javax/servlet/ServletRequestListener.java  
 \* /opt/cola/permits/1681312840\_1684484792.055749/0/jakarta-servlet-api-4-0-4-sources-  
 jar/javax/servlet/http/HttpServletResponse.java  
 \* /opt/cola/permits/1681312840\_1684484792.055749/0/jakarta-servlet-api-4-0-4-sources-  
 jar/javax/servlet/ServletContextListener.java  
 \* /opt/cola/permits/1681312840\_1684484792.055749/0/jakarta-servlet-api-4-0-4-sources-  
 jar/javax/servlet/ServletRequestAttributeListener.java  
 \* /opt/cola/permits/1681312840\_1684484792.055749/0/jakarta-servlet-api-4-0-4-sources-  
 jar/javax/servlet/http/HttpServletRequest.java  
 \* /opt/cola/permits/1681312840\_1684484792.055749/0/jakarta-servlet-api-4-0-4-sources-  
 jar/javax/servlet/http/HttpServletRequestWrapper.java  
 \* /opt/cola/permits/1681312840\_1684484792.055749/0/jakarta-servlet-api-4-0-4-sources-  
 jar/javax/servlet/Filter.java  
 \*  
 /opt/cola/permits/1681312840\_1684484792.055749/0/jakarta-servlet-api-4-0-4-sources-  
 jar/javax/servlet/ServletOutputStream.java  
 \* /opt/cola/permits/1681312840\_1684484792.055749/0/jakarta-servlet-api-4-0-4-sources-  
 jar/javax/servlet/http/HttpServletRequestWrapper.java  
 \* /opt/cola/permits/1681312840\_1684484792.055749/0/jakarta-servlet-api-4-0-4-sources-  
 jar/javax/servlet/http/HttpUtils.java  
 \* /opt/cola/permits/1681312840\_1684484792.055749/0/jakarta-servlet-api-4-0-4-sources-  
 jar/javax/servlet/ServletContextAttributeEvent.java  
 \* /opt/cola/permits/1681312840\_1684484792.055749/0/jakarta-servlet-api-4-0-4-sources-  
 jar/javax/servlet/http/HttpSessionContext.java  
 \* /opt/cola/permits/1681312840\_1684484792.055749/0/jakarta-servlet-api-4-0-4-sources-

jar/javax/servlet/FilterConfig.java  
\* /opt/cola/permits/1681312840\_1684484792.055749/0/jakarta-servlet-api-4-0-4-sources-  
jar/javax/servlet/ServletInputStream.java  
\* /opt/cola/permits/1681312840\_1684484792.055749/0/jakarta-servlet-api-4-0-4-sources-  
jar/javax/servlet/UnavailableException.java  
\*  
/opt/cola/permits/1681312840\_1684484792.055749/0/jakarta-servlet-api-4-0-4-sources-  
jar/javax/servlet/http/HttpSessionEvent.java  
\* /opt/cola/permits/1681312840\_1684484792.055749/0/jakarta-servlet-api-4-0-4-sources-  
jar/javax/servlet/ServletResponse.java  
\* /opt/cola/permits/1681312840\_1684484792.055749/0/jakarta-servlet-api-4-0-4-sources-  
jar/javax/servlet/http/HttpSessionBindingListener.java  
\* /opt/cola/permits/1681312840\_1684484792.055749/0/jakarta-servlet-api-4-0-4-sources-  
jar/javax/servlet/http/HttpServlet.java  
\* /opt/cola/permits/1681312840\_1684484792.055749/0/jakarta-servlet-api-4-0-4-sources-  
jar/javax/servlet/SingleThreadModel.java  
\* /opt/cola/permits/1681312840\_1684484792.055749/0/jakarta-servlet-api-4-0-4-sources-  
jar/javax/servlet/ServletContextEvent.java  
\* /opt/cola/permits/1681312840\_1684484792.055749/0/jakarta-servlet-api-4-0-4-sources-  
jar/javax/servlet/ServletContext.java  
\* /opt/cola/permits/1681312840\_1684484792.055749/0/jakarta-servlet-api-4-0-4-sources-  
jar/javax/servlet/http/Cookie.java  
\*  
/opt/cola/permits/1681312840\_1684484792.055749/0/jakarta-servlet-api-4-0-4-sources-  
jar/javax/servlet/http/HttpSessionBindingEvent.java  
\* /opt/cola/permits/1681312840\_1684484792.055749/0/jakarta-servlet-api-4-0-4-sources-  
jar/javax/servlet/ServletResponseWrapper.java  
\* /opt/cola/permits/1681312840\_1684484792.055749/0/jakarta-servlet-api-4-0-4-sources-  
jar/javax/servlet/ServletRequestEvent.java  
\* /opt/cola/permits/1681312840\_1684484792.055749/0/jakarta-servlet-api-4-0-4-sources-  
jar/javax/servlet/http/HttpSession.java  
\* /opt/cola/permits/1681312840\_1684484792.055749/0/jakarta-servlet-api-4-0-4-sources-  
jar/javax/servlet/ServletConfig.java

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-->

Found in path(s):

\* /opt/cola/permits/1681312840\_1684484792.055749/0/jakarta-servlet-api-4-0-4-sources-jar/javax/servlet/annotation/package.html

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\* /opt/cola/permits/1681312840\_1684484792.055749/0/jakarta-servlet-api-4-0-4-sources-jar/javax/servlet/http/HttpServletMapping.java

## 1.273 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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# 1.274 aop-alliance 2.6.1

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```
{\rtf1\ansi\ansicpg1252\cocoartf1671\cocoasubrtf600
{\fonttbl{\f0\froman\charset0 Times-Roman;\f1\fmmodern\charset0 Courier;}
{\colortbl;\red255\green255\blue255;\red0\green0\blue0;}
{\*\expandedcolortbl;;\cssrgb\c0\c0\c0;}
\paperw11900\paperh16840\margl1440\margr1440\vieww10800\viewh8400\viewkind0
\defstab720
\pard\pardefstab720\sl280\partightenfactor0

\f0\fs24 \cf2 \expnd0\expndtw0\kerning0
\outl0\strokewidth0 \strokec2 This XML file does not appear to have any style information associated with it. The
document tree is shown below.\
\pard\pardefstab720\sl300\partightenfactor0

\f1\fs26 \cf2 <!--\
\
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```

```

\
-->
<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>
  <parent>
    <groupId>org.glassfish.hk2</groupId>
    <artifactId>external</artifactId>
    <version>2.6.1</version>
  </parent>
  <groupId>org.glassfish.hk2.external</groupId>
  <artifactId>aopalliance-repackaged</artifactId>
  <name>
aopalliance version ${aopalliance.version} repackaged as a module
  </name>
  <build>
    <plugins>
      <plugin>
        <groupId>org.apache.maven.plugins</groupId>
        <artifactId>maven-dependency-plugin</artifactId>
        <executions>
          <execution>
            <id>step1-unpack-sources</id>
            <phase>process-sources</phase>
            <goals>
              <goal>unpack</goal>
            </goals>
            <configuration>
              <artifactItems>
                <artifactItem>
                  <groupId>aopalliance</groupId>
                  <artifactId>aopalliance</artifactId>
                  <version>${aopalliance.version}</version>
                  <classifier>sources</classifier>
                  <overwrite>>false</overwrite>
                  <outputDirectory>${project.build.directory}/alternateLocation</outputDirectory>
                </artifactItem>
              </artifactItems>
            </configuration>
          </execution>
        </executions>
      </plugin>
      <plugin>
        <groupId>org.codehaus.mojo</groupId>
        <artifactId>build-helper-maven-plugin</artifactId>
        <executions>
          <execution>

```

```

<id>step2-add-sources</id>
<phase>process-sources</phase>
<goals>
<goal>add-source</goal>
</goals>
<configuration>
<sources>
<source>${project.build.directory}/alternateLocation</source>
</sources>
</configuration>
</execution>
</executions>
</plugin>
<plugin>
<groupId>org.apache.felix</groupId>
<artifactId>maven-bundle-plugin</artifactId>
<configuration>
<instructions>
<Embed-Dependency>'a0*;scope=compile;inline=true'a0</Embed-Dependency>
<!--

```

We set a mandatory attribute for these packages, because we don't want them to be visible to just anyone. An importer must specify the mandatory attribute for it to be able to import. See section #3.6.5 of OSGi R4 spec.

Why is this required?  
See [https://glassfish.dev.java.net/issues/show\\_bug.cgi?id=5385](https://glassfish.dev.java.net/issues/show_bug.cgi?id=5385)  
By doing this, we allow user have any version of apache-commons lib in their application class loader hierarchy. They don't even have to set delegation=false in sun-web.xml! This is the true advantage of using OSGi.

Sahoo.

```

-->
<Export-Package>org.aopalliance.*;version=${aopalliance.version}</Export-Package>
<Private-Package>!*</Private-Package>
</instructions>
</configuration>
<executions>
<execution>
<id>osgi-manifest</id>
<phase>process-classes</phase>
<goals>
<goal>manifest</goal>
</goals>
</execution>
</executions>
</plugin>
</plugins>

```

```
</build>\
<dependencies>\
<dependency>\
<groupId>aopalliance</groupId>\
<artifactId>aopalliance</artifactId>\
<version>${aopalliance.version}</version>\
<optional>true</optional>\
</dependency>\
</dependencies>\
</project>\
}
```

Found in path(s):

\* /opt/cola/permits/1688041658\_1684928894.4895442/0/aopalliance-2-6-1-zip/aopalliance-2.6.1.rtf

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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-
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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
```

# 1.276 guava 32.0.0-jre

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## 1.279 liquibase-core 4.22.0

## 1.280 snappy 0.3

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```
* /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-
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* /opt/cola/permits/1722433605_1686901730.8528392/0/snappy-0-3-sources-3-
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* /opt/cola/permits/1722433605_1686901730.8528392/0/snappy-0-3-sources-3-
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* /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-
jar/org/iq80/snappy/HadoopSnappyCodec.java
```

# 1.281 Lucene 9.6.0

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The `KStem` stemmer in `analysis/common/src/org/apache/lucene/analysis/en` was developed by Bob Krovetz and Sergio Guzman-Lara (CIIR-UMass Amherst) under the BSD-license.

The Arabic, Persian, Romanian, Bulgarian, Hindi and Bengali analyzers (`common`) come with a default 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,  
analysis/common/src/resources/org/apache/lucene/analysis/bn/stopwords.txt  
See <http://members.unine.ch/jacques.savoy/clef/index.html>.

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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  
analysis/common/src/java/org/apache/lucene/analysis/fr/FrenchLightStemmer.java  
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analysis/common/src/java/org/apache/lucene/analysis/hu/HungarianLightStemmer.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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See <https://github.com/carrot2/carrot2>.

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core/src/java/org/apache/lucene/util/compress/LZ4.java is a Java implementation of the LZ4 (<https://github.com/lz4/lz4/tree/dev/lib>) compression format for Lucene's DataInput/DataOutput abstractions.

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This file contains a list of people who have made large contributions to the public version of Protocol Buffers.

Original Protocol Buffers design and implementation:

Sanjay Ghemawat <sanjay@google.com>

Jeff Dean <jeff@google.com>

Daniel Dulitz <daniel@google.com>

Craig Silverstein

Paul Haahr <haahr@google.com>

Corey Anderson <corin@google.com>

(and many others)

Proto2 C++ and Java primary author:

Kenton Varda <kenton@google.com>

Proto2 Python primary authors:

Will Robinson <robinson@google.com>

Petar Petrov <petar@google.com>

Java Nano primary authors:

Brian Duff <bduff@google.com>

Tom Chao <chaot@google.com>

Max Cai <maxtroy@google.com>

Ulas Kirazci <ulas@google.com>

Large code contributions:

Jason Hsueh <jasonh@google.com>

Joseph Schorr <jschorr@google.com>

Wenbo Zhu <wenboz@google.com>

Large quantity of code reviews:

Scott Bruce <sbruce@google.com>

Frank Yellin

Neal Norwitz <nnorwitz@google.com>

Jeffrey Yasskin <jyasskin@google.com>

Ambrose  
Feinstein <ambrose@google.com>

Documentation:  
Lisa Carey <lcarey@google.com>

Maven packaging:  
Gregory Kick <gak@google.com>

Patch contributors:  
Kevin Ko <kevin.s.ko@gmail.com>

- \* Small patch to handle trailing slashes in --proto\_path flag.

Johan Euphrosine <proppy@aminche.com>

- \* Small patch to fix Python CallMethod().

Ulrich Kunitz <kune@deine-taler.de>

- \* Small optimizations to Python serialization.

Leandro Lucarella <llucax@gmail.com>

- \* VI syntax highlighting tweaks.
- \* Fix compiler to not make output executable.

Dilip Joseph <dilip.antony.joseph@gmail.com>

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

Brian Atkinson <nairb774@gmail.com>

- \* Added @Override annotation to generated Java code where appropriate.

Vincent Choinire <Choiniere.Vincent@hydro.qc.ca>

- \* Tru64 support.

Monty Taylor <monty.taylor@gmail.com>

- \* Solaris 10 + Sun Studio fixes.

Alek Storm <alek.storm@gmail.com>

- \* 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.

Brian Olson <brianolson@google.com>

- \* gzip/zlib I/O support.

Michael Poole <mdpoole@troilus.org>

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

Wink Saville <wink@google.com>

- \* Fixed initialization ordering problem in logging code.

Will Pierce <willp@nuclei.com>

- \* Small patch improving performance of in Python serialization.

Alexandre Vassalotti <alexandre@peadrop.com>

- \* 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)

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This file contains a list of people who have contributed code and effort to the memcached project. If you don't see your name mentioned send email to the memcached mailing list so you can be immortalized.

Also see the ChangeLog for even more people who have helped over the years by submitting fixes, patches and reporting bugs.

### Major authors:

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Brad Fitzpatrick <brad@danga.com> -- maintainer, original implementations

Anatoly Vorobey <mellon@pobox.com> -- lots of the modern server code

Steven Grimm <sgrimm@facebook.com> -- iov writing (less CPU), UDP mode, non-2.0 slab mantissas, multithread, ...

### Other Contributors

-----

Evan Martin <evan@danga.com>

Nathan Neulinger <nneul@umr.edu>

Eric Hodel <drbrain@segment7.net>

Michael Johnson <ahze@ahze.net>

Paul Querna <chip@corelands.com>

Jamie McCarthy <jamie@mccarthy.vg>

Philip Neustrom <philipn@gmail.com>

Andrew O'Brien <andrew@oriel.com.au>

Josh

Rotenberg <joshrotenberg@gmail.com>

Robin H. Johnson <robbat2@gentoo.org>

Tim Yardley <liquid@haveheart.com>

Paolo Borelli <paolo.borelli@gmail.com>

Eli Bingham <eli@pandora.com>

Jean-Francois Bustarret <jfbustarret@wat.tv>

Paul G <paul-lists@perforge.com>

Paul Lindner <lindner@inuus.com>

Dormando <dormando@rydia.net>

Dustin Sallings <dustin@spy.net>

Chris Goffinet <goffinet@yahoo-inc.com>

Tomash Brechko <tomash.brechko@gmail.com>

Brian Aker <brian@tangent.org>

Trond Norbye <trond.norbye@sun.com>

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# 1.287 java™-native-access 5

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The binary file of the original library has been modified by Atlassian in such way that classes have changed their package names from 'com.keypoint/org.jfree' to 'clover.com.keypoint/clover.org.jfree'. This was necessary to avoid potential name conflicts during instrumentation of a code using the original library when

using Clover. No source code of the original library was modified.

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The binary file of the original library has been modified by Atlassian in such way that classes have changed their package names from 'it.unimi.dsi.fastutil' to 'clover.it.unimi.dsi.fastutil'. This was necessary to avoid potential name conflicts during instrumentation of a code using the original library when using Clover. No source code of the original library was modified.

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The primary ANTLR guy:



Terence Parr  
parrt@cs.usfca.edu  
parrt@antlr.org  
onoMnApeShTpQtDJbcUgJTIFONPQeUndIgfQWWNNddIwBl  
mi2Kp5RjfhIjdGCSO<bOTNof2KNxm9KCi5lxEyKI9BJW3p  
qOPQUXpopOopMMPqnPnXXQPNOPNRnqQNQqStwVxuQSttVW  
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File: Core.js

Description:

Provides common utility functions and the Class object used internally by the library.

Also provides the <TreeUtil> object for manipulating JSON tree structures

Some of the Basic utility functions and the Class system are based in the MooTools Framework <<http://mootools.net>>. Copyright (c) 2006-2009 Valerio Proietti, <<http://mad4milk.net/>>. MIT license <<http://mootools.net/license.txt>>.

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Maven Ant Tasks

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This file contains a list of people who have made large contributions to the public version of Protocol Buffers.

Original Protocol Buffers design and implementation:

Sanjay Ghemawat <sanjay@google.com>

Jeff Dean <jeff@google.com>

Daniel Dulitz <daniel@google.com>

Craig Silverstein

Paul Haahr <haahr@google.com>

Corey Anderson <corin@google.com>

(and many others)

Proto2 C++ and Java primary author:

Kenton Varda <kenton@google.com>

Proto2 Python primary authors:

Will Robinson <robinson@google.com>

Petar Petrov <petar@google.com>

Java Nano primary authors:

Brian Duff <bduff@google.com>

Tom Chao <chaot@google.com>

Max Cai <maxtroy@google.com>

Ulas Kirazci <ulas@google.com>

Large code contributions:

Jason Hsueh <jasonh@google.com>

Joseph Schorr <jschorr@google.com>

Wenbo Zhu <wenboz@google.com>

Large quantity of code reviews:

Scott Bruce <sbruce@google.com>

Frank Yellin

Neal Norwitz <nnorwitz@google.com>

Jeffrey Yasskin <jyasskin@google.com>

Ambrose

Feinstein <ambrose@google.com>

Documentation:

Lisa Carey <lcarey@google.com>

Maven packaging:

Gregory Kick <gak@google.com>

Patch contributors:

Kevin Ko <kevin.s.ko@gmail.com>

\* Small patch to handle trailing slashes in --proto\_path flag.

Johan Euphrosine <proppy@aminche.com>

\* Small patch to fix Python CallMethod().

Ulrich Kunitz <kune@deine-taler.de>

\* Small optimizations to Python serialization.

Leandro Lucarella <llucax@gmail.com>

\* VI syntax highlighting tweaks.

\* Fix compiler to not make output executable.

Dilip Joseph <dilip.antony.joseph@gmail.com>

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

Brian Atkinson <nairb774@gmail.com>

\* Added @Override annotation to generated Java code where appropriate.

Vincent Choinire <Choiniere.Vincent@hydro.qc.ca>

\* Tru64 support.

Monty Taylor <monty.taylor@gmail.com>

\* Solaris 10 + Sun Studio fixes.

Alek Storm <alek.storm@gmail.com>

\* 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.

Brian Olson <brianolson@google.com>

\* gzip/zlib I/O support.

Michael Poole <mdpoole@troilus.org>

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

Wink Saville <wink@google.com>

- \* Fixed initialization ordering problem in logging code.

Will Pierce <willp@nuclei.com>

- \* Small patch improving performance of in Python serialization.

Alexandre Vassalotti <alexandre@peadrop.com>

- \* 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)

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MySQL 8.0

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cURL (libcurl)

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  external.c saslutit.c server.c seterror.c dlopen.c
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  scram.c gssapi.c
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*/
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dtoa.c

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Facebook Fast Checksum Patch

Facebook Fast Checksum Patch

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Google Controlling Master Thread I/O Rate Patch

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Google Perftools (TCMalloc utility)

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Google SMP Patch

Google SMP patch

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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  
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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  
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lib/gssapi/mechglue/g\_process\_context.c  
lib/gssapi/mechglue/g\_rel\_buffer.c  
lib/gssapi/mechglue/g\_rel\_cred.c  
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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  
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include/ipropr\_hdr.h  
kadmin/server/ipropr\_svc.c  
lib/kdb/ipropr.x  
lib/kdb/kdb\_convert.c  
lib/kdb/kdb\_log.c  
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# (14539)
# Secondary weight range: 0020..0192 (371)
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zlib

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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.

Major authors:

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Brad Fitzpatrick <brad@danga.com> -- maintainer, original implementations

Anatoly Vorobey <mellon@pobox.com> -- lots of the modern server code

Steven Grimm <sgrimm@facebook.com> -- iov writing (less CPU), UDP mode,

Other Contributors

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Evan Martin <evan@danga.com>  
Nathan Neulinger <nneul@umr.edu>  
Eric Hodel <drbrain@segment7.net>  
Michael Johnson <ahze@ahze.net>  
Paul Querna <chip@corelands.com>  
Jamie McCarthy <jamie@mccarthy.vg>  
Philip Neustrom <philipn@gmail.com>  
Andrew O'Brien <andrewo@oriel.com.au>  
Josh  
Rotenberg <joshrotenberg@gmail.com>  
Robin H. Johnson <robbat2@gentoo.org>  
Tim Yardley <liquid@haveheart.com>  
Paolo Borelli <paolo.borelli@gmail.com>  
Eli Bingham <eli@pandora.com>  
Jean-Francois Bustarret <jfbustarret@wat.tv>  
Paul G <paul-lists@perforge.com>  
Paul Lindner <lindner@inuus.com>  
Dormando <dormando@rydia.net>  
Dustin Sallings <dustin@spy.net>  
Chris Goffinet <goffinet@yahoo-inc.com>  
Tomash Brechko <tomash.brechko@gmail.com>  
Brian Aker <brian@tangent.org>  
Trond Norbye <trond.norbye@sun.com>

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## MySQL Router 8.0

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<signature of Ty Coon>, 1 April 1989
Ty Coon, President of Vice
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Kerberos5

Kerberos5

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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  
slave/kpropd\_rpc.c  
slave/kproplog.c

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Gallium code	src/gallium/	MIT
Ext headers	GL/glxt.h	Khronos
	GL/glxt.h	Khronos
	GL/wglxt.h	Khronos
	KHR/khrplatform.h	Khronos

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include/GL/gl.h :

Mesa 3-D  
graphics library

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\* This file is based on code from bdf.c,v 1.22 2000/03/16 20:08:50

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# 1.295 curl 8.1.1

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## 1.296 mysql-jdbc 8.0.22

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```
/opt/cola/permits/1842677812_1699449066.7070816/0/mysql-connector-java-8.0.22-1.el8.src.rpm-cosi-expand-  
archive-p8sLEb0c/mysql-connector-java-8.0.22.tar.gz-cosi-expand-archive-0dMeMTF2/mysql-connector-java-  
8.0.22.tar.gz: binary file matches
```

Found in path(s):

```
* /bin/grep
```

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```

Found in path(s):

```
* /opt/cola/permits/1842677812_1699449066.7070816/0/mysql-connector-java-8.0.22-1.el8.src.rpm-cosi-expand-  
archive-p8sLEb0c/mysql-connector-java.spec
```

## 1.297 libmysqlclient 5.6.3

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```
/opt/cola/permits/1842677729_1699449075.2932694/0/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/1842677729\_1699449075.2932694/0/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/1842677729\_1699449075.2932694/0/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/1842677729\_1699449075.2932694/0/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/1842677729\_1699449075.2932694/0/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/1842677729\_1699449075.2932694/0/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

## 1.298 bcpkix-fips 1.0.7

### 1.298.1 Available under license :

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```
/**
 * Base constructor.
 * <p>
 * The authorizer attempts to perform matching (including the use of the wildcard) in accordance with RFC 6125.
 * </p>
 * <p>
 * Known suffixes is a list of public domain suffixes that can't be used as wild cards for
 * example *.com, or c*c.com, as a dns wildcard could match every/most .com domains if a registrar were issue it.
 * If *.com is in the known suffixes list will not be allowed to match.
 * </p>
 *
 * @param knownSuffixes a set of suffixes that cannot be wild-carded, e.g. { ".com", ".net", ".org" }
 */
```

Found in path(s):

\* /opt/cola/permits/1866420555\_1702420805.8968983/0/bcpkix-fips-1-0-7-sources-2-  
jar/org/bouncycastle/est/jcajce/JsseDefaultHostnameAuthorizer.java

## 1.299 proto-google-common-protos 2.29.0

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Found in path(s):

- \* /opt/cola/permits/1870521330\_1702990616.6788976/0/proto-google-common-protos-2-29-0-jar/google/type/decimal.proto
- \* /opt/cola/permits/1870521330\_1702990616.6788976/0/proto-google-common-protos-2-29-0-jar/google/api/config\_change.proto
- \* /opt/cola/permits/1870521330\_1702990616.6788976/0/proto-google-common-protos-2-29-0-jar/google/cloud/audit/audit\_log.proto
- \* /opt/cola/permits/1870521330\_1702990616.6788976/0/proto-google-common-protos-2-29-0-jar/google/api/client.proto
- \* /opt/cola/permits/1870521330\_1702990616.6788976/0/proto-google-common-protos-2-29-0-jar/google/api/service.proto
- \* /opt/cola/permits/1870521330\_1702990616.6788976/0/proto-google-common-protos-2-29-0-jar/google/type/quaternion.proto
- \*
- /opt/cola/permits/1870521330\_1702990616.6788976/0/proto-google-common-protos-2-29-0-jar/google/type/month.proto
- \* /opt/cola/permits/1870521330\_1702990616.6788976/0/proto-google-common-protos-2-29-0-jar/google/rpc/status.proto
- \* /opt/cola/permits/1870521330\_1702990616.6788976/0/proto-google-common-protos-2-29-0-jar/google/rpc/context/audit\_context.proto
- \* /opt/cola/permits/1870521330\_1702990616.6788976/0/proto-google-common-protos-2-29-0-jar/google/type/expr.proto
- \* /opt/cola/permits/1870521330\_1702990616.6788976/0/proto-google-common-protos-2-29-0-jar/google/type/color.proto
- \* /opt/cola/permits/1870521330\_1702990616.6788976/0/proto-google-common-protos-2-29-0-jar/google/api/routing.proto
- \* /opt/cola/permits/1870521330\_1702990616.6788976/0/proto-google-common-protos-2-29-0-jar/google/api/monitored\_resource.proto
- \* /opt/cola/permits/1870521330\_1702990616.6788976/0/proto-google-common-protos-2-29-0-jar/google/api/field\_info.proto
- \*
- /opt/cola/permits/1870521330\_1702990616.6788976/0/proto-google-common-protos-2-29-0-jar/google/api/annotations.proto
- \* /opt/cola/permits/1870521330\_1702990616.6788976/0/proto-google-common-protos-2-29-0-jar/google/api/monitoring.proto
- \* /opt/cola/permits/1870521330\_1702990616.6788976/0/proto-google-common-protos-2-29-0-jar/google/api/resource.proto
- \* /opt/cola/permits/1870521330\_1702990616.6788976/0/proto-google-common-protos-2-29-0-jar/google/api/documentation.proto
- \* /opt/cola/permits/1870521330\_1702990616.6788976/0/proto-google-common-protos-2-29-0-jar/google/type/calendar\_period.proto
- \* /opt/cola/permits/1870521330\_1702990616.6788976/0/proto-google-common-protos-2-29-0-jar/google/api/quota.proto
- \* /opt/cola/permits/1870521330\_1702990616.6788976/0/proto-google-common-protos-2-29-0-jar/google/rpc/error\_details.proto

\* /opt/cola/permits/1870521330\_1702990616.6788976/0/proto-google-common-protos-2-29-0-jar/google/type/date.proto  
\* /opt/cola/permits/1870521330\_1702990616.6788976/0/proto-google-common-protos-2-29-0-jar/google/api/policy.proto  
\*  
/opt/cola/permits/1870521330\_1702990616.6788976/0/proto-google-common-protos-2-29-0-jar/google/longrunning/operations.proto  
\* /opt/cola/permits/1870521330\_1702990616.6788976/0/proto-google-common-protos-2-29-0-jar/google/api/endpoint.proto  
\* /opt/cola/permits/1870521330\_1702990616.6788976/0/proto-google-common-protos-2-29-0-jar/google/api/consumer.proto  
\* /opt/cola/permits/1870521330\_1702990616.6788976/0/proto-google-common-protos-2-29-0-jar/google/logging/type/log\_severity.proto  
\* /opt/cola/permits/1870521330\_1702990616.6788976/0/proto-google-common-protos-2-29-0-jar/google/type/datetime.proto  
\* /opt/cola/permits/1870521330\_1702990616.6788976/0/proto-google-common-protos-2-29-0-jar/google/logging/type/http\_request.proto  
\* /opt/cola/permits/1870521330\_1702990616.6788976/0/proto-google-common-protos-2-29-0-jar/google/api/distribution.proto  
\* /opt/cola/permits/1870521330\_1702990616.6788976/0/proto-google-common-protos-2-29-0-jar/google/api/logging.proto  
\*  
/opt/cola/permits/1870521330\_1702990616.6788976/0/proto-google-common-protos-2-29-0-jar/google/api/usage.proto  
\* /opt/cola/permits/1870521330\_1702990616.6788976/0/proto-google-common-protos-2-29-0-jar/google/rpc/code.proto  
\* /opt/cola/permits/1870521330\_1702990616.6788976/0/proto-google-common-protos-2-29-0-jar/google/type/phone\_number.proto  
\* /opt/cola/permits/1870521330\_1702990616.6788976/0/proto-google-common-protos-2-29-0-jar/google/api/error\_reason.proto  
\* /opt/cola/permits/1870521330\_1702990616.6788976/0/proto-google-common-protos-2-29-0-jar/google/geo/type/viewport.proto  
\* /opt/cola/permits/1870521330\_1702990616.6788976/0/proto-google-common-protos-2-29-0-jar/google/rpc/context/attribute\_context.proto  
\* /opt/cola/permits/1870521330\_1702990616.6788976/0/proto-google-common-protos-2-29-0-jar/google/type/money.proto  
\* /opt/cola/permits/1870521330\_1702990616.6788976/0/proto-google-common-protos-2-29-0-jar/google/api/control.proto  
\*  
/opt/cola/permits/1870521330\_1702990616.6788976/0/proto-google-common-protos-2-29-0-jar/google/api/visibility.proto  
\* /opt/cola/permits/1870521330\_1702990616.6788976/0/proto-google-common-protos-2-29-0-jar/google/cloud/location/locations.proto  
\* /opt/cola/permits/1870521330\_1702990616.6788976/0/proto-google-common-protos-2-29-0-jar/google/api/source\_info.proto  
\* /opt/cola/permits/1870521330\_1702990616.6788976/0/proto-google-common-protos-2-29-0-jar/google/type/localized\_text.proto  
\* /opt/cola/permits/1870521330\_1702990616.6788976/0/proto-google-common-protos-2-29-0-

```
jar/google/type/fraction.proto
* /opt/cola/permits/1870521330_1702990616.6788976/0/proto-google-common-protos-2-29-0-
jar/google/api/auth.proto
* /opt/cola/permits/1870521330_1702990616.6788976/0/proto-google-common-protos-2-29-0-
jar/google/api/system_parameter.proto
* /opt/cola/permits/1870521330_1702990616.6788976/0/proto-google-common-protos-2-29-0-
jar/google/type/interval.proto
* /opt/cola/permits/1870521330_1702990616.6788976/0/proto-google-common-protos-2-29-0-
jar/google/api/context.proto
*
/opt/cola/permits/1870521330_1702990616.6788976/0/proto-google-common-protos-2-29-0-
jar/google/api/field_behavior.proto
* /opt/cola/permits/1870521330_1702990616.6788976/0/proto-google-common-protos-2-29-0-
jar/google/api/backend.proto
* /opt/cola/permits/1870521330_1702990616.6788976/0/proto-google-common-protos-2-29-0-
jar/google/api/httpbody.proto
* /opt/cola/permits/1870521330_1702990616.6788976/0/proto-google-common-protos-2-29-0-
jar/google/api/label.proto
* /opt/cola/permits/1870521330_1702990616.6788976/0/proto-google-common-protos-2-29-0-
jar/google/api/log.proto
* /opt/cola/permits/1870521330_1702990616.6788976/0/proto-google-common-protos-2-29-0-
jar/google/api/metric.proto
* /opt/cola/permits/1870521330_1702990616.6788976/0/proto-google-common-protos-2-29-0-
jar/google/type/postal_address.proto
* /opt/cola/permits/1870521330_1702990616.6788976/0/proto-google-common-protos-2-29-0-
jar/google/api/http.proto
*
/opt/cola/permits/1870521330_1702990616.6788976/0/proto-google-common-protos-2-29-0-
jar/google/type/latlng.proto
* /opt/cola/permits/1870521330_1702990616.6788976/0/proto-google-common-protos-2-29-0-
jar/google/type/timeofday.proto
* /opt/cola/permits/1870521330_1702990616.6788976/0/proto-google-common-protos-2-29-0-
jar/google/api/billing.proto
* /opt/cola/permits/1870521330_1702990616.6788976/0/proto-google-common-protos-2-29-0-
jar/google/type/dayofweek.proto
* /opt/cola/permits/1870521330_1702990616.6788976/0/proto-google-common-protos-2-29-0-
jar/google/cloud/extended_operations.proto
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```
* /opt/cola/permits/1870521330_1702990616.6788976/0/proto-google-common-protos-2-29-0-
```

# 1.300 protobuf-java 3.25.1

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Found in path(s):

```
* /opt/cola/permits/1870521345_1702990628.701057/0/protobuf-java-3-25-1-jar/google/protobuf/duration.proto  
* /opt/cola/permits/1870521345_1702990628.701057/0/protobuf-java-3-25-1-jar/google/protobuf/field_mask.proto  
* /opt/cola/permits/1870521345_1702990628.701057/0/protobuf-java-3-25-1-jar/google/protobuf/type.proto  
*  
/opt/cola/permits/1870521345_1702990628.701057/0/protobuf-java-3-25-1-jar/google/protobuf/any.proto  
* /opt/cola/permits/1870521345_1702990628.701057/0/protobuf-java-3-25-1-  
jar/google/protobuf/source_context.proto  
* /opt/cola/permits/1870521345_1702990628.701057/0/protobuf-java-3-25-1-jar/google/protobuf/descriptor.proto  
* /opt/cola/permits/1870521345_1702990628.701057/0/protobuf-java-3-25-1-jar/google/protobuf/empty.proto  
* /opt/cola/permits/1870521345_1702990628.701057/0/protobuf-java-3-25-1-jar/google/protobuf/wrappers.proto  
* /opt/cola/permits/1870521345_1702990628.701057/0/protobuf-java-3-25-1-jar/google/protobuf/api.proto  
* /opt/cola/permits/1870521345_1702990628.701057/0/protobuf-java-3-25-1-jar/google/protobuf/timestamp.proto  
* /opt/cola/permits/1870521345_1702990628.701057/0/protobuf-java-3-25-1-jar/google/protobuf/struct.proto
```

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Manifest-Version: 1.0

Created-By: mergejars

Bnd-LastModified: 1700075063475

Bundle-Description: Core Protocol Buffers library. Protocol Buffers are a way of encoding structured data in an efficient yet extensible format

.

Bundle-DocURL: <https://developers.google.com/protocol-buffers/>

Bundle-License: <https://opensource.org/licenses/BSD-3-Clause>

Bundle-ManifestVersion: 2

Bundle-Name: Protocol Buffers [Core]

Bundle-SymbolicName: com.google.protobuf

Bundle-Version: 3.25.1

Export-Package: com.google.protobuf;version="3.25.1",com.google.protobuf



.compiler;version="3.25.1";uses:="com.google.protobuf"  
Import-Package: com.google.protobuf;version="[3.25,4)",sun.misc;resoluti  
on:=optional  
Require-Capability: osgi.ee;filter="(&(osgi.ee=JavaSE)(version=1.8))"  
Tool: Bnd-6.4.0.202211291949  
Target-Label: //java/core:lite\_runtime\_only

Found in path(s):

\* /opt/cola/permits/1870521345\_1702990628.701057/0/protobuf-java-3-25-1-jar/META-INF/MANIFEST.MF

# 1.301 error\_prone\_annotations 2.23.0

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Found in path(s):

\* /opt/cola/permits/1880697838\_1704469724.6983197/0/error-prone-annotations-2-23-0-jar/META-  
INF/maven/com.google.errorprone/error\_prone\_annotations/pom.xml

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Manifest-Version: 1.0

Created-By: Maven JAR Plugin 3.2.2

Build-Jdk-Spec: 17

Automatic-Module-Name: com.google.errorprone.annotations

Bundle-Description: Error Prone is a static analysis tool for Java that  
catches common programming mistakes at compile-time.

Bundle-DocURL: [https://errorprone.info/error\\_prone\\_annotations](https://errorprone.info/error_prone_annotations)

Bundle-License: "Apache 2.0";link="http://www.apache.org/licenses/LICENS  
E-2.0.txt"

Bundle-ManifestVersion: 2

Bundle-Name: error-prone annotations

Bundle-SCM: url="https://github.com/google/error-prone/error\_prone\_annot  
ations",connection="scm:git:https://github.com/google/error-prone.git/e  
rror\_prone\_annot",developer-connection="scm:git:git@github.com:go  
ogle/error-prone.git/error\_prone\_annot",tag=HEAD  
Bundle-SymbolicName: com.google.errorprone.annotations  
Bundle-Vendor: Google LLC  
Bundle-Version: 2.23.0  
Export-Package: com.google.errorprone.annotations;uses:="javax.lang.mode  
l.element";version="2.23.0",com.google.errorprone.annotations.concurren  
t;version="2.23.0"  
Import-Package: javax.lang.model.element  
Require-Capability: osgi.ee;filter="(&(osgi.ee=JavaSE)(version=1.8))"

Found in path(s):

\* /opt/cola/permits/1880697838\_1704469724.6983197/0/error-prone-annotations-2-23-0-jar/META-  
INF/MANIFEST.MF

## 1.302 jsch 0.2.4

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# 1.306 netty-codec-redis 4.1.107.Final

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\* /opt/cola/permits/1912366892\_1708460188.0693328/0/netty-codec-redis-4-1-107-final-sources-  
jar/io/netty/handler/codec/redis/InlineCommandRedisMessage.java

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\* /opt/cola/permits/1912366892\_1708460188.0693328/0/netty-codec-redis-4-1-107-final-sources-jar/io/netty/handler/codec/redis/ErrorMessage.java

\*

/opt/cola/permits/1912366892\_1708460188.0693328/0/netty-codec-redis-4-1-107-final-sources-jar/io/netty/handler/codec/redis/IntegerRedisMessage.java

\* /opt/cola/permits/1912366892\_1708460188.0693328/0/netty-codec-redis-4-1-107-final-sources-jar/io/netty/handler/codec/redis/RedisMessageType.java

\* /opt/cola/permits/1912366892\_1708460188.0693328/0/netty-codec-redis-4-1-107-final-sources-jar/io/netty/handler/codec/redis/RedisMessagePool.java

\* /opt/cola/permits/1912366892\_1708460188.0693328/0/netty-codec-redis-4-1-107-final-sources-jar/io/netty/handler/codec/redis/RedisEncoder.java

\* /opt/cola/permits/1912366892\_1708460188.0693328/0/netty-codec-redis-4-1-107-final-sources-jar/io/netty/handler/codec/redis/LastBulkStringRedisContent.java

\* /opt/cola/permits/1912366892\_1708460188.0693328/0/netty-codec-redis-4-1-107-final-sources-

```
jar/io/netty/handler/codec/redis/SimpleStringRedisMessage.java
* /opt/cola/permits/1912366892_1708460188.0693328/0/netty-codec-redis-4-1-107-final-sources-
jar/io/netty/handler/codec/redis/RedisBulkStringAggregator.java
*
/opt/cola/permits/1912366892_1708460188.0693328/0/netty-codec-redis-4-1-107-final-sources-
jar/io/netty/handler/codec/redis/BulkStringRedisContent.java
* /opt/cola/permits/1912366892_1708460188.0693328/0/netty-codec-redis-4-1-107-final-sources-
jar/io/netty/handler/codec/redis/AbstractStringRedisMessage.java
* /opt/cola/permits/1912366892_1708460188.0693328/0/netty-codec-redis-4-1-107-final-sources-
jar/io/netty/handler/codec/redis/BulkStringHeaderRedisMessage.java
* /opt/cola/permits/1912366892_1708460188.0693328/0/netty-codec-redis-4-1-107-final-sources-
jar/io/netty/handler/codec/redis/ArrayRedisMessage.java
* /opt/cola/permits/1912366892_1708460188.0693328/0/netty-codec-redis-4-1-107-final-sources-
jar/io/netty/handler/codec/redis/FullBulkStringRedisMessage.java
* /opt/cola/permits/1912366892_1708460188.0693328/0/netty-codec-redis-4-1-107-final-sources-
jar/io/netty/handler/codec/redis/DefaultLastBulkStringRedisContent.java
*
/opt/cola/permits/1912366892_1708460188.0693328/0/netty-codec-redis-4-1-107-final-sources-
jar/io/netty/handler/codec/redis/RedisCodecUtil.java
* /opt/cola/permits/1912366892_1708460188.0693328/0/netty-codec-redis-4-1-107-final-sources-
jar/io/netty/handler/codec/redis/package-info.java
* /opt/cola/permits/1912366892_1708460188.0693328/0/netty-codec-redis-4-1-107-final-sources-
jar/io/netty/handler/codec/redis/DefaultBulkStringRedisContent.java
* /opt/cola/permits/1912366892_1708460188.0693328/0/netty-codec-redis-4-1-107-final-sources-
jar/io/netty/handler/codec/redis/RedisDecoder.java
* /opt/cola/permits/1912366892_1708460188.0693328/0/netty-codec-redis-4-1-107-final-sources-
jar/io/netty/handler/codec/redis/RedisMessage.java
* /opt/cola/permits/1912366892_1708460188.0693328/0/netty-codec-redis-4-1-107-final-sources-
jar/io/netty/handler/codec/redis/RedisArrayAggregator.java
* /opt/cola/permits/1912366892_1708460188.0693328/0/netty-codec-redis-4-1-107-final-sources-
jar/io/netty/handler/codec/redis/ArrayHeaderRedisMessage.java
*
/opt/cola/permits/1912366892_1708460188.0693328/0/netty-codec-redis-4-1-107-final-sources-
jar/io/netty/handler/codec/redis/RedisConstants.java
* /opt/cola/permits/1912366892_1708460188.0693328/0/netty-codec-redis-4-1-107-final-sources-
jar/io/netty/handler/codec/redis/FixedRedisMessagePool.java
```

## 1.307 netty-transport-native-unix-common

### 4.1.107.Final

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\* /opt/cola/permits/1912366841\_1708460241.334961/0/netty-transport-native-unix-common-4-1-107-final-sources-jar/netty\_unix.h  
\* /opt/cola/permits/1912366841\_1708460241.334961/0/netty-transport-native-unix-common-4-1-107-final-sources-jar/netty\_unix.c

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\* /opt/cola/permits/1912366841\_1708460241.334961/0/netty-transport-native-unix-common-4-1-107-final-sources-jar/io/netty/channel/unix/DomainSocketChannel.java  
\* /opt/cola/permits/1912366841\_1708460241.334961/0/netty-transport-native-unix-common-4-1-107-final-sources-jar/netty\_unix\_filedescriptor.c  
\*

/opt/cola/permits/1912366841\_1708460241.334961/0/netty-transport-native-unix-common-4-1-107-final-sources-jar/io/netty/channel/unix/Errors.java

\* /opt/cola/permits/1912366841\_1708460241.334961/0/netty-transport-native-unix-common-4-1-107-final-sources-jar/io/netty/channel/unix/NativeInetAddress.java

\* /opt/cola/permits/1912366841\_1708460241.334961/0/netty-transport-native-unix-common-4-1-107-final-sources-jar/io/netty/channel/unix/DomainSocketAddress.java

```
* /opt/cola/permits/1912366841_1708460241.334961/0/netty-transport-native-unix-common-4-1-107-final-sources-
jar/netty_unix_socket.h
* /opt/cola/permits/1912366841_1708460241.334961/0/netty-transport-native-unix-common-4-1-107-final-sources-
jar/netty_unix_filedescriptor.h
* /opt/cola/permits/1912366841_1708460241.334961/0/netty-transport-native-unix-common-4-1-107-final-sources-
jar/netty_unix_socket.c
* /opt/cola/permits/1912366841_1708460241.334961/0/netty-transport-native-unix-common-4-1-107-final-sources-
jar/io/netty/channel/unix/FileDescriptor.java
*
/opt/cola/permits/1912366841_1708460241.334961/0/netty-transport-native-unix-common-4-1-107-final-sources-
jar/netty_unix_errors.h
* /opt/cola/permits/1912366841_1708460241.334961/0/netty-transport-native-unix-common-4-1-107-final-sources-
jar/io/netty/channel/unix/UnixChannel.java
* /opt/cola/permits/1912366841_1708460241.334961/0/netty-transport-native-unix-common-4-1-107-final-sources-
jar/io/netty/channel/unix/ServerDomainSocketChannel.java
* /opt/cola/permits/1912366841_1708460241.334961/0/netty-transport-native-unix-common-4-1-107-final-sources-
jar/netty_unix_errors.c
* /opt/cola/permits/1912366841_1708460241.334961/0/netty-transport-native-unix-common-4-1-107-final-sources-
jar/io/netty/channel/unix/DomainSocketChannelConfig.java
* /opt/cola/permits/1912366841_1708460241.334961/0/netty-transport-native-unix-common-4-1-107-final-sources-
jar/io/netty/channel/unix/Socket.java
* /opt/cola/permits/1912366841_1708460241.334961/0/netty-transport-native-unix-common-4-1-107-final-sources-
jar/io/netty/channel/unix/DomainSocketReadMode.java
*
/opt/cola/permits/1912366841_1708460241.334961/0/netty-transport-native-unix-common-4-1-107-final-sources-
jar/io/netty/channel/unix/DatagramSocketAddress.java
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jar/io/netty/channel/unix/ErrorsStaticallyReferencedJniMethods.java
* /opt/cola/permits/1912366841_1708460241.334961/0/netty-transport-native-unix-common-4-1-107-final-sources-
```

jar/netty\_unix\_limits.c

\*

/opt/cola/permits/1912366841\_1708460241.334961/0/netty-transport-native-unix-common-4-1-107-final-sources-jar/io/netty/channel/unix/Limits.java

\* /opt/cola/permits/1912366841\_1708460241.334961/0/netty-transport-native-unix-common-4-1-107-final-sources-jar/io/netty/channel/unix/SocketWritableByteChannel.java

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\* /opt/cola/permits/1912366841\_1708460241.334961/0/netty-transport-native-unix-common-4-1-107-final-sources-jar/io/netty/channel/unix/PeerCredentials.java

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\* /opt/cola/permits/1912366841\_1708460241.334961/0/netty-transport-native-unix-common-4-1-107-final-sources-jar/io/netty/channel/unix/LimitsStaticallyReferencedJniMethods.java

\* /opt/cola/permits/1912366841\_1708460241.334961/0/netty-transport-native-unix-common-4-1-107-final-sources-jar/netty\_unix\_util.h

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\* /opt/cola/permits/1912366841\_1708460241.334961/0/netty-transport-native-unix-common-4-1-107-final-sources-jar/io/netty/channel/unix/Buffer.java

\*

/opt/cola/permits/1912366841\_1708460241.334961/0/netty-transport-native-unix-common-4-1-107-final-sources-jar/netty\_unix\_buffer.h

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jar/io/netty/channel/unix/package-info.java
* /opt/cola/permits/1912366841_1708460241.334961/0/netty-transport-native-unix-common-4-1-107-final-sources-
jar/io/netty/channel/unix/UnixChannelOption.java
*
/opt/cola/permits/1912366841_1708460241.334961/0/netty-transport-native-unix-common-4-1-107-final-sources-
jar/io/netty/channel/unix/Unix.java
* /opt/cola/permits/1912366841_1708460241.334961/0/netty-transport-native-unix-common-4-1-107-final-sources-
jar/io/netty/channel/unix/IovArray.java
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\* /opt/cola/permits/1912366841\_1708460241.334961/0/netty-transport-native-unix-common-4-1-107-final-sources-jar/io/netty/channel/unix/IntegerUnixChannelOption.java  
\*

/opt/cola/permits/1912366841\_1708460241.334961/0/netty-transport-native-unix-common-4-1-107-final-sources-jar/io/netty/channel/unix/GenericUnixChannelOption.java

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\* /opt/cola/permits/1912366841\_1708460241.334961/0/netty-transport-native-unix-common-4-1-107-final-sources-jar/io/netty/channel/unix/DomainDatagramChannel.java  
\*



```
/opt/cola/permits/1912366841_1708460241.334961/0/netty-transport-native-unix-common-4-1-107-final-sources-
jar/io/netty/channel/unix/DomainDatagramSocketAddress.java
* /opt/cola/permits/1912366841_1708460241.334961/0/netty-transport-native-unix-common-4-1-107-final-sources-
jar/io/netty/channel/unix/SegmentedDatagramPacket.java
* /opt/cola/permits/1912366841_1708460241.334961/0/netty-transport-native-unix-common-4-1-107-final-sources-
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jar/io/netty/channel/unix/UnixChannelUtil.java
* /opt/cola/permits/1912366841_1708460241.334961/0/netty-transport-native-unix-common-4-1-107-final-sources-
jar/netty_unix_jni.h
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## 1.308 netty-resolver-dns 4.1.107.Final

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* /opt/cola/permits/1912367001_1708460185.8276849/0/netty-resolver-dns-4-1-107-final-sources-
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/opt/cola/permits/1912367001\_1708460185.8276849/0/netty-resolver-dns-4-1-107-final-sources-jar/io/netty/resolver/dns/DnsCnameCache.java

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\* /opt/cola/permits/1912367001\_1708460185.8276849/0/netty-resolver-dns-4-1-107-final-sources-jar/io/netty/resolver/dns/DnsQueryContextManager.java  
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- \* /opt/cola/permits/1912367001\_1708460185.8276849/0/netty-resolver-dns-4-1-107-final-sources-jar/io/netty/resolver/dns/DnsCacheEntry.java
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- /opt/cola/permits/1912367001\_1708460185.8276849/0/netty-resolver-dns-4-1-107-final-sources-jar/io/netty/resolver/dns/BiDnsQueryLifecycleObserver.java
- \* /opt/cola/permits/1912367001\_1708460185.8276849/0/netty-resolver-dns-4-1-107-final-sources-jar/io/netty/resolver/dns/DnsNameResolverTimeoutException.java
- \* /opt/cola/permits/1912367001\_1708460185.8276849/0/netty-resolver-dns-4-1-107-final-sources-jar/io/netty/resolver/dns/BiDnsQueryLifecycleObserverFactory.java
- \* /opt/cola/permits/1912367001\_1708460185.8276849/0/netty-resolver-dns-4-1-107-final-sources-jar/io/netty/resolver/dns/SingletonDnsServerAddressStreamProvider.java
- \* /opt/cola/permits/1912367001\_1708460185.8276849/0/netty-resolver-dns-4-1-107-final-sources-jar/io/netty/resolver/dns/DnsQueryLifecycleObserverFactory.java
- \* /opt/cola/permits/1912367001\_1708460185.8276849/0/netty-resolver-dns-4-1-107-final-sources-jar/io/netty/resolver/dns/UniSequentialDnsServerAddressStreamProvider.java
- \* /opt/cola/permits/1912367001\_1708460185.8276849/0/netty-resolver-dns-4-1-107-final-sources-jar/io/netty/resolver/dns/NoopDnsQueryLifecycleObserverFactory.java
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- /opt/cola/permits/1912367001\_1708460185.8276849/0/netty-resolver-dns-4-1-107-final-sources-jar/io/netty/resolver/dns/DnsServerAddressStreamProviders.java
- \* /opt/cola/permits/1912367001\_1708460185.8276849/0/netty-resolver-dns-4-1-107-final-sources-jar/io/netty/resolver/dns/SequentialDnsServerAddressStreamProvider.java
- \* /opt/cola/permits/1912367001\_1708460185.8276849/0/netty-resolver-dns-4-1-107-final-sources-jar/io/netty/resolver/dns/MultiDnsServerAddressStreamProvider.java
- \* /opt/cola/permits/1912367001\_1708460185.8276849/0/netty-resolver-dns-4-1-107-final-sources-jar/io/netty/resolver/dns/LoggingDnsQueryLifecycleObserver.java
- \* /opt/cola/permits/1912367001\_1708460185.8276849/0/netty-resolver-dns-4-1-107-final-sources-jar/io/netty/resolver/dns/NoopDnsQueryLifecycleObserver.java
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* /opt/cola/permits/1912366885_1708460190.7824366/0/netty-transport-4-1-107-final-sources-
jar/io/netty/channel/ExtendedClosedChannelException.java
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/opt/cola/permits/1912366885_1708460190.7824366/0/netty-transport-4-1-107-final-sources-
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 */
```

Found in path(s):

\* /opt/cola/permits/1912366885\_1708460190.7824366/0/netty-transport-4-1-107-final-sources-jar/io/netty/channel/socket/DuplexChannelConfig.java

\* /opt/cola/permits/1912366885\_1708460190.7824366/0/netty-transport-4-1-107-final-sources-jar/io/netty/channel/StacklessClosedChannelException.java

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Found in path(s):

\* /opt/cola/permits/1912366885\_1708460190.7824366/0/netty-transport-4-1-107-final-sources-jar/io/netty/bootstrap/ChannelInitializerExtension.java

\* /opt/cola/permits/1912366885\_1708460190.7824366/0/netty-transport-4-1-107-final-sources-jar/io/netty/bootstrap/ChannelInitializerExtensions.java

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Found in path(s):

\* /opt/cola/permits/1912366885\_1708460190.7824366/0/netty-transport-4-1-107-final-sources-

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jar/io/netty/channel/DefaultMessageSizeEstimator.java
* /opt/cola/permits/1912366885_1708460190.7824366/0/netty-transport-4-1-107-final-sources-
jar/io/netty/channel/socket/oio/OioSocketChannelConfig.java
*
/opt/cola/permits/1912366885_1708460190.7824366/0/netty-transport-4-1-107-final-sources-
jar/io/netty/channel/MessageSizeEstimator.java
* /opt/cola/permits/1912366885_1708460190.7824366/0/netty-transport-4-1-107-final-sources-
jar/io/netty/channel/ChannelOutboundBuffer.java
* /opt/cola/permits/1912366885_1708460190.7824366/0/netty-transport-4-1-107-final-sources-
jar/io/netty/channel/AbstractEventLoopGroup.java
* /opt/cola/permits/1912366885_1708460190.7824366/0/netty-transport-4-1-107-final-sources-
jar/io/netty/channel/group/DefaultChannelGroup.java
* /opt/cola/permits/1912366885_1708460190.7824366/0/netty-transport-4-1-107-final-sources-
jar/io/netty/channel/group/ChannelMatchers.java
* /opt/cola/permits/1912366885_1708460190.7824366/0/netty-transport-4-1-107-final-sources-
jar/io/netty/channel/socket/oio/DefaultOioServerSocketChannelConfig.java
* /opt/cola/permits/1912366885_1708460190.7824366/0/netty-transport-4-1-107-final-sources-
jar/io/netty/channel/ChannelId.java
*
/opt/cola/permits/1912366885_1708460190.7824366/0/netty-transport-4-1-107-final-sources-
jar/io/netty/channel/socket/oio/OioServerSocketChannelConfig.java
* /opt/cola/permits/1912366885_1708460190.7824366/0/netty-transport-4-1-107-final-sources-
jar/io/netty/channel/ChannelProgressiveFutureListener.java
* /opt/cola/permits/1912366885_1708460190.7824366/0/netty-transport-4-1-107-final-sources-
jar/io/netty/channel/ChannelProgressiveFuture.java
* /opt/cola/permits/1912366885_1708460190.7824366/0/netty-transport-4-1-107-final-sources-
jar/io/netty/channel/ChannelProgressivePromise.java
* /opt/cola/permits/1912366885_1708460190.7824366/0/netty-transport-4-1-107-final-sources-
jar/io/netty/channel/DefaultChannelId.java
* /opt/cola/permits/1912366885_1708460190.7824366/0/netty-transport-4-1-107-final-sources-
jar/io/netty/channel/group/ChannelGroupException.java
* /opt/cola/permits/1912366885_1708460190.7824366/0/netty-transport-4-1-107-final-sources-
jar/io/netty/channel/SimpleChannelInboundHandler.java
*
/opt/cola/permits/1912366885_1708460190.7824366/0/netty-transport-4-1-107-final-sources-
jar/io/netty/channel/group/ChannelMatcher.java
* /opt/cola/permits/1912366885_1708460190.7824366/0/netty-transport-4-1-107-final-sources-
jar/io/netty/channel/ChannelHandlerAdapter.java
* /opt/cola/permits/1912366885_1708460190.7824366/0/netty-transport-4-1-107-final-sources-
jar/io/netty/channel/ConnectTimeoutException.java
* /opt/cola/permits/1912366885_1708460190.7824366/0/netty-transport-4-1-107-final-sources-
jar/io/netty/channel/nio/SelectedSelectionKeySet.java
* /opt/cola/permits/1912366885_1708460190.7824366/0/netty-transport-4-1-107-final-sources-
jar/io/netty/channel/DefaultAddressedEnvelope.java
* /opt/cola/permits/1912366885_1708460190.7824366/0/netty-transport-4-1-107-final-sources-
jar/io/netty/channel/group/ChannelGroup.java
* /opt/cola/permits/1912366885_1708460190.7824366/0/netty-transport-4-1-107-final-sources-
jar/io/netty/bootstrap/ChannelFactory.java

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\* /opt/cola/permits/1912366885\_1708460190.7824366/0/netty-transport-4-1-107-final-sources-jar/io/netty/channel/AddressedEnvelope.java

\*

/opt/cola/permits/1912366885\_1708460190.7824366/0/netty-transport-4-1-107-final-sources-jar/io/netty/channel/DefaultChannelProgressivePromise.java

\* /opt/cola/permits/1912366885\_1708460190.7824366/0/netty-transport-4-1-107-final-sources-jar/io/netty/channel/socket/oio/DefaultOioSocketChannelConfig.java

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\* /opt/cola/permits/1912366885\_1708460190.7824366/0/netty-transport-4-1-107-final-sources-jar/io/netty/channel/CoalescingBufferQueue.java

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Found in path(s):

\* /opt/cola/permits/1912366885\_1708460190.7824366/0/netty-transport-4-1-107-final-sources-

jar/io/netty/channel/oio/OioByteStreamChannel.java

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\* /opt/cola/permits/1912366885\_1708460190.7824366/0/netty-transport-4-1-107-final-sources-jar/io/netty/channel/ChannelPromiseAggregator.java

\* /opt/cola/permits/1912366885\_1708460190.7824366/0/netty-transport-4-1-107-final-sources-jar/io/netty/channel/socket/nio/package-info.java

\*

/opt/cola/permits/1912366885\_1708460190.7824366/0/netty-transport-4-1-107-final-sources-jar/io/netty/channel/AbstractChannel.java

\* /opt/cola/permits/1912366885\_1708460190.7824366/0/netty-transport-4-1-107-final-sources-jar/io/netty/channel/MultithreadEventLoopGroup.java

\* /opt/cola/permits/1912366885\_1708460190.7824366/0/netty-transport-4-1-107-final-sources-jar/io/netty/channel/socket/nio/NioServerSocketChannel.java

\* /opt/cola/permits/1912366885\_1708460190.7824366/0/netty-transport-4-1-107-final-sources-jar/io/netty/channel/DefaultChannelConfig.java

\* /opt/cola/permits/1912366885\_1708460190.7824366/0/netty-transport-4-1-107-final-sources-jar/io/netty/channel/ChannelPipelineException.java

\* /opt/cola/permits/1912366885\_1708460190.7824366/0/netty-transport-4-1-107-final-sources-jar/io/netty/channel/oio/AbstractOioByteChannel.java

\* /opt/cola/permits/1912366885\_1708460190.7824366/0/netty-transport-4-1-107-final-sources-jar/io/netty/channel/socket/DatagramChannelConfig.java

\* /opt/cola/permits/1912366885\_1708460190.7824366/0/netty-transport-4-1-107-final-sources-jar/io/netty/channel/socket/DefaultServerSocketChannelConfig.java

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/opt/cola/permits/1912366885\_1708460190.7824366/0/netty-transport-4-1-107-final-sources-jar/io/netty/channel/ChannelFuture.java

\* /opt/cola/permits/1912366885\_1708460190.7824366/0/netty-transport-4-1-107-final-sources-jar/io/netty/channel/embedded/EmbeddedEventLoop.java

\* /opt/cola/permits/1912366885\_1708460190.7824366/0/netty-transport-4-1-107-final-sources-jar/io/netty/channel/socket/SocketChannel.java

\* /opt/cola/permits/1912366885\_1708460190.7824366/0/netty-transport-4-1-107-final-sources-jar/io/netty/channel/nio/AbstractNioMessageChannel.java  
 \* /opt/cola/permits/1912366885\_1708460190.7824366/0/netty-transport-4-1-107-final-sources-jar/io/netty/channel/socket/nio/NioSocketChannel.java  
 \* /opt/cola/permits/1912366885\_1708460190.7824366/0/netty-transport-4-1-107-final-sources-jar/io/netty/channel/Channel.java  
 \* /opt/cola/permits/1912366885\_1708460190.7824366/0/netty-transport-4-1-107-final-sources-jar/io/netty/channel/group/ChannelGroupFutureListener.java  
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 /opt/cola/permits/1912366885\_1708460190.7824366/0/netty-transport-4-1-107-final-sources-jar/io/netty/channel/nio/NioTask.java  
 \* /opt/cola/permits/1912366885\_1708460190.7824366/0/netty-transport-4-1-107-final-sources-jar/io/netty/channel/group/DefaultChannelGroupFuture.java  
 \* /opt/cola/permits/1912366885\_1708460190.7824366/0/netty-transport-4-1-107-final-sources-jar/io/netty/channel/ChannelPromise.java  
 \* /opt/cola/permits/1912366885\_1708460190.7824366/0/netty-transport-4-1-107-final-sources-jar/io/netty/channel/socket/SocketChannelConfig.java  
 \* /opt/cola/permits/1912366885\_1708460190.7824366/0/netty-transport-4-1-107-final-sources-jar/io/netty/channel/FixedRecvByteBufAllocator.java  
 \* /opt/cola/permits/1912366885\_1708460190.7824366/0/netty-transport-4-1-107-final-sources-jar/io/netty/channel/socket/oio/OioServerSocketChannel.java  
 \* /opt/cola/permits/1912366885\_1708460190.7824366/0/netty-transport-4-1-107-final-sources-jar/io/netty/channel/ChannelPipeline.java  
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 /opt/cola/permits/1912366885\_1708460190.7824366/0/netty-transport-4-1-107-final-sources-jar/io/netty/channel/DefaultEventLoop.java  
 \* /opt/cola/permits/1912366885\_1708460190.7824366/0/netty-transport-4-1-107-final-sources-jar/io/netty/channel/socket/ServerSocketChannel.java  
 \* /opt/cola/permits/1912366885\_1708460190.7824366/0/netty-transport-4-1-107-final-sources-jar/io/netty/channel/ChannelInboundHandler.java  
 \* /opt/cola/permits/1912366885\_1708460190.7824366/0/netty-transport-4-1-107-final-sources-jar/io/netty/channel/local/LocalServerChannel.java  
 \* /opt/cola/permits/1912366885\_1708460190.7824366/0/netty-transport-4-1-107-final-sources-jar/io/netty/channel/socket/DefaultDatagramChannelConfig.java  
 \* /opt/cola/permits/1912366885\_1708460190.7824366/0/netty-transport-4-1-107-final-sources-jar/io/netty/channel/oio/OioEventLoopGroup.java  
 \* /opt/cola/permits/1912366885\_1708460190.7824366/0/netty-transport-4-1-107-final-sources-jar/io/netty/channel/socket/InternetProtocolFamily.java  
 \*  
 /opt/cola/permits/1912366885\_1708460190.7824366/0/netty-transport-4-1-107-final-sources-jar/io/netty/channel/socket/ChannelInputShutdownEvent.java  
 \* /opt/cola/permits/1912366885\_1708460190.7824366/0/netty-transport-4-1-107-final-sources-jar/io/netty/channel/ChannelException.java  
 \* /opt/cola/permits/1912366885\_1708460190.7824366/0/netty-transport-4-1-107-final-sources-jar/io/netty/channel/socket/package-info.java  
 \* /opt/cola/permits/1912366885\_1708460190.7824366/0/netty-transport-4-1-107-final-sources-jar/io/netty/channel/ChannelInitializer.java  
 \* /opt/cola/permits/1912366885\_1708460190.7824366/0/netty-transport-4-1-107-final-sources-

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jar/io/netty/channel/local/package-info.java
* /opt/cola/permits/1912366885_1708460190.7824366/0/netty-transport-4-1-107-final-sources-
jar/io/netty/bootstrap/package-info.java
* /opt/cola/permits/1912366885_1708460190.7824366/0/netty-transport-4-1-107-final-sources-
jar/io/netty/channel/ServerChannel.java
*
/opt/cola/permits/1912366885_1708460190.7824366/0/netty-transport-4-1-107-final-sources-
jar/io/netty/channel/EventLoopException.java
* /opt/cola/permits/1912366885_1708460190.7824366/0/netty-transport-4-1-107-final-sources-
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* /opt/cola/permits/1912366885_1708460190.7824366/0/netty-transport-4-1-107-final-sources-
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* /opt/cola/permits/1912366885_1708460190.7824366/0/netty-transport-4-1-107-final-sources-
jar/io/netty/channel/socket/DatagramPacket.java
* /opt/cola/permits/1912366885_1708460190.7824366/0/netty-transport-4-1-107-final-sources-
jar/io/netty/channel/ThreadPerChannelEventLoopGroup.java
* /opt/cola/permits/1912366885_1708460190.7824366/0/netty-transport-4-1-107-final-sources-
jar/io/netty/channel/nio/NioEventLoopGroup.java
* /opt/cola/permits/1912366885_1708460190.7824366/0/netty-transport-4-1-107-final-sources-
jar/io/netty/channel/VoidChannelPromise.java
*
/opt/cola/permits/1912366885_1708460190.7824366/0/netty-transport-4-1-107-final-sources-
jar/io/netty/channel/group/ChannelGroupFuture.java
* /opt/cola/permits/1912366885_1708460190.7824366/0/netty-transport-4-1-107-final-sources-
jar/io/netty/channel/socket/nio/NioDatagramChannelConfig.java
* /opt/cola/permits/1912366885_1708460190.7824366/0/netty-transport-4-1-107-final-sources-
jar/io/netty/channel/group/CombinedIterator.java
* /opt/cola/permits/1912366885_1708460190.7824366/0/netty-transport-4-1-107-final-sources-
jar/io/netty/channel/nio/AbstractNioByteChannel.java
* /opt/cola/permits/1912366885_1708460190.7824366/0/netty-transport-4-1-107-final-sources-
jar/io/netty/channel/RecvByteBufAllocator.java
* /opt/cola/permits/1912366885_1708460190.7824366/0/netty-transport-4-1-107-final-sources-
jar/io/netty/channel/DefaultEventLoopGroup.java
* /opt/cola/permits/1912366885_1708460190.7824366/0/netty-transport-4-1-107-final-sources-
jar/io/netty/channel/DefaultChannelPipeline.java
*
/opt/cola/permits/1912366885_1708460190.7824366/0/netty-transport-4-1-107-final-sources-
jar/io/netty/channel/FailedChannelFuture.java
* /opt/cola/permits/1912366885_1708460190.7824366/0/netty-transport-4-1-107-final-sources-
jar/io/netty/channel/EventLoop.java
* /opt/cola/permits/1912366885_1708460190.7824366/0/netty-transport-4-1-107-final-sources-
jar/io/netty/channel/nio/AbstractNioChannel.java
* /opt/cola/permits/1912366885_1708460190.7824366/0/netty-transport-4-1-107-final-sources-
jar/io/netty/channel/embedded/EmbeddedChannel.java
* /opt/cola/permits/1912366885_1708460190.7824366/0/netty-transport-4-1-107-final-sources-
jar/io/netty/channel/embedded/EmbeddedSocketAddress.java
* /opt/cola/permits/1912366885_1708460190.7824366/0/netty-transport-4-1-107-final-sources-
jar/io/netty/channel/oio/AbstractOioChannel.java

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\* /opt/cola/permits/1912366885\_1708460190.7824366/0/netty-transport-4-1-107-final-sources-jar/io/netty/channel/AbstractServerChannel.java

\* /opt/cola/permits/1912366885\_1708460190.7824366/0/netty-transport-4-1-107-final-sources-jar/io/netty/channel/ThreadPerChannelEventLoop.java

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/opt/cola/permits/1912366885\_1708460190.7824366/0/netty-transport-4-1-107-final-sources-jar/io/netty/channel/ChannelFutureListener.java

\* /opt/cola/permits/1912366885\_1708460190.7824366/0/netty-transport-4-1-107-final-sources-jar/io/netty/channel/socket/DefaultSocketChannelConfig.java

\* /opt/cola/permits/1912366885\_1708460190.7824366/0/netty-transport-4-1-107-final-sources-jar/io/netty/channel/local/LocalChannel.java

\* /opt/cola/permits/1912366885\_1708460190.7824366/0/netty-transport-4-1-107-final-sources-jar/io/netty/bootstrap/Bootstrap.java

\* /opt/cola/permits/1912366885\_1708460190.7824366/0/netty-transport-4-1-107-final-sources-jar/io/netty/channel/ChannelPromiseNotifier.java

\* /opt/cola/permits/1912366885\_1708460190.7824366/0/netty-transport-4-1-107-final-sources-jar/io/netty/channel/embedded/package-info.java

\* /opt/cola/permits/1912366885\_1708460190.7824366/0/netty-transport-4-1-107-final-sources-jar/io/netty/channel/ChannelConfig.java

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/opt/cola/permits/1912366885\_1708460190.7824366/0/netty-transport-4-1-107-final-sources-jar/io/netty/channel/SingleThreadEventLoop.java

\* /opt/cola/permits/1912366885\_1708460190.7824366/0/netty-transport-4-1-107-final-sources-jar/io/netty/channel/SucceededChannelFuture.java

\* /opt/cola/permits/1912366885\_1708460190.7824366/0/netty-transport-4-1-107-final-sources-jar/io/netty/bootstrap/ServerBootstrap.java

\* /opt/cola/permits/1912366885\_1708460190.7824366/0/netty-transport-4-1-107-final-sources-jar/io/netty/channel/ChannelMetadata.java

\* /opt/cola/permits/1912366885\_1708460190.7824366/0/netty-transport-4-1-107-final-sources-jar/io/netty/channel/EventLoopGroup.java

\* /opt/cola/permits/1912366885\_1708460190.7824366/0/netty-transport-4-1-107-final-sources-jar/io/netty/channel/CompleteChannelFuture.java

\* /opt/cola/permits/1912366885\_1708460190.7824366/0/netty-transport-4-1-107-final-sources-jar/io/netty/channel/socket/nio/NioDatagramChannel.java

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/opt/cola/permits/1912366885\_1708460190.7824366/0/netty-transport-4-1-107-final-sources-jar/io/netty/channel/package-info.java

\* /opt/cola/permits/1912366885\_1708460190.7824366/0/netty-transport-4-1-107-final-sources-jar/io/netty/channel/CombinedChannelDuplexHandler.java

\* /opt/cola/permits/1912366885\_1708460190.7824366/0/netty-transport-4-1-107-final-sources-jar/io/netty/channel/socket/DatagramChannel.java

\* /opt/cola/permits/1912366885\_1708460190.7824366/0/netty-transport-4-1-107-final-sources-jar/io/netty/channel/oio/package-info.java

\* /opt/cola/permits/1912366885\_1708460190.7824366/0/netty-transport-4-1-107-final-sources-jar/io/netty/channel/ChannelFlushPromiseNotifier.java

\* /opt/cola/permits/1912366885\_1708460190.7824366/0/netty-transport-4-1-107-final-sources-jar/io/netty/channel/DefaultChannelPromise.java

\* /opt/cola/permits/1912366885\_1708460190.7824366/0/netty-transport-4-1-107-final-sources-



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jar/io/netty/channel/nio/package-info.java
* /opt/cola/permits/1912366885_1708460190.7824366/0/netty-transport-4-1-107-final-sources-
jar/io/netty/bootstrap/AbstractBootstrap.java
*
/opt/cola/permits/1912366885_1708460190.7824366/0/netty-transport-4-1-107-final-sources-
jar/io/netty/channel/ChannelOutboundHandlerAdapter.java
* /opt/cola/permits/1912366885_1708460190.7824366/0/netty-transport-4-1-107-final-sources-
jar/io/netty/channel/socket/oio/OioDatagramChannel.java
* /opt/cola/permits/1912366885_1708460190.7824366/0/netty-transport-4-1-107-final-sources-
jar/io/netty/channel/AdaptiveRecvByteBufAllocator.java
* /opt/cola/permits/1912366885_1708460190.7824366/0/netty-transport-4-1-107-final-sources-
jar/io/netty/channel/socket/ServerSocketChannelConfig.java
* /opt/cola/permits/1912366885_1708460190.7824366/0/netty-transport-4-1-107-final-sources-
jar/io/netty/channel/ChannelInboundHandlerAdapter.java
* /opt/cola/permits/1912366885_1708460190.7824366/0/netty-transport-4-1-107-final-sources-
jar/io/netty/channel/socket/nio/ProtocolFamilyConverter.java
*
/opt/cola/permits/1912366885_1708460190.7824366/0/netty-transport-4-1-107-final-sources-
jar/io/netty/channel/FileRegion.java
* /opt/cola/permits/1912366885_1708460190.7824366/0/netty-transport-4-1-107-final-sources-
jar/io/netty/channel/group/package-info.java
* /opt/cola/permits/1912366885_1708460190.7824366/0/netty-transport-4-1-107-final-sources-
jar/io/netty/channel/ChannelDuplexHandler.java
* /opt/cola/permits/1912366885_1708460190.7824366/0/netty-transport-4-1-107-final-sources-
jar/io/netty/channel/nio/NioEventLoop.java
* /opt/cola/permits/1912366885_1708460190.7824366/0/netty-transport-4-1-107-final-sources-
jar/io/netty/channel/ChannelOption.java
* /opt/cola/permits/1912366885_1708460190.7824366/0/netty-transport-4-1-107-final-sources-
jar/io/netty/channel/AbstractChannelHandlerContext.java
* /opt/cola/permits/1912366885_1708460190.7824366/0/netty-transport-4-1-107-final-sources-
jar/io/netty/channel/DefaultFileRegion.java
* /opt/cola/permits/1912366885_1708460190.7824366/0/netty-transport-4-1-107-final-sources-
jar/io/netty/channel/local/LocalChannelRegistry.java
*
/opt/cola/permits/1912366885_1708460190.7824366/0/netty-transport-4-1-107-final-sources-
jar/io/netty/channel/socket/oio/OioSocketChannel.java
* /opt/cola/permits/1912366885_1708460190.7824366/0/netty-transport-4-1-107-final-sources-
jar/io/netty/channel/ChannelHandlerContext.java
* /opt/cola/permits/1912366885_1708460190.7824366/0/netty-transport-4-1-107-final-sources-
jar/io/netty/channel/local/LocalAddress.java
* /opt/cola/permits/1912366885_1708460190.7824366/0/netty-transport-4-1-107-final-sources-
jar/io/netty/channel/oio/AbstractOioMessageChannel.java
* /opt/cola/permits/1912366885_1708460190.7824366/0/netty-transport-4-1-107-final-sources-
jar/io/netty/channel/ChannelOutboundHandler.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 (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/1912366885_1708460190.7824366/0/netty-transport-4-1-107-final-sources-
jar/io/netty/channel/ChannelHandler.java

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\* /opt/cola/permits/1912366885\_1708460190.7824366/0/netty-transport-4-1-107-final-sources-jar/io/netty/channel/internal/ChannelUtils.java

\*

/opt/cola/permits/1912366885\_1708460190.7824366/0/netty-transport-4-1-107-final-sources-jar/io/netty/channel/socket/ChannelOutputShutdownException.java  
\* /opt/cola/permits/1912366885\_1708460190.7824366/0/netty-transport-4-1-107-final-sources-jar/io/netty/channel/socket/oio/DefaultOioDatagramChannelConfig.java  
\* /opt/cola/permits/1912366885\_1708460190.7824366/0/netty-transport-4-1-107-final-sources-jar/io/netty/channel/internal/package-info.java  
\* /opt/cola/permits/1912366885\_1708460190.7824366/0/netty-transport-4-1-107-final-sources-jar/io/netty/channel/nio/SelectedSelectionKeySetSelector.java  
\* /opt/cola/permits/1912366885\_1708460190.7824366/0/netty-transport-4-1-107-final-sources-jar/io/netty/bootstrap/FailedChannel.java  
\* /opt/cola/permits/1912366885\_1708460190.7824366/0/netty-transport-4-1-107-final-sources-jar/io/netty/channel/DelegatingChannelPromiseNotifier.java  
\* /opt/cola/permits/1912366885\_1708460190.7824366/0/netty-transport-4-1-107-final-sources-jar/io/netty/channel/PendingBytesTracker.java  
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/opt/cola/permits/1912366885\_1708460190.7824366/0/netty-transport-4-1-107-final-sources-jar/io/netty/channel/socket/ChannelOutputShutdownEvent.java  
\* /opt/cola/permits/1912366885\_1708460190.7824366/0/netty-transport-4-1-107-final-sources-jar/io/netty/channel/socket/ChannelInputShutdownReadComplete.java  
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jar/io/netty/channel/DefaultChannelHandlerContext.java
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\* /opt/cola/permits/1912366885\_1708460190.7824366/0/netty-transport-4-1-107-final-sources-jar/io/netty/channel/pool/AbstractChannelPoolHandler.java  
\*  
/opt/cola/permits/1912366885\_1708460190.7824366/0/netty-transport-4-1-107-final-sources-jar/io/netty/channel/pool/ChannelPoolMap.java  
\* /opt/cola/permits/1912366885\_1708460190.7824366/0/netty-transport-4-1-107-final-sources-jar/io/netty/channel/pool/ChannelPoolHandler.java  
\* /opt/cola/permits/1912366885\_1708460190.7824366/0/netty-transport-4-1-107-final-sources-jar/io/netty/channel/pool/AbstractChannelPoolMap.java  
\* /opt/cola/permits/1912366885\_1708460190.7824366/0/netty-transport-4-1-107-final-sources-jar/io/netty/channel/pool/package-info.java  
\* /opt/cola/permits/1912366885\_1708460190.7824366/0/netty-transport-4-1-107-final-sources-jar/io/netty/channel/DefaultMaxBytesRecvByteBufAllocator.java  
\* /opt/cola/permits/1912366885\_1708460190.7824366/0/netty-transport-4-1-107-final-sources-jar/io/netty/channel/pool/ChannelHealthChecker.java  
\* /opt/cola/permits/1912366885\_1708460190.7824366/0/netty-transport-4-1-107-final-sources-jar/io/netty/channel/DefaultMaxMessagesRecvByteBufAllocator.java  
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/opt/cola/permits/1912366885\_1708460190.7824366/0/netty-transport-4-1-107-final-sources-jar/io/netty/channel/pool/ChannelPool.java  
\* /opt/cola/permits/1912366885\_1708460190.7824366/0/netty-transport-4-1-107-final-sources-jar/io/netty/channel/pool/FixedChannelPool.java  
\* /opt/cola/permits/1912366885\_1708460190.7824366/0/netty-transport-4-1-107-final-sources-jar/io/netty/channel/pool/SimpleChannelPool.java  
\* /opt/cola/permits/1912366885\_1708460190.7824366/0/netty-transport-4-1-107-final-sources-jar/io/netty/channel/MaxMessagesRecvByteBufAllocator.java  
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\* /opt/cola/permits/1912366885\_1708460190.7824366/0/netty-transport-4-1-107-final-sources-jar/io/netty/channel/WriteBufferWaterMark.java

\* /opt/cola/permits/1912366885\_1708460190.7824366/0/netty-transport-4-1-107-final-sources-jar/io/netty/channel/socket/DuplexChannel.java

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\* /opt/cola/permits/1912366885\_1708460190.7824366/0/netty-transport-4-1-107-final-sources-jar/io/netty/bootstrap/BootstrapConfig.java

\* /opt/cola/permits/1912366885\_1708460190.7824366/0/netty-transport-4-1-107-final-sources-jar/io/netty/channel/ChannelInboundInvoker.java

\*

/opt/cola/permits/1912366885\_1708460190.7824366/0/netty-transport-4-1-107-final-sources-jar/io/netty/channel/DefaultSelectStrategy.java

\* /opt/cola/permits/1912366885\_1708460190.7824366/0/netty-transport-4-1-107-final-sources-jar/io/netty/channel/ChannelOutboundInvoker.java

\* /opt/cola/permits/1912366885\_1708460190.7824366/0/netty-transport-4-1-107-final-sources-jar/io/netty/bootstrap/ServerBootstrapConfig.java

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\* /opt/cola/permits/1912366885\_1708460190.7824366/0/netty-transport-4-1-107-final-sources-jar/io/netty/channel/PendingWriteQueue.java

\*

/opt/cola/permits/1912366885\_1708460190.7824366/0/netty-transport-4-1-107-final-sources-jar/io/netty/channel/AbstractEventLoop.java

\* /opt/cola/permits/1912366885\_1708460190.7824366/0/netty-transport-4-1-107-final-sources-jar/io/netty/channel/embedded/EmbeddedChannelId.java

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\* /opt/cola/permits/1912366885\_1708460190.7824366/0/netty-transport-4-1-107-final-sources-jar/io/netty/channel/socket/nio/NioChannelOption.java

\* /opt/cola/permits/1912366885\_1708460190.7824366/0/netty-transport-4-1-107-final-sources-jar/io/netty/channel/SimpleUserEventChannelHandler.java

## 1.310 netty-transport-sctp 4.1.107.Final

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\* /opt/cola/permits/1912366925\_1708460707.3798392/0/netty-transport-sctp-4-1-107-final-sources-jar/io/netty/channel/sctp/SctpChannelOption.java

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\* /opt/cola/permits/1912366925\_1708460707.3798392/0/netty-transport-sctp-4-1-107-final-sources-jar/io/netty/channel/sctp/package-info.java

\* /opt/cola/permits/1912366925\_1708460707.3798392/0/netty-transport-sctp-4-1-107-final-sources-jar/io/netty/channel/sctp/nio/package-info.java

\*

/opt/cola/permits/1912366925\_1708460707.3798392/0/netty-transport-sctp-4-1-107-final-sources-jar/io/netty/channel/sctp/oio/OioSctpServerChannel.java

\* /opt/cola/permits/1912366925\_1708460707.3798392/0/netty-transport-sctp-4-1-107-final-sources-jar/io/netty/handler/codec/sctp/SctpOutboundByteStreamHandler.java

\* /opt/cola/permits/1912366925\_1708460707.3798392/0/netty-transport-sctp-4-1-107-final-sources-jar/io/netty/channel/sctp/oio/package-info.java

\* /opt/cola/permits/1912366925\_1708460707.3798392/0/netty-transport-sctp-4-1-107-final-sources-jar/io/netty/channel/sctp/oio/OioSctpChannel.java

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jar/io/netty/handler/codec/sctp/SctpMessageToMessageDecoder.java
* /opt/cola/permits/1912366925_1708460707.3798392/0/netty-transport-sctp-4-1-107-final-sources-
jar/io/netty/handler/codec/sctp/package-info.java
```

```
/*
 * /opt/cola/permits/1912366925_1708460707.3798392/0/netty-transport-sctp-4-1-107-final-sources-
jar/io/netty/handler/codec/sctp/SctpMessageCompletionHandler.java
 * /opt/cola/permits/1912366925_1708460707.3798392/0/netty-transport-sctp-4-1-107-final-sources-
jar/io/netty/handler/codec/sctp/SctpInboundByteStreamHandler.java
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```
* /opt/cola/permits/1912366925_1708460707.3798392/0/netty-transport-sctp-4-1-107-final-sources-
```

```

jar/com/sun/nio/sctp/Association.java
* /opt/cola/permits/1912366925_1708460707.3798392/0/netty-transport-sctp-4-1-107-final-sources-
jar/com/sun/nio/sctp/PeerAddressChangeNotification.java
*
/opt/cola/permits/1912366925_1708460707.3798392/0/netty-transport-sctp-4-1-107-final-sources-
jar/com/sun/nio/sctp/SctpServerChannel.java
* /opt/cola/permits/1912366925_1708460707.3798392/0/netty-transport-sctp-4-1-107-final-sources-
jar/com/sun/nio/sctp/package-info.java
* /opt/cola/permits/1912366925_1708460707.3798392/0/netty-transport-sctp-4-1-107-final-sources-
jar/com/sun/nio/sctp/AssociationChangeNotification.java
* /opt/cola/permits/1912366925_1708460707.3798392/0/netty-transport-sctp-4-1-107-final-sources-
jar/io/netty/channel/sctp/nio/NioSctpServerChannel.java
* /opt/cola/permits/1912366925_1708460707.3798392/0/netty-transport-sctp-4-1-107-final-sources-
jar/io/netty/channel/sctp/SctpChannelConfig.java
* /opt/cola/permits/1912366925_1708460707.3798392/0/netty-transport-sctp-4-1-107-final-sources-
jar/com/sun/nio/sctp/SctpChannel.java
* /opt/cola/permits/1912366925_1708460707.3798392/0/netty-transport-sctp-4-1-107-final-sources-
jar/com/sun/nio/sctp/NotificationHandler.java
*
/opt/cola/permits/1912366925_1708460707.3798392/0/netty-transport-sctp-4-1-107-final-sources-
jar/com/sun/nio/sctp/SctpSocketOption.java
* /opt/cola/permits/1912366925_1708460707.3798392/0/netty-transport-sctp-4-1-107-final-sources-
jar/com/sun/nio/sctp/Notification.java
* /opt/cola/permits/1912366925_1708460707.3798392/0/netty-transport-sctp-4-1-107-final-sources-
jar/io/netty/channel/sctp/SctpNotificationHandler.java
* /opt/cola/permits/1912366925_1708460707.3798392/0/netty-transport-sctp-4-1-107-final-sources-
jar/io/netty/channel/sctp/nio/NioSctpChannel.java
* /opt/cola/permits/1912366925_1708460707.3798392/0/netty-transport-sctp-4-1-107-final-sources-
jar/com/sun/nio/sctp/ShutdownNotification.java
* /opt/cola/permits/1912366925_1708460707.3798392/0/netty-transport-sctp-4-1-107-final-sources-
jar/com/sun/nio/sctp/HandlerResult.java
* /opt/cola/permits/1912366925_1708460707.3798392/0/netty-transport-sctp-4-1-107-final-sources-
jar/com/sun/nio/sctp/AbstractNotificationHandler.java
* /opt/cola/permits/1912366925_1708460707.3798392/0/netty-transport-sctp-4-1-107-final-sources-
jar/io/netty/channel/sctp/SctpServerChannel.java
*
/opt/cola/permits/1912366925_1708460707.3798392/0/netty-transport-sctp-4-1-107-final-sources-
jar/io/netty/channel/sctp/SctpChannel.java
* /opt/cola/permits/1912366925_1708460707.3798392/0/netty-transport-sctp-4-1-107-final-sources-
jar/com/sun/nio/sctp/MessageInfo.java
* /opt/cola/permits/1912366925_1708460707.3798392/0/netty-transport-sctp-4-1-107-final-sources-
jar/com/sun/nio/sctp/SendFailedNotification.java
* /opt/cola/permits/1912366925_1708460707.3798392/0/netty-transport-sctp-4-1-107-final-sources-
jar/io/netty/channel/sctp/SctpServerChannelConfig.java
* /opt/cola/permits/1912366925_1708460707.3798392/0/netty-transport-sctp-4-1-107-final-sources-
jar/io/netty/channel/sctp/DefaultSctpChannelConfig.java
* /opt/cola/permits/1912366925_1708460707.3798392/0/netty-transport-sctp-4-1-107-final-sources-
jar/com/sun/nio/sctp/SctpStandardSocketOptions.java

```

\*  
/opt/cola/permits/1912366925\_1708460707.3798392/0/netty-transport-sctp-4-1-107-final-sources-jar/io/netty/channel/sctp/SctpMessage.java  
\* /opt/cola/permits/1912366925\_1708460707.3798392/0/netty-transport-sctp-4-1-107-final-sources-jar/com/sun/nio/sctp/UnsupportedOperationException.java  
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\* /opt/cola/permits/1912366925\_1708460707.3798392/0/netty-transport-sctp-4-1-107-final-sources-jar/META-INF/maven/io.netty/netty-transport-sctp/pom.xml  
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\* /opt/cola/permits/1912366925\_1708460707.3798392/0/netty-transport-sctp-4-1-107-final-sources-jar/io/netty/channel/sctp/DefaultSctpServerChannelConfig.java

# 1.311 netty-handler-proxy 4.1.107.Final

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* /opt/cola/permits/1912367008_1708460275.7912738/0/netty-handler-proxy-4-1-107-final-sources-jar/META-INF/maven/io.netty/netty-handler-proxy/pom.xml
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* /opt/cola/permits/1912367008_1708460275.7912738/0/netty-handler-proxy-4-1-107-final-sources-jar/io.netty.handler.proxy.ProxyConnectException.java
```

```
* /opt/cola/permits/1912367008_1708460275.7912738/0/netty-handler-proxy-4-1-107-final-sources-
```



```
jar/io/netty/handler/proxy/ProxyHandler.java
*
/opt/cola/permits/1912367008_1708460275.7912738/0/netty-handler-proxy-4-1-107-final-sources-
jar/io/netty/handler/proxy/ProxyConnectionEvent.java
* /opt/cola/permits/1912367008_1708460275.7912738/0/netty-handler-proxy-4-1-107-final-sources-
jar/io/netty/handler/proxy/Socks4ProxyHandler.java
* /opt/cola/permits/1912367008_1708460275.7912738/0/netty-handler-proxy-4-1-107-final-sources-
jar/io/netty/handler/proxy/Socks5ProxyHandler.java
* /opt/cola/permits/1912367008_1708460275.7912738/0/netty-handler-proxy-4-1-107-final-sources-
jar/io/netty/handler/proxy/package-info.java
* /opt/cola/permits/1912367008_1708460275.7912738/0/netty-handler-proxy-4-1-107-final-sources-
jar/io/netty/handler/proxy/HttpProxyHandler.java
```

# 1.312 netty-codec-mqtt 4.1.107.Final

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* /opt/cola/permits/1912367135_1708460887.0733333/0/netty-codec-mqtt-4-1-107-final-sources-
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\* /opt/cola/permits/1912367135\_1708460887.0733333/0/netty-codec-mqtt-4-1-107-final-sources-jar/io.netty.handler.codec.mqtt/MqttReasonCodes.java

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\* /opt/cola/permits/1912367135\_1708460887.0733333/0/netty-codec-mqtt-4-1-107-final-sources-jar/io/netty/handler/codec/mqtt/MqttConnectPayload.java

\*

/opt/cola/permits/1912367135\_1708460887.0733333/0/netty-codec-mqtt-4-1-107-final-sources-jar/io/netty/handler/codec/mqtt/MqttSubscribeMessage.java

\* /opt/cola/permits/1912367135\_1708460887.0733333/0/netty-codec-mqtt-4-1-107-final-sources-jar/io/netty/handler/codec/mqtt/MqttConnAckVariableHeader.java

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\* /opt/cola/permits/1912367135\_1708460887.0733333/0/netty-codec-mqtt-4-1-107-final-sources-jar/io/netty/handler/codec/mqtt/MqttVersion.java

\* /opt/cola/permits/1912367135\_1708460887.0733333/0/netty-codec-mqtt-4-1-107-final-sources-jar/io/netty/handler/codec/mqtt/MqttUnsubAckMessage.java

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/opt/cola/permits/1912367135\_1708460887.0733333/0/netty-codec-mqtt-4-1-107-final-sources-jar/io/netty/handler/codec/mqtt/MqttPublishMessage.java

\* /opt/cola/permits/1912367135\_1708460887.0733333/0/netty-codec-mqtt-4-1-107-final-sources-jar/io/netty/handler/codec/mqtt/MqttMessageIdVariableHeader.java

\* /opt/cola/permits/1912367135\_1708460887.0733333/0/netty-codec-mqtt-4-1-107-final-sources-jar/io/netty/handler/codec/mqtt/MqttFixedHeader.java  
\* /opt/cola/permits/1912367135\_1708460887.0733333/0/netty-codec-mqtt-4-1-107-final-sources-jar/io/netty/handler/codec/mqtt/MqttIdentifierRejectedException.java  
\* /opt/cola/permits/1912367135\_1708460887.0733333/0/netty-codec-mqtt-4-1-107-final-sources-jar/io/netty/handler/codec/mqtt/MqttSubAckMessage.java  
\* /opt/cola/permits/1912367135\_1708460887.0733333/0/netty-codec-mqtt-4-1-107-final-sources-jar/io/netty/handler/codec/mqtt/MqttMessageType.java  
\* /opt/cola/permits/1912367135\_1708460887.0733333/0/netty-codec-mqtt-4-1-107-final-sources-jar/io/netty/handler/codec/mqtt/MqttMessage.java  
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/opt/cola/permits/1912367135\_1708460887.0733333/0/netty-codec-mqtt-4-1-107-final-sources-jar/io/netty/handler/codec/mqtt/MqttUnacceptableProtocolVersionException.java  
\* /opt/cola/permits/1912367135\_1708460887.0733333/0/netty-codec-mqtt-4-1-107-final-sources-jar/io/netty/handler/codec/mqtt/MqttEncoder.java  
\* /opt/cola/permits/1912367135\_1708460887.0733333/0/netty-codec-mqtt-4-1-107-final-sources-jar/io/netty/handler/codec/mqtt/MqttPublishVariableHeader.java  
\* /opt/cola/permits/1912367135\_1708460887.0733333/0/netty-codec-mqtt-4-1-107-final-sources-jar/io/netty/handler/codec/mqtt/MqttConnectReturnCode.java  
\* /opt/cola/permits/1912367135\_1708460887.0733333/0/netty-codec-mqtt-4-1-107-final-sources-jar/io/netty/handler/codec/mqtt/MqttUnsubscribeMessage.java  
\* /opt/cola/permits/1912367135\_1708460887.0733333/0/netty-codec-mqtt-4-1-107-final-sources-jar/io/netty/handler/codec/mqtt/MqttTopicSubscription.java  
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/opt/cola/permits/1912367135\_1708460887.0733333/0/netty-codec-mqtt-4-1-107-final-sources-jar/io/netty/handler/codec/mqtt/MqttUnsubscribePayload.java  
\* /opt/cola/permits/1912367135\_1708460887.0733333/0/netty-codec-mqtt-4-1-107-final-sources-jar/io/netty/handler/codec/mqtt/MqttDecoder.java  
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\* /opt/cola/permits/1912367135\_1708460887.0733333/0/netty-codec-mqtt-4-1-107-final-sources-jar/io/netty/handler/codec/mqtt/MqttConnectMessage.java  
\* /opt/cola/permits/1912367135\_1708460887.0733333/0/netty-codec-mqtt-4-1-107-final-sources-jar/io/netty/handler/codec/mqtt/MqttSubscribePayload.java  
\* /opt/cola/permits/1912367135\_1708460887.0733333/0/netty-codec-mqtt-4-1-107-final-sources-jar/io/netty/handler/codec/mqtt/MqttConnAckMessage.java

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jar/io/netty/handler/codec/mqtt/MqttPubReplyMessageVariableHeader.java  
\* /opt/cola/permits/1912367135\_1708460887.0733333/0/netty-codec-mqtt-4-1-107-final-sources-  
jar/io/netty/handler/codec/mqtt/MqttProperties.java  
\*

/opt/cola/permits/1912367135\_1708460887.0733333/0/netty-codec-mqtt-4-1-107-final-sources-  
jar/io/netty/handler/codec/mqtt/MqttReasonCodeAndPropertiesVariableHeader.java  
\* /opt/cola/permits/1912367135\_1708460887.0733333/0/netty-codec-mqtt-4-1-107-final-sources-  
jar/io/netty/handler/codec/mqtt/MqttSubscriptionOption.java  
\* /opt/cola/permits/1912367135\_1708460887.0733333/0/netty-codec-mqtt-4-1-107-final-sources-  
jar/io/netty/handler/codec/mqtt/MqttMessageIdAndPropertiesVariableHeader.java  
\* /opt/cola/permits/1912367135\_1708460887.0733333/0/netty-codec-mqtt-4-1-107-final-sources-  
jar/io/netty/handler/codec/mqtt/MqttUnsubAckPayload.java

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jar/io/netty/handler/codec/mqtt/package-info.java  
\* /opt/cola/permits/1912367135\_1708460887.0733333/0/netty-codec-mqtt-4-1-107-final-sources-  
jar/io/netty/handler/codec/mqtt/MqttQoS.java

## 1.313 netty-resolver 4.1.107.Final

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\* /opt/cola/permits/1912366932\_1708460195.1031659/0/netty-resolver-4-1-107-final-sources-  
jar/io/netty/resolver/RoundRobinInetAddressResolver.java

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\* /opt/cola/permits/1912366932\_1708460195.1031659/0/netty-resolver-4-1-107-final-sources-  
jar/io/netty/resolver/ResolvedAddressTypes.java

\* /opt/cola/permits/1912366932\_1708460195.1031659/0/netty-resolver-4-1-107-final-sources-  
jar/io/netty/resolver/HostsFileEntries.java

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\* /opt/cola/permits/1912366932\_1708460195.1031659/0/netty-resolver-4-1-107-final-sources-jar/io/netty/resolver/InetAddressResolver.java  
\* /opt/cola/permits/1912366932\_1708460195.1031659/0/netty-resolver-4-1-107-final-sources-jar/io/netty/resolver/AbstractAddressResolver.java  
\*  
/opt/cola/permits/1912366932\_1708460195.1031659/0/netty-resolver-4-1-107-final-sources-jar/io/netty/resolver/HostsFileEntriesResolver.java  
\* /opt/cola/permits/1912366932\_1708460195.1031659/0/netty-resolver-4-1-107-final-sources-jar/io/netty/resolver/InetSocketAddressResolver.java  
\* /opt/cola/permits/1912366932\_1708460195.1031659/0/netty-resolver-4-1-107-final-sources-jar/io/netty/resolver/CompositeNameResolver.java  
\* /opt/cola/permits/1912366932\_1708460195.1031659/0/netty-resolver-4-1-107-final-sources-jar/io/netty/resolver/DefaultAddressResolverGroup.java  
\* /opt/cola/permits/1912366932\_1708460195.1031659/0/netty-resolver-4-1-107-final-sources-jar/io/netty/resolver/DefaultHostsFileEntriesResolver.java  
\* /opt/cola/permits/1912366932\_1708460195.1031659/0/netty-resolver-4-1-107-final-sources-jar/io/netty/resolver/HostsFileParser.java  
\* /opt/cola/permits/1912366932\_1708460195.1031659/0/netty-resolver-4-1-107-final-sources-jar/io/netty/resolver/AddressResolver.java  
\* /opt/cola/permits/1912366932\_1708460195.1031659/0/netty-resolver-4-1-107-final-sources-jar/io/netty/resolver/DefaultNameResolver.java

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jar/io/netty/resolver/HostsFileEntriesProvider.java

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jar/io/netty/resolver/package-info.java

\* /opt/cola/permits/1912366932\_1708460195.1031659/0/netty-resolver-4-1-107-final-sources-  
jar/io/netty/resolver/AddressResolverGroup.java

\* /opt/cola/permits/1912366932\_1708460195.1031659/0/netty-resolver-4-1-107-final-sources-  
jar/io/netty/resolver/NameResolver.java

\*

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jar/io/netty/resolver/SimpleNameResolver.java

\* /opt/cola/permits/1912366932\_1708460195.1031659/0/netty-resolver-4-1-107-final-sources-  
jar/io/netty/resolver/NoopAddressResolver.java

\* /opt/cola/permits/1912366932\_1708460195.1031659/0/netty-resolver-4-1-107-final-sources-  
jar/io/netty/resolver/NoopAddressResolverGroup.java

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## 1.314 netty-codec-socks 4.1.107.Final

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\* /opt/cola/permits/1912366904\_1708460224.4832048/0/netty-codec-socks-4-1-107-final-sources-jar/io/netty/handler/codec/socksx/v5/Socks5AddressEncoder.java  
\*

/opt/cola/permits/1912366904\_1708460224.4832048/0/netty-codec-socks-4-1-107-final-sources-jar/io/netty/handler/codec/socksx/SocksPortUnificationServerHandler.java

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```

```
* /opt/cola/permits/1912366904_1708460224.4832048/0/netty-codec-socks-4-1-107-final-sources-jar/io/netty/handler/codec/socks/SocksCmdType.java
```

```
*
/opt/cola/permits/1912366904_1708460224.4832048/0/netty-codec-socks-4-1-107-final-sources-jar/io/netty/handler/codec/socks/SocksSubnegotiationVersion.java
```

```
* /opt/cola/permits/1912366904_1708460224.4832048/0/netty-codec-socks-4-1-107-final-sources-jar/io/netty/handler/codec/socks/SocksProtocolVersion.java
```

```
* /opt/cola/permits/1912366904_1708460224.4832048/0/netty-codec-socks-4-1-107-final-sources-
```

jar/io/netty/handler/codec/socksx/SocksVersion.java  
\* /opt/cola/permits/1912366904\_1708460224.4832048/0/netty-codec-socks-4-1-107-final-sources-jar/io/netty/handler/codec/socks/SocksRequestType.java  
\* /opt/cola/permits/1912366904\_1708460224.4832048/0/netty-codec-socks-4-1-107-final-sources-jar/io/netty/handler/codec/socksx/v5/Socks5CommandType.java  
\* /opt/cola/permits/1912366904\_1708460224.4832048/0/netty-codec-socks-4-1-107-final-sources-jar/io/netty/handler/codec/socks/SocksAuthScheme.java  
\* /opt/cola/permits/1912366904\_1708460224.4832048/0/netty-codec-socks-4-1-107-final-sources-jar/io/netty/handler/codec/socks/SocksAuthStatus.java  
\*  
/opt/cola/permits/1912366904\_1708460224.4832048/0/netty-codec-socks-4-1-107-final-sources-jar/io/netty/handler/codec/socks/SocksMessageType.java  
\* /opt/cola/permits/1912366904\_1708460224.4832048/0/netty-codec-socks-4-1-107-final-sources-jar/io/netty/handler/codec/socksx/v5/Socks5PasswordAuthStatus.java  
\* /opt/cola/permits/1912366904\_1708460224.4832048/0/netty-codec-socks-4-1-107-final-sources-jar/io/netty/handler/codec/socks/SocksResponseType.java  
\* /opt/cola/permits/1912366904\_1708460224.4832048/0/netty-codec-socks-4-1-107-final-sources-jar/io/netty/handler/codec/socks/SocksAddressType.java  
\* /opt/cola/permits/1912366904\_1708460224.4832048/0/netty-codec-socks-4-1-107-final-sources-jar/io/netty/handler/codec/socksx/v5/Socks5AuthMethod.java  
\* /opt/cola/permits/1912366904\_1708460224.4832048/0/netty-codec-socks-4-1-107-final-sources-jar/io/netty/handler/codec/socks/SocksCmdStatus.java  
\* /opt/cola/permits/1912366904\_1708460224.4832048/0/netty-codec-socks-4-1-107-final-sources-jar/io/netty/handler/codec/socksx/v5/Socks5AddressType.java

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\* /opt/cola/permits/1912366904\_1708460224.4832048/0/netty-codec-socks-4-1-107-final-sources-jar/io/netty/handler/codec/socksx/v5/Socks5ClientEncoder.java

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\* /opt/cola/permits/1912366904\_1708460224.4832048/0/netty-codec-socks-4-1-107-final-sources-jar/io/netty/handler/codec/socksx/v5/AbstractSocks5Message.java  
\* /opt/cola/permits/1912366904\_1708460224.4832048/0/netty-codec-socks-4-1-107-final-sources-jar/io/netty/handler/codec/socksx/v5/Socks5CommandResponseDecoder.java  
\* /opt/cola/permits/1912366904\_1708460224.4832048/0/netty-codec-socks-4-1-107-final-sources-jar/io/netty/handler/codec/socksx/package-info.java  
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\* /opt/cola/permits/1912366904\_1708460224.4832048/0/netty-codec-socks-4-1-107-final-sources-jar/io/netty/handler/codec/socksx/v5/Socks5CommandRequestDecoder.java  
\* /opt/cola/permits/1912366904\_1708460224.4832048/0/netty-codec-socks-4-1-107-final-sources-jar/io/netty/handler/codec/socksx/v5/Socks5PasswordAuthRequestDecoder.java  
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\* /opt/cola/permits/1912366904\_1708460224.4832048/0/netty-codec-socks-4-1-107-final-sources-jar/io/netty/handler/codec/socksx/v4/Socks4ClientEncoder.java  
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\* /opt/cola/permits/1912366904\_1708460224.4832048/0/netty-codec-socks-4-1-107-final-sources-jar/io/netty/handler/codec/socksx/v4/package-info.java  
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\* /opt/cola/permits/1912366904\_1708460224.4832048/0/netty-codec-socks-4-1-107-final-sources-jar/io/netty/handler/codec/socks/SocksInitResponseDecoder.java

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/opt/cola/permits/1912366904\_1708460224.4832048/0/netty-codec-socks-4-1-107-final-sources-jar/io/netty/handler/codec/socks/UnknownSocksResponse.java

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\* /opt/cola/permits/1912366904\_1708460224.4832048/0/netty-codec-socks-4-1-107-final-sources-jar/io/netty/handler/codec/socks/SocksCmdResponse.java

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\* /opt/cola/permits/1912366904\_1708460224.4832048/0/netty-codec-socks-4-1-107-final-sources-jar/io/netty/handler/codec/socks/SocksAuthResponse.java

\*

/opt/cola/permits/1912366904\_1708460224.4832048/0/netty-codec-socks-4-1-107-final-sources-jar/io/netty/handler/codec/socks/SocksInitResponse.java

\* /opt/cola/permits/1912366904\_1708460224.4832048/0/netty-codec-socks-4-1-107-final-sources-jar/io/netty/handler/codec/socksx/v5/DefaultSocks5InitialRequest.java

\* /opt/cola/permits/1912366904\_1708460224.4832048/0/netty-codec-socks-4-1-107-final-sources-jar/io/netty/handler/codec/socksx/v5/Socks5PasswordAuthResponse.java

\* /opt/cola/permits/1912366904\_1708460224.4832048/0/netty-codec-socks-4-1-107-final-sources-jar/io/netty/handler/codec/socks/SocksCommonUtils.java

\* /opt/cola/permits/1912366904\_1708460224.4832048/0/netty-codec-socks-4-1-107-final-sources-jar/io/netty/handler/codec/socks/SocksMessage.java

\* /opt/cola/permits/1912366904\_1708460224.4832048/0/netty-codec-socks-4-1-107-final-sources-jar/io/netty/handler/codec/socks/SocksCmdRequest.java

\*

/opt/cola/permits/1912366904\_1708460224.4832048/0/netty-codec-socks-4-1-107-final-sources-jar/io/netty/handler/codec/socksx/v4/Socks4CommandType.java

\* /opt/cola/permits/1912366904\_1708460224.4832048/0/netty-codec-socks-4-1-107-final-sources-jar/io/netty/handler/codec/socksx/v4/Socks4CommandStatus.java

\* /opt/cola/permits/1912366904\_1708460224.4832048/0/netty-codec-socks-4-1-107-final-sources-jar/io/netty/handler/codec/socks/UnknownSocksRequest.java

\* /opt/cola/permits/1912366904\_1708460224.4832048/0/netty-codec-socks-4-1-107-final-sources-jar/io/netty/handler/codec/socks/SocksAuthRequestDecoder.java

\* /opt/cola/permits/1912366904\_1708460224.4832048/0/netty-codec-socks-4-1-107-final-sources-jar/io/netty/handler/codec/socks/SocksResponse.java

\* /opt/cola/permits/1912366904\_1708460224.4832048/0/netty-codec-socks-4-1-107-final-sources-jar/io/netty/handler/codec/socks/SocksAuthResponseDecoder.java

```

* /opt/cola/permits/1912366904_1708460224.4832048/0/netty-codec-socks-4-1-107-final-sources-
jar/io/netty/handler/codec/socks/SocksCmdResponseDecoder.java
*
/opt/cola/permits/1912366904_1708460224.4832048/0/netty-codec-socks-4-1-107-final-sources-
jar/io/netty/handler/codec/socksx/v4/Socks4ClientDecoder.java
* /opt/cola/permits/1912366904_1708460224.4832048/0/netty-codec-socks-4-1-107-final-sources-
jar/io/netty/handler/codec/socks/SocksInitRequest.java
* /opt/cola/permits/1912366904_1708460224.4832048/0/netty-codec-socks-4-1-107-final-sources-
jar/io/netty/handler/codec/socksx/v4/DefaultSocks4CommandResponse.java
* /opt/cola/permits/1912366904_1708460224.4832048/0/netty-codec-socks-4-1-107-final-sources-
jar/io/netty/handler/codec/socksx/v5/Socks5CommandResponse.java
* /opt/cola/permits/1912366904_1708460224.4832048/0/netty-codec-socks-4-1-107-final-sources-
jar/io/netty/handler/codec/socksx/SocksMessage.java
* /opt/cola/permits/1912366904_1708460224.4832048/0/netty-codec-socks-4-1-107-final-sources-
jar/io/netty/handler/codec/socksx/v4/Socks4CommandResponse.java
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jar/io/netty/handler/codec/socksx/v5/Socks5InitialRequest.java
* /opt/cola/permits/1912366904_1708460224.4832048/0/netty-codec-socks-4-1-107-final-sources-
jar/io/netty/handler/codec/socksx/v5/DefaultSocks5CommandResponse.java
* /opt/cola/permits/1912366904_1708460224.4832048/0/netty-codec-socks-4-1-107-final-sources-
jar/io/netty/handler/codec/socksx/v4/Socks4CommandRequest.java
* /opt/cola/permits/1912366904_1708460224.4832048/0/netty-codec-socks-4-1-107-final-sources-
jar/io/netty/handler/codec/socksx/v5/Socks5InitialResponse.java
* /opt/cola/permits/1912366904_1708460224.4832048/0/netty-codec-socks-4-1-107-final-sources-
jar/io/netty/handler/codec/socksx/v5/DefaultSocks5CommandRequest.java
* /opt/cola/permits/1912366904_1708460224.4832048/0/netty-codec-socks-4-1-107-final-sources-
jar/io/netty/handler/codec/socksx/v5/package-info.java
* /opt/cola/permits/1912366904_1708460224.4832048/0/netty-codec-socks-4-1-107-final-sources-
jar/io/netty/handler/codec/socks/SocksRequest.java
*
/opt/cola/permits/1912366904_1708460224.4832048/0/netty-codec-socks-4-1-107-final-sources-
jar/io/netty/handler/codec/socks/SocksCmdRequestDecoder.java
* /opt/cola/permits/1912366904_1708460224.4832048/0/netty-codec-socks-4-1-107-final-sources-
jar/io/netty/handler/codec/socks/SocksInitRequestDecoder.java
* /opt/cola/permits/1912366904_1708460224.4832048/0/netty-codec-socks-4-1-107-final-sources-
jar/io/netty/handler/codec/socks/SocksMessageEncoder.java
* /opt/cola/permits/1912366904_1708460224.4832048/0/netty-codec-socks-4-1-107-final-sources-
jar/io/netty/handler/codec/socksx/v4/DefaultSocks4CommandRequest.java
* /opt/cola/permits/1912366904_1708460224.4832048/0/netty-codec-socks-4-1-107-final-sources-
jar/io/netty/handler/codec/socks/SocksAuthRequest.java
* /opt/cola/permits/1912366904_1708460224.4832048/0/netty-codec-socks-4-1-107-final-sources-
jar/io/netty/handler/codec/socks/package-info.java
*
/opt/cola/permits/1912366904_1708460224.4832048/0/netty-codec-socks-4-1-107-final-sources-
jar/io/netty/handler/codec/socksx/v5/DefaultSocks5PasswordAuthRequest.java

```

# 1.315 netty-transport-classes-epoll

## 4.1.107.Final

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```
* /opt/cola/permits/1912367031_1708460231.6747782/0/netty-transport-classes-epoll-4-1-107-final-sources-
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* /opt/cola/permits/1912367031_1708460231.6747782/0/netty-transport-classes-epoll-4-1-107-final-sources-
jar/io/netty/channel/epoll/NativeStaticallyReferencedJniMethods.java
```

```
* /opt/cola/permits/1912367031_1708460231.6747782/0/netty-transport-classes-epoll-4-1-107-final-sources-  
jar/io/netty/channel/epoll/LinuxSocket.java
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jar/META-INF/native-image/io.netty/netty-transport-classes-epoll/native-image.properties
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jar/io/netty/channel/epoll/VSocketAddress.java
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```
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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.

*/
```

Found in path(s):

```
* /opt/cola/permits/1912367031_1708460231.6747782/0/netty-transport-classes-epoll-4-1-107-final-sources-
jar/io/netty/channel/epoll/EpollServerSocketChannelConfig.java
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jar/io/netty/channel/epoll/EpollServerDomainSocketChannel.java
* /opt/cola/permits/1912367031_1708460231.6747782/0/netty-transport-classes-epoll-4-1-107-final-sources-
jar/io/netty/channel/epoll/AbstractEpollServerChannel.java
*
/opt/cola/permits/1912367031_1708460231.6747782/0/netty-transport-classes-epoll-4-1-107-final-sources-
jar/io/netty/channel/epoll/EpollMode.java
* /opt/cola/permits/1912367031_1708460231.6747782/0/netty-transport-classes-epoll-4-1-107-final-sources-
jar/io/netty/channel/epoll/EpollRecvByteAllocatorStreamingHandle.java
* /opt/cola/permits/1912367031_1708460231.6747782/0/netty-transport-classes-epoll-4-1-107-final-sources-
jar/io/netty/channel/epoll/EpollRecvByteAllocatorHandle.java
* /opt/cola/permits/1912367031_1708460231.6747782/0/netty-transport-classes-epoll-4-1-107-final-sources-
jar/io/netty/channel/epoll/EpollServerChannelConfig.java
* /opt/cola/permits/1912367031_1708460231.6747782/0/netty-transport-classes-epoll-4-1-107-final-sources-
jar/io/netty/channel/epoll/AbstractEpollStreamChannel.java
* /opt/cola/permits/1912367031_1708460231.6747782/0/netty-transport-classes-epoll-4-1-107-final-sources-
jar/io/netty/channel/epoll/EpollEventArray.java
```

\*  
/opt/cola/permits/1912367031\_1708460231.6747782/0/netty-transport-classes-epoll-4-1-107-final-sources-jar/io/netty/channel/epoll/EpollDomainSocketChannel.java  
\* /opt/cola/permits/1912367031\_1708460231.6747782/0/netty-transport-classes-epoll-4-1-107-final-sources-jar/io/netty/channel/epoll/EpollChannelConfig.java  
\* /opt/cola/permits/1912367031\_1708460231.6747782/0/netty-transport-classes-epoll-4-1-107-final-sources-jar/io/netty/channel/epoll/EpollDomainSocketChannelConfig.java  
\* /opt/cola/permits/1912367031\_1708460231.6747782/0/netty-transport-classes-epoll-4-1-107-final-sources-jar/io/netty/channel/epoll/TcpMd5Util.java  
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\* /opt/cola/permits/1912367031\_1708460231.6747782/0/netty-transport-classes-epoll-4-1-107-final-sources-jar/io/netty/channel/epoll/SegmentedDatagramPacket.java

\*

/opt/cola/permits/1912367031\_1708460231.6747782/0/netty-transport-classes-epoll-4-1-107-final-sources-jar/io/netty/channel/epoll/EpollDomainDatagramChannel.java

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jar/io/netty/channel/epoll/EpollDatagramChannel.java
* /opt/cola/permits/1912367031_1708460231.6747782/0/netty-transport-classes-epoll-4-1-107-final-sources-
jar/io/netty/channel/epoll/AbstractEpollChannel.java
*
/opt/cola/permits/1912367031_1708460231.6747782/0/netty-transport-classes-epoll-4-1-107-final-sources-
jar/io/netty/channel/epoll/EpollEventLoopGroup.java
* /opt/cola/permits/1912367031_1708460231.6747782/0/netty-transport-classes-epoll-4-1-107-final-sources-
jar/io/netty/channel/epoll/EpollSocketChannel.java
* /opt/cola/permits/1912367031_1708460231.6747782/0/netty-transport-classes-epoll-4-1-107-final-sources-
jar/io/netty/channel/epoll/package-info.java
* /opt/cola/permits/1912367031_1708460231.6747782/0/netty-transport-classes-epoll-4-1-107-final-sources-
jar/io/netty/channel/epoll/NativeDatagramPacketArray.java
* /opt/cola/permits/1912367031_1708460231.6747782/0/netty-transport-classes-epoll-4-1-107-final-sources-
jar/io/netty/channel/epoll/EpollServerSocketChannel.java
* /opt/cola/permits/1912367031_1708460231.6747782/0/netty-transport-classes-epoll-4-1-107-final-sources-
jar/io/netty/channel/epoll/EpollEventLoop.java
* /opt/cola/permits/1912367031_1708460231.6747782/0/netty-transport-classes-epoll-4-1-107-final-sources-
jar/io/netty/channel/epoll/EpollTcpInfo.java
*
/opt/cola/permits/1912367031_1708460231.6747782/0/netty-transport-classes-epoll-4-1-107-final-sources-
jar/io/netty/channel/epoll/EpollChannelOption.java
* /opt/cola/permits/1912367031_1708460231.6747782/0/netty-transport-classes-epoll-4-1-107-final-sources-
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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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\* /opt/cola/permits/1912367031\_1708460231.6747782/0/netty-transport-classes-epoll-4-1-107-final-sources-jar/io/netty/channel/epoll/EpollSocketChannelConfig.java

# 1.316 netty-codec-xml 4.1.107.Final

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- \* /opt/cola/permits/1912366848\_1708460256.4799318/0/netty-codec-xml-4-1-107-final-sources-jar/io/netty/handler/codec/xml/XmlElement.java
- \*
- /opt/cola/permits/1912366848\_1708460256.4799318/0/netty-codec-xml-4-1-107-final-sources-jar/io/netty/handler/codec/xml/package-info.java
- \* /opt/cola/permits/1912366848\_1708460256.4799318/0/netty-codec-xml-4-1-107-final-sources-jar/io/netty/handler/codec/xml/XmlSpace.java
- \* /opt/cola/permits/1912366848\_1708460256.4799318/0/netty-codec-xml-4-1-107-final-sources-jar/io/netty/handler/codec/xml/XmlAttribute.java
- \* /opt/cola/permits/1912366848\_1708460256.4799318/0/netty-codec-xml-4-1-107-final-sources-jar/io/netty/handler/codec/xml/XmlCdata.java
- \* /opt/cola/permits/1912366848\_1708460256.4799318/0/netty-codec-xml-4-1-107-final-sources-jar/io/netty/handler/codec/xml/XmlEntityReference.java
- \* /opt/cola/permits/1912366848\_1708460256.4799318/0/netty-codec-xml-4-1-107-final-sources-jar/io/netty/handler/codec/xml/XmlDocumentEnd.java
- \* /opt/cola/permits/1912366848\_1708460256.4799318/0/netty-codec-xml-4-1-107-final-sources-jar/io/netty/handler/codec/xml/XmlNamespace.java
- \* /opt/cola/permits/1912366848\_1708460256.4799318/0/netty-codec-xml-4-1-107-final-sources-jar/io/netty/handler/codec/xml/XmlComment.java
- \*
- /opt/cola/permits/1912366848\_1708460256.4799318/0/netty-codec-xml-4-1-107-final-sources-jar/io/netty/handler/codec/xml/XmlContent.java
- \* /opt/cola/permits/1912366848\_1708460256.4799318/0/netty-codec-xml-4-1-107-final-sources-jar/io/netty/handler/codec/xml/XmlDocumentStart.java
- \* /opt/cola/permits/1912366848\_1708460256.4799318/0/netty-codec-xml-4-1-107-final-sources-jar/io/netty/handler/codec/xml/XmlCharacters.java
- \* /opt/cola/permits/1912366848\_1708460256.4799318/0/netty-codec-xml-4-1-107-final-sources-jar/io/netty/handler/codec/xml/XmlElementStart.java
- \* /opt/cola/permits/1912366848\_1708460256.4799318/0/netty-codec-xml-4-1-107-final-sources-jar/io/netty/handler/codec/xml/XmlDTD.java
- \* /opt/cola/permits/1912366848\_1708460256.4799318/0/netty-codec-xml-4-1-107-final-sources-jar/io/netty/handler/codec/xml/XmlProcessingInstruction.java
- \* /opt/cola/permits/1912366848\_1708460256.4799318/0/netty-codec-xml-4-1-107-final-sources-jar/io/netty/handler/codec/xml/XmlElementEnd.java

## 1.317 netty-codec-haproxy 4.1.107.Final

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* /opt/cola/permits/1912366911_1708460256.4696126/0/netty-codec-haproxy-4-1-107-final-sources-jar/io/netty/handler/codec/haproxy/HAProxyMessageEncoder.java
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```
* /opt/cola/permits/1912366911_1708460256.4696126/0/netty-codec-haproxy-4-1-107-final-sources-jar/META-INF/maven/io.netty/netty-codec-haproxy/pom.xml
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\* /opt/cola/permits/1912366911\_1708460256.4696126/0/netty-codec-haproxy-4-1-107-final-sources-jar/io/netty/handler/codec/haproxy/HAProxySSLTLV.java  
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\* /opt/cola/permits/1912366911\_1708460256.4696126/0/netty-codec-haproxy-4-1-107-final-sources-jar/io/netty/handler/codec/haproxy/HAProxyMessageDecoder.java  
\*  
\* /opt/cola/permits/1912366911\_1708460256.4696126/0/netty-codec-haproxy-4-1-107-final-sources-jar/io/netty/handler/codec/haproxy/HAProxyCommand.java  
\* /opt/cola/permits/1912366911\_1708460256.4696126/0/netty-codec-haproxy-4-1-107-final-sources-jar/io/netty/handler/codec/haproxy/package-info.java  
\* /opt/cola/permits/1912366911\_1708460256.4696126/0/netty-codec-haproxy-4-1-107-final-sources-jar/io/netty/handler/codec/haproxy/HAProxyConstants.java



```
* /opt/cola/permits/1912366911_1708460256.4696126/0/netty-codec-haproxy-4-1-107-final-sources-
jar/io/netty/handler/codec/haproxy/HAProxyProtocolVersion.java
* /opt/cola/permits/1912366911_1708460256.4696126/0/netty-codec-haproxy-4-1-107-final-sources-
jar/io/netty/handler/codec/haproxy/HAProxyMessage.java
* /opt/cola/permits/1912366911_1708460256.4696126/0/netty-codec-haproxy-4-1-107-final-sources-
jar/io/netty/handler/codec/haproxy/HAProxyProxiedProtocol.java
```

## 1.318 netty-resolver-dns-classes-macos

### 4.1.107.Final

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* /opt/cola/permits/1912367059_1708460229.4040077/0/netty-resolver-dns-classes-macos-4-1-107-final-sources-
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\* /opt/cola/permits/1912367059\_1708460229.4040077/0/netty-resolver-dns-classes-macos-4-1-107-final-sources-jar/io/netty/resolver/dns/macos/MacOSDnsServerAddressStreamProvider.java  
\*  
/opt/cola/permits/1912367059\_1708460229.4040077/0/netty-resolver-dns-classes-macos-4-1-107-final-sources-jar/io/netty/resolver/dns/macos/DnsResolver.java

# 1.319 netty-codec-memcache 4.1.107.Final

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\* /opt/cola/permits/1912367038\_1708460279.6501567/0/netty-codec-memcache-4-1-107-final-sources-jar/io/netty/handler/codec/memcache/DefaultLastMemcacheContent.java

\*

/opt/cola/permits/1912367038\_1708460279.6501567/0/netty-codec-memcache-4-1-107-final-sources-jar/io/netty/handler/codec/memcache/AbstractMemcacheObjectDecoder.java

\* /opt/cola/permits/1912367038\_1708460279.6501567/0/netty-codec-memcache-4-1-107-final-sources-jar/io/netty/handler/codec/memcache/binary/FullBinaryMemcacheRequest.java

\* /opt/cola/permits/1912367038\_1708460279.6501567/0/netty-codec-memcache-4-1-107-final-sources-jar/io/netty/handler/codec/memcache/AbstractMemcacheObjectAggregator.java

\* /opt/cola/permits/1912367038\_1708460279.6501567/0/netty-codec-memcache-4-1-107-final-sources-jar/io/netty/handler/codec/memcache/binary/DefaultBinaryMemcacheRequest.java

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\*

/opt/cola/permits/1912367038\_1708460279.6501567/0/netty-codec-memcache-4-1-107-final-sources-jar/io/netty/handler/codec/memcache/MemcacheContent.java

\* /opt/cola/permits/1912367038\_1708460279.6501567/0/netty-codec-memcache-4-1-107-final-sources-jar/io/netty/handler/codec/memcache/DefaultMemcacheContent.java

\* /opt/cola/permits/1912367038\_1708460279.6501567/0/netty-codec-memcache-4-1-107-final-sources-jar/io/netty/handler/codec/memcache/MemcacheObject.java

\* /opt/cola/permits/1912367038\_1708460279.6501567/0/netty-codec-memcache-4-1-107-final-sources-jar/io/netty/handler/codec/memcache/LastMemcacheContent.java

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\* /opt/cola/permits/1912367038\_1708460279.6501567/0/netty-codec-memcache-4-1-107-final-sources-jar/io/netty/handler/codec/memcache/FullMemcacheMessage.java

\*

/opt/cola/permits/1912367038\_1708460279.6501567/0/netty-codec-memcache-4-1-107-final-sources-jar/io/netty/handler/codec/memcache/binary/BinaryMemcacheResponseStatus.java

\* /opt/cola/permits/1912367038\_1708460279.6501567/0/netty-codec-memcache-4-1-107-final-sources-jar/io/netty/handler/codec/memcache/binary/BinaryMemcacheResponse.java

\* /opt/cola/permits/1912367038\_1708460279.6501567/0/netty-codec-memcache-4-1-107-final-sources-jar/io/netty/handler/codec/memcache/package-info.java

\* /opt/cola/permits/1912367038\_1708460279.6501567/0/netty-codec-memcache-4-1-107-final-sources-jar/io/netty/handler/codec/memcache/AbstractMemcacheObject.java

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jar/io/netty/handler/codec/memcache/binary/BinaryMemcacheRequest.java
* /opt/cola/permits/1912367038_1708460279.6501567/0/netty-codec-memcache-4-1-107-final-sources-
jar/io/netty/handler/codec/memcache/binary/BinaryMemcacheServerCodec.java
*
/opt/cola/permits/1912367038_1708460279.6501567/0/netty-codec-memcache-4-1-107-final-sources-
jar/io/netty/handler/codec/memcache/binary/AbstractBinaryMemcacheDecoder.java
* /opt/cola/permits/1912367038_1708460279.6501567/0/netty-codec-memcache-4-1-107-final-sources-
jar/io/netty/handler/codec/memcache/binary/BinaryMemcacheOpcodes.java
* /opt/cola/permits/1912367038_1708460279.6501567/0/netty-codec-memcache-4-1-107-final-sources-
jar/io/netty/handler/codec/memcache/binary/BinaryMemcacheObjectAggregator.java
* /opt/cola/permits/1912367038_1708460279.6501567/0/netty-codec-memcache-4-1-107-final-sources-
jar/io/netty/handler/codec/memcache/binary/AbstractBinaryMemcacheMessage.java
* /opt/cola/permits/1912367038_1708460279.6501567/0/netty-codec-memcache-4-1-107-final-sources-
jar/io/netty/handler/codec/memcache/binary/FullBinaryMemcacheResponse.java
* /opt/cola/permits/1912367038_1708460279.6501567/0/netty-codec-memcache-4-1-107-final-sources-
jar/io/netty/handler/codec/memcache/binary/AbstractBinaryMemcacheEncoder.java
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/opt/cola/permits/1912367038_1708460279.6501567/0/netty-codec-memcache-4-1-107-final-sources-
jar/io/netty/handler/codec/memcache/binary/BinaryMemcacheMessage.java
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jar/io/netty/handler/codec/memcache/binary/BinaryMemcacheClientCodec.java
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## 1.320 netty-transport-udt 4.1.107.Final

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\* /opt/cola/permits/1912366918\_1708460271.7668064/0/netty-transport-udt-4-1-107-final-sources-jar/io/netty/channel/udt/nio/package-info.java  
\*

/opt/cola/permits/1912366918\_1708460271.7668064/0/netty-transport-udt-4-1-107-final-sources-jar/io/netty/channel/udt/UdtMessage.java  
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\* /opt/cola/permits/1912366918\_1708460271.7668064/0/netty-transport-udt-4-1-107-final-sources-jar/io/netty/channel/udt/package-info.java

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/opt/cola/permits/1912366918\_1708460271.7668064/0/netty-transport-udt-4-1-107-final-sources-jar/io/netty/channel/udt/nio/NioUdtByteRendezvousChannel.java

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jar/io/netty/channel/udt/nio/NioUdtAcceptorChannel.java
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jar/io/netty/channel/udt/nio/NioUdtMessageRendezvousChannel.java
* /opt/cola/permits/1912366918_1708460271.7668064/0/netty-transport-udt-4-1-107-final-sources-
jar/io/netty/channel/udt/nio/NioUdtMessageConnectorChannel.java
* /opt/cola/permits/1912366918_1708460271.7668064/0/netty-transport-udt-4-1-107-final-sources-
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* /opt/cola/permits/1912366918_1708460271.7668064/0/netty-transport-udt-4-1-107-final-sources-
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Found in path(s):

\* /opt/cola/permits/1912366918\_1708460271.7668064/0/netty-transport-udt-4-1-107-final-sources-jar/io/netty/channel/udt/UdtServerChannelConfig.java

\* /opt/cola/permits/1912366918\_1708460271.7668064/0/netty-transport-udt-4-1-107-final-sources-jar/io/netty/channel/udt/UdtChannelOption.java

\*

/opt/cola/permits/1912366918\_1708460271.7668064/0/netty-transport-udt-4-1-107-final-sources-jar/io/netty/channel/udt/DefaultUdtServerChannelConfig.java

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\* /opt/cola/permits/1912366918\_1708460271.7668064/0/netty-transport-udt-4-1-107-final-sources-jar/io/netty/channel/udt/UdtServerChannel.java

## 1.321 netty-transport-rxtx 4.1.107.Final

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Found in path(s):

\* /opt/cola/permits/1912367128\_1708460703.8758316/0/netty-transport-rxtx-4-1-107-final-sources-jar/META-INF/maven/io.netty/netty-transport-rxtx/pom.xml

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Found in path(s):

\* /opt/cola/permits/1912367128\_1708460703.8758316/0/netty-transport-rxtx-4-1-107-final-sources-jar/io/netty/channel/rxtx/RxtxDeviceAddress.java

\* /opt/cola/permits/1912367128\_1708460703.8758316/0/netty-transport-rxtx-4-1-107-final-sources-jar/io/netty/channel/rxtx/RxtxChannelOption.java

\*

/opt/cola/permits/1912367128\_1708460703.8758316/0/netty-transport-rxtx-4-1-107-final-sources-jar/io/netty/channel/rxtx/RxtxChannel.java

\* /opt/cola/permits/1912367128\_1708460703.8758316/0/netty-transport-rxtx-4-1-107-final-sources-jar/io/netty/channel/rxtx/DefaultRxtxChannelConfig.java

\* /opt/cola/permits/1912367128\_1708460703.8758316/0/netty-transport-rxtx-4-1-107-final-sources-jar/io/netty/channel/rxtx/package-info.java

\* /opt/cola/permits/1912367128\_1708460703.8758316/0/netty-transport-rxtx-4-1-107-final-sources-jar/io/netty/channel/rxtx/RxtxChannelConfig.java

## 1.322 netty-codec 4.1.107.Final



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```

Found in path(s):

```
* /opt/cola/permits/1912366828_1708460250.5215762/0/netty-codec-4-1-107-final-sources-
jar/io/netty/handler/codec/string/LineSeparator.java
* /opt/cola/permits/1912366828_1708460250.5215762/0/netty-codec-4-1-107-final-sources-
jar/io/netty/handler/codec/DatagramPacketDecoder.java
*
 /opt/cola/permits/1912366828_1708460250.5215762/0/netty-codec-4-1-107-final-sources-
jar/io/netty/handler/codec/CodecOutputList.java
* /opt/cola/permits/1912366828_1708460250.5215762/0/netty-codec-4-1-107-final-sources-
jar/io/netty/handler/codec/compression/CompressionUtil.java
* /opt/cola/permits/1912366828_1708460250.5215762/0/netty-codec-4-1-107-final-sources-
jar/io/netty/handler/codec/compression/ByteBufChecksum.java
* /opt/cola/permits/1912366828_1708460250.5215762/0/netty-codec-4-1-107-final-sources-
jar/io/netty/handler/codec/string/LineEncoder.java
* /opt/cola/permits/1912366828_1708460250.5215762/0/netty-codec-4-1-107-final-sources-
jar/io/netty/handler/codec/DateFormat.java
* /opt/cola/permits/1912366828_1708460250.5215762/0/netty-codec-4-1-107-final-sources-
jar/io/netty/handler/codec/DatagramPacketEncoder.java
```

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\* /opt/cola/permits/1912366828\_1708460250.5215762/0/netty-codec-4-1-107-final-sources-  
jar/io/netty/handler/codec/compression/EncoderUtil.java  
\* /opt/cola/permits/1912366828\_1708460250.5215762/0/netty-codec-4-1-107-final-sources-  
jar/io/netty/handler/codec/compression/SnappyOptions.java

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\* /opt/cola/permits/1912366828\_1708460250.5215762/0/netty-codec-4-1-107-final-sources-  
jar/io/netty/handler/codec/UnsupportedValueConverter.java  
\* /opt/cola/permits/1912366828\_1708460250.5215762/0/netty-codec-4-1-107-final-sources-  
jar/io/netty/handler/codec/protobuf/ProtobufVarint32LengthFieldPrepender.java

\*

/opt/cola/permits/1912366828\_1708460250.5215762/0/netty-codec-4-1-107-final-sources-  
jar/io/netty/handler/codec/protobuf/ProtobufDecoderNano.java

\* /opt/cola/permits/1912366828\_1708460250.5215762/0/netty-codec-4-1-107-final-sources-  
jar/io/netty/handler/codec/protobuf/ProtobufEncoder.java

\* /opt/cola/permits/1912366828\_1708460250.5215762/0/netty-codec-4-1-107-final-sources-  
jar/io/netty/handler/codec/ProtocolDetectionResult.java

\* /opt/cola/permits/1912366828\_1708460250.5215762/0/netty-codec-4-1-107-final-sources-  
jar/io/netty/handler/codec/protobuf/ProtobufEncoderNano.java

\* /opt/cola/permits/1912366828\_1708460250.5215762/0/netty-codec-4-1-107-final-sources-  
jar/io/netty/handler/codec/protobuf/ProtobufVarint32FrameDecoder.java

\* /opt/cola/permits/1912366828\_1708460250.5215762/0/netty-codec-4-1-107-final-sources-  
jar/io/netty/handler/codec/ProtocolDetectionState.java

```
* /opt/cola/permits/1912366828_1708460250.5215762/0/netty-codec-4-1-107-final-sources-
jar/io/netty/handler/codec/HeadersUtils.java
```

```
*
```

```
/opt/cola/permits/1912366828_1708460250.5215762/0/netty-codec-4-1-107-final-sources-
jar/io/netty/handler/codec/protobuf/ProtobufDecoder.java
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```

```
Found in path(s):
```

```
* /opt/cola/permits/1912366828_1708460250.5215762/0/netty-codec-4-1-107-final-sources-jar/META-INF/native-
image/io.netty.netty-codec/native-image.properties
```

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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>
```

\* **2 bytes length field at offset 1 in the middle of 4 bytes header,  
strip the first header field and the length field**

\* 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 | 0x000C | 0xFE | "HELLO, WORLD" | | 0xFE | "HELLO, WORLD" |
* +-----+-----+-----+-----+ +-----+-----+
```

\* **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**

\* 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/1912366828_1708460250.5215762/0/netty-codec-4-1-107-final-sources-
jar/io/netty/handler/codec/LengthFieldBasedFrameDecoder.java
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```
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- \* /opt/cola/permits/1912366828\_1708460250.5215762/0/netty-codec-4-1-107-final-sources-jar/io/netty/handler/codec/compression/Snappy.java
- \* /opt/cola/permits/1912366828\_1708460250.5215762/0/netty-codec-4-1-107-final-sources-jar/io/netty/handler/codec/package-info.java
- \* /opt/cola/permits/1912366828\_1708460250.5215762/0/netty-codec-4-1-107-final-sources-jar/io/netty/handler/codec/MessageToMessageDecoder.java
- \*
- /opt/cola/permits/1912366828\_1708460250.5215762/0/netty-codec-4-1-107-final-sources-jar/io/netty/handler/codec/compression/ZlibUtil.java
- \* /opt/cola/permits/1912366828\_1708460250.5215762/0/netty-codec-4-1-107-final-sources-jar/io/netty/handler/codec/bytes/ByteArrayDecoder.java
- \* /opt/cola/permits/1912366828\_1708460250.5215762/0/netty-codec-4-1-107-final-sources-jar/io/netty/handler/codec/CorruptedFrameException.java
- \* /opt/cola/permits/1912366828\_1708460250.5215762/0/netty-codec-4-1-107-final-sources-jar/io/netty/handler/codec/compression/ZlibCodecFactory.java
- \* /opt/cola/permits/1912366828\_1708460250.5215762/0/netty-codec-4-1-107-final-sources-jar/io/netty/handler/codec/MessageToMessageEncoder.java
- \* /opt/cola/permits/1912366828\_1708460250.5215762/0/netty-codec-4-1-107-final-sources-jar/io/netty/handler/codec/serialization/ObjectDecoderInputStream.java
- \*
- /opt/cola/permits/1912366828\_1708460250.5215762/0/netty-codec-4-1-107-final-sources-jar/io/netty/handler/codec/string/StringEncoder.java
- \* /opt/cola/permits/1912366828\_1708460250.5215762/0/netty-codec-4-1-107-final-sources-jar/io/netty/handler/codec/serialization/ReferenceMap.java
- \* /opt/cola/permits/1912366828\_1708460250.5215762/0/netty-codec-4-1-107-final-sources-jar/io/netty/handler/codec/MessageToByteEncoder.java
- \* /opt/cola/permits/1912366828\_1708460250.5215762/0/netty-codec-4-1-107-final-sources-jar/io/netty/handler/codec/serialization/CompactObjectInputStream.java
- \* /opt/cola/permits/1912366828\_1708460250.5215762/0/netty-codec-4-1-107-final-sources-jar/io/netty/handler/codec/TooLongFrameException.java
- \* /opt/cola/permits/1912366828\_1708460250.5215762/0/netty-codec-4-1-107-final-sources-jar/io/netty/handler/codec/string/package-info.java
- \* /opt/cola/permits/1912366828\_1708460250.5215762/0/netty-codec-4-1-107-final-sources-jar/io/netty/handler/codec/DecoderException.java
- \* /opt/cola/permits/1912366828\_1708460250.5215762/0/netty-codec-4-1-107-final-sources-jar/io/netty/handler/codec/xml/package-info.java
- \*
- /opt/cola/permits/1912366828\_1708460250.5215762/0/netty-codec-4-1-107-final-sources-jar/io/netty/handler/codec/CodecException.java
- \* /opt/cola/permits/1912366828\_1708460250.5215762/0/netty-codec-4-1-107-final-sources-jar/io/netty/handler/codec/LineBasedFrameDecoder.java
- \* /opt/cola/permits/1912366828\_1708460250.5215762/0/netty-codec-4-1-107-final-sources-jar/io/netty/handler/codec/compression/ZlibEncoder.java
- \* /opt/cola/permits/1912366828\_1708460250.5215762/0/netty-codec-4-1-107-final-sources-jar/io/netty/handler/codec/marshalling/MarshallerProvider.java
- \* /opt/cola/permits/1912366828\_1708460250.5215762/0/netty-codec-4-1-107-final-sources-



```

jar/io/netty/handler/codec/serialization/ClassResolver.java
* /opt/cola/permits/1912366828_1708460250.5215762/0/netty-codec-4-1-107-final-sources-
jar/io/netty/handler/codec/ReplayingDecoder.java
* /opt/cola/permits/1912366828_1708460250.5215762/0/netty-codec-4-1-107-final-sources-
jar/io/netty/handler/codec/serialization/ClassLoaderClassResolver.java
*
/opt/cola/permits/1912366828_1708460250.5215762/0/netty-codec-4-1-107-final-sources-
jar/io/netty/handler/codec/ByteToMessageDecoder.java
* /opt/cola/permits/1912366828_1708460250.5215762/0/netty-codec-4-1-107-final-sources-
jar/io/netty/handler/codec/base64/package-info.java
* /opt/cola/permits/1912366828_1708460250.5215762/0/netty-codec-4-1-107-final-sources-
jar/io/netty/handler/codec/UnsupportedMessageTypeException.java
* /opt/cola/permits/1912366828_1708460250.5215762/0/netty-codec-4-1-107-final-sources-
jar/io/netty/handler/codec/serialization/ClassResolvers.java
* /opt/cola/permits/1912366828_1708460250.5215762/0/netty-codec-4-1-107-final-sources-
jar/io/netty/handler/codec/protobuf/package-info.java
* /opt/cola/permits/1912366828_1708460250.5215762/0/netty-codec-4-1-107-final-sources-
jar/io/netty/handler/codec/string/StringDecoder.java
* /opt/cola/permits/1912366828_1708460250.5215762/0/netty-codec-4-1-107-final-sources-
jar/io/netty/handler/codec/serialization/ObjectDecoder.java
*
/opt/cola/permits/1912366828_1708460250.5215762/0/netty-codec-4-1-107-final-sources-
jar/io/netty/handler/codec/serialization/SoftReferenceMap.java
* /opt/cola/permits/1912366828_1708460250.5215762/0/netty-codec-4-1-107-final-sources-
jar/io/netty/handler/codec/compression/ZlibWrapper.java
* /opt/cola/permits/1912366828_1708460250.5215762/0/netty-codec-4-1-107-final-sources-
jar/io/netty/handler/codec/DelimiterBasedFrameDecoder.java
* /opt/cola/permits/1912366828_1708460250.5215762/0/netty-codec-4-1-107-final-sources-
jar/io/netty/handler/codec/compression/package-info.java
* /opt/cola/permits/1912366828_1708460250.5215762/0/netty-codec-4-1-107-final-sources-
jar/io/netty/handler/codec/ByteToMessageCodec.java
* /opt/cola/permits/1912366828_1708460250.5215762/0/netty-codec-4-1-107-final-sources-
jar/io/netty/handler/codec/Delimiters.java
* /opt/cola/permits/1912366828_1708460250.5215762/0/netty-codec-4-1-107-final-sources-
jar/io/netty/handler/codec/serialization/CompactObjectOutputStream.java
*
/opt/cola/permits/1912366828_1708460250.5215762/0/netty-codec-4-1-107-final-sources-
jar/io/netty/handler/codec/marshalling/ContextBoundUnmarshallerProvider.java
* /opt/cola/permits/1912366828_1708460250.5215762/0/netty-codec-4-1-107-final-sources-
jar/io/netty/handler/codec/compression/JdkZlibEncoder.java
* /opt/cola/permits/1912366828_1708460250.5215762/0/netty-codec-4-1-107-final-sources-
jar/io/netty/handler/codec/ReplayingDecoderByteBuf.java
* /opt/cola/permits/1912366828_1708460250.5215762/0/netty-codec-4-1-107-final-sources-
jar/io/netty/handler/codec/compression/SnappyFrameEncoder.java
* /opt/cola/permits/1912366828_1708460250.5215762/0/netty-codec-4-1-107-final-sources-
jar/io/netty/handler/codec/marshalling/UnmarshallerProvider.java
* /opt/cola/permits/1912366828_1708460250.5215762/0/netty-codec-4-1-107-final-sources-
jar/io/netty/handler/codec/marshalling/ChannelBufferByteInput.java

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\*  
/opt/cola/permits/1912366828\_1708460250.5215762/0/netty-codec-4-1-107-final-sources-jar/io/netty/handler/codec/marshalling/ThreadLocalUnmarshallerProvider.java  
\* /opt/cola/permits/1912366828\_1708460250.5215762/0/netty-codec-4-1-107-final-sources-jar/io/netty/handler/codec/serialization/CachingClassResolver.java  
\* /opt/cola/permits/1912366828\_1708460250.5215762/0/netty-codec-4-1-107-final-sources-jar/io/netty/handler/codec/MessageToMessageCodec.java  
\* /opt/cola/permits/1912366828\_1708460250.5215762/0/netty-codec-4-1-107-final-sources-jar/io/netty/handler/codec/serialization/CompatibleObjectEncoder.java  
\* /opt/cola/permits/1912366828\_1708460250.5215762/0/netty-codec-4-1-107-final-sources-jar/io/netty/handler/codec/marshalling/MarshallingDecoder.java  
\* /opt/cola/permits/1912366828\_1708460250.5215762/0/netty-codec-4-1-107-final-sources-jar/io/netty/handler/codec/marshalling/ThreadLocalMarshallerProvider.java  
\* /opt/cola/permits/1912366828\_1708460250.5215762/0/netty-codec-4-1-107-final-sources-jar/io/netty/handler/codec/marshalling/DefaultUnmarshallerProvider.java  
\*  
/opt/cola/permits/1912366828\_1708460250.5215762/0/netty-codec-4-1-107-final-sources-jar/io/netty/handler/codec/marshalling/ChannelBufferByteOutput.java  
\* /opt/cola/permits/1912366828\_1708460250.5215762/0/netty-codec-4-1-107-final-sources-jar/io/netty/handler/codec/DecoderResult.java  
\* /opt/cola/permits/1912366828\_1708460250.5215762/0/netty-codec-4-1-107-final-sources-jar/io/netty/handler/codec/marshalling/LimitingByteInput.java  
\* /opt/cola/permits/1912366828\_1708460250.5215762/0/netty-codec-4-1-107-final-sources-jar/io/netty/handler/codec/EncoderException.java  
\* /opt/cola/permits/1912366828\_1708460250.5215762/0/netty-codec-4-1-107-final-sources-jar/io/netty/handler/codec/LengthFieldPrepender.java  
\* /opt/cola/permits/1912366828\_1708460250.5215762/0/netty-codec-4-1-107-final-sources-jar/io/netty/handler/codec/compression/CompressionException.java  
\* /opt/cola/permits/1912366828\_1708460250.5215762/0/netty-codec-4-1-107-final-sources-jar/io/netty/handler/codec/MessageAggregator.java  
\*  
/opt/cola/permits/1912366828\_1708460250.5215762/0/netty-codec-4-1-107-final-sources-jar/io/netty/handler/codec/marshalling/DefaultMarshallerProvider.java  
\* /opt/cola/permits/1912366828\_1708460250.5215762/0/netty-codec-4-1-107-final-sources-jar/io/netty/handler/codec/marshalling/package-info.java  
\* /opt/cola/permits/1912366828\_1708460250.5215762/0/netty-codec-4-1-107-final-sources-jar/io/netty/handler/codec/serialization/ObjectEncoder.java  
\* /opt/cola/permits/1912366828\_1708460250.5215762/0/netty-codec-4-1-107-final-sources-jar/io/netty/handler/codec/compression/ZlibDecoder.java  
\* /opt/cola/permits/1912366828\_1708460250.5215762/0/netty-codec-4-1-107-final-sources-jar/io/netty/handler/codec/marshalling/CompatibleMarshallingDecoder.java  
\* /opt/cola/permits/1912366828\_1708460250.5215762/0/netty-codec-4-1-107-final-sources-jar/io/netty/handler/codec/compression/SnappyFrameDecoder.java  
\*  
/opt/cola/permits/1912366828\_1708460250.5215762/0/netty-codec-4-1-107-final-sources-jar/io/netty/handler/codec/FixedLengthFrameDecoder.java  
\* /opt/cola/permits/1912366828\_1708460250.5215762/0/netty-codec-4-1-107-final-sources-jar/io/netty/handler/codec/bytes/ByteArrayEncoder.java

\* /opt/cola/permits/1912366828\_1708460250.5215762/0/netty-codec-4-1-107-final-sources-jar/io/netty/handler/codec/serialization/ObjectEncoderOutputStream.java  
\* /opt/cola/permits/1912366828\_1708460250.5215762/0/netty-codec-4-1-107-final-sources-jar/io/netty/handler/codec/base64/Base64Encoder.java  
\* /opt/cola/permits/1912366828\_1708460250.5215762/0/netty-codec-4-1-107-final-sources-jar/io/netty/handler/codec/bytes/package-info.java  
\* /opt/cola/permits/1912366828\_1708460250.5215762/0/netty-codec-4-1-107-final-sources-jar/io/netty/handler/codec/compression/DecompressionException.java  
\* /opt/cola/permits/1912366828\_1708460250.5215762/0/netty-codec-4-1-107-final-sources-jar/io/netty/handler/codec/base64/Base64Decoder.java  
\*  
/opt/cola/permits/1912366828\_1708460250.5215762/0/netty-codec-4-1-107-final-sources-jar/io/netty/handler/codec/PrematureChannelClosureException.java  
\* /opt/cola/permits/1912366828\_1708460250.5215762/0/netty-codec-4-1-107-final-sources-jar/io/netty/handler/codec/compression/JZlibEncoder.java  
\* /opt/cola/permits/1912366828\_1708460250.5215762/0/netty-codec-4-1-107-final-sources-jar/io/netty/handler/codec/compression/JZlibDecoder.java  
\* /opt/cola/permits/1912366828\_1708460250.5215762/0/netty-codec-4-1-107-final-sources-jar/io/netty/handler/codec/marshalling/MarshallingEncoder.java  
\* /opt/cola/permits/1912366828\_1708460250.5215762/0/netty-codec-4-1-107-final-sources-jar/io/netty/handler/codec/serialization/package-info.java  
\* /opt/cola/permits/1912366828\_1708460250.5215762/0/netty-codec-4-1-107-final-sources-jar/io/netty/handler/codec/serialization/WeakReferenceMap.java  
\* /opt/cola/permits/1912366828\_1708460250.5215762/0/netty-codec-4-1-107-final-sources-jar/io/netty/handler/codec/marshalling/CompatibleMarshallingEncoder.java  
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\* /opt/cola/permits/1912366828\_1708460250.5215762/0/netty-codec-4-1-107-final-sources-jar/io/netty/handler/codec/compression/Lz4XXHash32.java

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```
* /opt/cola/permits/1912366828_1708460250.5215762/0/netty-codec-4-1-107-final-sources-
jar/io/netty/handler/codec/CharSequenceValueConverter.java
* /opt/cola/permits/1912366828_1708460250.5215762/0/netty-codec-4-1-107-final-sources-
jar/io/netty/handler/codec/ValueConverter.java
*
/opt/cola/permits/1912366828_1708460250.5215762/0/netty-codec-4-1-107-final-sources-
jar/io/netty/handler/codec/DefaultHeadersImpl.java
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* /opt/cola/permits/1912366828_1708460250.5215762/0/netty-codec-4-1-107-final-sources-
jar/io/netty/handler/codec/EmptyHeaders.java
* /opt/cola/permits/1912366828_1708460250.5215762/0/netty-codec-4-1-107-final-sources-
jar/io/netty/handler/codec/DefaultHeaders.java
* /opt/cola/permits/1912366828_1708460250.5215762/0/netty-codec-4-1-107-final-sources-
```

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

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\* /opt/cola/permits/1912366828\_1708460250.5215762/0/netty-codec-4-1-107-final-sources-jar/io/netty/handler/codec/compression/JdkZlibDecoder.java

\* /opt/cola/permits/1912366828\_1708460250.5215762/0/netty-codec-4-1-107-final-sources-jar/io/netty/handler/codec/xml/XmlFrameDecoder.java

\*

/opt/cola/permits/1912366828\_1708460250.5215762/0/netty-codec-4-1-107-final-sources-jar/io/netty/handler/codec/compression/Crc32c.java

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\* /opt/cola/permits/1912366828\_1708460250.5215762/0/netty-codec-4-1-107-final-sources-jar/io/netty/handler/codec/compression/Lz4Constants.java

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* /opt/cola/permits/1912366828_1708460250.5215762/0/netty-codec-4-1-107-final-sources-
jar/io/netty/handler/codec/compression/FastLzFrameEncoder.java
*
/opt/cola/permits/1912366828_1708460250.5215762/0/netty-codec-4-1-107-final-sources-
jar/io/netty/handler/codec/compression/LzfEncoder.java
* /opt/cola/permits/1912366828_1708460250.5215762/0/netty-codec-4-1-107-final-sources-
jar/io/netty/handler/codec/compression/Bzip2HuffmanAllocator.java
* /opt/cola/permits/1912366828_1708460250.5215762/0/netty-codec-4-1-107-final-sources-
jar/io/netty/handler/codec/compression/Bzip2DivSufSort.java
* /opt/cola/permits/1912366828_1708460250.5215762/0/netty-codec-4-1-107-final-sources-
jar/io/netty/handler/codec/compression/Bzip2Encoder.java
* /opt/cola/permits/1912366828_1708460250.5215762/0/netty-codec-4-1-107-final-sources-
jar/io/netty/handler/codec/compression/Bzip2HuffmanStageEncoder.java
* /opt/cola/permits/1912366828_1708460250.5215762/0/netty-codec-4-1-107-final-sources-
jar/io/netty/handler/codec/json/package-info.java
* /opt/cola/permits/1912366828_1708460250.5215762/0/netty-codec-4-1-107-final-sources-
jar/io/netty/handler/codec/compression/Bzip2Constants.java
*
/opt/cola/permits/1912366828_1708460250.5215762/0/netty-codec-4-1-107-final-sources-
jar/io/netty/handler/codec/DecoderResultProvider.java
* /opt/cola/permits/1912366828_1708460250.5215762/0/netty-codec-4-1-107-final-sources-
jar/io/netty/handler/codec/compression/FastLz.java
* /opt/cola/permits/1912366828_1708460250.5215762/0/netty-codec-4-1-107-final-sources-
jar/io/netty/handler/codec/compression/Lz4FrameEncoder.java
* /opt/cola/permits/1912366828_1708460250.5215762/0/netty-codec-4-1-107-final-sources-
jar/io/netty/handler/codec/compression/Bzip2Decoder.java
* /opt/cola/permits/1912366828_1708460250.5215762/0/netty-codec-4-1-107-final-sources-
jar/io/netty/handler/codec/compression/Bzip2BitReader.java
* /opt/cola/permits/1912366828_1708460250.5215762/0/netty-codec-4-1-107-final-sources-
jar/io/netty/handler/codec/compression/Bzip2BlockDecompressor.java
* /opt/cola/permits/1912366828_1708460250.5215762/0/netty-codec-4-1-107-final-sources-
jar/io/netty/handler/codec/compression/Lz4FrameDecoder.java
*
/opt/cola/permits/1912366828_1708460250.5215762/0/netty-codec-4-1-107-final-sources-
jar/io/netty/handler/codec/compression/SnappyFramedDecoder.java
* /opt/cola/permits/1912366828_1708460250.5215762/0/netty-codec-4-1-107-final-sources-
jar/io/netty/handler/codec/MessageAggregationException.java
* /opt/cola/permits/1912366828_1708460250.5215762/0/netty-codec-4-1-107-final-sources-
jar/io/netty/handler/codec/compression/Crc32.java
* /opt/cola/permits/1912366828_1708460250.5215762/0/netty-codec-4-1-107-final-sources-
jar/io/netty/handler/codec/json/JsonObjectDecoder.java
* /opt/cola/permits/1912366828_1708460250.5215762/0/netty-codec-4-1-107-final-sources-
jar/io/netty/handler/codec/compression/Bzip2MoveToFrontTable.java
* /opt/cola/permits/1912366828_1708460250.5215762/0/netty-codec-4-1-107-final-sources-
jar/io/netty/handler/codec/compression/LzfDecoder.java
* /opt/cola/permits/1912366828_1708460250.5215762/0/netty-codec-4-1-107-final-sources-
jar/io/netty/handler/codec/AsciiHeadersEncoder.java
*

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/opt/cola/permits/1912366828_1708460250.5215762/0/netty-codec-4-1-107-final-sources-
jar/io/netty/handler/codec/compression/Bzip2BitWriter.java
* /opt/cola/permits/1912366828_1708460250.5215762/0/netty-codec-4-1-107-final-sources-
jar/io/netty/handler/codec/compression/Bzip2Rand.java
* /opt/cola/permits/1912366828_1708460250.5215762/0/netty-codec-4-1-107-final-sources-
jar/io/netty/handler/codec/compression/Bzip2MTFAndRLE2StageEncoder.java
* /opt/cola/permits/1912366828_1708460250.5215762/0/netty-codec-4-1-107-final-sources-
jar/io/netty/handler/codec/compression/Bzip2BlockCompressor.java
* /opt/cola/permits/1912366828_1708460250.5215762/0/netty-codec-4-1-107-final-sources-
jar/io/netty/handler/codec/compression/FastLzFrameDecoder.java
* /opt/cola/permits/1912366828_1708460250.5215762/0/netty-codec-4-1-107-final-sources-
jar/io/netty/handler/codec/compression/LzmaFrameEncoder.java
* /opt/cola/permits/1912366828_1708460250.5215762/0/netty-codec-4-1-107-final-sources-
jar/io/netty/handler/codec/compression/SnappyFramedEncoder.java
*
/opt/cola/permits/1912366828_1708460250.5215762/0/netty-codec-4-1-107-final-sources-
jar/io/netty/handler/codec/compression/Bzip2HuffmanStageDecoder.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
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* Base64 Encoder/Decoder</a>.
*/
```

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\* /opt/cola/permits/1912366828\_1708460250.5215762/0/netty-codec-4-1-107-final-sources-jar/io/netty/handler/codec/base64/Base64Dialect.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

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\* [Base64 Encoder/Decoder](#).

\*/

Found in path(s):

\* /opt/cola/permits/1912366828\_1708460250.5215762/0/netty-codec-4-1-107-final-sources-jar/io/netty/handler/codec/base64/Base64.java

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- \* /opt/cola/permits/1912366828\_1708460250.5215762/0/netty-codec-4-1-107-final-sources-jar/io/netty/handler/codec/compression/BrotliOptions.java
- \* /opt/cola/permits/1912366828\_1708460250.5215762/0/netty-codec-4-1-107-final-sources-jar/io/netty/handler/codec/compression/BrotliDecoder.java
- \*
- /opt/cola/permits/1912366828\_1708460250.5215762/0/netty-codec-4-1-107-final-sources-jar/io/netty/handler/codec/compression/DeflateOptions.java
- \* /opt/cola/permits/1912366828\_1708460250.5215762/0/netty-codec-4-1-107-final-sources-jar/io/netty/handler/codec/compression/Zstd.java
- \* /opt/cola/permits/1912366828\_1708460250.5215762/0/netty-codec-4-1-107-final-sources-jar/io/netty/handler/codec/compression/ZstdConstants.java
- \* /opt/cola/permits/1912366828\_1708460250.5215762/0/netty-codec-4-1-107-final-sources-jar/io/netty/handler/codec/compression/ZstdEncoder.java
- \* /opt/cola/permits/1912366828\_1708460250.5215762/0/netty-codec-4-1-107-final-sources-jar/io/netty/handler/codec/compression/Brotli.java
- \* /opt/cola/permits/1912366828\_1708460250.5215762/0/netty-codec-4-1-107-final-sources-jar/io/netty/handler/codec/compression/CompressionOptions.java
- \* /opt/cola/permits/1912366828\_1708460250.5215762/0/netty-codec-4-1-107-final-sources-jar/io/netty/handler/codec/compression/GzipOptions.java
- \*
- /opt/cola/permits/1912366828\_1708460250.5215762/0/netty-codec-4-1-107-final-sources-jar/io/netty/handler/codec/compression/StandardCompressionOptions.java
- \* /opt/cola/permits/1912366828\_1708460250.5215762/0/netty-codec-4-1-107-final-sources-jar/io/netty/handler/codec/compression/BrotliEncoder.java
- \* /opt/cola/permits/1912366828\_1708460250.5215762/0/netty-codec-4-1-107-final-sources-jar/io/netty/handler/codec/compression/ZstdOptions.java

## 1.323 netty-codec-smtp 4.1.107.Final

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- \* /opt/cola/permits/1912366855\_1708460262.8286393/0/netty-codec-smtp-4-1-107-final-sources-jar/io/netty/handler/codec/smtp/SmtResponse.java
  - \* /opt/cola/permits/1912366855\_1708460262.8286393/0/netty-codec-smtp-4-1-107-final-sources-jar/io/netty/handler/codec/smtp/SmtRequest.java
  - \*
  - /opt/cola/permits/1912366855\_1708460262.8286393/0/netty-codec-smtp-4-1-107-final-sources-jar/io/netty/handler/codec/smtp/SmtCommand.java
  - \* /opt/cola/permits/1912366855\_1708460262.8286393/0/netty-codec-smtp-4-1-107-final-sources-jar/io/netty/handler/codec/smtp/DefaultLastSmtContent.java
  - \* /opt/cola/permits/1912366855\_1708460262.8286393/0/netty-codec-smtp-4-1-107-final-sources-jar/io/netty/handler/codec/smtp/SmtUtils.java
  - \* /opt/cola/permits/1912366855\_1708460262.8286393/0/netty-codec-smtp-4-1-107-final-sources-jar/io/netty/handler/codec/smtp/package-info.java
  - \* /opt/cola/permits/1912366855\_1708460262.8286393/0/netty-codec-smtp-4-1-107-final-sources-jar/io/netty/handler/codec/smtp/LastSmtContent.java
  - \* /opt/cola/permits/1912366855\_1708460262.8286393/0/netty-codec-smtp-4-1-107-final-sources-jar/io/netty/handler/codec/smtp/DefaultSmtContent.java
  - \* /opt/cola/permits/1912366855\_1708460262.8286393/0/netty-codec-smtp-4-1-107-final-sources-jar/io/netty/handler/codec/smtp/SmtRequestEncoder.java
  - \*
  - /opt/cola/permits/1912366855\_1708460262.8286393/0/netty-codec-smtp-4-1-107-final-sources-jar/io/netty/handler/codec/smtp/SmtRequests.java
  - \* /opt/cola/permits/1912366855\_1708460262.8286393/0/netty-codec-smtp-4-1-107-final-sources-jar/io/netty/handler/codec/smtp/DefaultSmtResponse.java
  - \* /opt/cola/permits/1912366855\_1708460262.8286393/0/netty-codec-smtp-4-1-107-final-sources-jar/io/netty/handler/codec/smtp/SmtResponseDecoder.java
  - \* /opt/cola/permits/1912366855\_1708460262.8286393/0/netty-codec-smtp-4-1-107-final-sources-jar/io/netty/handler/codec/smtp/DefaultSmtRequest.java
  - \* /opt/cola/permits/1912366855\_1708460262.8286393/0/netty-codec-smtp-4-1-107-final-sources-jar/io/netty/handler/codec/smtp/SmtContent.java
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## 1.324 netty-codec-dns 4.1.107.Final

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- \* /opt/cola/permits/1912366971\_1708460277.658924/0/netty-codec-dns-4-1-107-final-sources-jar/io/netty/handler/codec/dns/DnsQuestion.java
- \* /opt/cola/permits/1912366971\_1708460277.658924/0/netty-codec-dns-4-1-107-final-sources-jar/io/netty/handler/codec/dns/DnsRecordType.java
- \*
- /opt/cola/permits/1912366971\_1708460277.658924/0/netty-codec-dns-4-1-107-final-sources-jar/io/netty/handler/codec/dns/DatagramDnsResponseDecoder.java
- \* /opt/cola/permits/1912366971\_1708460277.658924/0/netty-codec-dns-4-1-107-final-sources-jar/io/netty/handler/codec/dns/DnsSection.java
- \* /opt/cola/permits/1912366971\_1708460277.658924/0/netty-codec-dns-4-1-107-final-sources-jar/io/netty/handler/codec/dns/DatagramDnsQuery.java
- \* /opt/cola/permits/1912366971\_1708460277.658924/0/netty-codec-dns-4-1-107-final-sources-jar/io/netty/handler/codec/dns/DnsMessage.java
- \* /opt/cola/permits/1912366971\_1708460277.658924/0/netty-codec-dns-4-1-107-final-sources-jar/io/netty/handler/codec/dns/DnsResponseCode.java
- \* /opt/cola/permits/1912366971\_1708460277.658924/0/netty-codec-dns-4-1-107-final-sources-jar/io/netty/handler/codec/dns/DnsRecordDecoder.java
- \* /opt/cola/permits/1912366971\_1708460277.658924/0/netty-codec-dns-4-1-107-final-sources-jar/io/netty/handler/codec/dns/DatagramDnsResponse.java
- \*
- /opt/cola/permits/1912366971\_1708460277.658924/0/netty-codec-dns-4-1-107-final-sources-jar/io/netty/handler/codec/dns/AbstractDnsMessage.java
- \* /opt/cola/permits/1912366971\_1708460277.658924/0/netty-codec-dns-4-1-107-final-sources-jar/io/netty/handler/codec/dns/DefaultDnsResponse.java
- \* /opt/cola/permits/1912366971\_1708460277.658924/0/netty-codec-dns-4-1-107-final-sources-jar/io/netty/handler/codec/dns/DnsResponse.java
- \* /opt/cola/permits/1912366971\_1708460277.658924/0/netty-codec-dns-4-1-107-final-sources-jar/io/netty/handler/codec/dns/DatagramDnsResponseEncoder.java
- \* /opt/cola/permits/1912366971\_1708460277.658924/0/netty-codec-dns-4-1-107-final-sources-jar/io/netty/handler/codec/dns/DatagramDnsQueryEncoder.java
- \* /opt/cola/permits/1912366971\_1708460277.658924/0/netty-codec-dns-4-1-107-final-sources-jar/io/netty/handler/codec/dns/DefaultDnsRawRecord.java
- \*
- /opt/cola/permits/1912366971\_1708460277.658924/0/netty-codec-dns-4-1-107-final-sources-jar/io/netty/handler/codec/dns/DatagramDnsQueryDecoder.java
- \* /opt/cola/permits/1912366971\_1708460277.658924/0/netty-codec-dns-4-1-107-final-sources-jar/io/netty/handler/codec/dns/DefaultDnsQuestion.java
- \* /opt/cola/permits/1912366971\_1708460277.658924/0/netty-codec-dns-4-1-107-final-sources-

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jar/io/netty/handler/codec/dns/DefaultDnsRecordDecoder.java
* /opt/cola/permits/1912366971_1708460277.658924/0/netty-codec-dns-4-1-107-final-sources-
jar/io/netty/handler/codec/dns/DnsMessageUtil.java
* /opt/cola/permits/1912366971_1708460277.658924/0/netty-codec-dns-4-1-107-final-sources-
jar/io/netty/handler/codec/dns/DnsRecordEncoder.java
* /opt/cola/permits/1912366971_1708460277.658924/0/netty-codec-dns-4-1-107-final-sources-
jar/io/netty/handler/codec/dns/DnsRawRecord.java
* /opt/cola/permits/1912366971_1708460277.658924/0/netty-codec-dns-4-1-107-final-sources-
jar/io/netty/handler/codec/dns/DefaultDnsQuery.java
*
/opt/cola/permits/1912366971_1708460277.658924/0/netty-codec-dns-4-1-107-final-sources-
jar/io/netty/handler/codec/dns/DnsQuery.java
* /opt/cola/permits/1912366971_1708460277.658924/0/netty-codec-dns-4-1-107-final-sources-
jar/io/netty/handler/codec/dns/AbstractDnsRecord.java
* /opt/cola/permits/1912366971_1708460277.658924/0/netty-codec-dns-4-1-107-final-sources-
jar/io/netty/handler/codec/dns/DefaultDnsRecordEncoder.java
* /opt/cola/permits/1912366971_1708460277.658924/0/netty-codec-dns-4-1-107-final-sources-
jar/io/netty/handler/codec/dns/package-info.java
* /opt/cola/permits/1912366971_1708460277.658924/0/netty-codec-dns-4-1-107-final-sources-
jar/io/netty/handler/codec/dns/DnsOpCode.java
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jar/io/netty/handler/codec/dns/DnsOptEcsRecord.java
* /opt/cola/permits/1912366971_1708460277.658924/0/netty-codec-dns-4-1-107-final-sources-
jar/io/netty/handler/codec/dns/DefaultDnsPtrRecord.java
*
/opt/cola/permits/1912366971_1708460277.658924/0/netty-codec-dns-4-1-107-final-sources-
jar/io/netty/handler/codec/dns/DnsPtrRecord.java
* /opt/cola/permits/1912366971_1708460277.658924/0/netty-codec-dns-4-1-107-final-sources-
jar/io/netty/handler/codec/dns/DefaultDnsOptEcsRecord.java
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\* /opt/cola/permits/1912366971\_1708460277.658924/0/netty-codec-dns-4-1-107-final-sources-jar/io/netty/handler/codec/dns/DnsOptPseudoRecord.java  
\* /opt/cola/permits/1912366971\_1708460277.658924/0/netty-codec-dns-4-1-107-final-sources-jar/io/netty/handler/codec/dns/AbstractDnsOptPseudoRrRecord.java  
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\* /opt/cola/permits/1912366971\_1708460277.658924/0/netty-codec-dns-4-1-107-final-sources-jar/io/netty/handler/codec/dns/TcpDnsResponseEncoder.java  
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* /opt/cola/permits/1912366971_1708460277.658924/0/netty-codec-dns-4-1-107-final-sources-
jar/io/netty/handler/codec/dns/TcpDnsResponseDecoder.java
*
/opt/cola/permits/1912366971_1708460277.658924/0/netty-codec-dns-4-1-107-final-sources-
jar/io/netty/handler/codec/dns/DnsCodecUtil.java
* /opt/cola/permits/1912366971_1708460277.658924/0/netty-codec-dns-4-1-107-final-sources-
jar/io/netty/handler/codec/dns/DnsResponseDecoder.java
* /opt/cola/permits/1912366971_1708460277.658924/0/netty-codec-dns-4-1-107-final-sources-
jar/io/netty/handler/codec/dns/DnsQueryEncoder.java
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## 1.325 netty-codec-http 4.1.107.Final

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jar/io/netty/handler/codec/http/multipart/FileUploadUtil.java
* /opt/cola/permits/1912367052_1708460289.0733008/0/netty-codec-http-4-1-107-final-sources-
jar/io/netty/handler/codec/http/websocketx/WebSocketChunkedInput.java
*
/opt/cola/permits/1912367052_1708460289.0733008/0/netty-codec-http-4-1-107-final-sources-
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jar/io/netty/handler/codec/http/websocketx/WebSocket13FrameDecoder.java
* /opt/cola/permits/1912367052_1708460289.0733008/0/netty-codec-http-4-1-107-final-sources-
jar/io/netty/handler/codec/http/websocketx/WebSocket08FrameDecoder.java
* /opt/cola/permits/1912367052_1708460289.0733008/0/netty-codec-http-4-1-107-final-sources-
jar/io/netty/handler/codec/http/websocketx/WebSocket07FrameDecoder.java
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jar/io/netty/handler/codec/http/multipart/AbstractMixedHttpData.java
```



\* /opt/cola/permits/1912367052\_1708460289.0733008/0/netty-codec-http-4-1-107-final-sources-jar/io/netty/handler/codec/http/TooLongHttpException.java

\*

/opt/cola/permits/1912367052\_1708460289.0733008/0/netty-codec-http-4-1-107-final-sources-jar/io/netty/handler/codec/http/HttpHeaderValidationUtil.java

\* /opt/cola/permits/1912367052\_1708460289.0733008/0/netty-codec-http-4-1-107-final-sources-jar/io/netty/handler/codec/http/TooLongHttpHeaderException.java

\* /opt/cola/permits/1912367052\_1708460289.0733008/0/netty-codec-http-4-1-107-final-sources-jar/io/netty/handler/codec/http/TooLongHttpContentException.java

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- \* /opt/cola/permits/1912367052\_1708460289.0733008/0/netty-codec-http-4-1-107-final-sources-jar/io/netty/handler/codec/spdy/SpdyStreamStatus.java
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- /opt/cola/permits/1912367052\_1708460289.0733008/0/netty-codec-http-4-1-107-final-sources-jar/io/netty/handler/codec/http/DefaultFullHttpRequest.java
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- \* /opt/cola/permits/1912367052\_1708460289.0733008/0/netty-codec-http-4-1-107-final-sources-jar/io/netty/handler/codec/spdy/SpdyVersion.java
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- \* /opt/cola/permits/1912367052\_1708460289.0733008/0/netty-codec-http-4-1-107-final-sources-jar/io/netty/handler/codec/spdy/SpdySessionHandler.java
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- \* /opt/cola/permits/1912367052\_1708460289.0733008/0/netty-codec-http-4-1-107-final-sources-jar/io/netty/handler/codec/spdy/SpdyHeaderBlockEncoder.java
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\* /opt/cola/permits/1912367052\_1708460289.0733008/0/netty-codec-http-4-1-107-final-sources-jar/io/netty/handler/codec/http/HttpMessageDecoderResult.java  
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\* /opt/cola/permits/1912367052\_1708460289.0733008/0/netty-codec-http-4-1-107-final-sources-jar/io/netty/handler/codec/http/cors/CorsConfig.java  
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- \* /opt/cola/permits/1912367052\_1708460289.0733008/0/netty-codec-http-4-1-107-final-sources-jar/io/netty/handler/codec/http/websocketx/WebSocketServerHandshaker00.java
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- /opt/cola/permits/1912367052\_1708460289.0733008/0/netty-codec-http-4-1-107-final-sources-jar/io/netty/handler/codec/http/websocketx/WebSocketServerProtocolHandler.java
- \* /opt/cola/permits/1912367052\_1708460289.0733008/0/netty-codec-http-4-1-107-final-sources-jar/io/netty/handler/codec/http/websocketx/extensions/WebSocketExtensionFilter.java
- \* /opt/cola/permits/1912367052\_1708460289.0733008/0/netty-codec-http-4-1-107-final-sources-jar/io/netty/handler/codec/http/websocketx/WebSocketServerProtocolConfig.java
- \* /opt/cola/permits/1912367052\_1708460289.0733008/0/netty-codec-http-4-1-107-final-sources-jar/io/netty/handler/codec/http/websocketx/WebSocketCloseStatus.java
- \* /opt/cola/permits/1912367052\_1708460289.0733008/0/netty-codec-http-4-1-107-final-sources-jar/io/netty/handler/codec/http/websocketx/WebSocketDecoderConfig.java
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- \* /opt/cola/permits/1912367052\_1708460289.0733008/0/netty-codec-http-4-1-107-final-sources-jar/io/netty/handler/codec/http/websocketx/CorruptedWebSocketFrameException.java
- \* /opt/cola/permits/1912367052\_1708460289.0733008/0/netty-codec-http-4-1-107-final-sources-jar/io/netty/handler/codec/http/websocketx/WebSocketServerHandshaker07.java
- \* /opt/cola/permits/1912367052\_1708460289.0733008/0/netty-codec-http-4-1-107-final-sources-jar/io/netty/handler/codec/http/websocketx/CloseWebSocketFrame.java
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\* /opt/cola/permits/1912367052\_1708460289.0733008/0/netty-codec-http-4-1-107-final-sources-jar/io/netty/handler/codec/http/HttpObjectEncoder.java  
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\* /opt/cola/permits/1912367052\_1708460289.0733008/0/netty-codec-http-4-1-107-final-sources-jar/io/netty/handler/codec/http/multipart/DiskFileUpload.java  
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/opt/cola/permits/1912367052\_1708460289.0733008/0/netty-codec-http-4-1-107-final-sources-jar/io/netty/handler/codec/http/HttpContentDecoder.java  
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/opt/cola/permits/1912367052\_1708460289.0733008/0/netty-codec-http-4-1-107-final-sources-jar/io/netty/handler/codec/http/HttpObject.java  
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\* /opt/cola/permits/1912367052\_1708460289.0733008/0/netty-codec-http-4-1-107-final-sources-jar/io/netty/handler/codec/http/package-info.java  
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\* /opt/cola/permits/1912367052\_1708460289.0733008/0/netty-codec-http-4-1-107-final-sources-jar/io/netty/handler/codec/http/HttpMessage.java  
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jar/io/netty/handler/codec/http/HttpObjectDecoder.java
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* /opt/cola/permits/1912367052_1708460289.0733008/0/netty-codec-http-4-1-107-final-sources-
jar/io/netty/handler/codec/http/websocketx/WebSocketClientHandshakerFactory.java
* /opt/cola/permits/1912367052_1708460289.0733008/0/netty-codec-http-4-1-107-final-sources-
jar/io/netty/handler/codec/rtsp/RtspVersions.java
* /opt/cola/permits/1912367052_1708460289.0733008/0/netty-codec-http-4-1-107-final-sources-
jar/io/netty/handler/codec/http/HttpRequestDecoder.java
*
/opt/cola/permits/1912367052_1708460289.0733008/0/netty-codec-http-4-1-107-final-sources-
jar/io/netty/handler/codec/http/websocketx/PongWebSocketFrame.java

```

\* /opt/cola/permits/1912367052\_1708460289.0733008/0/netty-codec-http-4-1-107-final-sources-jar/io/netty/handler/codec/http/DefaultHttpResponse.java  
\* /opt/cola/permits/1912367052\_1708460289.0733008/0/netty-codec-http-4-1-107-final-sources-jar/io/netty/handler/codec/http/Cookie.java  
\* /opt/cola/permits/1912367052\_1708460289.0733008/0/netty-codec-http-4-1-107-final-sources-jar/io/netty/handler/codec/rtsp/RtspMethods.java  
\* /opt/cola/permits/1912367052\_1708460289.0733008/0/netty-codec-http-4-1-107-final-sources-jar/io/netty/handler/codec/spdy/package-info.java  
\* /opt/cola/permits/1912367052\_1708460289.0733008/0/netty-codec-http-4-1-107-final-sources-jar/io/netty/handler/codec/http/multipart/AbstractHttpData.java  
\* /opt/cola/permits/1912367052\_1708460289.0733008/0/netty-codec-http-4-1-107-final-sources-jar/io/netty/handler/codec/rtsp/RtspObjectDecoder.java  
\*

/opt/cola/permits/1912367052\_1708460289.0733008/0/netty-codec-http-4-1-107-final-sources-jar/io/netty/handler/codec/http/HttpHeaderDateFormat.java  
\* /opt/cola/permits/1912367052\_1708460289.0733008/0/netty-codec-http-4-1-107-final-sources-jar/io/netty/handler/codec/http/HttpContent.java  
\* /opt/cola/permits/1912367052\_1708460289.0733008/0/netty-codec-http-4-1-107-final-sources-jar/io/netty/handler/codec/http/multipart/InterfaceHttpData.java  
\* /opt/cola/permits/1912367052\_1708460289.0733008/0/netty-codec-http-4-1-107-final-sources-jar/io/netty/handler/codec/http/HttpConstants.java  
\* /opt/cola/permits/1912367052\_1708460289.0733008/0/netty-codec-http-4-1-107-final-sources-jar/io/netty/handler/codec/http/multipart/MemoryAttribute.java  
\* /opt/cola/permits/1912367052\_1708460289.0733008/0/netty-codec-http-4-1-107-final-sources-jar/io/netty/handler/codec/http/HttpObjectAggregator.java  
\* /opt/cola/permits/1912367052\_1708460289.0733008/0/netty-codec-http-4-1-107-final-sources-jar/io/netty/handler/codec/http/multipart/MemoryFileUpload.java  
\*

/opt/cola/permits/1912367052\_1708460289.0733008/0/netty-codec-http-4-1-107-final-sources-jar/io/netty/handler/codec/rtsp/RtspHeaders.java

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\* /opt/cola/permits/1912367052\_1708460289.0733008/0/netty-codec-http-4-1-107-final-sources-jar/io/netty/handler/codec/http/websocketx/WebSocketServerHandshakeException.java

\*

/opt/cola/permits/1912367052\_1708460289.0733008/0/netty-codec-http-4-1-107-final-sources-jar/io/netty/handler/codec/http/multipart/DeleteFileOnExitHook.java

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\* /opt/cola/permits/1912367052\_1708460289.0733008/0/netty-codec-http-4-1-107-final-sources-jar/io/netty/handler/codec/http/HttpServerUpgradeHandler.java

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\* /opt/cola/permits/1912367052\_1708460289.0733008/0/netty-codec-http-4-1-107-final-sources-jar/io.netty.handler.codec/http.websocketx/WebSocket07FrameEncoder.java

\* /opt/cola/permits/1912367052\_1708460289.0733008/0/netty-codec-http-4-1-107-final-sources-jar/io.netty.handler.codec/http.websocketx/WebSocket08FrameEncoder.java

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- \* /opt/cola/permits/1912367052\_1708460289.0733008/0/netty-codec-http-4-1-107-final-sources-jar/io/netty/handler/codec/http/cookie/CookieHeaderNames.java
- \* /opt/cola/permits/1912367052\_1708460289.0733008/0/netty-codec-http-4-1-107-final-sources-jar/io/netty/handler/codec/http/cookie/Cookie.java
- \*
- /opt/cola/permits/1912367052\_1708460289.0733008/0/netty-codec-http-4-1-107-final-sources-jar/io/netty/handler/codec/http/cookie/CookieEncoder.java
- \* /opt/cola/permits/1912367052\_1708460289.0733008/0/netty-codec-http-4-1-107-final-sources-jar/io/netty/handler/codec/http/HttpExpectationFailedEvent.java
- \* /opt/cola/permits/1912367052\_1708460289.0733008/0/netty-codec-http-4-1-107-final-sources-jar/io/netty/handler/codec/http/HttpScheme.java
- \* /opt/cola/permits/1912367052\_1708460289.0733008/0/netty-codec-http-4-1-107-final-sources-jar/io/netty/handler/codec/http/HttpUtil.java
- \* /opt/cola/permits/1912367052\_1708460289.0733008/0/netty-codec-http-4-1-107-final-sources-jar/io/netty/handler/codec/http/cookie/ServerCookieDecoder.java
- \* /opt/cola/permits/1912367052\_1708460289.0733008/0/netty-codec-http-4-1-107-final-sources-jar/io/netty/handler/codec/http/cookie/CookieUtil.java
- \* /opt/cola/permits/1912367052\_1708460289.0733008/0/netty-codec-http-4-1-107-final-sources-jar/io/netty/handler/codec/http/CookieUtil.java
- \*
- /opt/cola/permits/1912367052\_1708460289.0733008/0/netty-codec-http-4-1-107-final-sources-jar/io/netty/handler/codec/http/EmptyHttpHeaders.java
- \* /opt/cola/permits/1912367052\_1708460289.0733008/0/netty-codec-http-4-1-107-final-sources-jar/io/netty/handler/codec/http/cookie/ClientCookieEncoder.java
- \* /opt/cola/permits/1912367052\_1708460289.0733008/0/netty-codec-http-4-1-107-final-sources-jar/io/netty/handler/codec/http/CombinedHttpHeaders.java
- \* /opt/cola/permits/1912367052\_1708460289.0733008/0/netty-codec-http-4-1-107-final-sources-jar/io/netty/handler/codec/http/cookie/package-info.java
- \* /opt/cola/permits/1912367052\_1708460289.0733008/0/netty-codec-http-4-1-107-final-sources-jar/io/netty/handler/codec/http/cookie/CookieDecoder.java
- \* /opt/cola/permits/1912367052\_1708460289.0733008/0/netty-codec-http-4-1-107-final-sources-jar/io/netty/handler/codec/rtsp/RtspEncoder.java
- \* /opt/cola/permits/1912367052\_1708460289.0733008/0/netty-codec-http-4-1-107-final-sources-jar/io/netty/handler/codec/rtsp/RtspDecoder.java
- \*
- /opt/cola/permits/1912367052\_1708460289.0733008/0/netty-codec-http-4-1-107-final-sources-jar/io/netty/handler/codec/http/cookie/DefaultCookie.java
- \* /opt/cola/permits/1912367052\_1708460289.0733008/0/netty-codec-http-4-1-107-final-sources-

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jar/io/netty/handler/codec/http/cookie/ServerCookieEncoder.java
* /opt/cola/permits/1912367052_1708460289.0733008/0/netty-codec-http-4-1-107-final-sources-
jar/io/netty/handler/codec/http/cookie/ClientCookieDecoder.java
```

# 1.326 netty-handler-ssl-ocsp 4.1.107.Final

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* /opt/cola/permits/1912367045_1708460215.600761/0/netty-handler-ssl-ocsp-4-1-107-final-sources-
jar/io/netty/handler/ssl/ocsp/IoTransport.java
* /opt/cola/permits/1912367045_1708460215.600761/0/netty-handler-ssl-ocsp-4-1-107-final-sources-
jar/io/netty/handler/ssl/ocsp/OcspResponse.java
*
/opt/cola/permits/1912367045_1708460215.600761/0/netty-handler-ssl-ocsp-4-1-107-final-sources-
jar/io/netty/handler/ssl/ocsp/package-info.java
* /opt/cola/permits/1912367045_1708460215.600761/0/netty-handler-ssl-ocsp-4-1-107-final-sources-
jar/io/netty/handler/ssl/ocsp/OcspHttpHandler.java
* /opt/cola/permits/1912367045_1708460215.600761/0/netty-handler-ssl-ocsp-4-1-107-final-sources-
jar/io/netty/handler/ssl/ocsp/OcspServerCertificateValidator.java
* /opt/cola/permits/1912367045_1708460215.600761/0/netty-handler-ssl-ocsp-4-1-107-final-sources-
jar/io/netty/handler/ssl/ocsp/OcspClient.java
* /opt/cola/permits/1912367045_1708460215.600761/0/netty-handler-ssl-ocsp-4-1-107-final-sources-
jar/io/netty/handler/ssl/ocsp/OcspValidationEvent.java
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## 1.327 netty 4.1.107.Final

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\* /opt/cola/permits/1912367082\_1708460323.4877825/0/netty-common-4-1-107-final-sources-jar/io/netty/util/concurrent/PromiseAggregator.java  
\* /opt/cola/permits/1912367082\_1708460323.4877825/0/netty-common-4-1-107-final-sources-jar/io/netty/util/ThreadDeathWatcher.java  
\* /opt/cola/permits/1912367082\_1708460323.4877825/0/netty-common-4-1-107-final-sources-jar/io/netty/util/concurrent/FastThreadLocal.java  
\*  
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\* /opt/cola/permits/1912367082\_1708460323.4877825/0/netty-common-4-1-107-final-sources-jar/io/netty/util/Mapping.java  
\* /opt/cola/permits/1912367082\_1708460323.4877825/0/netty-common-4-1-107-final-sources-jar/io/netty/util/ResourceLeakHint.java  
\* /opt/cola/permits/1912367082\_1708460323.4877825/0/netty-common-4-1-107-final-sources-jar/io/netty/util/concurrent/PromiseNotifier.java  
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\* /opt/cola/permits/1912367082\_1708460323.4877825/0/netty-common-4-1-107-final-sources-jar/io/netty/util/internal/UnpaddedInternalThreadLocalMap.java  
\* /opt/cola/permits/1912367082\_1708460323.4877825/0/netty-common-4-1-107-final-sources-jar/io/netty/util/internal/InternalThreadLocalMap.java  
\*

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\* /opt/cola/permits/1912367082\_1708460323.4877825/0/netty-common-4-1-107-final-sources-jar/io/netty/util/AsciiString.java

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jar/io/netty/util/internal/svm/PlatformDependent0Substitution.java  
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jar/io/netty/util/internal/svm/PlatformDependentSubstitution.java  
\*  
/opt/cola/permits/1912367082\_1708460323.4877825/0/netty-common-4-1-107-final-sources-  
jar/io/netty/util/internal/ObjectPool.java  
\* /opt/cola/permits/1912367082\_1708460323.4877825/0/netty-common-4-1-107-final-sources-  
jar/io/netty/util/internal/svm/UnsafeRefArrayAccessSubstitution.java  
\* /opt/cola/permits/1912367082\_1708460323.4877825/0/netty-common-4-1-107-final-sources-  
jar/io/netty/util/internal/Hidden.java  
\* /opt/cola/permits/1912367082\_1708460323.4877825/0/netty-common-4-1-107-final-sources-  
jar/io/netty/util/internal/svm/package-info.java  
\* /opt/cola/permits/1912367082\_1708460323.4877825/0/netty-common-4-1-107-final-sources-  
jar/io/netty/util/internal/svm/CleanerJava6Substitution.java  
\* /opt/cola/permits/1912367082\_1708460323.4877825/0/netty-common-4-1-107-final-sources-  
jar/io/netty/util/internal/ReferenceCountUpdater.java  
\* /opt/cola/permits/1912367082\_1708460323.4877825/0/netty-common-4-1-107-final-sources-  
jar/io/netty/util/internal/ThreadExecutorMap.java

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jar/io/netty/util/collection/ShortObjectHashMap.java
* /opt/cola/permits/1912367082_1708460323.4877825/0/netty-common-4-1-107-final-sources-
jar/io/netty/util/collection/CharObjectHashMap.java
*
/opt/cola/permits/1912367082_1708460323.4877825/0/netty-common-4-1-107-final-sources-
jar/io/netty/util/collection/ByteObjectMap.java
* /opt/cola/permits/1912367082_1708460323.4877825/0/netty-common-4-1-107-final-sources-
jar/io/netty/util/collection/CharObjectMap.java
* /opt/cola/permits/1912367082_1708460323.4877825/0/netty-common-4-1-107-final-sources-
jar/io/netty/util/internal/ObjectUtil.java
* /opt/cola/permits/1912367082_1708460323.4877825/0/netty-common-4-1-107-final-sources-
jar/io/netty/util/collection/LongObjectHashMap.java
* /opt/cola/permits/1912367082_1708460323.4877825/0/netty-common-4-1-107-final-sources-
jar/io/netty/util/collection/ShortCollections.java
* /opt/cola/permits/1912367082_1708460323.4877825/0/netty-common-4-1-107-final-sources-
jar/io/netty/util/collection/LongCollections.java
* /opt/cola/permits/1912367082_1708460323.4877825/0/netty-common-4-1-107-final-sources-
jar/io/netty/util/collection/IntObjectHashMap.java
* /opt/cola/permits/1912367082_1708460323.4877825/0/netty-common-4-1-107-final-sources-
jar/io/netty/util/collection/LongObjectMap.java
*
/opt/cola/permits/1912367082_1708460323.4877825/0/netty-common-4-1-107-final-sources-
jar/io/netty/util/collection/ShortObjectMap.java
* /opt/cola/permits/1912367082_1708460323.4877825/0/netty-common-4-1-107-final-sources-
jar/io/netty/util/collection/ByteObjectHashMap.java
* /opt/cola/permits/1912367082_1708460323.4877825/0/netty-common-4-1-107-final-sources-
jar/io/netty/util/collection/IntObjectMap.java
* /opt/cola/permits/1912367082_1708460323.4877825/0/netty-common-4-1-107-final-sources-
jar/io/netty/util/collection/IntCollections.java
* /opt/cola/permits/1912367082_1708460323.4877825/0/netty-common-4-1-107-final-sources-
jar/io/netty/util/collection/ByteCollections.java
* /opt/cola/permits/1912367082_1708460323.4877825/0/netty-common-4-1-107-final-sources-
jar/io/netty/util/collection/CharCollections.java
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io.netty.util.internal.Hidden\$NettyBlockHoundIntegration

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\* /opt/cola/permits/1912367082\_1708460323.4877825/0/netty-common-4-1-107-final-sources-jar/META-INF/services/reactor.blockhound.integration.BlockHoundIntegration  
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\* /opt/cola/permits/1912367082\_1708460323.4877825/0/netty-common-4-1-107-final-sources-jar/io/netty/util/ResourceLeakTracker.java

\* /opt/cola/permits/1912367082\_1708460323.4877825/0/netty-common-4-1-107-final-sources-jar/io/netty/util/concurrent/RejectedExecutionHandler.java

\*

/opt/cola/permits/1912367082\_1708460323.4877825/0/netty-common-4-1-107-final-sources-jar/io/netty/util/concurrent/OrderedEventExecutor.java

\* /opt/cola/permits/1912367082\_1708460323.4877825/0/netty-common-4-1-107-final-sources-jar/io/netty/util/DomainNameMappingBuilder.java

\* /opt/cola/permits/1912367082\_1708460323.4877825/0/netty-common-4-1-107-final-sources-jar/io/netty/util/internal/logging/Log4J2Logger.java

\* /opt/cola/permits/1912367082\_1708460323.4877825/0/netty-common-4-1-107-final-sources-jar/io/netty/util/concurrent/NonStickyEventExecutorGroup.java

\* /opt/cola/permits/1912367082\_1708460323.4877825/0/netty-common-4-1-107-final-sources-jar/io/netty/util/internal/NativeLibraryUtil.java

\* /opt/cola/permits/1912367082\_1708460323.4877825/0/netty-common-4-1-107-final-sources-jar/io/netty/util/internal/SocketUtils.java

\* /opt/cola/permits/1912367082\_1708460323.4877825/0/netty-common-4-1-107-final-sources-jar/io/netty/util/internal/MacAddressUtil.java

\*

/opt/cola/permits/1912367082\_1708460323.4877825/0/netty-common-4-1-107-final-sources-jar/io/netty/util/internal/OutOfDirectMemoryError.java



\* /opt/cola/permits/1912367082\_1708460323.4877825/0/netty-common-4-1-107-final-sources-jar/io/netty/util/concurrent/EventExecutorChooserFactory.java  
\* /opt/cola/permits/1912367082\_1708460323.4877825/0/netty-common-4-1-107-final-sources-jar/io/netty/util/concurrent/RejectedExecutionHandlers.java  
\* /opt/cola/permits/1912367082\_1708460323.4877825/0/netty-common-4-1-107-final-sources-jar/io/netty/util/IntSupplier.java  
\* /opt/cola/permits/1912367082\_1708460323.4877825/0/netty-common-4-1-107-final-sources-jar/io/netty/util/concurrent/DefaultEventExecutorChooserFactory.java  
\* /opt/cola/permits/1912367082\_1708460323.4877825/0/netty-common-4-1-107-final-sources-jar/io/netty/util/internal/ConstantTimeUtils.java  
\* /opt/cola/permits/1912367082\_1708460323.4877825/0/netty-common-4-1-107-final-sources-jar/io/netty/util/internal/logging/Log4J2LoggerFactory.java  
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/opt/cola/permits/1912367082\_1708460323.4877825/0/netty-common-4-1-107-final-sources-jar/io/netty/util/internal/PromiseNotificationUtil.java  
\* /opt/cola/permits/1912367082\_1708460323.4877825/0/netty-common-4-1-107-final-sources-jar/io/netty/util/BooleanSupplier.java  
\* /opt/cola/permits/1912367082\_1708460323.4877825/0/netty-common-4-1-107-final-sources-jar/io/netty/util/concurrent/PromiseCombiner.java  
\* /opt/cola/permits/1912367082\_1708460323.4877825/0/netty-common-4-1-107-final-sources-jar/io/netty/util/internal/ThrowableUtil.java  
\* /opt/cola/permits/1912367082\_1708460323.4877825/0/netty-common-4-1-107-final-sources-jar/io/netty/util/concurrent/UnorderedThreadPoolEventExecutor.java  
\* /opt/cola/permits/1912367082\_1708460323.4877825/0/netty-common-4-1-107-final-sources-jar/io/netty/util/internal/UnstableApi.java  
\* /opt/cola/permits/1912367082\_1708460323.4877825/0/netty-common-4-1-107-final-sources-jar/io/netty/util/ResourceLeakDetectorFactory.java  
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* /opt/cola/permits/1912367082_1708460323.4877825/0/netty-common-4-1-107-final-sources-
jar/io/netty/util/internal/package-info.java
*
/opt/cola/permits/1912367082_1708460323.4877825/0/netty-common-4-1-107-final-sources-
jar/io/netty/util/TimerTask.java
* /opt/cola/permits/1912367082_1708460323.4877825/0/netty-common-4-1-107-final-sources-
jar/io/netty/util/concurrent/GlobalEventExecutor.java
* /opt/cola/permits/1912367082_1708460323.4877825/0/netty-common-4-1-107-final-sources-
jar/io/netty/util/HashedWheelTimer.java
* /opt/cola/permits/1912367082_1708460323.4877825/0/netty-common-4-1-107-final-sources-
jar/io/netty/util/DefaultAttributeMap.java
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jar/io/netty/util/concurrent/BlockingOperationException.java
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jar/io/netty/util/internal/logging/Log4JLoggerFactory.java
* /opt/cola/permits/1912367082_1708460323.4877825/0/netty-common-4-1-107-final-sources-
jar/io/netty/util/concurrent/DefaultEventExecutor.java
* /opt/cola/permits/1912367082_1708460323.4877825/0/netty-common-4-1-107-final-sources-
jar/io/netty/util/internal/SystemPropertyUtil.java
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/opt/cola/permits/1912367082_1708460323.4877825/0/netty-common-4-1-107-final-sources-
jar/io/netty/util/package-info.java
* /opt/cola/permits/1912367082_1708460323.4877825/0/netty-common-4-1-107-final-sources-
jar/io/netty/util/concurrent/SingleThreadEventExecutor.java
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jar/io/netty/util/Timeout.java
* /opt/cola/permits/1912367082_1708460323.4877825/0/netty-common-4-1-107-final-sources-
jar/io/netty/util/concurrent/SucceededFuture.java
* /opt/cola/permits/1912367082_1708460323.4877825/0/netty-common-4-1-107-final-sources-
jar/io/netty/util/Signal.java
* /opt/cola/permits/1912367082_1708460323.4877825/0/netty-common-4-1-107-final-sources-
jar/io/netty/util/concurrent/EventExecutorGroup.java
* /opt/cola/permits/1912367082_1708460323.4877825/0/netty-common-4-1-107-final-sources-
jar/io/netty/util/AttributeKey.java
*
/opt/cola/permits/1912367082_1708460323.4877825/0/netty-common-4-1-107-final-sources-
jar/io/netty/util/concurrent/FailedFuture.java
* /opt/cola/permits/1912367082_1708460323.4877825/0/netty-common-4-1-107-final-sources-
jar/io/netty/util/internal/logging/InternalLoggerFactory.java
* /opt/cola/permits/1912367082_1708460323.4877825/0/netty-common-4-1-107-final-sources-
jar/io/netty/util/internal/logging/Slf4JLoggerFactory.java
* /opt/cola/permits/1912367082_1708460323.4877825/0/netty-common-4-1-107-final-sources-
jar/io/netty/util/AttributeMap.java
* /opt/cola/permits/1912367082_1708460323.4877825/0/netty-common-4-1-107-final-sources-
jar/io/netty/util/concurrent/DefaultEventExecutorGroup.java
* /opt/cola/permits/1912367082_1708460323.4877825/0/netty-common-4-1-107-final-sources-
jar/io/netty/util/internal/PlatformDependent.java
* /opt/cola/permits/1912367082_1708460323.4877825/0/netty-common-4-1-107-final-sources-

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jar/io/netty/util/internal/logging/CommonsLoggerFactory.java
* /opt/cola/permits/1912367082_1708460323.4877825/0/netty-common-4-1-107-final-sources-
jar/io/netty/util/internal/logging/Slf4JLogger.java
*
/opt/cola/permits/1912367082_1708460323.4877825/0/netty-common-4-1-107-final-sources-
jar/io/netty/util/Constant.java
* /opt/cola/permits/1912367082_1708460323.4877825/0/netty-common-4-1-107-final-sources-
jar/io/netty/util/concurrent/MultithreadEventExecutorGroup.java
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jar/io/netty/util/internal/logging/JdkLoggerFactory.java
* /opt/cola/permits/1912367082_1708460323.4877825/0/netty-common-4-1-107-final-sources-
jar/io/netty/util/concurrent/EventExecutor.java
* /opt/cola/permits/1912367082_1708460323.4877825/0/netty-common-4-1-107-final-sources-
jar/io/netty/util/Timer.java
* /opt/cola/permits/1912367082_1708460323.4877825/0/netty-common-4-1-107-final-sources-
jar/io/netty/util/Attribute.java
* /opt/cola/permits/1912367082_1708460323.4877825/0/netty-common-4-1-107-final-sources-
jar/io/netty/util/CharsetUtil.java
*
/opt/cola/permits/1912367082_1708460323.4877825/0/netty-common-4-1-107-final-sources-
jar/io/netty/util/internal/logging/AbstractInternalLogger.java
* /opt/cola/permits/1912367082_1708460323.4877825/0/netty-common-4-1-107-final-sources-
jar/io/netty/util/AbstractConstant.java
* /opt/cola/permits/1912367082_1708460323.4877825/0/netty-common-4-1-107-final-sources-
jar/io/netty/util/IllegalReferenceCountException.java
* /opt/cola/permits/1912367082_1708460323.4877825/0/netty-common-4-1-107-final-sources-
jar/io/netty/util/internal/StringUtil.java
* /opt/cola/permits/1912367082_1708460323.4877825/0/netty-common-4-1-107-final-sources-
jar/io/netty/util/NetUtil.java
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 jar/io/netty/util/internal/logging/FormattingTuple.java

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 jar/io/netty/util/internal/logging/MessageFormatter.java

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/opt/cola/permits/1912367082\_1708460323.4877825/0/netty-common-4-1-107-final-sources-jar/io/netty/util/HashingStrategy.java

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\* /opt/cola/permits/1912367082\_1708460323.4877825/0/netty-common-4-1-107-final-sources-jar/io/netty/util/AsyncMapping.java

\* /opt/cola/permits/1912367082\_1708460323.4877825/0/netty-common-4-1-107-final-sources-jar/io/netty/util/DomainMappingBuilder.java

\* /opt/cola/permits/1912367082\_1708460323.4877825/0/netty-common-4-1-107-final-sources-jar/io/netty/util/internal/PriorityQueueNode.java

\* /opt/cola/permits/1912367082\_1708460323.4877825/0/netty-common-4-1-107-final-sources-jar/io/netty/util/concurrent/ThreadProperties.java

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\* /opt/cola/permits/1912367082\_1708460323.4877825/0/netty-common-4-1-107-final-sources-jar/io/netty/util/internal/shaded/org/jctools/queues/MpscLinkedQueue.java  
\* /opt/cola/permits/1912367082\_1708460323.4877825/0/netty-common-4-1-107-final-sources-jar/io/netty/util/internal/shaded/org/jctools/queues/MpscCompoundQueue.java  
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\* /opt/cola/permits/1912367082\_1708460323.4877825/0/netty-common-4-1-107-final-sources-jar/io/netty/util/internal/shaded/org/jctools/util/UnsafeAccess.java

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<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>

```

```

<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>
<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>
  </plugins>
</build>

```

```

    </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>
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        <goal>jar</goal>
      </goals>
    </execution>
  </executions>
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</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/1912367082\_1708460323.4877825/0/netty-common-4-1-107-final-sources-jar/META-INF/maven/org.jctools/jctools-core/pom.xml

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 */
```

Found in path(s):

```
* /opt/cola/permits/1912367082_1708460323.4877825/0/netty-common-4-1-107-final-sources-
jar/io/netty/util/NetUtilInitializations.java
* /opt/cola/permits/1912367082_1708460323.4877825/0/netty-common-4-1-107-final-sources-
jar/io/netty/util/DomainWildcardMappingBuilder.java
* /opt/cola/permits/1912367082_1708460323.4877825/0/netty-common-4-1-107-final-sources-
jar/io/netty/util/NetUtilSubstitutions.java
```

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Found in path(s):

```
* /opt/cola/permits/1912367082_1708460323.4877825/0/netty-common-4-1-107-final-sources-
jar/io/netty/util/internal/SuppressJava6Requirement.java
```

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Found in path(s):

```
* /opt/cola/permits/1912367082_1708460323.4877825/0/netty-common-4-1-107-final-sources-
jar/io/netty/util/concurrent/FastThreadLocalRunnable.java
* /opt/cola/permits/1912367082_1708460323.4877825/0/netty-common-4-1-107-final-sources-
jar/io/netty/util/internal/Cleaner.java
* /opt/cola/permits/1912367082_1708460323.4877825/0/netty-common-4-1-107-final-sources-
jar/io/netty/util/internal/CleanerJava9.java
```

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express
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* the License.
*/
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Found in path(s):

```
* /opt/cola/permits/1912367082_1708460323.4877825/0/netty-common-4-1-107-final-sources-
jar/io/netty/util/ByteProcessor.java
* /opt/cola/permits/1912367082_1708460323.4877825/0/netty-common-4-1-107-final-sources-
jar/io/netty/util/internal/MathUtil.java
```

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-->

Found in path(s):

\* /opt/cola/permits/1912367082\_1708460323.4877825/0/netty-common-4-1-107-final-sources-jar/META-INF/maven/io.netty/netty-common/pom.xml

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Found in path(s):

\* /opt/cola/permits/1912367082\_1708460323.4877825/0/netty-common-4-1-107-final-sources-jar/META-INF/native-image/io.netty/netty-common/native-image.properties

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Found in path(s):

\* /opt/cola/permits/1912367082\_1708460323.4877825/0/netty-common-4-1-107-final-sources-jar/io/netty/util/SuppressForbidden.java

```

* /opt/cola/permits/1912367082_1708460323.4877825/0/netty-common-4-1-107-final-sources-
jar/io/netty/util/internal/ReflectionUtil.java
* /opt/cola/permits/1912367082_1708460323.4877825/0/netty-common-4-1-107-final-sources-
jar/io/netty/util/internal/PriorityQueue.java
*
/opt/cola/permits/1912367082_1708460323.4877825/0/netty-common-4-1-107-final-sources-
jar/io/netty/util/internal/logging/LocationAwareSlf4JLogger.java
* /opt/cola/permits/1912367082_1708460323.4877825/0/netty-common-4-1-107-final-sources-
jar/io/netty/util/internal/LongAdderCounter.java
* /opt/cola/permits/1912367082_1708460323.4877825/0/netty-common-4-1-107-final-sources-
jar/io/netty/util/internal/ObjectCleaner.java
* /opt/cola/permits/1912367082_1708460323.4877825/0/netty-common-4-1-107-final-sources-
jar/io/netty/util/NettyRuntime.java
* /opt/cola/permits/1912367082_1708460323.4877825/0/netty-common-4-1-107-final-sources-
jar/io/netty/util/UncheckedBooleanSupplier.java
* /opt/cola/permits/1912367082_1708460323.4877825/0/netty-common-4-1-107-final-sources-
jar/io/netty/util/internal/EmptyPriorityQueue.java

```

## 1.328 netty-handler 4.1.107.Final

### 1.328.1 Available under license :

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```

Found in path(s):

```

* /opt/cola/permits/1912367142_1708460254.3605444/0/netty-handler-4-1-107-final-sources-
jar/io/netty/handler/ssl/Java8SslUtils.java
* /opt/cola/permits/1912367142_1708460254.3605444/0/netty-handler-4-1-107-final-sources-
jar/io/netty/handler/ssl/DelegatingSslContext.java
* /opt/cola/permits/1912367142_1708460254.3605444/0/netty-handler-4-1-107-final-sources-
jar/io/netty/handler/flush/FlushConsolidationHandler.java
*

```

/opt/cola/permits/1912367142\_1708460254.3605444/0/netty-handler-4-1-107-final-sources-jar/io/netty/handler/ssl/ReferenceCountedOpenSslContext.java  
\* /opt/cola/permits/1912367142\_1708460254.3605444/0/netty-handler-4-1-107-final-sources-jar/io/netty/handler/ssl/OpenSslCertificateException.java  
\* /opt/cola/permits/1912367142\_1708460254.3605444/0/netty-handler-4-1-107-final-sources-jar/io/netty/handler/ssl/ReferenceCountedOpenSslEngine.java  
\* /opt/cola/permits/1912367142\_1708460254.3605444/0/netty-handler-4-1-107-final-sources-jar/io/netty/handler/ssl/ReferenceCountedOpenSslClientContext.java  
\* /opt/cola/permits/1912367142\_1708460254.3605444/0/netty-handler-4-1-107-final-sources-jar/io/netty/handler/ssl/PemEncoded.java  
\* /opt/cola/permits/1912367142\_1708460254.3605444/0/netty-handler-4-1-107-final-sources-jar/io/netty/handler/ssl/OpenSslKeyMaterialManager.java  
\*

/opt/cola/permits/1912367142\_1708460254.3605444/0/netty-handler-4-1-107-final-sources-jar/io/netty/handler/flush/package-info.java  
\* /opt/cola/permits/1912367142\_1708460254.3605444/0/netty-handler-4-1-107-final-sources-jar/io/netty/handler/ssl/ReferenceCountedOpenSslServerContext.java  
\* /opt/cola/permits/1912367142\_1708460254.3605444/0/netty-handler-4-1-107-final-sources-jar/io/netty/handler/ssl/PemValue.java  
\* /opt/cola/permits/1912367142\_1708460254.3605444/0/netty-handler-4-1-107-final-sources-jar/io/netty/handler/ssl/util/X509TrustManagerWrapper.java  
\* /opt/cola/permits/1912367142\_1708460254.3605444/0/netty-handler-4-1-107-final-sources-jar/io/netty/handler/ssl/PemPrivateKey.java  
\* /opt/cola/permits/1912367142\_1708460254.3605444/0/netty-handler-4-1-107-final-sources-jar/io/netty/handler/ssl/PemX509Certificate.java  
\* /opt/cola/permits/1912367142\_1708460254.3605444/0/netty-handler-4-1-107-final-sources-jar/io/netty/handler/flow/package-info.java

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\* /opt/cola/permits/1912367142\_1708460254.3605444/0/netty-handler-4-1-107-final-sources-jar/io/netty/handler/ssl/JdkNpnApplicationProtocolNegotiator.java

```

* /opt/cola/permits/1912367142_1708460254.3605444/0/netty-handler-4-1-107-final-sources-
jar/io/netty/handler/ssl/ApplicationProtocolUtil.java
*
/opt/cola/permits/1912367142_1708460254.3605444/0/netty-handler-4-1-107-final-sources-
jar/io/netty/handler/ssl/OpenSslSessionContext.java
* /opt/cola/permits/1912367142_1708460254.3605444/0/netty-handler-4-1-107-final-sources-
jar/io/netty/handler/ssl/util/FingerprintTrustManagerFactory.java
* /opt/cola/permits/1912367142_1708460254.3605444/0/netty-handler-4-1-107-final-sources-
jar/io/netty/handler/ssl/OpenSslEngine.java
* /opt/cola/permits/1912367142_1708460254.3605444/0/netty-handler-4-1-107-final-sources-
jar/io/netty/handler/ipfilter/IpSubnetFilterRule.java
* /opt/cola/permits/1912367142_1708460254.3605444/0/netty-handler-4-1-107-final-sources-
jar/io/netty/handler/ipfilter/AbstractRemoteAddressFilter.java
* /opt/cola/permits/1912367142_1708460254.3605444/0/netty-handler-4-1-107-final-sources-
jar/io/netty/handler/ssl/util/BouncyCastleSelfSignedCertGenerator.java
* /opt/cola/permits/1912367142_1708460254.3605444/0/netty-handler-4-1-107-final-sources-
jar/io/netty/handler/ssl/JettyAlpnSslEngine.java
*
/opt/cola/permits/1912367142_1708460254.3605444/0/netty-handler-4-1-107-final-sources-
jar/io/netty/handler/ssl/OpenSslContext.java
* /opt/cola/permits/1912367142_1708460254.3605444/0/netty-handler-4-1-107-final-sources-
jar/io/netty/handler/ssl/JdkBaseApplicationProtocolNegotiator.java
* /opt/cola/permits/1912367142_1708460254.3605444/0/netty-handler-4-1-107-final-sources-
jar/io/netty/handler/ssl/IdentityCipherSuiteFilter.java
* /opt/cola/permits/1912367142_1708460254.3605444/0/netty-handler-4-1-107-final-sources-
jar/io/netty/handler/ssl/SslProvider.java
* /opt/cola/permits/1912367142_1708460254.3605444/0/netty-handler-4-1-107-final-sources-
jar/io/netty/handler/ssl/OpenSslServerContext.java
* /opt/cola/permits/1912367142_1708460254.3605444/0/netty-handler-4-1-107-final-sources-
jar/io/netty/handler/ssl/JdkSslClientContext.java
* /opt/cola/permits/1912367142_1708460254.3605444/0/netty-handler-4-1-107-final-sources-
jar/io/netty/handler/ipfilter/IpFilterRule.java
*
/opt/cola/permits/1912367142_1708460254.3605444/0/netty-handler-4-1-107-final-sources-
jar/io/netty/handler/ipfilter/UniqueIpFilter.java
* /opt/cola/permits/1912367142_1708460254.3605444/0/netty-handler-4-1-107-final-sources-
jar/io/netty/handler/ssl/JettyNpnSslEngine.java
* /opt/cola/permits/1912367142_1708460254.3605444/0/netty-handler-4-1-107-final-sources-
jar/io/netty/handler/ssl/JdkDefaultApplicationProtocolNegotiator.java
* /opt/cola/permits/1912367142_1708460254.3605444/0/netty-handler-4-1-107-final-sources-
jar/io/netty/handler/ssl/OpenSslDefaultApplicationProtocolNegotiator.java
* /opt/cola/permits/1912367142_1708460254.3605444/0/netty-handler-4-1-107-final-sources-
jar/io/netty/handler/ssl/Java7SslParametersUtils.java
* /opt/cola/permits/1912367142_1708460254.3605444/0/netty-handler-4-1-107-final-sources-
jar/io/netty/handler/ssl/util/ThreadLocalInsecureRandom.java
* /opt/cola/permits/1912367142_1708460254.3605444/0/netty-handler-4-1-107-final-sources-
jar/io/netty/handler/ssl/OpenSslApplicationProtocolNegotiator.java
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```

/opt/cola/permits/1912367142\_1708460254.3605444/0/netty-handler-4-1-107-final-sources-jar/io/netty/handler/ssl/JdkSslContext.java  
\* /opt/cola/permits/1912367142\_1708460254.3605444/0/netty-handler-4-1-107-final-sources-jar/io/netty/handler/ssl/OpenSslServerSessionContext.java  
\* /opt/cola/permits/1912367142\_1708460254.3605444/0/netty-handler-4-1-107-final-sources-jar/io/netty/handler/ssl/CipherSuiteConverter.java  
\* /opt/cola/permits/1912367142\_1708460254.3605444/0/netty-handler-4-1-107-final-sources-jar/io/netty/handler/ssl/OpenSslSessionStats.java  
\* /opt/cola/permits/1912367142\_1708460254.3605444/0/netty-handler-4-1-107-final-sources-jar/io/netty/handler/ssl/ApplicationProtocolNegotiator.java  
\* /opt/cola/permits/1912367142\_1708460254.3605444/0/netty-handler-4-1-107-final-sources-jar/io/netty/handler/ssl/OpenSsl.java  
\* /opt/cola/permits/1912367142\_1708460254.3605444/0/netty-handler-4-1-107-final-sources-jar/io/netty/handler/ssl/SslUtils.java  
\*  
/opt/cola/permits/1912367142\_1708460254.3605444/0/netty-handler-4-1-107-final-sources-jar/io/netty/handler/ssl/util/InsecureTrustManagerFactory.java  
\* /opt/cola/permits/1912367142\_1708460254.3605444/0/netty-handler-4-1-107-final-sources-jar/io/netty/handler/ssl/JdkAlpnApplicationProtocolNegotiator.java  
\* /opt/cola/permits/1912367142\_1708460254.3605444/0/netty-handler-4-1-107-final-sources-jar/io/netty/handler/ssl/util/OpenJdkSelfSignedCertGenerator.java  
\* /opt/cola/permits/1912367142\_1708460254.3605444/0/netty-handler-4-1-107-final-sources-jar/io/netty/handler/ssl/JdkSslServerContext.java  
\* /opt/cola/permits/1912367142\_1708460254.3605444/0/netty-handler-4-1-107-final-sources-jar/io/netty/handler/ssl/util/SimpleTrustManagerFactory.java  
\* /opt/cola/permits/1912367142\_1708460254.3605444/0/netty-handler-4-1-107-final-sources-jar/io/netty/handler/ssl/SupportedCipherSuiteFilter.java  
\* /opt/cola/permits/1912367142\_1708460254.3605444/0/netty-handler-4-1-107-final-sources-jar/io/netty/handler/ipfilter/package-info.java  
\*  
/opt/cola/permits/1912367142\_1708460254.3605444/0/netty-handler-4-1-107-final-sources-jar/io/netty/handler/ipfilter/IpFilterRuleType.java  
\* /opt/cola/permits/1912367142\_1708460254.3605444/0/netty-handler-4-1-107-final-sources-jar/io/netty/handler/ssl/SslContext.java  
\* /opt/cola/permits/1912367142\_1708460254.3605444/0/netty-handler-4-1-107-final-sources-jar/io/netty/handler/ssl/JdkSslEngine.java  
\* /opt/cola/permits/1912367142\_1708460254.3605444/0/netty-handler-4-1-107-final-sources-jar/io/netty/handler/ipfilter/RuleBasedIpFilter.java  
\* /opt/cola/permits/1912367142\_1708460254.3605444/0/netty-handler-4-1-107-final-sources-jar/io/netty/handler/ssl/SniHandler.java  
\* /opt/cola/permits/1912367142\_1708460254.3605444/0/netty-handler-4-1-107-final-sources-jar/io/netty/handler/ssl/util/LazyX509Certificate.java  
\* /opt/cola/permits/1912367142\_1708460254.3605444/0/netty-handler-4-1-107-final-sources-jar/io/netty/handler/ssl/OpenSslEngineMap.java  
\* /opt/cola/permits/1912367142\_1708460254.3605444/0/netty-handler-4-1-107-final-sources-jar/io/netty/handler/ssl/ApplicationProtocolConfig.java  
\*

/opt/cola/permits/1912367142\_1708460254.3605444/0/netty-handler-4-1-107-final-sources-jar/io/netty/handler/ssl/PemReader.java  
\* /opt/cola/permits/1912367142\_1708460254.3605444/0/netty-handler-4-1-107-final-sources-jar/io/netty/handler/traffic/GlobalChannelTrafficCounter.java  
\* /opt/cola/permits/1912367142\_1708460254.3605444/0/netty-handler-4-1-107-final-sources-jar/io/netty/handler/ssl/JdkApplicationProtocolNegotiator.java  
\* /opt/cola/permits/1912367142\_1708460254.3605444/0/netty-handler-4-1-107-final-sources-jar/io/netty/handler/ssl/OpenSslClientContext.java  
\* /opt/cola/permits/1912367142\_1708460254.3605444/0/netty-handler-4-1-107-final-sources-jar/io/netty/handler/ssl/OpenSslNpnApplicationProtocolNegotiator.java  
\* /opt/cola/permits/1912367142\_1708460254.3605444/0/netty-handler-4-1-107-final-sources-jar/io/netty/handler/ssl/CipherSuiteFilter.java  
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\* /opt/cola/permits/1912367142\_1708460254.3605444/0/netty-handler-4-1-107-final-sources-jar/io/netty/handler/ssl/OpenSslCertificateCompressionAlgorithm.java  
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jar/io/netty/handler/ssl/StacklessSSLHandshakeException.java  
\* /opt/cola/permits/1912367142\_1708460254.3605444/0/netty-handler-4-1-107-final-sources-  
jar/io/netty/handler/ssl/EnhancingX509ExtendedTrustManager.java  
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jar/io/netty/handler/ssl/ConscryptAlpnSslEngine.java  
\* /opt/cola/permits/1912367142\_1708460254.3605444/0/netty-handler-4-1-107-final-sources-  
jar/io/netty/handler/ssl/OptionalSslHandler.java  
\*  
/opt/cola/permits/1912367142\_1708460254.3605444/0/netty-handler-4-1-107-final-sources-  
jar/io/netty/handler/ssl/JdkAlpnSslEngine.java  
\* /opt/cola/permits/1912367142\_1708460254.3605444/0/netty-handler-4-1-107-final-sources-  
jar/io/netty/handler/ssl/AbstractSniHandler.java  
\* /opt/cola/permits/1912367142\_1708460254.3605444/0/netty-handler-4-1-107-final-sources-  
jar/io/netty/handler/ssl/JdkAlpnSslUtils.java  
\* /opt/cola/permits/1912367142\_1708460254.3605444/0/netty-handler-4-1-107-final-sources-  
jar/io/netty/handler/ssl/ocsp/OcspClientHandler.java  
\* /opt/cola/permits/1912367142\_1708460254.3605444/0/netty-handler-4-1-107-final-sources-  
jar/io/netty/handler/ssl/ocsp/package-info.java  
\* /opt/cola/permits/1912367142\_1708460254.3605444/0/netty-handler-4-1-107-final-sources-  
jar/io/netty/handler/ssl/SslClientHelloHandler.java  
\* /opt/cola/permits/1912367142\_1708460254.3605444/0/netty-handler-4-1-107-final-sources-  
jar/io/netty/handler/ssl/SslCloseCompletionEvent.java

\* /opt/cola/permits/1912367142\_1708460254.3605444/0/netty-handler-4-1-107-final-sources-jar/io/netty/handler/ssl/SslCompletionEvent.java

\*

/opt/cola/permits/1912367142\_1708460254.3605444/0/netty-handler-4-1-107-final-sources-jar/io/netty/handler/ssl/SniCompletionEvent.java

\* /opt/cola/permits/1912367142\_1708460254.3605444/0/netty-handler-4-1-107-final-sources-jar/io/netty/handler/ssl/Conscrypt.java

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\* /opt/cola/permits/1912367142\_1708460254.3605444/0/netty-handler-4-1-107-final-sources-jar/io/netty/handler/timeout/IdleState.java

\* /opt/cola/permits/1912367142\_1708460254.3605444/0/netty-handler-4-1-107-final-sources-jar/io/netty/handler/stream/ChunkedStream.java

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/opt/cola/permits/1912367142\_1708460254.3605444/0/netty-handler-4-1-107-final-sources-jar/io/netty/handler/stream/package-info.java

\* /opt/cola/permits/1912367142\_1708460254.3605444/0/netty-handler-4-1-107-final-sources-jar/io/netty/handler/ssl/SslHandler.java

\* /opt/cola/permits/1912367142\_1708460254.3605444/0/netty-handler-4-1-107-final-sources-jar/io/netty/handler/timeout/package-info.java

\* /opt/cola/permits/1912367142\_1708460254.3605444/0/netty-handler-4-1-107-final-sources-jar/io/netty/handler/ssl/util/package-info.java

\* /opt/cola/permits/1912367142\_1708460254.3605444/0/netty-handler-4-1-107-final-sources-jar/io/netty/handler/timeout/IdleStateEvent.java

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\* /opt/cola/permits/1912367142\_1708460254.3605444/0/netty-handler-4-1-107-final-sources-jar/io/netty/handler/logging/package-info.java

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/opt/cola/permits/1912367142\_1708460254.3605444/0/netty-handler-4-1-107-final-sources-jar/io/netty/handler/timeout/IdleStateHandler.java  
\* /opt/cola/permits/1912367142\_1708460254.3605444/0/netty-handler-4-1-107-final-sources-jar/io/netty/handler/timeout/WriteTimeoutException.java  
\* /opt/cola/permits/1912367142\_1708460254.3605444/0/netty-handler-4-1-107-final-sources-jar/io/netty/handler/logging/LoggingHandler.java  
\* /opt/cola/permits/1912367142\_1708460254.3605444/0/netty-handler-4-1-107-final-sources-jar/io/netty/handler/timeout/ReadTimeoutException.java  
\* /opt/cola/permits/1912367142\_1708460254.3605444/0/netty-handler-4-1-107-final-sources-jar/io/netty/handler/stream/ChunkedFile.java  
\* /opt/cola/permits/1912367142\_1708460254.3605444/0/netty-handler-4-1-107-final-sources-jar/io/netty/handler/logging/LogLevel.java  
\* /opt/cola/permits/1912367142\_1708460254.3605444/0/netty-handler-4-1-107-final-sources-jar/io/netty/handler/timeout/ReadTimeoutHandler.java  
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/opt/cola/permits/1912367142\_1708460254.3605444/0/netty-handler-4-1-107-final-sources-jar/io/netty/handler/stream/ChunkedWriteHandler.java  
\* /opt/cola/permits/1912367142\_1708460254.3605444/0/netty-handler-4-1-107-final-sources-jar/io/netty/handler/timeout/TimeoutException.java  
\* /opt/cola/permits/1912367142\_1708460254.3605444/0/netty-handler-4-1-107-final-sources-jar/io/netty/handler/ssl/NotSslRecordException.java  
\* /opt/cola/permits/1912367142\_1708460254.3605444/0/netty-handler-4-1-107-final-sources-jar/io/netty/handler/stream/ChunkedNioStream.java  
\* /opt/cola/permits/1912367142\_1708460254.3605444/0/netty-handler-4-1-107-final-sources-jar/io/netty/handler/ssl/package-info.java  
\* /opt/cola/permits/1912367142\_1708460254.3605444/0/netty-handler-4-1-107-final-sources-jar/io/netty/handler/stream/ChunkedNioFile.java  
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jar/io/netty/handler/ssl/OpenSslClientSessionCache.java
* /opt/cola/permits/1912367142_1708460254.3605444/0/netty-handler-4-1-107-final-sources-
jar/io/netty/handler/ssl/Ciphers.java
* /opt/cola/permits/1912367142_1708460254.3605444/0/netty-handler-4-1-107-final-sources-
jar/io/netty/handler/ssl/AsyncRunnable.java
*
/opt/cola/permits/1912367142_1708460254.3605444/0/netty-handler-4-1-107-final-sources-
jar/io/netty/handler/ssl/BouncyCastleAlpnSslEngine.java
* /opt/cola/permits/1912367142_1708460254.3605444/0/netty-handler-4-1-107-final-sources-
jar/io/netty/handler/ssl/GroupsConverter.java
* /opt/cola/permits/1912367142_1708460254.3605444/0/netty-handler-4-1-107-final-sources-
jar/io/netty/handler/ssl/OpenSslAsyncPrivateKeyMethod.java
* /opt/cola/permits/1912367142_1708460254.3605444/0/netty-handler-4-1-107-final-sources-
jar/io/netty/handler/ssl/OpenSslContextOption.java
* /opt/cola/permits/1912367142_1708460254.3605444/0/netty-handler-4-1-107-final-sources-
jar/io/netty/handler/ssl/OpenSslSessionCache.java
* /opt/cola/permits/1912367142_1708460254.3605444/0/netty-handler-4-1-107-final-sources-
jar/io/netty/handler/ssl/SslContextOption.java
* /opt/cola/permits/1912367142_1708460254.3605444/0/netty-handler-4-1-107-final-sources-
jar/io/netty/handler/ssl/SslProtocols.java
*
/opt/cola/permits/1912367142_1708460254.3605444/0/netty-handler-4-1-107-final-sources-
jar/io/netty/handler/ssl/BouncyCastle.java
* /opt/cola/permits/1912367142_1708460254.3605444/0/netty-handler-4-1-107-final-sources-
jar/io/netty/handler/ssl/BouncyCastleAlpnSslUtils.java
* /opt/cola/permits/1912367142_1708460254.3605444/0/netty-handler-4-1-107-final-sources-
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jar/io/netty/handler/ssl/SslMasterKeyHandler.java
* /opt/cola/permits/1912367142_1708460254.3605444/0/netty-handler-4-1-107-final-sources-
jar/io/netty/handler/ssl/OpenSslPrivateKeyMethod.java
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/opt/cola/permits/1912367142_1708460254.3605444/0/netty-handler-4-1-107-final-sources-
jar/io/netty/handler/ssl/util/X509KeyManagerWrapper.java
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jar/io/netty/handler/ssl/util/TrustManagerFactoryWrapper.java  
\* /opt/cola/permits/1912367142\_1708460254.3605444/0/netty-handler-4-1-107-final-sources-  
jar/io/netty/handler/ssl/util/KeyManagerFactoryWrapper.java  
\* /opt/cola/permits/1912367142\_1708460254.3605444/0/netty-handler-4-1-107-final-sources-  
jar/io/netty/handler/ssl/util/SimpleKeyManagerFactory.java  
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jar/io/netty/handler/address/package-info.java  
\* /opt/cola/permits/1912367142\_1708460254.3605444/0/netty-handler-4-1-107-final-sources-  
jar/io/netty/handler/ssl/PseudoRandomFunction.java  
\* /opt/cola/permits/1912367142\_1708460254.3605444/0/netty-handler-4-1-107-final-sources-  
jar/io/netty/handler/address/DynamicAddressConnectHandler.java  
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jar/io/netty/handler/ssl/OpenSslX509TrustManagerWrapper.java  
\*  
/opt/cola/permits/1912367142\_1708460254.3605444/0/netty-handler-4-1-107-final-sources-  
jar/io/netty/handler/ssl/OpenSslPrivateKey.java  
\* /opt/cola/permits/1912367142\_1708460254.3605444/0/netty-handler-4-1-107-final-sources-  
jar/io/netty/handler/ssl/OpenSslKeyMaterialProvider.java  
\* /opt/cola/permits/1912367142\_1708460254.3605444/0/netty-handler-4-1-107-final-sources-  
jar/io/netty/handler/ssl/OpenSslCachingKeyMaterialProvider.java  
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jar/io/netty/handler/ssl/OpenSslCachingX509KeyManagerFactory.java  
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jar/io/netty/handler/ssl/OpenSslX509KeyManagerFactory.java  
\* /opt/cola/permits/1912367142\_1708460254.3605444/0/netty-handler-4-1-107-final-sources-  
jar/io/netty/handler/ssl/SignatureAlgorithmConverter.java  
\* /opt/cola/permits/1912367142\_1708460254.3605444/0/netty-handler-4-1-107-final-sources-

jar/io/netty/handler/ssl/ExtendedOpenSslSession.java

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jar/io/netty/handler/ssl/OpenSslSession.java

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jar/io/netty/handler/pcap/PcapWriter.java

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jar/io/netty/handler/pcap/package-info.java

\* /opt/cola/permits/1912367142\_1708460254.3605444/0/netty-handler-4-1-107-final-sources-

jar/io/netty/handler/pcap/IPPacket.java

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jar/io/netty/handler/pcap/PcapWriteHandler.java

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jar/io/netty/handler/pcap/TCPpacket.java

\* /opt/cola/permits/1912367142\_1708460254.3605444/0/netty-handler-4-1-107-final-sources-

jar/io/netty/handler/pcap/EthernetPacket.java

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Found in path(s):

\* /opt/cola/permits/1912367142\_1708460254.3605444/0/netty-handler-4-1-107-final-sources-jar/io/netty/handler/traffic/GlobalTrafficShapingHandler.java  
\* /opt/cola/permits/1912367142\_1708460254.3605444/0/netty-handler-4-1-107-final-sources-jar/io/netty/handler/traffic/ChannelTrafficShapingHandler.java  
\*  
/opt/cola/permits/1912367142\_1708460254.3605444/0/netty-handler-4-1-107-final-sources-jar/io/netty/handler/traffic/TrafficCounter.java  
\* /opt/cola/permits/1912367142\_1708460254.3605444/0/netty-handler-4-1-107-final-sources-jar/io/netty/handler/traffic/package-info.java

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Found in path(s):

\* /opt/cola/permits/1912367142\_1708460254.3605444/0/netty-handler-4-1-107-final-sources-jar/META-INF/maven/io.netty/netty-handler/pom.xml

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*/
```

Found in path(s):

```
* /opt/cola/permits/1912367142_1708460254.3605444/0/netty-handler-4-1-107-final-sources-  
jar/io/netty/handler/ssl/ApplicationProtocolNegotiationHandler.java  
* /opt/cola/permits/1912367142_1708460254.3605444/0/netty-handler-4-1-107-final-sources-  
jar/io/netty/handler/ssl/ClientAuth.java  
*  
/opt/cola/permits/1912367142_1708460254.3605444/0/netty-handler-4-1-107-final-sources-  
jar/io/netty/handler/ssl/OpenSslSessionTicketKey.java  
* /opt/cola/permits/1912367142_1708460254.3605444/0/netty-handler-4-1-107-final-sources-  
jar/io/netty/handler/ssl/util/LazyJavaxX509Certificate.java  
* /opt/cola/permits/1912367142_1708460254.3605444/0/netty-handler-4-1-107-final-sources-  
jar/io/netty/handler/ssl/ApplicationProtocolNames.java  
* /opt/cola/permits/1912367142_1708460254.3605444/0/netty-handler-4-1-107-final-sources-  
jar/io/netty/handler/ssl/ApplicationProtocolAccessor.java  
* /opt/cola/permits/1912367142_1708460254.3605444/0/netty-handler-4-1-107-final-sources-  
jar/io/netty/handler/ssl/SslContextBuilder.java  
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// Try the OpenJDK's proprietary implementation.
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\* /opt/cola/permits/1912367142\_1708460254.3605444/0/netty-handler-4-1-107-final-sources-jar/io/netty/handler/ssl/util/SelfSignedCertificate.java

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Found in path(s):

\* /opt/cola/permits/1912367142\_1708460254.3605444/0/netty-handler-4-1-107-final-sources-jar/io/netty/handler/traffic/GlobalChannelTrafficShapingHandler.java

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\* /opt/cola/permits/1912367142\_1708460254.3605444/0/netty-handler-4-1-107-final-sources-jar/io/netty/handler/ssl/SslHandshakeTimeoutException.java

\* /opt/cola/permits/1912367142\_1708460254.3605444/0/netty-handler-4-1-107-final-sources-jar/io/netty/handler/address/ResolveAddressHandler.java

\*

/opt/cola/permits/1912367142\_1708460254.3605444/0/netty-handler-4-1-107-final-sources-jar/io/netty/handler/ssl/util/FingerprintTrustManagerFactoryBuilder.java  
\* /opt/cola/permits/1912367142\_1708460254.3605444/0/netty-handler-4-1-107-final-sources-jar/io/netty/handler/logging/ByteBufFormat.java  
\* /opt/cola/permits/1912367142\_1708460254.3605444/0/netty-handler-4-1-107-final-sources-jar/io/netty/handler/ipfilter/IpSubnetFilter.java  
\* /opt/cola/permits/1912367142\_1708460254.3605444/0/netty-handler-4-1-107-final-sources-jar/io/netty/handler/ssl/SslClosedEngineException.java  
\* /opt/cola/permits/1912367142\_1708460254.3605444/0/netty-handler-4-1-107-final-sources-jar/io/netty/handler/ipfilter/IpSubnetFilterRuleComparator.java  
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* /opt/cola/permits/1912367142_1708460254.3605444/0/netty-handler-4-1-107-final-sources-jar/io/netty/handler/ssl/SslHandshakeCompletionEvent.java
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* /opt/cola/permits/1912367142_1708460254.3605444/0/netty-handler-4-1-107-final-sources-jar/META-INF/native-image/io.netty/netty-handler/native-image.properties
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* /opt/cola/permits/1912367142_1708460254.3605444/0/netty-handler-4-1-107-final-sources-jar/io/netty/handler/traffic/AbstractTrafficShapingHandler.java
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## 1.329 netty-codec-stomp 4.1.107.Final

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\* /opt/cola/permits/1912367099\_1708460233.4534025/0/netty-codec-stomp-4-1-107-final-sources-jar/io/netty/handler/codec/stomp/StompHeadersSubframe.java  
\* /opt/cola/permits/1912367099\_1708460233.4534025/0/netty-codec-stomp-4-1-107-final-sources-jar/io/netty/handler/codec/stomp/StompSubframeEncoder.java  
\*  
/opt/cola/permits/1912367099\_1708460233.4534025/0/netty-codec-stomp-4-1-107-final-sources-jar/io/netty/handler/codec/stomp/DefaultStompContentSubframe.java  
\* /opt/cola/permits/1912367099\_1708460233.4534025/0/netty-codec-stomp-4-1-107-final-sources-jar/io/netty/handler/codec/stomp/DefaultStompFrame.java  
\* /opt/cola/permits/1912367099\_1708460233.4534025/0/netty-codec-stomp-4-1-107-final-sources-jar/io/netty/handler/codec/stomp/package-info.java  
\* /opt/cola/permits/1912367099\_1708460233.4534025/0/netty-codec-stomp-4-1-107-final-sources-jar/io/netty/handler/codec/stomp/StompFrame.java  
\* /opt/cola/permits/1912367099\_1708460233.4534025/0/netty-codec-stomp-4-1-107-final-sources-jar/io/netty/handler/codec/stomp/StompHeaders.java  
\* /opt/cola/permits/1912367099\_1708460233.4534025/0/netty-codec-stomp-4-1-107-final-sources-jar/io/netty/handler/codec/stomp/DefaultLastStompContentSubframe.java  
\* /opt/cola/permits/1912367099\_1708460233.4534025/0/netty-codec-stomp-4-1-107-final-sources-jar/io/netty/handler/codec/stomp/StompContentSubframe.java  
\*  
/opt/cola/permits/1912367099\_1708460233.4534025/0/netty-codec-stomp-4-1-107-final-sources-jar/io/netty/handler/codec/stomp/StompSubframeAggregator.java  
\* /opt/cola/permits/1912367099\_1708460233.4534025/0/netty-codec-stomp-4-1-107-final-sources-jar/io/netty/handler/codec/stomp/StompSubframeDecoder.java  
\* /opt/cola/permits/1912367099\_1708460233.4534025/0/netty-codec-stomp-4-1-107-final-sources-jar/io/netty/handler/codec/stomp/LastStompContentSubframe.java  
\* /opt/cola/permits/1912367099\_1708460233.4534025/0/netty-codec-stomp-4-1-107-final-sources-jar/io/netty/handler/codec/stomp/StompCommand.java  
\* /opt/cola/permits/1912367099\_1708460233.4534025/0/netty-codec-stomp-4-1-107-final-sources-jar/io/netty/handler/codec/stomp/DefaultStompHeaders.java  
\* /opt/cola/permits/1912367099\_1708460233.4534025/0/netty-codec-stomp-4-1-107-final-sources-jar/io/netty/handler/codec/stomp/StompSubframe.java  
\* /opt/cola/permits/1912367099\_1708460233.4534025/0/netty-codec-stomp-4-1-107-final-sources-jar/io/netty/handler/codec/stomp/DefaultStompHeadersSubframe.java  
\*  
/opt/cola/permits/1912367099\_1708460233.4534025/0/netty-codec-stomp-4-1-107-final-sources-jar/io/netty/handler/codec/stomp/StompConstants.java

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```

## 1.330 netty-transport-classes-kqueue

### 4.1.107.Final

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\* /opt/cola/permits/1912366994\_1708460178.1056507/0/netty-transport-classes-kqueue-4-1-107-final-sources-jar/io/netty/channel/kqueue/KQueueChannelConfig.java

\*

/opt/cola/permits/1912366994\_1708460178.1056507/0/netty-transport-classes-kqueue-4-1-107-final-sources-jar/io/netty/channel/kqueue/KQueueSocketChannelConfig.java

\* /opt/cola/permits/1912366994\_1708460178.1056507/0/netty-transport-classes-kqueue-4-1-107-final-sources-jar/io/netty/channel/kqueue/KQueueServerChannelConfig.java

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\* /opt/cola/permits/1912366994\_1708460178.1056507/0/netty-transport-classes-kqueue-4-1-107-final-sources-jar/io/netty/channel/kqueue/KQueueServerSocketChannel.java

\* /opt/cola/permits/1912366994\_1708460178.1056507/0/netty-transport-classes-kqueue-4-1-107-final-sources-jar/io/netty/channel/kqueue/KQueueDatagramChannel.java

\* /opt/cola/permits/1912366994\_1708460178.1056507/0/netty-transport-classes-kqueue-4-1-107-final-sources-jar/io/netty/channel/kqueue/KQueueEventLoop.java

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/opt/cola/permits/1912366994\_1708460178.1056507/0/netty-transport-classes-kqueue-4-1-107-final-sources-jar/io/netty/channel/kqueue/KQueueSocketChannel.java

\* /opt/cola/permits/1912366994\_1708460178.1056507/0/netty-transport-classes-kqueue-4-1-107-final-sources-jar/io/netty/channel/kqueue/KQueueEventArray.java

\* /opt/cola/permits/1912366994\_1708460178.1056507/0/netty-transport-classes-kqueue-4-1-107-final-sources-jar/io/netty/channel/kqueue/AcceptFilter.java

\* /opt/cola/permits/1912366994\_1708460178.1056507/0/netty-transport-classes-kqueue-4-1-107-final-sources-jar/io/netty/channel/kqueue/AbstractKQueueChannel.java

\* /opt/cola/permits/1912366994\_1708460178.1056507/0/netty-transport-classes-kqueue-4-1-107-final-sources-jar/io/netty/channel/kqueue/KQueueServerDomainSocketChannel.java

\* /opt/cola/permits/1912366994\_1708460178.1056507/0/netty-transport-classes-kqueue-4-1-107-final-sources-jar/io/netty/channel/kqueue/NativeLongArray.java  
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\*  
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\* /opt/cola/permits/1912366994\_1708460178.1056507/0/netty-transport-classes-kqueue-4-1-107-final-sources-jar/io/netty/channel/kqueue/KQueueChannelOption.java  
\* /opt/cola/permits/1912366994\_1708460178.1056507/0/netty-transport-classes-kqueue-4-1-107-final-sources-jar/io/netty/channel/kqueue/Native.java  
\* /opt/cola/permits/1912366994\_1708460178.1056507/0/netty-transport-classes-kqueue-4-1-107-final-sources-jar/io/netty/channel/kqueue/KQueueRecvByteAllocatorHandle.java  
\*  
/opt/cola/permits/1912366994\_1708460178.1056507/0/netty-transport-classes-kqueue-4-1-107-final-sources-jar/io/netty/channel/kqueue/BsdSocket.java  
\* /opt/cola/permits/1912366994\_1708460178.1056507/0/netty-transport-classes-kqueue-4-1-107-final-sources-jar/io/netty/channel/kqueue/KQueueDomainSocketChannelConfig.java  
\* /opt/cola/permits/1912366994\_1708460178.1056507/0/netty-transport-classes-kqueue-4-1-107-final-sources-jar/io/netty/channel/kqueue/KQueueStaticallyReferencedJniMethods.java  
\* /opt/cola/permits/1912366994\_1708460178.1056507/0/netty-transport-classes-kqueue-4-1-107-final-sources-jar/io/netty/channel/kqueue/KQueueDomainSocketChannel.java  
\* /opt/cola/permits/1912366994\_1708460178.1056507/0/netty-transport-classes-kqueue-4-1-107-final-sources-jar/io/netty/channel/kqueue/AbstractKQueueServerChannel.java  
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jar/io/netty/channel/kqueue/KQueueDomainDatagramChannelConfig.java
* /opt/cola/permits/1912366994_1708460178.1056507/0/netty-transport-classes-kqueue-4-1-107-final-sources-
jar/io/netty/channel/kqueue/KQueueDomainDatagramChannel.java
*
/opt/cola/permits/1912366994_1708460178.1056507/0/netty-transport-classes-kqueue-4-1-107-final-sources-
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## 1.333 open-ldap 2.5.so.0.1.8

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\* /opt/cola/permits/1932116864\_1710257017.0478957/0/activation-1-1-1-sources-10-jar/javax/activation/CommandInfo.java  
\* /opt/cola/permits/1932116864\_1710257017.0478957/0/activation-1-1-1-sources-10-jar/javax/activation/SecuritySupport.java  
\* /opt/cola/permits/1932116864\_1710257017.0478957/0/activation-1-1-1-sources-10-jar/javax/activation/DataContentHandlerFactory.java  
\* /opt/cola/permits/1932116864\_1710257017.0478957/0/activation-1-1-1-sources-10-jar/com/sun/activation/registries/MimeTypeFile.java  
\* /opt/cola/permits/1932116864\_1710257017.0478957/0/activation-1-1-1-sources-10-jar/javax/activation/MimeTypeParameterList.java  
\* /opt/cola/permits/1932116864\_1710257017.0478957/0/activation-1-1-1-sources-10-jar/javax/activation/MimeTypeParseException.java  
\* /opt/cola/permits/1932116864\_1710257017.0478957/0/activation-1-1-1-sources-10-jar/javax/activation/ActivationDataFlavor.java  
\* /opt/cola/permits/1932116864\_1710257017.0478957/0/activation-1-1-1-sources-10-jar/javax/activation/MimeType.java  
\*  
/opt/cola/permits/1932116864\_1710257017.0478957/0/activation-1-1-1-sources-10-jar/com/sun/activation/viewers/ImageViewer.java  
\* /opt/cola/permits/1932116864\_1710257017.0478957/0/activation-1-1-1-sources-10-jar/com/sun/activation/viewers/ImageViewerCanvas.java  
\* /opt/cola/permits/1932116864\_1710257017.0478957/0/activation-1-1-1-sources-10-jar/com/sun/activation/viewers/TextViewer.java  
\* /opt/cola/permits/1932116864\_1710257017.0478957/0/activation-1-1-1-sources-10-jar/javax/activation/CommandObject.java  
\* /opt/cola/permits/1932116864\_1710257017.0478957/0/activation-1-1-1-sources-10-jar/com/sun/activation/viewers/TextEditor.java  
\* /opt/cola/permits/1932116864\_1710257017.0478957/0/activation-1-1-1-sources-10-jar/javax/activation/FileDataSource.java  
\* /opt/cola/permits/1932116864\_1710257017.0478957/0/activation-1-1-1-sources-10-jar/javax/activation/MailcapCommandMap.java  
\* /opt/cola/permits/1932116864\_1710257017.0478957/0/activation-1-1-1-sources-10-jar/javax/activation/MimetypesFileTypeMap.java



\*  
/opt/cola/permits/1932116864\_1710257017.0478957/0/activation-1-1-1-sources-10-jar/com/sun/activation/registries/MailcapTokenizer.java  
\* /opt/cola/permits/1932116864\_1710257017.0478957/0/activation-1-1-1-sources-10-jar/com/sun/activation/registries/MailcapParseException.java  
\* /opt/cola/permits/1932116864\_1710257017.0478957/0/activation-1-1-1-sources-10-jar/javax/activation/UnsupportedDataTypeException.java  
\* /opt/cola/permits/1932116864\_1710257017.0478957/0/activation-1-1-1-sources-10-jar/com/sun/activation/registries/MimeTypeEntry.java  
\* /opt/cola/permits/1932116864\_1710257017.0478957/0/activation-1-1-1-sources-10-jar/com/sun/activation/registries/MailcapFile.java  
\* /opt/cola/permits/1932116864\_1710257017.0478957/0/activation-1-1-1-sources-10-jar/javax/activation/URLDataSource.java  
\* /opt/cola/permits/1932116864\_1710257017.0478957/0/activation-1-1-1-sources-10-jar/javax/activation/DataHandler.java  
\* /opt/cola/permits/1932116864\_1710257017.0478957/0/activation-1-1-1-sources-10-jar/javax/activation/CommandMap.java  
\*  
/opt/cola/permits/1932116864\_1710257017.0478957/0/activation-1-1-1-sources-10-jar/javax/activation/FileTypeMap.java  
\* /opt/cola/permits/1932116864\_1710257017.0478957/0/activation-1-1-1-sources-10-jar/javax/activation/DataContentHandler.java  
\* /opt/cola/permits/1932116864\_1710257017.0478957/0/activation-1-1-1-sources-10-jar/com/sun/activation/registries/LogSupport.java  
\* /opt/cola/permits/1932116864\_1710257017.0478957/0/activation-1-1-1-sources-10-jar/javax/activation/DataSource.java

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@(#)package.html 1.2 07/05/14

-->

Found

in path(s):

\* /opt/cola/permits/1932116864\_1710257017.0478957/0/activation-1-1-1-sources-10-jar/javax/activation/package.html

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\* /opt/cola/permits/1932736116\_1710322304.7754936/0/grpc-protobuf-1-62-2-sources-jar/io/grpc/protobuf/ProtoServiceDescriptorSupplier.java

\* /opt/cola/permits/1932736116\_1710322304.7754936/0/grpc-protobuf-1-62-2-sources-jar/io/grpc/protobuf/ProtoMethodDescriptorSupplier.java

\* /opt/cola/permits/1932736116\_1710322304.7754936/0/grpc-protobuf-1-62-2-sources-jar/io/grpc/protobuf/StatusProto.java

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# 1.337 jetty-util-ajax 9.4.54.v20240208

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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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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

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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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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

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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

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org.eclipse.jetty.toolchain:jetty-schemas

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- \* javax.servlet:javax.servlet-api
- \* javax.annotation:javax.annotation-api
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org.apache.tomcat:tomcat-jasper-el  
org.apache.tomcat:tomcat-api  
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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: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

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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

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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# 1.341 jetty-client 9.4.54.v20240208

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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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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

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

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org.ow2.asm:asm-commons

org.ow2.asm:asm

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org.apache.taglibs:taglibs-standard-spec

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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

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org.apache.tomcat:tomcat-jasper-el

org.apache.tomcat:tomcat-api

org.apache.tomcat:tomcat-util-scan

org.apache.tomcat:tomcat-util

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org.eclipse.jetty.toolchain:jetty-schemas

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org.apache.tomcat:tomcat-jasper-el  
org.apache.tomcat:tomcat-api  
org.apache.tomcat:tomcat-util-scan  
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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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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

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- 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

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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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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

-----

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

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<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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org.mortbay.jasper:apache-jsp  
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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  
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Eclipse

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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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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

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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

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- 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

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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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## 1.347 jetty-jmx 9.4.54.v20240208

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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: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>

-----

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

-----

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

-----

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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# 1.348 jetty-xml 9.4.54.v20240208

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\* 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.

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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

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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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# 1.349 jetty 9.4.54.v20240208

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\* 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: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

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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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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

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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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## 1.351 elasticsearch 8.12.2

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