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1.358 swagger-models-jakarta 2.2.38

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1.509 libbacktrace 1.0+git20251223
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1.1 libjpeg 6b

1.1.1 Notifications :

This software is based in part on the work of the Independent JPEG Group.

1.1.2 Available under license :

The Independent JPEG Group's JPEG software

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README for release 6b of 27-Mar-1998

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Serious users of this software (particularly those incorporating it into larger programs) should contact IJG at jpeg-info@uunet.uu.net to be added to our electronic mailing list. Mailing list members are notified of updates and have a chance to participate in technical discussions, etc.

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

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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.
coderrules.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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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.

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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.

We are required to state that

"The Graphics Interchange Format(c) is the Copyright property of CompuServe Incorporated. GIF(sm) is a Service Mark property of CompuServe Incorporated."

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:

Literature Department
C-Cube Microsystems, Inc.
1778 McCarthy Blvd.
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](ftp://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](ftp://ftp.uu.net) (Internet address 192.48.96.9). The most recent released version can always be found there in directory [graphics/jpeg](ftp://ftp.uu.net/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 for information on retrieving files that way.

Numerous Internet sites maintain copies of the UUNET files. However, only [ftp.uu.net](ftp://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](http://rtfm.mit.edu/pub/usenet/news.answers/jpeg-faq/): [ftp://rtfm.mit.edu/pub/usenet/news.answers/jpeg-faq/](http://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 with body
send usenet/news.answers/jpeg-faq/part1
send usenet/news.answers/jpeg-faq/part2

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.

1.2 libyaml 0.2.5

1.2.1 Available under license :

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1.3 apr 1.7.5

1.3.1 Available under license :

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```
/*
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From network_io/unix/inet_ntop.c, network_io/unix/inet_pton.c:

```
/* Copyright (c) 1996 by Internet Software Consortium.
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```

From dso/aix/dso.c:

```
* Based on libdl (dlfcn.c/dlfcn.h) which is
* Copyright (c) 1992,1993,1995,1996,1997,1988
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```


From strings/apr_strnatcmp.c,
include/apr_strings.h:

strnatcmp.c -- Perform 'natural order' comparisons of strings in C.
Copyright (C) 2000 by Martin Pool <mbp@humblebug.org.au>

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From
strings/apr_snprintf.c:

*
* cvt - IEEE floating point formatting routines.
* Derived from UNIX V7, Copyright(C) Caldera International Inc.
*

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1.4 libcxxabi 1.1.10.5

1.4.1 Available under license :

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

Manifest-Version: 1.0

Bnd-LastModified: 1695799258578

Bundle-ActivationPolicy: lazy

Bundle-Activator: org.xerial.snappy.SnappyBundleActivator

Bundle-Description: snappy-java: A fast compression/decompression libr
ary

Bundle-DocURL: <http://www.xerial.org/>

Bundle-License: <http://www.apache.org/licenses/LICENSE-2.0.txt>

Bundle-ManifestVersion: 2

Bundle-Name: snappy-java: A fast compression/decompression library

Bundle-NativeCode: org/xerial/snappy/native/Windows/x86_64/snappyjava.

dll;osname=win32;processor=x86-64,org/xerial/snappy/native/Windows/x8

6_64/snappyjava.dll;osname=win32;processor=x64,org/xerial/snappy/nati

ve/Windows/x86_64/snappyjava.dll;osname=win32;processor=amd64,org/xer

ial/snappy/native/Windows/x86/snappyjava.dll;osname=win32;processor=x

86,org/xerial/snappy/native/Mac/x86/libsnappyjava.jnilib;osname=macos

x;processor=x86,org/xerial/snappy/native/Mac/x86_64/libsnappyjava.dyl

ib;osname=macosx;processor=x86-64,org/xerial/snappy/native/Mac/aarch6

4/libsnappyjava.dylib;osname=macosx;processor=aarch64,org/xerial/snap

py/native/Linux/x86_64/libsnappyjava.so;osname=linux;processor=x86-64

,org/xerial/snappy/native/Linux/x86_64/libsnappyjava.so;osname=linux;

processor=x64,org/xerial/snappy/native/Linux/x86_64/libsnappyjava.so;

osname=linux;processor=amd64,org/xerial/snappy/native/Linux/x86/libsn

appyjava.so;osname=linux;processor=x86,org/xerial/snappy/native/Linux
 /aarch64/libsnappyjava.so;osname=linux;processor=aarch64,org/xerial/s
 nappy/native/Linux/riscv64/libsnappyjava.so;osname=linux;processor=ri
 scv64,org/xerial/snappy/native/Linux/arm/libsnappyjava.so;osname=linu
 x;processor=arm,org/xerial/snappy/native/Linux/armv7/libsnappyjava.so
 ;osname=linux;processor=arm_le,org/xerial/snappy/native/Linux/ppc64/l
 ibsnappyjava.so;osname=linux;processor=ppc64le,org/xerial/snappy/nati
 ve/Linux/s390x/libsnappyjava.so;osname=linux;processor=s390x,org/xeri
 al/snappy/native/AIX/ppc/libsnappyjava.a;osname=aix;processor=ppc,org
 /xerial/snappy/native/AIX/ppc64/libsnappyjava.a;osname=aix;processor=
 ppc64,org/xerial/snappy/native/SunOS/x86/libsnappyjava.so;osname=suno
 s;processor=x86,org/xerial/snappy/native/SunOS/x86_64/libsnappyjava.s
 o;osname=sunos;processor=x86-64,org/xerial/snappy/native/SunOS/sparc/
 libsnappyjava.so;osname=sunos;processor=sparc
 Bundle-SymbolicName: org.xerial.snappy.snappy-java
 Bundle-Vendor: xerial.org
 Bundle-Version: 1.1.10.5
 Created-By: 11.0.20 (Azul Systems, Inc.)
 Export-Package: org.xerial.snappy;uses:="org.osgi.framework,org.xerial
 .snappy.buffer,org.xerial.snappy.pool";version="1.1.10",org.xerial.sn
 appy.buffer;version="1.1.10",org.xerial.snappy.pool;version="1.1.10"
 Implementation-Title: snappy-java
 Implementation-URL: <https://github.com/xerial/snappy-java>
 Implementation-Vendor: xerial.org
 Implementation-Vendor-Id: org.xerial.snappy
 Implementation-Version: 1.1.10.5
 Import-Package: org.osgi.framework;version="[1.5,2)"
 Private-Package:
 org.xerial.snappy.native.AIX.ppc,org.xerial.snappy.na
 tive.AIX.ppc64,org.xerial.snappy.native.FreeBSD.x86_64,org.xerial.sna
 ppy.native.Linux.aarch64,org.xerial.snappy.native.Linux.android-aarch
 64,org.xerial.snappy.native.Linux.android-arm,org.xerial.snappy.nativ
 e.Linux.arm,org.xerial.snappy.native.Linux.armv6,org.xerial.snappy.na
 tive.Linux.armv7,org.xerial.snappy.native.Linux.ppc,org.xerial.snappy
 .native.Linux.ppc64,org.xerial.snappy.native.Linux.ppc64le,org.xerial
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 .xerial.snappy.native.Linux.x86,org.xerial.snappy.native.Linux.x86_64
 ,org.xerial.snappy.native.Mac.aarch64,org.xerial.snappy.native.Mac.x8
 6,org.xerial.snappy.native.Mac.x86_64,org.xerial.snappy.native,org.xe
 rial.snappy.native.SunOS.sparc,org.xerial.snappy.native.SunOS.x86,org
 .xerial.snappy.native.SunOS.x86_64,org.xerial.snappy.native.Windows.a
 arch64,org.xerial.snappy.native.Windows.x86,org.xerial.snappy.native.
 Windows.x86_64
 Require-Capability:
 osgi.ee;filter:="(&(osgi.ee=JavaSE)(version=1.7))"
 Specification-Title: snappy-java
 Specification-Vendor: xerial.org
 Specification-Version: 1.1.10.5

Tool: Bnd-5.1.2.202007211702

Found in path(s):

* /snappy-java-1-1-10-5-jar/META-INF/MANIFEST.MF

1.5 giflib 5.2.2

1.5.1 Available under license :

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1.6 free-type 2.13.3

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The contributed BDF and PCF drivers come with a license similar to that of the X Window System. It is compatible to the above two licenses (see files ``src/bdf/README`` and ``src/pcf/README``). The same holds for the source code files ``src/base/fthash.c`` and ``include/freetype/internal/fthash.h``; they were part of the BDF driver in earlier FreeType versions.

The gzip module uses the zlib license (see ``src/gzip/zlib.h``) which too is compatible to the above two licenses.

The files ``src/autofit/ft-hb.c`` and ``src/autofit/ft-hb.h`` contain code taken almost verbatim from the HarfBuzz file ``hb-ft.cc``, which uses the 'Old MIT' license, compatible to the above two licenses.

The MD5 checksum support (only used for debugging in development builds) is in the public domain.

--- end of LICENSE.TXT ---

Found in path(s):

* /freetype-279-tar/freetype.TXT

1.7 simple launcher 1.1.0.14

1.7.1 Available under license :

A. HISTORY OF THE SOFTWARE

=====

Python was created in the early 1990s by Guido van Rossum at Stichting

Mathematisch Centrum (CWI, see <http://www.cwi.nl>) in the Netherlands as a successor of a language called ABC. Guido remains Python's principal author, although it includes many contributions from others.

In 1995, Guido continued his work on Python at the Corporation for National Research Initiatives (CNRI, see <http://www.cnri.reston.va.us>) in Reston, Virginia where he released several versions of the software.

In May 2000, Guido and the Python core development team moved to BeOpen.com to form the BeOpen PythonLabs team. In October of the same year, the PythonLabs team moved to Digital Creations (now Zope Corporation, see <http://www.zope.com>). In 2001, the Python Software Foundation (PSF, see <http://www.python.org/psf/>) was formed, a non-profit organization created specifically to own Python-related Intellectual Property. Zope Corporation is a sponsoring member of the PSF.

All Python releases are Open Source (see <http://www.opensource.org> for the Open Source Definition). Historically, most, but not all, Python releases have also been GPL-compatible; the table below summarizes the various releases.

Release	Derived from	Year	Owner	GPL-compatible? (1)
0.9.0 thru 1.2		1991-1995	CWI	yes
1.3 thru 1.5.2	1.2	1995-1999	CNRI	yes
1.6	1.5.2	2000	CNRI	no
2.0	1.6	2000	BeOpen.com	no
1.6.1	1.6	2001	CNRI	yes (2)
2.1	2.0+1.6.1	2001	PSF	no
2.0.1	2.0+1.6.1	2001	PSF	yes
2.1.1	2.1+2.0.1	2001	PSF	yes
2.2	2.1.1	2001	PSF	yes
2.1.2	2.1.1	2002	PSF	yes
2.1.3				
2.1.2	2002	PSF	yes	
2.2.1	2.2	2002	PSF	yes
2.2.2	2.2.1	2002	PSF	yes
2.2.3	2.2.2	2003	PSF	yes
2.3	2.2.2	2002-2003	PSF	yes
2.3.1	2.3	2002-2003	PSF	yes
2.3.2	2.3.1	2002-2003	PSF	yes
2.3.3	2.3.2	2002-2003	PSF	yes
2.3.4	2.3.3	2004	PSF	yes
2.3.5	2.3.4	2005	PSF	yes

2.4	2.3	2004	PSF	yes
2.4.1	2.4	2005	PSF	yes
2.4.2	2.4.1	2005	PSF	yes
2.4.3	2.4.2	2006	PSF	yes
2.4.4	2.4.3	2006	PSF	yes
2.5	2.4	2006	PSF	yes
2.5.1	2.5	2007	PSF	yes
2.5.2	2.5.1	2008	PSF	yes
2.5.3	2.5.2	2008	PSF	yes
2.6	2.5	2008	PSF	yes
2.6.1	2.6	2008	PSF	yes
2.6.2	2.6.1	2009	PSF	yes
2.6.3	2.6.2	2009	PSF	yes
2.6.4	2.6.3	2009	PSF	yes
2.6.5	2.6.4	2010	PSF	yes
3.0	2.6	2008	PSF	yes
3.0.1	3.0	2009	PSF	yes
3.1	3.0.1	2009	PSF	yes
3.1.1	3.1	2009	PSF	yes
3.1.2	3.1	2010	PSF	yes
3.2	3.1	2010	PSF	yes

Footnotes:

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=====

Distutils2 Contributors

=====

The Distutils2 project was started by Tarek Ziad and is currently maintained by ric Araujo. Many people have contributed to the project.

distlib has started off using some of the code from distutil2.

If you're making a patch, please add your name below in alphabetical order, and welcome into the Fellowship of the Packaging!

Thanks to:

- Rajiv Abraham
- Ali Afshar
- David Barnett
- Pior Bastida
- Anthony Baxter
- Erik Bray
- C. Titus Brown
- Francisco Martn Brugu
- Nicolas Cadou
- Godefroid Chapelle
- Julien Courteau
- Christophe Combelles
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- Victor Stinner
- Alexandre Vassalotti
- Nadeem Vawda

Metadata-Version: 1.0
Name: setuptools
Version: 0.6c9
Summary: Download, build, install, upgrade, and uninstall Python packages -- easily!
Home-page: <http://pypi.org/pypi/setuptools>

Author: Phillip J. Eby

Author-email: distutils-sig@python.org

License: PSF or ZPL

Description: =====

Installing and Using Setuptools

=====

.. contents:: **Table of Contents**

Installation Instructions

Windows

=====

Install setuptools using the provided ``.exe`` installer. If you've previously installed older versions of setuptools, please delete all ``setuptools\*.egg`` and ``setuptools.pth`` files from your system's ``site-packages`` directory (and any other ``sys.path`` directories) FIRST.

If you are upgrading a previous version of setuptools that was installed using an ``.exe`` installer, please be sure to also *uninstall that older version* via your system's "Add/Remove Programs" feature, BEFORE installing the newer version.

Once installation is complete, you will find an ``easy\_install.exe`` program in your Python ``Scripts`` subdirectory. Be sure to add this directory to your ``PATH`` environment variable, if you haven't already done so.

RPM-Based Systems

=====

Install setuptools using the provided source RPM. The included ``.spec`` file assumes you are installing using the default ``python`` executable, and is not specific to a particular Python version. The ``easy\_install`` executable will be installed to a system ``bin`` directory such as ``/usr/bin``.

If you wish to install to a location other than the default Python installation's default ``site-packages`` directory (and ``\$prefix/bin`` for scripts), please use the ``.egg``-based installation approach described in the following section.

Cygwin, Mac OS X, Linux, Other

=====

1. Download the appropriate egg for your version of Python (e.g. ``setuptools-0.6c9-py2.4.egg``). Do NOT rename it.
2. Run it as if it were a shell script, e.g. ``sh setuptools-0.6c9-py2.4.egg``. Setuptools will install itself using the matching version of Python (e.g. ``python2.4``), and will place the ``easy\_install`` executable in the default location for installing Python scripts (as determined by the standard distutils configuration files, or by the Python installation).

If you want to install setuptools to somewhere other than ``site-packages`` or your default distutils installation locations for libraries and scripts, you may include EasyInstall command-line options such as ``--prefix``, ``--install-dir``, and so on, following the ``.egg`` filename on the same command line. For example::

```
sh setuptools-0.6c9-py2.4.egg --prefix=~
```

You can use ``--help`` to get a full options list, but we recommend consulting the `EasyInstall manual`_ for detailed instructions, especially `the section on custom installation locations`_.

.. _EasyInstall manual: <http://peak.telecommunity.com/DevCenter/EasyInstall>
.. _the section on custom installation locations: <http://peak.telecommunity.com/DevCenter/EasyInstall#custom-installation-locations>

Cygwin Note

If you are trying to install setuptools for the **Windows** version of Python (as opposed to the Cygwin version that lives in ``/usr/bin``), you must make sure that an appropriate executable (``python2.3``, ``python2.4``, or ``python2.5``) is on your **Cygwin** ``PATH`` when invoking the egg. For example, doing the following at a Cygwin bash prompt will install setuptools for the **Windows** Python found at ``C:\Python24``::

```
ln -s /cygdrive/c/Python24/python.exe python2.4
PATH=.:$PATH sh setuptools-0.6c9-py2.4.egg
rm python2.4
```

Downloads

=====

All setuptools downloads can be found at the project's home page in the Python Package Index_. Scroll to the very bottom of the page to find the links.

.. the project's home page in the Python Package Index: <http://pypi.org/pypi/setuptools>

In addition to the PyPI downloads, the development version of ``setuptools`` is available from the `Python SVN sandbox`, and in-development versions of the `0.6 branch` are available as well.

.. 0.6 branch: <http://svn.python.org/projects/sandbox/branches/setuptools-0.6/#egg=setuptools-dev06>

.. Python SVN sandbox: <http://svn.python.org/projects/sandbox/trunk/setuptools/#egg=setuptools-dev>

Using

Setuptools and EasyInstall

Here are some of the available manuals, tutorials, and other resources for learning about Setuptools, Python Eggs, and EasyInstall:

- * The EasyInstall user's guide and reference manual_
- * The setuptools Developer's Guide_
- * The pkg_resources API reference_
- * Package Compatibility Notes_ (user-maintained)
- * The Internal Structure of Python Eggs_

Questions, comments, and bug reports should be directed to the `distutils-sig` mailing list_. If you have written (or know of) any tutorials, documentation, plug-ins, or other resources for setuptools users, please let us know about them there, so this reference list can be updated. If you have working, *tested* patches to correct problems or add features, you may submit them to the `setuptools bug tracker`_.

.. setuptools bug tracker: <http://bugs.python.org/setuptools/>

.. Package Compatibility Notes: <http://peak.telecommunity.com/DevCenter/PackageNotes>

.. The Internal Structure of Python Eggs: <http://peak.telecommunity.com/DevCenter/EggFormats>

.. The setuptools Developer's Guide: <http://peak.telecommunity.com/DevCenter/setuptools>

.. The pkg_resources API reference: <http://peak.telecommunity.com/DevCenter/PkgResources>

.. The EasyInstall user's guide and reference manual: <http://peak.telecommunity.com/DevCenter/EasyInstall>

.. distutils-sig mailing list: <http://mail.python.org/pipermail/distutils-sig/>

Credits

- * The original design for the ``.egg`` format and the ``pkg\_resources`` API was

co-created by Phillip Eby and Bob Ippolito. Bob also implemented the first version of ``pkg\_resources``, and supplied the OS X operating system version compatibility algorithm.

* Ian Bicking implemented many early "creature comfort" features of `easy_install`, including support for downloading via Sourceforge and Subversion repositories. Ian's comments on the Web-SIG about WSGI application deployment also inspired the concept of "entry points" in eggs, and he has given talks at PyCon and elsewhere to inform and educate the community about eggs and `setuptools`.

* Jim Fulton contributed time and effort to build automated tests of various aspects of ``easy\_install``, and supplied the doctests for the command-line ``.exe`` wrappers on Windows.

* Phillip J. Eby is the principal author and maintainer of `setuptools`, and first proposed the idea of an importable binary distribution format for Python application plug-ins.

* Significant parts of the implementation of `setuptools` were funded by the Open Source Applications Foundation, to provide a plug-in infrastructure for the Chandler PIM application.

In addition, many OSAF staffers (such as Mike "Code Bear" Taylor) contributed their time and stress as guinea pigs for the use of eggs and `setuptools`, even before eggs were "cool". (Thanks, guys!)

Keywords: CPAN PyPI distutils eggs package management

Platform: UNKNOWN

Classifier: Development Status :: 3 - Alpha

Classifier: Intended Audience :: Developers

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1.8 golang 1.24.1

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This product includes software written by Tim Hudson (tjh@cryptsoft.com).

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package copyright

```
import (  
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    "internal/testenv"  
    "io"  
    "io/fs"  
    "os"  
    "path/filepath"  
    "testing"  
)
```

```
var copyright = []byte("Copyright")
```

```
var permitted = [][]byte{  
    []byte("// Code generated by "),  
    []byte("// Code generated from "),  
    []byte("// Created by cgo -cdefs"),  
    []byte("// DO NOT EDIT\n// generated by:"),  
    []byte("// Empty assembly file"),  
}
```

```

[]byte("// Generated using cgo"),
[]byte("// Original source:\n/\^thttp://www.zorinaq.com/papers/md5-amd64.html"), // public domain crypto/md5
[]byte("// created by cgo -cdefs"),
[]byte("// go run mkasm.go"),
[]byte("// mkerrors"),
[]byte("// mksys"),
[]byte("// run\n// Code generated by"), // cmd/compile/internal/test/constFold_test.go
}

func TestCopyright(t *testing.T) {
    buf := make([]byte, 2048)
    filepath.WalkDir(filepath.Join(testenv.GOROOT(t), "src"), func(path string,
    d fs.DirEntry, err error) error {
        if d.IsDir() && (d.Name() == "testdata" || d.Name() == "vendor") {
            return filepath.SkipDir
        }
        switch filepath.Ext(d.Name()) {
        default:
            return nil
        case ".s", ".go":
            // check
        }

        f, err := os.Open(path)
        if err != nil {
            t.Error(err)
            return nil
        }
        defer f.Close()
        n, err := f.Read(buf)
        if err != nil && err != io.EOF {
            t.Error(err)
            return nil
        }
        b := buf[:n]
        if bytes.Contains(b, copyright) {
            return nil
        }
        for _, ok := range permitted {
            if bytes.HasPrefix(b, ok) {
                return nil
            }
        }
        t.Errorf("%s: missing copyright notice", path)
        return nil
    })
}

```

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1.10 zstd 1.5.6

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Ext headers GL/gl.h Khronos
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include/GL/gl.h :

Mesa 3-D
graphics library

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include/GL/wglxext.h :

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```
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Ty Coon, President of Vice

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1.16 jnats 2.17.0

1.16.1 Available under license :

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

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Found
in path(s):
* /jnats-2-17-0-jar/io/nats/client/impl/NatsConnection.class
No license file was found, but licenses were detected in source scan.

/opt/cola/permits/2692980312_1761583756.7164607/0/jnats-2-17-0-jar/io/nats/client/impl/NatsConsumer.class
/opt/cola/permits/2692980312_1761583756.7164607/0/jnats-2-17-0-jar/io/nats/client/impl/NatsStatistics.class

Found in path(s):
* markNotSlow
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/opt/cola/permits/2692980312_1761583756.7164607/0/jnats-2-17-0-jar/io/nats/service/StatsResponse.class
endpointStatsList /opt/cola/permits/2692980312_1761583756.7164607/0/jnats-2-17-0-
jar/io/nats/service/StatsResponse.class getEndpointStatsList

Found in path(s):
* resultsLeft
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/opt/cola/permits/2692980312_1761583756.7164607/0/jnats-2-17-0-jar/io/nats/client/impl/NatsStatistics.class
writeStatsLock /opt/cola/permits/2692980312_1761583756.7164607/0/jnats-2-17-0-
jar/io/nats/client/support/Encoding.class bitsLeft /opt/cola/permits/2692980312_1761583756.7164607/0/jnats-2-17-0-
jar/io/nats/client/support/Validator.class'validatePrintableExceptWildDotGtSlashes
/opt/cola/permits/2692980312_1761583756.7164607/0/jnats-2-17-0-
jar/io/nats/client/support/Validator.class!notPrintableOrHasWildGtDotSlashes
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jar/io/nats/client/support/Validator.class0lambda$validatePrintableExceptWildDotGtSlashes$4
/opt/cola/permits/2692980312_1761583756.7164607/0/jnats-2-17-0-jar/io/nats/service/Discovery.class

Found in path(s):
* readStatsLock

```

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1.18 hibernate-validator 8.0.3.Final

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1.19 typeguard 4.3.0

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1.20 fgprof 0.9.5

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1.21 libxml2 2.13.9-r0

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1.22 jetcd-core 0.8.3

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 */
/**
 * Defragment one member of the cluster by its endpoint.
 *
 * <p>
 * After compacting the keyspace, the backend database may exhibit internal
 * fragmentation. Any internal fragmentation is space that is free to use
```

- * by the backend but still consumes storage space. The process of
- * defragmentation

releases this storage space back to the file system.

- * Defragmentation is issued on a per-member so that cluster-wide latency
- * spikes may be avoided.
- *
- * <p>
- * Defragment is an expensive operation. User should avoid defragmenting
- * multiple members at the same time.
- * To defragment multiple members in the cluster, user need to call defragment
- * multiple times with different endpoints.
- *
- * @param target the etcd server endpoint.
- * @return the response result
- */

Found in path(s):

- * /jetcd-core-0-8-3-sources-jar/io/etcd/jetcd/Maintenance.java

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 */
```

Found in path(s):

- * /jetcd-core-0-8-3-sources-jar/io/etcd/jetcd/impl/AbstractResponse.java
- * /jetcd-core-0-8-3-sources-jar/io/etcd/jetcd/resolver/DnsSrvResolverProvider.java
- * /jetcd-core-0-8-3-sources-jar/io/etcd/jetcd/auth/AuthUserDeleteResponse.java
- * /jetcd-core-0-8-3-sources-jar/io/etcd/jetcd/kv/TxnResponse.java
- * /jetcd-core-0-8-3-sources-jar/io/etcd/jetcd/auth/AuthUserRevokeRoleResponse.java
- *
- /jetcd-core-0-8-3-sources-jar/io/etcd/jetcd/watch/WatchResponseWithError.java
- * /jetcd-core-0-8-3-sources-jar/io/etcd/jetcd/Client.java
- * /jetcd-core-0-8-3-sources-jar/io/etcd/jetcd/auth/AuthRoleDeleteResponse.java
- * /jetcd-core-0-8-3-sources-jar/io/etcd/jetcd/options/PutOption.java
- * /jetcd-core-0-8-3-sources-jar/io/etcd/jetcd/impl/ClientConnectionManager.java

- * /jetcd-core-0-8-3-sources-jar/io/etcd/jetcd/kv/PutResponse.java
- * /jetcd-core-0-8-3-sources-jar/io/etcd/jetcd/lock/LockResponse.java
- * /jetcd-core-0-8-3-sources-jar/io/etcd/jetcd/resolver/HttpNameResolver.java
- * /jetcd-core-0-8-3-sources-jar/io/etcd/jetcd/auth/AuthDisableResponse.java
- * /jetcd-core-0-8-3-sources-jar/io/etcd/jetcd/options/LeaseOption.java
- * /jetcd-core-0-8-3-sources-jar/io/etcd/jetcd/impl/MaintenanceImpl.java
- * /jetcd-core-0-8-3-sources-jar/io/etcd/jetcd/lease/LeaseGrantResponse.java
- * /jetcd-core-0-8-3-sources-jar/io/etcd/jetcd/resolver/HttpResolverProvider.java
- *
- /jetcd-core-0-8-3-sources-jar/io/etcd/jetcd/support/CloseableClient.java
- * /jetcd-core-0-8-3-sources-jar/io/etcd/jetcd/election/LeaderKey.java
- * /jetcd-core-0-8-3-sources-jar/io/etcd/jetcd/election/CampaignResponse.java
- * /jetcd-core-0-8-3-sources-jar/io/etcd/jetcd/KeyValue.java
- * /jetcd-core-0-8-3-sources-jar/io/etcd/jetcd/auth/AuthRoleGrantPermissionResponse.java
- * /jetcd-core-0-8-3-sources-jar/io/etcd/jetcd/maintenance/StatusResponse.java
- * /jetcd-core-0-8-3-sources-jar/io/etcd/jetcd/impl/LockImpl.java
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- * /jetcd-core-0-8-3-sources-jar/io/etcd/jetcd/maintenance/SnapshotResponse.java
- * /jetcd-core-0-8-3-sources-jar/io/etcd/jetcd/Cluster.java
- * /jetcd-core-0-8-3-sources-jar/io/etcd/jetcd/op/Op.java
- * /jetcd-core-0-8-3-sources-jar/io/etcd/jetcd/ClientBuilder.java
- * /jetcd-core-0-8-3-sources-jar/io/etcd/jetcd/maintenance/AlarmResponse.java
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- * /jetcd-core-0-8-3-sources-jar/io/etcd/jetcd/election/ResignResponse.java
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- * /jetcd-core-0-8-3-sources-jar/io/etcd/jetcd/Election.java
- * /jetcd-core-0-8-3-sources-jar/io/etcd/jetcd/maintenance/DefragmentResponse.java
- * /jetcd-core-0-8-3-sources-jar/io/etcd/jetcd/impl/ElectionImpl.java
- * /jetcd-core-0-8-3-sources-jar/io/etcd/jetcd/lease/LeaseKeepAliveResponse.java
- * /jetcd-core-0-8-3-sources-jar/io/etcd/jetcd/auth/Permission.java
- * /jetcd-core-0-8-3-sources-jar/io/etcd/jetcd/cluster/MemberListResponse.java
- * /jetcd-core-0-8-3-sources-jar/io/etcd/jetcd/resolver/IPNameResolver.java
- * /jetcd-core-0-8-3-sources-jar/io/etcd/jetcd/options/OptionsUtil.java
- *
- /jetcd-core-0-8-3-sources-jar/io/etcd/jetcd/resolver/HttpsNameResolver.java
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- * /jetcd-core-0-8-3-sources-jar/io/etcd/jetcd/support/Util.java
- * /jetcd-core-0-8-3-sources-jar/io/etcd/jetcd/impl/KVImpl.java
- * /jetcd-core-0-8-3-sources-jar/io/etcd/jetcd/lease/LeaseKeepAliveResponseWithError.java
- * /jetcd-core-0-8-3-sources-jar/io/etcd/jetcd/impl/LeaseImpl.java
- * /jetcd-core-0-8-3-sources-jar/io/etcd/jetcd/cluster/MemberAddResponse.java
- * /jetcd-core-0-8-3-sources-jar/io/etcd/jetcd/resolver/HttpsResolverProvider.java
- * /jetcd-core-0-8-3-sources-jar/io/etcd/jetcd/KV.java

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- * /jetcd-core-0-8-3-sources-jar/io/etcd/jetcd/maintenance/HashKVResponse.java
- * /jetcd-core-0-8-3-sources-jar/io/etcd/jetcd/impl/AuthImpl.java
- * /jetcd-core-0-8-3-sources-jar/io/etcd/jetcd/auth/AuthUserAddResponse.java
- *
- /jetcd-core-0-8-3-sources-jar/io/etcd/jetcd/election/NotLeaderException.java
- * /jetcd-core-0-8-3-sources-jar/io/etcd/jetcd/auth/AuthRoleAddResponse.java
- * /jetcd-core-0-8-3-sources-jar/io/etcd/jetcd/support/Errors.java
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- /jetcd-core-0-8-3-sources-jar/io/etcd/jetcd/cluster/Member.java
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- * /jetcd-core-0-8-3-sources-jar/io/etcd/jetcd/maintenance/MoveLeaderResponse.java
- * /jetcd-core-0-8-3-sources-jar/io/etcd/jetcd/Response.java
- * /jetcd-core-0-8-3-sources-jar/io/etcd/jetcd/op/Cmp.java
- * /jetcd-core-0-8-3-sources-jar/io/etcd/jetcd/election/LeaderResponse.java
- * /jetcd-core-0-8-3-sources-jar/io/etcd/jetcd/lease/NoSuchLeaseException.java
- * /jetcd-core-0-8-3-sources-jar/io/etcd/jetcd/auth/AuthUserChangePasswordResponse.java
- * /jetcd-core-0-8-3-sources-jar/io/etcd/jetcd/Watch.java
- * /jetcd-core-0-8-3-sources-jar/io/etcd/jetcd/impl/WatchImpl.java
- * /jetcd-core-0-8-3-sources-jar/io/etcd/jetcd/auth/AuthRoleGetResponse.java
- * /jetcd-core-0-8-3-sources-jar/io/etcd/jetcd/options/WatchOption.java
- * /jetcd-core-0-8-3-sources-jar/io/etcd/jetcd/auth/AuthEnableResponse.java
- * /jetcd-core-0-8-3-sources-jar/io/etcd/jetcd/kv/CompactResponse.java
- * /jetcd-core-0-8-3-sources-jar/io/etcd/jetcd/lock/UnlockResponse.java
- *
- /jetcd-core-0-8-3-sources-jar/io/etcd/jetcd/ByteSequence.java
- * /jetcd-core-0-8-3-sources-jar/io/etcd/jetcd/resolver/DnsSrvNameResolver.java
- * /jetcd-core-0-8-3-sources-jar/io/etcd/jetcd/watch/WatchEvent.java
- * /jetcd-core-0-8-3-sources-jar/io/etcd/jetcd/lease/LeaseRevokeResponse.java
- * /jetcd-core-0-8-3-sources-jar/io/etcd/jetcd/op/TxnImpl.java
- * /jetcd-core-0-8-3-sources-jar/io/etcd/jetcd/lease/LeaseTimeToLiveResponse.java
- * /jetcd-core-0-8-3-sources-jar/io/etcd/jetcd/resolver/AbstractResolverProvider.java
- * /jetcd-core-0-8-3-sources-jar/io/etcd/jetcd/Constants.java
- * /jetcd-core-0-8-3-sources-jar/io/etcd/jetcd/election/ProclaimResponse.java
- * /jetcd-core-0-8-3-sources-jar/io/etcd/jetcd/cluster/MemberUpdateResponse.java
- * /jetcd-core-0-8-3-sources-jar/io/etcd/jetcd/options/DeleteOption.java
- * /jetcd-core-0-8-3-sources-jar/io/etcd/jetcd/impl/ClientImpl.java

```

* /jetcd-core-0-8-3-sources-jar/io/etcd/jetcd/auth/AuthUserListResponse.java
*
/jetcd-core-0-8-3-sources-jar/io/etcd/jetcd/cluster/MemberRemoveResponse.java
* /jetcd-core-0-8-3-sources-jar/io/etcd/jetcd/impl/AuthCredential.java
* /jetcd-core-0-8-3-sources-jar/io/etcd/jetcd/auth/AuthRoleListResponse.java
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Found in path(s):
* /jetcd-core-0-8-3-sources-jar/io/etcd/jetcd/Preconditions.java
* /jetcd-core-0-8-3-sources-jar/io/etcd/jetcd/Txn.java
* /jetcd-core-0-8-3-sources-jar/io/etcd/jetcd/resolver/AbstractNameResolver.java

```

1.23 idna 15.1.0

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1.24 goautoneg 0.0.0-20191010083416-a7dc8b61c822

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1.25 zerolog 1.34.0

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1.26 activation-api 1.2.0

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it under certain conditions; type `show c' for details.
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1.27 intern 1.0.0

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1.28 asm 8.0.1

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- *
- /asm-8-0-1-sources-2-jar/org/objectweb/asm/AnnotationWriter.java
- * /asm-8-0-1-sources-2-jar/org/objectweb/asm/RecordComponentVisitor.java
- * /asm-8-0-1-sources-2-jar/org/objectweb/asm/Frame.java
- * /asm-8-0-1-sources-2-jar/org/objectweb/asm/Type.java
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* /asm-8-0-1-sources-2-jar/org/objectweb/asm/Symbol.java
*
/asm-8-0-1-sources-2-jar/org/objectweb/asm/signature/SignatureWriter.java
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```

1.29 pax-utils 1.3.8-r2

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Format: <https://www.debian.org/doc/packaging-manuals/copyright-format/1.0/>

Upstream-Name: pax-utils

Upstream-Contact: Ned Ludd <solar@gentoo.org>, Mike Frysinger <vapier@gentoo.org>

Source: <http://dev.gentoo.org/~solar/pax-utils/>

Comment: This package was debianized by Rmi Denis-Courmont
<rdenis@simphalempin.com> on Tue, 19 Sep 2006 17:43:40 +0300.

It was downloaded from <http://dev.gentoo.org/~solar/pax/>

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1.31 jandex 3.2.0

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1.32 junit 4.13.2

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1.39 python3-pycache-pyc0 3.12.12-r0

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A. HISTORY OF THE SOFTWARE

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Python was created in the early 1990s by Guido van Rossum at Stichting Mathematisch Centrum (CWI, see <https://www.cwi.nl>) in the Netherlands as a successor of a language called ABC. Guido remains Python's principal author, although it includes many contributions from others.

In 1995, Guido continued his work on Python at the Corporation for National Research Initiatives (CNRI, see <https://www.cnri.reston.va.us>) in Reston, Virginia where he released several versions of the software.

In May 2000, Guido and the Python core development team moved to BeOpen.com to form the BeOpen PythonLabs team. In October of the same year, the PythonLabs team moved to Digital Creations, which became Zope Corporation. In 2001, the Python Software Foundation (PSF, see <https://www.python.org/psf/>) was formed, a non-profit organization created specifically to own Python-related Intellectual Property. Zope Corporation was a sponsoring member of the PSF.

All

Python releases are Open Source (see <https://opensource.org> for the Open Source Definition). Historically, most, but not all, Python releases have also been GPL-compatible; the table below summarizes

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Release	Derived from	Year	Owner	GPL- compatible? (1)
0.9.0 thru 1.2		1991-1995	CWI	yes
1.3 thru 1.5.2	1.2	1995-1999	CNRI	yes
1.6	1.5.2	2000	CNRI	no
2.0	1.6	2000	BeOpen.com	no
1.6.1	1.6	2001	CNRI	yes (2)
2.1	2.0+1.6.1	2001	PSF	no
2.0.1	2.0+1.6.1	2001	PSF	yes
2.1.1	2.1+2.0.1	2001	PSF	yes
2.1.2	2.1.1	2002	PSF	yes
2.1.3	2.1.2	2002	PSF	yes
2.2 and above	2.1.1	2001-now		
PSF	yes			

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Thanks to the many outside volunteers who have worked under Guido's direction to make these releases possible.

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1.40 libidn 2.3.8-r0

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```

#ifndef _BASENAME_LGPL_H
#define _BASENAME_LGPL_H

/* This file uses _GL_ATTRIBUTE_PURE. */
#if !_GL_CONFIG_H_INCLUDED
#error "Please include config.h first."
#endif

#include <stddef.h>

#ifndef
DOUBLE_SLASH_IS_DISTINCT_ROOT
# define DOUBLE_SLASH_IS_DISTINCT_ROOT 0
#endif

#ifdef __cplusplus
extern "C" {
#endif

/* Return the address of the last file name component of FILENAME.
   If FILENAME has some trailing slash(es), they are considered to be
   part of the last component.
   If FILENAME has no relative file name components because it is a file
   system root, return the empty string.
   Examples:
       FILENAME    RESULT
       "foo.c"     "foo.c"
       "foo/bar.c" "bar.c"
       "/foo/bar.c" "bar.c"
       "foo/bar/"  "bar/"
       "foo/bar/"  "bar/"
       "/"         ""
       "/"         ""
       ""         ""

   The return value is a tail of the given FILENAME; do NOT free() it! */

/* This function was traditionally called 'basename', but we avoid this
   function name because
   * Various platforms have different functions in their libc.
   In particular, the glibc basename(),
   defined in <string.h>, does
   not consider trailing slashes to be part of the component:
       FILENAME    RESULT
       "foo/bar/"  ""
       "foo/bar/"  ""

   * The 'basename' command eliminates trailing slashes and for a root
   produces a non-empty result:

```

```

FILENAME    RESULT
"foo/bar/"  "bar"
"foo/bar/"  "bar"
"/"         "/"
"//"        "/"

*/

extern char *last_component (char const *filename) _GL_ATTRIBUTE_PURE;

/* Return the length of the basename FILENAME.
   Typically FILENAME is the value returned by base_name or last_component.
   Act like strlen (FILENAME), except omit all trailing slashes. */
extern size_t base_len (char const *filename) _GL_ATTRIBUTE_PURE;

#ifdef __cplusplus
} /* extern "C" */
#endif

#endif /* _BASENAME_LGPL_H */

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Version 3, 29 June 2007

```

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1.41 failsafe 3.3.2

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Found in path(s):

```
* /failsafe-3-3-2-sources-jar/dev/failsafe/internal/util/FutureLinkedList.java
* /failsafe-3-3-2-sources-jar/dev/failsafe/Call.java
* /failsafe-3-3-2-sources-jar/dev/failsafe/CallImpl.java
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```

Found in path(s):

```
* /failsafe-3-3-2-sources-jar/dev/failsafe/FailsafeExecutor.java
* /failsafe-3-3-2-sources-jar/dev/failsafe/function/CheckedSupplier.java
* /failsafe-3-3-2-sources-jar/dev/failsafe/FallbackBuilder.java
```

- * /failsafe-3-3-2-sources-jar/dev/failsafe/internal/FallbackImpl.java
- * /failsafe-3-3-2-sources-jar/dev/failsafe/Functions.java
- *
- /failsafe-3-3-2-sources-jar/dev/failsafe/function/CheckedConsumer.java
- * /failsafe-3-3-2-sources-jar/dev/failsafe/RetryPolicyBuilder.java
- * /failsafe-3-3-2-sources-jar/dev/failsafe/AsyncExecutionImpl.java
- * /failsafe-3-3-2-sources-jar/dev/failsafe/function/ContextualRunnable.java
- * /failsafe-3-3-2-sources-jar/dev/failsafe/internal/ClosedState.java
- * /failsafe-3-3-2-sources-jar/dev/failsafe/internal/CircuitBreakerImpl.java
- * /failsafe-3-3-2-sources-jar/dev/failsafe/function/ContextualSupplier.java
- * /failsafe-3-3-2-sources-jar/dev/failsafe/FailsafeException.java
- * /failsafe-3-3-2-sources-jar/dev/failsafe/spi/Scheduler.java
- * /failsafe-3-3-2-sources-jar/dev/failsafe/CircuitBreaker.java
- * /failsafe-3-3-2-sources-jar/dev/failsafe/internal/HalfOpenState.java
- * /failsafe-3-3-2-sources-jar/dev/failsafe/SyncExecutionImpl.java
- * /failsafe-3-3-2-sources-jar/dev/failsafe/ExecutionImpl.java
- * /failsafe-3-3-2-sources-jar/dev/failsafe/function/CheckedFunction.java
- * /failsafe-3-3-2-sources-jar/dev/failsafe/internal/OpenState.java
- *
- /failsafe-3-3-2-sources-jar/dev/failsafe/function/CheckedPredicate.java
- * /failsafe-3-3-2-sources-jar/dev/failsafe/ExecutionContext.java
- * /failsafe-3-3-2-sources-jar/dev/failsafe/internal/RetryPolicyImpl.java
- * /failsafe-3-3-2-sources-jar/dev/failsafe/internal/util/Assert.java
- * /failsafe-3-3-2-sources-jar/dev/failsafe/function/AsyncRunnable.java
- * /failsafe-3-3-2-sources-jar/dev/failsafe/spi/FailsafeFuture.java
- * /failsafe-3-3-2-sources-jar/dev/failsafe/spi/DefaultScheduledFuture.java
- * /failsafe-3-3-2-sources-jar/dev/failsafe/Failsafe.java
- * /failsafe-3-3-2-sources-jar/dev/failsafe/function/CheckedBiPredicate.java
- * /failsafe-3-3-2-sources-jar/dev/failsafe/CircuitBreakerOpenException.java
- * /failsafe-3-3-2-sources-jar/dev/failsafe/internal/CircuitState.java
- * /failsafe-3-3-2-sources-jar/dev/failsafe/function/AsyncSupplier.java
- * /failsafe-3-3-2-sources-jar/dev/failsafe/function/CheckedRunnable.java
- * /failsafe-3-3-2-sources-jar/dev/failsafe/RetryPolicy.java
- *

- /failsafe-3-3-2-sources-jar/dev/failsafe/Fallback.java
- * /failsafe-3-3-2-sources-jar/dev/failsafe/CircuitBreakerBuilder.java

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- * /failsafe-3-3-2-sources-jar/dev/failsafe/RateLimiterBuilder.java
- * /failsafe-3-3-2-sources-jar/dev/failsafe/BulkheadFullException.java
- * /failsafe-3-3-2-sources-jar/dev/failsafe/BulkheadConfig.java
- * /failsafe-3-3-2-sources-jar/dev/failsafe/internal/BulkheadImpl.java
- * /failsafe-3-3-2-sources-jar/dev/failsafe/Bulkhead.java
- *
- /failsafe-3-3-2-sources-jar/dev/failsafe/internal/BulkheadExecutor.java
- * /failsafe-3-3-2-sources-jar/dev/failsafe/RateLimitExceededException.java
- * /failsafe-3-3-2-sources-jar/dev/failsafe/RateLimiter.java
- * /failsafe-3-3-2-sources-jar/dev/failsafe/internal/BurstyRateLimiterStats.java
- * /failsafe-3-3-2-sources-jar/dev/failsafe/internal/SmoothRateLimiterStats.java
- * /failsafe-3-3-2-sources-jar/dev/failsafe/internal/RateLimiterExecutor.java
- * /failsafe-3-3-2-sources-jar/dev/failsafe/internal/RateLimiterImpl.java
- * /failsafe-3-3-2-sources-jar/dev/failsafe/BulkheadBuilder.java
- * /failsafe-3-3-2-sources-jar/dev/failsafe/RateLimiterConfig.java
- * /failsafe-3-3-2-sources-jar/dev/failsafe/internal/RateLimiterStats.java

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- * /failsafe-3-3-2-sources-jar/dev/failsafe/internal/util/Durations.java
- * /failsafe-3-3-2-sources-jar/dev/failsafe/internal/util/Maths.java
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```

* /failsafe-3-3-2-sources-jar/dev/failsafe/spi/FailurePolicy.java
* /failsafe-3-3-2-sources-jar/dev/failsafe/internal/util/DelegatingScheduler.java
* /failsafe-3-3-2-sources-jar/dev/failsafe/spi/AsyncExecutionInternal.java
* /failsafe-3-3-2-sources-jar/dev/failsafe/spi/DelayablePolicy.java
* /failsafe-3-3-2-sources-jar/dev/failsafe/internal/CountingCircuitStats.java
*
* /failsafe-3-3-2-sources-jar/dev/failsafe/event/EventListener.java
* /failsafe-3-3-2-sources-jar/dev/failsafe/RetryPolicyConfig.java
* /failsafe-3-3-2-sources-jar/dev/failsafe/CircuitBreakerConfig.java
* /failsafe-3-3-2-sources-jar/dev/failsafe/event/ExecutionEvent.java
* /failsafe-3-3-2-sources-jar/dev/failsafe/event/ExecutionAttemptedEvent.java
* /failsafe-3-3-2-sources-jar/dev/failsafe/internal/CircuitBreakerExecutor.java

```

- * /failsafe-3-3-2-sources-jar/dev/failsafe/internal/TimeoutExecutor.java
- * /failsafe-3-3-2-sources-jar/dev/failsafe/event/ExecutionScheduledEvent.java
- * /failsafe-3-3-2-sources-jar/dev/failsafe/FailurePolicyBuilder.java
- * /failsafe-3-3-2-sources-jar/dev/failsafe/TimeoutBuilder.java
- * /failsafe-3-3-2-sources-jar/dev/failsafe/PolicyBuilder.java
- * /failsafe-3-3-2-sources-jar/dev/failsafe/event/CircuitBreakerStateChangedEvent.java
- * /failsafe-3-3-2-sources-jar/dev/failsafe/internal/EventHandler.java
- *
- /failsafe-3-3-2-sources-jar/dev/failsafe/PolicyListeners.java
- * /failsafe-3-3-2-sources-jar/dev/failsafe/DelayablePolicyConfig.java
- * /failsafe-3-3-2-sources-jar/dev/failsafe/internal/FallbackExecutor.java
- * /failsafe-3-3-2-sources-jar/dev/failsafe/TimeoutConfig.java
- * /failsafe-3-3-2-sources-jar/dev/failsafe/spi/PolicyExecutor.java
- * /failsafe-3-3-2-sources-jar/dev/failsafe/Timeout.java
- * /failsafe-3-3-2-sources-jar/dev/failsafe/Policy.java
- * /failsafe-3-3-2-sources-jar/dev/failsafe/spi/SyncExecutionInternal.java
- * /failsafe-3-3-2-sources-jar/dev/failsafe/AsyncExecution.java
- * /failsafe-3-3-2-sources-jar/dev/failsafe/DelayablePolicyBuilder.java
- * /failsafe-3-3-2-sources-jar/dev/failsafe/Execution.java
- * /failsafe-3-3-2-sources-jar/dev/failsafe/FallbackConfig.java
- * /failsafe-3-3-2-sources-jar/dev/failsafe/internal/CircuitStats.java
- * /failsafe-3-3-2-sources-jar/dev/failsafe/internal/TimedCircuitStats.java
- * /failsafe-3-3-2-sources-jar/dev/failsafe/spi/ExecutionResult.java
- * /failsafe-3-3-2-sources-jar/dev/failsafe/FailurePolicyConfig.java
- *
- /failsafe-3-3-2-sources-jar/dev/failsafe/internal/RetryPolicyExecutor.java
- * /failsafe-3-3-2-sources-jar/dev/failsafe/PolicyConfig.java
- * /failsafe-3-3-2-sources-jar/dev/failsafe/spi/ExecutionInternal.java
- * /failsafe-3-3-2-sources-jar/dev/failsafe/event/ExecutionCompletedEvent.java
- * /failsafe-3-3-2-sources-jar/dev/failsafe/internal/util/RandomDelay.java

1.42 make 4.4.1-r3

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7.0.3.Final

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1.44 java-nats-streaming 2.2.3

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```
* /java-nats-streaming-2-2-3-sources-jar/io/nats/streaming/examples/benchmark/Sample.java  
* /java-nats-streaming-2-2-3-sources-jar/io/nats/streaming/ConnectionLostHandler.java  
* /java-nats-streaming-2-2-3-sources-jar/io/nats/streaming/package-info.java  
* /java-nats-streaming-2-2-3-sources-jar/io/nats/streaming/examples/benchmark/SampleGroup.java  
* /java-nats-streaming-2-2-3-sources-jar/io/nats/streaming/examples/benchmark/Utils.java  
* /java-nats-streaming-2-2-3-sources-jar/io/nats/streaming/StreamingConnectionFactory.java  
* /java-nats-streaming-2-2-3-sources-jar/io/nats/streaming/StreamingConnection.java  
* /java-nats-streaming-2-2-3-sources-jar/io/nats/streaming/SubscriptionImpl.java  
*  
/java-nats-streaming-2-2-3-sources-jar/io/nats/streaming/Message.java  
* /java-nats-streaming-2-2-3-sources-jar/io/nats/streaming/Subscription.java  
* /java-nats-streaming-2-2-3-sources-jar/io/nats/streaming/examples/StanBench.java  
* /java-nats-streaming-2-2-3-sources-jar/io/nats/streaming/MessageHandler.java  
* /java-nats-streaming-2-2-3-sources-jar/io/nats/streaming/examples/Publisher.java  
* /java-nats-streaming-2-2-3-sources-jar/io/nats/streaming/SubscriptionOptions.java  
* /java-nats-streaming-2-2-3-sources-jar/io/nats/streaming/StreamingConnectionImpl.java  
* /java-nats-streaming-2-2-3-sources-jar/io/nats/streaming/NatsStreaming.java  
* /java-nats-streaming-2-2-3-sources-jar/io/nats/streaming/AckHandler.java  
* /java-nats-streaming-2-2-3-sources-jar/io/nats/streaming/examples/Subscriber.java  
* /java-nats-streaming-2-2-3-sources-jar/io/nats/streaming/examples/package-info.java  
* /java-nats-streaming-2-2-3-sources-jar/io/nats/streaming/Options.java  
*  
/java-nats-streaming-2-2-3-sources-jar/io/nats/streaming/examples/benchmark/Benchmark.java
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1.45 visual-studio-runtime 14.27.29016.

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1.48 more-itertools 10.3.0

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1.50 bcpkix-jdk18on 1.79

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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):

* /bcpkix-jdk18on-1-79-sources-jar/org/bouncycastle/est/jcajce/JsseDefaultHostnameAuthorizer.java

1.51 robfig-cron 1.2.0

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1.52 perks 1.0.1

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1.53 easyjson 0.7.7

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1.54 dataclasses 0.6

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1.55 vertx-core 4.5.9

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```

Found in path(s):

* /vertx-core-4-5-9-1-jar/META-INF/maven/io.vertx/vertx-core/pom.xml

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```

Core commands

```
io.vertx.core.impl.launcher.commands.RunCommandFactory
io.vertx.core.impl.launcher.commands.VersionCommandFactory
io.vertx.core.impl.launcher.commands.BareCommandFactory
```

Background application control

```
io.vertx.core.impl.launcher.commands.ListCommandFactory
io.vertx.core.impl.launcher.commands.StartCommandFactory
io.vertx.core.impl.launcher.commands.StopCommandFactory
```

Found in path(s):

* /vertx-core-4-5-9-1-jar/META-INF/services/io.vertx.core.spi.launcher.CommandFactory

1.56 grpc-grpclb 1.66.0

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* /grpc-grpclb-1-66-0-1-jar/grpc/lb/v1/load_balancer.proto

1.57 hypersistence-utils-hibernate-63 3.10.1

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1.58 go-immutable-radix 1.3.1

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1.59 profile 1.7.0

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1.60 flyway-database-postgresql 11.7.2

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```
/*-
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 * =====
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 * =====
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 * you may not use this file except in compliance with the License.
 * You may obtain a copy of the License at
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 *
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 * distributed under the License is distributed on an "AS IS" BASIS,
 * WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied.
 * See the License for the specific language governing permissions and
 * limitations under the License.
 * =====LICENSE_END=====
 */
```

Found in path(s):

```
* /flyway-database-postgresql-11-7-2-sources-jar/org/flywaydb/database/postgresql/PostgreSQLSchema.java
* /flyway-database-postgresql-11-7-2-sources-jar/org/flywaydb/database/cockroachdb/CockroachDBTable.java
* /flyway-database-postgresql-11-7-2-sources-jar/org/flywaydb/database/postgresql/PostgreSQLDatabase.java
* /flyway-database-postgresql-11-7-2-sources-jar/org/flywaydb/database/postgresql/PostgreSQLConnection.java
* /flyway-database-postgresql-11-7-2-sources-
jar/org/flywaydb/database/postgresql/PostgreSQLCopyParsedStatement.java
* /flyway-database-postgresql-11-7-2-sources-jar/org/flywaydb/database/cockroachdb/package-info.java
* /flyway-database-postgresql-11-7-2-sources-jar/org/flywaydb/database/postgresql/TransactionalModel.java
* /flyway-database-postgresql-11-7-2-sources-jar/org/flywaydb/database/postgresql/PostgreSQLParser.java
* /flyway-database-postgresql-11-7-2-sources-
jar/org/flywaydb/database/postgresql/PostgreSQLConfigurationExtension.java
*
```



```

/flyway-database-postgresql-11-7-2-sources-jar/org/flywaydb/database/cockroachdb/CockroachDBParser.java
* /flyway-database-postgresql-11-7-2-sources-jar/org/flywaydb/database/postgresql/PostgreSQLTable.java
* /flyway-database-postgresql-11-7-2-sources-jar/org/flywaydb/database/postgresql/PostgreSQLType.java
* /flyway-database-postgresql-11-7-2-sources-
jar/org/flywaydb/database/cockroachdb/CockroachDBDatabaseType.java
* /flyway-database-postgresql-11-7-2-sources-jar/org/flywaydb/database/cockroachdb/CockroachDBSchema.java
* /flyway-database-postgresql-11-7-2-sources-jar/org/flywaydb/database/cockroachdb/CockroachDBDatabase.java
* /flyway-database-postgresql-11-7-2-sources-
jar/org/flywaydb/database/postgresql/PostgreSQLAdvisoryLockTemplate.java
* /flyway-database-postgresql-11-7-2-sources-
jar/org/flywaydb/database/cockroachdb/CockroachRetryingTransactionalExecutionTemplate.java
* /flyway-database-postgresql-11-7-2-sources-jar/org/flywaydb/database/postgresql/PostgreSQLDatabaseType.java
*
/flyway-database-postgresql-11-7-2-sources-jar/org/flywaydb/database/postgresql/package-info.java
* /flyway-database-postgresql-11-7-2-sources-
jar/org/flywaydb/database/cockroachdb/CockroachDBRetryingStrategy.java
* /flyway-database-postgresql-11-7-2-sources-
jar/org/flywaydb/database/cockroachdb/CockroachDBConnection.java

```

1.61 zlib 1.3.1-r2

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1.62 error_prone_annotations 2.41.0

1.62.1 Available under license :

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Manifest-Version: 1.0

Created-By: Maven JAR Plugin 3.2.2

Build-Jdk-Spec: 17

Multi-Release: true

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

Bundle-License: "Apache 2.0";link="http://www.apache.org/licenses/LICENSE-2.0.txt"

Bundle-ManifestVersion: 2

Bundle-Name: error-prone annotations

Bundle-SCM: url="https://github.com/google/error-prone/error_prone_annotations",connection="scm:git:https://github.com/google/error-prone.git/error_prone_annotations",developer-connection="scm:git:git@github.com:google/error-prone.git/error_prone_annotations",tag=HEAD

Bundle-SymbolicName: com.google.errorprone.annotations

Bundle-Vendor: Google LLC

Bundle-Version: 2.41.0

Export-Package: com.google.errorprone.annotations;uses:="javax.lang.model.element";version="2.41.0",com.google.errorprone.annotations.concurrent

```
t;version="2.41.0"
Import-Package: javax.lang.model.element
Require-Capability: osgi.ee;filter:="(&(osgi.ee=JavaSE)(version=1.8))"
```

Found in path(s):

* /error-prone-annotations-2-41-0-jar/META-INF/MANIFEST.MF

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```
/opt/cola/permits/2661349651_1761750562.2238505/0/error-prone-annotations-2-41-0-jar/META-
INF/maven/com.google.errorprone/error_prone_annotations/pom.xml<?xml version="1.0" encoding="UTF-8"?>
```

Found in path(s):

*

1.63 jakarta-validation-api 3.0.2

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```
<!--
~ Jakarta Bean Validation API
~
~ License: Apache License, Version 2.0
~ See the license.txt file in the root directory or <http://www.apache.org/licenses/LICENSE-2.0>.
-->
<![CDATA[
Comments to: <a href="mailto:bean-validation-dev@eclipse.org">bean-validation-dev@eclipse.org</a>.<br>
Copyright &#169; 2019,2020 Eclipse Foundation.<br>
Use is subject to <a href="{@docRoot}/doc-files/speclicense.html" target="_top">EFSL</a>; this spec is based on
material that is licensed under the Apache License, version 2.0.]]>
```

Found in path(s):

* /jakarta-validation-api-3-0-2-sources-jar/META-INF/maven/jakarta.validation/jakarta.validation-api/pom.xml

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```
/*
* Jakarta Bean Validation API
*
* License: Apache License, Version 2.0
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*/
```

Found in path(s):

* /jakarta-validation-api-3-0-2-sources-jar/jakarta/validation/metadata/ValidateUnwrappedValue.java

* /jakarta-validation-api-3-0-2-sources-jar/jakarta/validation/executable/ValidateOnExecution.java

* /jakarta-validation-api-3-0-2-sources-jar/jakarta/validation/constraints/AssertTrue.java

- * /jakarta-validation-api-3-0-2-sources-jar/jakarta/validation/ConstraintDefinitionException.java
- * /jakarta-validation-api-3-0-2-sources-jar/jakarta/validation/constraints/Positive.java
- * /jakarta-validation-api-3-0-2-sources-jar/jakarta/validation/constraints/Digits.java
- * /jakarta-validation-api-3-0-2-sources-jar/jakarta/validation/constraints/Min.java
- * /jakarta-validation-api-3-0-2-sources-jar/jakarta/validation/executable/package-info.java
- *
- /jakarta-validation-api-3-0-2-sources-jar/module-info.java
- * /jakarta-validation-api-3-0-2-sources-jar/jakarta/validation/ValidatorContext.java
- * /jakarta-validation-api-3-0-2-sources-jar/jakarta/validation/metadata/CascadableDescriptor.java
- * /jakarta-validation-api-3-0-2-sources-jar/jakarta/validation/metadata/ExecutableDescriptor.java
- * /jakarta-validation-api-3-0-2-sources-jar/jakarta/validation/Configuration.java
- * /jakarta-validation-api-3-0-2-sources-jar/jakarta/validation/metadata/MethodDescriptor.java
- * /jakarta-validation-api-3-0-2-sources-jar/jakarta/validation/spi/package-info.java
- * /jakarta-validation-api-3-0-2-sources-jar/jakarta/validation/groups/Default.java
- * /jakarta-validation-api-3-0-2-sources-jar/jakarta/validation/GroupDefinitionException.java
- * /jakarta-validation-api-3-0-2-sources-jar/jakarta/validation/constraints/FutureOrPresent.java
- * /jakarta-validation-api-3-0-2-sources-jar/jakarta/validation/constraints/NotBlank.java
- * /jakarta-validation-api-3-0-2-sources-jar/jakarta/validation/constraints/DecimalMin.java
- *
- /jakarta-validation-api-3-0-2-sources-jar/jakarta/validation/metadata/ConstraintDescriptor.java
- * /jakarta-validation-api-3-0-2-sources-jar/jakarta/validation/Payload.java
- * /jakarta-validation-api-3-0-2-sources-jar/jakarta/validation/spi/BootstrapState.java
- * /jakarta-validation-api-3-0-2-sources-jar/jakarta/validation/ParameterNameProvider.java
- * /jakarta-validation-api-3-0-2-sources-jar/jakarta/validation/metadata/Scope.java
- * /jakarta-validation-api-3-0-2-sources-jar/jakarta/validation/ValidationProviderResolver.java
- * /jakarta-validation-api-3-0-2-sources-jar/jakarta/validation/constraints/NegativeOrZero.java
- * /jakarta-validation-api-3-0-2-sources-jar/jakarta/validation/constraints/NotEmpty.java
- * /jakarta-validation-api-3-0-2-sources-jar/jakarta/validation/valueextraction/ExtractedValue.java
- * /jakarta-validation-api-3-0-2-sources-jar/jakarta/validation/constraintvalidation/ValidationTarget.java
- * /jakarta-validation-api-3-0-2-sources-jar/jakarta/validation/UnexpectedTypeException.java
- *
- /jakarta-validation-api-3-0-2-sources-jar/jakarta/validation/metadata/CrossParameterDescriptor.java
- * /jakarta-validation-api-3-0-2-sources-jar/jakarta/validation/metadata/PropertyDescriptor.java
- * /jakarta-validation-api-3-0-2-sources-jar/jakarta/validation/BootstrapConfiguration.java
- * /jakarta-validation-api-3-0-2-sources-jar/jakarta/validation/metadata/GroupConversionDescriptor.java
- * /jakarta-validation-api-3-0-2-sources-jar/jakarta/validation/valueextraction/package-info.java
- * /jakarta-validation-api-3-0-2-sources-jar/jakarta/validation/metadata/ReturnValueDescriptor.java
- * /jakarta-validation-api-3-0-2-sources-jar/jakarta/validation/bootstrap/GenericBootstrap.java
- * /jakarta-validation-api-3-0-2-sources-jar/jakarta/validation/constraints/AssertFalse.java
- * /jakarta-validation-api-3-0-2-sources-jar/jakarta/validation/valueextraction/Unwrapping.java
- * /jakarta-validation-api-3-0-2-sources-jar/jakarta/validation/ReportAsSingleViolation.java
- *
- /jakarta-validation-api-3-0-2-sources-jar/jakarta/validation/ConstraintViolationException.java
- * /jakarta-validation-api-3-0-2-sources-jar/jakarta/validation/metadata/ParameterDescriptor.java
- * /jakarta-validation-api-3-0-2-sources-jar/jakarta/validation/Constraint.java
- * /jakarta-validation-api-3-0-2-sources-jar/jakarta/validation/TraversableResolver.java
- * /jakarta-validation-api-3-0-2-sources-jar/jakarta/validation/NoProviderFoundException.java
- * /jakarta-validation-api-3-0-2-sources-jar/jakarta/validation/ValidatorFactory.java

- * /jakarta-validation-api-3-0-2-sources-jar/jakarta/validation/constraints/Null.java
- * /jakarta-validation-api-3-0-2-sources-jar/jakarta/validation/ValidationException.java
- * /jakarta-validation-api-3-0-2-sources-jar/jakarta/validation/Path.java
- * /jakarta-validation-api-3-0-2-sources-jar/jakarta/validation/Validation.java
- * /jakarta-validation-api-3-0-2-sources-jar/jakarta/validation/valueextraction/ValueExtractorDefinitionException.java
- *
- /jakarta-validation-api-3-0-2-sources-jar/jakarta/validation/ConstraintValidatorFactory.java
- * /jakarta-validation-api-3-0-2-sources-jar/jakarta/validation/constraints/Max.java
- * /jakarta-validation-api-3-0-2-sources-jar/jakarta/validation/constraints/PastOrPresent.java
- * /jakarta-validation-api-3-0-2-sources-jar/jakarta/validation/constraints/Negative.java
- * /jakarta-validation-api-3-0-2-sources-jar/jakarta/validation/Validator.java
- * /jakarta-validation-api-3-0-2-sources-jar/jakarta/validation/metadata/ContainerElementTypeDescriptor.java
- * /jakarta-validation-api-3-0-2-sources-jar/jakarta/validation/metadata/ConstructorDescriptor.java
- * /jakarta-validation-api-3-0-2-sources-jar/jakarta/validation/ConstraintDeclarationException.java
- * /jakarta-validation-api-3-0-2-sources-jar/jakarta/validation/constraints/Email.java
- * /jakarta-validation-api-3-0-2-sources-jar/jakarta/validation/constraints/Pattern.java
- * /jakarta-validation-api-3-0-2-sources-jar/jakarta/validation/ElementKind.java
- *
- /jakarta-validation-api-3-0-2-sources-jar/jakarta/validation/executable/ExecutableValidator.java
- * /jakarta-validation-api-3-0-2-sources-jar/jakarta/validation/constraints/NotNull.java
- * /jakarta-validation-api-3-0-2-sources-jar/jakarta/validation/metadata/ElementDescriptor.java
- * /jakarta-validation-api-3-0-2-sources-jar/jakarta/validation/constraints/Past.java
- * /jakarta-validation-api-3-0-2-sources-jar/jakarta/validation/package-info.java
- * /jakarta-validation-api-3-0-2-sources-jar/jakarta/validation/ClockProvider.java
- * /jakarta-validation-api-3-0-2-sources-jar/jakarta/validation/constraints/Size.java
- * /jakarta-validation-api-3-0-2-sources-jar/jakarta/validation/metadata/package-info.java
- * /jakarta-validation-api-3-0-2-sources-jar/jakarta/validation/constraints/PositiveOrZero.java
- * /jakarta-validation-api-3-0-2-sources-jar/jakarta/validation/bootstrap/ProviderSpecificBootstrap.java
- * /jakarta-validation-api-3-0-2-sources-jar/jakarta/validation/constraints/Future.java
- *
- /jakarta-validation-api-3-0-2-sources-jar/jakarta/validation/ConstraintTarget.java
- * /jakarta-validation-api-3-0-2-sources-jar/jakarta/validation/constraints/DecimalMax.java
- * /jakarta-validation-api-3-0-2-sources-jar/jakarta/validation/GroupSequence.java
- * /jakarta-validation-api-3-0-2-sources-jar/jakarta/validation/spi/ConfigurationState.java
- * /jakarta-validation-api-3-0-2-sources-jar/jakarta/validation/metadata/BeanDescriptor.java
- * /jakarta-validation-api-3-0-2-sources-jar/jakarta/validation/groups/ConvertGroup.java
- * /jakarta-validation-api-3-0-2-sources-jar/jakarta/validation/constraintvalidation/package-info.java
- * /jakarta-validation-api-3-0-2-sources-jar/jakarta/validation/spi/ValidationProvider.java
- * /jakarta-validation-api-3-0-2-sources-jar/jakarta/validation/MessageInterpolator.java
- * /jakarta-validation-api-3-0-2-sources-jar/jakarta/validation/bootstrap/package-info.java
- * /jakarta-validation-api-3-0-2-sources-jar/jakarta/validation/valueextraction/ValueExtractor.java
- *
- /jakarta-validation-api-3-0-2-sources-jar/jakarta/validation/groups/package-info.java
- * /jakarta-validation-api-3-0-2-sources-jar/jakarta/validation/ConstraintValidatorContext.java
- * /jakarta-validation-api-3-0-2-sources-jar/jakarta/validation/ConstraintViolation.java
- * /jakarta-validation-api-3-0-2-sources-jar/jakarta/validation/constraintvalidation/SupportedValidationTarget.java
- * /jakarta-validation-api-3-0-2-sources-jar/jakarta/validation/valueextraction/UnwrapByDefault.java

```

* /jakarta-validation-api-3-0-2-sources-jar/jakarta/validation/Valid.java
* /jakarta-validation-api-3-0-2-sources-jar/jakarta/validation/OverridesAttribute.java
* /jakarta-validation-api-3-0-2-sources-
jar/jakarta/validation/valueextraction/ValueExtractorDeclarationException.java
* /jakarta-validation-api-3-0-2-sources-jar/jakarta/validation/ConstraintValidator.java
* /jakarta-validation-api-3-0-2-sources-jar/jakarta/validation/constraints/package-info.java
* /jakarta-validation-api-3-0-2-sources-jar/jakarta/validation/executable/ExecutableType.java
*
/jakarta-validation-api-3-0-2-sources-jar/jakarta/validation/metadata/MethodType.java
* /jakarta-validation-api-3-0-2-sources-jar/jakarta/validation/metadata/ContainerDescriptor.java

```

1.64 protobuf-java 3.25.8

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```

java.util.List<com.google.protobuf.DescriptorProtos.FieldOptions.OptionTargetType> getTargetsList();
getEditionDefaultsList();
public java.util.List<com.google.protobuf.DescriptorProtos.FieldOptions.OptionTargetType> getTargetsList() {
public java.util.List<com.google.protobuf.DescriptorProtos.FieldOptions.EditionDefault> getEditionDefaultsList() {
if (!getEditionDefaultsList()
.equals(other.getEditionDefaultsList())) return false;
hash = (53 * hash) + getEditionDefaultsList().hashCode();
public java.util.List<com.google.protobuf.DescriptorProtos.FieldOptions.OptionTargetType> getTargetsList() {
public java.util.List<com.google.protobuf.DescriptorProtos.FieldOptions.EditionDefault> getEditionDefaultsList() {
getDefaultsList();
public java.util.List<com.google.protobuf.DescriptorProtos.FeatureSetDefaults.FeatureSetEditionDefault>
getDefaultsList() {
if (!getDefaultsList()
.equals(other.getDefaultsList())) return false;
hash
= (53 * hash) + getDefaultsList().hashCode();
public java.util.List<com.google.protobuf.DescriptorProtos.FeatureSetDefaults.FeatureSetEditionDefault>
getDefaultsList() {
getLeadingDetachedCommentsList();
getLeadingDetachedCommentsList() {
size += 1 * getLeadingDetachedCommentsList().size();
if (!getLeadingDetachedCommentsList()
.equals(other.getLeadingDetachedCommentsList())) return false;
hash = (53 * hash) + getLeadingDetachedCommentsList().hashCode();
getLeadingDetachedCommentsList() {

```

Found in path(s):

```

* /protobuf-java-3-25-8-sources-jar/com/google/protobuf/DescriptorProtos.java

```

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```

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```

Found in path(s):

- * /protobuf-java-3-25-8-sources-jar/com/google/protobuf/ProtocolStringList.java
- * /protobuf-java-3-25-8-sources-jar/com/google/protobuf/SingleFieldBuilder.java
- * /protobuf-java-3-25-8-sources-jar/com/google/protobuf/ProtobufArrayList.java
- * /protobuf-java-3-25-8-sources-jar/com/google/protobuf/Android.java
- * /protobuf-java-3-25-8-sources-jar/com/google/protobuf/MessageOrBuilder.java
- * /protobuf-java-3-25-8-sources-jar/com/google/protobuf/Java8Compatibility.java
- * /protobuf-java-3-25-8-sources-jar/com/google/protobuf/TypeRegistry.java
- * /protobuf-java-3-25-8-sources-jar/com/google/protobuf/GeneratedMessageLite.java
- * /protobuf-java-3-25-8-sources-jar/com/google/protobuf/DynamicMessage.java
- * /protobuf-java-3-25-8-sources-jar/com/google/protobuf/MapFieldLite.java
- * /protobuf-java-3-25-8-sources-jar/com/google/protobuf/ByteBufferWriter.java
- * /protobuf-java-3-25-8-sources-jar/com/google/protobuf/TextFormat.java
- *
- /protobuf-java-3-25-8-sources-jar/com/google/protobuf/Parser.java
- * /protobuf-java-3-25-8-sources-jar/com/google/protobuf/MessageLite.java
- * /protobuf-java-3-25-8-sources-jar/com/google/protobuf/MessageInfoFactory.java
- * /protobuf-java-3-25-8-sources-jar/com/google/protobuf/DoubleArrayList.java
- * /protobuf-java-3-25-8-sources-jar/com/google/protobuf/IterableByteBufferInputStream.java
- * /protobuf-java-3-25-8-sources-jar/com/google/protobuf/MapFieldSchemaFull.java
- * /protobuf-java-3-25-8-sources-jar/com/google/protobuf/CompileTimeConstant.java
- * /protobuf-java-3-25-8-sources-jar/com/google/protobuf/RepeatedFieldBuilder.java
- * /protobuf-java-3-25-8-sources-jar/com/google/protobuf/RpcCallback.java
- * /protobuf-java-3-25-8-sources-jar/com/google/protobuf/ProtoSyntax.java
- * /protobuf-java-3-25-8-sources-jar/com/google/protobuf/RopeByteString.java
- * /protobuf-java-3-25-8-sources-jar/com/google/protobuf/ServiceException.java
- * /protobuf-java-3-25-8-sources-jar/com/google/protobuf/CodedInputStream.java
- *
- /protobuf-java-3-25-8-sources-jar/com/google/protobuf/ExtensionRegistryFactory.java
- * /protobuf-java-3-25-8-sources-jar/com/google/protobuf/Internal.java
- * /protobuf-java-3-25-8-sources-jar/com/google/protobuf/UnknownFieldSetLite.java
- * /protobuf-java-3-25-8-sources-jar/com/google/protobuf/NewInstanceSchemaLite.java
- * /protobuf-java-3-25-8-sources-jar/com/google/protobuf/UnknownFieldSetSchema.java
- * /protobuf-java-3-25-8-sources-jar/com/google/protobuf/MapFieldSchemaLite.java
- * /protobuf-java-3-25-8-sources-jar/com/google/protobuf/OneofInfo.java
- * /protobuf-java-3-25-8-sources-jar/com/google/protobuf/StructuralMessageInfo.java
- * /protobuf-java-3-25-8-sources-jar/com/google/protobuf/NewInstanceSchemas.java
- * /protobuf-java-3-25-8-sources-jar/com/google/protobuf/CodedInputStreamReader.java
- * /protobuf-java-3-25-8-sources-jar/com/google/protobuf/MessageSetSchema.java
- * /protobuf-java-3-25-8-sources-jar/com/google/protobuf/LazyFieldLite.java
- *
- /protobuf-java-3-25-8-sources-jar/com/google/protobuf/TextFormatEscaper.java
- * /protobuf-java-3-25-8-sources-jar/com/google/protobuf/ManifestSchemaFactory.java
- * /protobuf-java-3-25-8-sources-jar/com/google/protobuf/NioByteString.java
- * /protobuf-java-3-25-8-sources-jar/com/google/protobuf/RawMessageInfo.java
- * /protobuf-java-3-25-8-sources-jar/com/google/protobuf/AbstractMessage.java
- * /protobuf-java-3-25-8-sources-jar/com/google/protobuf/GeneratedMessageInfoFactory.java

- * /protobuf-java-3-25-8-sources-jar/com/google/protobuf/TextFormatParseLocation.java
- * /protobuf-java-3-25-8-sources-jar/com/google/protobuf/TextFormatParseInfoTree.java
- * /protobuf-java-3-25-8-sources-jar/com/google/protobuf/MessageLiteOrBuilder.java
- * /protobuf-java-3-25-8-sources-jar/com/google/protobuf/UnknownFieldSetLiteSchema.java
- * /protobuf-java-3-25-8-sources-jar/com/google/protobuf/JavaType.java
- * /protobuf-java-3-25-8-sources-jar/com/google/protobuf/BufferAllocator.java
- * /protobuf-java-3-25-8-sources-jar/com/google/protobuf/AbstractProtobufList.java
- *
- /protobuf-java-3-25-8-sources-jar/com/google/protobuf/BlockingService.java
- * /protobuf-java-3-25-8-sources-jar/com/google/protobuf/RpcController.java
- * /protobuf-java-3-25-8-sources-jar/com/google/protobuf/ExtensionRegistry.java
- * /protobuf-java-3-25-8-sources-jar/com/google/protobuf/Schema.java
- * /protobuf-java-3-25-8-sources-jar/com/google/protobuf/FloatArrayList.java
- * /protobuf-java-3-25-8-sources-jar/com/google/protobuf/FieldSet.java
- * /protobuf-java-3-25-8-sources-jar/com/google/protobuf/InlineMe.java
- * /protobuf-java-3-25-8-sources-jar/com/google/protobuf/GeneratedMessage.java
- * /protobuf-java-3-25-8-sources-jar/com/google/protobuf/Utf8.java
- * /protobuf-java-3-25-8-sources-jar/com/google/protobuf/FieldInfo.java
- * /protobuf-java-3-25-8-sources-jar/com/google/protobuf/BlockingRpcChannel.java
- * /protobuf-java-3-25-8-sources-jar/com/google/protobuf/Protobuf.java
- * /protobuf-java-3-25-8-sources-jar/com/google/protobuf/ExtensionLite.java
- *
- /protobuf-java-3-25-8-sources-jar/com/google/protobuf/MapEntry.java
- * /protobuf-java-3-25-8-sources-jar/com/google/protobuf/WireFormat.java
- * /protobuf-java-3-25-8-sources-jar/com/google/protobuf/UnknownFieldSchema.java
- * /protobuf-java-3-25-8-sources-jar/com/google/protobuf/RepeatedFieldBuilderV3.java
- * /protobuf-java-3-25-8-sources-jar/com/google/protobuf/IntArrayList.java
- * /protobuf-java-3-25-8-sources-jar/com/google/protobuf/BinaryReader.java
- * /protobuf-java-3-25-8-sources-jar/com/google/protobuf/UnknownFieldSet.java
- * /protobuf-java-3-25-8-sources-jar/com/google/protobuf/LazyField.java
- * /protobuf-java-3-25-8-sources-jar/com/google/protobuf/Reader.java
- * /protobuf-java-3-25-8-sources-jar/com/google/protobuf/ExtensionSchemaFull.java
- * /protobuf-java-3-25-8-sources-jar/com/google/protobuf/NewInstanceSchemaFull.java
- * /protobuf-java-3-25-8-sources-jar/com/google/protobuf/FieldType.java
- * /protobuf-java-3-25-8-sources-jar/com/google/protobuf/CheckReturnValue.java
- *
- /protobuf-java-3-25-8-sources-jar/com/google/protobuf/ExtensionSchemaLite.java
- * /protobuf-java-3-25-8-sources-jar/com/google/protobuf/LazyStringArrayList.java
- * /protobuf-java-3-25-8-sources-jar/com/google/protobuf/NewInstanceSchema.java
- * /protobuf-java-3-25-8-sources-jar/com/google/protobuf/CodedOutputStream.java
- * /protobuf-java-3-25-8-sources-jar/com/google/protobuf/ExtensionSchemas.java
- * /protobuf-java-3-25-8-sources-jar/com/google/protobuf/InvalidProtocolBufferException.java
- * /protobuf-java-3-25-8-sources-jar/com/google/protobuf/UnsafeUtil.java
- * /protobuf-java-3-25-8-sources-jar/com/google/protobuf/SchemaUtil.java
- * /protobuf-java-3-25-8-sources-jar/com/google/protobuf/BooleanArrayList.java
- * /protobuf-java-3-25-8-sources-jar/com/google/protobuf/DescriptorMessageInfoFactory.java
- * /protobuf-java-3-25-8-sources-jar/com/google/protobuf/LegacyDescriptorsUtil.java
- * /protobuf-java-3-25-8-sources-jar/com/google/protobuf/RpcUtil.java


```

* /protobuf-java-3-25-8-sources-jar/com/google/protobuf/MessageLiteToString.java
*
/protobuf-java-3-25-8-sources-jar/com/google/protobuf/Service.java
* /protobuf-java-3-25-8-sources-jar/com/google/protobuf/AbstractMessageLite.java
* /protobuf-java-3-25-8-sources-jar/com/google/protobuf/Extension.java
* /protobuf-java-3-25-8-sources-jar/com/google/protobuf/ByteString.java
* /protobuf-java-3-25-8-sources-jar/com/google/protobuf/CodedOutputStreamWriter.java
* /protobuf-java-3-25-8-sources-jar/com/google/protobuf/SmallSortedMap.java
* /protobuf-java-3-25-8-sources-jar/com/google/protobuf/ByteOutput.java
* /protobuf-java-3-25-8-sources-jar/com/google/protobuf/PrimitiveNonBoxingCollection.java
* /protobuf-java-3-25-8-sources-jar/com/google/protobuf/MutabilityOracle.java
* /protobuf-java-3-25-8-sources-jar/com/google/protobuf/ListFieldSchema.java
* /protobuf-java-3-25-8-sources-jar/com/google/protobuf/Message.java
* /protobuf-java-3-25-8-sources-jar/com/google/protobuf/GeneratedMessageV3.java
* /protobuf-java-3-25-8-sources-jar/com/google/protobuf/CanIgnoreReturnValue.java
*
/protobuf-java-3-25-8-sources-jar/com/google/protobuf/ExtensionSchema.java
* /protobuf-java-3-25-8-sources-jar/com/google/protobuf/ExtensionRegistryLite.java
* /protobuf-java-3-25-8-sources-jar/com/google/protobuf/UninitializedMessageException.java
* /protobuf-java-3-25-8-sources-jar/com/google/protobuf/MessageReflection.java
* /protobuf-java-3-25-8-sources-jar/com/google/protobuf/UnsafeByteOperations.java
* /protobuf-java-3-25-8-sources-jar/com/google/protobuf/MapEntryLite.java
* /protobuf-java-3-25-8-sources-jar/com/google/protobuf/MapFieldBuilder.java
* /protobuf-java-3-25-8-sources-jar/com/google/protobuf/Descriptors.java
* /protobuf-java-3-25-8-sources-jar/com/google/protobuf/DiscardUnknownFieldsParser.java
* /protobuf-java-3-25-8-sources-jar/com/google/protobuf/UnmodifiableLazyStringList.java
* /protobuf-java-3-25-8-sources-jar/com/google/protobuf/ProtocolMessageEnum.java
* /protobuf-java-3-25-8-sources-jar/com/google/protobuf/Writer.java
*
/protobuf-java-3-25-8-sources-jar/com/google/protobuf/MapFieldSchemas.java
* /protobuf-java-3-25-8-sources-jar/com/google/protobuf/MessageInfo.java
* /protobuf-java-3-25-8-sources-jar/com/google/protobuf/LongArrayList.java
* /protobuf-java-3-25-8-sources-jar/com/google/protobuf/ArrayDecoders.java
* /protobuf-java-3-25-8-sources-jar/com/google/protobuf/ExperimentalApi.java
* /protobuf-java-3-25-8-sources-jar/com/google/protobuf/SchemaFactory.java
* /protobuf-java-3-25-8-sources-jar/com/google/protobuf/SingleFieldBuilderV3.java
* /protobuf-java-3-25-8-sources-jar/com/google/protobuf/AbstractParser.java
* /protobuf-java-3-25-8-sources-jar/com/google/protobuf/AllocatedBuffer.java
* /protobuf-java-3-25-8-sources-jar/com/google/protobuf/MapFieldReflectionAccessor.java
* /protobuf-java-3-25-8-sources-jar/com/google/protobuf/MapFieldSchema.java
* /protobuf-java-3-25-8-sources-jar/com/google/protobuf/MapField.java
* /protobuf-java-3-25-8-sources-jar/com/google/protobuf/LazyStringList.java
*
/protobuf-java-3-25-8-sources-jar/com/google/protobuf/BinaryWriter.java
* /protobuf-java-3-25-8-sources-jar/com/google/protobuf/RpcChannel.java
* /protobuf-java-3-25-8-sources-jar/com/google/protobuf/MessageSchema.java

```

1.65 gojsonschema 1.2.0

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1.66 jaraco-functools 4.0.1

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1.70 go-sysconf 0.3.4

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1.71 pyc 3.12.12-r0

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A. HISTORY OF THE SOFTWARE

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Python was created in the early 1990s by Guido van Rossum at Stichting Mathematisch Centrum (CWI, see <https://www.cwi.nl>) in the Netherlands as a successor of a language called ABC. Guido remains Python's principal author, although it includes many contributions from others.

In 1995, Guido continued his work on Python at the Corporation for National Research Initiatives (CNRI, see <https://www.cnri.reston.va.us>) in Reston, Virginia where he released several versions of the software.

In May 2000, Guido and the Python core development team moved to BeOpen.com to form the BeOpen PythonLabs team. In October of the same year, the PythonLabs team moved to Digital Creations, which became Zope Corporation. In 2001, the Python Software Foundation (PSF, see <https://www.python.org/psf/>) was formed, a non-profit organization created specifically to own Python-related Intellectual Property. Zope Corporation was a sponsoring member of the PSF.

All

Python releases are Open Source (see <https://opensource.org> for the Open Source Definition). Historically, most, but not all, Python releases have also been GPL-compatible; the table below summarizes the various releases.

Release	Derived from	Year	Owner	GPL-compatible? (1)
0.9.0 thru 1.2		1991-1995	CWI	yes
1.3 thru 1.5.2	1.2	1995-1999	CNRI	yes

1.6	1.5.2	2000	CNRI	no
2.0	1.6	2000	BeOpen.com	no
1.6.1	1.6	2001	CNRI	yes (2)
2.1	2.0+1.6.1	2001	PSF	no
2.0.1	2.0+1.6.1	2001	PSF	yes
2.1.1	2.1+2.0.1	2001	PSF	yes
2.1.2	2.1.1	2002	PSF	yes
2.1.3	2.1.2	2002	PSF	yes
2.2 and above	2.1.1	2001-now		
PSF				yes

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1.76 httpcomponents-core 5.3.6

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1.77 file-type v1.1.3

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1.78 xz 5.8.1-r0

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package main

```
import (  
    "bufio"  
    "bytes"  
    "flag"  
    "fmt"  
    "io"  
    "log"  
    "os"  
    "path/filepath"  
    "strings"  
)
```

```
const crUsageString = `xb copyright [options] <path>....`
```

The xb copyright command adds a copyright remark to all go files below path.

-h prints this message and exits

,

```
func crUsage(w io.Writer) {  
    fmt.Fprint(w, crUsageString)  
}
```

```
const copyrightText = `  
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`
```

```
func goComment(text string) string {  
    buf := new(bytes.Buffer)  
    scanner := bufio.NewScanner(strings.NewReader(text))  
    var err error  
    for scanner.Scan() {  
        s := strings.TrimSpace(scanner.Text())  
        if len(s) == 0 {  
            continue  
        }  
        if _, err = fmt.Fprintln(buf, "///", s); err != nil {  
            panic(err)  
        }  
    }  
    if err  
    = scanner.Err(); err != nil {  
        panic(err)  
    }  
    if _, err = fmt.Fprintln(buf); err != nil {  
        panic(err)  
    }  
    return buf.String()  
}
```

```
var goCopyright = goComment(copyrightText)
```

```
func addCopyright(path string) (err error) {  
    log.Printf("adding copyright to %s", path)  
    src, err := os.Open(path)  
    if err != nil {  
        return err  
    }  
    defer func() {  
        cerr := src.Close()  
    }
```

```

    if cerr != nil && err == nil {
        err = cerr
    }
}()
newPath := path + ".new"
dst, err := os.Create(newPath)
if err != nil {
    return err
}
defer func() {
    cerr := dst.Close()
    if cerr != nil && err == nil {
        err = cerr
    }
}()
out := bufio.NewWriter(dst)
fmt.Fprint(out, goCopyright)
scanner := bufio.NewScanner(src)
line := 0
del := false
for scanner.Scan() {
    line++
    txt := scanner.Text()
    if line == 1 && strings.Contains(txt, "Copyright") {
        del = true
        continue
    }
    if del {
        s := strings.TrimSpace(txt)
        if len(s) == 0 {
            del = false
        }
        continue
    }
    fmt.Fprintln(out, txt)
}
if err = scanner.Err();
err != nil {
    return err
}
if err = out.Flush(); err != nil {
    return
}
err = os.Rename(newPath, path)
return
}

func walkCopyrights(path string, info os.FileInfo, err error) error {

```

```

if err != nil {
    return err
}
if info.IsDir() {
    return nil
}
if !strings.HasSuffix(info.Name(), ".go") {
    return nil
}
return addCopyright(path)
}

func copyright() {
    cmdName := os.Args[0]
    log.SetPrefix(fmt.Sprintf("%s: ", cmdName))
    log.SetFlags(0)

    flag.CommandLine = flag.NewFlagSet(cmdName, flag.ExitOnError)
    flag.Usage = func() { crUsage(os.Stderr); os.Exit(1) }

    help := flag.Bool("h", false, "")

    flag.Parse()

    if *help {
        crUsage(os.Stdout)
        os.Exit(0)
    }

    for _, path := range flag.Args() {
        fi, err := os.Stat(path)
        if err != nil {
            log.Print(err)
            continue
        }
        if !fi.IsDir() {
            log.Printf("%s is not a directory", path)
            continue
        }
        if err = filepath.Walk(path, walkCopyrights); err != nil {
            log.Fatalf("%s error %s", path, err)
        }
    }
}

package main

const goLicense = `Copyright (c) 2009 The Go Authors. All rights reserved.

```


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```

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1.79 mpc1 1.3.1-r1

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1.80 go-playground-locales 0.14.1

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1.81 zipp 3.19.2

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1.83 popt 1.19-r4

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1.84 go-resiliency 1.7.0

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1.85 simpleclient_tracer_common 0.16.0

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1.86 isl 0.26-r1

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1.87 commons-lang3 3.18.0

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1.88 mpclib 1.3.1-r1

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1.89 simpleclient_servlet_common 0.16.0

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* /simpleclient-servlet-common-0-16-0-sources-1-jar/META-

INF/maven/io.prometheus/simpleclient_servlet_common/pom.xml

1.90 py3-packaging-pyc 25.0-r0

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1.91 activation-api 2.1.4

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1.92 python3-pyc 3.12.12-r0

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In 1995, Guido continued his work on Python at the Corporation for National Research Initiatives (CNRI, see <https://www.cnri.reston.va.us>) in Reston, Virginia where he released several versions of the software.

In May 2000, Guido and the Python core development team moved to BeOpen.com to form the BeOpen PythonLabs team. In October of the same year, the PythonLabs team moved to Digital Creations, which became Zope Corporation. In 2001, the Python Software Foundation (PSF, see <https://www.python.org/psf/>) was formed, a non-profit organization created specifically to own Python-related Intellectual Property. Zope Corporation was a sponsoring member of the PSF.

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1.3 thru 1.5.2	1.2	1995-1999	CNRI	yes
1.6	1.5.2	2000	CNRI	no
2.0	1.6	2000	BeOpen.com	no
1.6.1	1.6	2001	CNRI	yes (2)
2.1	2.0+1.6.1	2001	PSF	no
2.0.1	2.0+1.6.1	2001	PSF	yes
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- * Source: <https://github.com/apache/maven-resolver/tree/master/maven-resolver-transport-file>

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(1.0)

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testng (6.14.2)

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

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

wagon-http-lightweight (3.0.0)

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1.94 x-exp 0.0.0-20250911091902- df9299821621

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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):

* /antlr4-4-13-0-sources-1-jar/org/antlr/v4/tool/templates/messages/formats/antlr.stg

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*/

/** ANTLR tool checks output templates are compatible with tool code generation.

* For now, a simple string match used on x.y of x.y.z scheme.

* Must match Tool.VERSION during load to templates.

*

* REQUIRED.

*/

javascriptTypeInitMap ::= [

"bool": "false",

"int": "0",

"float": "0.0",

"str": "",

default: "{}" // 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)>
import antlr4 from 'antlr4';
<if(file.genListener)>
import <file.grammarName>Listener from './<file.grammarName>Listener.js';
<endif>
<if(file.genVisitor)>
import <file.grammarName>Visitor from './<file.grammarName>Visitor.js';
<endif>

<namedActions.header>
<parser>
>>
```

```
ListenerFile(file, header, namedActions) ::= <<
<fileHeader(file.grammarFileName, file.ANTLRVersion)>
import antlr4 from 'antlr4';
```

// This class defines a complete listener for a parse tree produced by <file.parserName>.
export default class <file.grammarName>Listener extends antlr4.tree.ParseTreeListener {

```
<file.listenerNames:{lname |
// Enter a parse tree produced by <file.parserName>#<lname>.
enter<lname; format="cap">(ctx) {
\}
```

```
// Exit a parse tree produced by <file.parserName>#<lname>.
exit<lname;
format="cap">(ctx) {
\}
```

```
}; separator="\n">
```

```
}
```

```
>>
```

```
VisitorFile(file, header, namedActions) ::= <<
<fileHeader(file.grammarFileName, file.ANTLRVersion)>
import antlr4 from 'antlr4';
```

// This class defines a complete generic visitor for a parse tree produced by <file.parserName>.


```

export default class <file.grammarName>Visitor extends antlr4.tree.ParseTreeVisitor {

  <file.visitorNames:{lname |
    // Visit a parse tree produced by <file.parserName>#<lname>.
    visit<lname; format="cap">(ctx) {
      return this.visitChildren(ctx);
    }
  }

  }; separator="\n">

}
>>

fileHeader(grammarFileName, ANTLRVersion) ::= <<
// Generated from <grammarFileName> by ANTLR <ANTLRVersion>
// jshint ignore: start
>>

Parser(parser, funcs, atn, sempredFuncs, superClass) ::= <<
<if(superClass)>
import <superClass> from './<superClass>.js';
<endif>

<atn>

const atn = new antlr4.atn.ATNDeserializer().deserialize(serializedATN);

const decisionsToDFA = atn.decisionToState.map( (ds, index) => new antlr4.dfa.DFA(ds,
index) );

const sharedContextCache = new antlr4.atn.PredictionContextCache();

export default class <parser.name> extends <superClass; null="antlr4.Parser"> {

  static grammarFileName = "<parser.grammarFileName>";
  static literalNames = [ <parser.literalNames:{t | <t>}; null="null", separator=", ", wrap, anchor> ];
  static symbolicNames = [ <parser.symbolicNames:{t | <t>}; null="null", separator=", ", wrap, anchor> ];
  static ruleNames = [ <parser.ruleNames:{r | "<r>"}; separator=", ", wrap, anchor> ];

  constructor(input) {
    super(input);
    this._interp = new antlr4.atn.ParserATNSimulator(this, atn, decisionsToDFA, sharedContextCache);
    this.ruleNames = <parser.name>.ruleNames;
    this.literalNames = <parser.name>.literalNames;
    this.symbolicNames = <parser.name>.symbolicNames;
    <namedActions.members>
  }
}

```

```

<if(sempredFuncs)>
sempred(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>

<funcs; separator="\n">

}

<parser.name>.EOF = antlr4.Token.EOF;
<if(parser.tokens)>
<parser.tokens:{ k | <parser.name>.<k> = <parser.tokens.(k)>;}; separator="\n", wrap, anchor>
<endif>

<if(parser.rules)>
<parser.rules:{ r | <parser.name>.RULE_<r.name> = <r.index>;}; separator="\n", wrap, anchor>
<endif>

<funcs:{ f | <ruleContexts(f)>}; separator="\n">

<! Define fields of this parser to export the context classes !>
<parser.funcs:{ f | <parser.name>.<f.ctxType> = <f.ctxType>; }; separator="\n">

>>

ruleContexts(currentRule) ::= <<
<currentRule.ruleCtx>

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

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>.prototype.<r.name>_sempred =
function<else><r.name>_sempred<endif>(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)
::= <<

```

```

<currentRule.escapedName>(<currentRule.args:{a | <a.escapedName>}; separator=", ">) {
  let localctx = new <currentRule.ctxType>(this, this._ctx, this.state<currentRule.args:{a | , <a.escapedName>}>);
  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) ::=
<<

```

```

<currentRule.escapedName>(_p<if(currentRule.args)>, <args:{a | , <a>}><endif>) {
  if(_p===undefined) {

```

```

    _p = 0;
}
const _parentctx = this._ctx;
const _parentState = this.state;
let localctx = new <currentRule.ctxType>(this, this._ctx, _parentState<args:{a | , <a.escapedName>}>);
let _prevctx
= localctx;
const _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(tokens=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(tokens=look)>
    <alt>
    break;}; separator="\n">
default:
    break;
}
>>

```

```

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.tokens)))><bitsetBitfieldComparison(s, bits)><else><bitsetInlineComparison(s,
bits)><endif>; separator=" || ">
>>

// Javascript language spec - shift operators are 32 bits long max
testShiftInRange(shiftAmount) ::= <<
((<shiftAmount>)
    & ~0x1f) === 0
>>

bitsetBitfieldComparison(s, bits) ::= <%
(<testShiftInRange({<offsetShiftVar(s.varName, bits.shift)>})> && ((1 \<\< <offsetShiftVar(s.varName,
bits.shift)>) & <bits.calculated>) !== 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>
%>

bitsetInlineComparison(s, bits) ::= <%
<bits.tokens:{t | <s.varName>===<t.type>}; separator=" || ">
%>

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

InvokeRule(r, argExprsChunks) ::= <<
this.state = <r.stateNumber>;
<if(r.labels)><r.labels:{l | <labelref(l)> =
}><endif>this.<r.escapedName>(<if(r.ast.options.p)><r.ast.options.p><if(argExprsChunks)><endif><endif><argE
xprsChunks>);
>>

MatchToken(m) ::= <<
this.state = <m.stateNumber>;
<if(m.labels)><m.labels:{l
| <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:{l | <labelref(l)> = }>this._input.LT(1);<endif>
<capture>
<if(invert)>if(<m.varName>\<=0 || <expr>)<else>if(!(<expr>))<endif> {
  <if(m.labels)><m.labels:{l | <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:{l | <labelref(l)> = }><endif>this.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.escapedName>"
LocalRef(a) ::= "localctx.<a.escapedName>"
RetValRef(a) ::= "localctx.<a.escapedName>"
QRetValRef(a) ::= "<ctx(a)>.<a.dict>.<a.escapedName>"
/** How to translate $tokenLabel */
TokenRef(t) ::= "<ctx(t)>.<t.escapedName>"
LabelRef(t) ::= "<ctx(t)>.<t.escapedName>"
ListLabelRef(t) ::=

```

```

"<ctx(t)>.<ListLabelName(t.escapedName)>"
SetAttr(s,rhsChunks) ::= "<ctx(s)>.<s.escapedName> = <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) ::= "this.getInvokingContext(<s.ruleIndex>).<s.escapedName>"
SetNonLocalAttr(s, rhsChunks) ::= "this.getInvokingContext(<s.ruleIndex>).<s.escapedName> = <rhsChunks>"

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

TokenDecl(t) ::= "this.<t.escapedName> = null;"
TokenTypeDecl(t) ::= "var <t.escapedName> = 0;"
TokenListDecl(t)
::= "this.<t.escapedName> = [];"
RuleContextDecl(r) ::= "this.<r.escapedName> = null;"
RuleContextListDecl(rdecl) ::= "this.<rdecl.escapedName> = [];"

ContextTokenGetterDecl(t) ::= <<
<t.escapedName>() {
    return this.getToken(<parser.name>.<t.name>, 0);
};
>>

// should never be called
ContextTokenListGetterDecl(t) ::= <<

```

```

<t.escapedName>_list() {
  return this.getTokens(<parser.name>.<t.name>);
}
>>

```

```

ContextTokenListIndexedGetterDecl(t) ::= <<
<t.escapedName> = 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.escapedName>() {
  return this.getTypedRuleContext(<r.ctxName>,0);
};
>>

```

```

// should never be called
ContextRuleListGetterDecl(r) ::= <<
<r.escapedName>_list() {
  return this.getTypedRuleContexts(<parser.name>.<r.ctxName>);
}
>>

```

```

ContextRuleListIndexedGetterDecl(r)
::= <<
<r.escapedName> = 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,signatures) ::= <<
class <struct.escapedName> extends
<if(contextSuperClass)><contextSuperClass><else>antlr4.ParserRuleContext<endif> {

    constructor(parser, parent, invokingState<struct.ctorAttrs:{ a
| , <a.escapedName>}> ) {
        if(parent===undefined) {
            parent = null;
        }
        if(invokingState===undefined || invokingState===null) {
            invokingState = -1;
        }
        super(parent, invokingState);
        this.parser = parser;
        this.ruleIndex = <parser.name>.RULE_<struct.derivedFromName>;
        <attrs:{ a | <a>} ; separator="\n">
        <struct.ctorAttrs:{ a | this.<a.escapedName> = <a.escapedName> || null;}; separator="\n">
    }

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

    <if(struct.provideCopyFrom)> <! don't need copy unless we have subclasses !>
    copyFrom(ctx) {
        super.copyFrom(ctx);
        <struct.attrs:{ a | this.<a.escapedName> = ctx.<a.escapedName>;}; separator="\n">
    }
    <endif>
    <dispatchMethods; separator="\n">
    <extensionMembers; separator="\n">

}

>>

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

```

```

class <struct.escapedName> extends <struct.parentRule; format="cap">Context {

    constructor(parser, ctx) {

        super(parser);
        <attrs:{ a | <a>;}; separator="\n">
        super.copyFrom(ctx);
    }

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

    <dispatchMethods; separator="\n">

}

<! Define fields of this parser to export this struct/context class !>
<parser.name>.<struct.name> = <struct.escapedName>;

>>

ListenerDispatchMethod(method) ::= <<
<if(method.isEnter)>enter<else>exit<endif>Rule(listener) {
    if(listener instanceof <parser.grammarName>Listener ) {
        listener.<if(method.isEnter)>enter<else>exit<endif><struct.derivedFromName; format="cap">(this);
    }
}

>>

VisitorDispatchMethod(method) ::= <<
accept(visitor) {
    if ( visitor instanceof <parser.grammarName>Visitor ) {
        return visitor.visit<struct.derivedFromName; format="cap">(this);
    } else {
        return visitor.visitChildren(this);
    }
}

>>

AttributeDecl(d) ::= "this.<d.escapedName> = <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.escapedName>"

/** 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, isListLabel) ::= <<
localctx = new <ctxName>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>);
>>

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)>

```

```

import antlr4 from 'antlr4';

<namedActions.header>

<lexer>

>>

Lexer(lexer, atn, actionFuncs, sempredFuncs, superClass) ::= <<
<if(superClass)>
import <superClass> from './<superClass>.js';

<endif>
<atn>

const atn = new antlr4.atn.ATNDeserializer().deserialize(serializedATN);

const decisionsToDFA = atn.decisionToState.map( (ds, index) => new antlr4.dfa.DFA(ds, index) );

export default class <lexer.name> extends <if(superClass)><superClass><else>antlr4.Lexer<endif>
{

    static grammarFileName = "<lexer.grammarFileName>";
    static channelNames = [ "DEFAULT_TOKEN_CHANNEL", "HIDDEN"<if (lexer.channelNames)>,
<lexer.channelNames:{c| "<c>"}; separator=", ", wrap, anchor><endif> ];
    static modeNames = [ <lexer.modes:{m| "<m>"}; separator=", ", wrap, anchor> ];
    static literalNames = [ <lexer.literalNames:{t| <t>}; null="null", separator=", ", wrap, anchor> ];
    static symbolicNames = [ <lexer.symbolicNames:{t| <t>}; null="null", separator=", ", wrap, anchor> ];
    static ruleNames = [ <lexer.ruleNames:{r| "<r>"}; separator=", ", wrap, anchor> ];

    constructor(input) {
        super(input)
        this._interp = new antlr4.atn.LexerATNSimulator(this, atn, decisionsToDFA, new
antlr4.atn.PredictionContextCache());
        <namedActions.members>
    }
}

<lexer.name>.EOF = antlr4.Token.EOF;
<if(lexer.tokens)>
<lexer.tokens:{k| <lexer.name>.<k> = <lexer.tokens.(k)>;}; separator="\n", wrap, anchor>
<endif>

<if(lexer.escapedChannels)>
<lexer.escapedChannels:{c|
<lexer.name>.<c> = <lexer.escapedChannels.(c)>;}; separator="\n">

<endif>

```



```

<if(rest(lexer.escapedModeNames))>
<rest(lexer.escapedModeNames):{m| <lexer.name>.<m> = <i>;}; separator="\n">

<endif>

```

```

<dumpActions(lexer, "", actionFuncs, sempredFuncs)>

```

```

>>

```

```

SerializedATN(model) ::= <<
const serializedATN = [<model.serialized: {s | <s>}; separator=",", wrap>];

```

```

>>

```

```

/** 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) ::= <<
<javacriptTypeInitMap.(typeName)>
>>

```

```

codeFileExtension() ::= ".js"

```

Found in path(s):

* /antlr4-4-13-0-sources-1-jar/org/antlr/v4/tool/templates/codegen/JavaScript/JavaScript.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.

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>:<column>:"

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

report(location, message, type) ::= "<location> <type>: <message>"

wantsSingleLineMessage() ::= "true"

Found in path(s):

* /antlr4-4-13-0-sources-1-jar/org/antlr/v4/tool/templates/messages/formats/gnu.stg

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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 {
/*
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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
    options,
        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 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($m);}) )?
    opts=optionsSpec*
    {discoverLexerRule((RuleAST)$RULE, $TOKEN_REF, mods, $opts.start, (GrammarAST)input.LT(1));}
    lexerRuleBlock
    {
        finishLexerRule((RuleAST)$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);
}
: lexerAtom
| lexerSubrule
| ACTION    {actionInAlt((ActionAST)$ACTION);}
| SEMPRED   {sempredInAlt((PredAST)$SEMPRED);}
| ^(ACTION elementOptions) {actionInAlt((ActionAST)$ACTION);}
| ^(SEMPRED elementOptions) {sempredInAlt((PredAST)$SEMPRED);}
| EPSILON
;

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);}
| range
| ^(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):

* /antlr4-4-13-0-sources-1-jar/org/antlr/v4/parse/GrammarTreeVisitor.g

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/*

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*/

Found in path(s):

* /antlr4-4-13-0-sources-1-jar/org/antlr/v4/parse/GrammarTreeVisitor.java

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```
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 */
```

```
phpTypeInitMap ::= [
  "int": "0",
  "long": "0",
  "float": "0.0",
  "double": "0.0",
  "boolean": "false",
  default: "null"
]
```

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

ParserFile(file, parser, namedActions, contextSuperClass) ::= <<

```

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

ListenerFile(file, header, namedActions) ::= <<
<fileHeader(file.grammarFileName,
file.ANTLRVersion)>
<if(file.genPackage)>
namespace <file.genPackage>;
<endif>
<header>
use Antlr\Antlr4\Runtime\Tree\ParseTreeListener;

/**
 * This interface defines a complete listener for a parse tree produced by
 * {@see <file.parserName>}.
 */
interface <file.grammarName>Listener extends ParseTreeListener {
<file.listenerNames:{lname |
/**
<if(file.listenerLabelRuleNames.(lname))>
 * Enter a parse tree produced by the `<lname>`
 * labeled alternative in {@see <file.parserName>::<file.listenerLabelRuleNames.(lname)>()}.
<else>
 * Enter a parse tree produced by {@see <file.parserName>::<lname>()}.
<endif>
 * @param $context The parse tree.
 */
public function enter<lname; format="cap">(Context\<lname; format="cap">Context $context): void;
/**
<if(file.listenerLabelRuleNames.(lname))>
 * Exit a parse tree produced by the `<lname>` labeled alternative
 * in {@see <file.parserName>::<file.listenerLabelRuleNames.(lname)>()}.
<else>
 * Exit a parse
 * tree produced by {@see <file.parserName>::<lname>()}.
<endif>
 * @param $context The parse tree.
 */
public function exit<lname; format="cap">(Context\<lname; format="cap">Context $context): void;};
separator="\n">
}
>>

BaseListenerFile(file, header, namedActions) ::= <<
<fileHeader(file.grammarFileName, file.ANTLRVersion)>
<if(file.genPackage)>
namespace <file.genPackage>;

```

```

<endif>
<header>

use Antlr\Antlr4\Runtime\ParserRuleContext;
use Antlr\Antlr4\Runtime\Tree\ErrorNode;
use Antlr\Antlr4\Runtime\Tree\TerminalNode;

/**
 * This class provides an empty implementation of {@see <file.grammarName>Listener},
 * which can be extended to create a listener which only needs to handle a subset
 * of the available methods.
 */
class <file.grammarName>BaseListener implements <file.grammarName>Listener
{
    <file.listenerNames>{lname |
/**
 * {@inheritDoc}
 *
 * The default implementation does nothing.
 */
public function enter<lname; format="cap">(Context\<lname; format="cap">Context
    $context): void {}

/**
 * {@inheritDoc}
 *
 * The default implementation does nothing.
 */
public function exit<lname; format="cap">(Context\<lname; format="cap">Context $context): void {}};
separator="\n">

/**
 * {@inheritDoc}
 *
 * The default implementation does nothing.
 */
public function enterEveryRule(ParserRuleContext $context): void {}

/**
 * {@inheritDoc}
 *
 * The default implementation does nothing.
 */
public function exitEveryRule(ParserRuleContext $context): void {}

/**
 * {@inheritDoc}
 *

```

```

* The default implementation does nothing.
*/
public function visitTerminal(TerminalNode $node): void {}

/**
 * {@inheritdoc}
 *
 * The default implementation does nothing.
 */
public function visitErrorNode(ErrorNode $node): void {}
}
>>

VisitorFile(file, header, namedActions) ::= <<
<fileHeader(file.grammarFileName, file.ANTLRVersion)>
<if(file.genPackage)>
namespace <file.genPackage>;
<endif>

<header>
use Antlr\Antlr4\Runtime\Tree\ParseTreeVisitor;

/**
 * This interface defines a complete generic visitor for a parse tree produced by {@see <file.parserName>}.
 */
interface <file.grammarName>Visitor extends ParseTreeVisitor
{
    <file.visitorNames:{lname |
/**
<if(file.visitorLabelRuleNames.(lname))>
* Visit a parse tree produced by the `<lname>` labeled alternative
* in {@see <file.parserName>::<file.visitorLabelRuleNames.(lname)>()}.
<else>
* Visit a parse tree produced by {@see <file.parserName>::<lname>()}.
<endif>
*
* @param Context\<lname; format="cap">Context $context The parse tree.
*
* @return mixed The visitor result.
*/
public function visit<lname; format="cap">(Context\<lname; format="cap">Context $context);};
separator="\n\n"
}
>>

BaseVisitorFile(file, header, namedActions) ::= <<
<fileHeader(file.grammarFileName, file.ANTLRVersion)>
<if(file.genPackage)>

```

```

namespace <file.genPackage>;
<endif>
<header>
use Antlr\\Antlr4\\Runtime\\Tree\\AbstractParseTreeVisitor;

/**
 * This class provides an
 * empty implementation of {@see <file.grammarName>Visitor},
 * which can be extended to create a visitor which only needs to handle a subset
 * of the available methods.
 */
class <file.grammarName>BaseVisitor extends AbstractParseTreeVisitor implements <file.grammarName>Visitor
{
    <file.visitorNames:{lname |
/**
 * {@inheritdoc}
 *
 * The default implementation returns the result of calling
 * {@see self::visitChildren()} on `context`.
 */
    public function visit<lname; format="cap">(Context\\<lname; format="cap">Context $context)
    {
        return $this->visitChildren($context);
    }
    \\}}; separator="\n\n">
}
>>

fileHeader(grammarFileName, ANTLRVersion) ::= <<
\\<?php

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

>>

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

Parser_(parser, funcs, atn, sempredFuncs, ctor, superClass) ::= <<
namespace<if(file.genPackage)> <file.genPackage><endif> {
<if(namedActions.header)><namedActions.header><endif>
use
Antlr\\Antlr4\\Runtime\\Atn\\ATN;
use Antlr\\Antlr4\\Runtime\\Atn\\ATNDeserializer;
use Antlr\\Antlr4\\Runtime\\Atn\\ParserATNSimulator;
use Antlr\\Antlr4\\Runtime\\Dfa\\DFA;
use Antlr\\Antlr4\\Runtime\\Error\\Exceptions\\FailedPredicateException;

```

```

use Antlr\\Antlr4\\Runtime\\Error\\Exceptions\\NoViableAltException;
use Antlr\\Antlr4\\Runtime\\PredictionContexts\\PredictionContextCache;
use Antlr\\Antlr4\\Runtime\\Error\\Exceptions\\RecognitionException;
use Antlr\\Antlr4\\Runtime\\RuleContext;
use Antlr\\Antlr4\\Runtime\\Token;
use Antlr\\Antlr4\\Runtime\\TokenStream;
use Antlr\\Antlr4\\Runtime\\Vocabulary;
use Antlr\\Antlr4\\Runtime\\VocabularyImpl;
use Antlr\\Antlr4\\Runtime\\RuntimeMetaData;
use Antlr\\Antlr4\\Runtime\\Parser;
<if(namedActions.definitions)><namedActions.definitions><endif>

final class <parser.name> extends <superClass; null="Parser">
{
    <if(parser.tokens)>
    public const <parser.tokens:{k | <k> = <parser.tokens.(k)>}; separator=",
", wrap, anchor>;
    <endif>

    <if(parser.rules)>
    public const <parser.rules:{r | RULE_<r.name> = <r.index>}; separator=", ", wrap, anchor>;
    <endif>

    /**
     * @var array<string>
     */
    public const RULE_NAMES = [
        <parser.ruleNames:{r | '<r>'}; separator=", ", wrap, anchor>
    ];

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

    <atn>
    protected static $atn;
    protected static $decisionToDFA;
    protected static $sharedContextCache;
    <if(namedActions.members)>

    <namedActions.members>
    <endif>

    <parser:(ctor)()>

    private static function initialize(): void
    {
        if (self::$atn !== null) {
            return;

```

```

}

RuntimeMetaData::checkVersion('<file.ANTLRVersion>', RuntimeMetaData::VERSION);

$atn = (new ATNDeserializer())->deserialize(self::SERIALIZED_ATN);

$decisionToDFA = [];
for ($i = 0, $count = $atn->getNumberOfDecisions(); $i < $count; $i++) {
    $decisionToDFA[] = new DFA($atn->getDecisionState($i), $i);
}

self::$atn = $atn;
self::$decisionToDFA
= $decisionToDFA;
self::$sharedContextCache = new PredictionContextCache();
}

public function getGrammarFileName(): string
{
    return "<parser.grammarFileName>";
}

public function getRuleNames(): array
{
    return self::RULE_NAMES;
}

public function getSerializedATN(): array
{
    return self::SERIALIZED_ATN;
}

public function getATN(): ATN
{
    return self::$atn;
}

public function getVocabulary(): Vocabulary
{
    static $vocabulary;

    return $vocabulary = $vocabulary ?? new VocabularyImpl(self::LITERAL_NAMES, self::SYMBOLIC_NAMES);
}
<if(funcs)>

<funcs; separator="\n\n">
<endif>
<if(sempredFuncs)>

```

```

public function sempred(?RuleContext $localContext, int $ruleIndex, int $predicateIndex): bool
{
    switch ($ruleIndex) {
        <parser.sempredFuncs.values:{f}
        case <f.ruleIndex>:
            return $this->sempred<f.name; format="cap">($localContext, $predicateIndex);}; separator="\n\n">

            default:
                return
    true;
    }
}

<sempredFuncs.values; separator="\n\n">
<endif>
}
}

namespace <if(file.genPackage)><file.genPackage>\<endif>Context {
    use Antlr\Antlr4\Runtime\ParserRuleContext;
    use Antlr\Antlr4\Runtime\Token;
    use Antlr\Antlr4\Runtime\Tree\ParseTreeVisitor;
    use Antlr\Antlr4\Runtime\Tree\TerminalNode;
    use Antlr\Antlr4\Runtime\Tree\ParseTreeListener;
    use <if(file.genPackage)><file.genPackage>\<endif><parser.name>;
    <if (file.genVisitor)>use <if(file.genPackage)><file.genPackage>\<endif><file.grammarName>Visitor;<endif>
    <if (file.genListener)>use <if(file.genPackage)><file.genPackage>\<endif><file.grammarName>Listener;<endif>
    <namedActions.contexts>

    <funcs :{ func | <func.ruleCtx><if(func.altLabelCtxs)>

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

    vocabulary(literalNames, symbolicNames) ::= <<
/**
 * @var array<string|null>
 */
private const LITERAL_NAMES = [
    <literalNames:{t | <t>}; null="null",
    separator=", ", wrap, anchor>
];

/**
 * @var array<string>
 */

```



```

private const SYMBOLIC_NAMES = [
  <symbolicNames:{t | <t>}; null="null", separator=", ", wrap, anchor>
];
>>

dumpActions(recog, argFuncs, actionFuncs, sempredFuncs) ::= <<
<if(actionFuncs)>

public function action(?RuleContext $localContext, int $ruleIndex, int $actionIndex): void
{
  switch ($ruleIndex) {
    <recog.actionFuncs.values:{f|
  case <f.ruleIndex>:
    $this->action<f.name; format="cap">($localContext, $actionIndex);
    break;}; separator="\n\n">
  }
}

<actionFuncs.values; separator="\n">
<endif>
<if(sempredFuncs)>

public function sempred(?RuleContext $localContext, int $ruleIndex, int $predicateIndex): bool
{
  switch ($ruleIndex) {
    <recog.sempredFuncs.values:{f|
  case <f.ruleIndex>:
    return $this->sempred<f.name; format="cap">($localContext, $predicateIndex);}; separator="\n\n">
  }

  return true;
}
<sempredFuncs.values; separator="\n\n">
<endif>
>>

parser_ctor(p) ::= <<
public function __construct(TokenStream
  $input)
{
  parent::__construct($input);

  self::initialize();

  $this->interp = new ParserATNSimulator($this, self::$satn, self::$decisionToDFA, self::$sharedContextCache);
}
>>

```

```

/**
 * This generates a private method since the actionIndex is generated, making
 * an overriding implementation impossible to maintain.
 */
RuleActionFunction(r, actions) ::= <<
private function action<r.name; format="cap">(?<r.ctxType> $localContext, int $actionIndex): void
{
    switch ($actionIndex) {
    <actions:{index|
    case <index>:
    <actions.(index)>

    break;}; separator="\n\n">
    }
}
>>

/**
 * This generates a private method since the predicateIndex is generated, making
 * an overriding implementation impossible to maintain.
 */
RuleSempredFunction(r, actions) ::= <<
private function sempred<r.name; format="cap">(Context\<r.ctxType> $localContext, int $predicateIndex): bool
{
    switch ($predicateIndex) {
    <actions:{index|
    case <index>:
        return <actions.(index)>;}; separator="\n\n">
    }

    return
    true;
}
>>

RuleFunction(currentRule,args,code,locals,ruleCtx,altLabelCtxs,namedActions,finallyAction,exceptions,postamble)
::= <<
/**
 * @throws RecognitionException
 */
<if(currentRule.modifiers)><currentRule.modifiers:{f | <f> }><endif>public function <currentRule.name>(<args;
separator=", ">): Context\<currentRule.ctxType>
{
    $localContext = new Context\<currentRule.ctxType>($this->ctx, $this->getState())<currentRule.args:{a | ,
$a.name}>>);

    $this->enterRule($localContext, <currentRule.startState>, self::RULE_<currentRule.name>);
    <namedActions.init>

```

```

<locals; separator="\n">

try {
    <code>
    <postamble; separator="\n">
    <namedActions.after>
} <if(exceptions)> <exceptions; separator="\n"> <else> catch (RecognitionException $exception) {
    $localContext->exception = $exception;
    $this->errorHandler->reportError($this, $exception);
    $this->errorHandler->recover($this, $exception);
} <endif> finally {

    <finallyAction>
    $this->exitRule();
}

return $localContext;
}
>>

LeftRecursiveRuleFunction(currentRule,args,code,locals,ruleCtx,altLabelCtxs,namedActions,finallyAction,postamble) ::= <<
/**
 * @throws RecognitionException
 */
<if(currentRule.modifiers)><currentRule.modifiers:{f | <f> }><endif>public function <currentRule.name>(<args;
separator=", ">): Context\<currentRule.ctxType>
{
    return $this->recursive<currentRule.name; format="cap">(0<currentRule.args:{a | , <a.name>}>);
}

/**
 * @throws RecognitionException
 */
private function recursive<currentRule.name; format="cap">(int $precedence<args:{a | , <a>}>):
Context\<currentRule.ctxType>
{
    $parentContext = $this->ctx;
    $parentState = $this->getState();
    $localContext = new Context\<currentRule.ctxType>($this->ctx, $parentState<currentRule.args:{a | ,
<a.name>}>);
    $previousContext = $localContext;
    $startState = <currentRule.startState>;
    $this->enterRecursionRule($localContext, <currentRule.startState>,
self::RULE_<currentRule.name>, $precedence);
    <namedActions.init>
    <locals; separator="\n">

```

```

try {
  <code>
  <postamble; separator="\n">
  <namedActions.after>
} catch (RecognitionException $exception) {
  $localContext->exception = $exception;
  $this->errorHandler->reportError($this, $exception);
  $this->errorHandler->recover($this, $exception);
} finally {
  <finallyAction>
  $this->unrollRecursionContexts($parentContext);
}

return $localContext;
}
>>

CodeBlockForOuterMostAlt(currentOuterMostAltCodeBlock, locals, preamble, ops) ::= <<
<if(currentOuterMostAltCodeBlock.altLabel)>$localContext = new
Context\<currentOuterMostAltCodeBlock.altLabel; format="cap">Context($localContext);<endif>
$this->enterOuterAlt($localContext, <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->setState(<choice.stateNumber>);
$this->errorHandler->sync($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(tokens=look)>
  <alt>
  break;}; separator="\n\n">

default:
  <error>
}
>>

LL1OptionalBlock(choice, alts, error) ::= <<

```

```

$this->setState(<choice.stateNumber>);
$this->errorHandler->sync($this);

switch ($this->input->LA(1)) {
    <choice.altLook,alts:{look,alt| <cases(tokens=look)>
    <alt>
    break;}; separator="\n\n">

default:
    break;
}
>>

LL1OptionalBlockSingleAlt(choice, expr, alts, preamble, error, followExpr) ::= <<
$this->setState(<choice.stateNumber>);
$this->errorHandler->sync($this);
<preamble; separator="\n">

if (<expr>) {
    <alts; separator="\n">
}
>>

LL1StarBlockSingleAlt(choice, loopExpr, alts, preamble, iteration) ::= <<
$this->setState(<choice.stateNumber>);
$this->errorHandler->sync($this);

<preamble;
separator="\n">
while (<loopExpr>) {
    <alts; separator="\n">
    $this->setState(<choice.loopBackStateNumber>);
    $this->errorHandler->sync($this);
    <iteration>
}
>>

LL1PlusBlockSingleAlt(choice, loopExpr, alts, preamble, iteration) ::= <<
$this->setState(<choice.blockStartStateNumber>); <! alt block decision !>
$this->errorHandler->sync($this);

<preamble; separator="\n">
do {
    <alts; separator="\n">
    $this->setState(<choice.stateNumber>); <! loopback/exit decision !>
    $this->errorHandler->sync($this);
    <iteration>
} while (<loopExpr>);

```

>>

// LL(*) stuff

AltBlock(choice, preamble, alts, error) ::= <<

\$this->setState(<choice.stateNumber>);

\$this->errorHandler->sync(\$this);

<if(choice.label)><labelref(choice.label)> = \$this->input->LT(1);<endif>

<preamble; separator="\n">

switch (\$this->getInterpreter()->adaptivePredict(\$this->input, <choice.decision>, \$this->ctx)) {

<alts:{ alt |

case <i>:

<alt>

break;}; separator="\n\n">

}

>>

OptionalBlock(choice,

alts, error) ::= <<

\$this->setState(<choice.stateNumber>);

\$this->errorHandler->sync(\$this);

switch (\$this->getInterpreter()->adaptivePredict(\$this->input, <choice.decision>, \$this->ctx)) {

<alts:{ alt |

case <i><if(!choice.ast.greedy)>+1<endif>:

<alt>

break;}; separator="\n\n">

}

>>

StarBlock(choice, alts, sync, iteration) ::= <<

\$this->setState(<choice.stateNumber>);

\$this->errorHandler->sync(\$this);

\$alt = \$this->getInterpreter()->adaptivePredict(\$this->input, <choice.decision>, \$this->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 !>

}

\$this->setState(<choice.loopBackStateNumber>);

\$this->errorHandler->sync(\$this);

\$alt = \$this->getInterpreter()->adaptivePredict(\$this->input, <choice.decision>, \$this->ctx);

}

>>

```
PlusBlock(choice, alts, error) ::= <<
$this->setState(<choice.blockStartStateNumber>); <! alt block decision !>
$this->errorHandler->sync($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\n">
  default:
    <error>
  }
}
```

```
$this->setState(<choice.loopBackStateNumber>); <! loopback/exit decision !>
$this->errorHandler->sync($this);
```

```
$alt = $this->getInterpreter()->adaptivePredict($this->input, <choice.decision>, $this->ctx);
} while ($alt !== <choice.exitAlt> && $alt !== 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.tokens)))><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
>>
```

```
bitsetBitfieldComparison(s, bits) ::= <%
(<testShiftInRange({<offsetShiftVar(s.varName,
bits.shift)>})> && ((1 \<< <offsetShiftVar(s.varName, bits.shift)>) & <bits.calculated>) !== 0)
%>
```

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

]

```
offsetShiftVar(shiftAmount, offset) ::= <%  
<if(!isZero(offset))>($<shiftAmount> - <offset>)<else>$<shiftAmount><endif>  
>%>  
offsetShiftConst(shiftAmount, offset) ::= <%  
<if(!isZero(offset))>(self::<shiftAmount> - <offset>)<else>self::<shiftAmount><endif>  
>%>
```

```
bitsetInlineComparison(s, bits) ::= <%  
<bits.tokens:{t | $<s.varName> === self::<t.name>}; separator=" || ">  
>%>
```

```
cases(tokens) ::= <<  
<tokens:{t | case self::<t.name>:}; separator="\n">  
>>
```

```
InvokeRule(r, argExprsChunks) ::= <<  
$this->setState(<r.stateNumber>);  
<if(r.labels)><r.labels:{l | <labelref(l)> = }><endif>$this-><if(r.ast.options.p)>recursive<r.name>;  
format="cap"><else><r.name><endif>(<if(r.ast.options.p)><r.ast.options.p><if(argExprsChunks)>,<endif><endif>  
<argExprsChunks>);  
>>
```

```
MatchToken(m) ::= <<  
$this->setState(<m.stateNumber>);  
<if(m.labels)><m.labels:{l  
| <labelref(l)> = }><endif>$this->match(self::<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->setState(<m.stateNumber>);
```

```
<if(m.labels)><m.labels:{l | <labelref(l)> = }>$this->input->LT(1);<endif>  
<capture>
```

```
if (<if(invert)>$<m.varName> \<= 0 || <else>!<endif>(<expr>)) {  
    <if(m.labels)><m.labels:{l | <labelref(l)> = }><endif>$this->errorHandler->recoverInline($this);  
} else {  
    if ($this->input->LA(1) === Token::EOF) {  
        $this->matchedEOF = true;  
    }  
}
```

```
$this->errorHandler->reportMatch($this);
```



```

$this->consume();
}
>>

Wildcard(w) ::= <<
$this->setState(<w.stateNumber>);
<if(w.labels)><w.labels:{l | <labelref(l)> = }><endif>$this->matchWildcard();
>>

// ACTION STUFF

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

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

SemPred(p, chunks, failChunks) ::= <<
$this->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() ::= "$this->skip();"
LexerMoreCommand() ::= "$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) ::= "$localContext-><a.name>"
LocalRef(a) ::= "$localContext-><a.name>"
RetValRef(a) ::= "$localContext-><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 ? (int) <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 ? $this->input->getTextByTokens(<ctx(r)-><r.label>->start, <ctx(r)-><r.label>->stop) : null)"
RulePropertyRef_ctx(r) ::= "<ctx(r)-><r.label>"
RulePropertyRef_parser(r) ::= "$this"

ThisRulePropertyRef_start(r) ::= "$localContext->start"
ThisRulePropertyRef_stop(r) ::= "$localContext->stop"
ThisRulePropertyRef_text(r) ::= "$this->input->getTextByTokens($localContext->start, $this->input->LT(-1))"
ThisRulePropertyRef_ctx(r) ::= "$localContext"
ThisRulePropertyRef_parser(r) ::= "$this"

NonLocalAttrRef(s) ::= "$this->getInvokingContext(<s.ruleIndex>)-><s.name>"
SetNonLocalAttr(s, rhsChunks) ::= "$this->getInvokingContext(<s.ruleIndex>)-><s.name> = <rhsChunks>;"

AddToLabelList(a) ::= "<ctx(a.label)-><a.listName>[]
    = <labelref(a.label)>;"

TokenDecl(t) ::= "<TokenLabelType()> $<t.name>"
TokenTypeDecl(t) ::= ""
TokenListDecl(t) ::= "array $<t.name> = []"
RuleContextDecl(r) ::= "<r.ctxName> $<r.name>"
RuleContextListDecl(rdecl) ::= "array $<rdecl.name> = []"
AttributeDecl(d) ::= "<d.type> $<d.name><if(d.initValue)> = <d.initValue><endif>"

PropertiesDecl(struct) ::= <<
    <if(struct.tokenListDecls)>
    <struct.tokenListDecls : { d | /**

```

```

* @var array\<Token>|null $<d.name>
*/
public $<d.name>;}; separator="\n\n">
<endif>
<if(struct.tokenDecls)>
<if(struct.tokenListDecls)>

<endif>
<struct.tokenDecls : {d | /**
* @var <TokenLabelType>|null $<d.name>
*/
public $<d.name>;}; separator="\n\n">
<endif>
<if(struct.ruleContextDecls)>
<if(struct.tokenListDecls || struct.tokenDecls)>

<endif>
<struct.ruleContextDecls : {d | /**
* @var <d.ctxName>|null $<d.name>
*/
public $<d.name>;}; separator="\n\n">
<endif>
<if(struct.ruleContextListDecls)>
<if(struct.tokenListDecls || struct.tokenDecls
|| struct.ruleContextDecls)>

<endif>
<struct.ruleContextListDecls : {d | /**
* @var array\<<d.ctxName>\>|null $<d.name>
*/
public $<d.name>;}; separator="\n\n">
<endif>
<if(struct.attributeDecls)>
<if(struct.tokenListDecls || struct.tokenDecls || struct.ruleContextDecls || struct.ruleContextListDecls)>

<endif>
<struct.attributeDecls : {d | /**
* @var <d.type><if(!d.initValue)>|null<endif> $<d.name>
*/
public $<d.name><if(d.initValue)> = <d.initValue><endif>;}; separator="\n\n">
<endif>

>>

ContextTokenGetterDecl(t) ::= <<
public function <t.name>(): ?TerminalNode
{
    return $this->getToken(<parser.name>::<t.name>, 0);
}

```

```
}
```

```
>>
```

```
ContextTokenListGetterDecl(t) ::= <<
```

```
>>
```

```
ContextTokenListIndexedGetterDecl(t) ::= <<
```

```
/**
```

```
* @return array\<TerminalNode>|TerminalNode|null
```

```
*/
```

```
public function <t.name>(int $index = null)
```

```
{
```

```
    if ($index === null) {
```

```
        return $this->getTokens(<parser.name>::<t.name>);
```

```
    }
```

```
    return $this->getToken(<parser.name>::<t.name>, $index);
```

```
}
```

```
>>
```

```
ContextRuleGetterDecl(r)
```

```
    ::= <<
```

```
public function <r.name>(): ?<r.ctxName>
```

```
{
```

```
    return $this->getTypedRuleContext(<r.ctxName>::class, 0);
```

```
}
```

```
>>
```

```
ContextRuleListGetterDecl(r) ::= <<
```

```
>>
```

```
ContextRuleListIndexedGetterDecl(r) ::= <<
```

```
/**
```

```
* @return array\<<r.ctxName>\>|<r.ctxName>|null
```

```
*/
```

```
public function <r.name>(int $index = null)
```

```
{
```

```
    if ($index === null) {
```

```
        return $this->getTypedRuleContexts(<r.ctxName>::class);
```

```
    }
```

```
    return $this->getTypedRuleContext(<r.ctxName>::class, $index);
```

```
}
```

```
>>
```

```
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> = \${this->input->LT(1)};"
```

```
CaptureNextTokenType(d) ::= "$<d.varName> = \${this->input->LA(1)};"
```

```
StructDecl(struct,ctorAttrs,attrs, getters,dispatchMethods,interfaces,extensionMembers,signatures)
```

```
::= <<
```

```
class <struct.name> extends
```

```
<if(contextSuperClass)><contextSuperClass><else>ParserRuleContext<endif><if(interfaces)> implements
```

```
<interfaces; separator=", "><endif>
```

```
{
```

```
<PropertiesDecl(struct)>
```

```
public function __construct(?ParserRuleContext $parent, ?int $invokingState = null<ctorAttrs:{a | , ?<a> = null}>)
```

```
{
```

```
parent::__construct($parent, $invokingState);
```

```
<if(struct.ctorAttrs)>
```

```
<struct.ctorAttrs:{a | \${this-><a.name> = \${<a.name>} ?? \${this-><a.name>}}; separator="\n">
```

```
<endif>
```

```
}
```

```
public function getRuleIndex(): int
```

```
{
```

```
return <parser.name>::RULE_<struct.derivedFromName>;
```

```
}
```

```
<if(getters)>
```

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

```
<endif>
```

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

```
public function copyFrom(ParserRuleContext $context): void
```

```
{
```

```
parent::copyFrom($context);
```

```
<struct.attrs:{a | \${this-><a.name> = \${<a.name>} ?? \${<a.name>}}; separator="\n">
```

```
}
```

```
<endif>
```

```
<if(dispatchMethods)>
```

```
<dispatchMethods;
```

```

separator="\n\n">
<endif>
<if(extensionMembers)>

```

```

<extensionMembers; separator="\n\n">
<endif>
}
>>

```

```

AltLabelStructDecl(struct,attrs, getters,dispatchMethods) ::= <<
class <struct.name> extends <struct.parentRule; format="cap">Context
{
<PropertiesDecl(struct)>
public function __construct(<struct.parentRule; format="cap">Context $context)
{
    parent::__construct($context);

    $this->copyFrom($context);
}
<if(getters)>

    <getters:{g | <g>}; separator="\n\n">
<endif>
<if(dispatchMethods)>

    <dispatchMethods; separator="\n\n">
<endif>
}
>>

```

```

ListenerDispatchMethod(method) ::= <<
public function <if(method.isEnter)>enter<else>exit<endif>Rule(ParseTreeListener $listener): void
{
    if ($listener instanceof <parser.grammarName>Listener) {
        $listener-><if(method.isEnter)>enter<else>exit<endif><struct.derivedFromName; format="cap">($this);
    }
}
>>

```

```

VisitorDispatchMethod(method) ::= <<
public function accept(ParseTreeVisitor $visitor): mixed
{
    if ($visitor instanceof
    <parser.grammarName>Visitor) {
        return $visitor->visit<struct.derivedFromName; format="cap">($this);
    }

    return $visitor->visitChildren($this);
}

```

```

}
>>

/** If we don't know location of label def x, use this template */
labelref(x) ::= "<if(!x.isLocal)>$localContext-><endif><x.name>"

/** For any action chunk, what is correctly-typed context struct ptr? */
ctx(actionChunk) ::= "$localContext"

// 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, isListLabel) ::= <<
$localContext = new Context\\<ctxName>Context($parentContext, $parentState);
<if(label)>
<if(isListLabel)>
$localContext-><label>[] = $previousContext;
<else>
$localContext-><label> = $previousContext;
<endif>
<endif>

$this->pushNewRecursionContext($localContext,
    $startState, self::RULE_<ruleName>);
>>

recRuleLabeledAltStartAction(ruleName, currentAltLabel, label, isListLabel) ::= <<
$localContext = new Context\\<currentAltLabel; format="cap">Context(new Context\\<ruleName;
format="cap">Context($parentContext, $parentState));
<if(label)>
<if(isListLabel)>
$localContext-><label>[] = $previousContext;
<else>
$localContext-><label> = $previousContext;
<endif>
<endif>

$this->pushNewRecursionContext($localContext, $startState, self::RULE_<ruleName>);
>>

recRuleReplaceContext(ctxName) ::= <<
$localContext = new Context\\<ctxName>Context($localContext);
$this->ctx = $localContext;
$previousContext = $localContext;

```

```
>>
```

```
recRuleSetPrevCtx() ::= <<  
if ($this->getParseListeners() !== null) {  
    $this->triggerExitRuleEvent();  
}
```

```
$previousContext = $localContext;  
>>
```

```
LexerFile(lexerFile, lexer, namedActions) ::= <<  
<fileHeader(lexerFile.grammarFileName, lexerFile.ANTLRVersion)>  
<lexer>  
>>
```

```
Lexer(lexer, atn, actionFuncs, sempredFuncs, superClass)  
::= <<  
namespace<if(lexerFile.genPackage)> <lexerFile.genPackage><endif> {  
<if(namedActions.header)><namedActions.header><endif>  
    use Antlr\Antlr4\Runtime\Atn\ATNDeserializer;  
    use Antlr\Antlr4\Runtime\Atn\LexerATNSimulator;  
    use Antlr\Antlr4\Runtime\Lexer;  
    use Antlr\Antlr4\Runtime\CharStream;  
    use Antlr\Antlr4\Runtime\PredictionContexts\PredictionContextCache;  
    use Antlr\Antlr4\Runtime\RuleContext;  
    use Antlr\Antlr4\Runtime\Atn\ATN;  
    use Antlr\Antlr4\Runtime\Dfa\DFA;  
    use Antlr\Antlr4\Runtime\Vocabulary;  
    use Antlr\Antlr4\Runtime\RuntimeMetaData;  
    use Antlr\Antlr4\Runtime\VocabularyImpl;  
<if(namedActions.definitions)><namedActions.definitions><endif>  
  
    final class <lexer.name> extends <superClass; null="Lexer">  
    {  
        <if(lexer.tokens)>  
        public const <lexer.tokens:{k | <k> = <lexer.tokens.(k)>}; separator=", ", wrap, anchor>;  
        <endif>  
  
        <if(lexer.escapedChannels)>  
        public const <lexer.escapedChannels:{c | <c> = <lexer.escapedChannels.(c)>};  
        separator=", ", wrap, anchor>;  
        <endif>  
  
        <if(rest(lexer.escapedModeNames))>  
        public const <rest(lexer.escapedModeNames):{m | <m>=<i>}; separator=", ", wrap, anchor>;  
        <endif>
```



```

/**
 * @var array<string>
 */
public const CHANNEL_NAMES = [
    'DEFAULT_TOKEN_CHANNEL', 'HIDDEN'<if (lexer.channelNames)>, <lexer.channelNames:{c| '<c>'}>;
separator=", ", wrap, anchor><endif>
];

/**
 * @var array<string>
 */
public const MODE_NAMES = [
    <lexer.modes:{m| '<m>'>; separator=", ", wrap, anchor>
];

/**
 * @var array<string>
 */
public const RULE_NAMES = [
    <lexer.ruleNames:{r| '<r>'>; separator=", ", wrap, anchor>
];

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

<atn>
protected static $atn;
protected static $decisionToDFA;
protected static $sharedContextCache;
<if(namedActions.members)>

    <namedActions.members>
<endif>

public function __construct(CharStream $input)
{
    parent::__construct($input);

    self::initialize();

    $this->interp
= new LexerATNSimulator($this, self::$atn, self::$decisionToDFA, self::$sharedContextCache);
}

private static function initialize(): void
{
    if (self::$atn !== null) {
        return;
    }

```

```

RuntimeMetaData::checkVersion('<lexerFile.ANTLRVersion>', RuntimeMetaData::VERSION);

$atn = (new ATNDeserializer()->deserialize(self::SERIALIZED_ATN);

$decisionToDFA = [];
for ($i = 0, $count = $atn->getNumberOfDecisions(); $i < $count; $i++) {
    $decisionToDFA[] = new DFA($atn->getDecisionState($i), $i);
}

self::$atn = $atn;
self::$decisionToDFA = $decisionToDFA;
self::$sharedContextCache = new PredictionContextCache();
}

public static function vocabulary(): Vocabulary
{
    static $vocabulary;

    return $vocabulary = $vocabulary ?? new VocabularyImpl(self::LITERAL_NAMES, self::SYMBOLIC_NAMES);
}

public function getGrammarFileName(): string
{
    return '<lexer.grammarFileName>';
}

public function getRuleNames(): array
{
    return
self::RULE_NAMES;
}

public function getSerializedATN(): array
{
    return self::SERIALIZED_ATN;
}

/**
 * @return array<string>
 */
public function getChannelNames(): array
{
    return self::CHANNEL_NAMES;
}

/**
 * @return array<string>

```

```

*/
public function getModeNames(): array
{
    return self::MODE_NAMES;
}

public function getATN(): ATN
{
    return self::$atn;
}

public function getVocabulary(): Vocabulary
{
    return self::vocabulary();
}
<dumpActions(lexer, "", actionFuncs, sempredFuncs)>
}
}
>>

SerializedATN(model) ::= <<
private const SERIALIZED_ATN =
[<model.serialized: {s | <s>}; separator=", ", wrap={<\n> }>];
>>

/**
 * 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) ::= <<
<phpTypeInitMap.(typeName)>
>>

codeFileExtension() ::= ".php"

Found in path(s):
* /antlr4-4-13-0-sources-1-jar/org/antlr/v4/tool/templates/codegen/PHP/PHP.stg
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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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*/

```
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):

* /antlr4-4-13-0-sources-1-jar/org/antlr/v4/parse/ATNBuilder.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)>
    # encoding: utf-8
    from antlr4 import *
    from io import StringIO
    import sys
    if sys.version_info[1] > 5:
        from typing import TextIO
    else:
        from typing.io import TextIO

    <namedActions.header>
    <parser>

    >>
```

```
ListenerFile(file, header, namedActions) ::= <<
    <fileHeader(file.grammarFileName, file.ANTLRVersion)>
    from antlr4 import *
    if "." in __name__:
        from .<file.parserName> import <file.parserName>
    else:
```

```

    from <file.parserName> import <file.parserName>
<header>

# This class defines a complete listener for a parse tree produced by <file.parserName>.
class <file.grammarName>Listener(ParseTreeListener):

    <file.listenerNames:{lname |
# Enter a parse tree produced by <file.parserName>#<lname>.
def enter<lname; format="cap">(self, ctx:<file.parserName>.<lname; format="cap">Context):
    pass

# Exit a parse tree produced by <file.parserName>#<lname>.
def exit<lname; format="cap">(self, ctx:<file.parserName>.<lname; format="cap">Context):
    pass

}; separator="\n">

del <file.parserName>
>>

```

```

VisitorFile(file, header, namedActions) ::= <<
<fileHeader(file.grammarFileName, file.ANTLRVersion)>
from antlr4 import *
if "." 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)>
if "." in __name__:
    from .<superClass> import <superClass>
else:
    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> ]

    <if(parser.rules)>
    <parser.rules:{r | RULE_<r.name> = <r.index>}; separator="\n", wrap, anchor>
    <endif>

    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, output:TextIO = sys.stdout):
    super().__init__(input, output)
    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.escapedName>(self<currentRule.args:{a | , <a.escapedName><if(a.type)>:<a.type><endif>}>):

    localctx = <parser.name>.<currentRule.ctxType>(self, self._ctx, self.state<currentRule.args:{a | ,
<a.escapedName>}>))
    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.escapedName>(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.escapedName>}>))
    _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(tokens=look)>
    <alt>
    pass}; separator="\n">
else:
    <error>

>>

LL1OptionalBlock(choice, alts, error) ::= <<
self.state = <choice.stateNumber>

```

```

self._errHandler.sync(self)
token = self._input.LA(1)
<choice.altLook,alts:{look,alt| <cases(tokens=look)>
    <alt>
    pass}; separator="\n">
else:
    pass
>>

```

```

LL1OptionalBlockSingleAlt(choice, expr, alts, preamble, error, followExpr) ::= <<
self.state = <choice.stateNumber>
self._errHandler.sync(self)
<preamble; separator="\n">
if <expr>:
    <alts; separator="\n">

<!else if ( !(<followExpr> ) ) <error>!>
>>

```

```

LL1StarBlockSingleAlt(choice, loopExpr, alts, preamble, iteration) ::= <<
self.state = <choice.stateNumber>
self._errHandler.sync(self)
<preamble; separator="\n">
while <loopExpr>:
    <alts; separator="\n">
    self.state = <choice.loopBackStateNumber>
    self._errHandler.sync(self)
    <iteration>

>>

```

```

LL1PlusBlockSingleAlt(choice, loopExpr, alts, preamble, iteration) ::= <<
self.state = <choice.blockStartStateNumber> <! alt
    block decision !>
self._errHandler.sync(self)
<preamble; separator="\n">
while True:
    <alts; separator="\n">
    self.state = <choice.stateNumber> <! loopback/exit decision !>
    self._errHandler.sync(self)
    <iteration>
    if not (<loopExpr>):
        break

>>

```

```

// LL(*) stuff

```



```

AltBlock(choice, preamble, alts, error) ::= <<
self.state = <choice.stateNumber>
self._errHandler.sync(self)
<if(choice.label)><labelref(choice.label)> = _input.LT(1)<endif>
<preamble; separator="\n">
la_ = self._interp.adaptivePredict(self._input,<choice.decision>,self._ctx)
<alts:{alt |
if la_ == <i>:
    <alt>
    pass
}; separator="\nel">

>>

```

```

OptionalBlock(choice, alts, error) ::= <<
self.state = <choice.stateNumber>
self._errHandler.sync(self)
la_ = self._interp.adaptivePredict(self._input,<choice.decision>,self._ctx)
<alts:{alt |
if la_ == <i><if(!choice.ast.greedy)>+1<endif>:
    <alt>
}; separator="\nel">

>>

```

```

StarBlock(choice, alts, sync, iteration) ::= <<
self.state = <choice.stateNumber>
self._errHandler.sync(self)
_alt
= self._interp.adaptivePredict(self._input,<choice.decision>,self._ctx)
while _alt!=<choice.exitAlt> and _alt!=ATN.INVALID_ALT_NUMBER:
    if _alt==1<if(!choice.ast.greedy)>+1<endif>:
        <iteration>
        <alts> <! should only be one !>
    self.state = <choice.loopBackStateNumber>
    self._errHandler.sync(self)
    _alt = self._interp.adaptivePredict(self._input,<choice.decision>,self._ctx)

>>

```

```

PlusBlock(choice, alts, error) ::= <<
self.state = <choice.blockStartStateNumber> <! alt block decision !>
self._errHandler.sync(self)
_alt = 1<if(!choice.ast.greedy)>+1<endif>
while _alt!=<choice.exitAlt> and _alt!=ATN.INVALID_ALT_NUMBER:
    <alts:{alt|
if _alt == <i><if(!choice.ast.greedy)>+1<endif>:

```

```

    <alt>
}; separator="\nel">
    else:
        <error>
        self.state = <choice.loopBackStateNumber> <! loopback/exit decision !>
        self._errHandler.sync(self)
        _alt = self._interp.adaptivePredict(self._input,<choice.decision>,self._ctx)

>>

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

ThrowNoViableAlt(t) ::= "raise NoViableAltException(self)"

TestSetInline(s) ::= <<
<s.bitsets:{bits | <if(rest(rest(bits.tokens)))><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
>>

bitsetBitfieldComparison(s, bits) ::= <%
(<testShiftInRange({<offsetShiftVar(s.varName, bits.shift)>})> and ((1 \<\< <offsetShiftVar(s.varName,
bits.shift)>) & <bits.calculated>) != 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>
%>

bitsetInlineComparison(s, bits) ::= <%
<bits.tokens:{t
| <s.varName>==<t.type>}; separator=" or ">
%>

```

```

cases(tokens) ::= <<
if token in [<tokens:{t | <t.type>}; separator=", ">]:
>>

InvokeRule(r, argExprsChunks) ::= <<
self.state = <r.stateNumber>
<if(r.labels)><r.labels:{l | <labelref(l)> =
}><endif>self.<r.escapedName>(<if(r.ast.options.p)><r.ast.options.p><if(argExprsChunks)><endif><endif><argE
xprsChunks>)
>>

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:{l | <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) ::= <<
except <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.escapedName>"
LocalRef(a) ::= "localctx.<a.escapedName>"
RetValRef(a) ::= "localctx.<a.escapedName>"
QRetValRef(a) ::= "<ctx(a)>.<a.dict>.<a.escapedName>"
/** How to translate $tokenLabel */
TokenRef(t) ::= "<ctx(t)>.<t.escapedName>"
LabelRef(t) ::= "<ctx(t)>.<t.escapedName>"
ListLabelRef(t) ::= "<ctx(t)>.<ListLabelName(t.escapedName)>"
SetAttr(s,rhsChunks) ::= "<ctx(s)>.<s.escapedName> = <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)    ::= "self.getInvokingContext(<s.ruleIndex>).<s.escapedName>"
SetNonLocalAttr(s, rhsChunks) ::= "self.getInvokingContext(<s.ruleIndex>).<s.escapedName> = <rhsChunks>"

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

TokenDecl(t) ::= "self.<t.escapedName> = None # <TokenLabelType()>"
TokenTypeDecl(t) ::= "self.<t.escapedName> = 0 # <TokenLabelType()> type"
TokenListDecl(t) ::= "self.<t.escapedName> = list() # of <TokenLabelType()>s"
RuleContextDecl(r) ::= "self.<r.escapedName> = None # <r.ctxName>"
RuleContextListDecl(rdecl) ::= "self.<rdecl.escapedName> = list() # of <rdecl.ctxName>s"

ContextTokenGetterDecl(t)    ::= <<
def <t.escapedName>(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.escapedName>(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.escapedName>(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.escapedName>(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,signatures) ::= <<
class <struct.escapedName>(<if(contextSuperClass)><contextSuperClass><else>ParserRuleContext<endif>):
    __slots__ = 'parser'

    def __init__(self, parser, parent:ParserRuleContext=None, invokingState:int=-1<struct.ctorAttrs:{a | ,
<a.escapedName><if(a.type)>:<a.type><endif>=None}>):
        super().__init__(parent, invokingState)
        self.parser = parser
        <attrs:{a | <a>}; separator="\n">
        <struct.ctorAttrs:{a | self.<a.escapedName> = <a.escapedName>}; 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.escapedName> = ctx.<a.escapedName>}; separator="\n">

<endif>
<dispatchMethods; separator="\n">
<extensionMembers; separator="\n">

>>

AltLabelStructDecl(struct,attrs, getters,dispatchMethods) ::= <<
class <struct.escapedName>(<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.escapedName> = <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.escapedName>"

/** 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, isListLabel) ::= <<
localctx =
  <parser.name>.<ctxName>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>)
>>

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
import sys
if sys.version_info[1] > 5:
    from typing import TextIO
else:
    from typing.io import TextIO

<namedActions.header>

<lexer>
>>

Lexer(lexer, atn, actionFuncs, sempredFuncs, superClass) ::= <<
<if(superClass)>
if "." in __name__:
    from .<superClass> import <superClass>
else:
    from <superClass> import <superClass>

<endif>
<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) ]

<if(lexer.escapedChannels)>
    <lexer.escapedChannels:{c| <c> = <lexer.escapedChannels.(c)>}; separator="\n">

<endif>
<if(rest(lexer.escapedModeNames))>
    <rest(lexer.escapedModeNames):{m| <m> = <i>}; separator="\n">

<endif>
<if(lexer.tokens)>
    <lexer.tokens:{k| <k> = <lexer.tokens.(k)>}; separator="\n", wrap, anchor>
<endif>

    channelNames = [ u"DEFAULT_TOKEN_CHANNEL", u"HIDDEN"<if (lexer.channelNames)>,
<lexer.channelNames:{c| u"<c>"}; separator=", ", wrap, anchor><endif> ]

    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, output:TextIO = sys.stdout):
    super().__init__(input, output)
    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)
::= <<
def serializedATN():
    return [
        <model.serialized: {s | <s>}; separator=",", wrap>
    ]
>>

/** 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) ::= <<
<pythonTypeInitMap.(typeName)>
>>

codeFileExtension() ::= ".py"

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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):

*

/antlr4-4-13-0-sources-1-jar/org/antlr/v4/parse/LeftRecursiveRuleWalker.g

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Found in path(s):

* /antlr4-4-13-0-sources-1-jar/org/antlr/v4/tool/templates/codegen/Cpp/Cpp.stg

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```
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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.Utills;
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 ) {
    $omos = DefaultOutputModelFactory.list(controller.getChoiceBlock((BlockAST)$blk, alts, $label));
}
else {
    Choice choice = controller.getEBNFBlock($ebnfRoot, alts);
    hasLookaheadBlock |= choice instanceof PlusBlock || choice instanceof StarBlock;
    $omos = DefaultOutputModelFactory.list(choice);
}
}
;

alternative returns [CodeBlockForAlt altCodeBlock, List<SrcOp> ops]
@init {
    boolean outerMost = inContext("RULE BLOCK");
}
@after {
    controller.finishAlternative($altCodeBlock, $ops, outerMost);
}
: a=alt[outerMost] { $altCodeBlock=$a.altCodeBlock; $ops=$a.ops; }
;

alt[boolean outerMost] returns [CodeBlockForAlt altCodeBlock, List<SrcOp> ops]
@init {
    // set alt if outer ALT only (the only ones with alt field set to Alternative object)
    AltAST altAST = (AltAST)retval.start;

```

```

if ( outerMost ) controller.setCurrentOuterMostAlt(altAST.alt);
}
: {
    List<SrcOp> elems = new ArrayList<SrcOp>();
    // TODO: shouldn't we pass $start to controller.alternative()?
    $altCodeBlock = controller.alternative(controller.getCurrentOuterMostAlt(), outerMost);
    $altCodeBlock.ops = $ops = elems;
    controller.setCurrentBlock($altCodeBlock);
}
^( ALT elementOptions? ( element {if ($element.omos!=null) elems.addAll($element.omos);} )+ )

| ^(ALT elementOptions?
EPSILON)
    { $altCodeBlock = controller.epsilon(controller.getCurrentOuterMostAlt(), outerMost); }
;

element returns [List<? extends SrcOp> omos]
: labeledElement { $omos = $labeledElement.omos; }
| atom[null,false] { $omos = $atom.omos; }
| subrule { $omos = $subrule.omos; }
| ACTION { $omos = controller.action((ActionAST)$ACTION); }
| SEMPRED { $omos = controller.sempred((ActionAST)$SEMPRED); }
| ^(ACTION elementOptions) { $omos = controller.action((ActionAST)$ACTION); }
| ^(SEMPRED elementOptions) { $omos = controller.sempred((ActionAST)$SEMPRED); }
;

labeledElement returns [List<? extends SrcOp> omos]
: ^(ASSIGN ID atom[$ID,false] ) { $omos = $atom.omos; }
| ^(PLUS_ASSIGN ID atom[$ID,false]) { $omos = $atom.omos; }
| ^(ASSIGN ID block[$ID,null] ) { $omos = $block.omos; }
| ^(PLUS_ASSIGN ID block[$ID,null]) { $omos = $block.omos; }
;

subrule returns [List<? extends SrcOp> omos]
: ^(OPTIONAL b=block[null,$OPTIONAL])
{
    $omos = $block.omos;
}
| ( ^(op=CLOSURE
b=block[null,null])
| ^(op=POSITIVE_CLOSURE b=block[null,null])
)
{
    List<CodeBlockForAlt> alts = new ArrayList<CodeBlockForAlt>();
    SrcOp blk = $b.omos.get(0);
    CodeBlockForAlt alt = new CodeBlockForAlt(controller.delegate);
    alt.addOp(blk);
    alts.add(alt);
}

```

```

SrcOp loop = controller.getEBNFBlock($op, alts); // "star it"
    hasLookaheadBlock |= loop instanceof PlusBlock || loop instanceof StarBlock;
    $omos = DefaultOutputModelFactory.list(loop);
}
| block[null, null]    {$omos = $block.omos;}
;

blockSet[GrammarAST label, boolean invert] returns [List<SrcOp> omos]
: ^(SET atom[label,invert]+) {$omos = controller.set($SET, $label, invert);}
;

/*
addElement
: STRING_LITERAL
| TOKEN_REF
| ^(RANGE STRING_LITERAL STRING_LITERAL)
;
*/

// TODO: combine ROOT/BANG into one then just make new op ref'ing return value of atom/terminal...
// TODO: same for NOT
atom[GrammarAST label, boolean invert] returns [List<SrcOp> omos]
: ^(NOT
a=atom[$label, true]) {$omos = $a.omos;}
| range[label]    {$omos = $range.omos;}
| ^(DOT ID terminal[$label])
| ^(DOT ID ruleref[$label])
| ^(WILDCARD .)    {$omos = controller.wildcard($WILDCARD, $label);}
| WILDCARD    {$omos = controller.wildcard($WILDCARD, $label);}
| terminal[label]    {$omos = $terminal.omos;}
| ruleref[label]    {$omos = $ruleref.omos;}
| blockSet[$label, invert] {$omos = $blockSet.omos;}
;

ruleref[GrammarAST label] returns [List<SrcOp> omos]
: ^(RULE_REF ARG_ACTION? elementOptions?) {$omos = controller.ruleRef($RULE_REF, $label,
$ARG_ACTION);}
;

range[GrammarAST label] returns [List<SrcOp> omos]
: ^(RANGE a=STRING_LITERAL b=STRING_LITERAL)
;

terminal[GrammarAST label] returns [List<SrcOp> omos]
: ^(STRING_LITERAL .) {$omos = controller.stringRef($STRING_LITERAL, $label);}
| STRING_LITERAL    {$omos = controller.stringRef($STRING_LITERAL, $label);}
| ^(TOKEN_REF ARG_ACTION .) {$omos =

```

```

controller.tokenRef($TOKEN_REF, $label, $ARG_ACTION);}
| ^($TOKEN_REF .) { $omos = controller.tokenRef($TOKEN_REF, $label, null);}
| TOKEN_REF { $omos = controller.tokenRef($TOKEN_REF, $label, null);}
;

```

elementOptions

```

: ^(ELEMENT_OPTIONS elementOption+)
;

```

elementOption

```

: ID
| ^($ASSIGN ID ID)
| ^($ASSIGN ID STRING_LITERAL)
| ^($ASSIGN ID ACTION)
| ^($ASSIGN ID INT)
;

```

Found in path(s):

* /antlr4-4-13-0-sources-1-jar/org/antlr/v4/codegen/SourceGenTriggers.g

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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:{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>
* @param ctx the parse tree
*/
void enter<lname; format="cap">(<file.parserName>.<lname; format="cap">Context ctx);
/**
<if(file.listenerLabelRuleNames.(lname))>
* Exit a parse tree produced by the {@code <lname>}
* labeled alternative in {@link <file.parserName>#<file.listenerLabelRuleNames.(lname)>}.
<else>
* Exit a parse tree produced by {@link <file.parserName>#<lname>}.
<endif>
* @param ctx the parse tree
*/
void exit<lname; format="cap">(<file.parserName>.<lname; format="cap">Context ctx);; separator="\n">
}
>>

```

```

BaseListenerFile(file, header, namedActions) ::= <<
<fileHeader(file.grammarFileName, file.ANTLRVersion)>
<if(file.genPackage)>
package <file.genPackage>;
<endif>
<header>

```

```

import org.antlr.v4.runtime.ParserRuleContext;
import org.antlr.v4.runtime.tree.ErrorNode;
import org.antlr.v4.runtime.tree.TerminalNode;

```

```

/**
* This class provides an empty implementation of {@link <file.grammarName>Listener},
* which can be extended to create a listener which only needs to handle a subset
* of the available methods.
*/
@SuppressWarnings("CheckReturnValue")
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.
*/
@SuppressWarnings("CheckReturnValue")
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> 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", "CheckReturnValue"})
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>
<if(parser.rules)>
public static final int
<parser.rules:{r | RULE_<r.name> = <r.index>}; separator=", ", wrap, anchor>;
<endif>
private static String[] makeRuleNames() {
return new String[] {
<parser.ruleNames:{r | "<r>"}; separator=", ", wrap, anchor>
};
}
public static final String[] ruleNames = makeRuleNames();

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

@Override
public String getGrammarFileName() { return "<parser.grammarFileName>"; }

@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 String[] makeLiteralNames() {
    return new String[] {
        <literalNames:{t | <t>}; null="null", separator=", ", wrap, anchor>
    };
}
private static final String[] _LITERAL_NAMES = makeLiteralNames();
private static String[] makeSymbolicNames() {
    return new String[] {
        <symbolicNames:{t | <t>}; null="null", separator=", ", wrap, anchor>
    };
}
private static final String[] _SYMBOLIC_NAMES = makeSymbolicNames();
public static final Vocabulary VOCABULARY = new VocabularyImpl(_LITERAL_NAMES,
    _SYMBOLIC_NAMES);

/**
 * @deprecated Use {@link #VOCABULARY} instead.
 */
@Deprecated
public static final String[] tokenNames;
static {
    tokenNames = new String[_SYMBOLIC_NAMES.length];

```

```

for (int i = 0; i < tokenNames.length; i++) {
    tokenNames[i]
= VOCABULARY.getLiteralName(i);
    if (tokenNames[i] == null) {
        tokenNames[i] = VOCABULARY.getSymbolicName(i);
    }

    if (tokenNames[i] == null) {
        tokenNames[i] = "<INVALID>";
    }
}

@Override
@Deprecated
public String[] getTokenNames() {
    return tokenNames;
}

@Override

public Vocabulary getVocabulary() {
    return VOCABULARY;
}
>>

dumpActions(recog, argFuncs, actionFuncs, sempredFuncs) ::= <<
<if(actionFuncs)>
@Override
public void action(RuleContext _localctx, int ruleIndex, int actionIndex) {
    switch (ruleIndex) {
        <recog.actionFuncs.values:{f|
case <f.ruleIndex>:
        <f.name>_action((<f.ctxType>)_localctx, actionIndex);
        break;}; separator="\n">
    }
}
<actionFuncs.values; separator="\n">
<endif>
<if(sempredFuncs)>
@Override
public boolean sempred(RuleContext _localctx, int ruleIndex, int predIndex) {
    switch (ruleIndex) {
        <recog.sempredFuncs.values:{f|
case <f.ruleIndex>:
        return <f.name>_sempred((<f.ctxType>)_localctx, predIndex);}; separator="\n">
    }
}
return

```

```

true;
}
<sempredFuncs.values; separator="\n">
<endif>
>>

parser_ctor(p) ::= <<
public <p.name>(TokenStream input) {
super(input);
_interp = new ParserATNSimulator(this,_ATN,_decisionToDFA,_sharedContextCache);
}
>>

/* This generates a private method since the actionIndex is generated, making an
* overriding implementation impossible to maintain.
*/
RuleActionFunction(r, actions) ::= <<
private void <r.name>_action(<r.ctxType> _localctx, int actionIndex) {
switch (actionIndex) {
<actions:{index|
case <index>:
<actions.(index)>
break;}; separator="\n">
}
}
>>

/* This generates a private method since the predIndex is generated, making an
* overriding implementation impossible to maintain.
*/
RuleSempredFunction(r, actions) ::= <<
private boolean <r.name>_sempred(<r.ctxType> _localctx, int predIndex) {
switch (predIndex) {
<actions:{index|
case <index>:
return <actions.(index)>;}; separator="\n">
}
return true;
}
>>

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

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

<if(currentRule.modifiers)><currentRule.modifiers:{f | <f> }><else>public final <endif><currentRule.ctxType>

```

```

<currentRule.escapedName>(<args; separator=",">) throws RecognitionException {
  <currentRule.ctxType> _localctx = new <currentRule.ctxType>(_ctx, getState())<currentRule.args:{a | ,
  <a.escapedName>}>);
  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.escapedName>(<args; separator=",">) throws RecognitionException {
  return <currentRule.escapedName>(0<currentRule.args:{a | , <a.escapedName>}>);
}

private <currentRule.ctxType> <currentRule.escapedName>(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.escapedName>}>);
<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(tokens=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(tokens=look)>
<alt>
break;}; separator="\n">
default:
break;
}
>>

```

```

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.tokens)))><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
>>

```

```

bitsetBitfieldComparison(s, bits) ::= <%
(<testShiftInRange({<offsetShift(s.varName, bits.shift)>})> && ((1L \<\< <offsetShift(s.varName, bits.shift)>) &
<bits.calculated>L) != 0)
%>

```

```

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

```

```

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

bitsetInlineComparison(s, bits) ::= <%
<bits.tokens:{t | <s.varName>==<t.name>}; separator=" || ">
%>

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

InvokeRule(r, argExprsChunks)
::= <<
setState(<r.stateNumber>);
<if(r.labels)><r.labels:{l | <labelref(l)> =
}><endif><r.escapedName>(<if(r.ast.options.p)><r.ast.options.p><if(argExprsChunks)>,<endif><endif><argExprs
Chunks>);
>>

MatchToken(m) ::= <<
setState(<m.stateNumber>);
<if(m.labels)><m.labels:{l | <labelref(l)> = }><endif>match(<m.escapedName>);
>>

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

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

CommonSetStuff(m, expr, capture, invert) ::= <<
setState(<m.stateNumber>);
<if(m.labels)><m.labels:{l | <labelref(l)> = }>_input.LT(1);<endif>
<capture>
if ( <if(invert)><m.varName> \<= 0 || <else>!<endif>(<expr>) ) {
  <if(m.labels)><m.labels:{l | <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:{l | <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.escapedName>"
LocalRef(a) ::= "_localctx.<a.escapedName>"
RetValRef(a) ::= "_localctx.<a.escapedName>"
QRetValRef(a)
    ::= "<ctx(a)>.<a.dict>.<a.escapedName>"
/** How to translate $tokenLabel */
TokenRef(t) ::= "<ctx(t)>.<t.escapedName>"
LabelRef(t) ::= "<ctx(t)>.<t.escapedName>"
ListLabelRef(t) ::= "<ctx(t)>.<ListLabelName(t.escapedName)>"
SetAttr(s,rhsChunks) ::= "<ctx(s)>.<s.escapedName> = <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.escapedName>"
SetNonLocalAttr(s, rhsChunks) ::=
"(<s.ruleName; format=\"cap\">Context)getInvokingContext(<s.ruleIndex>)).<s.escapedName>
= <rhsChunks>;"

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

TokenDecl(t) ::= "<TokenLabelType()> <t.escapedName>"
TokenTypeDecl(t) ::= "int <t.escapedName>;"
TokenListDecl(t) ::= "List<Token> <t.escapedName> = new ArrayList<Token>()"
RuleContextDecl(r) ::= "<r.ctxName> <r.escapedName>"
RuleContextListDecl(rdecl) ::= "List<<rdecl.ctxName>> <rdecl.escapedName> = 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.escapedName>() {
        return getRuleContext(<r.ctxName>.class,0);
    }

```

```

>>
ContextRuleListGetterDecl(r) ::= <<
public
List\<<r.ctxName>\> <r.escapedName>() {
return getRuleContexts(<r.ctxName>.class);
}
>>

ContextRuleListIndexedGetterDecl(r) ::= <<
public <r.ctxName> <r.escapedName>(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,signatures)
::= <<
@SuppressWarnings("CheckReturnValue")
public static class <struct.escapedName> 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.escapedName>(ParserRuleContext parent, int invokingState) { super(parent,
invokingState); }<endif>
public <struct.escapedName>(ParserRuleContext parent, int invokingState<ctorAttrs:{a | , <a>}>) {
super(parent, invokingState);
<struct.ctorAttrs:{a | this.<a.escapedName> = <a.escapedName>;}; separator="\n">
}
@Override public int getRuleIndex() { return RULE_<struct.derivedFromName>; }
<if(struct.provideCopyFrom)><! don't need copy unless we have subclasses !>
public <struct.escapedName>() { }
public void copyFrom(<struct.escapedName> ctx) {
super.copyFrom(ctx);

```

```

    <struct.attrs:{a | this.<a.escapedName> = ctx.<a.escapedName>;}; separator="\n">
  }
<endif>
<dispatchMethods; separator="\n">
<extensionMembers; separator="\n">
}
>>

```

```

AltLabelStructDecl(struct,attrs, getters,dispatchMethods) ::= <<
@SuppressWarnings("CheckReturnValue")
public static class
  <struct.escapedName> extends <currentRule.name; format="cap">Context {
  <attrs:{a | public <a>;}; separator="\n">
  <getters:{g | <g>;}; separator="\n">
  public <struct.escapedName>(<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.escapedName><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.escapedName>"

```

```

/** 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>
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", "CheckReturnValue"})
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();
    <if(lexer.tokens)>
    public static final int
        <lexer.tokens:{k | <k>=<lexer.tokens.(k)>}; separator=", ", wrap, anchor>;
    <endif>
    <if(lexer.escapedChannels)>
    public static final int
        <lexer.escapedChannels:{c | <c>=<lexer.escapedChannels.(c)>}; separator=", ", wrap, anchor>;
    <endif>
    <if(rest(lexer.escapedModeNames))>
    public static final int
        <rest(lexer.escapedModeNames):{m | <m>=<i>}; separator=", ", wrap, anchor>;
    <endif>
    public static String[]
        channelNames = {
            "DEFAULT_TOKEN_CHANNEL", "HIDDEN"<if (lexer.channelNames)>, <lexer.channelNames:{c| "<c>"}>;
        separator=", ", wrap, anchor><endif>
    };

    public static String[] modeNames = {
        <lexer.modes:{m| "<m>"}>; separator=", ", wrap, anchor>
    };

    private static String[] makeRuleNames() {
        return new String[] {
            <lexer.ruleNames:{r | "<r>"}>; separator=", ", wrap, anchor>
        };
    }
    public static final String[] ruleNames = makeRuleNames();

```

```

<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[] getChannelNames() { return channelNames; }

@Override
public String[] getModeNames()
{ return modeNames; }

@Override
public ATN getATN() { return _ATN; }

<dumpActions(lexer, "", actionFuncs, sempredFuncs)>
<atn>
}
>>

SerializedJavaATN(model) ::= <<
<if(rest(model.segments))>
<! requires segmented representation !>
<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):

```
* /antlr4-4-13-0-sources-1-jar/org/antlr/v4/tool/templates/codegen/Java/Java.stg
```

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

```

/*
 * [The "BSD license"]
 * Copyright (c) 2012-2016 Terence Parr
 * Copyright (c) 2012-2016 Sam Harwell
 * All rights reserved.
 *
 * Redistribution and use in source and binary forms, with or without
 * modification, are permitted provided that the following conditions
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 *
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 *    derived from this software without specific prior written permission.
 *
 * THIS SOFTWARE IS PROVIDED BY THE AUTHOR ``AS IS" AND ANY EXPRESS OR
 * IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED

```

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```
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* THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT  
* (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF  
* THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.  
*/
```

```
/** 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):

* /antlr4-4-13-0-sources-1-jar/org/antlr/v4/tool/templates/LeftRecursiveRules.stg

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

```
/*
```

```
* Copyright 20162022 The ANTLR Project. All rights reserved.
```

```
* Licensed under the BSD-3-Clause license. See LICENSE file in the project root for license information.
```

```
*/
```

Found in path(s):

* /antlr4-4-13-0-sources-1-jar/org/antlr/v4/codegen/target/TypeScriptTarget.java

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/*

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Found in path(s):

* /antlr4-4-13-0-sources-1-jar/org/antlr/v4/parse/ATNBuilder.java

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Found in path(s):

* /antlr4-4-13-0-sources-1-jar/org/antlr/v4/semantics/SemanticPipeline.java

* /antlr4-4-13-0-sources-1-jar/org/antlr/v4/codegen/model/decl/ContextRuleGetterDecl.java

* /antlr4-4-13-0-sources-1-jar/org/antlr/v4/semantics/RuleCollector.java

* /antlr4-4-13-0-sources-1-jar/org/antlr/v4/codegen/model/StarBlock.java

* /antlr4-4-13-0-sources-1-jar/org/antlr/v4/analysis/LeftRecursiveRuleTransformer.java

* /antlr4-4-13-0-sources-1-jar/org/antlr/v4/codegen/model/decl/ContextTokenGetterDecl.java

* /antlr4-4-13-0-sources-1-jar/org/antlr/v4/codegen/model/chunk/TokenRef.java

* /antlr4-4-13-0-sources-1-jar/org/antlr/v4/gui/TestRig.java

* /antlr4-4-13-0-sources-1-jar/org/antlr/v4/codegen/model/MatchNotSet.java

* /antlr4-4-13-0-sources-1-jar/org/antlr/v4/parse/GrammarASTAdaptor.java

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/antlr4-4-13-0-sources-1-jar/org/antlr/v4/tool/ast/RuleElementAST.java
* /antlr4-4-13-0-sources-1-jar/org/antlr/v4/analysis/LeftRecursionDetector.java
* /antlr4-4-13-0-sources-1-jar/org/antlr/v4/codegen/target/DartTarget.java
* /antlr4-4-13-0-sources-1-jar/org/antlr/v4/gui/TreePostScriptGenerator.java
* /antlr4-4-13-0-sources-1-jar/org/antlr/v4/semantics/ActionSniffer.java
* /antlr4-4-13-0-sources-1-jar/org/antlr/v4/tool/GrammarSyntaxMessage.java
* /antlr4-4-13-0-sources-1-jar/org/antlr/v4/tool/AttributeDict.java
* /antlr4-4-13-0-sources-1-jar/org/antlr/v4/gui/SystemFontMetrics.java
* /antlr4-4-13-0-sources-1-jar/org/antlr/v4/codegen/DefaultOutputModelFactory.java
* /antlr4-4-13-0-sources-1-jar/org/antlr/v4/codegen/model/LeftRecursiveRuleFunction.java
* /antlr4-4-13-0-sources-1-jar/org/antlr/v4/codegen/model/chunk/RulePropertyRef_stop.java
* /antlr4-4-13-0-sources-1-jar/org/antlr/v4/codegen/model/Loop.java
* /antlr4-4-13-0-sources-1-jar/org/antlr/v4/codegen/model/Lexer.java
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/antlr4-4-13-0-sources-1-jar/org/antlr/v4/gui/TreeLayoutAdaptor.java
* /antlr4-4-13-0-sources-1-jar/org/antlr/v4/automata/ATNPrinter.java
* /antlr4-4-13-0-sources-1-jar/org/antlr/v4/automata/TailEpsilonRemover.java
* /antlr4-4-13-0-sources-1-jar/org/antlr/v4/codegen/model/AddToLabelList.java
* /antlr4-4-13-0-sources-1-jar/org/antlr/v4/codegen/model/decl/AttributeDecl.java
* /antlr4-4-13-0-sources-1-jar/org/antlr/v4/codegen/model/decl/TokenListDecl.java
* /antlr4-4-13-0-sources-1-jar/org/antlr/v4/codegen/OutputModelWalker.java
* /antlr4-4-13-0-sources-1-jar/org/antlr/v4/codegen/CodeGeneratorExtension.java
* /antlr4-4-13-0-sources-1-jar/org/antlr/v4/codegen/target/CSharpTarget.java
* /antlr4-4-13-0-sources-1-jar/org/antlr/v4/tool/ast/ActionAST.java
* /antlr4-4-13-0-sources-1-jar/org/antlr/v4/codegen/model/Wildcard.java
* /antlr4-4-13-0-sources-1-jar/org/antlr/v4/semantics/UseDefAnalyzer.java
* /antlr4-4-13-0-sources-1-jar/org/antlr/v4/tool/Grammar.java
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/antlr4-4-13-0-sources-1-jar/org/antlr/v4/gui/BasicFontMetrics.java
* /antlr4-4-13-0-sources-1-jar/org/antlr/v4/codegen/model/ListenerDispatchMethod.java
* /antlr4-4-13-0-sources-1-jar/org/antlr/v4/tool/ast/GrammarRootAST.java
* /antlr4-4-13-0-sources-1-jar/org/antlr/v4/codegen/model/chunk/SetAttr.java
* /antlr4-4-13-0-sources-1-jar/org/antlr/v4/analysis/AnalysisPipeline.java
* /antlr4-4-13-0-sources-1-jar/org/antlr/v4/tool/GrammarTransformPipeline.java
* /antlr4-4-13-0-sources-1-jar/org/antlr/v4/gui/TreeViewer.java
* /antlr4-4-13-0-sources-1-jar/org/antlr/v4/tool/ast/GrammarASTWithOptions.java
* /antlr4-4-13-0-sources-1-jar/org/antlr/v4/tool/ast/OptionalBlockAST.java
* /antlr4-4-13-0-sources-1-jar/org/antlr/v4/codegen/target/Python3Target.java
* /antlr4-4-13-0-sources-1-jar/org/antlr/v4/codegen/model/OutputFile.java
* /antlr4-4-13-0-sources-1-jar/org/antlr/v4/codegen/model/decl/CodeBlock.java
* /antlr4-4-13-0-sources-1-jar/org/antlr/v4/codegen/target/GoTarget.java
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/antlr4-4-13-0-sources-1-jar/org/antlr/v4/semantics/SymbolCollector.java
* /antlr4-4-13-0-sources-1-jar/org/antlr/v4/codegen/model/ThrowNoViableAlt.java
* /antlr4-4-13-0-sources-1-jar/org/antlr/v4/tool/Attribute.java
* /antlr4-4-13-0-sources-1-jar/org/antlr/v4/codegen/model/OptionalBlock.java
* /antlr4-4-13-0-sources-1-jar/org/antlr/v4/codegen/CodeGenerator.java
* /antlr4-4-13-0-sources-1-jar/org/antlr/v4/semantics/BlankActionSplitterListener.java

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- * /antlr4-4-13-0-sources-1-jar/org/antlr/v4/codegen/model/decl/TokenTypeDecl.java
- * /antlr4-4-13-0-sources-1-jar/org/antlr/v4/codegen/model/chunk/ThisRulePropertyRef_stop.java
- * /antlr4-4-13-0-sources-1-jar/org/antlr/v4/codegen/model/ParserFile.java
- * /antlr4-4-13-0-sources-1-jar/org/antlr/v4/tool/ANTLRMessage.java
- * /antlr4-4-13-0-sources-1-jar/org/antlr/v4/codegen/model/chunk/TokenPropertyRef_pos.java
- * /antlr4-4-13-0-sources-1-jar/org/antlr/v4/codegen/model/LexerFile.java
- * /antlr4-4-13-0-sources-1-jar/org/antlr/v4/automata/ATNVisitor.java
- *
- /antlr4-4-13-0-sources-1-jar/org/antlr/v4/codegen/model/chunk/ActionText.java
- * /antlr4-4-13-0-sources-1-jar/org/antlr/v4/gui/PostScriptDocument.java
- * /antlr4-4-13-0-sources-1-jar/org/antlr/v4/gui/JFileChooserConfirmOverwrite.java
- * /antlr4-4-13-0-sources-1-jar/org/antlr/v4/misc/OrderedHashMap.java
- * /antlr4-4-13-0-sources-1-jar/org/antlr/v4/tool/ast/SetAST.java
- * /antlr4-4-13-0-sources-1-jar/org/antlr/v4/tool/DOTGenerator.java
- * /antlr4-4-13-0-sources-1-jar/org/antlr/v4/codegen/CodeGenPipeline.java
- * /antlr4-4-13-0-sources-1-jar/org/antlr/v4/unicode/UnicodeDataTemplateController.java
- * /antlr4-4-13-0-sources-1-jar/org/antlr/v4/misc/EscapeSequenceParsing.java
- * /antlr4-4-13-0-sources-1-jar/org/antlr/v4/codegen/model/ThrowEarlyExitException.java
- * /antlr4-4-13-0-sources-1-jar/org/antlr/v4/tool/Rule.java
- * /antlr4-4-13-0-sources-1-jar/org/antlr/v4/tool/BuildDependencyGenerator.java
- * /antlr4-4-13-0-sources-1-jar/org/antlr/v4/codegen/model/decl/ContextTokenListIndexedGetterDecl.java
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- /antlr4-4-13-0-sources-1-jar/org/antlr/v4/tool/ErrorType.java
- * /antlr4-4-13-0-sources-1-jar/org/antlr/v4/tool/ast/GrammarASTVisitor.java
- * /antlr4-4-13-0-sources-1-jar/org/antlr/v4/codegen/model/DispatchMethod.java
- * /antlr4-4-13-0-sources-1-jar/org/antlr/v4/codegen/model/CodeBlockForAlt.java
- * /antlr4-4-13-0-sources-1-jar/org/antlr/v4/codegen/model/Sync.java
- * /antlr4-4-13-0-sources-1-jar/org/antlr/v4/codegen/model/VisitorDispatchMethod.java
- * /antlr4-4-13-0-sources-1-jar/org/antlr/v4/codegen/model/decl/Decl.java
- * /antlr4-4-13-0-sources-1-jar/org/antlr/v4/codegen/LexerFactory.java
- * /antlr4-4-13-0-sources-1-jar/org/antlr/v4/codegen/model/CaptureNextToken.java
- * /antlr4-4-13-0-sources-1-jar/org/antlr/v4/codegen/target/JavaTarget.java
- * /antlr4-4-13-0-sources-1-jar/org/antlr/v4/misc/MutableInt.java
- * /antlr4-4-13-0-sources-1-jar/org/antlr/v4/codegen/model/chunk/RulePropertyRef.java
- * /antlr4-4-13-0-sources-1-jar/org/antlr/v4/automata/LexerATNFactory.java
- * /antlr4-4-13-0-sources-1-jar/org/antlr/v4/codegen/model/decl/ElementListDecl.java
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- /antlr4-4-13-0-sources-1-jar/org/antlr/v4/codegen/model/chunk/ActionChunk.java
- * /antlr4-4-13-0-sources-1-jar/org/antlr/v4/analysis/LeftRecursiveRuleAltInfo.java
- * /antlr4-4-13-0-sources-1-jar/org/antlr/v4/codegen/model/InvokeRule.java
- * /antlr4-4-13-0-sources-1-jar/org/antlr/v4/codegen/target/PHPTarget.java
- * /antlr4-4-13-0-sources-1-jar/org/antlr/v4/codegen/model/chunk/SetNonLocalAttr.java
- * /antlr4-4-13-0-sources-1-jar/org/antlr/v4/parse/ToolANTLRParser.java
- * /antlr4-4-13-0-sources-1-jar/org/antlr/v4/codegen/model/ListenerFile.java
- * /antlr4-4-13-0-sources-1-jar/org/antlr/v4/gui/Trees.java
- * /antlr4-4-13-0-sources-1-jar/org/antlr/v4/tool/ast/PredAST.java
- * /antlr4-4-13-0-sources-1-jar/org/antlr/v4/tool/ast/BlockAST.java
- * /antlr4-4-13-0-sources-1-jar/org/antlr/v4/codegen/model/chunk/RulePropertyRef_parser.java

- * /antlr4-4-13-0-sources-1-jar/org/antlr/v4/codegen/model/decl/ContextRuleListIndexedGetterDecl.java
- * /antlr4-4-13-0-sources-1-jar/org/antlr/v4/codegen/model/SrcOp.java
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- /antlr4-4-13-0-sources-1-jar/org/antlr/v4/codegen/target/JavaScriptTarget.java
- * /antlr4-4-13-0-sources-1-jar/org/antlr/v4/semantics/BasicSemanticChecks.java
- * /antlr4-4-13-0-sources-1-jar/org/antlr/v4/tool/GrammarSemanticsMessage.java
- * /antlr4-4-13-0-sources-1-jar/org/antlr/v4/codegen/model/Recognizer.java
- * /antlr4-4-13-0-sources-1-jar/org/antlr/v4/codegen/model/MatchToken.java
- * /antlr4-4-13-0-sources-1-jar/org/antlr/v4/codegen/model/SemPred.java
- * /antlr4-4-13-0-sources-1-jar/org/antlr/v4/tool/AttributeResolver.java
- * /antlr4-4-13-0-sources-1-jar/org/antlr/v4/tool/ast/NotAST.java
- * /antlr4-4-13-0-sources-1-jar/org/antlr/v4/tool/LexerGrammar.java
- * /antlr4-4-13-0-sources-1-jar/org/antlr/v4/parse/v4ParserException.java
- * /antlr4-4-13-0-sources-1-jar/org/antlr/v4/codegen/model/PlusBlock.java
- * /antlr4-4-13-0-sources-1-jar/org/antlr/v4/parse/ActionSplitterListener.java
- * /antlr4-4-13-0-sources-1-jar/org/antlr/v4/codegen/model/decl/ContextRuleListGetterDecl.java
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- /antlr4-4-13-0-sources-1-jar/org/antlr/v4/misc/Graph.java
- * /antlr4-4-13-0-sources-1-jar/org/antlr/v4/codegen/model/chunk/RetValRef.java
- * /antlr4-4-13-0-sources-1-jar/org/antlr/v4/codegen/model/RuleElement.java
- * /antlr4-4-13-0-sources-1-jar/org/antlr/v4/codegen/target/SwiftTarget.java
- * /antlr4-4-13-0-sources-1-jar/org/antlr/v4/codegen/model/LL1OptionalBlockSingleAlt.java
- * /antlr4-4-13-0-sources-1-jar/org/antlr/v4/codegen/model/ArgAction.java
- * /antlr4-4-13-0-sources-1-jar/org/antlr/v4/codegen/model/chunk/ActionTemplate.java
- * /antlr4-4-13-0-sources-1-jar/org/antlr/v4/tool/ast/RuleRefAST.java
- * /antlr4-4-13-0-sources-1-jar/org/antlr/v4/codegen/model/chunk/RulePropertyRef_ctx.java
- * /antlr4-4-13-0-sources-1-jar/org/antlr/v4/codegen/model/chunk/NonLocalAttrRef.java
- * /antlr4-4-13-0-sources-1-jar/org/antlr/v4/codegen/model/ExceptionClause.java
- * /antlr4-4-13-0-sources-1-jar/org/antlr/v4/semantics/SymbolChecks.java
- * /antlr4-4-13-0-sources-1-jar/org/antlr/v4/codegen/model/chunk/ThisRulePropertyRef_ctx.java
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- /antlr4-4-13-0-sources-1-jar/org/antlr/v4/codegen/model/BaseVisitorFile.java
- * /antlr4-4-13-0-sources-1-jar/org/antlr/v4/codegen/model/chunk/TokenPropertyRef_type.java
- * /antlr4-4-13-0-sources-1-jar/org/antlr/v4/codegen/target/CppTarget.java
- * /antlr4-4-13-0-sources-1-jar/org/antlr/v4/codegen/model/ThrowRecognitionException.java
- * /antlr4-4-13-0-sources-1-jar/org/antlr/v4/tool/ANTLRToolListener.java
- * /antlr4-4-13-0-sources-1-jar/org/antlr/v4/tool/ast/StarBlockAST.java
- * /antlr4-4-13-0-sources-1-jar/org/antlr/v4/codegen/model/CaptureNextTokenType.java
- * /antlr4-4-13-0-sources-1-jar/org/antlr/v4/codegen/model/chunk/ThisRulePropertyRef_parser.java
- * /antlr4-4-13-0-sources-1-jar/org/antlr/v4/tool/DefaultToolListener.java
- * /antlr4-4-13-0-sources-1-jar/org/antlr/v4/codegen/model/decl/RuleContextListDecl.java
- * /antlr4-4-13-0-sources-1-jar/org/antlr/v4/codegen/model/LL1Loop.java
- * /antlr4-4-13-0-sources-1-jar/org/antlr/v4/codegen/model/chunk/TokenPropertyRef_index.java
- *
- /antlr4-4-13-0-sources-1-jar/org/antlr/v4/codegen/model/chunk/LabelRef.java
- * /antlr4-4-13-0-sources-1-jar/org/antlr/v4/misc/CharSupport.java
- * /antlr4-4-13-0-sources-1-jar/org/antlr/v4/tool/ast/RuleAST.java
- * /antlr4-4-13-0-sources-1-jar/org/antlr/v4/codegen/Target.java


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* /antlr4-4-13-0-sources-1-jar/org/antlr/v4/codegen/model/chunk/ThisRulePropertyRef_text.java
* /antlr4-4-13-0-sources-1-jar/org/antlr/v4/codegen/model/chunk/LocalRef.java
* /antlr4-4-13-0-sources-1-jar/org/antlr/v4/parse/ScopeParser.java
* /antlr4-4-13-0-sources-1-jar/org/antlr/v4/codegen/model/decl/ContextGetterDecl.java
* /antlr4-4-13-0-sources-1-jar/org/antlr/v4/codegen/model/BaseListenerFile.java
* /antlr4-4-13-0-sources-1-jar/org/antlr/v4/codegen/model/OutputModelObject.java
* /antlr4-4-13-0-sources-1-jar/org/antlr/v4/tool/LeftRecursiveRule.java
* /antlr4-4-13-0-sources-1-jar/org/antlr/v4/codegen/model/chunk/ThisRulePropertyRef_start.java
* /antlr4-4-13-0-sources-1-jar/org/antlr/v4/tool/GrammarInterpreterRuleContext.java
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/antlr4-4-13-0-sources-1-jar/org/antlr/v4/codegen/model/decl/TokenDecl.java
* /antlr4-4-13-0-sources-1-jar/org/antlr/v4/codegen/UnicodeEscapes.java
* /antlr4-4-13-0-sources-1-jar/org/antlr/v4/codegen/model/chunk/TokenPropertyRef_channel.java
* /antlr4-4-13-0-sources-1-jar/org/antlr/v4/tool/ErrorSeverity.java
* /antlr4-4-13-0-sources-1-jar/org/antlr/v4/tool/ToolMessage.java
* /antlr4-4-13-0-sources-1-jar/org/antlr/v4/parse/ResyncToEndOfRuleBlock.java
* /antlr4-4-13-0-sources-1-jar/org/antlr/v4/codegen/OutputModelFactory.java
* /antlr4-4-13-0-sources-1-jar/org/antlr/v4/Tool.java
* /antlr4-4-13-0-sources-1-jar/org/antlr/v4/codegen/target/Python2Target.java
* /antlr4-4-13-0-sources-1-jar/org/antlr/v4/tool/LabelType.java
* /antlr4-4-13-0-sources-1-jar/org/antlr/v4/tool/ast/QuantifierAST.java
* /antlr4-4-13-0-sources-1-jar/org/antlr/v4/codegen/model/decl/StructDecl.java
* /antlr4-4-13-0-sources-1-jar/org/antlr/v4/tool/ast/GrammarASTErrorNode.java
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/antlr4-4-13-0-sources-1-jar/org/antlr/v4/parse/TokenVocabParser.java
* /antlr4-4-13-0-sources-1-jar/org/antlr/v4/codegen/model/LL1AltBlock.java
* /antlr4-4-13-0-sources-1-jar/org/antlr/v4/tool/ast/PlusBlockAST.java
* /antlr4-4-13-0-sources-1-jar/org/antlr/v4/tool/ast/AltAST.java
* /antlr4-4-13-0-sources-1-jar/org/antlr/v4/codegen/model/chunk/TokenPropertyRef_line.java
* /antlr4-4-13-0-sources-1-jar/org/antlr/v4/tool/ast/TerminalAST.java
* /antlr4-4-13-0-sources-1-jar/org/antlr/v4/automata/ParserATNFactory.java
* /antlr4-4-13-0-sources-1-jar/org/antlr/v4/tool/ast/RangeAST.java
* /antlr4-4-13-0-sources-1-jar/org/antlr/v4/codegen/model/chunk/QRetValueRef.java
* /antlr4-4-13-0-sources-1-jar/org/antlr/v4/codegen/ParserFactory.java
* /antlr4-4-13-0-sources-1-jar/org/antlr/v4/codegen/model/VisitorFile.java
* /antlr4-4-13-0-sources-1-jar/org/antlr/v4/codegen/model/Choice.java
* /antlr4-4-13-0-sources-1-jar/org/antlr/v4/analysis/LeftRecursiveRuleAnalyzer.java
* /antlr4-4-13-0-sources-1-jar/org/antlr/v4/codegen/model/LL1OptionalBlock.java
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/antlr4-4-13-0-sources-1-jar/org/antlr/v4/codegen/model/MatchSet.java
* /antlr4-4-13-0-sources-1-jar/org/antlr/v4/codegen/model/chunk/TokenPropertyRef_text.java
* /antlr4-4-13-0-sources-1-jar/org/antlr/v4/codegen/model/decl/ContextTokenListGetterDecl.java
* /antlr4-4-13-0-sources-1-jar/org/antlr/v4/codegen/model/decl/RuleContextDecl.java
* /antlr4-4-13-0-sources-1-jar/org/antlr/v4/tool/GrammarParserInterpreter.java
* /antlr4-4-13-0-sources-1-jar/org/antlr/v4/codegen/model/chunk/ListLabelRef.java
* /antlr4-4-13-0-sources-1-jar/org/antlr/v4/codegen/ActionTranslator.java
* /antlr4-4-13-0-sources-1-jar/org/antlr/v4/codegen/model/CodeBlockForOuterMostAlt.java
* /antlr4-4-13-0-sources-1-jar/org/antlr/v4/codegen/model/RuleActionFunction.java

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* /antlr4-4-13-0-sources-1-jar/org/antlr/v4/automata/ATNOptimizer.java
* /antlr4-4-13-0-sources-1-jar/org/antlr/v4/codegen/model/Action.java
* /antlr4-4-13-0-sources-1-jar/org/antlr/v4/misc/Utils.java
*
/antlr4-4-13-0-sources-1-jar/org/antlr/v4/tool/ErrorMessage.java
* /antlr4-4-13-0-sources-1-jar/org/antlr/v4/codegen/model/RuleSempredFunction.java
* /antlr4-4-13-0-sources-1-jar/org/antlr/v4/codegen/model/RuleFunction.java
* /antlr4-4-13-0-sources-1-jar/org/antlr/v4/codegen/model/chunk/TokenPropertyRef.java
* /antlr4-4-13-0-sources-1-jar/org/antlr/v4/tool/ast/GrammarAST.java
* /antlr4-4-13-0-sources-1-jar/org/antlr/v4/codegen/model/ModelElement.java
* /antlr4-4-13-0-sources-1-jar/org/antlr/v4/codegen/model/LL1PlusBlockSingleAlt.java
* /antlr4-4-13-0-sources-1-jar/org/antlr/v4/codegen/model/AltBlock.java
* /antlr4-4-13-0-sources-1-jar/org/antlr/v4/codegen/model/dbg.java
* /antlr4-4-13-0-sources-1-jar/org/antlr/v4/codegen/model/LL1StarBlockSingleAlt.java
* /antlr4-4-13-0-sources-1-jar/org/antlr/v4/codegen/model/SerializedATN.java
* /antlr4-4-13-0-sources-1-jar/org/antlr/v4/semantics/AttributeChecks.java
* /antlr4-4-13-0-sources-1-jar/org/antlr/v4/codegen/model/TestSetInline.java
*
/antlr4-4-13-0-sources-1-jar/org/antlr/v4/misc/FrequencySet.java
* /antlr4-4-13-0-sources-1-jar/org/antlr/v4/parse/ToolANTLR Lexer.java
* /antlr4-4-13-0-sources-1-jar/org/antlr/v4/codegen/model/chunk/TokenPropertyRef_int.java
* /antlr4-4-13-0-sources-1-jar/org/antlr/v4/codegen/model/ElementFrequenciesVisitor.java
* /antlr4-4-13-0-sources-1-jar/org/antlr/v4/tool/Alternative.java
* /antlr4-4-13-0-sources-1-jar/org/antlr/v4/codegen/model/chunk/ArgRef.java
* /antlr4-4-13-0-sources-1-jar/org/antlr/v4/codegen/model/Parser.java
* /antlr4-4-13-0-sources-1-jar/org/antlr/v4/tool/LabelElementPair.java
* /antlr4-4-13-0-sources-1-jar/org/antlr/v4/codegen/BlankOutputModelFactory.java
* /antlr4-4-13-0-sources-1-jar/org/antlr/v4/codegen/model/LL1Choice.java
* /antlr4-4-13-0-sources-1-jar/org/antlr/v4/tool/LeftRecursionCyclesMessage.java
* /antlr4-4-13-0-sources-1-jar/org/antlr/v4/automata/ATNFactory.java
* /antlr4-4-13-0-sources-1-jar/org/antlr/v4/gui/TreeTextProvider.java
* /antlr4-4-13-0-sources-1-jar/org/antlr/v4/codegen/model/LabeledOp.java
*
/antlr4-4-13-0-sources-1-jar/org/antlr/v4/codegen/model/chunk/RulePropertyRef_start.java
* /antlr4-4-13-0-sources-1-jar/org/antlr/v4/codegen/model/chunk/RulePropertyRef_text.java
* /antlr4-4-13-0-sources-1-jar/org/antlr/v4/parse/GrammarToken.java
* /antlr4-4-13-0-sources-1-jar/org/antlr/v4/codegen/model/decl/AltLabelStructDecl.java
* /antlr4-4-13-0-sources-1-jar/org/antlr/v4/codegen/OutputModelController.java
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```

```

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- */

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

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

@members {
public String currentRuleName;
```

```

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

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

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

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

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

blockSet
@init {
    boolean inLexer = Grammar.isTokenName(currentRuleName);
}
@after {
    GrammarTransformPipeline.setGrammarPtr(g, $tree);
}
: {inContext("RULE")}?
// top-level: rule block and > 1 alt
^(BLOCK ^(alt=ALT elementOptions? {((AltAST)$alt).altLabel==null}? setElement[inLexer]) ( ^(ALT
elementOptions? setElement[inLexer]) )+ )
-> ^(BLOCK<BlockAST>[$BLOCK.token] ^(ALT<AltAST>[$BLOCK.token,"ALT"] ^(SET[$BLOCK.token,
"SET"] setElement+)))

```

```

| {!inContext("RULE")}? // if not rule block and > 1 alt
^(BLOCK ^(ALT elementOptions? setElement[inLexer]) ( ^(ALT elementOptions? setElement[inLexer]) )+ )
-> ^(SET[$BLOCK.token, "SET"] setElement+)
;

setElement[boolean inLexer]
@after {
    GrammarTransformPipeline.setGrammarPtr(g, $tree);
}
: ( ^(a=STRING_LITERAL elementOptions) {!inLexer ||
CharSupport.getCharValueFromGrammarCharLiteral($a.getText())!=-1}?
| a=STRING_LITERAL {!inLexer || CharSupport.getCharValueFromGrammarCharLiteral($a.getText())!=-1}?
| {!inLexer}?=> ^(TOKEN_REF elementOptions)
| {!inLexer}?=> TOKEN_REF
| {!inLexer}?=> ^(RANGE a=STRING_LITERAL b=STRING_LITERAL)
{CharSupport.getCharValueFromGrammarCharLiteral($a.getText())!=-1
&&
CharSupport.getCharValueFromGrammarCharLiteral($b.getText())!=-1}?
)
;

elementOptions
: ^(ELEMENT_OPTIONS elementOption*)
;

elementOption
: ID
| ^(ASSIGN id=ID v=ID)
| ^(ASSIGN ID v=STRING_LITERAL)
| ^(ASSIGN ID v=ACTION)
| ^(ASSIGN ID v=INT)
;

```

Found in path(s):

* /antlr4-4-13-0-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):

* /antlr4-4-13-0-sources-1-jar/org/antlr/v4/tool/templates/dot/graphs.stg

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*/

```

```

/** ANTLR tool checks output templates are compatible with tool code generation.
* For now, a simple string match used on x.y of x.y.z scheme.
* Must match Tool.VERSION during load to templates.
*
* REQUIRED.
*/

```

```

pythonTypeInitMap ::= [
  "bool": "False",
  "int": "0",
  "float": "0.0",
  "str": "",
  default: "None" // anything other
                    than a primitive type is an object
]

```

```

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

```

```

ParserFile(file, parser, namedActions, contextSuperClass) ::= <<
<fileHeader(file.grammarFileName, file.ANTLRVersion)>
# encoding: utf-8
from __future__ import print_function
from antlr4 import *
from io import StringIO
import sys

<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)>
if __name__ is not None and "." in __name__:
    from .<superClass> import <superClass>
else:
    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> ]

    <if(parser.rules)>
    <parser.rules:{r | RULE_<r.name> = <r.index>}; separator="\n", wrap, anchor>
    <endif>

    ruleNames = [ <parser.ruleNames:{r | u"<r>"}; separator=", ", wrap, anchor> ]

    EOF = <TokenLabelType>.EOF
    <if(parser.tokens)>
    <parser.tokens:{k | <k>=<parser.tokens.(k)>}; separator="\n", wrap, anchor>
    <endif>

    <parser:(ctor)()>

    <namedActions.members>

    <funcs; separator="\n">

    <if(sempredFuncs)>
    def sempred(self, localctx, ruleIndex, predIndex):

```

```

        if self._predicates == None:
            self._predicates = dict()
<parser.sempredFuncs.values:{f
|
    self._predicates[<f.ruleIndex>] = self.<f.name>_sempred}; separator="\n    ">
    pred = self._predicates.get(ruleIndex, None)
    if pred is None:
        raise Exception("No predicate with index:" + str(ruleIndex))
    else:
        return pred(localctx, predIndex)

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

>>

dumpActions(recog, argFuncs, actionFuncs, sempredFuncs) ::= <<
<if(actionFuncs)>
def action(self, localctx, ruleIndex, actionIndex):
    if self._actions is None:
        actions = dict()
<recog.actionFuncs.values:{f|
    actions[<f.ruleIndex>] = self.<f.name>_action }; separator="\n">
    self._actions = actions
    action = self._actions.get(ruleIndex, None)
    if action is not None:
        action(localctx, actionIndex)
    else:
        raise Exception("No registered action for:" + str(ruleIndex))

<actionFuncs.values; separator="\n">

<endif>
<if(sempredFuncs)>
def sempred(self, localctx, ruleIndex, predIndex):
    if self._predicates is None:
        preds = dict()
<recog.sempredFuncs.values:{f|
    preds[<f.ruleIndex>] = self.<f.name>_sempred}; separator="\n">
    self._predicates = preds
    pred = self._predicates.get(ruleIndex, None)
    if pred is not None:
        return pred(localctx, predIndex)
    else:
        raise Exception("No registered predicate for:" + str(ruleIndex))

```

```

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

parser_ctor(p) ::= <<
def __init__(self, input, output=sys.stdout):
    super(<parser.name>, self).__init__(input, output=output)
    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.escapedName>(self<currentRule.args:{a | , <a.escapedName>}>):

localctx = <parser.name>.<currentRule.ctxType>(self, self._ctx, self.state<currentRule.args:{a
| , <a.escapedName>}>)

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.escapedName>(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.escapedName>}>)

_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(tokens=look)>
    <alt>
    pass}; separator="\n">
else:
    <error>

>>

```

```

LL1OptionalBlock(choice, alts, error) ::= <<
self.state = <choice.stateNumber>
self._errHandler.sync(self)
token = self._input.LA(1)
<choice.altLook,alts:{look,alt| <cases(tokens=look)>
    <alt>

```

```

    pass}; separator="\n">
else:
    pass
>>

```

```

LL1OptionalBlockSingleAlt(choice, expr, alts, preamble, error, followExpr) ::= <<
self.state = <choice.stateNumber>
self._errHandler.sync(self)
<preamble; separator="\n">
if <expr>:
    <alts; separator="\n">

<!else if ( !(<followExpr> ) <error>!>
>>

```

```

LL1StarBlockSingleAlt(choice,
    loopExpr, alts, preamble, iteration) ::= <<
self.state = <choice.stateNumber>
self._errHandler.sync(self)
<preamble; separator="\n">
while <loopExpr>:
    <alts; separator="\n">
    self.state = <choice.loopBackStateNumber>
    self._errHandler.sync(self)
    <iteration>

>>

```

```

LL1PlusBlockSingleAlt(choice, loopExpr, alts, preamble, iteration) ::= <<
self.state = <choice.blockStartStateNumber> <! alt block decision !>
self._errHandler.sync(self)
<preamble; separator="\n">
while True:
    <alts; separator="\n">
    self.state = <choice.stateNumber> <! loopback/exit decision !>
    self._errHandler.sync(self)
    <iteration>
    if not (<loopExpr>):
        break

>>

```

```

// LL(*) stuff

```

```

AltBlock(choice, preamble, alts, error) ::= <<
self.state = <choice.stateNumber>
self._errHandler.sync(self)

```



```

<if(choice.label)><labelref(choice.label)> = _input.LT(1)<endif>
<preamble; separator="\n">
la_ = self._interp.adaptivePredict(self._input,<choice.decision>,self._ctx)
<alts:{alt |
if la_ ==
<i>:
<alt>
pass
}; separator="\nel">

>>

```

```

OptionalBlock(choice, alts, error) ::= <<
self.state = <choice.stateNumber>
self._errHandler.sync(self)
la_ = self._interp.adaptivePredict(self._input,<choice.decision>,self._ctx)
<alts:{alt |
if la_ == <i><if(!choice.ast.greedy)>+1<endif>:
<alt>
}; separator="\nel">

>>

```

```

StarBlock(choice, alts, sync, iteration) ::= <<
self.state = <choice.stateNumber>
self._errHandler.sync(self)
_alt = self._interp.adaptivePredict(self._input,<choice.decision>,self._ctx)
while _alt!=<choice.exitAlt> and _alt!=ATN.INVALID_ALT_NUMBER:
if _alt==1<if(!choice.ast.greedy)>+1<endif>:
<iteration>
<alts> <! should only be one !>
self.state = <choice.loopBackStateNumber>
self._errHandler.sync(self)
_alt = self._interp.adaptivePredict(self._input,<choice.decision>,self._ctx)

>>

```

```

PlusBlock(choice, alts, error) ::= <<
self.state = <choice.blockStartStateNumber> <! alt block decision !>
self._errHandler.sync(self)
_alt = 1<if(!choice.ast.greedy)>+1<endif>
while
_alt!=<choice.exitAlt> and _alt!=ATN.INVALID_ALT_NUMBER:
<alts:{alt|
if _alt == <i><if(!choice.ast.greedy)>+1<endif>:
<alt>
}; separator="\nel">
else:

```

```

    <error>
    self.state = <choice.loopBackStateNumber> <! loopback/exit decision !>
    self._errHandler.sync(self)
    _alt = self._interp.adaptivePredict(self._input,<choice.decision>,self._ctx)

>>

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

ThrowNoViableAlt(t) ::= "raise NoViableAltException(self)"

TestSetInline(s) ::= <<
<s.bitsets:{bits | <if(rest(rest(bits.tokens)))><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
>>

bitsetBitfieldComparison(s, bits) ::= <%
(<testShiftInRange({<offsetShiftVar(s.varName, bits.shift)>})> and ((1 \<\< <offsetShiftVar(s.varName,
bits.shift)>) & <bits.calculated>) != 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>
%>

bitsetInlineComparison(s, bits) ::= <%
<bits.tokens:{t | <s.varName>==<t.type>}; separator=" or ">
%>

cases(tokens) ::= <<
if token in [<tokens:{t | <t.type>}; separator=", ">]:
>>

InvokeRule(r, argExprsChunks) ::= <<

```

```

self.state = <r.stateNumber>
<if(r.labels)><r.labels:{l | <labelref(l)> =
}><endif>self.<r.escapedName>(<if(r.ast.options.p)><r.ast.options.p><if(argExprsChunks)><endif><endif><argE
xprsChunks>)
>>

```

```

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:{l | <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)

```

```

::= <<
except <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.escapedName>"
LocalRef(a) ::= "localctx.<a.escapedName>"
RetValRef(a) ::= "localctx.<a.escapedName>"
QRetValRef(a) ::= "<ctx(a)>.<a.dict>.<a.escapedName>"
/** How to translate $tokenLabel */
TokenRef(t) ::= "<ctx(t)>.<t.escapedName>"
LabelRef(t) ::= "<ctx(t)>.<t.escapedName>"
ListLabelRef(t) ::= "<ctx(t)>.<ListLabelName(t.escapedName)>"
SetAttr(s,rhsChunks) ::= "<ctx(s)>.<s.escapedName> = <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) ::= "self.getInvokingContext(<s.ruleIndex>).<s.escapedName>"
SetNonLocalAttr(s, rhsChunks) ::= "self.getInvokingContext(<s.ruleIndex>).<s.escapedName> = <rhsChunks>"

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

TokenDecl(t) ::= "self.<t.escapedName> = None # <TokenLabelType()>"
TokenTypeDecl(t) ::= "self.<t.escapedName> = 0 # <TokenLabelType()> type"
TokenListDecl(t) ::= "self.<t.escapedName> = list() # of <TokenLabelType()>s"
RuleContextDecl(r) ::= "self.<r.escapedName> = None # <r.ctxName>"
RuleContextListDecl(rdecl)
::= "self.<rdecl.escapedName> = list() # of <rdecl.ctxName>s"

ContextTokenGetterDecl(t) ::= <<
def <t.escapedName>(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.escapedName>(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.escapedName>(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.escapedName>(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,signatures) ::= <<
class <struct.escapedName>(<if(contextSuperClass)><contextSuperClass><else>ParserRuleContext<endif>):

    def __init__(self, parser, parent=None, invokingState=-1<struct.ctorAttrs:{a | , <a.escapedName>=None}>):
        super(<parser.name>.<struct.name>, self).__init__(parent, invokingState)

    self.parser = parser
        <attrs:{a | <a>}; separator="\n">
        <struct.ctorAttrs:{a | self.<a.escapedName> = <a.escapedName>}; 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.escapedName> = ctx.<a.escapedName>}; separator="\n">

<endif>
    <dispatchMethods; separator="\n">
    <extensionMembers; separator="\n">

```

>>

```
AltLabelStructDecl(struct,attrs, getters,dispatchMethods) ::= <<
class <struct.escapedName>(<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.escapedName> = <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.escapedName>"
```

```
/** 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, isListLabel) ::= <<
```

```

localctx = <parser.name>.<ctxName>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>)
>>

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
import sys

<namedActions.header>

```



```

<lexer>
>>

Lexer(lexer, atn, actionFuncs, sempredFuncs, superClass) ::= <<
<if(superClass)>
if __name__ is not None and "." in __name__:
    from .<superClass> import <superClass>
else:
    from <superClass> import <superClass>

<endif>

<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) ]

<if(lexer.escapedChannels)>
    <lexer.escapedChannels:{c| <c> = <lexer.escapedChannels.(c)>}; separator="\n">

<endif>
<if(rest(lexer.escapedModeNames))>
    <rest(lexer.escapedModeNames):{m| <m> = <i>}; separator="\n">

<endif>
<if(lexer.tokens)>
    <lexer.tokens:{k| <k> = <lexer.tokens.(k)>}; separator="\n", wrap, anchor>
<endif>

    channelNames = [ u"DEFAULT_TOKEN_CHANNEL", u"HIDDEN"<if (lexer.channelNames)>,
<lexer.channelNames:{c| u"<c>"}; separator=", ", wrap, anchor><endif> ]

    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, output=sys.stdout):

super(<lexer.name>, self).__init__(input, output=output)
    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) ::= <<
def serializedATN():
    return [
        <model.serialized: {s | <s>}; separator=",", wrap>
    ]
>>

/** 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) ::= <<
<pythonTypeInitMap.(typeName)>
>>

codeFileExtension() ::= ".py"

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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">
>>

```

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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 grammars 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 {
/*
[The "BSD licence"]
Copyright (c) 2005-2009 Terence Parr
All rights reserved.
```

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```
*/
package org.antlr.v4.parse;
```



```

import org.antlr.v4.tool.*;
import org.antlr.v4.runtime.misc.Interval;
}

@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
        boolean withinOptionsBlock = false;
        while (i >= 0 && i < n) {
            int ttype = tokens.get(i).getType();
            if (withinOptionsBlock) {
                // Ignore rule options content
                if (ttype == OPTIONS) {
                    withinOptionsBlock = false;
                }
            }
            else {
                if (ttype == RBRACE) {
                    withinOptionsBlock = true;
                }
                else 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 descriptive
// 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;} )?
;

// -----
// 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 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' ;

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    : '?'      ;
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
// or \u{xxxxxx},
// where x is a valid hexadecimal number.
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
: '\w'
(
    // The standard escaped character set such as tab, newline, etc...
    'b'|'t'|'n'|'f'|'r'|'\'|'\"|'\\'

    | // A Java style Unicode escape sequence
    UNICODE_ESC

    | // A
    Swift/Hack style Unicode escape sequence
    UNICODE_EXTENDED_ESC

    | // An illegal escape sequence
    ~(('b'|'t'|'n'|'f'|'r'|'\'|'\"|'\\'|'u')) // \x for any invalid x (make sure to match char here)
    {
        Token t = new CommonToken(input, state.type, state.channel, getCharIndex()-2, getCharIndex()-1);
        t.setText(t.getText());
        t.setLine(input.getLine());
        t.setCharPositionInLine(input.getCharPositionInLine()-2);
        grammarError(ErrorType.INVALID_ESCAPE_SEQUENCE, t, input.substring(getCharIndex()-
2,getCharIndex()-1));
    }
)
;

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) {
        Interval badRange = Interval.of(getCharIndex()-2-hCount, getCharIndex());
        String lastChar = input.substring(badRange.b,
badRange.b);
        if ( lastChar.codePointAt(0)=="\" ) {
            badRange.b--;

```

```

    }
    String bad = input.substring(badRange.a, badRange.b);
    Token t = new CommonToken(input, state.type, state.channel, badRange.a, badRange.b);
    t.setLine(input.getLine());
    t.setCharPositionInLine(input.getCharPositionInLine()-hCount-2);
    grammarError(ErrorType.INVALID_ESCAPE_SEQUENCE, t, bad);
    }
    }
    ;

fragment
UNICODE_EXTENDED_ESC
: 'u{' // Leadin for unicode extended escape sequence

    HEX_DIGIT+ // One or more hexadecimal digits

    '}' // Leadout for unicode extended escape sequence

    // Now check the digit count and issue an error if we need to
    {
        int numDigits = getCharIndex()-state.tokenStartCharIndex-6;
        if (numDigits > 6) {
            Token t = new CommonToken(input, state.type, state.channel, state.tokenStartCharIndex, getCharIndex()-
1);
            t.setText(t.getText());
            t.setLine(input.getLine());
            t.setCharPositionInLine(input.getCharPositionInLine()-numDigits);
            grammarError(ErrorType.INVALID_ESCAPE_SEQUENCE, t,
input.substring(state.tokenStartCharIndex,getCharIndex()-1));
        }
    }
    ;

// -----
// 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 grammar 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):

* /antlr4-4-13-0-sources-1-jar/org/antlr/v4/parse/ANTLRLexer.g

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

```
/*
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 * Copyright (c) 2015 Janyou
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 * THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT
 * (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF
```

* THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

*/

```
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>
```

```
accessLevelOpenOK(obj) ::= "<obj.accessLevel; null=\"open\">"
accessLevelNotOpen(obj) ::= "<obj.accessLevel; null=\"public\">"
```

```
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>}.


```

*/
<accessLevelNotOpen(file)> 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.
*/
<accessLevelOpenOK(file)> class <file.grammarName>BaseListener: <file.grammarName>Listener {
  <accessLevelNotOpen(file)> init() { \}
  <file.listenerNames:{lname |

```

```

/**
 * {@inheritDoc\}
 *
 * \<p>The default implementation does nothing.\</p>
 */
<accessLevelOpenOK(file)> func enter<lname; format="cap">(_ ctx: <file.parserName>.<lname;
format="cap">Context) { \}
/**
 * {@inheritDoc\}
 *
 * \<p>The default implementation does nothing.\</p>
 */
<accessLevelOpenOK(file)> func exit<lname; format="cap">(_ ctx: <file.parserName>.<lname;
format="cap">Context) { \};; separator="\n"

/**
 * {@inheritDoc\}
 *
 * \<p>The default implementation does nothing.\</p>
 */
<accessLevelOpenOK(file)> func enterEveryRule(_ ctx: ParserRuleContext) throws { }
/**
 * {@inheritDoc\}
 *
 * \<p>The default implementation does nothing.\</p>
 */
<accessLevelOpenOK(file)> func exitEveryRule(_ ctx: ParserRuleContext) throws { }
/**
 * {@inheritDoc\}
 *
 * \<p>The default implementation does nothing.\</p>
 */
<accessLevelOpenOK(file)> func visitTerminal(_ node: TerminalNode) { }
/**
 * {@inheritDoc\}
 *
 * \<p>The default implementation does nothing.\</p>
 */
<accessLevelOpenOK(file)> 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.
 */
<accessLevelOpenOK(file)> class <file.grammarName>Visitor\<T>: 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>
    - Parameters:
    - ctx: the parse tree
    - returns: the visitor result
    */
    <accessLevelOpenOK(file)> func visit<lname; format="cap">(_ ctx: <file.parserName>.<lname;
    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.
 */
<accessLevelOpenOK(file)> class <file.grammarName>BaseVisitor\<T>: AbstractParseTreeVisitor\<T> {

```

```

<file.visitorNames:{lname
|
/**
 * {@inheritDoc\}
 *
 * \<p>The default implementation returns the result of calling
 * {@link #visitChildren\} on {@code ctx\}.\</p>
 */
<accessLevelOpenOK(file)> func visit<lname; format="cap">(_ ctx: <file.parserName>.<lname;
format="cap">Context) -> T? { return 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) ::= <<
<!//@SuppressWarnings({"all", "warnings", "unchecked", "unused", "cast"})!>
<accessLevelOpenOK(parser)> 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()

<if(parser.tokens)>
<accessLevelNotOpen(parser)>
enum Tokens: Int {
    case EOF = -1, <parser.tokens:{k | <k> = <parser.tokens.(k)>}; separator=", ", wrap, anchor>
}
<endif>

<accessLevelNotOpen(parser)>
<if(parser.rules)>
static let <parser.rules:{r | RULE_<r.name> = <r.index>}; separator=", ", wrap, anchor>

```

```

<endif>

<accessLevelNotOpen(parser)>
static let ruleNames: [String] = [
  <parser.ruleNames:{r | "<r>"}; separator=", ", wrap, anchor>
]

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

override <accessLevelOpenOK(parser)>
func getGrammarFileName() -> String { return "<parser.grammarFileName>" }

override <accessLevelOpenOK(parser)>
func getRuleNames() -> [String] { return <parser.name>.ruleNames
}

override <accessLevelOpenOK(parser)>
func getSerializedATN() -> [Int] { return <parser.name>._serializedATN }

override <accessLevelOpenOK(parser)>
func getATN() -> ATN { return <parser.name>._ATN }

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

<if(sempredFuncs)>
override <accessLevelOpenOK(parser)>
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>

<accessLevelNotOpen(parser)>
static let _ATN = try! ATNDeserializer().deserialize(_serializedATN)
}
>>

```

```

vocabulary(literalNames, symbolicNames, accessLevel) ::= <<
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>
]
<accessLevel>
static let VOCABULARY = Vocabulary(_LITERAL_NAMES, _SYMBOLIC_NAMES)
>>

dumpActions(recog, argFuncs, actionFuncs, sempredFuncs) ::= <<
<if(actionFuncs)>
override <accessLevelOpenOK(parser)>
func action(_ _localctx: RuleContext?, _ ruleIndex: Int, _ actionIndex: Int) throws {
  switch (ruleIndex) {
    <recog.actionFuncs.values:{f|
case <f.ruleIndex>:
  try <f.name>_action((_localctx as <f.ctxType>?), actionIndex)
  }; separator="\n">
  default: break
  }
}
<actionFuncs.values; separator="\n">
<endif>
<if(sempredFuncs)>
override <accessLevelOpenOK(parser)>
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) ::= <<

override <accessLevelOpenOK(parser)>
func getVocabulary() -> Vocabulary {
  return <p.name>.VOCABULARY
}

```

```

override <accessLevelNotOpen(parser)>
init(_ input:TokenStream) throws {
    RuntimeMetaData.checkVersion("<file.ANTLRVersion>", 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) throws {
    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> <accessLevelOpenOK(parser)> func
<endif><currentRule.escapedName>(<if(first(args))>_ <endif><args; separator="", _">) throws ->
<currentRule.ctxType> {

```

```

var _localctx: <currentRule.ctxType>
_localctx = <currentRule.ctxType>(_ctx, getState()<currentRule.args:{a | , <a.escapedName>}>)>
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> <accessLevelNotOpen(parser)> final <endif>
func <currentRule.escapedName>(<if(first(args))>_ <endif><args; separator=", _">) throws ->
<currentRule.ctxType> {
    return try <currentRule.escapedName>(0<currentRule.args:{a | , <a.escapedName>}>)>
}
@discardableResult
private func <currentRule.escapedName>(_ _p<args:{a | , <a>}>):
    Int) throws -> <currentRule.ctxType> {
    let _parentctx: ParserRuleContext? = _ctx

```



```

let _parentState: Int = getState()
var _localctx: <currentRule.ctxType>
_localctx = <currentRule.ctxType>(_ctx, _parentState<currentRule.args:{a | , <a.escapedName>}>)>
var _prevctx: <currentRule.ctxType> = _localctx
let _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(tokens=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(tokens=look)>
<alt>
break}); separator="\n">
default:
break
}
>>

```

```

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 ANTLRException.recognition(e: NoViableAltException(self))"

```

```

TestSetInline(s) ::= <<
<s.bitsets:{bits | <if(rest(rest(bits.tokens)))><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) ::= <<
(Int64(<shiftAmount>) & ~0x3f) == 0
>>

```

```

bitsetBitfieldComparison(s, bits) ::= <<
(<testShiftInRange({<offsetShift(s.varName, bits.shift)>})> && ((Int64(1) \<\< <offsetShift(s.varName,
bits.shift)>) & <bits.calculated>) != 0)
>>

```

```

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

```

```

]
parserName(t) ::= <%
<parser.name>.Tokens.<t.name>.rawValue
%>
offsetShift(shiftAmount, offset) ::= <%
<if(!isZero.(offset))>(<shiftAmount> - <offset>)<else><shiftAmount><endif>
%>

bitsetInlineComparison(s, bits) ::= <%
<bits.tokens: {t | <s.varName> == <parser.name>.Tokens.<t.name>.rawValue}; separator=" || ">
%>

cases(tokens) ::= <<
<trunc(tokens): {t | case .<t.name>:fallthrough} ; separator="\n">
<last(tokens): {t | case .<t.name>:} ; separator="\n">
>>

InvokeRule(r, argExprsChunks) ::= <<
setState(<r.stateNumber>)
<if(r.labels)>
try {
  let assignmentValue = try
<r.escapedName>(<if(r.ast.options.p)><r.ast.options.p><if(argExprsChunks)>,<endif><endif><argExprsChunks>)
  <r.labels:{l
| <labelref(l)> = assignmentValue} ; separator="\n">
  }()
<else>try
<r.escapedName>(<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.escapedName>.rawValue)
  <m.labels:{l | <labelref(l)> = assignmentValue} ; separator="\n">
  }()
<else>try match(<parser.name>.Tokens.<m.escapedName>.rawValue)<endif>
>>

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

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

CommonSetStuff(m, expr, capture, invert) ::= <<
setState(<m.stateNumber>)
<if(m.labels)><m.labels:{l | <labelref(l)> = }>try _input.LT(1)<endif>

```

```

<capture>
if (<if(invert)><m.varName> \<= 0 || <else>!<endif><(<expr>)) {
  <if(m.labels)><m.labels:{l
  | <labelref(l)> = }><endif>try _errHandler.recoverInline(self)<if(m.labels)> as Token<endif>
}
else {
  _errHandler.reportMatch(self)
  try consume()
}
>>

Wildcard(w) ::= <<
setState(<w.stateNumber>)
<if(w.labels)><w.labels:{l | <labelref(l)> = }><endif>try matchWildcard();
>>

// ACTION STUFF

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

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

SemPred(p, chunks, failChunks) ::= <<
setState(<p.stateNumber>)
if (!(<chunks>)) {
  throw 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.escapedName>"
LocalRef(a) ::= "_localctx.<a.escapedName>"
RetValRef(a) ::= "_localctx.<a.escapedName>"
QRetValRef(a) ::= "<ctx(a)>.<a.dict>.<a.escapedName>"
/** How to translate $tokenLabel */
TokenRef(t) ::= "<ctx(t)>.<t.escapedName>"
LabelRef(t) ::= "<ctx(t)>.<t.escapedName>"
ListLabelRef(t) ::= "<ctx(t)>.<ListLabelName(t.escapedName)>"
SetAttr(s,rhsChunks) ::= "<ctx(s)>.<s.escapedName> = <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.escapedName>"
SetNonLocalAttr(s, rhsChunks) ::=
"((<s.ruleName; format=\"cap\">Context)getInvokingContext(<s.ruleIndex>)).<s.escapedName> = <rhsChunks>"

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

TokenDecl(t) ::= "<t.escapedName>: <SwiftTypeMap.(TokenLabelType())>!"
TokenTypeDecl(t) ::= "var <t.escapedName>: Int = 0"
TokenListDecl(t) ::= "<t.escapedName>: [Token] = [Token]()"

```

```

RuleContextDecl(r) ::= "<r.escapedName>: <r.ctxName>!"
RuleContextListDecl(rdecl) ::= "<rdecl.escapedName>: [<rdecl.ctxName>] = [<rdecl.ctxName>]()"

ContextTokenGetterDecl(t) ::= <<
  <accessLevelOpenOK(parser)>
  func <t.escapedName>() -> TerminalNode? {
    return getToken(<parser.name>.Tokens.<t.escapedName>.rawValue, 0)
  }
>>

ContextTokenListGetterDecl(t)
  ::= <<
    <accessLevelOpenOK(parser)>
    func <t.escapedName>() -> [TerminalNode] {
      return getTokens(<parser.name>.Tokens.<t.escapedName>.rawValue)
    }
  >>

ContextTokenListIndexedGetterDecl(t) ::= <<
  <accessLevelOpenOK(parser)>
  func <t.escapedName>(_ i: Int) -> TerminalNode? {
    return getToken(<parser.name>.Tokens.<t.escapedName>.rawValue, i)
  }
  >>

ContextRuleGetterDecl(r) ::= <<
  <accessLevelOpenOK(parser)>
  func <r.escapedName>() -> <r.ctxName>? {
    return getRuleContext(<r.ctxName>.self, 0)
  }
  >>

ContextRuleListGetterDecl(r) ::= <<
  <accessLevelOpenOK(parser)>
  func <r.escapedName>() -> [<r.ctxName>] {
    return getRuleContexts(<r.ctxName>.self)
  }
  >>

ContextRuleListIndexedGetterDecl(r) ::= <<
  <accessLevelOpenOK(parser)>
  func <r.escapedName>(_ 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,signatures,
  superClass={ParserRuleContext}) ::= <<

<accessLevelNotOpen(parser)> class <struct.escapedName>:
<if(contextSuperClass)><contextSuperClass><else>ParserRuleContext<endif><if(interfaces)>, <interfaces;
separator=", "><endif> {
  <attrs:{a | <accessLevelOpenOK(parser)> var <a>}; separator="\n">
  <getters:{g | <g>}; separator="\n">
  <! <if(ctorAttrs)> <accessLevelNotOpen(parser)> init(_ parent: ParserRuleContext,_ invokingState: Int) {
super.init(parent, invokingState) }<endif> !>
  <if(ctorAttrs)>
  <accessLevelNotOpen(parser)> convenience init(_ parent: ParserRuleContext?, _ invokingState:
Int<ctorAttrs:{a | , _ <a>}>) {
  self.init(parent, invokingState)
  <struct.ctorAttrs:{a | self.<a.escapedName> = <a.escapedName>;}; separator="\n">
  }
  <endif>

  override <accessLevelOpenOK(parser)>
  func getRuleIndex() -> Int {
    return <parser.name>.RULE_<struct.derivedFromName>
  }
  <if(struct.provideCopyFrom && struct.attrs)> <! don't need copy unless we have subclasses !>
  <accessLevelOpenOK(parser)>
  override func copyFrom(_ ctx_: ParserRuleContext) {
    super.copyFrom(ctx_)
    let ctx = ctx_ as! <struct.escapedName>
    <struct.attrs:{a | self.<a.escapedName> = ctx.<a.escapedName>;}; separator="\n">
  }
  <endif>
  <dispatchMethods; separator="\n">
  <extensionMembers; separator="\n">
  }
>>

AltLabelStructDecl(struct,attrs, getters,dispatchMethods) ::= <<
<accessLevelNotOpen(parser)> class <struct.escapedName>: <currentRule.name; format="cap">Context {
  <attrs:{a | <accessLevelNotOpen(parser)> var <a>}; separator="\n">
  <getters:{g | <g>}; separator="\n">

```

```

<accessLevelNotOpen(parser)>
init(_
ctx: <currentRule.name; format="cap">Context) {
    super.init()
    copyFrom(ctx)
}
<dispatchMethods; separator="\n">
}
>>

ListenerDispatchMethod(method) ::= <<
override <accessLevelOpenOK(parser)>
func <if(method.isEnter)>enter<else>exit<endif>Rule(_ listener: ParseTreeListener) {
    if let listener = listener as? <parser.grammarName>Listener {
        listener.<if(method.isEnter)>enter<else>exit<endif><struct.derivedFromName; format="cap">(self)
    }
}
>>

VisitorDispatchMethod(method) ::= <<
override <accessLevelOpenOK(parser)>
func accept<T>(_ visitor: ParseTreeVisitor<T>) -> T? {
    if let visitor = visitor as? <parser.grammarName>Visitor {
        return visitor.visit<struct.derivedFromName; format="cap">(self)
    }
    else if let visitor = visitor as? <parser.grammarName>BaseVisitor {
        return visitor.visit<struct.derivedFromName; format="cap">(self)
    }
    else {
        return visitor.visitChildren(self)
    }
}
>>

AttributeDecl(d) ::= "<d.escapedName>: <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.escapedName>"

/** 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>
    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) ::= <<
<accessLevelOpenOK(lexer)> 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()

    <accessLevelNotOpen(lexer)>
    <if(lexer.tokens)>
    static let <lexer.tokens>:{k | <k>=<lexer.tokens.(k)>}; separator=", ", wrap, anchor>
    <endif>

    <if(lexer.escapedChannels)>
    <accessLevelNotOpen(lexer)>
    static let <lexer.escapedChannels>:{k | <k>=<lexer.escapedChannels.(k)>}; separator=", ", wrap, anchor>
    <endif>
    <if(rest(lexer.escapedModeNames))>
    <accessLevelNotOpen(lexer)>
    static let <rest(lexer.escapedModeNames):{m | <m>=<i>}; separator=", ", wrap, anchor>
    <endif>
    <accessLevelNotOpen(lexer)>
    static
    let channelNames: [String] = [
      "DEFAULT_TOKEN_CHANNEL", "HIDDEN"<if (lexer.channelNames)>, <lexer.channelNames:{c| "<c>">;
separator=", ", wrap, anchor><endif>
    ]

    <accessLevelNotOpen(lexer)>
    static let modeNames: [String] = [
      <lexer.modes:{m| "<m>">; separator=", ", wrap, anchor>
    ]

    <accessLevelNotOpen(lexer)>
    static let ruleNames: [String] = [
      <lexer.ruleNames:{r| "<r>">; separator=", ", wrap, anchor>
    ]

```

```

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

<namedActions.members>

override <accessLevelOpenOK(lexer)>
func getVocabulary() -> Vocabulary {
    return <lexer.name>.VOCABULARY
}

<accessLevelNotOpen(lexer)>
required 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 <accessLevelOpenOK(lexer)>
func
getGrammarFileName() -> String { return "<lexer.grammarFileName>" }

override <accessLevelOpenOK(lexer)>
func getRuleNames() -> [String] { return <lexer.name>.ruleNames }

override <accessLevelOpenOK(lexer)>
func getSerializedATN() -> [Int] { return <lexer.name>._serializedATN }

override <accessLevelOpenOK(lexer)>
func getChannelNames() -> [String] { return <lexer.name>.channelNames }

override <accessLevelOpenOK(lexer)>
func getModeNames() -> [String] { return <lexer.name>.modeNames }

override <accessLevelOpenOK(lexer)>
func getATN() -> ATN { return <lexer.name>._ATN }

<dumpActions(lexer, "", actionFuncs, sempredFuncs)>
<atn>

<accessLevelNotOpen(lexer)>
static let _ATN: ATN = try! ATNDeserializer().deserialize(_serializedATN)
}
>>

SerializedATN(model) ::= <<
static let _serializedATN:[Int] = [

```

```
<model.serialized: {s | <s>}; separator="," wrap>
]
>>
```

```
/** 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):

```
* /antlr4-4-13-0-sources-1-jar/org/antlr/v4/tool/templates/codegen/Swift/Swift.stg
No license file was found, but licenses were detected in source scan.
```

```
// Copyright 2016-2022 The ANTLR Project. All rights reserved.
// Licensed under the BSD-3-Clause license. See LICENSE file in the project root for license information.
```

Found in path(s):

```
* /antlr4-4-13-0-sources-1-jar/org/antlr/v4/tool/templates/codegen/TypeScript/TypeScript.stg
No license file was found, but licenses were detected in source scan.
```

```
/*
 * [The "BSD license"]
 * Copyright (c) 2012-2016 Terence Parr
 * Copyright (c) 2012-2016 Sam Harwell
 * All rights reserved.
 *
 * Redistribution and use in source and binary forms, with or without
 * modification, are permitted provided that the following conditions
 * are met:
 *
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 * notice, this list of conditions and the following disclaimer.
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 * notice, this list of conditions and the following disclaimer in the
 * documentation and/or other materials provided with the distribution.
 * 3. The name of the author may not be used to endorse or promote products
 * derived from this software without specific prior written permission.
 *
 * THIS SOFTWARE IS PROVIDED BY THE AUTHOR ``AS IS'' AND ANY EXPRESS OR
 * IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED
 * TO, THE IMPLIED WARRANTIES
 * OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED.
 * IN NO EVENT SHALL THE AUTHOR BE LIABLE FOR ANY DIRECT, INDIRECT,
```

- * INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT
- * NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE,
- * DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY
- * THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT
- * (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF
- * THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

*/

```
lexer grammar ActionSplitter;
```

```
options { filter=true; }
```

```
@header {
package organtlr.v4.parse;
import organtlr.v4.tool.*;
import organtlr.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
: '/' ~(\"|\\r\"|\\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):

* /antlr4-4-13-0-sources-1-jar/org/antlr/v4/parse/ActionSplitter.g

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

```
/*
 * [The "BSD license"]
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 * Copyright (c) 2013 Sam Harwell
 * All rights reserved.
 *
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 * modification, are permitted provided that the following conditions
 * are met:
 *
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 *    notice, this list of conditions and the following disclaimer.
 * 2. Redistributions in binary form must reproduce the above copyright
 *    notice, this list of conditions and the following disclaimer in the
 *    documentation and/or other materials provided with the distribution.
 * 3. The name of the author may not be used to endorse or promote products
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 *
 * THIS SOFTWARE IS PROVIDED BY THE AUTHOR ``AS IS" AND ANY EXPRESS OR
 * IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO,
 * THE IMPLIED WARRANTIES
 * OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED.
 * IN NO EVENT SHALL THE AUTHOR BE LIABLE FOR ANY DIRECT, INDIRECT,
 * INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT
 * NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE,
 * DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY
 * THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT
 * (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF
 * THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.
 */
```

// 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.IO;
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="<file.parserName>"/>.
/// \</summary>
[System.CodeDom.Compiler.GeneratedCode("ANTLR", "<file.ANTLRVersion>")]
[System.CLSCompliant(false)]
public interface I<file.grammarName>Listener : IParseTreeListener {
    <file.listenerNames:{lname |
/// \<summary>
<if(file.listenerLabelRuleNames.(lname))>
/// Enter a parse tree produced by the \<c><lname>\</c>
/// labeled alternative in
    \<see cref="<file.parserName>.<file.listenerLabelRuleNames.(lname)>"/>.
<else>
/// Enter a parse tree produced by \<see cref="<file.parserName>.<lname>"/>.
<endif>

```

```

/// \</summary>
/// \<param name="context">The parse tree.\</param>
void Enter<lname; format="cap">([NotNull] <file.parserName>.<lname; format="cap">Context context);
/// \<summary>
<if(file.listenerLabelRuleNames.(lname))>
/// Exit a parse tree produced by the \<c><lname>\</c>
/// labeled alternative in \<see cref="<file.parserName>.<file.listenerLabelRuleNames.(lname)>">.
<else>
/// Exit a parse tree produced by \<see cref="<file.parserName>.<lname>">.
<endif>
/// \</summary>
/// \<param name="context">The parse tree.\</param>
void Exit<lname; format="cap">([NotNull] <file.parserName>.<lname; format="cap">Context context);};
separator="\n">
}
<if(file.genPackage)>
} // namespace <file.genPackage>
<endif>
>>

```

```

BaseListenerFile(file, header, namedActions) ::= <<
<fileHeader(file.grammarFileName, file.ANTLRVersion)>
<if(file.genPackage)>
namespace
<file.genPackage> {
<endif>
<header>

```

```

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

```

```

/// \<summary>
/// This class provides an empty implementation of \<see cref="I<file.grammarName>Listener">,
/// which can be extended to create a listener which only needs to handle a subset
/// of the available methods.
/// \</summary>
[System.CodeDom.Compiler.GeneratedCode("ANTLR", "<file.ANTLRVersion>")]
[System.Diagnostics.DebuggerNonUserCode]
[System.CLSCompliant(false)]
public partial class <file.grammarName>BaseListener : I<file.grammarName>Listener {
<file.listenerNames:{lname |
/// \<summary>
<if(file.listenerLabelRuleNames.(lname))>
/// Enter a parse tree produced by the \<c><lname>\</c>
/// labeled alternative in \<see cref="<file.parserName>.<file.listenerLabelRuleNames.(lname)>">.

```

```

<else>
///
Enter a parse tree produced by \<see cref="<file.parserName>.<lname>"/>.
<endif>
/// \<para>The default implementation does nothing.\</para>
/// \</summary>
/// \<param name="context">The parse tree.\</param>
public virtual void Enter<lname; format="cap">([NotNull] <file.parserName>.<lname; format="cap">Context
context) { }
/// \<summary>
<if(file.listenerLabelRuleNames.(lname))>
/// Exit a parse tree produced by the \<c><lname>\</c>
/// labeled alternative in \<see cref="<file.parserName>.<file.listenerLabelRuleNames.(lname)>"/>.
<else>
/// Exit a parse tree produced by \<see cref="<file.parserName>.<lname>"/>.
<endif>
/// \<para>The default implementation does nothing.\</para>
/// \</summary>
/// \<param name="context">The parse tree.\</param>
public virtual void Exit<lname; format="cap">([NotNull] <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="<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.(lname))>
/// Visit a parse tree produced by the \<c><lname>\</c>
/// labeled alternative in \<see cref="<file.parserName>.<file.visitorLabelRuleNames.(lname)>"/>.
<else>
/// Visit a parse tree produced by \<see cref="<file.parserName>.<lname>"/>.
<endif>
/// \</summary>
/// \<param name="context">The parse tree.\</param>
/// \<return>The visitor result.\</return>
Result Visit<lname; format="cap">([NotNull] <file.parserName>.<lname; 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.Diagnostics.DebuggerNonUserCode]
[System.CLSCompliant(false)]
public partial class <file.grammarName>BaseVisitor<<Result> : AbstractParseTreeVisitor<<Result>,
I<file.grammarName>Visitor<<Result> {
    <file.visitorNames:{lname |
/// \<summary>
<if(file.visitorLabelRuleNames.(lname))>
/// Visit a parse tree produced by the \<c><lname>\</c>
///
    labeled alternative in \<see cref="<file.parserName>.<file.visitorLabelRuleNames.(lname)>">/.
<else>
/// Visit a parse tree produced by \<see cref="<file.parserName>.<lname>">/.
<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<lname; format="cap">([NotNull] <file.parserName>.<lname; 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 <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>
    <if(parser.rules)>
    public const int
    <parser.rules:{r | RULE_<r.name> = <r.index>}; separator=", ", wrap, anchor>;
    <endif>
    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 int[] SerializedAtn { get { return _serializedATN; } }

    static <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 <parser.name>(ITokenStream input) : this(input, Console.Out, Console.Error) { }

    public <parser.name>(ITokenStream input, TextWriter output, TextWriter errorOutput)
    : base(input, output, errorOutput)
    {
        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>
```

```
<currentRule.escapedName>(<args; separator=", ">) {
```

```
<currentRule.ctxType>
```

```
_localctx = new <currentRule.ctxType>(Context, State<currentRule.args:{a | , <a.escapedName>}>);
```

```
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>
```

```
<currentRule.escapedName>(<args; separator=", ">) {
```

```

<currentRule.ctxType> _localctx = new <currentRule.ctxType>(Context, State<currentRule.args:{a | ,
<a.escapedName>}>);
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>
<currentRule.escapedName>(<args; separator=", ">) {
    <currentRule.ctxType> _localctx = new <currentRule.ctxType>(Context,
    State<currentRule.args:{a | , <a.escapedName>}>);
    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>
<currentRule.escapedName>(<args; separator=", ">) {
    return <currentRule.escapedName>(0<currentRule.args:{a | , <a.escapedName>}>);
}

```

```

private <currentRule.ctxType>
<currentRule.escapedName>(int _p<args:{a | , <a>}>) {
    ParserRuleContext _parentctx = Context;
    int _parentState = State;
    <currentRule.ctxType> _localctx = new <currentRule.ctxType>(Context, _parentState<currentRule.args:{a | ,
    <a.escapedName>}>);
    <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(tokens=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(tokens=look)>
        <alt>
        break;}; separator="\n">
default:
    break;
}
>>

```

```
}
```

```
>>
```

```
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.tokens)))><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.tokens contains more than two items
bitsetBitfieldComparison(s, bits) ::= <%
(<testShiftInRange(<offsetShift(s.varName, bits.shift)>)> && ((1L \<\< <offsetShift(s.varName, bits.shift)>) &
<bits.calculated>L) != 0)
%>

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

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

bitsetInlineComparison(s, bits) ::= <%
<bits.tokens:{t | <s.varName>==<tokenType.(t.name)>}; separator=" || ">
%>

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

InvokeRule(r, argExprsChunks) ::= <<
State = <r.stateNumber>;
<if(r.labels)><r.labels:{l | <labelref(l)> =
}><endif><r.escapedName>(<if(r.ast.options.p)><r.ast.options.p><if(argExprsChunks)><endif><endif><argExprs
Chunks>);
>>

```



```

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

Wildcard(w) ::= <<
State = <w.stateNumber>;
<if(w.labels)><w.labels:{l | <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.<a.escapedName>"
```

```
LocalRef(a) ::= "_localctx.<a.escapedName>"
```

```
RetValRef(a) ::= "_localctx.<a.escapedName>"
```

```
QRetValRef(a) ::= "<ctx(a)>.<a.dict>.<a.escapedName>"
```

```
/** How to translate $tokenLabel */
```

```
TokenRef(t) ::= "<ctx(t)>.<tokenType.(t.escapedName)>"
```

```
LabelRef(t) ::= "<ctx(t)>.<t.escapedName>"
```

```
ListLabelRef(t) ::= "<ctx(t)>.<ListLabelName(t.escapedName)>"
```

```
SetAttr(s,rhsChunks) ::= "<ctx(s)>.<s.escapedName> = <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>)).<s.escapedName>%>
SetNonLocalAttr(s, rhsChunks) ::=
<%((<s.ruleName; format="cap">Context)GetInvokingContext(<s.ruleIndex>)).<s.escapedName> =
<rhsChunks>;%>

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

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

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

ContextTokenGetterDecl(t) ::=
"[System.Diagnostics.DebuggerNonUserCode] public ITerminalNode <tokenType.(t.name)>() { return
GetToken(<parser.name>.<tokenType.(t.name)>, 0); }"
ContextTokenListGetterDecl(t) ::= <<
[System.Diagnostics.DebuggerNonUserCode] public <contextGetterCollection("ITerminalNode")>
<tokenType.(t.name)>() { return GetTokens(<parser.name>.<tokenType.(t.name)>); }
>>
ContextTokenListIndexedGetterDecl(t) ::= <<
[System.Diagnostics.DebuggerNonUserCode] public ITerminalNode <tokenType.(t.name)>(int i) {
return GetToken(<parser.name>.<tokenType.(t.name)>, i);
}
>>
ContextRuleGetterDecl(r) ::= <<
[System.Diagnostics.DebuggerNonUserCode]
public <r.ctxName> <r.escapedName>() {
return GetRuleContext\<<r.ctxName>\>(0);
}
>>
ContextRuleListGetterDecl(r) ::= <<
[System.Diagnostics.DebuggerNonUserCode] public <contextGetterCollection({<r.ctxName>})>
<r.escapedName>() {
return GetRuleContexts\<<r.ctxName>\>();
}
>>

```

```

ContextRuleListIndexedGetterDecl(r) ::= <<
[System.Diagnostics.DebuggerNonUserCode] public <r.ctxName> <r.escapedName>(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,signatures,
    superClass={ParserRuleContext}) ::= <<
public partial class <struct.escapedName> :
<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.escapedName>(ParserRuleContext parent, int invokingState) : base(parent,
invokingState) { }<endif>
    public <struct.escapedName>(ParserRuleContext parent, int invokingState<ctorAttrs:{a | , <a>}>)
    : base(parent, invokingState)
    {
        <struct.ctorAttrs:{a | this.<a.escapedName> = <a.escapedName>;}; separator="\n">
    }
    public override int RuleIndex { get { return RULE_<struct.derivedFromName>; } }
    <if(struct.provideCopyFrom)> <!-- don't need copy unless we have subclasses !-->
    public <struct.escapedName>() { }
    public virtual void CopyFrom(<struct.escapedName> context) {
        base.CopyFrom(context);
        <struct.attrs:{a
| this.<a.escapedName> = context.<a.escapedName>;}; separator="\n">
    }
    <endif>
    <dispatchMethods; separator="\n">
    <extensionMembers; separator="\n">
}
>>

```

```

AltLabelStructDecl(struct,attrs, getters,dispatchMethods) ::= <<
public partial class <struct.escapedName> : <currentRule.name; format="cap">Context {
    <attrs:{a | public <a>;}; separator="\n">
    <getters:{g | <g>;}; separator="\n">
    public <struct.escapedName>(<currentRule.name; format="cap">Context context) { CopyFrom(context); }
    <dispatchMethods; separator="\n">
}
>>

ListenerDispatchMethod(method) ::= <<
[System.Diagnostics.DebuggerNonUserCode]
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) ::= <<
[System.Diagnostics.DebuggerNonUserCode]
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> <d.escapedName><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><x.escapedName>"

/** 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.IO;
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 <lexer.name> : <superClass; null="Lexer"> {
protected static DFA[] decisionToDFA;
protected static PredictionContextCache sharedContextCache = new PredictionContextCache();
<if(lexer.tokens)>
public
const int
<lexer.tokens:{k | <tokenType.(k)>=<lexer.tokens.(k)>}; separator=", ", wrap, anchor>;
<endif>
<if(lexer.escapedChannels)>
public const int
<lexer.escapedChannels:{k | <k>=<lexer.escapedChannels.(k)>}; separator=", ", wrap, anchor>;
<endif>
<if(rest(lexer.escapedModeNames))>
public const int
<rest(lexer.escapedModeNames):{m | <m>=<i>}; separator=", ", wrap, anchor>;
<endif>
public static string[] channelNames = {
"DEFAULT_TOKEN_CHANNEL", "HIDDEN"<if (lexer.channelNames)>, <lexer.channelNames:{c| "<c>">};
separator=", ", wrap, anchor><endif>
};

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 <lexer.name>(ICharStream input)
: this(input, Console.Out, Console.Error) { }

public <lexer.name>(ICharStream input, TextWriter output, TextWriter errorOutput)
:
```

```

base(input, output, errorOutput)
{
    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[] ChannelNames { get { return channelNames; } }

```

```

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

```

```

public override int[] SerializedAtn { get { return _serializedATN; } }

```

```

static <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 int[] _serializedATN = {
    <model.serialized: {s | <s>}; separator=",", wrap>
};

```

```

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

```

```

>>

```

```

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

]

Found in path(s):

* /antlr4-4-13-0-sources-1-jar/org/antlr/v4/tool/templates/codegen/CSharp/CSharp.stg

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*/

/*

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

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

This file contains the default format ANTLR uses.

*/

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

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

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

wantsSingleLineMessage() ::= "true"

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* /antlr4-4-13-0-sources-1-jar/org/antlr/v4/parse/ANTLRLexer.java

1.96 jaxb-core 4.0.6

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- * <https://github.com/eclipse-ee4j/jaxb-istack-commons>
- * <https://github.com/eclipse-ee4j/jaxb-dtd-parser>
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- * Source: <https://mvnrepository.com/artifact/org.apache.maven/maven-core/3.5.2>

maven-plugin-annotations (3.5)

- * License: Apache-2.0
- * Project: <https://maven.apache.org/plugin-tools/maven-plugin-annotations/>
- * Source:
<https://github.com/apache/maven-plugin-tools/tree/master/maven-plugin-annotations>

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* Source:

<https://github.com/apache/maven-resolver/tree/master/maven-resolver-transport-file>

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* Source:

<https://mvnrepository.com/artifact/org.apache.maven/maven-settings/3.5.2>

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* Project: <https://codehaus-plexus.github.io/plexus-archiver/>

* Source: <https://github.com/codehaus-plexus/plexus-archiver>

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* Project: <http://www.megginson.com/downloads/SAX/>

* Source: http://sourceforge.net/project/showfiles.php?group_id=29449

testng (6.14.2)

* License: Apache-2.0 AND (MIT OR GPL-1.0+)

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

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

wagon-http-lightweight (3.0.0)

* License: Pending

*

Project: <https://maven.apache.org/wagon/>

* Source:

<https://mvnrepository.com/artifact/org.apache.maven.wagon/wagon-http-lightweight/3.0.0>

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1.101 isl26 0.26-r1

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1.102 jspecify 1.0.0

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Manifest-Version: 1.0

Bundle-Description: An artifact of well-specified annotations to power
static analysis checks and JVM language interop.

Bundle-DocURL: <https://jspecify.dev/docs/start-here>

Bundle-License: <https://www.apache.org/licenses/LICENSE-2.0>

Bundle-ManifestVersion: 2

Bundle-Name: JSpecify annotations

Bundle-SymbolicName: org.jspecify.jspecify

Bundle-Vendor: The JSpecify Authors

Bundle-Version: 1.0.0

Export-Package: org.jspecify.annotations;version="1.0.0"

Implementation-Version: 1.0.0

Import-Package: java.lang,java.lang.annotation

Multi-Release: true

Require-Capability: osgi.ee;filter="(&(osgi.ee=JavaSE)(version=1.8))"

Found in path(s):

* /jspecify-1-0-0-jar/META-INF/MANIFEST.MF

1.103 bzip2 1.0.8-r6

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Julian Seward, jseward@acm.org
bzip2/libbzip2 version 1.0.8 of 13 July 2019

1.104 codegangsta-cli 1.20.0

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1.105 sse 1.1.0

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xwd v1.0.7

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[This is the first released version of the library GPL. It is numbered 2 because it goes with version 2 of the ordinary GPL.]

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The reason we have a separate public license for some libraries is that they blur the distinction we usually make between modifying or adding to a program and simply using it. Linking a program with a library, without changing the library, is in some sense simply using the library, and is analogous to running a utility program or application program. However, in a textual and legal sense, the linked executable is a combined work, a derivative of the original library, and the ordinary General Public License treats it as such.

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However, unrestricted linking of non-free programs would deprive the users of those programs of all benefit from the free status of the libraries themselves. This Library General Public License is intended to permit developers of non-free programs to use free libraries, while preserving your freedom as a user of such programs to change the free libraries that are incorporated in them. (We have not seen how to achieve this as regards changes in header files, but we have achieved it as regards changes in the actual functions of the Library.) The hope is that this will lead to faster development of free libraries.

The precise terms and conditions for copying, distribution and modification follow. Pay close attention to the difference between a "work based on the library" and a "work that uses the library". The

former contains
code derived from the library, while the latter only
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"Source code" for a work means the preferred form of the work for
making modifications to it. For a library, complete source code means
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the Library does
and what the program that uses the Library does.

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This option is useful when you wish to copy part of the code of the Library into a program that is not a library.

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If distribution of object code is made by offering access to copy from a designated place, then offering equivalent access to copy the source code from the same place satisfies the requirement to distribute the source code, even though third parties are not compelled to copy the source along with the object code.

5. A program that contains no derivative of any portion of the Library, but is designed to work with the Library by being compiled or linked with it, is called a "work that uses the Library". Such a work, in isolation, is not a derivative work of the Library, and therefore falls outside the scope of this License.

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linking a "work that uses the Library" with the Library
creates an executable that is a derivative of the Library (because it
contains portions of the Library), rather than a "work that uses the
library". The executable is therefore covered by this License.
Section 6 states terms for distribution of such executables.

When a "work that uses the Library" uses material from a header file
that is part of the Library, the object code for the work may be a
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Whether this is true is especially significant if the work can be
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threshold for this to be true is not precisely defined by law.

If such an object file uses only numerical parameters, data
structure layouts and accessors, and small macros and small inline
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(Executables containing this object code plus portions of the
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Otherwise, if the work is a derivative of the Library, you may
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Any executables containing that work also fall under Section 6,
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6. As an exception to the Sections above, you may also compile or
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b) Accompany the work with a written offer, valid for at least three years, to give the same user the materials specified in Subsection 6a, above, for a charge no more than the cost of performing this distribution.

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c)

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Thus, it is not the intent of this section to claim rights or contest your rights to work written entirely by you; rather, the intent is to exercise the right to control the distribution of derivative or collective works based on the Program.

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The source code for a work means the preferred form of the work for making modifications to it. For an executable work, complete source code means all the source code for all modules it contains, plus any associated interface definition files, plus the scripts used to control compilation and installation of the executable. However, as a special exception, the source code distributed need not include anything that is normally distributed (in either source or binary form) with the major components (compiler, kernel, and so on) of the operating system on which the executable runs, unless that component itself accompanies the executable.

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signature of Moe Ghoul, 1 April 1989

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Contributor: Carlo Landmeter <clandmeter@alpinelinux.org>

Maintainer: Kevin Daudt <kdaudt@alpinelinux.org>

pkgname=spdx-licenses

pkgver=3.27.0

pkgrel=0

pkgdesc="Various data formats for the SPDX License List"

url="https://spdx.org/"

arch="noarch"

options="!check" # no test suite

```

license="CC-BY-3.0"
source="license-list-data-$pkgver.tar.gz::https://github.com/spdx/license-list-data/archive/v$pkgver.tar.gz"
builddir="$srcdir/license-list-data-$pkgver"
subpackages="$pkgname-list"

_types="html json rdfa rdft rdfturtle rdFXML template text"

for type in $_types; do
    subpackages="$subpackages $pkgname-$type:_subpkg"
done

package() {
    mkdir -p "$pkgdir"
}

_subpkg() {
    local type=${subpkgname/$pkgname-/}
    pkgdesc="$pkgdesc ($type)"
    install_if="$pkgname=$pkgver-r$pkgrel"
    mkdir -p "$subpkgdir"/usr/share/spdx
    cp -r "$builddir"/$type "$subpkgdir"/usr/share/spdx/
}

list() {
    pkgdesc="$pkgdesc (licence list)"
    mkdir -p "$subpkgdir"/usr/share/spdx
    local i; for i in "$builddir"/text/*.txt;
    do
        local license=${i##*/}
        echo ${license%.*} >> "$subpkgdir"/usr/share/spdx/license.lst
    done
}

sha512sums="
16d59c81e331b54b52639826f83408d98144cdaa70eacc3e8ce35dc3b13992e4794cf7515eb9db200efd390a0c0e35ae9
d4706f8e0ca6a8d236189e88870720c license-list-data-3.27.0.tar.gz
"

# Automatically generated by apkgbuild-cpan, template 4
# Contributor: Valery Kartel <valery.kartel@gmail.com>
# Maintainer: Celeste <cielesti@protonmail.com>
maintainer="Celeste <cielesti@protonmail.com>"
pkgname=perl-bsd-resource
pkgver=1.2911
pkgrel=11
#_pkgreal is used by apkgbuild-cpan to find modules at MetaCpan
_pkgreal=BSD-Resource
pkgdesc="Perl extension implements the BSD process resource limit functions"
url="https://metacpan.org/release/BSD-Resource/"

```

```

arch="all"
license="Artistic-2.0 OR LGPL-2.0"
depends="perl"
makedepends="perl-dev"
subpackages="$pkgname-doc"
source="https://cpan.metacpan.org/authors/id/J/JH/JHI/BSD-Resource-$pkgver.tar.gz"
builddir="$srcdir/$_pkgreal-$pkgver"

build() {
    export CFLAGS=$(perl -MConfig -E 'say $Config{ccflags}')
    PERL_MM_USE_DEFAULT=1 perl -I. Makefile.PL \
        INSTALLDIRS=vendor \
        NO_PACKLIST=1 \
        NO_PERLLOCAL=1
    make
}

check() {
    export CFLAGS=$(perl -MConfig -E 'say $Config{ccflags}')
    make test
}

package() {
    make DESTDIR="$pkgdir" install
}

sha512sums="
d0032d41c7c0468ed1c6d8f57b885f6cb97a5039d754c8cb60b2067daedaf53bd15fb6561a3d0f828df16dfa5417f663b
8065ba65f4fea16dc9262728b3b6b85
    BSD-Resource-1.2911.tar.gz
"

maintainer="Achill Gilgenast <achill@achill.org>"
pkgname=cargo-license
pkgver=0.7.0
pkgrel=1
pkgdesc="Cargo subcommand to see license of dependencies"
url="https://github.com/onur/cargo-license"
arch="all"
license="MIT"
makedepends="cargo cargo-auditable"
source="$pkgname-$pkgver.tar.gz::https://crates.io/api/v1/crates/cargo-license/$pkgver/download"

prepare() {
    default_prepare

    cargo fetch --target="$CTARGET" --locked
}

```

```

build() {
    cargo auditable build --release --frozen
}

check() {
    cargo test --frozen
}

package() {
    install -Dm755 target/release/cargo-license -t "$pkgdir"/usr/bin
}

sha512sums="
9b3f0ead35515e85ef4074ebdbdbe5b9ec8bcaec244fabe414e2ed60f90366e8b1692d8bf7ffe4c07d778e60d94bab86bc
0c8be9823232e9c360a38bc65e9c5a cargo-license-0.7.0.tar.gz
"

#!/sbin/openrc-run

command="/usr/libexec/xdg-permission-store"
supervisor=supervise-daemon
command_args="--replace $command_args"
error_logger="logger -t '${RC_SVCNAME}' -p daemon.error"

depend() {
    need dbus
}

# Contributor: Maxim Karasev <begs@disroot.org>
# Maintainer: mio <miyopan@e.email>
pkgname=bsd-games
pkgver=3.3
pkgrel=2
pkgdesc="traditional text mode games from BSD"
url="https://bsd-games.sourceforge.io/"
arch="all"
license="BSD-3-Clause"
install="$pkgname.post-install"
makedepends="ncurses-dev coreutils" # configure causes busybox expr error
subpackages="$pkgname-doc"
source="https://sourceforge.net/projects/bsd-games/files/bsd-games-$pkgver.tar.gz
0001-bsd-games-scores-dir.patch
"

options="!check" # no tests

build() {
    # some GNU autoconf options are ignored, but it works
    ./configure \
        --build=$CBUILD \
        --host=$CHOST \

```

```

--prefix=/usr \
--sysconfdir=/etc \
--mandir=/usr/share/man \
--scoredir=/usr/share/$pkgname
make
}

package() {
make DESTDIR="$pkgdir" install
install -Dm644 LICENSE "$pkgdir"/usr/share/licenses/bsd-games/LICENSE
}

sha512sums="
aaf36d09d4fe68514a5c279063d7e77a9a9a84c447037cba974b29faa07eb80c2aab2379d0699c196b5c27ffe1b2bb2c6
8d3390143e0e62d5e3d210ccfb61294
bsd-games-3.3.tar.gz
e1def0d4835a877242c4173fae862e278a7858738e0bacacbb045a42bcabec2aa7c72d000bbd2421ce35fe66cdc1f52c0
577b7e278029ca5ed50f7aab22319f6 0001-bsd-games-scores-dir.patch
"

```

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Maintainer: Natanael Copa <ncopa@alpinelinux.org>

pkgname=libart-lgpl

pkgver=2.3.21

pkgrel=8

pkgdesc="A library for high-performance 2D graphics"

url="https://www.levien.com/libart/"

arch="all"

```
options="!check" # No test suite.
license="LGPL-2.0-or-later"
subpackages="$pkgname-dev"
source="https://download.gnome.org/sources/libart_lgpl/2.3/libart_lgpl-$pkgver.tar.bz2"
"
```

```
builddir="$srcdir"/libart_lgpl-$pkgver
```

```
prepare() {
    update_config_sub
    default_prepare
}
```

```
build() {
    ./configure \
        --build=$CBUILD \
        --host=$CHOST \
        --prefix=/usr
    make
}
```

```
package() {
    make DESTDIR="$pkgdir" install
}
```

```
sha512sums="8a632a6a4da59e5e8c02ec2f5a57e36d182b325b46513765425e5f171ff9ae326af1b133725beba28f7e7
6654309e001aee9bace727b5b4c8589405256a3c020 libart_lgpl-2.3.21.tar.bz2"
mini_sendmail - accept email on behalf of real sendmail
```

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Contributor: Patrycja Rosa <alpine@ptrcnull.me>

Maintainer: Patrycja Rosa <alpine@ptrcnull.me>

pkgname=bsd-compat-headers

pkgver=0.7.2

pkgrel=6

pkgdesc="BSD compatibility headers (cdefs, queue, tree)"

url="https://gitlab.alpinelinux.org/alpine/aports"

arch="noarch"

license="BSD-2-Clause AND BSD-3-Clause"

source="

cdefs.h

queue.h

tree.h

"

builddir="\$srcdir"

options="!check" # just headers

package() {

mkdir -p "\$pkgdir"

install -Dm644 -t "\$pkgdir"/usr/include/sys \

cdefs.h queue.h tree.h

}

sha512sums="

37c8fc73c7aea7b490f7850927e2bb91d12137c9e59e22c084146d515696dbc7973b5de92f4c987ba080dd2502ba8312
7006442c3f019b6447a620c0cae73178 cdefs.h

2f0d5e6e4dc3350285cf17009265dddcbe12431c111868eea39bc8cb038ab7c1f2acacbb21735c4e9d4a1fd106a8fc0f86
11ea33987d4faba37dde5ce6da0750 queue.h

d9ac210d81feb8ad2655bc80fb065d3fe20ae4417b32b4a1711e6738a4870140005c13373b5d1846ef3ce5ae6da45f2da
cef2092881eded0a2e94f6a07752ef3 tree.h

"

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The X-Spline code was written Carole Blanc (blanc@labri.u-bordeaux.fr) and Christophe Schlick (schlick@labri.u-bordeaux.fr) starting from an initial implementation done by C. Feuille, S. Grosbois, L. Maziere and L. Minihot as a student practice (Universite Bordeaux, France). For additional information about X-splines, see:

"X-Splines: A Spline Model Designed for the End User" by C. Blanc and C. Schlick, Proceedings of SIGGRAPH'95

<http://dept-info.labri.u-bordeaux.fr/~schlick/DOC/sig1.html>

/* \$NetBSD: queue.h,v 1.70 2015/11/02 15:21:23 christos Exp \$ */

/*

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*

* @(#)queue.h 8.5 (Berkeley) 8/20/94

*/

#ifndef _SYS_QUEUE_H_

#define _SYS_QUEUE_H_

/*

* This file defines five types of data structures: singly-linked lists,

* lists, simple queues, tail queues, and circular queues.

*

* A singly-linked list is headed by a single forward pointer. The

* elements are singly linked for minimum space and
pointer manipulation

* overhead at the expense of O(n) removal for arbitrary elements. New

* elements can be added to the list after an existing element or at the

* head of the list. Elements being removed from the head of the list

* should use the explicit macro for this purpose for optimum

* efficiency. A singly-linked list may only be traversed in the forward

* direction. Singly-linked lists are ideal for applications with large

* datasets and few or no removals or for implementing a LIFO queue.

*

* A list is headed by a single forward pointer (or an array of forward

* pointers for a hash table header). The elements are doubly linked

* so that an arbitrary element can be removed without a need to

* traverse the list. New elements can be added to the list before

* or after an existing element or at the head of the list. A list

* may only be traversed in the forward direction.

*

* A simple queue is headed by a pair of pointers, one the head of the

* list and the

other to the tail of the list. The elements are singly

* linked to save space, so elements can only be removed from the

* head of the list. New elements can be added to the list after

* an existing element, at the head of the list, or at the end of the

* list. A simple queue may only be traversed in the forward direction.

*

* A tail queue is headed by a pair of pointers, one to the head of the

* list and the other to the tail of the list. The elements are doubly

* linked so that an arbitrary element can be removed without a need to

* traverse the list. New elements can be added to the list before or

* after an existing element, at the head of the list, or at the end of

* the list. A tail queue may be traversed in either direction.

*

* A circle queue is headed by a pair of pointers, one to the head of the

* list and the other to the tail of the list. The elements are doubly

* linked so that an arbitrary element can be removed without a need to

* traverse the list. New elements

```

can be added to the list before or after
* an existing element, at the head of the list, or at the end of the list.
* A circle queue may be traversed in either direction, but has a more
* complex end of list detection.
*
* For details on the use of these macros, see the queue(3) manual page.
*/

```

```

/*
* Include the definition of NULL only on NetBSD because sys/null.h
* is not available elsewhere. This conditional makes the header
* portable and it can simply be dropped verbatim into any system.
* The caveat is that on other systems some other header
* must provide NULL before the macros can be used.
*/
#ifdef __NetBSD__
#include <sys/null.h>
#endif

```

```

#if defined(QEUEDEBUG)
# if defined(_KERNEL)
#  define QUEUEDEBUG_ABORT(...) panic(__VA_ARGS__)
# else
#  include <err.h>
#  define QUEUEDEBUG_ABORT(...) err(1, __VA_ARGS__)
# endif
#endif

```

```

/*
* Singly-linked List definitions.
*/
#define SLIST_HEAD(name, type) \
struct name { \
    struct type *slh_first; /* first \
    element */ \
}

#define SLIST_HEAD_INITIALIZER(head) \
{ NULL }

#define SLIST_ENTRY(type) \
struct { \
    struct type *sle_next; /* next element */ \
}

/*
* Singly-linked List access methods.
*/

```

```

#define SLIST_FIRST(head) ((head)->slh_first)
#define SLIST_END(head) NULL
#define SLIST_EMPTY(head) ((head)->slh_first == NULL)
#define SLIST_NEXT(elm, field) ((elm)->field.sle_next)

#define SLIST_FOREACH(var, head, field) \
for((var) = (head)->slh_first; \
    (var) != SLIST_END(head); \
    (var) = (var)->field.sle_next)

#define SLIST_FOREACH_SAFE(var, head, field, tvar) \
for ((var) = SLIST_FIRST((head)); \
    (var) != SLIST_END(head) && \
    ((tvar) = SLIST_NEXT((var), field), 1); \
    (var) = (tvar))

/*
 * Singly-linked List functions.
 */
#define SLIST_INIT(head) do { \
    (head)->slh_first = SLIST_END(head); \
} while (/*CONSTCOND*/0)

#define SLIST_INSERT_AFTER(slistelm, elm, field) do { \
    (elm)->field.sle_next = (slistelm)->field.sle_next; \
    (slistelm)->field.sle_next \
    = (elm); \
} while (/*CONSTCOND*/0)

#define SLIST_INSERT_HEAD(head, elm, field) do { \
    (elm)->field.sle_next = (head)->slh_first; \
    (head)->slh_first = (elm); \
} while (/*CONSTCOND*/0)

#define SLIST_REMOVE_AFTER(slistelm, field) do { \
    (slistelm)->field.sle_next = \
        SLIST_NEXT(SLIST_NEXT((slistelm), field), field); \
} while (/*CONSTCOND*/0)

#define SLIST_REMOVE_HEAD(head, field) do { \
    (head)->slh_first = (head)->slh_first->field.sle_next; \
} while (/*CONSTCOND*/0)

#define SLIST_REMOVE(head, elm, type, field) do { \
    if ((head)->slh_first == (elm)) { \
        SLIST_REMOVE_HEAD((head), field); \
    } \
    else { \

```

```

struct type *curelm = (head)->slh_first; \
while(curelm->field.sle_next != (elm)) \
    curelm = curelm->field.sle_next; \
curelm->field.sle_next = \
    curelm->field.sle_next->field.sle_next; \
} \
} while (/*CONSTCOND*/0)

/*
 * List definitions.
 */
#define LIST_HEAD(name, type) \
struct name { \
    struct type *lh_first; /* first element */ \
}

#define LIST_HEAD_INITIALIZER(head) \
{ NULL }

#define LIST_ENTRY(type) \
struct { \
    struct type *le_next; /* next element */ \
    struct type **le_prev; /* address of previous next element */ \
}

/*
 * List access methods.
 */
#define LIST_FIRST(head) ((head)->lh_first)
#define LIST_END(head) NULL
#define LIST_EMPTY(head) ((head)->lh_first == LIST_END(head))
#define LIST_NEXT(elm, field) ((elm)->field.le_next)

#define LIST_FOREACH(var, head, field) \
for ((var) = ((head)->lh_first); \
    (var) != LIST_END(head); \
    (var) = ((var)->field.le_next))

#define LIST_FOREACH_SAFE(var, head, field, tvar) \
for ((var) = LIST_FIRST((head)); \
    (var) != LIST_END(head) && \
    ((tvar) = LIST_NEXT((var), field), 1); \
    (var) = (tvar))

#define LIST_MOVE(head1, head2) do { \
    LIST_INIT((head2)); \
    if (!LIST_EMPTY((head1)))

```

```

{    \
(head2)->lh_first = (head1)->lh_first; \
LIST_INIT((head1)); \
}    \
} while (/*CONSTCOND*/0)

/*
 * List functions.
 */
#if defined(QUEUEDEBUG)
#define QUEUEDEBUG_LIST_INSERT_HEAD(head, elm, field) \
if ((head)->lh_first && \
    (head)->lh_first->field.le_prev != &(head)->lh_first) \
    QUEUEDEBUG_ABORT("LIST_INSERT_HEAD %p %s:%d", (head), \
        __FILE__, __LINE__);
#define QUEUEDEBUG_LIST_OP(elm, field) \
if ((elm)->field.le_next && \
    (elm)->field.le_next->field.le_prev != \
    &(elm)->field.le_next) \
    QUEUEDEBUG_ABORT("LIST_* forw %p %s:%d", (elm), \
        __FILE__, __LINE__); \
if (*(elm)->field.le_prev != (elm)) \
    QUEUEDEBUG_ABORT("LIST_* back %p %s:%d", (elm), \
        __FILE__, __LINE__);
#define QUEUEDEBUG_LIST_POSTREMOVE(elm, field) \
(elm)->field.le_next = (void *)1L; \
(elm)->field.le_prev = (void *)1L;
#else
#define QUEUEDEBUG_LIST_INSERT_HEAD(head, elm, field)
#define QUEUEDEBUG_LIST_OP(elm,
    field)
#define QUEUEDEBUG_LIST_POSTREMOVE(elm, field)
#endif

#define LIST_INIT(head) do { \
    (head)->lh_first = LIST_END(head); \
} while (/*CONSTCOND*/0)

#define LIST_INSERT_AFTER(listelm, elm, field) do { \
    QUEUEDEBUG_LIST_OP((listelm), field) \
    if (((elm)->field.le_next = (listelm)->field.le_next) != \
        LIST_END(head)) \
        (listelm)->field.le_next->field.le_prev = \
            &(elm)->field.le_next; \
    (listelm)->field.le_next = (elm); \
    (elm)->field.le_prev = &(listelm)->field.le_next; \
} while (/*CONSTCOND*/0)

```

```

#define LIST_INSERT_BEFORE(listelm, elm, field) do { \
    QUEUEDEBUG_LIST_OP((listelm), field) \
    (elm)->field.le_prev = (listelm)->field.le_prev; \
    (elm)->field.le_next = (listelm); \
    *(listelm)->field.le_prev = (elm); \
    (listelm)->field.le_prev = &(elm)->field.le_next; \
} while (/*CONSTCOND*/0)

#define LIST_INSERT_HEAD(head, elm, field) do { \
    QUEUEDEBUG_LIST_INSERT_HEAD((head), (elm), field) \
    if (((elm)->field.le_next \
    = (head)->lh_first) != LIST_END(head)) \
    (head)->lh_first->field.le_prev = &(elm)->field.le_next; \
    (head)->lh_first = (elm); \
    (elm)->field.le_prev = &(head)->lh_first; \
} while (/*CONSTCOND*/0)

#define LIST_REMOVE(elm, field) do { \
    QUEUEDEBUG_LIST_OP((elm), field) \
    if ((elm)->field.le_next != NULL) \
    (elm)->field.le_next->field.le_prev = \
    (elm)->field.le_prev; \
    *(elm)->field.le_prev = (elm)->field.le_next; \
    QUEUEDEBUG_LIST_POSTREMOVE((elm), field) \
} while (/*CONSTCOND*/0)

#define LIST_REPLACE(elm, elm2, field) do { \
    if (((elm2)->field.le_next = (elm)->field.le_next) != NULL) \
    (elm2)->field.le_next->field.le_prev = \
    &(elm2)->field.le_next; \
    (elm2)->field.le_prev = (elm)->field.le_prev; \
    *(elm2)->field.le_prev = (elm2); \
    QUEUEDEBUG_LIST_POSTREMOVE((elm), field) \
} while (/*CONSTCOND*/0)

/*
 * Simple queue definitions.
 */
#define SIMPLEQ_HEAD(name, type) \
struct name { \
    struct \
    type *sqh_first; /* first element */ \
    struct type **sqh_last; /* addr of last next element */ \
}

#define SIMPLEQ_HEAD_INITIALIZER(head) \
{ NULL, &(head).sqh_first }

```

```

#define SIMPLEQ_ENTRY(type) \
struct { \
    struct type *sqe_next; /* next element */ \
}

/*
 * Simple queue access methods.
 */

#define SIMPLEQ_FIRST(head) ((head)->sqh_first)
#define SIMPLEQ_END(head) NULL
#define SIMPLEQ_EMPTY(head) ((head)->sqh_first == SIMPLEQ_END(head))
#define SIMPLEQ_NEXT(elm, field) ((elm)->field.sqe_next)

#define SIMPLEQ_FOREACH(var, head, field) \
for ((var) = ((head)->sqh_first); \
     (var) != SIMPLEQ_END(head); \
     (var) = ((var)->field.sqe_next))

#define SIMPLEQ_FOREACH_SAFE(var, head, field, next) \
for ((var) = ((head)->sqh_first); \
     (var) != SIMPLEQ_END(head) && \
     ((next = ((var)->field.sqe_next)), 1); \
     (var) = (next))

/*
 * Simple queue functions.
 */

#define SIMPLEQ_INIT(head) do { \
    (head)->sqh_first = NULL; \
    (head)->sqh_last \
    = &(head)->sqh_first; \
} while (/*CONSTCOND*/0)

#define SIMPLEQ_INSERT_HEAD(head, elm, field) do { \
    if (((elm)->field.sqe_next = (head)->sqh_first) == NULL) \
        (head)->sqh_last = &(elm)->field.sqe_next; \
    (head)->sqh_first = (elm); \
} while (/*CONSTCOND*/0)

#define SIMPLEQ_INSERT_TAIL(head, elm, field) do { \
    (elm)->field.sqe_next = NULL; \
    *(head)->sqh_last = (elm); \
    (head)->sqh_last = &(elm)->field.sqe_next; \
} while (/*CONSTCOND*/0)

#define SIMPLEQ_INSERT_AFTER(head, listelm, elm, field) do { \
    if (((elm)->field.sqe_next = (listelm)->field.sqe_next) == NULL) \
        (head)->sqh_last = &(elm)->field.sqe_next; \
} while (/*CONSTCOND*/0)

```

```

(listelm)->field.sqe_next = (elm); \
} while (/*CONSTCOND*/0)

#define SIMPLEQ_REMOVE_HEAD(head, field) do { \
if (((head)->sqh_first = (head)->sqh_first->field.sqe_next) == NULL) \
(head)->sqh_last = &(head)->sqh_first; \
} while (/*CONSTCOND*/0)

#define SIMPLEQ_REMOVE_AFTER(head, elm, field) do { \
if \
(((elm)->field.sqe_next = (elm)->field.sqe_next->field.sqe_next) \
== NULL) \
(head)->sqh_last = &(elm)->field.sqe_next; \
} while (/*CONSTCOND*/0)

#define SIMPLEQ_REMOVE(head, elm, type, field) do { \
if ((head)->sqh_first == (elm)) { \
SIMPLEQ_REMOVE_HEAD((head), field); \
} else { \
struct type *curelm = (head)->sqh_first; \
while (curelm->field.sqe_next != (elm)) \
curelm = curelm->field.sqe_next; \
if ((curelm->field.sqe_next = \
curelm->field.sqe_next->field.sqe_next) == NULL) \
(head)->sqh_last = &(curelm)->field.sqe_next; \
} \
} while (/*CONSTCOND*/0)

#define SIMPLEQ_CONCAT(head1, head2) do { \
if (!SIMPLEQ_EMPTY((head2))) { \
*(head1)->sqh_last = (head2)->sqh_first; \
(head1)->sqh_last = (head2)->sqh_last; \
SIMPLEQ_INIT((head2)); \
} \
} while (/*CONSTCOND*/0)

#define SIMPLEQ_LAST(head, type, field) \
(SIMPLEQ_EMPTY((head)) ? \
NULL : \
((struct type \
*)(void *) \
((char *)((head)->sqh_last) - offsetof(struct type, field))))

/*
 * Tail queue definitions.
 */

#define _TAILQ_HEAD(name, type, qual) \
struct name { \

```



```

qual type *tqh_first; /* first element */ \
qual type *qual *tqh_last; /* addr of last next element */ \
}
#define TAILQ_HEAD(name, type) _TAILQ_HEAD(name, struct type,)

#define TAILQ_HEAD_INITIALIZER(head) \
{ TAILQ_END(head), &(head).tqh_first }

#define _TAILQ_ENTRY(type, qual) \
struct { \
    qual type *tqe_next; /* next element */ \
    qual type *qual *tqe_prev; /* address of previous next element */ \
}
#define TAILQ_ENTRY(type) _TAILQ_ENTRY(struct type,)

/*
 * Tail queue access methods.
 */
#define TAILQ_FIRST(head) ((head)->tqh_first)
#define TAILQ_END(head) (NULL)
#define TAILQ_NEXT(elm, field) ((elm)->field.tqe_next)
#define TAILQ_LAST(head, headname) \
    (((struct headname *) (void *) ((head)->tqh_last))->tqh_last)
#define TAILQ_PREV(elm, headname, field) \
    (((struct headname *) (void *) ((elm)->field.tqe_prev))->tqh_last)
#define TAILQ_EMPTY(head) (TAILQ_FIRST(head) == TAILQ_END(head))

#define TAILQ_FOREACH(var, head, field) \
for ((var) = ((head)->tqh_first); \
    (var) != TAILQ_END(head); \
    (var) = ((var)->field.tqe_next))

#define TAILQ_FOREACH_SAFE(var, head, field, next) \
for ((var) = ((head)->tqh_first); \
    (var) != TAILQ_END(head) && \
    ((next) = TAILQ_NEXT(var, field), 1); (var) = (next))

#define TAILQ_FOREACH_REVERSE(var, head, headname, field) \
for ((var) = TAILQ_LAST((head), headname); \
    (var) != TAILQ_END(head); \
    (var) = TAILQ_PREV((var), headname, field))

#define TAILQ_FOREACH_REVERSE_SAFE(var, head, headname, field, prev) \
for ((var) = TAILQ_LAST((head), headname); \
    (var) != TAILQ_END(head) && \
    ((prev) = TAILQ_PREV((var), headname, field), 1); (var) = (prev))

```

```

/*
 * Tail queue functions.
 */

#if defined(QEUEDEDEBUG)
#define QEUEDEDEBUG_TAILQ_INSERT_HEAD(head,
elm, field) \
if ((head)->tqh_first && \
    (head)->tqh_first->field.tqe_prev != &(head)->tqh_first) \
    QEUEDEDEBUG_ABORT("TAILQ_INSERT_HEAD %p %s:%d", (head), \
        __FILE__, __LINE__);
#define QEUEDEDEBUG_TAILQ_INSERT_TAIL(head, elm, field) \
if (*(head)->tqh_last != NULL) \
    QEUEDEDEBUG_ABORT("TAILQ_INSERT_TAIL %p %s:%d", (head), \
        __FILE__, __LINE__);
#define QEUEDEDEBUG_TAILQ_OP(elm, field) \
if ((elm)->field.tqe_next && \
    (elm)->field.tqe_next->field.tqe_prev != \
    &(elm)->field.tqe_next) \
    QEUEDEDEBUG_ABORT("TAILQ_* forw %p %s:%d", (elm), \
        __FILE__, __LINE__); \
if (*(elm)->field.tqe_prev != (elm)) \
    QEUEDEDEBUG_ABORT("TAILQ_* back %p %s:%d", (elm), \
        __FILE__, __LINE__);
#define QEUEDEDEBUG_TAILQ_PREREMOVE(head, elm, field) \
if ((elm)->field.tqe_next == NULL && \
    (head)->tqh_last != &(elm)->field.tqe_next) \
    QEUEDEDEBUG_ABORT("TAILQ_PREREMOVE head %p elm %p %s:%d", \
        (head), (elm), __FILE__, \
        __LINE__);
#define QEUEDEDEBUG_TAILQ_POSTREMOVE(elm, field) \
(elm)->field.tqe_next = (void *)1L; \
(elm)->field.tqe_prev = (void *)1L;
#else
#define QEUEDEDEBUG_TAILQ_INSERT_HEAD(head, elm, field)
#define QEUEDEDEBUG_TAILQ_INSERT_TAIL(head, elm, field)
#define QEUEDEDEBUG_TAILQ_OP(elm, field)
#define QEUEDEDEBUG_TAILQ_PREREMOVE(head, elm, field)
#define QEUEDEDEBUG_TAILQ_POSTREMOVE(elm, field)
#endif

#define TAILQ_INIT(head) do { \
    (head)->tqh_first = TAILQ_END(head); \
    (head)->tqh_last = &(head)->tqh_first; \
} while (/*CONSTCOND*/0)

#define TAILQ_INSERT_HEAD(head, elm, field) do { \
    QEUEDEDEBUG_TAILQ_INSERT_HEAD((head), (elm), field) \

```

```

if (((elm)->field.tqe_next = (head)->tqh_first) != TAILQ_END(head))\
    (head)->tqh_first->field.tqe_prev = \
        &(elm)->field.tqe_next; \
else \
    (head)->tqh_last = &(elm)->field.tqe_next; \
    (head)->tqh_first = (elm); \
    (elm)->field.tqe_prev = &(head)->tqh_first; \
} while (/*CONSTCOND*/0)

```

```

#define TAILQ_INSERT_TAIL(head,
elm, field) do { \
    QUEUEDEBDEBUG_TAILQ_INSERT_TAIL((head), (elm), field) \
    (elm)->field.tqe_next = TAILQ_END(head); \
    (elm)->field.tqe_prev = (head)->tqh_last; \
    *(head)->tqh_last = (elm); \
    (head)->tqh_last = &(elm)->field.tqe_next; \
} while (/*CONSTCOND*/0)

```

```

#define TAILQ_INSERT_AFTER(head, listelm, elm, field) do { \
    QUEUEDEBDEBUG_TAILQ_OP((listelm), field) \
    if (((elm)->field.tqe_next = (listelm)->field.tqe_next) != \
        TAILQ_END(head)) \
        (elm)->field.tqe_next->field.tqe_prev = \
            &(elm)->field.tqe_next; \
    else \
        (head)->tqh_last = &(elm)->field.tqe_next; \
        (listelm)->field.tqe_next = (elm); \
        (elm)->field.tqe_prev = &(listelm)->field.tqe_next; \
} while (/*CONSTCOND*/0)

```

```

#define TAILQ_INSERT_BEFORE(listelm, elm, field) do { \
    QUEUEDEBDEBUG_TAILQ_OP((listelm), field) \
    (elm)->field.tqe_prev = (listelm)->field.tqe_prev; \
    (elm)->field.tqe_next = (listelm); \
    *(listelm)->field.tqe_prev = (elm); \
    (listelm)->field.tqe_prev \
        = &(elm)->field.tqe_next; \
} while (/*CONSTCOND*/0)

```

```

#define TAILQ_REMOVE(head, elm, field) do { \
    QUEUEDEBDEBUG_TAILQ_PREREMOVE((head), (elm), field) \
    QUEUEDEBDEBUG_TAILQ_OP((elm), field) \
    if (((elm)->field.tqe_next) != TAILQ_END(head)) \
        (elm)->field.tqe_next->field.tqe_prev = \
            (elm)->field.tqe_prev; \
    else \
        (head)->tqh_last = (elm)->field.tqe_prev; \
    *(elm)->field.tqe_prev = (elm)->field.tqe_next; \
} while (/*CONSTCOND*/0)

```

```

QUEUEDEBUG_TAILQ_POSTREMOVE((elm), field); \
} while (/*CONSTCOND*/0)

```

```

#define TAILQ_REPLACE(head, elm, elm2, field) do { \
    if (((elm2)->field.tqe_next = (elm)->field.tqe_next) != \
        TAILQ_END(head)) \
        (elm2)->field.tqe_next->field.tqe_prev = \
            &(elm2)->field.tqe_next; \
    else \
        (head)->tqh_last = &(elm2)->field.tqe_next; \
        (elm2)->field.tqe_prev = (elm)->field.tqe_prev; \
        *(elm2)->field.tqe_prev = (elm2); \
    QUEUEDEBUG_TAILQ_POSTREMOVE((elm), \
        field); \
} while (/*CONSTCOND*/0)

```

```

#define TAILQ_CONCAT(head1, head2, field) do { \
    if (!TAILQ_EMPTY(head2)) { \
        *(head1)->tqh_last = (head2)->tqh_first; \
        (head2)->tqh_first->field.tqe_prev = (head1)->tqh_last; \
        (head1)->tqh_last = (head2)->tqh_last; \
        TAILQ_INIT((head2)); \
    } \
} while (/*CONSTCOND*/0)

```

/*

* Singly-linked Tail queue declarations.

*/

```

#define STAILQ_HEAD(name, type) \
struct name { \
    struct type *stqh_first; /* first element */ \
    struct type **stqh_last; /* addr of last next element */ \
}

```

```

#define STAILQ_HEAD_INITIALIZER(head) \
{ NULL, &(head).stqh_first }

```

```

#define STAILQ_ENTRY(type) \
struct { \
    struct type *stqe_next; /* next element */ \
}

```

/*

* Singly-linked Tail queue access methods.

*/

```

#define STAILQ_FIRST(head) ((head)->stqh_first)
#define STAILQ_END(head) NULL
#define STAILQ_NEXT(elm, field) ((elm)->field.stqe_next)

```

```

#define STAILQ_EMPTY(head) (STAILQ_FIRST(head)
== STAILQ_END(head))

/*
 * Singly-linked Tail queue functions.
 */
#define STAILQ_INIT(head) do { \
    (head)->stqh_first = NULL; \
    (head)->stqh_last = &(head)->stqh_first; \
} while (/*CONSTCOND*/0)

#define STAILQ_INSERT_HEAD(head, elm, field) do { \
    if (((elm)->field.stqe_next = (head)->stqh_first) == NULL) \
        (head)->stqh_last = &(elm)->field.stqe_next; \
    (head)->stqh_first = (elm); \
} while (/*CONSTCOND*/0)

#define STAILQ_INSERT_TAIL(head, elm, field) do { \
    (elm)->field.stqe_next = NULL; \
    *(head)->stqh_last = (elm); \
    (head)->stqh_last = &(elm)->field.stqe_next; \
} while (/*CONSTCOND*/0)

#define STAILQ_INSERT_AFTER(head, listelm, elm, field) do { \
    if (((elm)->field.stqe_next = (listelm)->field.stqe_next) == NULL) \
        (head)->stqh_last = &(elm)->field.stqe_next; \
    (listelm)->field.stqe_next = (elm); \
} while (/*CONSTCOND*/0)

#define STAILQ_REMOVE_HEAD(head, field) do { \
    if (((head)->stqh_first = (head)->stqh_first->field.stqe_next) \
        == NULL) \
        (head)->stqh_last = &(head)->stqh_first; \
} while (/*CONSTCOND*/0)

#define STAILQ_REMOVE(head, elm, type, field) do { \
    if ((head)->stqh_first == (elm)) { \
        STAILQ_REMOVE_HEAD((head), field); \
    } else { \
        struct type *curelm = (head)->stqh_first; \
        while (curelm->field.stqe_next != (elm)) \
            curelm = curelm->field.stqe_next; \
        if ((curelm->field.stqe_next = \
            curelm->field.stqe_next->field.stqe_next) == NULL) \
            (head)->stqh_last = &(curelm)->field.stqe_next; \
    } \
} while (/*CONSTCOND*/0)

```

```

#define STAILQ_FOREACH(var, head, field) \
for ((var) = ((head)->stqh_first); \
     (var); \
     (var) = ((var)->field.stqe_next))

#define STAILQ_FOREACH_SAFE(var, head, field, tvar) \
for ((var) = STAILQ_FIRST((head)); \
     (var) && ((tvar) = STAILQ_NEXT((var), field), 1); \
     (var) = (tvar))

#define STAILQ_CONCAT(head1, head2) do { \
if (!STAILQ_EMPTY((head2))) { \
    *(head1)->stqh_last \
    = (head2)->stqh_first; \
    (head1)->stqh_last = (head2)->stqh_last; \
    STAILQ_INIT((head2)); \
} \
} while (/*CONSTCOND*/0)

#define STAILQ_LAST(head, type, field) \
(STAILQ_EMPTY((head)) ? \
    NULL : \
    ((struct type *) (void *) \
    ((char *)((head)->stqh_last) - offsetof(struct type, field))))

#ifdef _KERNEL
/*
 * Circular queue definitions. Do not use. We still keep the macros
 * for compatibility but because of pointer aliasing issues their use
 * is discouraged!
 */

/*
 * __launder_type(): We use this ugly hack to work around the the compiler
 * noticing that two types may not alias each other and elide tests in code.
 * We hit this in the CIRCLEQ macros when comparing 'struct name *' and
 * 'struct type *' (see CIRCLEQ_HEAD()). Modern compilers (such as GCC
 * 4.8) declare these comparisons as always false, causing the code to
 * not run as designed.
 *
 * This hack is only to be used for comparisons and thus can be fully const.
 * Do not use for assignment.
 *
 * If we ever choose to change the ABI of the CIRCLEQ macros, we could fix
 * this by changing the head/tail sentinel values, but see the note above
 * this one.
 */

```

```

static __inline const void * __launder_type(const void *);
static __inline const void *
__launder_type(const void *__x)
{
    __asm __volatile("" : "+r" (__x));
    return __x;
}

#if defined(QEUEDEDEBUG)
#define QEUEDEDEBUG_CIRCLEQ_HEAD(head, field) \
    if ((head)->cqh_first != CIRCLEQ_ENDC(head) && \
        (head)->cqh_first->field.cqe_prev != CIRCLEQ_ENDC(head)) \
        QEUEDEDEBUG_ABORT("CIRCLEQ head forw %p %s:%d", (head), \
            __FILE__, __LINE__); \
    if ((head)->cqh_last != CIRCLEQ_ENDC(head) && \
        (head)->cqh_last->field.cqe_next != CIRCLEQ_ENDC(head)) \
        QEUEDEDEBUG_ABORT("CIRCLEQ head back %p %s:%d", (head), \
            __FILE__, __LINE__);
#define QEUEDEDEBUG_CIRCLEQ_ELM(head, elm, field) \
    if ((elm)->field.cqe_next == CIRCLEQ_ENDC(head)) { \
        if ((head)->cqh_last != (elm)) \
            QEUEDEDEBUG_ABORT("CIRCLEQ \
elm last %p %s:%d", \
                (elm), __FILE__, __LINE__); \
    } else { \
        if ((elm)->field.cqe_next->field.cqe_prev != (elm)) \
            QEUEDEDEBUG_ABORT("CIRCLEQ elm forw %p %s:%d", \
                (elm), __FILE__, __LINE__); \
    } \
    if ((elm)->field.cqe_prev == CIRCLEQ_ENDC(head)) { \
        if ((head)->cqh_first != (elm)) \
            QEUEDEDEBUG_ABORT("CIRCLEQ elm first %p %s:%d", \
                (elm), __FILE__, __LINE__); \
    } else { \
        if ((elm)->field.cqe_prev->field.cqe_next != (elm)) \
            QEUEDEDEBUG_ABORT("CIRCLEQ elm prev %p %s:%d", \
                (elm), __FILE__, __LINE__); \
    }
#define QEUEDEDEBUG_CIRCLEQ_POSTREMOVE(elm, field) \
    (elm)->field.cqe_next = (void *)1L; \
    (elm)->field.cqe_prev = (void *)1L;
#else
#define QEUEDEDEBUG_CIRCLEQ_HEAD(head, field)
#define QEUEDEDEBUG_CIRCLEQ_ELM(head, elm, field)
#define QEUEDEDEBUG_CIRCLEQ_POSTREMOVE(elm, field)
#endif

#define CIRCLEQ_HEAD(name, type) \

```

```

struct name {
    struct type *cqh_first; /*
    first element */
    struct type *cqh_last; /* last element */
}

#define CIRCLEQ_HEAD_INITIALIZER(head)
{ CIRCLEQ_END(&head), CIRCLEQ_END(&head) }

#define CIRCLEQ_ENTRY(type)
struct {
    struct type *cqe_next; /* next element */
    struct type *cqe_prev; /* previous element */
}

/*
 * Circular queue functions.
 */
#define CIRCLEQ_INIT(head) do {
    (head)->cqh_first = CIRCLEQ_END(head);
    (head)->cqh_last = CIRCLEQ_END(head);
} while (/*CONSTCOND*/0)

#define CIRCLEQ_INSERT_AFTER(head, listelm, elm, field) do {
    QUEUEDEBUG_CIRCLEQ_HEAD((head), field)
    QUEUEDEBUG_CIRCLEQ_ELM((head), (listelm), field)
    (elm)->field.cqe_next = (listelm)->field.cqe_next;
    (elm)->field.cqe_prev = (listelm);
    if ((listelm)->field.cqe_next == CIRCLEQ_ENDC(head))
        (head)->cqh_last = (elm);
    else
        (listelm)->field.cqe_next->field.cqe_prev = (elm);
    (listelm)->field.cqe_next = (elm);
} while (/*CONSTCOND*/0)

#define CIRCLEQ_INSERT_BEFORE(head,
listelm, elm, field) do {
    QUEUEDEBUG_CIRCLEQ_HEAD((head), field)
    QUEUEDEBUG_CIRCLEQ_ELM((head), (listelm), field)
    (elm)->field.cqe_next = (listelm);
    (elm)->field.cqe_prev = (listelm)->field.cqe_prev;
    if ((listelm)->field.cqe_prev == CIRCLEQ_ENDC(head))
        (head)->cqh_first = (elm);
    else
        (listelm)->field.cqe_prev->field.cqe_next = (elm);
    (listelm)->field.cqe_prev = (elm);
} while (/*CONSTCOND*/0)

```



```

#define CIRCLEQ_INSERT_HEAD(head, elm, field) do { \
    QUEUEDEBUG_CIRCLEQ_HEAD((head), field) \
    (elm)->field.cqe_next = (head)->cqh_first; \
    (elm)->field.cqe_prev = CIRCLEQ_END(head); \
    if ((head)->cqh_last == CIRCLEQ_ENDC(head)) \
        (head)->cqh_last = (elm); \
    else \
        (head)->cqh_first->field.cqe_prev = (elm); \
    (head)->cqh_first = (elm); \
} while (/*CONSTCOND*/0)

```

```

#define CIRCLEQ_INSERT_TAIL(head, elm, field) do { \
    QUEUEDEBUG_CIRCLEQ_HEAD((head), field) \
    (elm)->field.cqe_next \
    = CIRCLEQ_END(head); \
    (elm)->field.cqe_prev = (head)->cqh_last; \
    if ((head)->cqh_first == CIRCLEQ_ENDC(head)) \
        (head)->cqh_first = (elm); \
    else \
        (head)->cqh_last->field.cqe_next = (elm); \
    (head)->cqh_last = (elm); \
} while (/*CONSTCOND*/0)

```

```

#define CIRCLEQ_REMOVE(head, elm, field) do { \
    QUEUEDEBUG_CIRCLEQ_HEAD((head), field) \
    QUEUEDEBUG_CIRCLEQ_ELM((head), (elm), field) \
    if ((elm)->field.cqe_next == CIRCLEQ_ENDC(head)) \
        (head)->cqh_last = (elm)->field.cqe_prev; \
    else \
        (elm)->field.cqe_next->field.cqe_prev = \
            (elm)->field.cqe_prev; \
    if ((elm)->field.cqe_prev == CIRCLEQ_ENDC(head)) \
        (head)->cqh_first = (elm)->field.cqe_next; \
    else \
        (elm)->field.cqe_prev->field.cqe_next = \
            (elm)->field.cqe_next; \
    QUEUEDEBUG_CIRCLEQ_POSTREMOVE((elm), field) \
} while (/*CONSTCOND*/0)

```

```

#define CIRCLEQ_FOREACH(var, head, field) \
    for ((var) = ((head)->cqh_first); \
        (var) != CIRCLEQ_ENDC(head); \
        (var) \
        = ((var)->field.cqe_next))

```

```

#define CIRCLEQ_FOREACH_REVERSE(var, head, field) \
    for ((var) = ((head)->cqh_last); \
        (var) != CIRCLEQ_ENDC(head); \

```

```

(var) = ((var)->field.cqe_prev))

/*
 * Circular queue access methods.
 */
#define CIRCLEQ_FIRST(head) ((head)->cqh_first)
#define CIRCLEQ_LAST(head) ((head)->cqh_last)
/* For comparisons */
#define CIRCLEQ_ENDC(head) (__launter_type(head))
/* For assignments */
#define CIRCLEQ_END(head) ((void *)(head))
#define CIRCLEQ_NEXT(elm, field) ((elm)->field.cqe_next)
#define CIRCLEQ_PREV(elm, field) ((elm)->field.cqe_prev)
#define CIRCLEQ_EMPTY(head) \
    (CIRCLEQ_FIRST(head) == CIRCLEQ_ENDC(head))

#define CIRCLEQ_LOOP_NEXT(head, elm, field) \
    (((elm)->field.cqe_next == CIRCLEQ_ENDC(head)) \
     ? ((head)->cqh_first) \
     : (elm->field.cqe_next))
#define CIRCLEQ_LOOP_PREV(head, elm, field) \
    (((elm)->field.cqe_prev == CIRCLEQ_ENDC(head)) \
     ? ((head)->cqh_last) \
     : \
     (elm->field.cqe_prev))
#endif /* !_KERNEL */

#endif /* !_SYS_QUEUE_H_ */
#ifndef _SYS_CDEFS_H_
#define _SYS_CDEFS_H_

#warning usage of non-standard #include <sys/cdefs.h> is deprecated

#undef __P
#undef __PMT

#define __P(args) args
#define __PMT(args) args

#define __CONCAT(x,y) x ## y
#define __STRING(x) #x

#ifdef __cplusplus
# define __BEGIN_DECLS extern "C" {
# define __END_DECLS }
#else
# define __BEGIN_DECLS
# define __END_DECLS

```

```

#endif

#if defined(__GNUC__) && !defined(__cplusplus)
# define __THROW __attribute__ ((__nothrow__))
# define __NTH(fct) __attribute__ ((__nothrow__)) fct
#else
# define __THROW
# define __NTH(fct) fct
#endif

#endif /* _SYS_CDEFS_H_ */

# Contributor: Fabian Affolter <fabian@affolter-engineering.ch>
# Maintainer: Fabian Affolter <fabian@affolter-engineering.ch>
pkgname=py3-flake8-copyright
_pkgname=flake8-copyright
pkgver=0.2.4
pkgrel=3
pkgdesc="Extension for flake8 which checks for copyrights"
options="!check" # No testsuite
url="https://github.com/savoirfairelinux/flake8-copyright"
arch="noarch"
license="MIT"
depends="py3-flake8 py3-setuptools"
makedepends="py3-gpep517 py3-wheel"
subpackages="$pkgname-pyc"
source="https://files.pythonhosted.org/packages/source/${_pkgname:0:1}/${_pkgname}/${_pkgname}-${pkgver}.tar.gz"
builddir="$srcdir"/$_pkgname-$pkgver

replaces="py-flake8-copyright" # Backwards compatibility
provides="py-flake8-copyright=$pkgver-r$pkgrel" # Backwards compatibility

build() {
    gpep517 build-wheel \
        --wheel-dir .dist \
        --output-fd 3 3>&1 >&2
}

package() {
    gpep517 install-wheel --destdir "$pkgdir" \
        .dist/*.whl
}

sha512sums="
a6ab47e1bb715618f075c51f398e18180404871b3b0faf1c2d30701d5203db6bc23771bf22ffb5bafcd8ee856b9b64237
b316bd503ae7dceed6ca284ccd5a74d
flake8-copyright-0.2.4.tar.gz
"

```

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/* \$NetBSD: tree.h,v 1.20 2013/09/14 13:20:45 joerg Exp \$ */

/* \$OpenBSD: tree.h,v 1.13 2011/07/09 00:19:45 pirofti Exp \$ */

/* Modified by Void Linux. */

/*

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*

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```

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*/

#ifndef _SYS_TREE_H_
#define _SYS_TREE_H_

#ifdef __GNUC__
#define __GNUC_PREREQ__(x, y) \
    ((__GNUC__ == (x) && __GNUC_MINOR__ >= (y)) || \
     (__GNUC__ > (x)))
#else
#define __GNUC_PREREQ__(x, y) 0
#endif

#if __GNUC_PREREQ__(2, 7) || defined(__lint__)
#define _sys_tree_h_unused __attribute__((__unused__))
#else
#define _sys_tree_h_unused /* delete */
#endif

/*
* This file defines data structures for different types of trees:
* splay trees and red-black trees.
*
* A splay tree is a self-organizing
data structure. Every operation
* on the tree causes a splay to happen. The splay moves the requested
* node to the root of the tree and partly rebalances it.
*
* This has the benefit that request locality causes faster lookups as
* the requested nodes move to the top of the tree. On the other hand,
* every lookup causes memory writes.
*
* The Balance Theorem bounds the total access time for m operations
* and n inserts on an initially empty tree as  $O((m + n) \lg n)$ . The
* amortized cost for a sequence of m accesses to a splay tree is  $O(\lg n)$ ;
*
* A red-black tree is a binary search tree with the node color as an
* extra attribute. It fulfills a set of conditions:
* - every search path from the root to a leaf consists of the
*   same number of black nodes,
* - each red node (except for the root) has a black parent,
* - each leaf node is black.
*
* Every operation on a red-black tree is bounded as  $O(\lg n)$ .
* The maximum height of a red-black tree is  $2 \lg (n+1)$ .

```

```

*/

#define SPLAY_HEAD(name, type) \
struct name { \
    struct type *sph_root; /* root of the tree */ \
}

#define SPLAY_INITIALIZER(root) \
{ NULL }

#define SPLAY_INIT(root) do { \
    (root)->sph_root = NULL; \
} while (/*CONSTCOND*/ 0)

#define SPLAY_ENTRY(type) \
struct { \
    struct type *spe_left; /* left element */ \
    struct type *spe_right; /* right element */ \
}

#define SPLAY_LEFT(elm, field) (elm)->field.spe_left
#define SPLAY_RIGHT(elm, field) (elm)->field.spe_right
#define SPLAY_ROOT(head) (head)->sph_root
#define SPLAY_EMPTY(head) (SPLAY_ROOT(head) == NULL)

/* SPLAY_ROTATE_{LEFT,RIGHT} expect that tmp hold SPLAY_{RIGHT,LEFT} */
#define SPLAY_ROTATE_RIGHT(head, tmp, field) do { \
    SPLAY_LEFT((head)->sph_root, field) = SPLAY_RIGHT(tmp, field); \
    SPLAY_RIGHT(tmp, field) = (head)->sph_root; \
    (head)->sph_root = tmp; \
} while (/*CONSTCOND*/ 0)

#define SPLAY_ROTATE_LEFT(head, tmp, field) do { \
    SPLAY_RIGHT((head)->sph_root, \
    field) = SPLAY_LEFT(tmp, field); \
    SPLAY_LEFT(tmp, field) = (head)->sph_root; \
    (head)->sph_root = tmp; \
} while (/*CONSTCOND*/ 0)

#define SPLAY_LINKLEFT(head, tmp, field) do { \
    SPLAY_LEFT(tmp, field) = (head)->sph_root; \
    tmp = (head)->sph_root; \
    (head)->sph_root = SPLAY_LEFT((head)->sph_root, field); \
} while (/*CONSTCOND*/ 0)

#define SPLAY_LINKRIGHT(head, tmp, field) do { \
    SPLAY_RIGHT(tmp, field) = (head)->sph_root; \
    tmp = (head)->sph_root; \

```

```

(head)->sph_root = SPLAY_RIGHT((head)->sph_root, field); \
} while (/*CONSTCOND*/ 0)

#define SPLAY_ASSEMBLE(head, node, left, right, field) do { \
    SPLAY_RIGHT(left, field) = SPLAY_LEFT((head)->sph_root, field); \
    SPLAY_LEFT(right, field) = SPLAY_RIGHT((head)->sph_root, field); \
    SPLAY_LEFT((head)->sph_root, field) = SPLAY_RIGHT(node, field); \
    SPLAY_RIGHT((head)->sph_root, field) = SPLAY_LEFT(node, field); \
} while (/*CONSTCOND*/ 0)

/* Generates prototypes and inline functions */

#define
    SPLAY_PROTOTYPE(name, type, field, cmp) \
void name##_SPLAY(struct name *, struct type *); \
void name##_SPLAY_MINMAX(struct name *, int); \
struct type *name##_SPLAY_INSERT(struct name *, struct type *); \
struct type *name##_SPLAY_REMOVE(struct name *, struct type *); \
    \
/* Finds the node with the same key as elm */ \
static __inline struct type * \
name##_SPLAY_FIND(struct name *head, struct type *elm) \
{ \
    \
    if (SPLAY_EMPTY(head)) \
        return(NULL); \
    name##_SPLAY(head, elm); \
    if ((cmp)(elm, (head)->sph_root) == 0) \
        return (head->sph_root); \
    return (NULL); \
} \
    \
static __inline _sys_tree_h_unused struct type * \
name##_SPLAY_NEXT(struct name *head, struct type *elm) \
{ \
    \
    name##_SPLAY(head, elm); \
    if (SPLAY_RIGHT(elm, field) != NULL) { \
        elm = SPLAY_RIGHT(elm, field); \
        while (SPLAY_LEFT(elm, field) != NULL) { \
            elm = SPLAY_LEFT(elm, field); \
        } \
    } \
    else \
        elm = NULL; \
    return (elm); \
} \
    \
static _sys_tree_h_unused __inline struct type * \
name##_SPLAY_MIN_MAX(struct name *head, int val) \

```

```

{
    \
    name##_SPLAY_MINMAX(head, val); \
    return (SPLAY_ROOT(head)); \
}

/* Main splay operation.
 * Moves node close to the key of elm to top
 */
#define SPLAY_GENERATE(name, type, field, cmp) \
struct type * \
name##_SPLAY_INSERT(struct name *head, struct type *elm) \
{
    \
    if (SPLAY_EMPTY(head)) { \
        SPLAY_LEFT(elm, field) = SPLAY_RIGHT(elm, field) = NULL; \
    } else { \
        int __comp; \
        name##_SPLAY(head, elm); \
        __comp = (cmp)(elm, (head)->sph_root); \
        if(__comp < 0) { \
            SPLAY_LEFT(elm, field) = SPLAY_LEFT((head)->sph_root, field);\
            SPLAY_RIGHT(elm, field) = (head)->sph_root; \
            SPLAY_LEFT((head)->sph_root, field) = NULL; \
        } else if (__comp > 0) { \
            SPLAY_RIGHT(elm, \
field) = SPLAY_RIGHT((head)->sph_root, field);\
            SPLAY_LEFT(elm, field) = (head)->sph_root; \
            SPLAY_RIGHT((head)->sph_root, field) = NULL; \
        } else \
            return ((head)->sph_root); \
    } \
    (head)->sph_root = (elm); \
    return (NULL); \
} \
\
struct type * \
name##_SPLAY_REMOVE(struct name *head, struct type *elm) \
{
    \
    struct type *__tmp; \
    if (SPLAY_EMPTY(head)) \
        return (NULL); \
    name##_SPLAY(head, elm); \
    if ((cmp)(elm, (head)->sph_root) == 0) { \
        if (SPLAY_LEFT((head)->sph_root, field) == NULL) { \
            (head)->sph_root = SPLAY_RIGHT((head)->sph_root, field);\
        } else { \
            __tmp = SPLAY_RIGHT((head)->sph_root, field); \
            (head)->sph_root = SPLAY_LEFT((head)->sph_root, field);\
            name##_SPLAY(head, elm); \
        }

```



```

    SPLAY_RIGHT((head)->sph_root, field) = __tmp; \
} \
return (elm); \
} \
return (NULL); \
} \
\
void \
name##_SPLAY(struct
name *head, struct type *elm) \
{ \
    struct type __node, *__left, *__right, *__tmp; \
    int __comp; \
\
    SPLAY_LEFT(&__node, field) = SPLAY_RIGHT(&__node, field) = NULL;\
    __left = __right = &__node; \
\
    while ((__comp = (cmp)(elm, (head)->sph_root)) != 0) { \
        if (__comp < 0) { \
            __tmp = SPLAY_LEFT((head)->sph_root, field); \
            if (__tmp == NULL) \
                break; \
            if ((cmp)(elm, __tmp) < 0){ \
                SPLAY_ROTATE_RIGHT(head, __tmp, field); \
                if (SPLAY_LEFT((head)->sph_root, field) == NULL)\
                    break; \
            } \
            SPLAY_LINKLEFT(head, __right, field); \
        } else if (__comp > 0) { \
            __tmp = SPLAY_RIGHT((head)->sph_root, field); \
            if (__tmp == NULL) \
                break; \
            if ((cmp)(elm, __tmp) > 0){ \
                SPLAY_ROTATE_LEFT(head, __tmp, field); \
                if (SPLAY_RIGHT((head)->sph_root, field) == NULL)\
                    break; \
            } \
            SPLAY_LINKRIGHT(head, __left, field); \
        } \
    } \
    SPLAY_ASSEMBLE(head,
    &__node, __left, __right, field); \
} \
\
/* Splay with either the minimum or the maximum element \
* Used to find minimum or maximum element in tree. \
*/ \
void name##_SPLAY_MINMAX(struct name *head, int __comp) \

```

```

{
    \
    struct type __node, *__left, *__right, *__tmp; \
    \
    SPLAY_LEFT(&__node, field) = SPLAY_RIGHT(&__node, field) = NULL;\
    __left = __right = &__node; \
    \
    while (1) {
        \
        if (__comp < 0) {
            \
            __tmp = SPLAY_LEFT((head)->sph_root, field);\
            if (__tmp == NULL)
                \
                break; \
            if (__comp < 0){
                \
                SPLAY_ROTATE_RIGHT(head, __tmp, field);\
                if (SPLAY_LEFT((head)->sph_root, field) == NULL)\
                    break; \
            }
            \
            SPLAY_LINKLEFT(head, __right, field); \
        } else if (__comp > 0) {
            \
            __tmp = SPLAY_RIGHT((head)->sph_root, field);\
            if (__tmp == NULL)
                \
                break; \
            if (__comp > 0) {
                \
                SPLAY_ROTATE_LEFT(head, __tmp, field);\
                if (SPLAY_RIGHT((head)->sph_root,
field) == NULL)\
                    break; \
            }
            \
            SPLAY_LINKRIGHT(head, __left, field); \
        }
    }
    \
    SPLAY_ASSEMBLE(head, &__node, __left, __right, field); \
}

```

```

#define SPLAY_NEGINF -1

```

```

#define SPLAY_INF 1

```

```

#define SPLAY_INSERT(name, x, y) name##_SPLAY_INSERT(x, y)

```

```

#define SPLAY_REMOVE(name, x, y) name##_SPLAY_REMOVE(x, y)

```

```

#define SPLAY_FIND(name, x, y) name##_SPLAY_FIND(x, y)

```

```

#define SPLAY_NEXT(name, x, y) name##_SPLAY_NEXT(x, y)

```

```

#define SPLAY_MIN(name, x) (SPLAY_EMPTY(x) ? NULL \

```

```

    : name##_SPLAY_MIN_MAX(x, SPLAY_NEGINF))

```

```

#define SPLAY_MAX(name, x) (SPLAY_EMPTY(x) ? NULL \

```

```

    : name##_SPLAY_MIN_MAX(x, SPLAY_INF))

```

```

#define SPLAY_FOREACH(x, name, head) \

```

```

    for ((x) = SPLAY_MIN(name, head); \

```

```

        (x) != NULL; \

```

```

(x) = SPLAY_NEXT(name, head, x))

/* Macros that define a red-black tree */
#define RB_HEAD(name, type) \
struct name { \
    struct type *rbh_root; /* root of the tree */ \
}

#define RB_INITIALIZER(root) \
{ \
    NULL \
}

#define RB_INIT(root) do { \
    (root)->rbh_root = NULL; \
} while (/*CONSTCOND*/ 0)

#define RB_BLACK 0
#define RB_RED 1
#define RB_ENTRY(type) \
struct { \
    struct type *rbe_left; /* left element */ \
    struct type *rbe_right; /* right element */ \
    struct type *rbe_parent; /* parent element */ \
    int rbe_color; /* node color */ \
}

#define RB_LEFT(elm, field) (elm)->field.rbe_left
#define RB_RIGHT(elm, field) (elm)->field.rbe_right
#define RB_PARENT(elm, field) (elm)->field.rbe_parent
#define RB_COLOR(elm, field) (elm)->field.rbe_color
#define RB_ROOT(head) (head)->rbh_root
#define RB_EMPTY(head) (RB_ROOT(head) == NULL)

#define RB_SET(elm, parent, field) do { \
    RB_PARENT(elm, field) = parent; \
    RB_LEFT(elm, field) = RB_RIGHT(elm, field) = NULL; \
    RB_COLOR(elm, field) = RB_RED; \
} while (/*CONSTCOND*/ 0)

#define RB_SET_BLACKRED(black, red, field) do { \
    RB_COLOR(black, field) = RB_BLACK; \
    RB_COLOR(red, field) \
    = RB_RED; \
} while (/*CONSTCOND*/ 0)

#ifndef RB_AUGMENT
#define RB_AUGMENT(x) do {} while (/*CONSTCOND*/ 0)
#endif
#endif

```

```

#define RB_ROTATE_LEFT(head, elm, tmp, field) do { \
    (tmp) = RB_RIGHT(elm, field); \
    if ((RB_RIGHT(elm, field) = RB_LEFT(tmp, field)) != NULL) { \
        RB_PARENT(RB_LEFT(tmp, field), field) = (elm); \
    } \
    RB_AUGMENT(elm); \
    if ((RB_PARENT(tmp, field) = RB_PARENT(elm, field)) != NULL) { \
        if ((elm) == RB_LEFT(RB_PARENT(elm, field), field)) \
            RB_LEFT(RB_PARENT(elm, field), field) = (tmp); \
        else \
            RB_RIGHT(RB_PARENT(elm, field), field) = (tmp); \
    } else \
        (head)->rbh_root = (tmp); \
    RB_LEFT(tmp, field) = (elm); \
    RB_PARENT(elm, field) = (tmp); \
    RB_AUGMENT(tmp); \
    if ((RB_PARENT(tmp, field))) \
        RB_AUGMENT(RB_PARENT(tmp, field)); \
} while (/*CONSTCOND*/ 0)

#define RB_ROTATE_RIGHT(head, elm, tmp, field) do { \
    (tmp) = RB_LEFT(elm, field); \
    if ((RB_LEFT(elm, field) = RB_RIGHT(tmp, field)) \
        != NULL) { \
        RB_PARENT(RB_RIGHT(tmp, field), field) = (elm); \
    } \
    RB_AUGMENT(elm); \
    if ((RB_PARENT(tmp, field) = RB_PARENT(elm, field)) != NULL) { \
        if ((elm) == RB_LEFT(RB_PARENT(elm, field), field)) \
            RB_LEFT(RB_PARENT(elm, field), field) = (tmp); \
        else \
            RB_RIGHT(RB_PARENT(elm, field), field) = (tmp); \
    } else \
        (head)->rbh_root = (tmp); \
    RB_RIGHT(tmp, field) = (elm); \
    RB_PARENT(elm, field) = (tmp); \
    RB_AUGMENT(tmp); \
    if ((RB_PARENT(tmp, field))) \
        RB_AUGMENT(RB_PARENT(tmp, field)); \
} while (/*CONSTCOND*/ 0)

/* Generates prototypes and inline functions */
#define RB_PROTOTYPE(name, type, field, cmp) \
    RB_PROTOTYPE_INTERNAL(name, type, field, cmp,)
#define RB_PROTOTYPE_STATIC(name, type, field, cmp) \
    RB_PROTOTYPE_INTERNAL(name, type, field, cmp, _sys_tree_h_unused static)
#define RB_PROTOTYPE_INTERNAL(name, type, field, cmp, attr) \

```

```

attr void name##_RB_INSERT_COLOR(struct name *, struct
type *); \
attr void name##_RB_REMOVE_COLOR(struct name *, struct type *, struct type *);\
attr struct type *name##_RB_REMOVE(struct name *, struct type *); \
attr struct type *name##_RB_INSERT(struct name *, struct type *); \
attr struct type *name##_RB_FIND(struct name *, struct type *); \
attr struct type *name##_RB_NFIND(struct name *, struct type *); \
attr struct type *name##_RB_NEXT(struct type *); \
attr struct type *name##_RB_PREV(struct type *); \
attr struct type *name##_RB_MINMAX(struct name *, int); \
\

/* Main rb operation.
* Moves node close to the key of elm to top
*/
#define RB_GENERATE(name, type, field, cmp) \
RB_GENERATE_INTERNAL(name, type, field, cmp,)
#define RB_GENERATE_STATIC(name, type, field, cmp) \
RB_GENERATE_INTERNAL(name, type, field, cmp, _sys_tree_h_unused static)
#define RB_GENERATE_INTERNAL(name, type, field, cmp, attr) \
attr void \
name##_RB_INSERT_COLOR(struct name *head, struct type *elm) \
{ \
struct type \
*parent, *gparent, *tmp; \
while ((parent = RB_PARENT(elm, field)) != NULL && \
RB_COLOR(parent, field) == RB_RED) { \
gparent = RB_PARENT(parent, field); \
if (parent == RB_LEFT(gparent, field)) { \
tmp = RB_RIGHT(gparent, field); \
if (tmp && RB_COLOR(tmp, field) == RB_RED) { \
RB_COLOR(tmp, field) = RB_BLACK; \
RB_SET_BLACKRED(parent, gparent, field);\
elm = gparent; \
continue; \
} \
if (RB_RIGHT(parent, field) == elm) { \
RB_ROTATE_LEFT(head, parent, tmp, field);\
tmp = parent; \
parent = elm; \
elm = tmp; \
} \
RB_SET_BLACKRED(parent, gparent, field); \
RB_ROTATE_RIGHT(head, gparent, tmp, field); \
} else { \
tmp = RB_LEFT(gparent, field); \
if (tmp && RB_COLOR(tmp, field) == RB_RED) { \
RB_COLOR(tmp, field) = RB_BLACK; \

```

```

RB_SET_BLACKRED(parent, gparent, field);\
elm = gparent; \
continue; \
} \
if (RB_LEFT(parent, field) == elm)
{ \
    RB_ROTATE_RIGHT(head, parent, tmp, field);\
    tmp = parent; \
    parent = elm; \
    elm = tmp; \
} \
RB_SET_BLACKRED(parent, gparent, field); \
RB_ROTATE_LEFT(head, gparent, tmp, field);\
} \
} \
RB_COLOR(head->rbh_root, field) = RB_BLACK; \
} \
\
attr void \
name##_RB_REMOVE_COLOR(struct name *head, struct type *parent, struct type *elm) \
{ \
    struct type *tmp; \
    while ((elm == NULL || RB_COLOR(elm, field) == RB_BLACK) && \
        elm != RB_ROOT(head)) { \
        if (RB_LEFT(parent, field) == elm) { \
            tmp = RB_RIGHT(parent, field); \
            if (RB_COLOR(tmp, field) == RB_RED) { \
                RB_SET_BLACKRED(tmp, parent, field); \
                RB_ROTATE_LEFT(head, parent, tmp, field);\
                tmp = RB_RIGHT(parent, field); \
            } \
            if ((RB_LEFT(tmp, field) == NULL || \
                RB_COLOR(RB_LEFT(tmp, field), field) == RB_BLACK) && \
                (RB_RIGHT(tmp, field) == NULL || \
                RB_COLOR(RB_RIGHT(tmp, field), field) == RB_BLACK)) {\
                RB_COLOR(tmp, field) = RB_RED; \
                elm = parent; \
                parent = RB_PARENT(elm, field); \
            } else { \
                if (RB_RIGHT(tmp, field) == NULL || \
                    RB_COLOR(RB_RIGHT(tmp, field), field) == RB_BLACK) {\
                    struct type *oleft; \
                    if ((oleft = RB_LEFT(tmp, field)) \
                        != NULL) \
                        RB_COLOR(oleft, field) = RB_BLACK;\
                    RB_COLOR(tmp, field) = RB_RED; \
                    RB_ROTATE_RIGHT(head, tmp, oleft, field);\

```

```

    tmp = RB_RIGHT(parent, field); \
} \
RB_COLOR(tmp, field) = RB_COLOR(parent, field);\
RB_COLOR(parent, field) = RB_BLACK; \
if (RB_RIGHT(tmp, field)) \
    RB_COLOR(RB_RIGHT(tmp, field), field) = RB_BLACK;\
RB_ROTATE_LEFT(head, parent, tmp, field);\
elm = RB_ROOT(head); \
break; \
} \
} else { \
    tmp = RB_LEFT(parent, field); \
    if (RB_COLOR(tmp, field) == RB_RED) { \
        RB_SET_BLACKRED(tmp, parent, field); \
        RB_ROTATE_RIGHT(head, parent, tmp, field);\
        tmp
= RB_LEFT(parent, field); \
    } \
    if ((RB_LEFT(tmp, field) == NULL || \
        RB_COLOR(RB_LEFT(tmp, field), field) == RB_BLACK) &&\
        (RB_RIGHT(tmp, field) == NULL || \
        RB_COLOR(RB_RIGHT(tmp, field), field) == RB_BLACK)) {\
        RB_COLOR(tmp, field) = RB_RED; \
        elm = parent; \
        parent = RB_PARENT(elm, field); \
    } else { \
        if (RB_LEFT(tmp, field) == NULL || \
            RB_COLOR(RB_LEFT(tmp, field), field) == RB_BLACK) {\
            struct type *oright; \
            if ((oright = RB_RIGHT(tmp, field)) \
                != NULL) \
                RB_COLOR(oright, field) = RB_BLACK;\
            RB_COLOR(tmp, field) = RB_RED; \
            RB_ROTATE_LEFT(head, tmp, oright, field);\
            tmp = RB_LEFT(parent, field); \
        } \
        RB_COLOR(tmp, field) = RB_COLOR(parent, field);\
        RB_COLOR(parent, field) = RB_BLACK; \
        if (RB_LEFT(tmp, field)) \
            RB_COLOR(RB_LEFT(tmp, field), field) = RB_BLACK;\
        RB_ROTATE_RIGHT(head, parent, tmp, field);\
        elm = RB_ROOT(head); \
        break; \
    } \
} \
} \
} \
if

```

```

(elm)    \
    RB_COLOR(elm, field) = RB_BLACK; \
}      \
    \
attr struct type *    \
name##_RB_REMOVE(struct name *head, struct type *elm) \
{      \
    struct type *child, *parent, *old = elm; \
    int color;    \
    if (RB_LEFT(elm, field) == NULL) \
        child = RB_RIGHT(elm, field); \
    else if (RB_RIGHT(elm, field) == NULL) \
        child = RB_LEFT(elm, field); \
    else {      \
        struct type *left; \
        elm = RB_RIGHT(elm, field); \
        while ((left = RB_LEFT(elm, field)) != NULL) \
            elm = left; \
        child = RB_RIGHT(elm, field); \
        parent = RB_PARENT(elm, field); \
        color = RB_COLOR(elm, field); \
        if (child) \
            RB_PARENT(child, field) = parent; \
        if (parent) { \
            if (RB_LEFT(parent, field) == elm) \
                RB_LEFT(parent, field) = child; \
            else \
                RB_RIGHT(parent, field) = child; \
            RB_AUGMENT(parent); \
        } else \
            RB_ROOT(head)
= child; \
    if (RB_PARENT(elm, field) == old) \
        parent = elm; \
    (elm)->field = (old)->field; \
    if (RB_PARENT(old, field)) { \
        if (RB_LEFT(RB_PARENT(old, field), field) == old)\
            RB_LEFT(RB_PARENT(old, field), field) = elm;\
        else \
            RB_RIGHT(RB_PARENT(old, field), field) = elm;\
        RB_AUGMENT(RB_PARENT(old, field)); \
    } else \
        RB_ROOT(head) = elm; \
    RB_PARENT(RB_LEFT(old, field), field) = elm; \
    if (RB_RIGHT(old, field)) \
        RB_PARENT(RB_RIGHT(old, field), field) = elm; \
    if (parent) { \
        left = parent; \

```



```

do { \
    RB_AUGMENT(left); \
} while ((left = RB_PARENT(left, field)) != NULL); \
} \
goto color; \
} \
parent = RB_PARENT(elm, field); \
color = RB_COLOR(elm, field); \
if (child) \
    RB_PARENT(child, field) = parent; \
if (parent) { \
    if (RB_LEFT(parent, field) == elm) \
        RB_LEFT(parent, field) = child; \
    else \
        RB_RIGHT(parent,
field) = child; \
    RB_AUGMENT(parent); \
} else \
    RB_ROOT(head) = child; \
color: \
if (color == RB_BLACK) \
    name##_RB_REMOVE_COLOR(head, parent, child); \
return (old); \
} \
\
/* Inserts a node into the RB tree */ \
attr struct type * \
name##_RB_INSERT(struct name *head, struct type *elm) \
{ \
    struct type *tmp; \
    struct type *parent = NULL; \
    int comp = 0; \
    tmp = RB_ROOT(head); \
    while (tmp) { \
        parent = tmp; \
        comp = (cmp)(elm, parent); \
        if (comp < 0) \
            tmp = RB_LEFT(tmp, field); \
        else if (comp > 0) \
            tmp = RB_RIGHT(tmp, field); \
        else \
            return (tmp); \
    } \
    RB_SET(elm, parent, field); \
    if (parent != NULL) { \
        if (comp < 0) \
            RB_LEFT(parent, field) = elm; \
        else \

```

```

    RB_RIGHT(parent, field) = elm; \
    RB_AUGMENT(parent); \
} else \
    RB_ROOT(head) = elm; \
name##_RB_INSERT_COLOR(head,
elm); \
return (NULL); \
} \
\
/* Finds the node with the same key as elm */ \
attr struct type * \
name##_RB_FIND(struct name *head, struct type *elm) \
{ \
    struct type *tmp = RB_ROOT(head); \
    int comp; \
    while (tmp) { \
        comp = cmp(elm, tmp); \
        if (comp < 0) \
            tmp = RB_LEFT(tmp, field); \
        else if (comp > 0) \
            tmp = RB_RIGHT(tmp, field); \
        else \
            return (tmp); \
    } \
    return (NULL); \
} \
\
/* Finds the first node greater than or equal to the search key */ \
attr struct type * \
name##_RB_NFIND(struct name *head, struct type *elm) \
{ \
    struct type *tmp = RB_ROOT(head); \
    struct type *res = NULL; \
    int comp; \
    while (tmp) { \
        comp = cmp(elm, tmp); \
        if (comp < 0) { \
            res = tmp; \
            tmp = RB_LEFT(tmp, field); \
        } \
        else if (comp > 0) \
            tmp = \
RB_RIGHT(tmp, field); \
        else \
            return (tmp); \
    } \
    return (res); \
} \

```

```

    \
/* ARGSUSED */    \
attr struct type *    \
name##_RB_NEXT(struct type *elm)    \
{    \
    if (RB_RIGHT(elm, field)) {    \
        elm = RB_RIGHT(elm, field);    \
        while (RB_LEFT(elm, field))    \
            elm = RB_LEFT(elm, field);    \
    } else {    \
        if (RB_PARENT(elm, field) &&    \
            (elm == RB_LEFT(RB_PARENT(elm, field), field)))    \
            elm = RB_PARENT(elm, field);    \
        else {    \
            while (RB_PARENT(elm, field) &&    \
                (elm == RB_RIGHT(RB_PARENT(elm, field), field)))    \
                elm = RB_PARENT(elm, field);    \
        }    \
    }    \
    return (elm);    \
}    \
    \
/* ARGSUSED */    \
attr struct type *    \
name##_RB_PREV(struct type *elm)    \
{    \
    if (RB_LEFT(elm, field)) {    \
        elm = RB_LEFT(elm, field);    \
        while (RB_RIGHT(elm, field))    \
            elm = RB_RIGHT(elm, field);    \
    }    \
    else {    \
        if (RB_PARENT(elm, field) &&    \
            (elm == RB_RIGHT(RB_PARENT(elm, field), field)))    \
            elm = RB_PARENT(elm, field);    \
        else {    \
            while (RB_PARENT(elm, field) &&    \
                (elm == RB_LEFT(RB_PARENT(elm, field), field)))    \
                elm = RB_PARENT(elm, field);    \
        }    \
    }    \
    return (elm);    \
}    \
    \
attr struct type *    \
name##_RB_MINMAX(struct name *head, int val)    \

```

```

{
    \
    struct type *tmp = RB_ROOT(head); \
    struct type *parent = NULL; \
    while (tmp) {
        \
        parent = tmp; \
        if (val < 0) \
            tmp = RB_LEFT(tmp, field); \
        else \
            tmp = RB_RIGHT(tmp, field); \
    } \
    return (parent); \
}

#define RB_NEGINF -1
#define RB_INF 1

#define RB_INSERT(name, x, y) name##_RB_INSERT(x, y)
#define RB_REMOVE(name, x, y) name##_RB_REMOVE(x, y)
#define RB_FIND(name, x, y) name##_RB_FIND(x, y)
#define RB_NFIND(name, x, y) name##_RB_NFIND(x,
y)
#define RB_NEXT(name, x, y) name##_RB_NEXT(y)
#define RB_PREV(name, x, y) name##_RB_PREV(y)
#define RB_MIN(name, x) name##_RB_MINMAX(x, RB_NEGINF)
#define RB_MAX(name, x) name##_RB_MINMAX(x, RB_INF)

#define RB_FOREACH(x, name, head) \
    for ((x) = RB_MIN(name, head); \
        (x) != NULL; \
        (x) = name##_RB_NEXT(x))

#define RB_FOREACH_FROM(x, name, y) \
    for ((x) = (y); \
        ((x) != NULL) && ((y) = name##_RB_NEXT(x), (x) != NULL); \
        (x) = (y))

#define RB_FOREACH_SAFE(x, name, head, y) \
    for ((x) = RB_MIN(name, head); \
        ((x) != NULL) && ((y) = name##_RB_NEXT(x), (x) != NULL); \
        (x) = (y))

#define RB_FOREACH_REVERSE(x, name, head) \
    for ((x) = RB_MAX(name, head); \
        (x) != NULL; \
        (x) = name##_RB_PREV(x))

#define RB_FOREACH_REVERSE_FROM(x, name, y) \
    for ((x) = (y); \

```

```

((x) != NULL) && ((y) = name##_RB_PREV(x), (x) != NULL); \
(x) = (y))

#define RB_FOREACH_REVERSE_SAFE(x, name,
head, y) \
for ((x) = RB_MAX(name, head); \
((x) != NULL) && ((y) = name##_RB_PREV(x), (x) != NULL); \
(x) = (y))

#endif /* _SYS_TREE_H_ */
# Contributor: Wen Heping <wenhepingalpine@sohu.com>
# Maintainer: Wen Heping <wenhepingalpine@sohu.com>
pkgname=perl-software-license
pkgver=0.104007
pkgrel=0
# _pkgreal is used by apkbuild-cpan to find modules at MetaCpan
_pkgreal=Software-License
pkgdesc="packages that provide templated software licenses"
url="https://metacpan.org/release/Software-License/"
arch="noarch"
license="GPL-1.0-or-later OR Artistic-1.0-Perl"
depends="perl perl-data-section perl-text-template"
checkdepends="perl-try-tiny"
subpackages="$pkgname-doc"
source="https://cpan.metacpan.org/authors/id/L/LE/LEONT/Software-License-$pkgver.tar.gz"
buildid="$srcdir/$_pkgreal-$pkgver"

build() {
export CFLAGS=$(perl -MConfig -E 'say $Config{ccflags}')
PERL_MM_USE_DEFAULT=1 perl -I. Makefile.PL \
INSTALLDIRS=vendor \
NO_PACKLIST=1 \
NO_PERLLOCAL=1
make
}

check() {
export CFLAGS=$(perl -MConfig -E 'say $Config{ccflags}')
make test
}

package() {
make DESTDIR="$pkgdir" install
}

sha512sums="
12d75e9583b3013d9b4a282467f1ac80ab6b7f3251926d66591d01404489b528f22adc396dfd4528a0f0ca650f0eed6d
9c959e69eace2169c6ed1cffe5277e4

```

Software-License-0.104007.tar.gz

"

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Contributor: Dhruvin Gandhi <contact@dhruvin>

Maintainer: Patrycja Rosa <alpine@ptrcnull.me>

pkgname=py3-license-expression

_pkgname=license_expression

pkgver=30.4.4

pkgrel=0

pkgdesc="Library to parse, compare, simplify and normalize license expressions"

url="https://github.com/nexB/license-expression"

arch="noarch"

license="Apache-2.0"

depends="python3 py3-boolean.py"

makedepends="py3-setuptools py3-setuptools_scm py3-gpep517 py3-wheel"

checkdepends="py3-pytest py3-pytest-xdist"

subpackages="\$pkgname-pyc"

source="https://files.pythonhosted.org/packages/source/l/_pkgname/_pkgname-\$pkgver.tar.gz"

builddir="\$srcdir/_pkgname-\$pkgver"

build() {

gpep517 build-wheel \

--wheel-dir .dist \

--output-fd 3 3>&1 >&2

}

```

check() {
python3 -m venv --clear --without-pip --system-site-packages .testenv
.testenv/bin/python3 -m installer .dist/*.whl
.testenv/bin/python3 -m pytest
}

package() {
python3 -m installer -d "$pkgdir" \
.dist/*.whl
}

sha512sums="
f46dd4cf524b3962115fe26f5545bfdd6767275b482724af51e7ca07da79244969a3bfc5d2fd5b95bc0f19d1b95a26a8f3
ab36c676e56ec302178d7166588066
license_expression-30.4.4.tar.gz
"

```

1.110 log4j-slf4j-impl 2.24.3

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1.111 ini4j 0.5.4

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-->

Found in path(s):

- * /ini4j-0-5-4-sources-jar/org/ini4j/package.html
- * /ini4j-0-5-4-sources-jar/org/ini4j/spi/package.html

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*/

Found in path(s):

- * /ini4j-0-5-4-sources-jar/org/ini4j/Config.java
- * /ini4j-0-5-4-sources-jar/org/ini4j/CommonMultiMap.java

- * /ini4j-0-5-4-sources-jar/org/ini4j/Registry.java
- * /ini4j-0-5-4-sources-jar/org/ini4j/BasicRegistryKey.java
- * /ini4j-0-5-4-sources-jar/org/ini4j/spi/OptionsParser.java
- * /ini4j-0-5-4-sources-jar/org/ini4j/Reg.java
- *
- /ini4j-0-5-4-sources-jar/org/ini4j/spi/IniSource.java
- * /ini4j-0-5-4-sources-jar/org/ini4j/spi/AbstractProfileBuilder.java
- * /ini4j-0-5-4-sources-jar/org/ini4j/spi/AbstractParser.java
- * /ini4j-0-5-4-sources-jar/org/ini4j/Persistable.java
- * /ini4j-0-5-4-sources-jar/org/ini4j/spi/IniHandler.java
- * /ini4j-0-5-4-sources-jar/org/ini4j/BasicProfile.java
- * /ini4j-0-5-4-sources-jar/org/ini4j/CommentedMap.java
- * /ini4j-0-5-4-sources-jar/org/ini4j/spi/IniFormatter.java
- * /ini4j-0-5-4-sources-jar/org/ini4j/spi/BeanTool.java
- * /ini4j-0-5-4-sources-jar/org/ini4j/BasicOptionMap.java
- * /ini4j-0-5-4-sources-jar/org/ini4j/BasicRegistry.java
- * /ini4j-0-5-4-sources-jar/org/ini4j/MultiMap.java
- * /ini4j-0-5-4-sources-jar/org/ini4j/spi/UnicodeInputStreamReader.java
- * /ini4j-0-5-4-sources-jar/org/ini4j/spi/AbstractFormatter.java
- * /ini4j-0-5-4-sources-jar/org/ini4j/spi/OptionsBuilder.java
- * /ini4j-0-5-4-sources-jar/org/ini4j/spi/OptionsFormatter.java
- * /ini4j-0-5-4-sources-jar/org/ini4j/Profile.java
- *
- /ini4j-0-5-4-sources-jar/org/ini4j/IniPreferencesFactory.java
- * /ini4j-0-5-4-sources-jar/org/ini4j/spi/ServiceFinder.java
- * /ini4j-0-5-4-sources-jar/org/ini4j/InvalidFileFormatException.java
- * /ini4j-0-5-4-sources-jar/org/ini4j/spi/BeanAccess.java
- * /ini4j-0-5-4-sources-jar/org/ini4j/spi/IniParser.java
- * /ini4j-0-5-4-sources-jar/org/ini4j/spi/OptionsHandler.java
- * /ini4j-0-5-4-sources-jar/org/ini4j/IniPreferences.java
- * /ini4j-0-5-4-sources-jar/org/ini4j/BasicMultiMap.java
- * /ini4j-0-5-4-sources-jar/org/ini4j/Wini.java
- * /ini4j-0-5-4-sources-jar/org/ini4j/BasicProfileSection.java
- * /ini4j-0-5-4-sources-jar/org/ini4j/spi/AbstractBeanInvocationHandler.java
- * /ini4j-0-5-4-sources-jar/org/ini4j/spi/HandlerBase.java
- * /ini4j-0-5-4-sources-jar/org/ini4j/spi/TypeValuesPair.java
- * /ini4j-0-5-4-sources-jar/org/ini4j/spi/Warnings.java
- * /ini4j-0-5-4-sources-jar/org/ini4j/spi/RegEscapeTool.java
- * /ini4j-0-5-4-sources-jar/org/ini4j/OptionMap.java
- * /ini4j-0-5-4-sources-jar/org/ini4j/spi/RegBuilder.java
- *
- /ini4j-0-5-4-sources-jar/org/ini4j/spi/EscapeTool.java
- * /ini4j-0-5-4-sources-jar/org/ini4j/spi/WinEscapeTool.java
- * /ini4j-0-5-4-sources-jar/org/ini4j/ConfigParser.java
- * /ini4j-0-5-4-sources-jar/org/ini4j/spi/IniBuilder.java
- * /ini4j-0-5-4-sources-jar/org/ini4j/Configurable.java
- * /ini4j-0-5-4-sources-jar/org/ini4j/Ini.java
- * /ini4j-0-5-4-sources-jar/org/ini4j/Options.java

1.112 jaraco.collections 5.1.0

1.112.1 Available under license :

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1.113 snappy-java 1.1.10.5

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Manifest-Version: 1.0

Bnd-LastModified: 1695799258578

Bundle-ActivationPolicy: lazy

Bundle-Activator: org.xerial.snappy.SnappyBundleActivator

Bundle-Description: snappy-java: A fast compression/decompression library

Bundle-DocURL: <http://www.xerial.org/>

Bundle-License: <http://www.apache.org/licenses/LICENSE-2.0.txt>

Bundle-ManifestVersion: 2

Bundle-Name: snappy-java: A fast compression/decompression library

Bundle-NativeCode: org.xerial.snappy/native/Windows/x86_64/snappyjava.

dll;osname=win32;processor=x86-64,org.xerial.snappy/native/Windows/x8

6_64/snappyjava.dll;osname=win32;processor=x64,org.xerial.snappy/native

Windows/x86_64/snappyjava.dll;osname=win32;processor=amd64,org.xerial

/snappy/native/Windows/x86/snappyjava.dll;osname=win32;processor=x

86,org.xerial.snappy/native/Mac/x86/libsnappyjava.jnilib;osname=macos

x;processor=x86,org.xerial.snappy/native/Mac/x86_64/libsnappyjava.dyl

ib;osname=macosx;processor=x86-64,org.xerial.snappy/native/Mac/aarch6

4/libsnappyjava.dylib;osname=macosx;processor=aarch64,org/xerial/snappy/native/Linux/x86_64/libsnappyjava.so;osname=linux;processor=x86-64,org/xerial/snappy/native/Linux/x86_64/libsnappyjava.so;osname=linux;processor=x64,org/xerial/snappy/native/Linux/x86_64/libsnappyjava.so;osname=linux;processor=amd64,org/xerial/snappy/native/Linux/x86/libsnappyjava.so;osname=linux;processor=x86,org/xerial/snappy/native/Linux/aarch64/libsnappyjava.so;osname=linux;processor=aarch64,org/xerial/snappy/native/Linux/riscv64/libsnappyjava.so;osname=linux;processor=riscv64,org/xerial/snappy/native/Linux/arm/libsnappyjava.so;osname=linux;processor=arm,org/xerial/snappy/native/Linux/armv7/libsnappyjava.so;osname=linux;processor=arm_le,org/xerial/snappy/native/Linux/ppc64/libsnappyjava.so;osname=linux;processor=ppc64le,org/xerial/snappy/native/Linux/s390x/libsnappyjava.so;osname=linux;processor=s390x,org/xerial/snappy/native/AIX/ppc/libsnappyjava.a;osname=aix;processor=ppc,org/xerial/snappy/native/AIX/ppc64/libsnappyjava.a;osname=aix;processor=ppc64,org/xerial/snappy/native/SunOS/x86/libsnappyjava.so;osname=sunos;processor=x86,org/xerial/snappy/native/SunOS/x86_64/libsnappyjava.so;osname=sunos;processor=x86-64,org/xerial/snappy/native/SunOS/sparc/libsnappyjava.so;osname=sunos;processor=sparc

Bundle-SymbolicName: org.xerial.snappy.snappy-java

Bundle-Vendor: xerial.org

Bundle-Version: 1.1.10.5

Created-By: 11.0.20 (Azul Systems, Inc.)

Export-Package: org.xerial.snappy;uses:="org.osgi.framework,org.xerial.snappy.buffer,org.xerial.snappy.pool";version="1.1.10",org.xerial.snappy.buffer;version="1.1.10",org.xerial.snappy.pool;version="1.1.10"

Implementation-Title: snappy-java

Implementation-URL: <https://github.com/xerial/snappy-java>

Implementation-Vendor: xerial.org

Implementation-Vendor-Id: org.xerial.snappy

Implementation-Version: 1.1.10.5

Import-Package: org.osgi.framework;version="[1.5,2)"

Private-Package: org.xerial.snappy.native.AIX.ppc,org.xerial.snappy.native.AIX.ppc64,org.xerial.snappy.native.FreeBSD.x86_64,org.xerial.snappy.native.Linux.aarch64,org.xerial.snappy.native.Linux.android-aarch64,org.xerial.snappy.native.Linux.android-arm,org.xerial.snappy.native.Linux.arm,org.xerial.snappy.native.Linux.armv6,org.xerial.snappy.native.Linux.armv7,org.xerial.snappy.native.Linux.ppc,org.xerial.snappy.native.Linux.ppc64,org.xerial.snappy.native.Linux.ppc64le,org.xerial.snappy.native.Linux.riscv64,org.xerial.snappy.native.Linux.s390x,org.xerial.snappy.native.Linux.x86,org.xerial.snappy.native.Linux.x86_64,org.xerial.snappy.native.Mac.aarch64,org.xerial.snappy.native.Mac.x86_64,org.xerial.snappy.native.Mac.x86_64,org.xerial.snappy.native,org.xerial.snappy.SunOS.sparc,org.xerial.snappy.native.SunOS.x86,org.xerial.snappy.native.SunOS.x86_64,org.xerial.snappy.native.Windows.aarch64,org.xerial.snappy.native.Windows.x86,org.xerial.snappy.native.Windows.x86_64

Require-Capability:

osgi.ee;filter:="(&(osgi.ee=JavaSE)(version=1.7))"

Specification-Title: snappy-java

Specification-Vendor: xerial.org

Specification-Version: 1.1.10.5

Tool: Bnd-5.1.2.202007211702

Found in path(s):

* /snappy-java-1-1-10-5-1-jar/META-INF/MANIFEST.MF

1.114 inotify 0.2.10

1.114.1 Available under license :

UNRECOGNIZED LICENSE; MD5 sum: 5cb13b05a253faf9cc933f3a438f1e2c

1.115 semver 3.5.1+incompatible

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1.116 zstd 1.5.7-r2

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1.117 jakarta-persistence-api 3.1.0

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1.118 go-playground-universal-translator

0.18.1

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1.120 wheel 0.45.1

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*/jetcd-common-0-8-5-sources-jar/io/etcd/jetcd/common/exception/ClosedWatcherException.java
*/jetcd-common-0-8-5-sources-jar/io/etcd/jetcd/common/exception/EtcdExceptionFactory.java
*
/jetcd-common-0-8-5-sources-jar/io/etcd/jetcd/common/exception/EtcdException.java
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1.122 graphql-go 0.8.1

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1.123 spec 0.20.4

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import (
    "encoding/json"
    "testing"

    "github.com/stretchr/testify/assert"
)

var license = License{
    LicenseProps: LicenseProps{Name: "the name", URL: "the url"},
    VendorExtensible: VendorExtensible{Extensions: map[string]interface{}{"x-license": "custom term"}}}

const licenseJSON = `{
    "name": "the name",
    "url": "the url",
    "x-license": "custom term"
}`

func TestIntegrationLicense(t
*testing.T) {

    // const licenseYAML = "name: the name\nurl: the url\n"

    b, err := json.MarshalIndent(license, "", "\t")
    if assert.NoError(t, err) {
        assert.Equal(t, licenseJSON, string(b))
    }

    actual := License{}
    err = json.Unmarshal([]byte(licenseJSON), &actual)
    if assert.NoError(t, err) {
        assert.EqualValues(t, license, actual)
    }
}

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```

```
package spec
```

```
import (  
    "encoding/json"
```

```
    "github.com/go-openapi/swag"  
)
```

```
// License information for the exposed API.  
//  
// For more information: http://goo.gl/8us55a#licenseObject
```

```
type License struct {  
    LicenseProps  
    VendorExtensible  
}
```

```
// LicenseProps holds the properties of a License object  
type LicenseProps struct {  
    Name string `json:"name,omitempty"`  
    URL  string `json:"url,omitempty"`  
}
```

```
// UnmarshalJSON  
hydrates License from json  
func (l *License) UnmarshalJSON(data []byte) error {  
    if err := json.Unmarshal(data, &l.LicenseProps); err != nil {  
        return err  
    }  
    return json.Unmarshal(data, &l.VendorExtensible)  
}
```

```
// MarshalJSON produces License as json  
func (l License) MarshalJSON() ([]byte, error) {  
    b1, err := json.Marshal(l.LicenseProps)  
    if err != nil {  
        return nil, err  
    }  
    b2, err := json.Marshal(l.VendorExtensible)  
    if err != nil {  
        return nil, err  
    }  
    return swag.ConcatJSON(b1, b2), nil  
}
```

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1.124 Iz4 1.10.0-r0

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Upstream-Name: liblz4

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

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

Files: *

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1.125 gofork 1.7.6

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1.126 gin-contrib-sse 1.1.0

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1.127 my-test-package 1.0

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1.128 robot-cw-distributed-cache-distributed-cache-go-client 0.0.0-20240916120131-776dbeecf453

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```
List<String> distSetsList = new ArrayList<>();
distSetsList.add("Name=" + set.getName() + ", Size=" + set.size() + ", LocalStats=" + set.getLocalSetStats());
distSetsResults.addData(distSetsList);
```

Found in path(s):

* /cw-distributed-cache-distributed-cache-parent-7-1-0-18-tar-gz/cw-distributed-cache-distributed-cache-parent-7.1.0.18/distributed-cache-service/src/main/java/com/cisco/cw/distributed/cache/monitor/MonitorTask.java

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```
Set<String> clientsLabels = new HashSet<>();
clientsLabels.add(labels.substring(1, labels.length()-1));
this.getInstance().getSet(ACTIVE_CLIENTS).retainAll(clientsLabels);
```

```
this.getInstance().getSet(ACTIVE_CLIENTS).addAll(clientsLabels);  
log.info("Active clients changed: " + clientsLabels);  
log.debug("Active clients : " + clientsLabels);
```

Found in path(s):

```
* /cw-distributed-cache-distributed-cache-parent-7-1-0-18-tar-gz/cw-distributed-cache-distributed-cache-parent-  
7.1.0.18/distributed-cache-  
service/src/main/java/com/cisco/cw/distributed/cache/service/DistributedServiceImpl.java
```

1.129 pgx 5.7.6

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1.130 skalibs 2.14.4.0-r0

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```
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```

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<signature of Ty Coon>, 1 April 1989

Ty Coon, President of Vice

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```
# Automatically generated by apkgbuild-cpan, template 4
# Contributor: Valery Kartel <valery.kartel@gmail.com>
# Maintainer: Celeste <cielesti@protonmail.com>
maintainer="Celeste <cielesti@protonmail.com>"
pkgname=perl-bsd-resource
pkgver=1.2911
pkgrel=10
#_pkgreal is used by apkgbuild-cpan to find modules at MetaCpan
_pkgreal=BSD-Resource
pkgdesc="Perl extension implements the BSD process resource limit functions"
url="https://metacpan.org/release/BSD-Resource/"
arch="all"
license="Artistic-2.0 OR LGPL-2.0"
depends="perl"
makedepends="perl-dev"
subpackages="$pkgname-doc"
source="https://cpan.metacpan.org/authors/id/J/JH/JHI/BSD-Resource-$pkgver.tar.gz"
buildid="$srcdir/${_pkgreal}-$pkgver"
```

```
build() {
    export CFLAGS=$(perl -MConfig -E 'say $Config{ccflags}')
    PERL_MM_USE_DEFAULT=1 perl -I. Makefile.PL \
        INSTALLDIRS=vendor \
        NO_PACKLIST=1 \
        NO_PERLLOCAL=1
    make
}
```

```
check() {
    export CFLAGS=$(perl -MConfig -E 'say $Config{ccflags}')
    make test
}
```

```

package() {
    make DESTDIR="$pkgdir" install
}

sha512sums="
d0032d41c7c0468ed1c6d8f57b885f6cb97a5039d754c8cb60b2067daedaf53bd15fb6561a3d0f828df16dfa5417f663b
8065ba65f4fea16dc9262728b3b6b85
    BSD-Resource-1.2911.tar.gz
"

# Contributor: Maxim Karasev <begs@disroot.org>
# Maintainer: mio <miyopan@e.email>
pkgname=bsd-games
pkgver=3.3
pkgrel=2
pkgdesc="traditional text mode games from BSD"
url="https://bsd-games.sourceforge.io/"
arch="all"
license="BSD-3-Clause"
install="$pkgname.post-install"
makedepends="ncurses-dev coreutils" # configure causes busybox expr error
subpackages="$pkgname-doc"
source="https://sourceforge.net/projects/bsd-games/files/bsd-games-$pkgver.tar.gz
0001-bsd-games-scores-dir.patch
"

options="!check" # no tests

build() {
    # some GNU autoconf options are ignored, but it works
    ./configure \
        --build=$CBUILD \
        --host=$CHOST \
        --prefix=/usr \
        --sysconfdir=/etc \
        --mandir=/usr/share/man \
        --sourcedir=/usr/share/$pkgname
    make
}

package() {
    make DESTDIR="$pkgdir" install
    install -Dm644 LICENSE "$pkgdir"/usr/share/licenses/bsd-games/LICENSE
}

sha512sums="
aaf36d09d4fe68514a5c279063d7e77a9a9a84c447037cba974b29faa07eb80c2aab2379d0699c196b5c27ffe1b2bb2c6
8d3390143e0e62d5e3d210ccfb61294
    bsd-games-3.3.tar.gz
e1def0d4835a877242c4173fae862e278a7858738e0bacacbb045a42bcabec2aa7c72d000bbd2421ce35fe66cdc1f52c0

```


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1

```
build() {  
    ./configure \  
        --build=$CBUILD \  
        --host=$CHOST \  
        --target=$CTARGET \  
        --enable-lto \  
        --enable-threads=posix \  
        --enable-shared \  
        --enable-static \  
        --enable-sysvlibtool \  
        --enable-zlib \  
        --enable-zstd \  
        --with-libc=glibc \  
        --with-libffi=auto \  
        --with-libiconv=auto \  
        --with-libintl=auto \  
        --with-libltdl=auto \  
        --with-libmpdec=auto \  
        --with-libmpfr=auto \  
        --with-libnettle=auto \  
        --with-libp11=auto \  
        --with-libtasn1=auto \  
        --with-libunistring=auto \  
        --with-libz=auto \  
        --with-libzstd=auto \  
        --with-pkg-config=auto \  
        --with-systemd=auto \  
        --with-systemtap=auto \  
        --with-tcl=auto \  
        --with-tk=auto \  
        --with-xz=auto \  
        --with-yaml=auto \  
        --with-zlib=auto \  
        --with-zstd=auto  
}
```

```

--prefix=/usr
make
}

package() {
make DESTDIR="$pkgdir" install
}

sha512sums="8a632a6a4da59e5e8c02ec2f5a57e36d182b325b46513765425e5f171ff9ae326af1b133725beba28f7e7
6654309e001aee9bace727b5b4c8589405256a3c020 libart_lgpl-2.3.21.tar.bz2"
mini_sendmail - accept email on behalf of real sendmail

```

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Contributor: Carlo Landmeter <clandmeter@alpinelinux.org>

Maintainer: Kevin Daudt <kdaudt@alpinelinux.org>

pkgname=spdx-licenses

pkgver=3.26.0

pkgrel=0

pkgdesc="Various data formats for the SPDX License List"

url="https://spdx.org/"

arch="noarch"

options="!check" # no test suite

license="CC-BY-3.0"

source="license-list-data-\$pkgver.tar.gz::https://github.com/spdx/license-list-data/archive/v\$pkgver.tar.gz"

builddir="\$srcdir/license-list-data-\$pkgver"

```

subpackages="$pkgname-list"

_types="html json rdfa rdft rdfturtle rdfxml template text"

for type in $_types; do
    subpackages="$subpackages $pkgname-$type:_subpkg"
done

package() {
    mkdir -p "$pkgdir"
}

_subpkg() {
    local type=${subpkgname/$pkgname-/}
    pkgdesc="$pkgdesc ($type)"
    install_if="$pkgname=$pkgver-r$pkgrel"
    mkdir -p "$subpkgdir"/usr/share/spdx
    cp -r "$builddir"/$type "$subpkgdir"/usr/share/spdx/
}

list() {
    pkgdesc="$pkgdesc (licence list)"
    mkdir -p "$subpkgdir"/usr/share/spdx
    local i; for i in "$builddir"/text/*.txt;
    do
        local license=${i##*/}
        echo ${license%.*} >> "$subpkgdir"/usr/share/spdx/license.lst
    done
}

sha512sums="
67e618d4642dfe4f366935d9514d6f7941d3711e77c49bc1b340ac572d36015981b8f10c72a9f80f1d83e132ae7e5093c
0155e0c0e786e4777ee16d1cb7b885a license-list-data-3.26.0.tar.gz
"

# Contributor: Patrycja Rosa <alpine@ptrcnull.me>
# Maintainer: Patrycja Rosa <alpine@ptrcnull.me>
pkgname=bsd-compat-headers
pkgver=0.7.2
pkgrel=6
pkgdesc="BSD compatibility headers (cdefs, queue, tree)"
url="https://gitlab.alpinelinux.org/alpine/aports"
arch="noarch"
license="BSD-2-Clause AND BSD-3-Clause"
source="
cdefs.h
queue.h
tree.h
"

```

```

builddir="$srcdir"
options="!check" # just headers

package() {
    mkdir -p "$pkgdir"
    install -Dm644 -t "$pkgdir"/usr/include/sys \
        cdefs.h queue.h tree.h
}
sha512sums="
37c8fc73c7aea7b490f7850927e2bb91d12137c9e59e22c084146d515696dbc7973b5de92f4c987ba080dd2502ba8312
7006442c3f019b6447a620c0cae73178 cdefs.h
2f0d5e6e4dc3350285cf17009265dddcbe12431c111868eea39bc8cb038ab7c1f2acacbb21735c4e9d4a1fd106a8fc0f86
11ea33987d4faba37dde5ce6da0750 queue.h
d9ac210d81feb8ad2655bc80fb065d3fe20ae4417b32b4a1711e6738a4870140005c13373b5d1846ef3ce5ae6da45f2da
cef2092881eded0a2e94f6a07752ef3 tree.h
"

```

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 "X-Splines: A Spline Model Designed for the End User" by C. Blanc and C. Schlick, Proceedings of SIGGRAPH'95
<http://dept-info.labri.u-bordeaux.fr/~schlick/DOC/sig1.html>
 # Contributor: Dhruvin Gandhi <contact@dhruvin>
 # Maintainer: Patrycja Rosa <alpine@ptrcnull.me>
 pkgname=py3-license-expression

```

_pkgname=license_expression
pkgver=30.4.1
pkgrel=0
pkgdesc="Library to parse, compare, simplify and normalize license expressions"
url="https://github.com/nexB/license-expression"
arch="noarch"
license="Apache-2.0"
depends="python3 py3-boolean.py"
makedepends="py3-setuptools py3-setuptools_scm py3-gpep517 py3-wheel"
checkdepends="py3-pytest py3-pytest-xdist"
subpackages="$pkgname-pyc"
source="https://files.pythonhosted.org/packages/source/l/${_pkgname}/${_pkgname}-${pkgver}.tar.gz"
buildid="$srcdir/${_pkgname}-${pkgver}"

build() {
    gpep517 build-wheel \
        --wheel-dir .dist \
        --output-fd 3 3>&1 >&2
}

check() {
    python3 -m venv --clear --without-pip --system-site-packages .testenv
    .testenv/bin/python3 -m installer .dist/*.whl
    .testenv/bin/python3 -m pytest
}

package() {
    python3 -m installer -d "$pkgdir" \
        .dist/*.whl
}

sha512sums="
114c630f098939757e49187e35b4e54883266a2ee9ca283724992420ef4c860f9606a8342da0ab74d93627c10805f312
fda3f699cbc7c4fbd47a71e220440fb0
    license_expression-30.4.1.tar.gz
"

/* $NetBSD: queue.h,v 1.70 2015/11/02 15:21:23 christos Exp $ */

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- * OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION)
- * HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT
- * LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY
- * OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF
- * SUCH DAMAGE.
- *
- * @(#)queue.h 8.5 (Berkeley) 8/20/94
- */

```
#ifndef _SYS_QUEUE_H_
#define _SYS_QUEUE_H_
```

```
/*
 * This file defines five types of data structures: singly-linked lists,
 * lists, simple queues, tail queues, and circular queues.
 *
 * A singly-linked list is headed by a single forward pointer. The
 * elements are singly linked for minimum space and
 * pointer manipulation
 * overhead at the expense of O(n) removal for arbitrary elements. New
 * elements can be added to the list after an existing element or at the
 * head of the list. Elements being removed from the head of the list
 * should use the explicit macro for this purpose for optimum
 * efficiency. A singly-linked list may only be traversed in the forward
 * direction. Singly-linked lists are ideal for applications with large
 * datasets and few or no removals or for implementing a LIFO queue.
 *
 * A list is headed by a single forward pointer (or an array of forward
 * pointers for a hash table header). The elements are doubly linked
 * so that an arbitrary element can be removed without a need to
 * traverse the list. New elements can be added to the list before
 * or after an existing element or at the head of the list. A list
 * may only be traversed in the forward direction.
 *
 * A simple queue is headed by a pair of pointers, one the head of the
```

- * list and the other to the tail of the list. The elements are singly linked to save space, so elements can only be removed from the head of the list. New elements can be added to the list after an existing element, at the head of the list, or at the end of the list. A simple queue may only be traversed in the forward direction.
- *
- * A tail queue is headed by a pair of pointers, one to the head of the list and the other to the tail of the list. The elements are doubly linked so that an arbitrary element can be removed without a need to traverse the list. New elements can be added to the list before or after an existing element, at the head of the list, or at the end of the list. A tail queue may be traversed in either direction.
- *
- * A circle queue is headed by a pair of pointers, one to the head of the list and the other to the tail of the list. The elements are doubly linked so that an arbitrary element can be removed without a need to traverse the list. New elements can be added to the list before or after an existing element, at the head of the list, or at the end of the list.
- * A circle queue may be traversed in either direction, but has a more complex end of list detection.
- *
- * For details on the use of these macros, see the queue(3) manual page.
- */

```
/*
 * Include the definition of NULL only on NetBSD because sys/null.h
 * is not available elsewhere. This conditional makes the header
 * portable and it can simply be dropped verbatim into any system.
 * The caveat is that on other systems some other header
 * must provide NULL before the macros can be used.
 */
```

```
#ifdef __NetBSD__
#include <sys/null.h>
#endif
```

```
#if defined(QUEUEDEBUG)
# if defined(_KERNEL)
# define QUEUEDEBUG_ABORT(...) panic(__VA_ARGS__)
# else
# include <err.h>
# define QUEUEDEBUG_ABORT(...) err(1, __VA_ARGS__)
# endif
#endif
```

```
/*
 * Singly-linked List definitions.
```

```

*/
#define SLIST_HEAD(name, type)    \
struct name {                    \
    struct type *slh_first; /* first \
    element */ \
}

#define SLIST_HEAD_INITIALIZER(head)    \
{ NULL }

#define SLIST_ENTRY(type)    \
struct { \
    struct type *sle_next; /* next element */ \
}

/*
 * Singly-linked List access methods.
 */
#define SLIST_FIRST(head) ((head)->slh_first)
#define SLIST_END(head) NULL
#define SLIST_EMPTY(head) ((head)->slh_first == NULL)
#define SLIST_NEXT(elm, field) ((elm)->field.sle_next)

#define SLIST_FOREACH(var, head, field)    \
for((var) = (head)->slh_first;    \
    (var) != SLIST_END(head);    \
    (var) = (var)->field.sle_next)

#define SLIST_FOREACH_SAFE(var, head, field, tvar)    \
for ((var) = SLIST_FIRST((head));    \
    (var) != SLIST_END(head) &&    \
    ((tvar) = SLIST_NEXT((var), field), 1);    \
    (var) = (tvar))

/*
 * Singly-linked List functions.
 */
#define SLIST_INIT(head) do {    \
    (head)->slh_first = SLIST_END(head);    \
} while (/*CONSTCOND*/0)

#define SLIST_INSERT_AFTER(slistelm, elm, field) do {    \
    (elm)->field.sle_next = (slistelm)->field.sle_next;    \
    (slistelm)->field.sle_next    \
    = (elm);    \
} while (/*CONSTCOND*/0)

#define SLIST_INSERT_HEAD(head, elm, field) do {    \

```



```

(elm)->field.sle_next = (head)->slh_first; \
(head)->slh_first = (elm); \
} while (/*CONSTCOND*/0)

#define SLIST_REMOVE_AFTER(slistelm, field) do { \
(slistelm)->field.sle_next = \
    SLIST_NEXT(SLIST_NEXT((slistelm), field), field); \
} while (/*CONSTCOND*/0)

#define SLIST_REMOVE_HEAD(head, field) do { \
(head)->slh_first = (head)->slh_first->field.sle_next; \
} while (/*CONSTCOND*/0)

#define SLIST_REMOVE(head, elm, type, field) do { \
if ((head)->slh_first == (elm)) { \
    SLIST_REMOVE_HEAD((head), field); \
} \
else { \
    struct type *curelm = (head)->slh_first; \
    while(curelm->field.sle_next != (elm)) \
        curelm = curelm->field.sle_next; \
    curelm->field.sle_next = \
        curelm->field.sle_next->field.sle_next; \
} \
} while (/*CONSTCOND*/0)

/*
 * List definitions.
 */
#define LIST_HEAD(name, type) \
struct name { \
    struct type *lh_first; /* first element */ \
}

#define LIST_HEAD_INITIALIZER(head) \
{ NULL }

#define LIST_ENTRY(type) \
struct { \
    struct type *le_next; /* next element */ \
    struct type **le_prev; /* address of previous next element */ \
}

/*
 * List access methods.
 */
#define LIST_FIRST(head) ((head)->lh_first)

```

```

#define LIST_END(head) NULL
#define LIST_EMPTY(head) ((head)->lh_first == LIST_END(head))
#define LIST_NEXT(elm, field) ((elm)->field.le_next)

#define LIST_FOREACH(var, head, field) \
    for ((var) = ((head)->lh_first); \
         (var) != LIST_END(head); \
         (var) = ((var)->field.le_next))

#define LIST_FOREACH_SAFE(var, head, field, tvar) \
    for ((var) = LIST_FIRST((head)); \
         (var) != LIST_END(head) && \
         ((tvar) = LIST_NEXT((var), field), 1); \
         (var) = (tvar))

#define LIST_MOVE(head1, head2) do { \
    LIST_INIT((head2)); \
    if (!LIST_EMPTY((head1))) \
    { \
        (head2)->lh_first = (head1)->lh_first; \
        LIST_INIT((head1)); \
    } \
} while (/*CONSTCOND*/0)

/*
 * List functions.
 */

#if defined(QUEUEDEBUG)
#define QUEUEDEBUG_LIST_INSERT_HEAD(head, elm, field) \
    if ((head)->lh_first && \
        (head)->lh_first->field.le_prev != &(head)->lh_first) \
        QUEUEDEBUG_ABORT("LIST_INSERT_HEAD %p %s:%d", (head), \
            __FILE__, __LINE__);
#define QUEUEDEBUG_LIST_OP(elm, field) \
    if ((elm)->field.le_next && \
        (elm)->field.le_next->field.le_prev != \
        &(elm)->field.le_next) \
        QUEUEDEBUG_ABORT("LIST_* forw %p %s:%d", (elm), \
            __FILE__, __LINE__); \
    if (*(elm)->field.le_prev != (elm)) \
        QUEUEDEBUG_ABORT("LIST_* back %p %s:%d", (elm), \
            __FILE__, __LINE__);
#define QUEUEDEBUG_LIST_POSTREMOVE(elm, field) \
    (elm)->field.le_next = (void *)1L; \
    (elm)->field.le_prev = (void *)1L;
#else
#define QUEUEDEBUG_LIST_INSERT_HEAD(head, elm, field)
#define QUEUEDEBUG_LIST_OP(elm,

```

```

field)
#define QUEUEDEBUG_LIST_POSTREMOVE(elm, field)
#endif

#define LIST_INIT(head) do { \
    (head)->lh_first = LIST_END(head); \
} while (/*CONSTCOND*/0)

#define LIST_INSERT_AFTER(listelm, elm, field) do { \
    QUEUEDEBUG_LIST_OP((listelm), field) \
    if (((elm)->field.le_next = (listelm)->field.le_next) != \
        LIST_END(head)) \
        (listelm)->field.le_next->field.le_prev = \
            &(elm)->field.le_next; \
    (listelm)->field.le_next = (elm); \
    (elm)->field.le_prev = &(listelm)->field.le_next; \
} while (/*CONSTCOND*/0)

#define LIST_INSERT_BEFORE(listelm, elm, field) do { \
    QUEUEDEBUG_LIST_OP((listelm), field) \
    (elm)->field.le_prev = (listelm)->field.le_prev; \
    (elm)->field.le_next = (listelm); \
    *(listelm)->field.le_prev = (elm); \
    (listelm)->field.le_prev = &(elm)->field.le_next; \
} while (/*CONSTCOND*/0)

#define LIST_INSERT_HEAD(head, elm, field) do { \
    QUEUEDEBUG_LIST_INSERT_HEAD((head), (elm), field) \
    if (((elm)->field.le_next \
        = (head)->lh_first) != LIST_END(head)) \
        (head)->lh_first->field.le_prev = &(elm)->field.le_next; \
    (head)->lh_first = (elm); \
    (elm)->field.le_prev = &(head)->lh_first; \
} while (/*CONSTCOND*/0)

#define LIST_REMOVE(elm, field) do { \
    QUEUEDEBUG_LIST_OP((elm), field) \
    if ((elm)->field.le_next != NULL) \
        (elm)->field.le_next->field.le_prev = \
            (elm)->field.le_prev; \
    *(elm)->field.le_prev = (elm)->field.le_next; \
    QUEUEDEBUG_LIST_POSTREMOVE((elm), field) \
} while (/*CONSTCOND*/0)

#define LIST_REPLACE(elm, elm2, field) do { \
    if (((elm2)->field.le_next = (elm)->field.le_next) != NULL) \
        (elm2)->field.le_next->field.le_prev = \
            &(elm2)->field.le_next; \

```

```

(elm2)->field.le_prev = (elm)->field.le_prev; \
*(elm2)->field.le_prev = (elm2); \
QUEUEDEBUG_LIST_POSTREMOVE((elm), field) \
} while (/*CONSTCOND*/0)

/*
 * Simple queue definitions.
 */
#define SIMPLEQ_HEAD(name, type) \
struct name { \
    struct \
    type *sqh_first; /* first element */ \
    struct type **sqh_last; /* addr of last next element */ \
}

#define SIMPLEQ_HEAD_INITIALIZER(head) \
{ NULL, &(head).sqh_first }

#define SIMPLEQ_ENTRY(type) \
struct { \
    struct type *sqe_next; /* next element */ \
}

/*
 * Simple queue access methods.
 */
#define SIMPLEQ_FIRST(head) ((head)->sqh_first)
#define SIMPLEQ_END(head) NULL
#define SIMPLEQ_EMPTY(head) ((head)->sqh_first == SIMPLEQ_END(head))
#define SIMPLEQ_NEXT(elm, field) ((elm)->field.sqe_next)

#define SIMPLEQ_FOREACH(var, head, field) \
for ((var) = ((head)->sqh_first); \
     (var) != SIMPLEQ_END(head); \
     (var) = ((var)->field.sqe_next))

#define SIMPLEQ_FOREACH_SAFE(var, head, field, next) \
for ((var) = ((head)->sqh_first); \
     (var) != SIMPLEQ_END(head) && \
     ((next = ((var)->field.sqe_next)), 1); \
     (var) = (next))

/*
 * Simple queue functions.
 */
#define SIMPLEQ_INIT(head) do { \
    (head)->sqh_first = NULL; \
    (head)->sqh_last

```

```

= &(head)->sqh_first; \
} while (/*CONSTCOND*/0)

#define SIMPLEQ_INSERT_HEAD(head, elm, field) do { \
if (((elm)->field.sqe_next = (head)->sqh_first) == NULL) \
(head)->sqh_last = &(elm)->field.sqe_next; \
(head)->sqh_first = (elm); \
} while (/*CONSTCOND*/0)

#define SIMPLEQ_INSERT_TAIL(head, elm, field) do { \
(elm)->field.sqe_next = NULL; \
*(head)->sqh_last = (elm); \
(head)->sqh_last = &(elm)->field.sqe_next; \
} while (/*CONSTCOND*/0)

#define SIMPLEQ_INSERT_AFTER(head, listelm, elm, field) do { \
if (((elm)->field.sqe_next = (listelm)->field.sqe_next) == NULL) \
(head)->sqh_last = &(elm)->field.sqe_next; \
(listelm)->field.sqe_next = (elm); \
} while (/*CONSTCOND*/0)

#define SIMPLEQ_REMOVE_HEAD(head, field) do { \
if (((head)->sqh_first = (head)->sqh_first->field.sqe_next) == NULL) \
(head)->sqh_last = &(head)->sqh_first; \
} while (/*CONSTCOND*/0)

#define SIMPLEQ_REMOVE_AFTER(head, elm, field) do { \
if \
(((elm)->field.sqe_next = (elm)->field.sqe_next->field.sqe_next) \
== NULL) \
(head)->sqh_last = &(elm)->field.sqe_next; \
} while (/*CONSTCOND*/0)

#define SIMPLEQ_REMOVE(head, elm, type, field) do { \
if ((head)->sqh_first == (elm)) { \
SIMPLEQ_REMOVE_HEAD((head), field); \
} else { \
struct type *curelm = (head)->sqh_first; \
while (curelm->field.sqe_next != (elm)) \
curelm = curelm->field.sqe_next; \
if ((curelm->field.sqe_next = \
curelm->field.sqe_next->field.sqe_next) == NULL) \
(head)->sqh_last = &(curelm)->field.sqe_next; \
} \
} while (/*CONSTCOND*/0)

#define SIMPLEQ_CONCAT(head1, head2) do { \
if (!SIMPLEQ_EMPTY((head2))) { \

```

```

*(head1)->sqh_last = (head2)->sqh_first; \
(head1)->sqh_last = (head2)->sqh_last; \
SIMPLEQ_INIT((head2)); \
} \
} while (/*CONSTCOND*/0)

#define SIMPLEQ_LAST(head, type, field) \
(SIMPLEQ_EMPTY((head)) ? \
NULL : \
((struct type \
*)(void *) \
((char *)((head)->sqh_last) - offsetof(struct type, field))))

/*
 * Tail queue definitions.
 */
#define _TAILQ_HEAD(name, type, qual) \
struct name { \
    qual type *tqh_first; /* first element */ \
    qual type *qual *tqh_last; /* addr of last next element */ \
}
#define TAILQ_HEAD(name, type) _TAILQ_HEAD(name, struct type,)

#define TAILQ_HEAD_INITIALIZER(head) \
{ TAILQ_END(head), &(head).tqh_first }

#define _TAILQ_ENTRY(type, qual) \
struct { \
    qual type *tqe_next; /* next element */ \
    qual type *qual *tqe_prev; /* address of previous next element */ \
}
#define TAILQ_ENTRY(type) _TAILQ_ENTRY(struct type,)

/*
 * Tail queue access methods.
 */
#define TAILQ_FIRST(head) ((head)->tqh_first)
#define TAILQ_END(head) (NULL)
#define TAILQ_NEXT(elm, field) ((elm)->field.tqe_next)
#define TAILQ_LAST(head, headname) \
(*(((struct headname *) (void *)((head)->tqh_last))->tqh_last))
#define TAILQ_PREV(elm, headname, field) \
(*(((struct headname \
*)(void *)((elm)->field.tqe_prev))->tqh_last))
#define TAILQ_EMPTY(head) (TAILQ_FIRST(head) == TAILQ_END(head))

#define TAILQ_FOREACH(var, head, field) \

```

```

for ((var) = ((head)->tqh_first); \
    (var) != TAILQ_END(head); \
    (var) = ((var)->field.tqe_next))

#define TAILQ_FOREACH_SAFE(var, head, field, next) \
for ((var) = ((head)->tqh_first); \
    (var) != TAILQ_END(head) && \
    ((next) = TAILQ_NEXT(var, field), 1); (var) = (next))

#define TAILQ_FOREACH_REVERSE(var, head, headname, field) \
for ((var) = TAILQ_LAST((head), headname); \
    (var) != TAILQ_END(head); \
    (var) = TAILQ_PREV((var), headname, field))

#define TAILQ_FOREACH_REVERSE_SAFE(var, head, headname, field, prev) \
for ((var) = TAILQ_LAST((head), headname); \
    (var) != TAILQ_END(head) && \
    ((prev) = TAILQ_PREV((var), headname, field), 1); (var) = (prev))

/*
 * Tail queue functions.
 */
#if defined(QEUEDEBUG)
#define QEUEDEBUG_TAILQ_INSERT_HEAD(head, \
    elm, field) \
    if ((head)->tqh_first && \
        (head)->tqh_first->field.tqe_prev != &(head)->tqh_first) \
        QEUEDEBUG_ABORT("TAILQ_INSERT_HEAD %p %s:%d", (head), \
            __FILE__, __LINE__);
#define QEUEDEBUG_TAILQ_INSERT_TAIL(head, elm, field) \
    if (*(head)->tqh_last != NULL) \
        QEUEDEBUG_ABORT("TAILQ_INSERT_TAIL %p %s:%d", (head), \
            __FILE__, __LINE__);
#define QEUEDEBUG_TAILQ_OP(elm, field) \
    if ((elm)->field.tqe_next && \
        (elm)->field.tqe_next->field.tqe_prev != \
        &(elm)->field.tqe_next) \
        QEUEDEBUG_ABORT("TAILQ_* forw %p %s:%d", (elm), \
            __FILE__, __LINE__); \
    if (*(elm)->field.tqe_prev != (elm)) \
        QEUEDEBUG_ABORT("TAILQ_* back %p %s:%d", (elm), \
            __FILE__, __LINE__);
#define QEUEDEBUG_TAILQ_PREREMOVE(head, elm, field) \
    if ((elm)->field.tqe_next == NULL && \
        (head)->tqh_last != &(elm)->field.tqe_next) \
        QEUEDEBUG_ABORT("TAILQ_PREREMOVE head %p elm %p %s:%d", \
            (head), (elm), __FILE__,

```

```

__LINE__);
#define QUEUEDEBUG_TAILQ_POSTREMOVE(elm, field) \
    (elm)->field.tqe_next = (void *)1L; \
    (elm)->field.tqe_prev = (void *)1L;
#else
#define QUEUEDEBUG_TAILQ_INSERT_HEAD(head, elm, field)
#define QUEUEDEBUG_TAILQ_INSERT_TAIL(head, elm, field)
#define QUEUEDEBUG_TAILQ_OP(elm, field)
#define QUEUEDEBUG_TAILQ_PREREMOVE(head, elm, field)
#define QUEUEDEBUG_TAILQ_POSTREMOVE(elm, field)
#endif

#define TAILQ_INIT(head) do { \
    (head)->tqh_first = TAILQ_END(head); \
    (head)->tqh_last = &(head)->tqh_first; \
} while (/*CONSTCOND*/0)

#define TAILQ_INSERT_HEAD(head, elm, field) do { \
    QUEUEDEBUG_TAILQ_INSERT_HEAD((head), (elm), field) \
    if (((elm)->field.tqe_next = (head)->tqh_first) != TAILQ_END(head)) \
        (head)->tqh_first->field.tqe_prev = \
            &(elm)->field.tqe_next; \
    else \
        (head)->tqh_last = &(elm)->field.tqe_next; \
    (head)->tqh_first = (elm); \
    (elm)->field.tqe_prev = &(head)->tqh_first; \
} while (/*CONSTCOND*/0)

#define TAILQ_INSERT_TAIL(head, \
    elm, field) do { \
    QUEUEDEBUG_TAILQ_INSERT_TAIL((head), (elm), field) \
    (elm)->field.tqe_next = TAILQ_END(head); \
    (elm)->field.tqe_prev = (head)->tqh_last; \
    *(head)->tqh_last = (elm); \
    (head)->tqh_last = &(elm)->field.tqe_next; \
} while (/*CONSTCOND*/0)

#define TAILQ_INSERT_AFTER(head, listelm, elm, field) do { \
    QUEUEDEBUG_TAILQ_OP((listelm), field) \
    if (((elm)->field.tqe_next = (listelm)->field.tqe_next) != \
        TAILQ_END(head)) \
        (elm)->field.tqe_next->field.tqe_prev = \
            &(elm)->field.tqe_next; \
    else \
        (head)->tqh_last = &(elm)->field.tqe_next; \
    (listelm)->field.tqe_next = (elm); \
    (elm)->field.tqe_prev = &(listelm)->field.tqe_next; \
} while (/*CONSTCOND*/0)

```



```
#define TAILQ_INSERT_BEFORE(listelm, elm, field) do { \
    QUEUEDEBUG_TAILQ_OP((listelm), field) \
    (elm)->field.tqe_prev = (listelm)->field.tqe_prev; \
    (elm)->field.tqe_next = (listelm); \
    *(listelm)->field.tqe_prev = (elm); \
    (listelm)->field.tqe_prev \
    = &(elm)->field.tqe_next; \
} while (/*CONSTCOND*/0)
```

```
#define TAILQ_REMOVE(head, elm, field) do { \
    QUEUEDEBUG_TAILQ_PREREMOVE((head), (elm), field) \
    QUEUEDEBUG_TAILQ_OP((elm), field) \
    if (((elm)->field.tqe_next != TAILQ_END(head)) \
        (elm)->field.tqe_next->field.tqe_prev = \
            (elm)->field.tqe_prev; \
    else \
        (head)->tqh_last = (elm)->field.tqe_prev; \
    *(elm)->field.tqe_prev = (elm)->field.tqe_next; \
    QUEUEDEBUG_TAILQ_POSTREMOVE((elm), field); \
} while (/*CONSTCOND*/0)
```

```
#define TAILQ_REPLACE(head, elm, elm2, field) do { \
    if (((elm2)->field.tqe_next = (elm)->field.tqe_next) != \
        TAILQ_END(head)) \
        (elm2)->field.tqe_next->field.tqe_prev = \
            &(elm2)->field.tqe_next; \
    else \
        (head)->tqh_last = &(elm2)->field.tqe_next; \
    (elm2)->field.tqe_prev = (elm)->field.tqe_prev; \
    *(elm2)->field.tqe_prev = (elm2); \
    QUEUEDEBUG_TAILQ_POSTREMOVE((elm), \
    field); \
} while (/*CONSTCOND*/0)
```

```
#define TAILQ_CONCAT(head1, head2, field) do { \
    if (!TAILQ_EMPTY(head2)) { \
        *(head1)->tqh_last = (head2)->tqh_first; \
        (head2)->tqh_first->field.tqe_prev = (head1)->tqh_last; \
        (head1)->tqh_last = (head2)->tqh_last; \
        TAILQ_INIT((head2)); \
    } \
} while (/*CONSTCOND*/0)
```

```
/*
```

```
* Singly-linked Tail queue declarations.
```

```
*/
```

```
#define STAILQ_HEAD(name, type) \
```

```

struct name {      \
    struct type *stqh_first; /* first element */ \
    struct type **stqh_last; /* addr of last next element */ \
}

#define STAILQ_HEAD_INITIALIZER(head)      \
    { NULL, &(head).stqh_first }

#define STAILQ_ENTRY(type)      \
    struct {      \
        struct type *stqe_next; /* next element */ \
    }

/*
 * Singly-linked Tail queue access methods.
 */
#define STAILQ_FIRST(head) ((head)->stqh_first)
#define STAILQ_END(head) NULL
#define STAILQ_NEXT(elm, field) ((elm)->field.stqe_next)
#define STAILQ_EMPTY(head) (STAILQ_FIRST(head) == STAILQ_END(head))

/*
 * Singly-linked Tail queue functions.
 */
#define STAILQ_INIT(head) do {      \
    (head)->stqh_first = NULL;      \
    (head)->stqh_last = &(head)->stqh_first; \
} while (/*CONSTCOND*/0)

#define STAILQ_INSERT_HEAD(head, elm, field) do {      \
    if (((elm)->field.stqe_next = (head)->stqh_first) == NULL) \
        (head)->stqh_last = &(elm)->field.stqe_next; \
    (head)->stqh_first = (elm);      \
} while (/*CONSTCOND*/0)

#define STAILQ_INSERT_TAIL(head, elm, field) do {      \
    (elm)->field.stqe_next = NULL;      \
    *(head)->stqh_last = (elm);      \
    (head)->stqh_last = &(elm)->field.stqe_next; \
} while (/*CONSTCOND*/0)

#define STAILQ_INSERT_AFTER(head, listelm, elm, field) do {      \
    if (((elm)->field.stqe_next = (listelm)->field.stqe_next) == NULL) \
        (head)->stqh_last = &(elm)->field.stqe_next; \
    (listelm)->field.stqe_next = (elm);      \
} while (/*CONSTCOND*/0)

```

```

#define STAILQ_REMOVE_HEAD(head, field) do { \
    if (((head)->stqh_first = (head)->stqh_first->field.stqe_next) \
        == NULL) \
        (head)->stqh_last = &(head)->stqh_first; \
} while (/*CONSTCOND*/0)

#define STAILQ_REMOVE(head, elm, type, field) do { \
    if ((head)->stqh_first == (elm)) { \
        STAILQ_REMOVE_HEAD((head), field); \
    } else { \
        struct type *curelm = (head)->stqh_first; \
        while (curelm->field.stqe_next != (elm)) \
            curelm = curelm->field.stqe_next; \
        if ((curelm->field.stqe_next = \
            curelm->field.stqe_next->field.stqe_next) == NULL) \
            (head)->stqh_last = &(curelm)->field.stqe_next; \
    } \
} while (/*CONSTCOND*/0)

#define STAILQ_FOREACH(var, head, field) \
    for ((var) = ((head)->stqh_first); \
        (var); \
        (var) = ((var)->field.stqe_next))

#define STAILQ_FOREACH_SAFE(var, head, field, tvar) \
    for ((var) = STAILQ_FIRST((head)); \
        (var) && ((tvar) = STAILQ_NEXT((var), field), 1); \
        (var) = (tvar))

#define STAILQ_CONCAT(head1, head2) do { \
    if (!STAILQ_EMPTY((head2))) { \
        *(head1)->stqh_last \
        = (head2)->stqh_first; \
        (head1)->stqh_last = (head2)->stqh_last; \
        STAILQ_INIT((head2)); \
    } \
} while (/*CONSTCOND*/0)

#define STAILQ_LAST(head, type, field) \
    (STAILQ_EMPTY((head)) ? \
    NULL : \
    ((struct type *) (void *) \
    ((char *) ((head)->stqh_last) - offsetof(struct type, field))))

#ifdef _KERNEL
/*
 * Circular queue definitions. Do not use. We still keep the macros

```

```

* for compatibility but because of pointer aliasing issues their use
* is discouraged!
*/

/*
* __launder_type(): We use this ugly hack to work around the the compiler
* noticing that two types may not alias each other and elide tests in code.
* We hit this in the CIRCLEQ macros when comparing 'struct name *' and
* 'struct type *' (see CIRCLEQ_HEAD()). Modern compilers (such as GCC
* 4.8) declare these comparisons as always false, causing the code to
* not run as designed.
*
* This hack is only to be used for comparisons and thus can be fully const.
* Do not use for assignment.
*
* If we ever choose to change the ABI of the CIRCLEQ macros, we could fix
* this by changing the head/tail sentinel values, but see the note above
* this one.
*/

static __inline const void * __launder_type(const void *);
static __inline const void *
__launder_type(const void *__x)
{
    __asm __volatile("" : "+r" (__x));
    return __x;
}

#if defined(QUEUEDEBUG)
#define QUEUEDEBUG_CIRCLEQ_HEAD(head, field) \
    if ((head)->cqh_first != CIRCLEQ_ENDC(head) && \
        (head)->cqh_first->field.cqe_prev != CIRCLEQ_ENDC(head)) \
        QUEUEDEBUG_ABORT("CIRCLEQ head forw %p %s:%d", (head), \
            __FILE__, __LINE__); \
    if ((head)->cqh_last != CIRCLEQ_ENDC(head) && \
        (head)->cqh_last->field.cqe_next != CIRCLEQ_ENDC(head)) \
        QUEUEDEBUG_ABORT("CIRCLEQ head back %p %s:%d", (head), \
            __FILE__, __LINE__);
#define QUEUEDEBUG_CIRCLEQ_ELM(head, elm, field) \
    if ((elm)->field.cqe_next == CIRCLEQ_ENDC(head)) { \
        if ((head)->cqh_last != (elm)) \
            QUEUEDEBUG_ABORT("CIRCLEQ \
elm last %p %s:%d", \
                (elm), __FILE__, __LINE__); \
    } else { \
        if ((elm)->field.cqe_next->field.cqe_prev != (elm)) \
            QUEUEDEBUG_ABORT("CIRCLEQ elm forw %p %s:%d", \
                (elm), __FILE__, __LINE__); \
    } \

```

```

if ((elm)->field.cqe_prev == CIRCLEQ_ENDC(head)) { \
    if ((head)->cqh_first != (elm)) \
        QUEUEDEBUG_ABORT("CIRCLEQ elm first %p %s:%d", \
            (elm), __FILE__, __LINE__); \
} else { \
    if ((elm)->field.cqe_prev->field.cqe_next != (elm)) \
        QUEUEDEBUG_ABORT("CIRCLEQ elm prev %p %s:%d", \
            (elm), __FILE__, __LINE__); \
}
#define QUEUEDEBUG_CIRCLEQ_POSTREMOVE(elm, field) \
    (elm)->field.cqe_next = (void *)1L; \
    (elm)->field.cqe_prev = (void *)1L;
#else
#define QUEUEDEBUG_CIRCLEQ_HEAD(head, field)
#define QUEUEDEBUG_CIRCLEQ_ELM(head, elm, field)
#define QUEUEDEBUG_CIRCLEQ_POSTREMOVE(elm, field)
#endif

#define CIRCLEQ_HEAD(name, type) \
    struct name { \
        struct type *cqh_first; /* \
        first element */ \
        struct type *cqh_last; /* last element */ \
    }

#define CIRCLEQ_HEAD_INITIALIZER(head) \
    { CIRCLEQ_END(&head), CIRCLEQ_END(&head) }

#define CIRCLEQ_ENTRY(type) \
    struct { \
        struct type *cqe_next; /* next element */ \
        struct type *cqe_prev; /* previous element */ \
    }

/*
 * Circular queue functions.
 */
#define CIRCLEQ_INIT(head) do { \
    (head)->cqh_first = CIRCLEQ_END(head); \
    (head)->cqh_last = CIRCLEQ_END(head); \
} while (/*CONSTCOND*/0)

#define CIRCLEQ_INSERT_AFTER(head, listelm, elm, field) do { \
    QUEUEDEBUG_CIRCLEQ_HEAD((head), field) \
    QUEUEDEBUG_CIRCLEQ_ELM((head), (listelm), field) \
    (elm)->field.cqe_next = (listelm)->field.cqe_next; \
    (elm)->field.cqe_prev = (listelm); \
    if ((listelm)->field.cqe_next == CIRCLEQ_ENDC(head)) \

```

```

(head)->cqh_last = (elm); \
else \
(listelm)->field.cqe_next->field.cqe_prev = (elm); \
(listelm)->field.cqe_next = (elm); \
} while (/*CONSTCOND*/0)

#define CIRCLEQ_INSERT_BEFORE(head,
listelm, elm, field) do { \
QUEUEDEBDEBUG_CIRCLEQ_HEAD((head), field) \
QUEUEDEBDEBUG_CIRCLEQ_ELM((head), (listelm), field) \
(elm)->field.cqe_next = (listelm); \
(elm)->field.cqe_prev = (listelm)->field.cqe_prev; \
if ((listelm)->field.cqe_prev == CIRCLEQ_ENDC(head)) \
(head)->cqh_first = (elm); \
else \
(listelm)->field.cqe_prev->field.cqe_next = (elm); \
(listelm)->field.cqe_prev = (elm); \
} while (/*CONSTCOND*/0)

#define CIRCLEQ_INSERT_HEAD(head, elm, field) do { \
QUEUEDEBDEBUG_CIRCLEQ_HEAD((head), field) \
(elm)->field.cqe_next = (head)->cqh_first; \
(elm)->field.cqe_prev = CIRCLEQ_END(head); \
if ((head)->cqh_last == CIRCLEQ_ENDC(head)) \
(head)->cqh_last = (elm); \
else \
(head)->cqh_first->field.cqe_prev = (elm); \
(head)->cqh_first = (elm); \
} while (/*CONSTCOND*/0)

#define CIRCLEQ_INSERT_TAIL(head, elm, field) do { \
QUEUEDEBDEBUG_CIRCLEQ_HEAD((head), field) \
(elm)->field.cqe_next
= CIRCLEQ_END(head); \
(elm)->field.cqe_prev = (head)->cqh_last; \
if ((head)->cqh_first == CIRCLEQ_ENDC(head)) \
(head)->cqh_first = (elm); \
else \
(head)->cqh_last->field.cqe_next = (elm); \
(head)->cqh_last = (elm); \
} while (/*CONSTCOND*/0)

#define CIRCLEQ_REMOVE(head, elm, field) do { \
QUEUEDEBDEBUG_CIRCLEQ_HEAD((head), field) \
QUEUEDEBDEBUG_CIRCLEQ_ELM((head), (elm), field) \
if ((elm)->field.cqe_next == CIRCLEQ_ENDC(head)) \
(head)->cqh_last = (elm)->field.cqe_prev; \
else \

```

```

(elm)->field.cqe_next->field.cqe_prev = \
    (elm)->field.cqe_prev; \
if ((elm)->field.cqe_prev == CIRCLEQ_ENDC(head)) \
    (head)->cqh_first = (elm)->field.cqe_next; \
else \
    (elm)->field.cqe_prev->field.cqe_next = \
        (elm)->field.cqe_next; \
QUEUEDEBUG_CIRCLEQ_POSTREMOVE((elm), field) \
} while (/*CONSTCOND*/0)

#define CIRCLEQ_FOREACH(var, head, field) \
for ((var) = ((head)->cqh_first); \
    (var) != CIRCLEQ_ENDC(head); \
    (var) \
    = ((var)->field.cqe_next))

#define CIRCLEQ_FOREACH_REVERSE(var, head, field) \
for ((var) = ((head)->cqh_last); \
    (var) != CIRCLEQ_ENDC(head); \
    (var) = ((var)->field.cqe_prev))

/*
 * Circular queue access methods.
 */
#define CIRCLEQ_FIRST(head) ((head)->cqh_first)
#define CIRCLEQ_LAST(head) ((head)->cqh_last)
/* For comparisons */
#define CIRCLEQ_ENDC(head) (__launter_type(head))
/* For assignments */
#define CIRCLEQ_END(head) ((void *)(head))
#define CIRCLEQ_NEXT(elm, field) ((elm)->field.cqe_next)
#define CIRCLEQ_PREV(elm, field) ((elm)->field.cqe_prev)
#define CIRCLEQ_EMPTY(head) \
    (CIRCLEQ_FIRST(head) == CIRCLEQ_ENDC(head))

#define CIRCLEQ_LOOP_NEXT(head, elm, field) \
    (((elm)->field.cqe_next == CIRCLEQ_ENDC(head)) \
     ? ((head)->cqh_first) \
     : (elm)->field.cqe_next)
#define CIRCLEQ_LOOP_PREV(head, elm, field) \
    (((elm)->field.cqe_prev == CIRCLEQ_ENDC(head)) \
     ? ((head)->cqh_last) \
     : \
     (elm)->field.cqe_prev)
#endif /* !_KERNEL */

#endif /* !_SYS_QUEUE_H_ */

```

```

# Contributor: Fabian Affolter <fabian@affolter-engineering.ch>
# Maintainer: Fabian Affolter <fabian@affolter-engineering.ch>
pkgname=py3-flake8-copyright
_pkgname=flake8-copyright
pkgver=0.2.4
pkgrel=3
pkgdesc="Extension for flake8 which checks for copyrights"
options="!check" # No testsuite
url="https://github.com/savoirfairelinux/flake8-copyright"
arch="noarch"
license="MIT"
depends="py3-flake8 py3-setuptools"
makedepends="py3-gpep517 py3-wheel"
subpackages="$pkgname-pyc"
source="https://files.pythonhosted.org/packages/source/${_pkgname:0:1}/${_pkgname}/${_pkgname}-${pkgver}.tar.gz"
builddir="$srcdir"/$_pkgname-$pkgver

replaces="py-flake8-copyright"          # Backwards compatibility
provides="py-flake8-copyright=$pkgver-r$pkgrel" # Backwards compatibility

build() {
    gpep517 build-wheel \
        --wheel-dir .dist \
        --output-fd 3 3>&1 >&2
}

package() {
    gpep517 install-wheel --destdir "$pkgdir" \
        .dist/*.whl
}

sha512sums="
a6ab47e1bb715618f075c51f398e18180404871b3b0faf1c2d30701d5203db6bc23771bf22ffb5bafcd8ee856b9b64237
b316bd503ae7dceed6ca284ccd5a74d
    flake8-copyright-0.2.4.tar.gz
"

#ifdef _SYS_CDEFS_H_
#define _SYS_CDEFS_H_

#warning usage of non-standard #include <sys/cdefs.h> is deprecated

#undef __P
#undef __PMT

#define __P(args) args
#define __PMT(args) args

#define __CONCAT(x,y) x ## y

```



```

#define __STRING(x) #x

#ifdef __cplusplus
# define __BEGIN_DECLS extern "C" {
# define __END_DECLS }
#else
# define __BEGIN_DECLS
# define __END_DECLS
#endif

#if defined(__GNUC__) && !defined(__cplusplus)
# define __THROW __attribute__ ((__nothrow__))
# define __NTH(fct) __attribute__ ((__nothrow__)) fct
#else
# define __THROW
# define __NTH(fct) fct
#endif

#endif /* _SYS_CDEFS_H_ */
# Maintainer: fossdd <fossdd@pwned.life>
pkgname=cargo-license
pkgver=0.6.1
pkgrel=1
pkgdesc="Cargo subcommand to see license of dependencies"
url="https://github.com/onur/cargo-license"
arch="all"
license="MIT"
makedepends="cargo cargo-auditable"
source="$pkgname-$pkgver.tar.gz::https://crates.io/api/v1/crates/cargo-license/$pkgver/download"

prepare() {
    default_prepare

    cargo fetch --target="$CTARGET" --locked
}

build() {
    cargo auditable build --release --frozen
}

check() {
    cargo test --frozen
}

package() {
    install -Dm755 target/release/cargo-license -t "$pkgdir"/usr/bin
}

```

```

sha512sums="
36215145e79965be090ae2f5ce6f5eb208465eb67a94c26bed1fe70a131c46c6dc35695e30852759b7366883fbc3caf00
272d796ac634f0a5e1d49232b6b29d5 cargo-license-0.6.1.tar.gz
"

/* $NetBSD: tree.h,v 1.20 2013/09/14 13:20:45 joerg Exp $ */
/* $OpenBSD: tree.h,v 1.13 2011/07/09 00:19:45 pirofti Exp $ */
/* Modified by Void Linux. */
/*
* Copyright 2002 Niels Provos <provos@citi.umich.edu>
* All rights reserved.
*
* Redistribution and use in source and binary forms, with or without
* modification, are permitted provided that the following conditions
* are met:
* 1. Redistributions of source code must retain the above copyright
* notice, this list of conditions and the following disclaimer.
* 2. Redistributions in binary form must reproduce the above copyright
* notice, this list of conditions and the following disclaimer in the
* documentation and/or other materials provided with the distribution.
*
* THIS SOFTWARE IS PROVIDED BY THE AUTHOR ``AS IS" AND ANY EXPRESS OR
* IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES
* OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED.
* IN NO EVENT SHALL THE
* AUTHOR BE LIABLE FOR ANY DIRECT, INDIRECT,
* INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT
* NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE,
* DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY
* THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT
* (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF
* THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.
*/

#ifndef _SYS_TREE_H_
#define _SYS_TREE_H_

#ifdef __GNUC__
#define __GNUC_PREREQ__(x, y) \
    ((__GNUC__ == (x) && __GNUC_MINOR__ >= (y)) || \
     (__GNUC__ > (x)))
#else
#define __GNUC_PREREQ__(x, y) 0
#endif

#if __GNUC_PREREQ__(2, 7) || defined(__lint__)
#define _sys_tree_h_unused __attribute__((__unused__))
#else
#define _sys_tree_h_unused /* delete */

```

```

#endif

/*
 * This file defines data structures for different types of trees:
 * splay trees and red-black trees.
 *
 * A splay tree is a self-organizing
 * data structure. Every operation
 * on the tree causes a splay to happen. The splay moves the requested
 * node to the root of the tree and partly rebalances it.
 *
 * This has the benefit that request locality causes faster lookups as
 * the requested nodes move to the top of the tree. On the other hand,
 * every lookup causes memory writes.
 *
 * The Balance Theorem bounds the total access time for m operations
 * and n inserts on an initially empty tree as  $O((m + n)\lg n)$ . The
 * amortized cost for a sequence of m accesses to a splay tree is  $O(\lg n)$ ;
 *
 * A red-black tree is a binary search tree with the node color as an
 * extra attribute. It fulfills a set of conditions:
 * - every search path from the root to a leaf consists of the
 *   same number of black nodes,
 * - each red node (except for the root) has a black parent,
 * - each leaf node is black.
 *
 * Every operation on a red-black tree is bounded as  $O(\lg n)$ .
 * The maximum height of a red-black tree is  $2\lg(n+1)$ .
 */

#define SPLAY_HEAD(name, type) \
struct name { \
    struct type *sph_root; /* root of the tree */ \
}

#define SPLAY_INITIALIZER(root) \
{ NULL }

#define SPLAY_INIT(root) do { \
    (root)->sph_root = NULL; \
} while (/*CONSTCOND*/ 0)

#define SPLAY_ENTRY(type) \
struct { \
    struct type *spe_left; /* left element */ \
    struct type *spe_right; /* right element */ \
}

```

```

#define SPLAY_LEFT(elm, field) (elm)->field.spe_left
#define SPLAY_RIGHT(elm, field) (elm)->field.spe_right
#define SPLAY_ROOT(head) (head)->sph_root
#define SPLAY_EMPTY(head) (SPLAY_ROOT(head) == NULL)

/* SPLAY_ROTATE_{LEFT,RIGHT} expect that tmp hold SPLAY_{RIGHT,LEFT} */
#define SPLAY_ROTATE_RIGHT(head, tmp, field) do { \
    SPLAY_LEFT((head)->sph_root, field) = SPLAY_RIGHT(tmp, field); \
    SPLAY_RIGHT(tmp, field) = (head)->sph_root; \
    (head)->sph_root = tmp; \
} while (/*CONSTCOND*/ 0)

#define SPLAY_ROTATE_LEFT(head, tmp, field) do { \
    SPLAY_RIGHT((head)->sph_root, \
    field) = SPLAY_LEFT(tmp, field); \
    SPLAY_LEFT(tmp, field) = (head)->sph_root; \
    (head)->sph_root = tmp; \
} while (/*CONSTCOND*/ 0)

#define SPLAY_LINKLEFT(head, tmp, field) do { \
    SPLAY_LEFT(tmp, field) = (head)->sph_root; \
    tmp = (head)->sph_root; \
    (head)->sph_root = SPLAY_LEFT((head)->sph_root, field); \
} while (/*CONSTCOND*/ 0)

#define SPLAY_LINKRIGHT(head, tmp, field) do { \
    SPLAY_RIGHT(tmp, field) = (head)->sph_root; \
    tmp = (head)->sph_root; \
    (head)->sph_root = SPLAY_RIGHT((head)->sph_root, field); \
} while (/*CONSTCOND*/ 0)

#define SPLAY_ASSEMBLE(head, node, left, right, field) do { \
    SPLAY_RIGHT(left, field) = SPLAY_LEFT((head)->sph_root, field); \
    SPLAY_LEFT(right, field) = SPLAY_RIGHT((head)->sph_root, field); \
    SPLAY_LEFT((head)->sph_root, field) = SPLAY_RIGHT(node, field); \
    SPLAY_RIGHT((head)->sph_root, field) = SPLAY_LEFT(node, field); \
} while (/*CONSTCOND*/ 0)

/* Generates prototypes and inline functions */

#define
    SPLAY_PROTOTYPE(name, type, field, cmp) \
void name##_SPLAY(struct name *, struct type *); \
void name##_SPLAY_MINMAX(struct name *, int); \
struct type *name##_SPLAY_INSERT(struct name *, struct type *); \
struct type *name##_SPLAY_REMOVE(struct name *, struct type *); \
\
/* Finds the node with the same key as elm */ \

```

```

static __inline struct type * \
name##_SPLAY_FIND(struct name *head, struct type *elm) \
{ \
    if (SPLAY_EMPTY(head)) \
        return(NULL); \
    name##_SPLAY(head, elm); \
    if ((cmp)(elm, (head)->sph_root) == 0) \
        return (head->sph_root); \
    return (NULL); \
} \
\
static __inline _sys_tree_h_unused struct type * \
name##_SPLAY_NEXT(struct name *head, struct type *elm) \
{ \
    name##_SPLAY(head, elm); \
    if (SPLAY_RIGHT(elm, field) != NULL) { \
        elm = SPLAY_RIGHT(elm, field); \
        while (SPLAY_LEFT(elm, field) != NULL) { \
            elm = SPLAY_LEFT(elm, field); \
        } \
    } \
    else \
        elm = NULL; \
    return (elm); \
} \
\
static _sys_tree_h_unused __inline struct type * \
name##_SPLAY_MIN_MAX(struct name *head, int val) \
{ \
    name##_SPLAY_MINMAX(head, val); \
    return (SPLAY_ROOT(head)); \
} \
\
/* Main splay operation.
 * Moves node close to the key of elm to top
 */
#define SPLAY_GENERATE(name, type, field, cmp) \
struct type * \
name##_SPLAY_INSERT(struct name *head, struct type *elm) \
{ \
    if (SPLAY_EMPTY(head)) { \
        SPLAY_LEFT(elm, field) = SPLAY_RIGHT(elm, field) = NULL; \
    } else { \
        int __comp; \
        name##_SPLAY(head, elm); \
        __comp = (cmp)(elm, (head)->sph_root); \
        if (__comp < 0) { \
            SPLAY_LEFT(elm, field) = SPLAY_LEFT((head)->sph_root, field); \

```

```

        SPLAY_RIGHT(elm, field) = (head)->sph_root; \
        SPLAY_LEFT((head)->sph_root, field) = NULL; \
    } else if (__comp > 0) { \
        SPLAY_RIGHT(elm,
field) = SPLAY_RIGHT((head)->sph_root, field);\
        SPLAY_LEFT(elm, field) = (head)->sph_root; \
        SPLAY_RIGHT((head)->sph_root, field) = NULL; \
    } else \
        return ((head)->sph_root); \
} \
(head)->sph_root = (elm); \
return (NULL); \
} \
\
struct type * \
name##_SPLAY_REMOVE(struct name *head, struct type *elm) \
{ \
    struct type *__tmp; \
    if (SPLAY_EMPTY(head)) \
        return (NULL); \
    name##_SPLAY(head, elm); \
    if ((cmp)(elm, (head)->sph_root) == 0) { \
        if (SPLAY_LEFT((head)->sph_root, field) == NULL) { \
            (head)->sph_root = SPLAY_RIGHT((head)->sph_root, field);\
        } else { \
            __tmp = SPLAY_RIGHT((head)->sph_root, field); \
            (head)->sph_root = SPLAY_LEFT((head)->sph_root, field);\
            name##_SPLAY(head, elm); \
            SPLAY_RIGHT((head)->sph_root, field) = __tmp; \
        } \
        return (elm); \
    } \
    return (NULL); \
} \
\
void \
name##_SPLAY(struct
name *head, struct type *elm) \
{ \
    struct type __node, *__left, *__right, *__tmp; \
    int __comp; \
    \
    SPLAY_LEFT(&__node, field) = SPLAY_RIGHT(&__node, field) = NULL;\
    __left = __right = &__node; \
    \
    while ((__comp = (cmp)(elm, (head)->sph_root)) != 0) { \
        if (__comp < 0) { \
            __tmp = SPLAY_LEFT((head)->sph_root, field); \

```

```

if (__tmp == NULL) \
    break; \
if ((cmp)(elm, __tmp) < 0){ \
    SPLAY_ROTATE_RIGHT(head, __tmp, field); \
    if (SPLAY_LEFT((head)->sph_root, field) == NULL)\
        break; \
} \
SPLAY_LINKLEFT(head, __right, field); \
} else if (__comp > 0) { \
    __tmp = SPLAY_RIGHT((head)->sph_root, field); \
    if (__tmp == NULL) \
        break; \
    if ((cmp)(elm, __tmp) > 0){ \
        SPLAY_ROTATE_LEFT(head, __tmp, field); \
        if (SPLAY_RIGHT((head)->sph_root, field) == NULL)\
            break; \
    } \
    SPLAY_LINKRIGHT(head, __left, field); \
} \
} \
SPLAY_ASSEMBLE(head,
&__node, __left, __right, field); \
} \
\
/* Splay with either the minimum or the maximum element \
* Used to find minimum or maximum element in tree. \
*/ \
void name##_SPLAY_MINMAX(struct name *head, int __comp) \
{ \
    struct type __node, *__left, *__right, *__tmp; \
    \
    SPLAY_LEFT(&__node, field) = SPLAY_RIGHT(&__node, field) = NULL; \
    __left = __right = &__node; \
    \
    while (1) { \
        if (__comp < 0) { \
            __tmp = SPLAY_LEFT((head)->sph_root, field); \
            if (__tmp == NULL) \
                break; \
            if (__comp < 0){ \
                SPLAY_ROTATE_RIGHT(head, __tmp, field); \
                if (SPLAY_LEFT((head)->sph_root, field) == NULL)\
                    break; \
            } \
            SPLAY_LINKLEFT(head, __right, field); \
        } else if (__comp > 0) { \
            __tmp = SPLAY_RIGHT((head)->sph_root, field); \
            if (__tmp == NULL) \

```

```

        break; \
    if (__comp > 0) { \
        SPLAY_ROTATE_LEFT(head, __tmp, field); \
        if (SPLAY_RIGHT((head)->sph_root,
field) == NULL)\
            break; \
    } \
    SPLAY_LINKRIGHT(head, __left, field); \
} \
} \
SPLAY_ASSEMBLE(head, &__node, __left, __right, field); \
}

#define SPLAY_NEGINF -1
#define SPLAY_INF 1

#define SPLAY_INSERT(name, x, y) name##_SPLAY_INSERT(x, y)
#define SPLAY_REMOVE(name, x, y) name##_SPLAY_REMOVE(x, y)
#define SPLAY_FIND(name, x, y) name##_SPLAY_FIND(x, y)
#define SPLAY_NEXT(name, x, y) name##_SPLAY_NEXT(x, y)
#define SPLAY_MIN(name, x) (SPLAY_EMPTY(x) ? NULL \
    : name##_SPLAY_MIN_MAX(x, SPLAY_NEGINF))
#define SPLAY_MAX(name, x) (SPLAY_EMPTY(x) ? NULL \
    : name##_SPLAY_MIN_MAX(x, SPLAY_INF))

#define SPLAY_FOREACH(x, name, head) \
    for ((x) = SPLAY_MIN(name, head); \
        (x) != NULL; \
        (x) = SPLAY_NEXT(name, head, x))

/* Macros that define a red-black tree */
#define RB_HEAD(name, type) \
struct name { \
    struct type *rbh_root; /* root of the tree */ \
}

#define RB_INITIALIZER(root) \
{ \
    NULL }

#define RB_INIT(root) do { \
    (root)->rbh_root = NULL; \
} while (/*CONSTCOND*/ 0)

#define RB_BLACK 0
#define RB_RED 1
#define RB_ENTRY(type) \
struct { \

```



```

struct type *rbe_left; /* left element */ \
struct type *rbe_right; /* right element */ \
struct type *rbe_parent; /* parent element */ \
int rbe_color; /* node color */ \
}

#define RB_LEFT(elm, field) (elm)->field.rbe_left
#define RB_RIGHT(elm, field) (elm)->field.rbe_right
#define RB_PARENT(elm, field) (elm)->field.rbe_parent
#define RB_COLOR(elm, field) (elm)->field.rbe_color
#define RB_ROOT(head) (head)->rbh_root
#define RB_EMPTY(head) (RB_ROOT(head) == NULL)

#define RB_SET(elm, parent, field) do { \
    RB_PARENT(elm, field) = parent; \
    RB_LEFT(elm, field) = RB_RIGHT(elm, field) = NULL; \
    RB_COLOR(elm, field) = RB_RED; \
} while (/*CONSTCOND*/ 0)

#define RB_SET_BLACKRED(black, red, field) do { \
    RB_COLOR(black, field) = RB_BLACK; \
    RB_COLOR(red, field) \
    = RB_RED; \
} while (/*CONSTCOND*/ 0)

#ifndef RB_AUGMENT
#define RB_AUGMENT(x) do {} while (/*CONSTCOND*/ 0)
#endif

#define RB_ROTATE_LEFT(head, elm, tmp, field) do { \
    (tmp) = RB_RIGHT(elm, field); \
    if ((RB_RIGHT(elm, field) = RB_LEFT(tmp, field)) != NULL) { \
        RB_PARENT(RB_LEFT(tmp, field), field) = (elm); \
    } \
    RB_AUGMENT(elm); \
    if ((RB_PARENT(tmp, field) = RB_PARENT(elm, field)) != NULL) { \
        if ((elm) == RB_LEFT(RB_PARENT(elm, field), field)) \
            RB_LEFT(RB_PARENT(elm, field), field) = (tmp); \
        else \
            RB_RIGHT(RB_PARENT(elm, field), field) = (tmp); \
    } else \
        (head)->rbh_root = (tmp); \
    RB_LEFT(tmp, field) = (elm); \
    RB_PARENT(elm, field) = (tmp); \
    RB_AUGMENT(tmp); \
    if ((RB_PARENT(tmp, field))) \
        RB_AUGMENT(RB_PARENT(tmp, field)); \
} while (/*CONSTCOND*/ 0)

```

```

#define RB_ROTATE_RIGHT(head, elm, tmp, field) do { \
    (tmp) = RB_LEFT(elm, field); \
    if ((RB_LEFT(elm, field) = RB_RIGHT(tmp, field)) \
    != NULL) { \
        RB_PARENT(RB_RIGHT(tmp, field), field) = (elm); \
    } \
    RB_AUGMENT(elm); \
    if ((RB_PARENT(tmp, field) = RB_PARENT(elm, field)) != NULL) { \
        if ((elm) == RB_LEFT(RB_PARENT(elm, field), field)) \
            RB_LEFT(RB_PARENT(elm, field), field) = (tmp); \
        else \
            RB_RIGHT(RB_PARENT(elm, field), field) = (tmp); \
    } else \
        (head)->rbh_root = (tmp); \
    RB_RIGHT(tmp, field) = (elm); \
    RB_PARENT(elm, field) = (tmp); \
    RB_AUGMENT(tmp); \
    if ((RB_PARENT(tmp, field))) \
        RB_AUGMENT(RB_PARENT(tmp, field)); \
} while (/*CONSTCOND*/ 0)

/* Generates prototypes and inline functions */
#define RB_PROTOTYPE(name, type, field, cmp) \
    RB_PROTOTYPE_INTERNAL(name, type, field, cmp,)
#define RB_PROTOTYPE_STATIC(name, type, field, cmp) \
    RB_PROTOTYPE_INTERNAL(name, type, field, cmp, _sys_tree_h_unused static)
#define RB_PROTOTYPE_INTERNAL(name, type, field, cmp, attr) \
    attr void name##_RB_INSERT_COLOR(struct name *, struct \
    type *); \
    attr void name##_RB_REMOVE_COLOR(struct name *, struct type *, struct type *); \
    attr struct type *name##_RB_REMOVE(struct name *, struct type *); \
    attr struct type *name##_RB_INSERT(struct name *, struct type *); \
    attr struct type *name##_RB_FIND(struct name *, struct type *); \
    attr struct type *name##_RB_NFIND(struct name *, struct type *); \
    attr struct type *name##_RB_NEXT(struct type *); \
    attr struct type *name##_RB_PREV(struct type *); \
    attr struct type *name##_RB_MINMAX(struct name *, int); \
    \

/* Main rb operation.
 * Moves node close to the key of elm to top
 */
#define RB_GENERATE(name, type, field, cmp) \
    RB_GENERATE_INTERNAL(name, type, field, cmp,)
#define RB_GENERATE_STATIC(name, type, field, cmp) \
    RB_GENERATE_INTERNAL(name, type, field, cmp, _sys_tree_h_unused static)
#define RB_GENERATE_INTERNAL(name, type, field, cmp, attr) \

```

```

attr void \
name##_RB_INSERT_COLOR(struct name *head, struct type *elm) \
{ \
    struct type
    *parent, *gparent, *tmp; \
    while ((parent = RB_PARENT(elm, field)) != NULL && \
        RB_COLOR(parent, field) == RB_RED) { \
        gparent = RB_PARENT(parent, field); \
        if (parent == RB_LEFT(gparent, field)) { \
            tmp = RB_RIGHT(gparent, field); \
            if (tmp && RB_COLOR(tmp, field) == RB_RED) { \
                RB_COLOR(tmp, field) = RB_BLACK; \
                RB_SET_BLACKRED(parent, gparent, field);\
                elm = gparent; \
                continue; \
            } \
            if (RB_RIGHT(parent, field) == elm) { \
                RB_ROTATE_LEFT(head, parent, tmp, field);\
                tmp = parent; \
                parent = elm; \
                elm = tmp; \
            } \
            RB_SET_BLACKRED(parent, gparent, field); \
            RB_ROTATE_RIGHT(head, gparent, tmp, field); \
        } else { \
            tmp = RB_LEFT(gparent, field); \
            if (tmp && RB_COLOR(tmp, field) == RB_RED) { \
                RB_COLOR(tmp, field) = RB_BLACK; \
                RB_SET_BLACKRED(parent, gparent, field);\
                elm = gparent; \
                continue; \
            } \
            if (RB_LEFT(parent, field) == elm)
{ \
                RB_ROTATE_RIGHT(head, parent, tmp, field);\
                tmp = parent; \
                parent = elm; \
                elm = tmp; \
            } \
            RB_SET_BLACKRED(parent, gparent, field); \
            RB_ROTATE_LEFT(head, gparent, tmp, field); \
        } \
    } \
    RB_COLOR(head->rbh_root, field) = RB_BLACK; \
} \
\
attr void \
name##_RB_REMOVE_COLOR(struct name *head, struct type *parent, struct type *elm) \

```

```

{
    \
    struct type *tmp;
    \
    while ((elm == NULL || RB_COLOR(elm, field) == RB_BLACK) && \
        elm != RB_ROOT(head)) {
        \
        if (RB_LEFT(parent, field) == elm) {
            \
            tmp = RB_RIGHT(parent, field);
            \
            if (RB_COLOR(tmp, field) == RB_RED) {
                \
                RB_SET_BLACKRED(tmp, parent, field);
                \
                RB_ROTATE_LEFT(head, parent, tmp, field);
                \
                tmp = RB_RIGHT(parent, field);
            }
            \
            if ((RB_LEFT(tmp, field) == NULL || \
                RB_COLOR(RB_LEFT(tmp, field), field) == RB_BLACK) && \
                (RB_RIGHT(tmp, field) == NULL || \
                RB_COLOR(RB_RIGHT(tmp, field), field) == RB_BLACK)) {
                \
                RB_COLOR(tmp, field) = RB_RED;
                \
                elm = parent;
                \
                parent = RB_PARENT(elm, field);
            } else {
                \
                if (RB_RIGHT(tmp, field) == NULL || \
                    RB_COLOR(RB_RIGHT(tmp, field), field) == RB_BLACK) {
                    \
                    struct type *oleft;
                    \
                    if ((oleft = RB_LEFT(tmp, field)) \
                        != NULL) \
                        RB_COLOR(oleft, field) = RB_BLACK;
                    \
                    RB_COLOR(tmp, field) = RB_RED;
                    \
                    RB_ROTATE_RIGHT(head, tmp, oleft, field);
                    \
                    tmp = RB_RIGHT(parent, field);
                }
                \
                RB_COLOR(tmp, field) = RB_COLOR(parent, field);
                \
                RB_COLOR(parent, field) = RB_BLACK;
                \
                if (RB_RIGHT(tmp, field)) \
                    RB_COLOR(RB_RIGHT(tmp, field), field) = RB_BLACK;
                \
                RB_ROTATE_LEFT(head, parent, tmp, field);
                \
                elm = RB_ROOT(head);
                \
                break;
            }
            \
        } else {
            \
            tmp = RB_LEFT(parent, field);
            \
            if (RB_COLOR(tmp, field) == RB_RED) {
                \
                RB_SET_BLACKRED(tmp, parent, field);
                \
                RB_ROTATE_RIGHT(head, parent, tmp, field);
                \
                tmp
            }
            \
            = RB_LEFT(parent, field);
            \
            if ((RB_LEFT(tmp, field) == NULL || \
                RB_COLOR(RB_LEFT(tmp, field), field) == RB_BLACK) && \

```

```

        (RB_RIGHT(tmp, field) == NULL || \
        RB_COLOR(RB_RIGHT(tmp, field), field) == RB_BLACK)) {\
    RB_COLOR(tmp, field) = RB_RED; \
    elm = parent; \
    parent = RB_PARENT(elm, field); \
} else { \
    if (RB_LEFT(tmp, field) == NULL || \
        RB_COLOR(RB_LEFT(tmp, field), field) == RB_BLACK) {\
        struct type *oright; \
        if ((oright = RB_RIGHT(tmp, field)) \
            != NULL) \
            RB_COLOR(oright, field) = RB_BLACK;\
        RB_COLOR(tmp, field) = RB_RED; \
        RB_ROTATE_LEFT(head, tmp, oright, field);\
        tmp = RB_LEFT(parent, field); \
    } \
    RB_COLOR(tmp, field) = RB_COLOR(parent, field);\
    RB_COLOR(parent, field) = RB_BLACK; \
    if (RB_LEFT(tmp, field)) \
        RB_COLOR(RB_LEFT(tmp, field), field) = RB_BLACK;\
    RB_ROTATE_RIGHT(head, parent, tmp, field);\
    elm = RB_ROOT(head); \
    break; \
} \
} \
} \
if
(elm) \
    RB_COLOR(elm, field) = RB_BLACK; \
} \
\
attr struct type * \
name##_RB_REMOVE(struct name *head, struct type *elm) \
{ \
    struct type *child, *parent, *old = elm; \
    int color; \
    if (RB_LEFT(elm, field) == NULL) \
        child = RB_RIGHT(elm, field); \
    else if (RB_RIGHT(elm, field) == NULL) \
        child = RB_LEFT(elm, field); \
    else { \
        struct type *left; \
        elm = RB_RIGHT(elm, field); \
        while ((left = RB_LEFT(elm, field)) != NULL) \
            elm = left; \
        child = RB_RIGHT(elm, field); \
        parent = RB_PARENT(elm, field); \
        color = RB_COLOR(elm, field); \

```

```

if (child)    \
  RB_PARENT(child, field) = parent; \
if (parent) {    \
  if (RB_LEFT(parent, field) == elm) \
    RB_LEFT(parent, field) = child; \
  else    \
    RB_RIGHT(parent, field) = child; \
  RB_AUGMENT(parent); \
} else    \
  RB_ROOT(head)
= child; \
if (RB_PARENT(elm, field) == old) \
  parent = elm; \
(elm)->field = (old)->field; \
if (RB_PARENT(old, field)) { \
  if (RB_LEFT(RB_PARENT(old, field), field) == old)\
    RB_LEFT(RB_PARENT(old, field), field) = elm;\
  else    \
    RB_RIGHT(RB_PARENT(old, field), field) = elm;\
  RB_AUGMENT(RB_PARENT(old, field)); \
} else    \
  RB_ROOT(head) = elm; \
RB_PARENT(RB_LEFT(old, field), field) = elm; \
if (RB_RIGHT(old, field)) \
  RB_PARENT(RB_RIGHT(old, field), field) = elm; \
if (parent) {    \
  left = parent; \
  do {    \
    RB_AUGMENT(left); \
  } while ((left = RB_PARENT(left, field)) != NULL); \
}    \
goto color; \
}    \
parent = RB_PARENT(elm, field); \
color = RB_COLOR(elm, field); \
if (child)    \
  RB_PARENT(child, field) = parent; \
if (parent) {    \
  if (RB_LEFT(parent, field) == elm) \
    RB_LEFT(parent, field) = child; \
  else    \
    RB_RIGHT(parent,
field) = child; \
  RB_AUGMENT(parent); \
} else    \
  RB_ROOT(head) = child; \
color:    \
if (color == RB_BLACK)    \

```

```

    name##_RB_REMOVE_COLOR(head, parent, child); \
    return (old); \
} \
\
/* Inserts a node into the RB tree */ \
attr struct type * \
name##_RB_INSERT(struct name *head, struct type *elm) \
{ \
    struct type *tmp; \
    struct type *parent = NULL; \
    int comp = 0; \
    tmp = RB_ROOT(head); \
    while (tmp) { \
        parent = tmp; \
        comp = (cmp)(elm, parent); \
        if (comp < 0) \
            tmp = RB_LEFT(tmp, field); \
        else if (comp > 0) \
            tmp = RB_RIGHT(tmp, field); \
        else \
            return (tmp); \
    } \
    RB_SET(elm, parent, field); \
    if (parent != NULL) { \
        if (comp < 0) \
            RB_LEFT(parent, field) = elm; \
        else \
            RB_RIGHT(parent, field) = elm; \
        RB_AUGMENT(parent); \
    } else \
        RB_ROOT(head) = elm; \
    name##_RB_INSERT_COLOR(head, \
    elm); \
    return (NULL); \
} \
\
/* Finds the node with the same key as elm */ \
attr struct type * \
name##_RB_FIND(struct name *head, struct type *elm) \
{ \
    struct type *tmp = RB_ROOT(head); \
    int comp; \
    while (tmp) { \
        comp = cmp(elm, tmp); \
        if (comp < 0) \
            tmp = RB_LEFT(tmp, field); \
        else if (comp > 0) \
            tmp = RB_RIGHT(tmp, field); \
    }

```

```

else \
    return (tmp); \
} \
return (NULL); \
} \
\
/* Finds the first node greater than or equal to the search key */\
attr struct type * \
name##_RB_NFIND(struct name *head, struct type *elm) \
{ \
    struct type *tmp = RB_ROOT(head); \
    struct type *res = NULL; \
    int comp; \
    while (tmp) { \
        comp = cmp(elm, tmp); \
        if (comp < 0) { \
            res = tmp; \
            tmp = RB_LEFT(tmp, field); \
        } \
        else if (comp > 0) \
            tmp = \
RB_RIGHT(tmp, field); \
        else \
            return (tmp); \
    } \
    return (res); \
} \
\
/* ARGSUSED */ \
attr struct type * \
name##_RB_NEXT(struct type *elm) \
{ \
    if (RB_RIGHT(elm, field)) { \
        elm = RB_RIGHT(elm, field); \
        while (RB_LEFT(elm, field)) \
            elm = RB_LEFT(elm, field); \
    } else { \
        if (RB_PARENT(elm, field) && \
            (elm == RB_LEFT(RB_PARENT(elm, field), field))) \
            elm = RB_PARENT(elm, field); \
        else { \
            while (RB_PARENT(elm, field) && \
                (elm == RB_RIGHT(RB_PARENT(elm, field), field))) \
                elm = RB_PARENT(elm, field); \
            elm = RB_PARENT(elm, field); \
        } \
    } \
    return (elm); \
} \

```



```

}    \
    \
/* ARGSUSED */    \
attr struct type *    \
name##_RB_PREV(struct type *elm)    \
{    \
    if (RB_LEFT(elm, field)) {    \
        elm = RB_LEFT(elm, field);    \
        while (RB_RIGHT(elm, field))    \
            elm = RB_RIGHT(elm, field);    \
    }
    else {    \
        if (RB_PARENT(elm, field) &&    \
            (elm == RB_RIGHT(RB_PARENT(elm, field), field)))    \
            elm = RB_PARENT(elm, field);    \
        else {    \
            while (RB_PARENT(elm, field) &&    \
                (elm == RB_LEFT(RB_PARENT(elm, field), field)))    \
                elm = RB_PARENT(elm, field);    \
            elm = RB_PARENT(elm, field);    \
        }    \
    }    \
    return (elm);    \
}    \
    \
attr struct type *    \
name##_RB_MINMAX(struct name *head, int val)    \
{    \
    struct type *tmp = RB_ROOT(head);    \
    struct type *parent = NULL;    \
    while (tmp) {    \
        parent = tmp;    \
        if (val < 0)    \
            tmp = RB_LEFT(tmp, field);    \
        else    \
            tmp = RB_RIGHT(tmp, field);    \
    }    \
    return (parent);    \
}

#define RB_NEGINF -1
#define RB_INF 1

#define RB_INSERT(name, x, y) name##_RB_INSERT(x, y)
#define RB_REMOVE(name, x, y) name##_RB_REMOVE(x, y)
#define RB_FIND(name, x, y) name##_RB_FIND(x, y)
#define RB_NFIND(name, x, y) name##_RB_NFIND(x,

```

```

y)
#define RB_NEXT(name, x, y) name##_RB_NEXT(y)
#define RB_PREV(name, x, y) name##_RB_PREV(y)
#define RB_MIN(name, x) name##_RB_MINMAX(x, RB_NEGINF)
#define RB_MAX(name, x) name##_RB_MINMAX(x, RB_INF)

#define RB_FOREACH(x, name, head) \
for ((x) = RB_MIN(name, head); \
(x) != NULL; \
(x) = name##_RB_NEXT(x))

#define RB_FOREACH_FROM(x, name, y) \
for ((x) = (y); \
((x) != NULL) && ((y) = name##_RB_NEXT(x), (x) != NULL); \
(x) = (y))

#define RB_FOREACH_SAFE(x, name, head, y) \
for ((x) = RB_MIN(name, head); \
((x) != NULL) && ((y) = name##_RB_NEXT(x), (x) != NULL); \
(x) = (y))

#define RB_FOREACH_REVERSE(x, name, head) \
for ((x) = RB_MAX(name, head); \
(x) != NULL; \
(x) = name##_RB_PREV(x))

#define RB_FOREACH_REVERSE_FROM(x, name, y) \
for ((x) = (y); \
((x) != NULL) && ((y) = name##_RB_PREV(x), (x) != NULL); \
(x) = (y))

#define RB_FOREACH_REVERSE_SAFE(x, name, \
head, y) \
for ((x) = RB_MAX(name, head); \
((x) != NULL) && ((y) = name##_RB_PREV(x), (x) != NULL); \
(x) = (y))

#endif /* _SYS_TREE_H_ */
pkgname=linux-headers
pkgver=6.14.2 # Follow the latest Linux stable
_kernver=${pkgver%.*}
pkgrel=0
pkgdesc="Linux system headers"
url="https://kernel.org/"
arch="all" # Headers are architecture specific
license="GPL-2.0-only"
makedepends="perl"
options="!check !dbg !strip !tracedeps !archcheck"

```

```
source="https://kernel.org/pub/linux/kernel/v6.x/linux-$_kernver.tar.xz
revert-broken-uapi.patch
0003-remove-inclusion-of-sysinfo.h-in-kernel.h.patch
```

1.131 queue 1.1.0

1.131.1 Available under license :

ISC

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1.132 pq 1.10.9

1.132.1 Available under license :

```
//go:build go1.10
// +build go1.10
```

package pq

```
import (
    "context"
```

```

"database/sql/driver"
)

// NoticeHandler returns the notice handler on the given connection, if any. A
// runtime panic occurs if c is not a pq connection. This is rarely used
// directly, use ConnectorNoticeHandler and ConnectorWithNoticeHandler instead.
func NoticeHandler(c driver.Conn) func(*Error) {
    return c.(*conn).noticeHandler
}

// SetNoticeHandler sets the given notice handler on the given connection. A
// runtime panic occurs if c is not a pq connection. A nil handler may be used
// to unset it. This is rarely used directly, use ConnectorNoticeHandler and
// ConnectorWithNoticeHandler instead.
//
// Note: Notice handlers are executed synchronously by pq meaning commands
// won't continue to be processed until the handler returns.
func SetNoticeHandler(c driver.Conn, handler func(*Error)) {
    c.(*conn).noticeHandler = handler
}

// NoticeHandlerConnector wraps a regular connector and sets a notice handler
//
// on it.
type NoticeHandlerConnector struct {
    driver.Connector
    noticeHandler func(*Error)
}

// Connect calls the underlying connector's connect method and then sets the
// notice handler.
func (n *NoticeHandlerConnector) Connect(ctx context.Context) (driver.Conn, error) {
    c, err := n.Connector.Connect(ctx)
    if err == nil {
        SetNoticeHandler(c, n.noticeHandler)
    }
    return c, err
}

// ConnectorNoticeHandler returns the currently set notice handler, if any. If
// the given connector is not a result of ConnectorWithNoticeHandler, nil is
// returned.
func ConnectorNoticeHandler(c driver.Connector) func(*Error) {
    if c, ok := c.(*NoticeHandlerConnector); ok {
        return c.noticeHandler
    }
    return nil
}

```

```
// ConnectorWithNoticeHandler creates or sets the given handler for the given
// connector. If the given connector is a result of calling this function
// previously, it is simply set on the given connector and returned. Otherwise,
// this returns a new connector wrapping the given one and
// setting the notice
// handler. A nil notice handler may be used to unset it.
//
// The returned connector is intended to be used with database/sql.OpenDB.
//
// Note: Notice handlers are executed synchronously by pq meaning commands
// won't continue to be processed until the handler returns.
func ConnectorWithNoticeHandler(c driver.Connector, handler func(*Error)) *NoticeHandlerConnector {
    if c, ok := c.(*NoticeHandlerConnector); ok {
        c.noticeHandler = handler
        return c
    }
    return &NoticeHandlerConnector{Connector: c, noticeHandler: handler}
}
```

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1.133 x-net 0.41.0

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1.135 javax-annotation-api 1.3.2

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Martin Richards

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/* zlib.h -- interface of the 'zlib' general purpose compression library
version 1.2.11, January 15th, 2017

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Bit Twiddling Hacks

By Sean Eron Anderson

seander@cs.stanford.edu

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The punycode implementation is based on the sample code in RFC 3492

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Use:

<https://github.com/dotnet/coreclr/blob/a9074bce5e3814db67dbec1c56f477202164d162/tests/src/sizeondisk/sodbench/SoDBench.cs#L738>

```
<Project Sdk="Microsoft.NET.Sdk">
```

```
<PropertyGroup>
```

```
<OutputType>Exe</OutputType>
```

```
<ApplicationManifest>App.manifest</ApplicationManifest>
```

```
</PropertyGroup>
```

```
<ItemGroup>
```

```
<Compile Include="Program.cs" />
```

```
<Compile Include="..\..\ServerContracts/Server.CoClasses.cs" />
```

```
<Compile Include="..\..\ServerContracts/Server.Contracts.cs" />
```

```
<Compile Include="..\..\ServerContracts/ServerGuids.cs" />
```

```
</ItemGroup>
```

```
<ItemGroup>
```

```
<ProjectReference Include="..\..\NativeServer/CMakeLists.txt" />
```

```
<ProjectReference Include="$(TestSourceDir)Common/CoreCLRTestLibrary/CoreCLRTestLibrary.csproj" />
```

```
</ItemGroup>
```

```
</Project>
```

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1.137 json-simple 1.1.1

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1.138 pyproject-hooks 1.2.0

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1.139 jline 3.26.1

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```

Found in path(s):

```
* /jline-3-26-1-sources-jar/org/jline/terminal/impl/jna/solaris/SolarisNativePty.java
* /jline-3-26-1-sources-jar/org/jline/terminal/impl/jna/JnaTerminalProvider.java
* /jline-3-26-1-sources-jar/org/jline/reader/impl/completer/SystemCompleter.java
* /jline-3-26-1-sources-jar/org/jline/terminal/impl/jna/linux/LinuxNativePty.java
* /jline-3-26-1-sources-jar/org/jline/console/CommandMethods.java
* /jline-3-26-1-sources-jar/org/jline/console/ScriptEngine.java
* /jline-3-26-1-sources-jar/org/jline/console/CommandRegistry.java
* /jline-3-26-1-sources-jar/org/jline/widget/AutosuggestionWidgets.java
* /jline-3-26-1-sources-jar/org/jline/terminal/impl/jna/freebsd/FreeBsdNativePty.java
*
* /jline-3-26-1-sources-jar/org/jline/console/impl/JlineCommandRegistry.java
* /jline-3-26-1-sources-jar/org/jline/terminal/impl/jansi/win/JansiWinSysTerminal.java
* /jline-3-26-1-sources-jar/org/jline/console/CommandInput.java
* /jline-3-26-1-sources-jar/org/jline/terminal/impl/jni/JniNativePty.java
* /jline-3-26-1-sources-jar/org/jline/terminal/impl/jna/freebsd/CLibrary.java
```

```

* /jline-3-26-1-sources-jar/org/jline/Utils/ColorPalette.java
* /jline-3-26-1-sources-jar/org/jline/console/impl/AbstractCommandRegistry.java
* /jline-3-26-1-sources-jar/org/jline/terminal/impl/jna/JnaNativePty.java
* /jline-3-26-1-sources-jar/org/jline/console/CmdDesc.java
* /jline-3-26-1-sources-jar/org/jline/terminal/impl/jna/osx/OsXNativePty.java
* /jline-3-26-1-sources-jar/org/jline/reader/EndOfFileException.java
* /jline-3-26-1-sources-jar/org/jline/reader/LineReaderBuilder.java
* /jline-3-26-1-sources-jar/org/jline/terminal/impl/jansi/JansiTerminalProvider.java
* /jline-3-26-1-sources-jar/org/jline/console/CmdLine.java
*
/jline-3-26-1-sources-jar/org/jline/widget/AutopairWidgets.java
* /jline-3-26-1-sources-jar/org/jline/Utils/Log.java
* /jline-3-26-1-sources-jar/org/jline/reader/impl/DefaultParser.java
* /jline-3-26-1-sources-jar/org/jline/terminal/impl/jni/win/NativeWinSysTerminal.java
* /jline-3-26-1-sources-jar/org/jline/terminal/impl/jna/osx/CLibrary.java
* /jline-3-26-1-sources-jar/org/jline/Utils/Display.java
* /jline-3-26-1-sources-jar/org/jline/terminal/impl/jni/JniTerminalProvider.java
* /jline-3-26-1-sources-jar/org/jline/terminal/impl/jna/linux/CLibrary.java
* /jline-3-26-1-sources-jar/org/jline/reader/CompletionMatcher.java
* /jline-3-26-1-sources-jar/org/jline/reader/impl/ReaderUtils.java
* /jline-3-26-1-sources-jar/org/jline/terminal/impl/jna/solaris/CLibrary.java
* /jline-3-26-1-sources-jar/org/jline/terminal/impl/jna/win/JnaWinSysTerminal.java
* /jline-3-26-1-sources-jar/org/jline/terminal/impl/jansi/JansiNativePty.java
* /jline-3-26-1-sources-jar/org/jline/Utils/Signals.java

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Found in path(s):

* /jline-3-26-1-sources-jar/org/jline/reader/Expander.java

* /jline-3-26-1-sources-jar/org/jline/terminal/impl/AbstractPosixTerminal.java

* /jline-3-26-1-sources-jar/org/jline/reader/impl/completer/AggregateCompleter.java

* /jline-3-26-1-sources-jar/org/jline/reader/impl/DefaultExpander.java

* /jline-3-26-1-sources-jar/org/jline/reader/Binding.java

* /jline-3-26-1-sources-jar/org/jline/reader/Macro.java

* /jline-3-26-1-sources-jar/org/jline/utils/ExecHelper.java

* /jline-3-26-1-sources-jar/org/jline/terminal/impl/exec/ExecPty.java

* /jline-3-26-1-sources-jar/org/jline/utils/Levenshtein.java

* /jline-3-26-1-sources-jar/org/jline/reader/Widget.java

*

/jline-3-26-1-sources-jar/org/jline/terminal/impl/MouseSupport.java

* /jline-3-26-1-sources-jar/org/jline/utils/DiffHelper.java

* /jline-3-26-1-sources-jar/org/jline/reader/impl/UndoTree.java

* /jline-3-26-1-sources-jar/org/jline/terminal/Attributes.java

* /jline-3-26-1-sources-jar/org/jline/utils/ClosedException.java

* /jline-3-26-1-sources-jar/org/jline/reader/impl/completer/NullCompleter.java

* /jline-3-26-1-sources-jar/org/jline/utils/ShutdownHooks.java

* /jline-3-26-1-sources-jar/org/jline/reader/impl/completer/EnumCompleter.java

* /jline-3-26-1-sources-jar/org/jline/keymap/KeyMap.java

* /jline-3-26-1-sources-jar/org/jline/utils/InputStreamReader.java

* /jline-3-26-1-sources-jar/org/jline/terminal/MouseEvent.java

* /jline-3-26-1-sources-jar/org/jline/terminal/impl/CursorSupport.java

* /jline-3-26-1-sources-jar/org/jline/reader/UserInterruptException.java

* /jline-3-26-1-sources-jar/org/jline/utils/WCWidth.java

* /jline-3-26-1-sources-jar/org/jline/terminal/Cursor.java

* /jline-3-26-1-sources-jar/org/jline/terminal/impl/jna/win/WindowsAnsiWriter.java

*

```
/jline-3-26-1-sources-jar/org/jline/reader/Reference.java
* /jline-3-26-1-sources-jar/org/jline/terminal/impl/NativeSignalHandler.java
* /jline-3-26-1-sources-jar/org/jline/terminal/spi/Pty.java
* /jline-3-26-1-sources-jar/org/jline/utils/AttributedString.java
* /jline-3-26-1-sources-jar/org/jline/utils/OSUtils.java
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Found in path(s):
* /jline-3-26-1-sources-jar/org/jline/terminal/impl/jansi/win/WindowsAnsiWriter.java
* /jline-3-26-1-sources-jar/org/jline/terminal/impl/jansi/win/WindowsAnsiWriter.java
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#
class = org.jline.terminal.impl.jni.JniTerminalProvider
```

```
Found in path(s):
* /jline-3-26-1-sources-jar/META-INF/services/org/jline/terminal/provider/jni
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* /jline-3-26-1-sources-jar/org/jline/nativ/JLineLibrary.java
* /jline-3-26-1-sources-jar/org/jline/terminal/impl/DumbTerminalProvider.java
* /jline-3-26-1-sources-jar/org/jline/terminal/spi/TerminalExt.java
* /jline-3-26-1-sources-jar/org/jline/terminal/impl/jansi/win/WindowsSupport.java
* /jline-3-26-1-sources-jar/org/jline/reader/EOFError.java
* /jline-3-26-1-sources-jar/org/jline/reader/SyntaxError.java
* /jline-3-26-1-sources-jar/org/jline/terminal/spi/SystemStream.java
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* /jline-3-26-1-sources-jar/org/jline/terminal/impl/ffm/WindowsAnsiWriter.java
* /jline-3-26-1-sources-jar/org/jline/terminal/impl/ffm/CLibrary.java
* /jline-3-26-1-sources-jar/org/jline/terminal/impl/ffm/FfmTerminalProvider.java
* /jline-3-26-1-sources-jar/org/jline/terminal/impl/ffm/NativeWinSysTerminal.java
* /jline-3-26-1-sources-jar/org/jline/terminal/impl/ffm/NativeWinConsoleWriter.java
* /jline-3-26-1-sources-jar/org/jline/terminal/impl/ffm/FfmNativePty.java
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Found in path(s):

* /jline-3-26-1-sources-jar/org/jline/terminal/Terminal.java
* /jline-3-26-1-sources-jar/org/jline/utils/StyleResolver.java
* /jline-3-26-1-sources-jar/org/jline/style/Styler.java
* /jline-3-26-1-sources-jar/org/jline/terminal/impl/ExternalTerminal.java
* /jline-3-26-1-sources-jar/org/jline/builtins/NfaMatcher.java
* /jline-3-26-1-sources-jar/org/jline/builtins/InputRC.java


```

* /jline-3-26-1-sources-jar/org/jline/terminal/impl/DumbTerminal.java
* /jline-3-26-1-sources-jar/org/jline/reader/impl/completer/FileNameCompleter.java
* /jline-3-26-1-sources-jar/org/jline/terminal/impl/PosixSysTerminal.java
* /jline-3-26-1-sources-jar/org/jline/utils/Colors.java
*
/jline-3-26-1-sources-jar/org/jline/utils/Timeout.java
* /jline-3-26-1-sources-jar/org/jline/reader/ParsedLine.java
* /jline-3-26-1-sources-jar/org/jline/reader/CompletingParsedLine.java
* /jline-3-26-1-sources-jar/org/jline/style/StyleFactory.java
* /jline-3-26-1-sources-jar/org/jline/utils/NonBlocking.java
* /jline-3-26-1-sources-jar/org/jline/keymap/BindingReader.java
* /jline-3-26-1-sources-jar/org/jline/terminal/Size.java
* /jline-3-26-1-sources-jar/org/jline/utils/AttributedStringBuilder.java
* /jline-3-26-1-sources-jar/org/jline/reader/impl/KillRing.java
* /jline-3-26-1-sources-jar/org/jline/utils/NonBlockingInputStream.java
* /jline-3-26-1-sources-jar/org/jline/reader/MaskingCallback.java
* /jline-3-26-1-sources-jar/org/jline/terminal/impl/LineDisciplineTerminal.java
* /jline-3-26-1-sources-jar/org/jline/reader/History.java
* /jline-3-26-1-sources-jar/org/jline/terminal/impl/PosixPtyTerminal.java
* /jline-3-26-1-sources-jar/org/jline/terminal/impl/jna/win/Kernel32.java
*
/jline-3-26-1-sources-jar/org/jline/reader/Completer.java
* /jline-3-26-1-sources-jar/org/jline/style/StyleExpression.java
* /jline-3-26-1-sources-jar/org/jline/terminal/impl/NonBlockingReader.java
* /jline-3-26-1-sources-jar/org/jline/terminal/impl/NonBlockingReaderImpl.java
* /jline-3-26-1-sources-jar/org/jline/terminal/impl/StyleSource.java
* /jline-3-26-1-sources-jar/org/jline/terminal/impl/NonBlockingInputStreamImpl.java
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```

* /jline-3-26-1-sources-jar/org/jline/reader/impl/completer/ArgumentCompleter.java
* /jline-3-26-1-sources-jar/org/jline/terminal/impl/InfoCmp.java
* /jline-3-26-1-sources-jar/org/jline/terminal/impl/AbstractPty.java
* /jline-3-26-1-sources-jar/org/jline/reader/impl/completer/StringsCompleter.java
* /jline-3-26-1-sources-jar/org/jline/builtins/Tmux.java
* /jline-3-26-1-sources-jar/org/jline/builtins/ConfigurationPath.java
* /jline-3-26-1-sources-jar/org/jline/reader/Candidate.java
* /jline-3-26-1-sources-jar/org/jline/terminal/impl/Status.java

```

* /jline-3-26-1-sources-jar/org/jline/reader/Editor.java

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* /jline-3-26-1-sources-jar/org/jline/builtins/telnet/ConnectionListener.java
*
/jline-3-26-1-sources-jar/org/jline/builtins/telnet/ConnectionFilter.java
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class = org.jline.terminal.impl ffm.FfmTerminalProvider

Found in path(s):

* /jline-3-26-1-sources-jar/META-INF/services/org/jline/terminal/provider/ffm
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Found in path(s):

* /jline-3-26-1-sources-jar/org/jline/reader/impl/InputRC.java
* /jline-3-26-1-sources-jar/org/jline/terminal/impl/AbstractWindowsTerminal.java
* /jline-3-26-1-sources-jar/org/jline/builtins/Commands.java
* /jline-3-26-1-sources-jar/org/jline/widget/TailTipWidgets.java
* /jline-3-26-1-sources-jar/org/jline/widget/Widgets.java
* /jline-3-26-1-sources-jar/org/jline/console/ConsoleEngine.java

```
* /jline-3-26-1-sources-jar/org/jline/reader/LineReader.java
* /jline-3-26-1-sources-jar/org/jline/reader/impl/LineReaderImpl.java
* /jline-3-26-1-sources-jar/org/jline/builtins/Less.java
* /jline-3-26-1-sources-jar/org/jline/console/impl/SystemRegistryImpl.java
*
```

```
/jline-3-26-1-sources-jar/org/jline/builtins/SyntaxHighlighter.java
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#
class = org.jline.terminal.impl.exec.ExecTerminalProvider
```

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```
* /jline-3-26-1-sources-jar/META-INF/services/org/jline/terminal/provider/exec
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* /jline-3-26-1-sources-jar/META-INF/maven/org.jline/jline-native/pom.xml
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```

* /jline-3-26-1-sources-jar/org/jline/builtins/telnet/ConnectionData.java
*
  /jline-3-26-1-sources-jar/org/jline/builtins/telnet/TelnetIO.java
* /jline-3-26-1-sources-jar/org/jline/builtins/telnet/ConnectionEvent.java
* /jline-3-26-1-sources-jar/org/jline/builtins/telnet/ConnectionManager.java
* /jline-3-26-1-sources-jar/org/jline/builtins/telnet/Connection.java
* /jline-3-26-1-sources-jar/org/jline/builtins/telnet/PortListener.java
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```

* /jline-3-26-1-sources-jar/org/jline/jansi/AnsiMode.java
* /jline-3-26-1-sources-jar/org/jline/jansi/AnsiColors.java
* /jline-3-26-1-sources-jar/org/jline/jansi/AnsiRenderer.java
* /jline-3-26-1-sources-jar/org/jline/jansi/AnsiType.java
* /jline-3-26-1-sources-jar/org/jline/jansi/io/WindowsAnsiProcessor.java
* /jline-3-26-1-sources-jar/org/jline/nativ/Kernel32.java

```

```

* /jline-3-26-1-sources-jar/org/jline/jansi/io/ColorsAnsiProcessor.java
* /jline-3-26-1-sources-jar/org/jline/jansi/io/FastBufferedOutputStream.java
* /jline-3-26-1-sources-jar/org/jline/jansi/AnsiPrintStream.java
* /jline-3-26-1-sources-jar/org/jline/jansi/Ansi.java
* /jline-3-26-1-sources-jar/org/jline/nativ/CLibrary.java
*

```

```

/jline-3-26-1-sources-jar/org/jline/Utils/FastBufferedOutputStream.java
* /jline-3-26-1-sources-jar/org/jline/jansi/AnsiMain.java
* /jline-3-26-1-sources-jar/org/jline/jansi/io/AnsiProcessor.java
* /jline-3-26-1-sources-jar/org/jline/jansi/WindowsSupport.java
* /jline-3-26-1-sources-jar/org/jline/jansi/io/Colors.java
* /jline-3-26-1-sources-jar/org/jline/jansi/io/AnsiOutputStream.java
* /jline-3-26-1-sources-jar/org/jline/terminal/impl/ffm/Kernel32.java
* /jline-3-26-1-sources-jar/org/jline/jansi/AnsiConsole.java
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* /jline-3-26-1-sources-jar/org/jline/reader/impl/history/DefaultHistory.java
* /jline-3-26-1-sources-jar/org/jline/reader/impl/CompletionMatcherImpl.java
* /jline-3-26-1-sources-jar/org/jline/builtins/Completers.java
* /jline-3-26-1-sources-jar/org/jline/reader/impl/DefaultHighlighter.java
* /jline-3-26-1-sources-jar/org/jline/terminal/impl/AbstractTerminal.java
* /jline-3-26-1-sources-jar/org/jline/reader/Parser.java
* /jline-3-26-1-sources-jar/org/jline/terminal/TerminalBuilder.java
* /jline-3-26-1-sources-jar/org/jline/builtins/Nano.java
* /jline-3-26-1-sources-jar/org/jline/Utils/AttributedCharSequence.java
* /jline-3-26-1-sources-jar/org/jline/reader/Highlighter.java
*
/jline-3-26-1-sources-jar/org/jline/builtins/Styles.java
* /jline-3-26-1-sources-jar/org/jline/builtins/ConsoleOptionGetter.java
* /jline-3-26-1-sources-jar/org/jline/builtins/TTop.java
* /jline-3-26-1-sources-jar/org/jline/console/impl/ConsoleEngineImpl.java
* /jline-3-26-1-sources-jar/org/jline/reader/PrintAboveWriter.java
* /jline-3-26-1-sources-jar/org/jline/console/ArgDesc.java
* /jline-3-26-1-sources-jar/org/jline/console/SystemRegistry.java
* /jline-3-26-1-sources-jar/org/jline/Utils/AttributedStyle.java
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* /jline-3-26-1-sources-jar/org/jline/reader/Buffer.java
* /jline-3-26-1-sources-jar/org/jline/style/NopStyleSource.java
* /jline-3-26-1-sources-jar/org/jline/builtins/ssh/ShellFactoryImpl.java
* /jline-3-26-1-sources-jar/org/jline/style/StyleColor.java
* /jline-3-26-1-sources-jar/org/jline/terminal/impl/jansi/win/JansiWinConsoleWriter.java
* /jline-3-26-1-sources-jar/org/jline/style/StyleResolver.java
* /jline-3-26-1-sources-jar/org/jline/builtins/ssh/ShellCommand.java
* /jline-3-26-1-sources-jar/org/jline/terminal/impl/jni/freebsd/FreeBsdNativePty.java
* /jline-3-26-1-sources-jar/org/jline/utils/WriterOutputStream.java
* /jline-3-26-1-sources-jar/org/jline/builtins/telnet/Telnet.java
*
/jline-3-26-1-sources-jar/org/jline/terminal/impl/jansi/osx/OsXNativePty.java
* /jline-3-26-1-sources-jar/org/jline/terminal/impl/jna/win/JnaWinConsoleWriter.java
* /jline-3-26-1-sources-jar/org/jline/style/StyleBundleInvocationHandler.java
* /jline-3-26-1-sources-jar/org/jline/style/MemoryStyleSource.java
* /jline-3-26-1-sources-jar/org/jline/terminal/impl/jansi/linux/LinuxNativePty.java
* /jline-3-26-1-sources-jar/org/jline/builtins/ssh/Ssh.java
* /jline-3-26-1-sources-jar/org/jline/terminal/impl/jansi/solaris/SolarisNativePty.java
* /jline-3-26-1-sources-jar/org/jline/style/StyleBundle.java
* /jline-3-26-1-sources-jar/org/jline/terminal/impl/jni/linux/LinuxNativePty.java
* /jline-3-26-1-sources-jar/org/jline/reader/impl/SimpleMaskingCallback.java
* /jline-3-26-1-sources-jar/org/jline/terminal/impl/jni/solaris/SolarisNativePty.java
* /jline-3-26-1-sources-jar/org/jline/reader/impl/BufferImpl.java
* /jline-3-26-1-sources-jar/org/jline/utils/NonBlockingPumpReader.java
*


```

/jline-3-26-1-sources-jar/org/jline/Utils/NonBlockingPumpInputStream.java
* /jline-3-26-1-sources-jar/org/jline/terminal/impl/jansi/freebsd/FreeBsdNativePty.java
* /jline-3-26-1-sources-jar/org/jline/terminal/impl/AbstractWindowsConsoleWriter.java
* /jline-3-26-1-sources-jar/org/jline/style/StyledWriter.java
* /jline-3-26-1-sources-jar/org/jline/terminal/impl/jni/win/NativeWinConsoleWriter.java
* /jline-3-26-1-sources-jar/org/jline/style/InterpolationHelper.java
* /jline-3-26-1-sources-jar/org/jline/Utils/PumpReader.java
* /jline-3-26-1-sources-jar/org/jline/terminal/impl/jni/osx/OsXNativePty.java
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* /jline-3-26-1-sources-jar/org/jline/console/impl/Builtins.java
* /jline-3-26-1-sources-jar/org/jline/console/Printer.java
* /jline-3-26-1-sources-jar/org/jline/console/impl/SystemHighlighter.java
* /jline-3-26-1-sources-jar/org/jline/builtins/Source.java
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```

```

auto_left_margin, bw, bw
auto_right_margin, am, am
back_color_erase, bce, ut
can_change, ccc, cc
ceol_standout_glitch, xhp, xs
col_addr_glitch, xhpa, YA
cpi_changes_res, cpix, YF
cr_cancels_micro_mode, crxm, YB
dest_tabs_magic_smo, xt, xt
eat_newline_glitch, xenl, xn
erase_overstrike, eo, eo
generic_type, gn, gn
hard_copy, hc, hc

```

hard_cursor, chts, HC
has_meta_key, km, km
has_print_wheel, daisy, YC
has_status_line, hs, hs
hue_lightness_saturation, hls, hl
insert_null_glitch, in, in
lpi_changes_res, lpix, YG
memory_above, da, da
memory_below, db, db
move_insert_mode, mir, mi
move_standout_mode, msgr, ms
needs_xon_xoff, nxon, nx
no_esc_ctlc, xsb, xb
no_pad_char, npc,
NP
non_dest_scroll_region, ndscr, ND
non_rev_rmcup, nrrmc, NR
over_strike, os, os
prtr_silent, mc5i, 5i
row_addr_glitch, xvpa, YD
semi_auto_right_margin, sam, YE
status_line_esc_ok, eslok, es
tilde_glitch, hz, hz
transparent_underline, ul, ul
xon_xoff, xon, xo
columns, cols, co
init_tabs, it, it
label_height, lh, lh
label_width, lw, lw
lines, lines, li
lines_of_memory, lm, lm
magic_cookie_glitch, xmc, sg
max_attributes, ma, ma
max_colors, colors, Co
max_pairs, pairs, pa
maximum_windows, wnum, MW
no_color_video, ncv, NC
num_labels, nlab, Nl
padding_baud_rate, pb, pb
virtual_terminal, vt, vt
width_status_line, wsl, ws
bit_image_entwining, bitwin, Yo
bit_image_type, bitype, Yp
buffer_capacity, bufsz, Ya
buttons, btns, BT
dot_horz_spacing, spinh, Yc
dot_vert_spacing, spinv, Yb
max_micro_address, maddr, Yd

max_micro_jump, mjump, Ye
micro_col_size, mcs, Yf
micro_line_size, mls, Yg
number_of_pins, npins, Yh
output_res_char, orc, Yi
output_res_horz_inch, orhi, Yk
output_res_line, orl, Yj
output_res_vert_inch,
orvi, Yl
print_rate, cps, Ym
wide_char_size, widcs, Yn
acs_chars, acsc, ac
back_tab, cbt, bt
bell, bel, bl
carriage_return, cr, cr
change_char_pitch, cpi, ZA
change_line_pitch, lpi, ZB
change_res_horz, chr, ZC
change_res_vert, cvr, ZD
change_scroll_region, csr, cs
char_padding, rmp, rP
clear_all_tabs, tbc, ct
clear_margins, mgc, MC
clear_screen, clear, cl
clr_bol, el1, cb
clr_eol, el, ce
clr_eos, ed, cd
column_address, hpa, ch
command_character, cmdch, CC
create_window, cwin, CW
cursor_address, cup, cm
cursor_down, cud1, do
cursor_home, home, ho
cursor_invisible, civis, vi
cursor_left, cub1, le
cursor_mem_address, mrcup, CM
cursor_normal, cnorm, ve
cursor_right, cuf1, nd
cursor_to_ll, ll, ll
cursor_up, cuu1, up
cursor_visible, cvvis, vs
define_char, defc, ZE
delete_character, dch1, dc
delete_line, dl1, dl
dial_phone, dial, DI
dis_status_line, dsl, ds
display_clock, dclk, DK
down_half_line, hd, hd

ena_acs, enacs, eA
enter_alt_charset_mode, smacs, as
enter_am_mode, smam,
SA
enter_blink_mode, blink, mb
enter_bold_mode, bold, md
enter_ca_mode, smcup, ti
enter_delete_mode, smdc, dm
enter_dim_mode, dim, mh
enter_doublewide_mode, swidm, ZF
enter_draft_quality, sdrfq, ZG
enter_insert_mode, smir, im
enter_italics_mode, sitm, ZH
enter_leftward_mode, slm, ZI
enter_micro_mode, smicm, ZJ
enter_near_letter_quality, snlq, ZK
enter_normal_quality, snrmq, ZL
enter_protected_mode, prot, mp
enter_reverse_mode, rev, mr
enter_secure_mode, invis, mk
enter_shadow_mode, sshm, ZM
enter_standout_mode, smso, so
enter_subscript_mode, ssubm, ZN
enter_superscript_mode, ssupm, ZO
enter_underline_mode, smul, us
enter_upward_mode, sum, ZP
enter_xon_mode, smxon, SX
erase_chars, ech, ec
exit_alt_charset_mode, rmacs, ae
exit_am_mode, rmam, RA
exit_attribute_mode, sgr0, me
exit_ca_mode, rmcup, te
exit_delete_mode, rmdc, ed
exit_doublewide_mode, rwidm, ZQ
exit_insert_mode, rmir, ei
exit_italics_mode, ritm, ZR
exit_leftward_mode, rlm, ZS
exit_micro_mode, rmicm, ZT
exit_shadow_mode, rshm,
ZU
exit_standout_mode, rmso, se
exit_subscript_mode, rsubm, ZV
exit_superscript_mode, rsupm, ZW
exit_underline_mode, rmul, ue
exit_upward_mode, rum, ZX
exit_xon_mode, rmxon, RX
fixed_pause, pause, PA
flash_hook, hook, fh

flash_screen, flash, vb
form_feed, ff, ff
from_status_line, fsl, fs
goto_window, wingo, WG
hangup, hup, HU
init_1string, is1, i1
init_2string, is2, is
init_3string, is3, i3
init_file, if, if
init_prog, iprog, iP
initialize_color, initc, Ic
initialize_pair, initp, Ip
insert_character, ich1, ic
insert_line, il1, al
insert_padding, ip, ip
key_a1, ka1, K1
key_a3, ka3, K3
key_b2, kb2, K2
key_backspace, kbs, kb
key_beg, kbeg, @1
key_btab, kcbt, kB
key_c1, kc1, K4
key_c3, kc3, K5
key_cancel, kcan, @2
key_catab, ktbc, ka
key_clear, kclr, kC
key_close, kclo, @3
key_command, kcmd, @4
key_copy, kcpy, @5
key_create, kcrt, @6
key_ctab, kctab, kt
key_dc, kdch1, kD
key_dl, kdl1, kL
key_down, kcud1, kd
key_eic, krmir, kM
key_end, kend, @7
key_enter, kent, @8
key_eol, kel, kE
key_eos,
ked, kS
key_exit, kext, @9
key_f0, kf0, k0
key_f1, kf1, k1
key_f10, kf10, k;
key_f11, kf11, F1
key_f12, kf12, F2
key_f13, kf13, F3
key_f14, kf14, F4

key_f15, kf15, F5
key_f16, kf16, F6
key_f17, kf17, F7
key_f18, kf18, F8
key_f19, kf19, F9
key_f2, kf2, k2
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key_f26, kf26, FG
key_f27, kf27, FH
key_f28, kf28, FI
key_f29, kf29, FJ
key_f3, kf3, k3
key_f30, kf30, FK
key_f31, kf31, FL
key_f32, kf32, FM
key_f33, kf33, FN
key_f34, kf34, FO
key_f35, kf35, FP
key_f36, kf36, FQ
key_f37, kf37, FR
key_f38, kf38, FS
key_f39, kf39, FT
key_f4, kf4, k4
key_f40, kf40, FU
key_f41, kf41, FV
key_f42, kf42, FW
key_f43, kf43, FX
key_f44, kf44, FY
key_f45, kf45, FZ
key_f46, kf46, Fa
key_f47, kf47, Fb
key_f48, kf48, Fc
key_f49, kf49, Fd
key_f5, kf5, k5
key_f50, kf50, Fe
key_f51, kf51, Ff
key_f52, kf52, Fg
key_f53, kf53, Fh
key_f54, kf54, Fi
key_f55, kf55, Fj
key_f56, kf56, Fk
key_f57, kf57, Fl
key_f58, kf58,

Fm
key_f59, kf59, Fn
key_f6, kf6, k6
key_f60, kf60, Fo
key_f61, kf61, Fp
key_f62, kf62, Fq
key_f63, kf63, Fr
key_f7, kf7, k7
key_f8, kf8, k8
key_f9, kf9, k9
key_find, kfnd, @0
key_help, khlp, %1
key_home, khome, kh
key_ic, kich1, kI
key_il, kil1, kA
key_left, kcub1, kl
key_ll, kll, kH
key_mark, kmrk, %2
key_message, kmsg, %3
key_move, kmov, %4
key_next, knxt, %5
key_npage, knp, kN
key_open, kopn, %6
key_options, kopt, %7
key_ppage, kpp, kP
key_previous, kprv, %8
key_print, kpri, %9
key_redo, krdo, %0
key_reference, kref, &1
key_refresh, krfr, &2
key_replace, krpl, &3
key_restart, krst, &4
key_resume, kres, &5
key_right, kcuf1, kr
key_save, ksav, &6
key_sbeg, kBEG, &9
key_scancel, kCAN, &0
key_scommand, kCMD, *1
key_scopy, kCPY, *2
key_screate, kCRT, *3
key_sdc, kDC, *4
key_sdl, kDL, *5
key_select, kslt, *6
key_send, kEND, *7
key_seol, kEOL, *8
key_sexit, kEXT, *9
key_sf, kind, kF
key_sfind, kFND, *0

key_shelp, kHLP, #1
key_shome, kHOM, #2
key_sic, kIC, #3
key_sleft, kLFT, #4
key_smessage,
 kMSG, %a
key_smove, kMOV, %b
key_snext, kNXT, %c
key_soptions, kOPT, %d
key_sprevious, kPRV, %e
key_sprint, kPRT, %f
key_sr, kri, kR
key_sredo, kRDO, %g
key_sreplace, kRPL, %h
key_sright, kRIT, %i
key_sresume, kRES, %j
key_ssave, kSAV, !1
key_ssuspend, kSPD, !2
key_stab, khts, kT
key_sundo, kUND, !3
key_suspend, kspd, &7
key_undo, kund, &8
key_up, kcuu1, ku
keypad_local, rmkx, ke
keypad_xmit, smkx, ks
lab_f0, lf0, l0
lab_f1, lf1, l1
lab_f10, lf10, la
lab_f2, lf2, l2
lab_f3, lf3, l3
lab_f4, lf4, l4
lab_f5, lf5, l5
lab_f6, lf6, l6
lab_f7, lf7, l7
lab_f8, lf8, l8
lab_f9, lf9, l9
label_format, fln, Lf
label_off, rmln, LF
label_on, smln, LO
meta_off, rmm, mo
meta_on, smm, mm
micro_column_address, mhpa, ZY
micro_down, mcud1, ZZ
micro_left, mcub1, Za
micro_right, mcuf1, Zb
micro_row_address, mvpa, Zc
micro_up, mcuu1, Zd
newline, nel, nw

order_of_pins, porder, Ze
orig_colors, oc, oc
orig_pair, op, op
pad_char, pad, pc
parm_dch, dch, DC
parm_delete_line, dl, DL
parm_down_cursor, cud, DO
parm_down_micro,
mcud, Zf
parm_ich, ich, IC
parm_index, indn, SF
parm_insert_line, il, AL
parm_left_cursor, cub, LE
parm_left_micro, mcub, Zg
parm_right_cursor, cuf, RI
parm_right_micro, mcuf, Zh
parm_rindex, rin, SR
parm_up_cursor, cuu, UP
parm_up_micro, mcuu, Zi
pkey_key, pfkey, pk
pkey_local, pfloc, pl
pkey_xmit, pfx, px
plab_norm, pln, pn
print_screen, mc0, ps
prtr_non, mc5p, pO
prtr_off, mc4, pf
prtr_on, mc5, po
pulse, pulse, PU
quick_dial, qdial, QD
remove_clock, rmclk, RC
repeat_char, rep, rp
req_for_input, rfi, RF
reset_1string, rs1, r1
reset_2string, rs2, r2
reset_3string, rs3, r3
reset_file, rf, rf
restore_cursor, rc, rc
row_address, vpa, cv
save_cursor, sc, sc
scroll_forward, ind, sf
scroll_reverse, ri, sr
select_char_set, scs, Zj
set_attributes, sgr, sa
set_background, setb, Sb
set_bottom_margin, smgb, Zk
set_bottom_margin_parm, smgbp, Zl
set_clock, sclk, SC
set_color_pair, scp, sp

set_foreground, setf, Sf
set_left_margin, smgl, ML
set_left_margin_parm, smglp, Zm
set_right_margin,
smgr, MR
set_right_margin_parm, smgrp, Zn
set_tab, hts, st
set_top_margin, smgt, Zo
set_top_margin_parm, smgtp, Zp
set_window, wind, wi
start_bit_image, sbim, Zq
start_char_set_def, scsd, Zr
stop_bit_image, rbim, Zs
stop_char_set_def, rcsd, Zt
subscript_characters, subcs, Zu
superscript_characters, supcs, Zv
tab, ht, ta
these_cause_cr, docr, Zw
to_status_line, tsl, ts
tone, tone, TO
underline_char, uc, uc
up_half_line, hu, hu
user0, u0, u0
user1, u1, u1
user2, u2, u2
user3, u3, u3
user4, u4, u4
user5, u5, u5
user6, u6, u6
user7, u7, u7
user8, u8, u8
user9, u9, u9
wait_tone, wait, WA
xoff_character, xoffc, XF
xon_character, xonc, XN
zero_motion, zerom, Zx
alt_scancode_esc, scesa, S8
bit_image_carriage_return, bicr, Yv
bit_image_newline, binel, Zz
bit_image_repeat, birep, Xy
char_set_names, csnm, Zy
code_set_init, csin, ci
color_names, colorm, Yw
define_bit_image_region, defbi, Yx
device_type, devt, dv
display_pc_char, disp, S1
end_bit_image_region, endbi, Yy
enter_pc_charset_mode,

smpch, S2
enter_scancode_mode, smsc, S4
exit_pc_charset_mode, rmpch, S3
exit_scancode_mode, rmsc, S5
get_mouse, getm, Gm
key_mouse, kmous, Km
mouse_info, minfo, Mi
pc_term_options, pctrm, S6
pkey_plab, pfxl, xl
req_mouse_pos, reqmp, RQ
scancode_escape, scesc, S7
set0_des_seq, s0ds, s0
set1_des_seq, s1ds, s1
set2_des_seq, s2ds, s2
set3_des_seq, s3ds, s3
set_a_background, setab, AB
set_a_foreground, setaf, AF
set_color_band, setcolor, Yz
set_lr_margin, smglr, ML
set_page_length, slines, YZ
set_tb_margin, smgtb, MT
enter_horizontal_hl_mode, ehhl, Xh
enter_left_hl_mode, elhl, Xl
enter_low_hl_mode, elohlm, Xo
enter_right_hl_mode, erhl, Xr
enter_top_hl_mode, ethlm, Xt
enter_vertical_hl_mode, evhl, Xv
set_a_attributes, sgr1, sA
set_pglen_inch, slength, sL

Found in path(s):

* /jline-3-26-1-sources-jar/org/jline/Utils/capabilities.txt

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Found in path(s):

* /jline-3-26-1-sources-jar/org/jline/reader/impl/completer/package-info.java

* /jline-3-26-1-sources-jar/org/jline/Utils/package-info.java

* /jline-3-26-1-sources-jar/org/jline/reader/impl/history/package-info.java

* /jline-3-26-1-sources-jar/org/jline/terminal/impl/package-info.java

* /jline-3-26-1-sources-jar/org/jline/reader/package-info.java
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```

Found in path(s):

* /jline-3-26-1-sources-jar/org/jline/nativ/JLineNativeLoader.java
* /jline-3-26-1-sources-jar/org/jline/nativ/OSInfo.java
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```

black
maroon
green

olive
navy
purple
teal
silver
grey
red
lime
yellow
blue
fuchsia
aqua
white
grey0
navyblue
darkblue
blue3
blue3a
blue1
darkgreen
deepskyblue4
deepskyblue4a
deepskyblue4b
dodgerblue3
dodgerblue2
green4
springgreen4
turquoise4
deepskyblue3
deepskyblue3a
dodgerblue1
green3
springgreen3
darkcyan
lightseagreen
deepskyblue2
deepskyblue1
green3a
springgreen3a
springgreen2
cyan3
darkturquoise
turquoise2
green1
springgreen2a
springgreen1
mediumspringgreen
cyan2

cyan1
darkred
deeppink4
purple4
purple4a
purple3
blueviolet
orange4
grey37
mediumpurple4
slateblue3
slateblue3a
royalblue1
chartreuse4
darkseagreen4
paleturquoise4
steelblue
steelblue3
cornflowerblue
chartreuse3
darkseagreen4a
cadetblue
cadetbluea
skyblue3
steelblue1
chartreuse3a
palegreen3
seagreen3
aquamarine3
mediumturquoise
steelblue1a
chartreuse2
seagreen2
seagreen1
seagreen1a
aquamarine1
darkslategray2
darkreda
deeppink4a
darkmagenta
darkmagentaa
darkviolet
purplea
orange4a
lightpink4
plum4
mediumpurple3
mediumpurple3a

slateblue1
yellow4
wheat4
grey53
lightslategrey
mediumpurple
lightslateblue
yellow4a
darkolivegreen3
darkseagreen
lightskyblue3
lightskyblue3a
skyblue2
chartreuse2a
darkolivegreen3a
palegreen3a
darkseagreen3
darkslategray3
skyblue1
chartreuse1
lightgreen
lightgreena
palegreen1
aquamarine1a
darkslategray1
red3
deeppink4b
mediumvioletred
magenta3
darkvioleta
purpleb
darkorange3
indianred
hotpink3
mediumorchid3
mediumorchid
mediumpurple2
darkgoldenrod
lightsalmon3
rosybrown
grey63
mediumpurple2a
mediumpurple1
gold3
darkkhaki
navajowhite3
grey69
lightsteelblue3

lightsteelblue
yellow3
darkolivegreen3b
darkseagreen3a
darkseagreen2
lightcyan3
lightskyblue1
greenyellow
darkolivegreen2
palegreen1a
darkseagreen2a
darkseagreen1
paleturquoise1
red3a
deeppink3
deeppink3a
magenta3a
magenta3b
magenta2
darkorange3a
indianreda
hotpink3a
hotpink2
orchid
mediumorchid1
orange3
lightsalmon3a
lightpink3
pink3
plum3
violet
gold3a
lightgoldenrod3
tan
mistyrose3
thistle3
plum2
yellow3a
khaki3
lightgoldenrod2
lightyellow3
grey84
lightsteelblue1
yellow2
darkolivegreen1
darkolivegreen1a
darkseagreen1a
honeydew2

lightcyan1
red1
deeppink2
deeppink1
deeppink1a
magenta2a
magenta1
orangered1
indianred1
indianred1a
hotpink
hotpinka
mediumorchid1a
darkorange
salmon1
lightcoral
palevioletred1
orchid2
orchid1
orange1
sandybrown
lightsalmon1
lightpink1
pink1
plum1
gold1
lightgoldenrod2a
lightgoldenrod2b
navajowhite1
mistyrose1
thistle1
yellow1
lightgoldenrod1
khaki1
wheat1
cornsilk1
grey100
grey3
grey7
grey11
grey15
grey19
grey23
grey27
grey30
grey35
grey39
grey42

grey46
grey50
grey54
grey58
grey62
grey66
grey70
grey74
grey78
grey82
grey85
grey89
grey93

Found

in path(s):

* /jline-3-26-1-sources-jar/org/jline/utils/colors.txt

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-->

Found in path(s):

* /jline-3-26-1-sources-jar/META-INF/maven/org.jline/jline-terminal/pom.xml

* /jline-3-26-1-sources-jar/META-INF/maven/org.jline/jline-remote-ssh/pom.xml

* /jline-3-26-1-sources-jar/META-INF/maven/org.jline/jline-terminal-jni/pom.xml

* /jline-3-26-1-sources-jar/META-INF/maven/org.jline/jline-reader/pom.xml

* /jline-3-26-1-sources-jar/META-INF/maven/org.jline/jline-terminal-ffmpeg/pom.xml

* /jline-3-26-1-sources-jar/META-INF/maven/org.jline/jline-terminal-jna/pom.xml

* /jline-3-26-1-sources-jar/META-INF/maven/org.jline/jline-builtins/pom.xml

* /jline-3-26-1-sources-jar/META-INF/maven/org.jline/jline-terminal-jansi/pom.xml

* /jline-3-26-1-sources-jar/META-INF/maven/org.jline/jline-remote-telnet/pom.xml

*

/jline-3-26-1-sources-jar/META-INF/maven/org.jline/jline-style/pom.xml

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#
class = org.jline.terminal.impl.jna.JnaTerminalProvider
```

Found in path(s):

```
* /jline-3-26-1-sources-jar/META-INF/services/org/jline/terminal/provider/jna
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```

Found in path(s):

```
* /jline-3-26-1-sources-jar/org/jline/terminal/spi/TerminalProvider.java
* /jline-3-26-1-sources-jar/org/jline/terminal/impl/Diag.java
* /jline-3-26-1-sources-jar/org/jline/terminal/impl/exec/ExecTerminalProvider.java
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```

```
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#
class = org.jline.terminal.impl.jansi.JansiTerminalProvider
```

Found in path(s):

* /jline-3-26-1-sources-jar/META-INF/services/org/jline/terminal/provider/jansi

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Found in path(s):

* /jline-3-26-1-sources-jar/META-INF/maven/org.jline/jansi-core/pom.xml

1.140 python-pip 25.1.1

1.140.1 Available under license :

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In 1995, Guido continued his work on Python at the Corporation for National Research Initiatives (CNRI, see <http://www.cnri.reston.va.us>)

in Reston, Virginia where he released several versions of the software.

In May 2000, Guido and the Python core development team moved to BeOpen.com to form the BeOpen PythonLabs team. In October of the same year, the PythonLabs team moved to Digital Creations (now Zope Corporation, see <http://www.zope.com>). In 2001, the Python Software Foundation (PSF, see <http://www.python.org/psf/>) was formed, a non-profit organization created specifically to own Python-related Intellectual Property. Zope Corporation is a sponsoring member of the PSF.

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1.3 thru 1.5.2	1.2	1995-1999	CNRI	yes
1.6	1.5.2	2000	CNRI	no
2.0	1.6	2000	BeOpen.com	no
1.6.1	1.6	2001	CNRI	yes (2)
2.1	2.0+1.6.1	2001	PSF	no
2.0.1	2.0+1.6.1	2001	PSF	yes
2.1.1	2.1+2.0.1	2001	PSF	yes
2.2	2.1.1	2001	PSF	yes
2.1.2	2.1.1	2002	PSF	yes
2.1.3				
2.1.2	2002	PSF	yes	
2.2.1	2.2	2002	PSF	yes
2.2.2	2.2.1	2002	PSF	yes
2.2.3	2.2.2	2003	PSF	yes
2.3	2.2.2	2002-2003	PSF	yes
2.3.1	2.3	2002-2003	PSF	yes
2.3.2	2.3.1	2002-2003	PSF	yes
2.3.3	2.3.2	2002-2003	PSF	yes
2.3.4	2.3.3	2004	PSF	yes
2.3.5	2.3.4	2005	PSF	yes
2.4	2.3	2004	PSF	yes
2.4.1	2.4	2005	PSF	yes
2.4.2	2.4.1	2005	PSF	yes
2.4.3	2.4.2	2006	PSF	yes
2.4.4	2.4.3	2006	PSF	yes
2.5	2.4	2006	PSF	yes

2.5.1	2.5	2007	PSF	yes
2.5.2	2.5.1	2008	PSF	yes
2.5.3	2.5.2	2008	PSF	yes
2.6	2.5	2008	PSF	yes
2.6.1	2.6	2008	PSF	yes
2.6.2	2.6.1	2009	PSF	yes
2.6.3	2.6.2	2009	PSF	yes
2.6.4	2.6.3	2009	PSF	yes
2.6.5	2.6.4	2010	PSF	yes
3.0	2.6	2008	PSF	yes
3.0.1	3.0	2009	PSF	yes
3.1	3.0.1	2009	PSF	yes
3.1.1	3.1	2009	PSF	yes
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2.0.1	2.0+1.6.1	2001	PSF	yes
2.1.1	2.1+2.0.1	2001	PSF	yes
2.1.2	2.1.1	2002	PSF	yes
2.1.3	2.1.2	2002	PSF	yes
2.2 and above	2.1.1	2001-now		
PSF				yes

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1.141 libssl3 3.5.4-r0

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1.144 python-certifi 2025.01.31

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This package contains a modified version of ca-bundle.crt:

ca-bundle.crt -- Bundle of CA Root Certificates

This is a bundle of X.509 certificates of public Certificate Authorities (CA). These were automatically extracted from Mozilla's root certificates file (certdata.txt). This file can be found in the mozilla source tree:
<https://hg.mozilla.org/mozilla-central/file/tip/security/nss/lib/ckfw/builtins/certdata.txt>
It contains the certificates in PEM format and therefore
can be directly used with curl / libcurl / php_curl, or with
an Apache+mod_ssl webserver for SSL client authentication.
Just configure this file as the SSLCACertificateFile.#

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@(#) \$RCSfile: certdata.txt,v \$ \$Revision: 1.80 \$ \$Date: 2011/11/03 15:11:58 \$

1.145 pgservicefile 0.0.0-20240606120523-5a60cdf6a761

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1.146 sosodev-duration 1.3.1

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1.147 go-systemd 22.6.0

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1.148 flyway-core 11.7.2

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* /flyway-core-11-7-2-sources-jar/org/flywaydb/core/internal/resolver/java/FixedJavaMigrationResolver.java
* /flyway-core-11-7-2-sources-jar/org/flywaydb/core/internal/scanner/ClasspathClassScanner.java
* /flyway-core-11-7-2-sources-jar/org/flywaydb/core/experimental/DatabaseSupport.java
* /flyway-core-11-7-2-sources-jar/org/flywaydb/core/internal/util/DateUtils.java
*
/flyway-core-11-7-2-sources-jar/org/flywaydb/core/experimental/ExperimentalDatabase.java
* /flyway-core-11-7-2-sources-jar/org/flywaydb/core/internal/configuration/ConfigurationValidator.java
* /flyway-core-11-7-2-sources-jar/org/flywaydb/core/internal/resource/package-info.java
* /flyway-core-11-7-2-sources-jar/org/flywaydb/core/internal/database/DatabaseType.java
* /flyway-core-11-7-2-sources-jar/org/flywaydb/core/internal/clazz/package-info.java
* /flyway-core-11-7-2-sources-jar/org/flywaydb/core/internal/license/FlywayExpiredLicenseKeyException.java
* /flyway-core-11-7-2-sources-jar/org/flywaydb/core/internal/callback/SqlScriptCallbackFactory.java
* /flyway-core-11-7-2-sources-jar/org/flywaydb/core/extensibility/ResourceType.java
* /flyway-core-11-7-2-sources-jar/org/flywaydb/core/internal/scanner/package-info.java
* /flyway-core-11-7-2-sources-jar/org/flywaydb/core/internal/scanner/classpath/ResourceAndClassScanner.java
*
/flyway-core-11-7-2-sources-jar/org/flywaydb/core/internal/jdbc/JdbcConnectionFactory.java
* /flyway-core-11-7-2-sources-jar/org/flywaydb/core/experimental/ConnectionType.java
* /flyway-core-11-7-2-sources-jar/org/flywaydb/core/ProgressLoggerSynchronized.java
* /flyway-core-11-7-2-sources-
jar/org/flywaydb/core/internal/configuration/extensions/DeployScriptFilenameConfigurationExtension.java
* /flyway-core-11-7-2-sources-jar/org/flywaydb/core/internal/database/base/Function.java
* /flyway-core-11-7-2-sources-jar/org/flywaydb/core/internal/exception/FlywaySqlException.java
* /flyway-core-11-7-2-sources-jar/org/flywaydb/core/internal/database/base/Schema.java
* /flyway-core-11-7-2-sources-jar/org/flywaydb/core/api/logging/LogCreator.java
* /flyway-core-11-7-2-sources-jar/org/flywaydb/core/internal/database/base/BaseDatabaseType.java
* /flyway-core-11-7-2-sources-jar/org/flywaydb/core/internal/util/CollectionsUtils.java
* /flyway-core-11-7-2-sources-

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jar/org/flywaydb/core/internal/scanner/classpath/jboss/JBossVFSv3ClassPathLocationScanner.java
*
/flyway-core-11-7-2-sources-jar/org/flywaydb/core/internal/callback/SimpleContext.java
* /flyway-core-11-7-2-sources-jar/org/flywaydb/core/internal/logging/apachecommons/ApacheCommonsLog.java
* /flyway-core-11-7-2-sources-jar/org/flywaydb/core/experimental/schemahistory/SchemaHistoryItem.java
* /flyway-core-11-7-2-sources-jar/org/flywaydb/core/experimental/schemahistory/ResolvedSchemaHistoryItem.java
* /flyway-core-11-7-2-sources-jar/org/flywaydb/core/internal/database/h2/package-info.java
* /flyway-core-11-7-2-sources-jar/org/flywaydb/core/Flyway.java
* /flyway-core-11-7-2-sources-jar/org/flywaydb/core/internal/license/FlywayPermit.java
* /flyway-core-11-7-2-sources-jar/org/flywaydb/core/extensibility/InfoTelemetryModel.java
* /flyway-core-11-7-2-sources-jar/org/flywaydb/core/internal/reports/ReportDetails.java
* /flyway-core-11-7-2-sources-jar/org/flywaydb/core/internal/scanner/Scanner.java
* /flyway-core-11-7-2-sources-jar/org/flywaydb/core/api/output/RepairOutput.java
*
/flyway-core-11-7-2-sources-jar/org/flywaydb/core/api/migration/baseline/BaselineMigrationResolver.java
* /flyway-core-11-7-2-sources-jar/org/flywaydb/core/internal/license/FlywayRedgateLicenseKeyException.java
* /flyway-core-11-7-2-sources-
jar/org/flywaydb/core/internal/logging/apachecommons/ApacheCommonsLogCreator.java
* /flyway-core-11-7-2-sources-jar/org/flywaydb/core/internal/util/BomFilter.java
* /flyway-core-11-7-2-sources-jar/org/flywaydb/core/internal/database/package-info.java
* /flyway-core-11-7-2-sources-jar/org/flywaydb/core/internal/logging/log4j2/Log4j2Log.java
* /flyway-core-11-7-2-sources-jar/org/flywaydb/core/internal/parser/UnboundedReadAheadReader.java
* /flyway-core-11-7-2-sources-jar/org/flywaydb/core/api/output/InfoResult.java
* /flyway-core-11-7-2-sources-jar/org/flywaydb/core/api/output/MigrateOutput.java
* /flyway-core-11-7-2-sources-jar/org/flywaydb/core/internal/scanner/classpath/ClassPathLocationScanner.java
*
/flyway-core-11-7-2-sources-jar/org/flywaydb/core/internal/configuration/models/EnvironmentModel.java
* /flyway-core-11-7-2-sources-jar/org/flywaydb/core/internal/util/BooleanEvaluator.java
* /flyway-core-11-7-2-sources-jar/org/flywaydb/core/internal/jdbc/PlainExecutionTemplate.java
* /flyway-core-11-7-2-sources-jar/org/flywaydb/core/internal/configuration/ListDeserializer.java
* /flyway-core-11-7-2-sources-jar/org/flywaydb/core/internal/info/MigrationInfoImpl.java
* /flyway-core-11-7-2-sources-jar/org/flywaydb/core/internal/schemahistory/JdbcTableSchemaHistory.java
* /flyway-core-11-7-2-sources-jar/org/flywaydb/core/api/migration/baseline/BaselineResolvedMigration.java
* /flyway-core-11-7-2-sources-jar/org/flywaydb/core/internal/sqlscript/ParsedSqlStatement.java
* /flyway-core-11-7-2-sources-jar/org/flywaydb/core/internal/command/MigrateTelemetryModel.java
* /flyway-core-11-7-2-sources-jar/org/flywaydb/core/extensibility/PluginMetadata.java
* /flyway-core-11-7-2-sources-jar/org/flywaydb/core/package-info.java
*
/flyway-core-11-7-2-sources-jar/org/flywaydb/core/internal/info/MigrationFilterImpl.java
* /flyway-core-11-7-2-sources-jar/org/flywaydb/core/internal/database/base/SchemaObject.java
* /flyway-core-11-7-2-sources-jar/org/flywaydb/core/extensibility/Plugin.java
* /flyway-core-11-7-2-sources-jar/org/flywaydb/core/ProgressLogger.java
* /flyway-core-11-7-2-sources-jar/org/flywaydb/core/internal/parser/Token.java
* /flyway-core-11-7-2-sources-jar/org/flywaydb/core/internal/scanner/filesystem/DirectoryValidationResult.java
* /flyway-core-11-7-2-sources-jar/org/flywaydb/core/api/output/MigrateResult.java
* /flyway-core-11-7-2-sources-jar/org/flywaydb/core/api/MigrationState.java
* /flyway-core-11-7-2-sources-jar/org/flywaydb/core/internal/parser/PositionTracker.java
* /flyway-core-11-7-2-sources-

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jar/org/flywaydb/core/internal/configuration/resolvers/EnvironmentVariableResolver.java
* /flyway-core-11-7-2-sources-jar/org/flywaydb/core/internal/sqlscript/DefaultSqlScriptExecutor.java
*
/flyway-core-11-7-2-sources-jar/org/flywaydb/core/api/callback/Callback.java
* /flyway-core-11-7-2-sources-jar/org/flywaydb/core/internal/proprietaryStubs/PrepareCommandExtensionStub.java
* /flyway-core-11-7-2-sources-jar/org/flywaydb/core/internal/jdbc/TableLockingExecutionTemplate.java
* /flyway-core-11-7-2-sources-jar/org/flywaydb/core/internal/parser/RecordingReader.java
* /flyway-core-11-7-2-sources-jar/org/flywaydb/core/api/resource/Resource.java
* /flyway-core-11-7-2-sources-jar/org/flywaydb/core/internal/database/h2/H2Table.java
* /flyway-core-11-7-2-sources-jar/org/flywaydb/core/experimental/ExperimentalModeUtils.java
* /flyway-core-11-7-2-sources-jar/org/flywaydb/core/internal/package-info.java
* /flyway-core-11-7-2-sources-jar/org/flywaydb/core/internal/util/AsciiTable.java
* /flyway-core-11-7-2-sources-jar/org/flywaydb/core/internal/scanner/classpath/UrlResolver.java
* /flyway-core-11-7-2-sources-jar/org/flywaydb/core/internal/logging/package-info.java
*
/flyway-core-11-7-2-sources-jar/org/flywaydb/core/internal/scanner/classpath/ClassPathScanner.java
* /flyway-core-11-7-2-sources-jar/org/flywaydb/core/internal/util/StopWatch.java
* /flyway-core-11-7-2-sources-jar/org/flywaydb/core/internal/scanner/LocationScannerCache.java
* /flyway-core-11-7-2-sources-jar/org/flywaydb/core/internal/logging/buffered/BufferedLogCreator.java
* /flyway-core-11-7-2-sources-jar/org/flywaydb/core/internal/parser/PlaceholderReplacingReader.java
* /flyway-core-11-7-2-sources-jar/org/flywaydb/core/internal/jdbc/Results.java
* /flyway-core-11-7-2-sources-jar/org/flywaydb/core/extensibility/VerbExtension.java
* /flyway-core-11-7-2-sources-
jar/org/flywaydb/core/experimental/migration/ExperimentalMigrationComparator.java
* /flyway-core-11-7-2-sources-jar/org/flywaydb/core/internal/scanner/ResourceNameCache.java
* /flyway-core-11-7-2-sources-jar/org/flywaydb/core/internal/scanner/classpath/jboss/JBossVFSv2UrlResolver.java
* /flyway-core-11-7-2-sources-jar/org/flywaydb/core/api/output/HtmlResult.java
*
/flyway-core-11-7-2-sources-jar/org/flywaydb/core/internal/database/h2/H2DatabaseType.java
* /flyway-core-11-7-2-sources-jar/org/flywaydb/core/internal/sqlscript/SqlScript.java
* /flyway-core-11-7-2-sources-jar/org/flywaydb/core/internal/command/DbRepair.java
* /flyway-core-11-7-2-sources-jar/org/flywaydb/core/internal/authentication/postgres/PgpassFileReader.java
* /flyway-core-11-7-2-sources-jar/org/flywaydb/core/internal/database/h2/H2Parser.java
* /flyway-core-11-7-2-sources-jar/org/flywaydb/core/internal/database/DatabaseTypeRegister.java
* /flyway-core-11-7-2-sources-jar/org/flywaydb/core/internal/jdbc/Result.java
* /flyway-core-11-7-2-sources-jar/org/flywaydb/core/internal/configuration/resolvers/PropertyResolver.java
* /flyway-core-11-7-2-sources-jar/org/flywaydb/core/experimental/AbstractExperimentalDatabase.java
* /flyway-core-11-7-2-sources-jar/org/flywaydb/core/internal/logging/sl4j/Slf4jLogCreator.java
* /flyway-core-11-7-2-sources-
jar/org/flywaydb/core/internal/proprietaryStubs/DiffTextCommandExtensionStub.java
*
/flyway-core-11-7-2-sources-jar/org/flywaydb/core/internal/sqlscript/SqlScriptExecutorFactory.java
* /flyway-core-11-7-2-sources-jar/org/flywaydb/core/extensibility/ConfigurationExtension.java
* /flyway-core-11-7-2-sources-jar/org/flywaydb/core/internal/configuration/TomlUtils.java
* /flyway-core-11-7-2-sources-jar/org/flywaydb/core/api/logging/Log.java
* /flyway-core-11-7-2-sources-jar/org/flywaydb/core/api/output/package-info.java
* /flyway-core-11-7-2-sources-jar/org/flywaydb/core/internal/plugin/PluginRegister.java
* /flyway-core-11-7-2-sources-jar/org/flywaydb/core/internal/resolver/java/JavaMigrationExecutor.java

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- * /flyway-core-11-7-2-sources-jar/org/flywaydb/core/internal/strategy/RetryStrategy.java
- * /flyway-core-11-7-2-sources-jar/org/flywaydb/core/internal/resolver/ResolvedMigrationComparator.java
- * /flyway-core-11-7-2-sources-jar/org/flywaydb/core/internal/parser/package-info.java
- *
- /flyway-core-11-7-2-sources-jar/org/flywaydb/core/internal/resolver/java/package-info.java
- * /flyway-core-11-7-2-sources-jar/org/flywaydb/core/internal/resource/ResourceNameParser.java
- * /flyway-core-11-7-2-sources-jar/org/flywaydb/core/internal/util/CloseableIterator.java
- * /flyway-core-11-7-2-sources-jar/org/flywaydb/core/internal/configuration/models/ConfigurationModel.java
- * /flyway-core-11-7-2-sources-jar/org/flywaydb/core/api/MigrationPattern.java
- * /flyway-core-11-7-2-sources-jar/org/flywaydb/core/internal/resource/filesystem/FileSystemResource.java
- * /flyway-core-11-7-2-sources-jar/org/flywaydb/core/internal/sqlscript/SqlScriptExecutor.java
- * /flyway-core-11-7-2-sources-
- jar/org/flywaydb/core/internal/configuration/extensions/SecretsManagerConfigurationExtension.java
- * /flyway-core-11-7-2-sources-jar/org/flywaydb/core/api/migration/Context.java
- * /flyway-core-11-7-2-sources-jar/org/flywaydb/core/api/output/OperationResultJsonBase.java
- * /flyway-core-11-7-2-sources-jar/org/flywaydb/core/extensibility/FlywayExpiredLicenseKeyException.java
- *
- /flyway-core-11-7-2-sources-jar/org/flywaydb/core/internal/callback/NoopCallbackExecutor.java
- * /flyway-core-11-7-2-sources-jar/org/flywaydb/core/api/resolver/ChecksumMatcher.java
- * /flyway-core-11-7-2-sources-jar/org/flywaydb/core/internal/database/h2/H2Schema.java
- * /flyway-core-11-7-2-sources-jar/org/flywaydb/core/internal/exception/FlywayMigrateException.java
- * /flyway-core-11-7-2-sources-
- jar/org/flywaydb/core/internal/configuration/resolvers/PlaceholderPropertyResolver.java
- * /flyway-core-11-7-2-sources-jar/org/flywaydb/core/api/migration/baseline/BaselineMigrationTypeResolver.java
- * /flyway-core-11-7-2-sources-jar/org/flywaydb/core/internal/resource/s3/AwsS3Resource.java
- * /flyway-core-11-7-2-sources-jar/org/flywaydb/core/api/configuration/Configuration.java
- * /flyway-core-11-7-2-sources-jar/org/flywaydb/core/internal/database/sqlite/SQLiteParser.java
- * /flyway-core-11-7-2-sources-jar/org/flywaydb/core/internal/parser/StatementType.java
- *
- /flyway-core-11-7-2-sources-jar/org/flywaydb/core/api/configuration/FluentConfiguration.java
- * /flyway-core-11-7-2-sources-jar/org/flywaydb/core/internal/command/DbInfo.java
- * /flyway-core-11-7-2-sources-jar/org/flywaydb/core/internal/scanner/classpath/OsgiClassPathLocationScanner.java
- * /flyway-core-11-7-2-sources-jar/org/flywaydb/core/api/output/ErrorOutput.java
- * /flyway-core-11-7-2-sources-jar/org/flywaydb/core/extensibility/FlywayInvalidLicenseKeyException.java
- * /flyway-core-11-7-2-sources-jar/org/flywaydb/core/extensibility/AppliedMigration.java
- * /flyway-core-11-7-2-sources-jar/org/flywaydb/core/api/output/CompositeResult.java
- * /flyway-core-11-7-2-sources-jar/org/flywaydb/core/api/executor/package-info.java
- * /flyway-core-11-7-2-sources-jar/org/flywaydb/core/internal/scanner/cloud/CloudScanner.java
- * /flyway-core-11-7-2-sources-jar/org/flywaydb/core/internal/database/base/Table.java
- * /flyway-core-11-7-2-sources-jar/org/flywaydb/core/api/output/ValidateResult.java
- *
- /flyway-core-11-7-2-sources-jar/org/flywaydb/core/extensibility/CleanModePlugin.java
- * /flyway-core-11-7-2-sources-jar/org/flywaydb/core/internal/logging/javautil/JavaUtilLog.java
- * /flyway-core-11-7-2-sources-jar/org/flywaydb/core/api/migration/baseline/BaselineResourceTypeProvider.java
- * /flyway-core-11-7-2-sources-jar/org/flywaydb/core/internal/resource/NoopResourceProvider.java
- * /flyway-core-11-7-2-sources-jar/org/flywaydb/core/internal/reports/ReportGenerationOutput.java
- * /flyway-core-11-7-2-sources-jar/org/flywaydb/core/experimental/CallbackHandler.java
- * /flyway-core-11-7-2-sources-jar/org/flywaydb/core/internal/sqlscript/SqlStatement.java

- * /flyway-core-11-7-2-sources-jar/org/flywaydb/core/api/migration/baseline/BaselineMigrationType.java
- * /flyway-core-11-7-2-sources-jar/org/flywaydb/core/internal/parser/ParserContext.java
- * /flyway-core-11-7-2-sources-jar/org/flywaydb/core/internal/sqlscript/FlywaySqlScriptException.java
- * /flyway-core-11-7-2-sources-jar/org/flywaydb/core/internal/info/MigrationInfoDumper.java
- *
- /flyway-core-11-7-2-sources-jar/org/flywaydb/core/api/MigrationInfo.java
- * /flyway-core-11-7-2-sources-jar/org/flywaydb/core/api/exception/FlywayBlockStatementExecutionException.java
- * /flyway-core-11-7-2-sources-jar/org/flywaydb/core/internal/database/base/Connection.java
- * /flyway-core-11-7-2-sources-jar/org/flywaydb/core/internal/database/sqlite/SQLiteDatabase.java
- * /flyway-core-11-7-2-sources-jar/org/flywaydb/core/experimental/ExperimentalJdbc.java
- * /flyway-core-11-7-2-sources-jar/org/flywaydb/core/internal/command/clean/CleanModel.java
- * /flyway-core-11-7-2-sources-jar/org/flywaydb/core/internal/jdbc/ErrorImpl.java
- * /flyway-core-11-7-2-sources-jar/org/flywaydb/core/internal/proprietaryInterfaces/CherryPickConfiguration.java
- * /flyway-core-11-7-2-sources-jar/org/flywaydb/core/internal/util/TimeFormat.java
- * /flyway-core-11-7-2-sources-
- jar/org/flywaydb/core/internal/scanner/classpath/JarFileClassPathLocationScanner.java
- * /flyway-core-11-7-2-sources-jar/org/flywaydb/core/internal/sqlscript/SqlStatementIterator.java
- *
- /flyway-core-11-7-2-sources-jar/org/flywaydb/core/internal/database/base/Database.java
- * /flyway-core-11-7-2-sources-jar/org/flywaydb/core/internal/jdbc/JdbcTemplate.java
- * /flyway-core-11-7-2-sources-
- jar/org/flywaydb/core/internal/proprietaryStubs/GenerateCommandExtensionStub.java
- * /flyway-core-11-7-2-sources-
- jar/org/flywaydb/core/experimental/migration/CompositeMigrationTypeResolver.java
- * /flyway-core-11-7-2-sources-jar/org/flywaydb/core/internal/scanner/classpath/package-info.java
- * /flyway-core-11-7-2-sources-jar/org/flywaydb/core/api/callback/Error.java
- * /flyway-core-11-7-2-sources-jar/org/flywaydb/core/api/migration/baseline/BaselineJavaMigration.java
- * /flyway-core-11-7-2-sources-jar/org/flywaydb/core/internal/schemahistory/SchemaHistoryFactory.java
- * /flyway-core-11-7-2-sources-jar/org/flywaydb/core/internal/sqlscript/ShouldExecuteEvaluator.java
- * /flyway-core-11-7-2-sources-jar/org/flywaydb/core/api/migration/BaseJavaMigration.java
- *
- /flyway-core-11-7-2-sources-jar/org/flywaydb/core/internal/info/MigrationInfoServiceImpl.java
- * /flyway-core-11-7-2-sources-
- jar/org/flywaydb/core/internal/resource/filesystem/FlywayEncodingDetectionException.java
- * /flyway-core-11-7-2-sources-jar/org/flywaydb/core/internal/util/package-info.java
- * /flyway-core-11-7-2-sources-jar/org/flywaydb/core/internal/database/sqlite/SQLiteSchema.java
- * /flyway-core-11-7-2-sources-jar/org/flywaydb/core/internal/jdbc/StatementInterceptor.java
- * /flyway-core-11-7-2-sources-jar/org/flywaydb/core/internal/resource/StringResource.java
- * /flyway-core-11-7-2-sources-jar/org/flywaydb/core/internal/license/FlywayLicensingException.java
- * /flyway-core-11-7-2-sources-jar/org/flywaydb/core/internal/logging/multi/MultiLogCreator.java
- * /flyway-core-11-7-2-sources-jar/org/flywaydb/core/internal/parser/Statement.java
- * /flyway-core-11-7-2-sources-
- jar/org/flywaydb/core/experimental/migration/ExperimentalMigrationScannerManager.java
- *
- /flyway-core-11-7-2-sources-jar/org/flywaydb/core/ProgressModel.java
- * /flyway-core-11-7-2-sources-jar/org/flywaydb/core/internal/logging/log4j2/Log4j2LogCreator.java
- * /flyway-core-11-7-2-sources-jar/org/flywaydb/core/internal/parser/ParsingContext.java
- * /flyway-core-11-7-2-sources-jar/org/flywaydb/core/internal/resource/classpath/ClassPathResource.java

- * /flyway-core-11-7-2-sources-jar/org/flywaydb/core/extensibility/Tier.java
- * /flyway-core-11-7-2-sources-jar/org/flywaydb/core/internal/resolver/MigrationInfoHelper.java
- * /flyway-core-11-7-2-sources-jar/org/flywaydb/core/api/logging/package-info.java
- * /flyway-core-11-7-2-sources-jar/org/flywaydb/core/internal/logging/PreviewFeatureWarning.java
- * /flyway-core-11-7-2-sources-jar/org/flywaydb/core/internal/database/sqlite/package-info.java
- * /flyway-core-11-7-2-sources-jar/org/flywaydb/core/experimental/migration/ExperimentalMigrationInfoFilter.java
- * /flyway-core-11-7-2-sources-jar/org/flywaydb/core/internal/info/AppliedMigrationAttributes.java
- *
- /flyway-core-11-7-2-sources-
- jar/org/flywaydb/core/internal/proprietaryStubs/PATTokenConfigurationExtensionStub.java
- * /flyway-core-11-7-2-sources-jar/org/flywaydb/core/internal/scanner/filesystem/FileSystemScanner.java
- * /flyway-core-11-7-2-sources-jar/org/flywaydb/core/internal/logging/javautil/JavaUtilLogCreator.java
- * /flyway-core-11-7-2-sources-jar/org/flywaydb/core/internal/proprietaryStubs/AuthCommandExtensionStub.java
- * /flyway-core-11-7-2-sources-jar/org/flywaydb/core/internal/configuration/resolvers/EnvironmentProvisioner.java
- * /flyway-core-11-7-2-sources-jar/org/flywaydb/core/api/resolver/MigrationResolver.java
- * /flyway-core-11-7-2-sources-jar/org/flywaydb/core/internal/exception/FlywayDbUpgradeRequiredException.java
- * /flyway-core-11-7-2-sources-jar/org/flywaydb/core/internal/util/StringUtils.java
- * /flyway-core-11-7-2-sources-jar/org/flywaydb/core/internal/authentication/ExternalAuthPropertiesProvider.java
- * /flyway-core-11-7-2-sources-jar/org/flywaydb/core/internal/scanner/cloud/s3/AwsS3Scanner.java
- *
- /flyway-core-11-7-2-sources-jar/org/flywaydb/core/internal/database/sqlite/SQLiteTable.java
- * /flyway-core-11-7-2-sources-jar/org/flywaydb/core/internal/proprietaryStubs/ModelCommandExtensionStub.java
- * /flyway-core-11-7-2-sources-jar/org/flywaydb/core/api/pattern/ValidatePattern.java
- * /flyway-core-11-7-2-sources-jar/org/flywaydb/core/internal/sqlscript/package-info.java
- * /flyway-core-11-7-2-sources-
- jar/org/flywaydb/core/api/migration/baseline/BaselineMigrationConfigurationExtension.java
- * /flyway-core-11-7-2-sources-jar/org/flywaydb/core/extensibility/FlywayTrialExpiredException.java
- * /flyway-core-11-7-2-sources-jar/org/flywaydb/core/internal/configuration/resolvers/PropertyResolverContext.java
- * /flyway-core-11-7-2-sources-jar/org/flywaydb/core/api/Location.java
- * /flyway-core-11-7-2-sources-jar/org/flywaydb/core/api/InfoOutputProvider.java
- * /flyway-core-11-7-2-sources-jar/org/flywaydb/core/internal/util/FlywayDbWebsiteLinks.java
- *
- /flyway-core-11-7-2-sources-jar/org/flywaydb/core/internal/callback/package-info.java
- * /flyway-core-11-7-2-sources-jar/org/flywaydb/core/api/output/OperationResultBase.java
- * /flyway-core-11-7-2-sources-jar/org/flywaydb/core/experimental/ExperimentalDatabasePluginResolverImpl.java
- * /flyway-core-11-7-2-sources-jar/org/flywaydb/core/api/resource/package-info.java
- * /flyway-core-11-7-2-sources-jar/org/flywaydb/core/internal/util/Pair.java
- * /flyway-core-11-7-2-sources-jar/org/flywaydb/core/internal/info/MigrationInfoContext.java
- * /flyway-core-11-7-2-sources-jar/org/flywaydb/core/internal/publishing/PublishingConfigurationExtension.java
- * /flyway-core-11-7-2-sources-jar/org/flywaydb/core/internal/util/ExternalProcessRunner.java
- * /flyway-core-11-7-2-sources-jar/org/flywaydb/core/api/FlywayException.java
- * /flyway-core-11-7-2-sources-jar/org/flywaydb/core/internal/parser/TokenType.java
- * /flyway-core-11-7-2-sources-jar/org/flywaydb/core/api/logging/ProgressBar.java
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- /flyway-core-11-7-2-sources-jar/org/flywaydb/core/internal/logging/buffered/BufferedLog.java
- * /flyway-core-11-7-2-sources-jar/org/flywaydb/core/internal/jdbc/DriverDataSource.java
- * /flyway-core-11-7-2-sources-jar/org/flywaydb/core/internal/resolver/CompositeMigrationResolver.java
- * /flyway-core-11-7-2-sources-jar/org/flywaydb/core/internal/database/InsertRowLock.java

- * /flyway-core-11-7-2-sources-jar/org/flywaydb/core/internal/resource/filesystem/package-info.java
- * /flyway-core-11-7-2-sources-jar/org/flywaydb/core/api/callback/Statement.java
- * /flyway-core-11-7-2-sources-jar/org/flywaydb/core/internal/util/Locations.java
- * /flyway-core-11-7-2-sources-jar/org/flywaydb/core/internal/configuration/package-info.java
- * /flyway-core-11-7-2-sources-jar/org/flywaydb/core/api/migration/JavaMigration.java
- * /flyway-core-11-7-2-sources-jar/org/flywaydb/core/internal/util/MergeUtils.java
- * /flyway-core-11-7-2-sources-jar/org/flywaydb/core/internal/configuration/resolvers/EnvironmentProvisionerNone.java
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- * /flyway-core-11-7-2-sources-jar/org/flywaydb/core/internal/strategy/BackoffStrategy.java
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- * /flyway-core-11-7-2-sources-jar/org/flywaydb/core/api/migration/baseline/BaselineAppliedMigration.java
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- * /flyway-core-11-7-2-sources-jar/org/flywaydb/core/internal/command/DbSchemas.java
- * /flyway-core-11-7-2-sources-jar/org/flywaydb/core/api/CoreMigrationType.java
- * /flyway-core-11-7-2-sources-jar/org/flywaydb/core/internal/configuration/models/FlywayModel.java
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- jar/org/flywaydb/core/internal/configuration/extensions/PrepareScriptFilenameConfigurationExtension.java
- * /flyway-core-11-7-2-sources-jar/org/flywaydb/core/internal/resolver/sql/package-info.java
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- * /flyway-core-11-7-2-sources-jar/org/flywaydb/core/internal/schemahistory/BaseAppliedMigration.java
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- * /flyway-core-11-7-2-sources-jar/org/flywaydb/core/internal/logging/EvolvingLog.java
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- * /flyway-core-11-7-2-sources-jar/org/flywaydb/core/experimental/migration/MigrationTypeResolver.java
- * /flyway-core-11-7-2-sources-jar/org/flywaydb/core/internal/util/VersionUtils.java
- * /flyway-core-11-7-2-sources-jar/org/flywaydb/core/internal/resolver/java/ScanningJavaMigrationResolver.java
- * /flyway-core-11-7-2-sources-jar/org/flywaydb/core/api/ClassProvider.java
- * /flyway-core-11-7-2-sources-jar/org/flywaydb/core/experimental/schemahistory/SchemaHistoryModel.java
- * /flyway-core-11-7-2-sources-jar/org/flywaydb/core/ProgressLoggerJson.java
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- * /flyway-core-11-7-2-sources-jar/org/flywaydb/core/internal/database/base/Type.java
- * /flyway-core-11-7-2-sources-jar/org/flywaydb/core/internal/resolver/sql/SqlMigrationExecutorFactory.java
- * /flyway-core-11-7-2-sources-jar/org/flywaydb/core/internal/jdbc/TransactionalExecutionTemplate.java
- * /flyway-core-11-7-2-sources-jar/org/flywaydb/core/internal/resolver/sql/SqlMigrationExecutor.java
- * /flyway-core-11-7-2-sources-jar/org/flywaydb/core/internal/configuration/models/DataSourceModel.java
- * /flyway-core-11-7-2-sources-jar/org/flywaydb/core/internal/resource/ResourceNameValidator.java
- * /flyway-core-11-7-2-sources-jar/org/flywaydb/core/internal/license/VersionPrinter.java
- * /flyway-core-11-7-2-sources-jar/org/flywaydb/core/api/output/MigrationKey.java
- * /flyway-core-11-7-2-sources-jar/org/flywaydb/core/extensibility/LicenseGuard.java
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/flyway-core-11-7-2-sources-jar/org/flywaydb/core/api/ErrorDetails.java
* /flyway-core-11-7-2-sources-jar/org/flywaydb/core/internal/configuration/models/FlywayEnvironmentModel.java
* /flyway-core-11-7-2-sources-jar/org/flywaydb/core/internal/database/base/CommunityDatabaseType.java
* /flyway-core-11-7-2-sources-jar/org/flywaydb/core/api/output/BaselineResult.java
* /flyway-core-11-7-2-sources-jar/org/flywaydb/core/internal/callback/DefaultCallbackExecutor.java
* /flyway-core-11-7-2-sources-jar/org/flywaydb/core/internal/command/DbValidate.java
* /flyway-core-11-7-2-sources-jar/org/flywaydb/core/internal/scanner/classpath/jboss/package-info.java

1.149 go-colorable 0.1.14

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1.151 aescts 2.0.0

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1.152 itsdangerous 2.2.0

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1.153 platformdirs 4.2.2

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1.154 angus-activation 2.0.3

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* <https://github.com/eclipse-ee4j/angus-activation>

* <https://github.com/eclipse-ee4j/angus-mail>

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1.155 zstd-jni 1.5.6-4

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Specification-Version: 1.5.6-4

Specification-Vendor: com.github.luben

Implementation-Title: zstd-jni

Implementation-Version: 1.5.6-4

Implementation-Vendor: com.github.luben

Implementation-Vendor-Id: com.github.luben

Automatic-Module-Name: com.github.luben.zstd_jni

Bnd-LastModified: 1721499007163

Bundle-Name: zstd-jni

Bundle-SymbolicName: com.github.luben.zstd-jni

Bundle-Description: JNI bindings for Zstd native library that provides fast and high compression lossless algorithm for Java and all JVM languages.

Bundle-Vendor: com.github.luben

Bundle-License: <https://opensource.org/licenses/BSD-2-Clause>;description=BSD 2-Clause License

Bundle-Version: 1.5.6.4

Bundle-ManifestVersion: 2

Bundle-NativeCode: darwin/x86_64/libzstd-jni-1.5.6-4.dylib;osname=MacOS;

osname=MacOSX;processor=x86_64,darwin/aarch64/libzstd-jni-1.5.6-4.dylib

;osname=MacOS;osname=MacOSX;processor=aarch64,freebsd/amd64/libzstd-jni

```
-1.5.6-4.so;osname=FreeBSD;processor=amd64,freebsd/i386/libzstd-jni-1.5.6-4.so;osname=FreeBSD;processor=i386,linux/aarch64/libzstd-jni-1.5.6-4.so;osname=Linux;processor=aarch64,linux/amd64/libzstd-jni-1.5.6-4.so;osname=Linux;processor=amd64,linux/arm/libzstd-jni-1.5.6-4.so;osname=Linux;processor=arm,linux/i386/libzstd-jni-1.5.6-4.so;osname=Linux;processor=i386,linux/mips64/libzstd-jni-1.5.6-4.so;osname=Linux;processor=mips64,linux/loongarch64/libzstd-jni-1.5.6-4.so;osname=Linux;processor=loongarch64,linux/ppc64/libzstd-jni-1.5.6-4.so;osname=Linux;processor=ppc64,linux/ppc64le/libzstd-jni-1.5.6-4.so;osname=Linux;processor=ppc64le,linux/riscv64/libzstd-jni-1.5.6-4.so;osname=Linux;processor=riscv64,linux/s390x/libzstd-jni-1.5.6-4.so;osname=Linux;processor=s390x,win/amd64/libzstd-jni-1.5.6-4.dll;osname=Win32;processor=amd64,win/aarch64/libzstd-jni-1.5.6-4.dll;osname=Win32;processor=aarch64,win/x86/libzstd-jni-1.5.6-4.dll;osname=Win32;processor=x86
```

Export-Package:

```
com.github.luben.zstd;version="1.5.6.4",com.github.luben.zstd.util;version="1.5.6.4"
```

Import-Package: org.osgi.framework;resolution:=optional

Private-Package: darwin.aarch64,darwin.x86_64,freebsd.amd64,freebsd.i386,linux.aarch64,linux.amd64,linux.arm,linux.i386,linux.loongarch64,linux.mips64,linux.ppc64,linux.ppc64le,linux.riscv64,linux.s390x,win.aarch64,win.amd64,win.x86

Require-Capability: osgi.ee;filter="(&(osgi.ee=JavaSE)(version>=1.8))"

Found in path(s):

* /zstd-jni-1-5-6-4-5-jar/META-INF/MANIFEST.MF

1.156 edwards25519 1.1.0

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1.157 gdbm 1.26-r0

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man/sha1.3

man/sha2.3

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*

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Found in path(s):

- * /hypersistence-tsid-2-1-4-sources-jar/io/hypersistence/tsid/TSID.java

1.169 bcprov-jdk18on 1.79

1.169.1 Available under license :

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public DomainParameters(BigInteger p, BigInteger g, BigInteger q, BigInteger j,

Found in path(s):

- * /bcprov-jdk18on-1-79-sources-jar/org/bouncycastle/asn1/x9/DomainParameters.java

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*

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* /bcprov-jdk18on-1-79-sources-jar/org/bouncycastle/LICENSE.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 C implementation

* by Andrew M (@floodyberry).

* @see Poly1305KeyGenerator

*/

Found in path(s):

* /bcprov-jdk18on-1-79-sources-jar/org/bouncycastle/crypto/mac/Poly1305.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):

* /bcprov-jdk18on-1-79-sources-jar/org/bouncycastle/pqc/crypto/sphincs/SPHINCS256Signer.java

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```

/**
 * An implementation of <a href="https://tools.ietf.org/html/rfc7253">RFC 7253 on The OCB
 * Authenticated-Encryption Algorithm</a>. For those still concerned about the original patents
 * around this, please see:
 * <p>
 * https://mailarchive.ietf.org/arch/msg/cfrg/qLTveWOdTJcLn4HP3ev-vrj05Vg/
 * </p>
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 * Phillip Rogaway &gt;rogaway@cs.ucdavis.edu&lt; Sat, 27 February 2021 02:46 UTCShow header
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 * and placed into the public domain all OCB-related IP of mine.
 * While I have been telling people this for quite some time, I don't
 * think I ever made a proper announcement to the CFRG or on the
 * OCB webpage. Consider that done.
 * </blockquote>
 */

```

Found in path(s):

```

* /bcprov-jdk18on-1-79-sources-jar/org/bouncycastle/crypto/modes/OCBBlockCipher.java
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```

```

/**
 * Magic value for proprietary OpenSSH private key.
 **/

```

Found in path(s):

```

* /bcprov-jdk18on-1-79-sources-jar/org/bouncycastle/crypto/util/OpenSSHPrivateKeyUtil.java
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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):

```

* /bcprov-jdk18on-1-79-sources-jar/org/bouncycastle/pqc/math/ntru/package-info.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>NIST submission files</p>

* <p>License of reference implementation</p>

*

* @see NIST round 3 PQC submissions page

* @see NTRU website

* @see NTRU specification

*/

Found in path(s):

* /bcprov-jdk18on-1-79-sources-jar/org/bouncycastle/pqc/crypto/ntru/package-info.java

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// now keep space is free to use

Found in path(s):

* /bcprov-jdk18on-1-79-sources-jar/org/bouncycastle/pqc/legacy/crypto/gmss/GMSSPrivateKeyParameters.java

1.170 libpsl 0.21.5-r3

1.170.1 Available under license :

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psl-make-dafsa and lookup_string_in_fixed_set.c.

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```

1.171 platfomdirs 4.3.7

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1.172 cachecontrol 0.14.2

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1.173 swaggo-files 1.0.1

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1.175 readline 8.3.1-r0

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```
# Contributor: Carlo Landmeter <clandmeter@alpinelinux.org>
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pkgname=spdx-licenses
pkgver=3.27.0
pkgrel=0
pkgdesc="Various data formats for the SPDX License List"
url="https://spdx.org/"
arch="noarch"
options="!check" # no test suite
license="CC-BY-3.0"
source="license-list-data-$pkgver.tar.gz::https://github.com/spdx/license-list-data/archive/v$pkgver.tar.gz"
builddir="$srcdir/license-list-data-$pkgver"
subpackages="$pkgname-list"

_types="html json rdfa rdfnt rdfturtle rdfxml template text"

for type in $_types; do
    subpackages="$subpackages $pkgname-$type:_subpkg"
done

package() {
    mkdir -p "$pkgdir"
}

_subpkg() {
    local type=${subpkgname/$pkgname-/}
    pkgdesc="$pkgdesc ($type)"
    install_if="$pkgname=$pkgver-r$pkgrel"
    mkdir -p "$subpkgdir"/usr/share/spdx
    cp -r "$builddir"/$type "$subpkgdir"/usr/share/spdx/
}

list() {
    pkgdesc="$pkgdesc (licence list)"
    mkdir -p "$subpkgdir"/usr/share/spdx
    local i; for i in "$builddir"/text/*.txt;
    do
        local license=${i##*/}
        echo ${license%.*} >> "$subpkgdir"/usr/share/spdx/license.lst
    done
}
```

```

sha512sums="
16d59c81e331b54b52639826f83408d98144cdaa70eacc3e8ce35dc3b13992e4794cf7515eb9db200efd390a0c0e35ae9
d4706fbe0ca6a8d236189e88870720c license-list-data-3.27.0.tar.gz
"

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pkgver=1.2911
pkgrel=11
#_pkgreal is used by apkbuid-cpan to find modules at MetaCpan
_pkgreal=BSD-Resource
pkgdesc="Perl extension implements the BSD process resource limit functions"
url="https://metacpan.org/release/BSD-Resource/"
arch="all"
license="Artistic-2.0 OR LGPL-2.0"
depends="perl"
makedepends="perl-dev"
subpackages="$pkgname-doc"
source="https://cpan.metacpan.org/authors/id/J/JH/JHI/BSD-Resource-$pkgver.tar.gz"
builddir="$srcdir/${_pkgreal}-${pkgver}"

build() {
    export CFLAGS=$(perl -MConfig -E 'say $Config{ccflags}')
    PERL_MM_USE_DEFAULT=1 perl -I. Makefile.PL \
        INSTALLDIRS=vendor \
        NO_PACKLIST=1 \
        NO_PERLLOCAL=1
    make
}

check() {
    export CFLAGS=$(perl -MConfig -E 'say $Config{ccflags}')
    make test
}

package() {
    make DESTDIR="$pkgdir" install
}

sha512sums="
d0032d41c7c0468ed1c6d8f57b885f6cb97a5039d754c8cb60b2067daedaf53bd15fb6561a3d0f828df16dfa5417f663b
8065ba65f4fea16dc9262728b3b6b85
    BSD-Resource-1.2911.tar.gz
"

maintainer="Achill Gilgenast <achill@achill.org>"
pkgname=cargo-license

```

```

pkgver=0.7.0
pkgrel=1
pkgdesc="Cargo subcommand to see license of dependencies"
url="https://github.com/onur/cargo-license"
arch="all"
license="MIT"
makedepends="cargo cargo-auditable"
source="$pkgname-$pkgver.tar.gz::https://crates.io/api/v1/crates/cargo-license/$pkgver/download"

prepare() {
    default_prepare

    cargo fetch --target="$CTARGET" --locked
}

build() {
    cargo auditable build --release --frozen
}

check() {
    cargo test --frozen
}

package() {
    install -Dm755 target/release/cargo-license -t "$pkgdir"/usr/bin
}

sha512sums="
9b3f0ead35515e85ef4074ebdbdbe5b9ec8bcaec244fabe414e2ed60f90366e8b1692d8bf7ffe4c07d778e60d94bab86bc
0c8be9823232e9c360a38bc65e9c5a cargo-license-0.7.0.tar.gz
"

#!/sbin/openrc-run

command="/usr/libexec/xdg-permission-store"
supervisor=supervise-daemon
command_args="--replace $command_args"
error_logger="logger -t '${RC_SVCNAME}' -p daemon.error"

depend() {
    need dbus
}

# Contributor: Maxim Karasev <begs@disroot.org>
# Maintainer: mio <miyopan@e.email>
pkgname=bsd-games
pkgver=3.3
pkgrel=2
pkgdesc="traditional text mode games from BSD"
url="https://bsd-games.sourceforge.io/"

```

```

arch="all"
license="BSD-3-Clause"
install="$pkgname.post-install"
makedepends="ncurses-dev coreutils" # configure causes busybox expr error
subpackages="$pkgname-doc"
source="https://sourceforge.net/projects/bsd-games/files/bsd-games-$pkgver.tar.gz
0001-bsd-games-scores-dir.patch
"

options="!check" # no tests

build() {
# some GNU autoconf options are ignored, but it works
./configure \
--build=$CBUILD \
--host=$CHOST \
--prefix=/usr \
--sysconfdir=/etc \
--mandir=/usr/share/man \
--sourcedir=/usr/share/$pkgname
make
}

package() {
make DESTDIR="$pkgdir" install
install -Dm644 LICENSE "$pkgdir"/usr/share/licenses/bsd-games/LICENSE
}

sha512sums="
aaf36d09d4fe68514a5c279063d7e77a9a9a84c447037cba974b29faa07eb80c2aab2379d0699c196b5c27ffe1b2bb2c6
8d3390143e0e62d5e3d210ccfb61294
bsd-games-3.3.tar.gz
e1def0d4835a877242c4173fae862e278a7858738e0bacacbb045a42bcabec2aa7c72d000bbd2421ce35fe66cdc1f52c0
577b7e278029ca5ed50f7aab22319f6 0001-bsd-games-scores-dir.patch
"

MIT License

```

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mini_sendmail - accept email on behalf of real sendmail

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Maintainer: Natanael Copa <ncopa@alpinelinux.org>

pkgname=libart-lgpl

pkgver=2.3.21

pkgrel=8

pkgdesc="A library for high-performance 2D graphics"

url="https://www.levien.com/libart/"

arch="all"

options="!check" # No test suite.

license="LGPL-2.0-or-later"

subpackages="\$pkgname-dev"

source="https://download.gnome.org/sources/libart-lgpl/2.3/libart-lgpl-\$pkgver.tar.bz2"

"

builddir="\$srcdir"/libart-lgpl-\$pkgver


```

prepare() {
    update_config_sub
    default_prepare
}

build() {
    ./configure \
    --build=$CBUILD \
    --host=$CHOST \
    --prefix=/usr
    make
}

package() {
    make DESTDIR="$pkgdir" install
}

sha512sums="8a632a6a4da59e5e8c02ec2f5a57e36d182b325b46513765425e5f171ff9ae326af1b133725beba28f7e7
6654309e001aee9bace727b5b4c8589405256a3c020 libart_lgpl-2.3.21.tar.bz2"
# Contributor: Patrycja Rosa <alpine@ptrcnull.me>
# Maintainer: Patrycja Rosa <alpine@ptrcnull.me>
pkgname=bsd-compat-headers
pkgver=0.7.2
pkgrel=6
pkgdesc="BSD compatibility headers (cdefs, queue, tree)"
url="https://gitlab.alpinelinux.org/alpine/aports"
arch="noarch"
license="BSD-2-Clause AND BSD-3-Clause"
source="
cdefs.h
queue.h
tree.h
"
builddir="$srcdir"
options="!check" # just headers

package() {
    mkdir -p "$pkgdir"
    install -Dm644 -t "$pkgdir"/usr/include/sys \
        cdefs.h queue.h tree.h
}
sha512sums="
37c8fc73c7aea7b490f7850927e2bb91d12137c9e59e22c084146d515696dbc7973b5de92f4c987ba080dd2502ba8312
7006442c3f019b6447a620c0cae73178 cdefs.h
2f0d5e6e4dc3350285cf17009265dddcbe12431c111868eea39bc8cb038ab7c1f2acacbb21735c4e9d4a1fd106a8fc0f86
11ea33987d4faba37dde5ce6da0750 queue.h
d9ac210d81feb8ad2655bc80fb065d3fe20ae4417b32b4a1711e6738a4870140005c13373b5d1846ef3ce5ae6da45f2da

```

cef2092881eded0a2e94f6a07752ef3 tree.h

"

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The X-Spline code was written Carole Blanc (blanc@labri.u-bordeaux.fr) and Christophe Schlick (schlick@labri.u-bordeaux.fr) starting from an initial implementation done by C. Feuille, S. Grosbois, L. Maziere and L. Minihot as a student practice (Universite Bordeaux, France). For additional information about X-splines, see:

"X-Splines: A Spline Model Designed for the End User" by C. Blanc and C. Schlick, Proceedings of SIGGRAPH'95
<http://dept-info.labri.u-bordeaux.fr/~schlick/DOC/sig1.html>

/* \$NetBSD: queue.h,v 1.70 2015/11/02 15:21:23 christos Exp \$ */

/*

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*
 * @(#)queue.h 8.5 (Berkeley) 8/20/94
 */

#ifndef _SYS_QUEUE_H_
 #define _SYS_QUEUE_H_

/*
 * This file defines five types of data structures: singly-linked lists,
 * lists, simple queues, tail queues, and circular queues.
 *
 * A singly-linked list is headed by a single forward pointer. The
 * elements are singly linked for minimum space and
 * pointer manipulation
 * overhead at the expense of O(n) removal for arbitrary elements. New
 * elements can be added to the list after an existing element or at the
 * head of the list. Elements being removed from the head of the list
 * should use the explicit macro for this purpose for optimum
 * efficiency. A singly-linked list may only be traversed in the forward
 * direction. Singly-linked lists are ideal for applications with large
 * datasets and few or no removals or for implementing a LIFO queue.
 *
 * A list is headed by a single forward pointer (or an array of forward
 * pointers for a hash table header). The elements are doubly linked
 * so that an arbitrary element can be removed without a need to
 * traverse the list. New elements can be added to the list before
 * or after an existing element or at the head of the list. A list
 * may only be traversed in the forward direction.
 *
 * A simple queue is headed by a pair of pointers, one the head of the
 * list and the
 * other to the tail of the list. The elements are singly
 * linked to save space, so elements can only be removed from the
 * head of the list. New elements can be added to the list after
 * an existing element, at the head of the list, or at the end of the

```

* list. A simple queue may only be traversed in the forward direction.
*
* A tail queue is headed by a pair of pointers, one to the head of the
* list and the other to the tail of the list. The elements are doubly
* linked so that an arbitrary element can be removed without a need to
* traverse the list. New elements can be added to the list before or
* after an existing element, at the head of the list, or at the end of
* the list. A tail queue may be traversed in either direction.
*
* A circle queue is headed by a pair of pointers, one to the head of the
* list and the other to the tail of the list. The elements are doubly
* linked so that an arbitrary element can be removed without a need to
* traverse the list. New elements
* can be added to the list before or after
* an existing element, at the head of the list, or at the end of the list.
* A circle queue may be traversed in either direction, but has a more
* complex end of list detection.
*
* For details on the use of these macros, see the queue(3) manual page.
*/

/*
* Include the definition of NULL only on NetBSD because sys/null.h
* is not available elsewhere. This conditional makes the header
* portable and it can simply be dropped verbatim into any system.
* The caveat is that on other systems some other header
* must provide NULL before the macros can be used.
*/
#ifdef __NetBSD__
#include <sys/null.h>
#endif

#if defined(QUEUEDEBUG)
# if defined(_KERNEL)
#  define QUEUEDEBUG_ABORT(...) panic(__VA_ARGS__)
# else
#  include <err.h>
#  define QUEUEDEBUG_ABORT(...) err(1, __VA_ARGS__)
# endif
#endif

/*
* Singly-linked List definitions.
*/
#define SLIST_HEAD(name, type) \
struct name { \
    struct type *slh_first; /* first

```

```

element */ \
}

#define SLIST_HEAD_INITIALIZER(head) \
{ NULL }

#define SLIST_ENTRY(type) \
struct { \
    struct type *sle_next; /* next element */ \
}

/*
 * Singly-linked List access methods.
 */
#define SLIST_FIRST(head) ((head)->slh_first)
#define SLIST_END(head) NULL
#define SLIST_EMPTY(head) ((head)->slh_first == NULL)
#define SLIST_NEXT(elm, field) ((elm)->field.sle_next)

#define SLIST_FOREACH(var, head, field) \
for((var) = (head)->slh_first; \
    (var) != SLIST_END(head); \
    (var) = (var)->field.sle_next)

#define SLIST_FOREACH_SAFE(var, head, field, tvar) \
for ((var) = SLIST_FIRST((head)); \
    (var) != SLIST_END(head) && \
    ((tvar) = SLIST_NEXT((var), field), 1); \
    (var) = (tvar))

/*
 * Singly-linked List functions.
 */
#define SLIST_INIT(head) do { \
    (head)->slh_first = SLIST_END(head); \
} while (/*CONSTCOND*/0)

#define SLIST_INSERT_AFTER(slistelm, elm, field) do { \
    (elm)->field.sle_next = (slistelm)->field.sle_next; \
    (slistelm)->field.sle_next \
    = (elm); \
} while (/*CONSTCOND*/0)

#define SLIST_INSERT_HEAD(head, elm, field) do { \
    (elm)->field.sle_next = (head)->slh_first; \
    (head)->slh_first = (elm); \
} while (/*CONSTCOND*/0)

```

```

#define SLIST_REMOVE_AFTER(slistelm, field) do { \
    (slistelm)->field.sle_next = \
        SLIST_NEXT(SLIST_NEXT((slistelm), field), field); \
} while (/*CONSTCOND*/0)

#define SLIST_REMOVE_HEAD(head, field) do { \
    (head)->slh_first = (head)->slh_first->field.sle_next; \
} while (/*CONSTCOND*/0)

#define SLIST_REMOVE(head, elm, type, field) do { \
    if ((head)->slh_first == (elm)) { \
        SLIST_REMOVE_HEAD((head), field); \
    } \
    else { \
        struct type *curelm = (head)->slh_first; \
        while(curelm->field.sle_next != (elm)) \
            curelm = curelm->field.sle_next; \
        curelm->field.sle_next = \
            curelm->field.sle_next->field.sle_next; \
    } \
} while (/*CONSTCOND*/0)

/*
 * List definitions.
 */
#define LIST_HEAD(name, type) \
struct name { \
    struct type *lh_first; /* first element */ \
}

#define LIST_HEAD_INITIALIZER(head) \
{ NULL }

#define LIST_ENTRY(type) \
struct { \
    struct type *le_next; /* next element */ \
    struct type **le_prev; /* address of previous next element */ \
}

/*
 * List access methods.
 */
#define LIST_FIRST(head) ((head)->lh_first)
#define LIST_END(head) NULL
#define LIST_EMPTY(head) ((head)->lh_first == LIST_END(head))
#define LIST_NEXT(elm, field) ((elm)->field.le_next)

```

```

#define LIST_FOREACH(var, head, field) \
for ((var) = ((head)->lh_first); \
    (var) != LIST_END(head); \
    (var) = ((var)->field.le_next))

#define LIST_FOREACH_SAFE(var, head, field, tvar) \
for ((var) = LIST_FIRST((head)); \
    (var) != LIST_END(head) && \
    ((tvar) = LIST_NEXT((var), field), 1); \
    (var) = (tvar))

#define LIST_MOVE(head1, head2) do { \
LIST_INIT((head2)); \
if (!LIST_EMPTY((head1))) \
{ \
(head2)->lh_first = (head1)->lh_first; \
LIST_INIT((head1)); \
} \
} while (/*CONSTCOND*/0)

/*
 * List functions.
 */

#if defined(QUEUEDEBUG)
#define QUEUEDEBUG_LIST_INSERT_HEAD(head, elm, field) \
if ((head)->lh_first && \
    (head)->lh_first->field.le_prev != &(head)->lh_first) \
QUEUEDEBUG_ABORT("LIST_INSERT_HEAD %p %s:%d", (head), \
    __FILE__, __LINE__);
#define QUEUEDEBUG_LIST_OP(elm, field) \
if ((elm)->field.le_next && \
    (elm)->field.le_next->field.le_prev != \
    &(elm)->field.le_next) \
QUEUEDEBUG_ABORT("LIST_* forw %p %s:%d", (elm), \
    __FILE__, __LINE__); \
if (*(elm)->field.le_prev != (elm)) \
QUEUEDEBUG_ABORT("LIST_* back %p %s:%d", (elm), \
    __FILE__, __LINE__);
#define QUEUEDEBUG_LIST_POSTREMOVE(elm, field) \
(elm)->field.le_next = (void *)1L; \
(elm)->field.le_prev = (void *)1L;
#else
#define QUEUEDEBUG_LIST_INSERT_HEAD(head, elm, field)
#define QUEUEDEBUG_LIST_OP(elm, field)
#define QUEUEDEBUG_LIST_POSTREMOVE(elm, field)
#endif

```

```

#define LIST_INIT(head) do { \
    (head)->lh_first = LIST_END(head); \
} while (/*CONSTCOND*/0)

#define LIST_INSERT_AFTER(listelm, elm, field) do { \
    QUEUEDEBDEBUG_LIST_OP((listelm), field) \
    if (((elm)->field.le_next = (listelm)->field.le_next) != \
        LIST_END(head)) \
    (listelm)->field.le_next->field.le_prev = \
        &(elm)->field.le_next; \
    (listelm)->field.le_next = (elm); \
    (elm)->field.le_prev = &(listelm)->field.le_next; \
} while (/*CONSTCOND*/0)

#define LIST_INSERT_BEFORE(listelm, elm, field) do { \
    QUEUEDEBDEBUG_LIST_OP((listelm), field) \
    (elm)->field.le_prev = (listelm)->field.le_prev; \
    (elm)->field.le_next = (listelm); \
    *(listelm)->field.le_prev = (elm); \
    (listelm)->field.le_prev = &(elm)->field.le_next; \
} while (/*CONSTCOND*/0)

#define LIST_INSERT_HEAD(head, elm, field) do { \
    QUEUEDEBDEBUG_LIST_INSERT_HEAD((head), (elm), field) \
    if (((elm)->field.le_next \
    = (head)->lh_first) != LIST_END(head)) \
    (head)->lh_first->field.le_prev = &(elm)->field.le_next; \
    (head)->lh_first = (elm); \
    (elm)->field.le_prev = &(head)->lh_first; \
} while (/*CONSTCOND*/0)

#define LIST_REMOVE(elm, field) do { \
    QUEUEDEBDEBUG_LIST_OP((elm), field) \
    if ((elm)->field.le_next != NULL) \
    (elm)->field.le_next->field.le_prev = \
        (elm)->field.le_prev; \
    *(elm)->field.le_prev = (elm)->field.le_next; \
    QUEUEDEBDEBUG_LIST_POSTREMOVE((elm), field) \
} while (/*CONSTCOND*/0)

#define LIST_REPLACE(elm, elm2, field) do { \
    if (((elm2)->field.le_next = (elm)->field.le_next) != NULL) \
    (elm2)->field.le_next->field.le_prev = \
        &(elm2)->field.le_next; \
    (elm2)->field.le_prev = (elm)->field.le_prev; \
    *(elm2)->field.le_prev = (elm2); \
    QUEUEDEBDEBUG_LIST_POSTREMOVE((elm), field) \
} while (/*CONSTCOND*/0)

```



```

/*
 * Simple queue definitions.
 */
#define SIMPLEQ_HEAD(name, type)  \
struct name {                    \
    struct                        \
    type *sqh_first; /* first element */ \
    struct type **sqh_last; /* addr of last next element */ \
}

#define SIMPLEQ_HEAD_INITIALIZER(head)  \
{ NULL, &(head).sqh_first }

#define SIMPLEQ_ENTRY(type)  \
struct {                      \
    struct type *sqe_next; /* next element */ \
}

/*
 * Simple queue access methods.
 */
#define SIMPLEQ_FIRST(head) ((head)->sqh_first)
#define SIMPLEQ_END(head) NULL
#define SIMPLEQ_EMPTY(head) ((head)->sqh_first == SIMPLEQ_END(head))
#define SIMPLEQ_NEXT(elm, field) ((elm)->field.sqe_next)

#define SIMPLEQ_FOREACH(var, head, field)  \
for ((var) = ((head)->sqh_first);  \
     (var) != SIMPLEQ_END(head);  \
     (var) = ((var)->field.sqe_next))

#define SIMPLEQ_FOREACH_SAFE(var, head, field, next)  \
for ((var) = ((head)->sqh_first);  \
     (var) != SIMPLEQ_END(head) &&  \
     ((next = ((var)->field.sqe_next)), 1);  \
     (var) = (next))

/*
 * Simple queue functions.
 */
#define SIMPLEQ_INIT(head) do {  \
    (head)->sqh_first = NULL;  \
    (head)->sqh_last  \
    = &(head)->sqh_first;  \
} while (/*CONSTCOND*/0)

#define SIMPLEQ_INSERT_HEAD(head, elm, field) do {  \

```

```

if (((elm)->field.sqe_next = (head)->sqh_first) == NULL) \
    (head)->sqh_last = &(elm)->field.sqe_next; \
(head)->sqh_first = (elm); \
} while (/*CONSTCOND*/0)

#define SIMPLEQ_INSERT_TAIL(head, elm, field) do { \
    (elm)->field.sqe_next = NULL; \
    *(head)->sqh_last = (elm); \
    (head)->sqh_last = &(elm)->field.sqe_next; \
} while (/*CONSTCOND*/0)

#define SIMPLEQ_INSERT_AFTER(head, listelm, elm, field) do { \
    if (((elm)->field.sqe_next = (listelm)->field.sqe_next) == NULL) \
        (head)->sqh_last = &(elm)->field.sqe_next; \
    (listelm)->field.sqe_next = (elm); \
} while (/*CONSTCOND*/0)

#define SIMPLEQ_REMOVE_HEAD(head, field) do { \
    if (((head)->sqh_first = (head)->sqh_first->field.sqe_next) == NULL) \
        (head)->sqh_last = &(head)->sqh_first; \
} while (/*CONSTCOND*/0)

#define SIMPLEQ_REMOVE_AFTER(head, elm, field) do { \
    if \
        (((elm)->field.sqe_next = (elm)->field.sqe_next->field.sqe_next) \
         == NULL) \
        (head)->sqh_last = &(elm)->field.sqe_next; \
} while (/*CONSTCOND*/0)

#define SIMPLEQ_REMOVE(head, elm, type, field) do { \
    if ((head)->sqh_first == (elm)) { \
        SIMPLEQ_REMOVE_HEAD((head), field); \
    } else { \
        struct type *curelm = (head)->sqh_first; \
        while (curelm->field.sqe_next != (elm)) \
            curelm = curelm->field.sqe_next; \
        if ((curelm->field.sqe_next = \
            curelm->field.sqe_next->field.sqe_next) == NULL) \
            (head)->sqh_last = &(curelm)->field.sqe_next; \
    } \
} while (/*CONSTCOND*/0)

#define SIMPLEQ_CONCAT(head1, head2) do { \
    if (!SIMPLEQ_EMPTY((head2))) { \
        *(head1)->sqh_last = (head2)->sqh_first; \
        (head1)->sqh_last = (head2)->sqh_last; \
        SIMPLEQ_INIT((head2)); \
    } \
}

```

```

} while (/*CONSTCOND*/0)

#define SIMPLEQ_LAST(head, type, field) \
(SIMPLEQ_EMPTY((head)) ? \
NULL : \
((struct type \
*)(void *) \
((char *)((head)->sqh_last) - offsetof(struct type, field))))

/*
 * Tail queue definitions.
 */
#define _TAILQ_HEAD(name, type, qual) \
struct name { \
    qual type *tqh_first; /* first element */ \
    qual type *qual *tqh_last; /* addr of last next element */ \
}
#define TAILQ_HEAD(name, type) _TAILQ_HEAD(name, struct type,)

#define TAILQ_HEAD_INITIALIZER(head) \
{ TAILQ_END(head), &(head).tqh_first }

#define _TAILQ_ENTRY(type, qual) \
struct { \
    qual type *tqe_next; /* next element */ \
    qual type *qual *tqe_prev; /* address of previous next element */ \
}
#define TAILQ_ENTRY(type) _TAILQ_ENTRY(struct type,)

/*
 * Tail queue access methods.
 */
#define TAILQ_FIRST(head) ((head)->tqh_first)
#define TAILQ_END(head) (NULL)
#define TAILQ_NEXT(elm, field) ((elm)->field.tqe_next)
#define TAILQ_LAST(head, headname) \
    (((struct headname *) (void *)((head)->tqh_last))->tqh_last)
#define TAILQ_PREV(elm, headname, field) \
    (((struct headname \
    *) (void *)((elm)->field.tqe_prev))->tqh_last)
#define TAILQ_EMPTY(head) (TAILQ_FIRST(head) == TAILQ_END(head))

#define TAILQ_FOREACH(var, head, field) \
for ((var) = ((head)->tqh_first); \
    (var) != TAILQ_END(head); \
    (var) = ((var)->field.tqe_next))

```

```

#define TAILQ_FOREACH_SAFE(var, head, field, next) \
for ((var) = ((head)->tqh_first); \
     (var) != TAILQ_END(head) && \
     ((next) = TAILQ_NEXT(var, field), 1); (var) = (next))

#define TAILQ_FOREACH_REVERSE(var, head, headname, field) \
for ((var) = TAILQ_LAST((head), headname); \
     (var) != TAILQ_END(head); \
     (var) = TAILQ_PREV((var), headname, field))

#define TAILQ_FOREACH_REVERSE_SAFE(var, head, headname, field, prev) \
for ((var) = TAILQ_LAST((head), headname); \
     (var) != TAILQ_END(head) && \
     ((prev) = TAILQ_PREV((var), headname, field), 1); (var) = (prev))

/*
 * Tail queue functions.
 */
#if defined(QUEUEDEBUG)
#define QUEUEDEBUG_TAILQ_INSERT_HEAD(head, \
elm, field) \
if ((head)->tqh_first && \
     (head)->tqh_first->field.tqe_prev != &(head)->tqh_first) \
    QUEUEDEBUG_ABORT("TAILQ_INSERT_HEAD %p %s:%d", (head), \
        __FILE__, __LINE__);
#define QUEUEDEBUG_TAILQ_INSERT_TAIL(head, elm, field) \
if (*(head)->tqh_last != NULL) \
    QUEUEDEBUG_ABORT("TAILQ_INSERT_TAIL %p %s:%d", (head), \
        __FILE__, __LINE__);
#define QUEUEDEBUG_TAILQ_OP(elm, field) \
if ((elm)->field.tqe_next && \
     (elm)->field.tqe_next->field.tqe_prev != \
     &(elm)->field.tqe_next) \
    QUEUEDEBUG_ABORT("TAILQ_* forw %p %s:%d", (elm), \
        __FILE__, __LINE__); \
if (*(elm)->field.tqe_prev != (elm)) \
    QUEUEDEBUG_ABORT("TAILQ_* back %p %s:%d", (elm), \
        __FILE__, __LINE__);
#define QUEUEDEBUG_TAILQ_PREREMOVE(head, elm, field) \
if ((elm)->field.tqe_next == NULL && \
     (head)->tqh_last != &(elm)->field.tqe_next) \
    QUEUEDEBUG_ABORT("TAILQ_PREREMOVE head %p elm %p %s:%d", \
        (head), (elm), __FILE__, \
        __LINE__);
#define QUEUEDEBUG_TAILQ_POSTREMOVE(elm, field) \
(elm)->field.tqe_next = (void *)1L; \
(elm)->field.tqe_prev = (void *)1L;
#else

```

```

#define QUEUEDEBUG_TAILQ_INSERT_HEAD(head, elm, field)
#define QUEUEDEBUG_TAILQ_INSERT_TAIL(head, elm, field)
#define QUEUEDEBUG_TAILQ_OP(elm, field)
#define QUEUEDEBUG_TAILQ_PREREMOVE(head, elm, field)
#define QUEUEDEBUG_TAILQ_POSTREMOVE(elm, field)
#endif

#define TAILQ_INIT(head) do { \
    (head)->tqh_first = TAILQ_END(head); \
    (head)->tqh_last = &(head)->tqh_first; \
} while (/*CONSTCOND*/0)

#define TAILQ_INSERT_HEAD(head, elm, field) do { \
    QUEUEDEBUG_TAILQ_INSERT_HEAD((head), (elm), field) \
    if (((elm)->field.tqe_next = (head)->tqh_first) != TAILQ_END(head)) \
        (head)->tqh_first->field.tqe_prev = \
            &(elm)->field.tqe_next; \
    else \
        (head)->tqh_last = &(elm)->field.tqe_next; \
    (head)->tqh_first = (elm); \
    (elm)->field.tqe_prev = &(head)->tqh_first; \
} while (/*CONSTCOND*/0)

#define TAILQ_INSERT_TAIL(head, \
    elm, field) do { \
    QUEUEDEBUG_TAILQ_INSERT_TAIL((head), (elm), field) \
    (elm)->field.tqe_next = TAILQ_END(head); \
    (elm)->field.tqe_prev = (head)->tqh_last; \
    *(head)->tqh_last = (elm); \
    (head)->tqh_last = &(elm)->field.tqe_next; \
} while (/*CONSTCOND*/0)

#define TAILQ_INSERT_AFTER(head, listelm, elm, field) do { \
    QUEUEDEBUG_TAILQ_OP((listelm), field) \
    if (((elm)->field.tqe_next = (listelm)->field.tqe_next) != \
        TAILQ_END(head)) \
        (elm)->field.tqe_next->field.tqe_prev = \
            &(elm)->field.tqe_next; \
    else \
        (head)->tqh_last = &(elm)->field.tqe_next; \
    (listelm)->field.tqe_next = (elm); \
    (elm)->field.tqe_prev = &(listelm)->field.tqe_next; \
} while (/*CONSTCOND*/0)

#define TAILQ_INSERT_BEFORE(listelm, elm, field) do { \
    QUEUEDEBUG_TAILQ_OP((listelm), field) \
    (elm)->field.tqe_prev = (listelm)->field.tqe_prev; \
    (elm)->field.tqe_next = (listelm); \
} while (/*CONSTCOND*/0)

```

```

*(listelm)->field.tqe_prev = (elm); \
(listelm)->field.tqe_prev
= &(elm)->field.tqe_next; \
} while (/*CONSTCOND*/0)

#define TAILQ_REMOVE(head, elm, field) do { \
    QUEUEDEBUG_TAILQ_PREREMOVE((head), (elm), field) \
    QUEUEDEBUG_TAILQ_OP((elm), field) \
    if (((elm)->field.tqe_next != TAILQ_END(head)) \
        (elm)->field.tqe_next->field.tqe_prev = \
            (elm)->field.tqe_prev; \
    else \
        (head)->tqh_last = (elm)->field.tqe_prev; \
        *(elm)->field.tqe_prev = (elm)->field.tqe_next; \
        QUEUEDEBUG_TAILQ_POSTREMOVE((elm), field); \
    } while (/*CONSTCOND*/0)

#define TAILQ_REPLACE(head, elm, elm2, field) do { \
    if (((elm2)->field.tqe_next = (elm)->field.tqe_next) != \
        TAILQ_END(head)) \
        (elm2)->field.tqe_next->field.tqe_prev = \
            &(elm2)->field.tqe_next; \
    else \
        (head)->tqh_last = &(elm2)->field.tqe_next; \
        (elm2)->field.tqe_prev = (elm)->field.tqe_prev; \
        *(elm2)->field.tqe_prev = (elm2); \
        QUEUEDEBUG_TAILQ_POSTREMOVE((elm), \
            field); \
    } while (/*CONSTCOND*/0)

#define TAILQ_CONCAT(head1, head2, field) do { \
    if (!TAILQ_EMPTY(head2)) { \
        *(head1)->tqh_last = (head2)->tqh_first; \
        (head2)->tqh_first->field.tqe_prev = (head1)->tqh_last; \
        (head1)->tqh_last = (head2)->tqh_last; \
        TAILQ_INIT((head2)); \
    } \
    } while (/*CONSTCOND*/0)

/*
 * Singly-linked Tail queue declarations.
 */
#define STAILQ_HEAD(name, type) \
struct name { \
    struct type *stqh_first; /* first element */ \
    struct type **stqh_last; /* addr of last next element */ \
}

```

```

#define STAILQ_HEAD_INITIALIZER(head)  \
{ NULL, &(head).stqh_first }

#define STAILQ_ENTRY(type)  \
struct {  \
    struct type *stqe_next; /* next element */  \
}

/*
 * Singly-linked Tail queue access methods.
 */
#define STAILQ_FIRST(head) ((head)->stqh_first)
#define STAILQ_END(head) NULL
#define STAILQ_NEXT(elm, field) ((elm)->field.stqe_next)
#define STAILQ_EMPTY(head) (STAILQ_FIRST(head) \
    == STAILQ_END(head))

/*
 * Singly-linked Tail queue functions.
 */
#define STAILQ_INIT(head) do {  \
    (head)->stqh_first = NULL;  \
    (head)->stqh_last = &(head)->stqh_first;  \
} while (/*CONSTCOND*/0)

#define STAILQ_INSERT_HEAD(head, elm, field) do {  \
    if (((elm)->field.stqe_next = (head)->stqh_first) == NULL) \
        (head)->stqh_last = &(elm)->field.stqe_next;  \
    (head)->stqh_first = (elm);  \
} while (/*CONSTCOND*/0)

#define STAILQ_INSERT_TAIL(head, elm, field) do {  \
    (elm)->field.stqe_next = NULL;  \
    *(head)->stqh_last = (elm);  \
    (head)->stqh_last = &(elm)->field.stqe_next;  \
} while (/*CONSTCOND*/0)

#define STAILQ_INSERT_AFTER(head, listelm, elm, field) do {  \
    if (((elm)->field.stqe_next = (listelm)->field.stqe_next) == NULL) \
        (head)->stqh_last = &(elm)->field.stqe_next;  \
    (listelm)->field.stqe_next = (elm);  \
} while (/*CONSTCOND*/0)

#define STAILQ_REMOVE_HEAD(head, field) do {  \
    if (((head)->stqh_first = (head)->stqh_first->field.stqe_next) \
        == NULL) \
        (head)->stqh_last = &(head)->stqh_first;  \
} while (/*CONSTCOND*/0)

```

```

#define STAILQ_REMOVE(head, elm, type, field) do { \
    if ((head)->stqh_first == (elm)) { \
        STAILQ_REMOVE_HEAD((head), field); \
    } else { \
        struct type *curelm = (head)->stqh_first; \
        while (curelm->field.stqe_next != (elm)) \
            curelm = curelm->field.stqe_next; \
        if ((curelm->field.stqe_next = \
            curelm->field.stqe_next->field.stqe_next) == NULL) \
            (head)->stqh_last = &(curelm)->field.stqe_next; \
    } \
} while (/*CONSTCOND*/0)

#define STAILQ_FOREACH(var, head, field) \
    for ((var) = ((head)->stqh_first); \
        (var); \
        (var) = ((var)->field.stqe_next))

#define STAILQ_FOREACH_SAFE(var, head, field, tvar) \
    for ((var) = STAILQ_FIRST((head)); \
        (var) && ((tvar) = STAILQ_NEXT((var), field), 1); \
        (var) = (tvar))

#define STAILQ_CONCAT(head1, head2) do { \
    if (!STAILQ_EMPTY((head2))) { \
        *(head1)->stqh_last \
        = (head2)->stqh_first; \
        (head1)->stqh_last = (head2)->stqh_last; \
        STAILQ_INIT((head2)); \
    } \
} while (/*CONSTCOND*/0)

#define STAILQ_LAST(head, type, field) \
    (STAILQ_EMPTY((head)) ? \
    NULL : \
    ((struct type *) (void *) \
    ((char *) ((head)->stqh_last) - offsetof(struct type, field))))

#ifdef _KERNEL
/*
 * Circular queue definitions. Do not use. We still keep the macros
 * for compatibility but because of pointer aliasing issues their use
 * is discouraged!
 */
/*

```



```

* __launder_type(): We use this ugly hack to work around the the compiler
* noticing that two types may not alias each other and elide tests in code.
* We hit this in the CIRCLEQ macros when comparing 'struct name *' and
* 'struct type *' (see CIRCLEQ_HEAD()). Modern compilers (such as GCC
* 4.8) declare these comparisons as always false, causing the code to
* not run as designed.
*
* This hack is only to be used for comparisons and thus can be fully const.
* Do not use for assignment.
*
* If we ever choose to change the ABI of the CIRCLEQ macros, we could fix
* this by changing the head/tail sentinel values, but see the note above
* this one.
*/

```

```

static __inline const void * __launder_type(const void *);
static __inline const void *
__launder_type(const void *__x)
{
    __asm __volatile("" : "+r" (__x));
    return __x;
}

#if defined(QUEUEDEBUG)
#define QUEUEDEBUG_CIRCLEQ_HEAD(head, field) \
    if ((head)->cqh_first != CIRCLEQ_ENDC(head) && \
        (head)->cqh_first->field.cqe_prev != CIRCLEQ_ENDC(head)) \
        QUEUEDEBUG_ABORT("CIRCLEQ head forw %p %s:%d", (head), \
            __FILE__, __LINE__); \
    if ((head)->cqh_last != CIRCLEQ_ENDC(head) && \
        (head)->cqh_last->field.cqe_next != CIRCLEQ_ENDC(head)) \
        QUEUEDEBUG_ABORT("CIRCLEQ head back %p %s:%d", (head), \
            __FILE__, __LINE__);
#define QUEUEDEBUG_CIRCLEQ_ELM(head, elm, field) \
    if ((elm)->field.cqe_next == CIRCLEQ_ENDC(head)) { \
        if ((head)->cqh_last != (elm)) \
            QUEUEDEBUG_ABORT("CIRCLEQ \
elm last %p %s:%d", \
                (elm), __FILE__, __LINE__); \
    } else { \
        if ((elm)->field.cqe_next->field.cqe_prev != (elm)) \
            QUEUEDEBUG_ABORT("CIRCLEQ elm forw %p %s:%d", \
                (elm), __FILE__, __LINE__); \
    } \
    if ((elm)->field.cqe_prev == CIRCLEQ_ENDC(head)) { \
        if ((head)->cqh_first != (elm)) \
            QUEUEDEBUG_ABORT("CIRCLEQ elm first %p %s:%d", \
                (elm), __FILE__, __LINE__); \
    } else { \

```

```

if ((elm)->field.cqe_prev->field.cqe_next != (elm)) \
    QUEUEDEBUG_ABORT("CIRCLEQ elm prev %p %s:%d", \
        (elm), __FILE__, __LINE__); \
}
#define QUEUEDEBUG_CIRCLEQ_POSTREMOVE(elm, field) \
    (elm)->field.cqe_next = (void *)1L; \
    (elm)->field.cqe_prev = (void *)1L;
#else
#define QUEUEDEBUG_CIRCLEQ_HEAD(head, field)
#define QUEUEDEBUG_CIRCLEQ_ELM(head, elm, field)
#define QUEUEDEBUG_CIRCLEQ_POSTREMOVE(elm, field)
#endif

#define CIRCLEQ_HEAD(name, type) \
    struct name { \
        struct type *cqh_first; /* \
        first element */ \
        struct type *cqh_last; /* last element */ \
    }

#define CIRCLEQ_HEAD_INITIALIZER(head) \
    { CIRCLEQ_END(&head), CIRCLEQ_END(&head) }

#define CIRCLEQ_ENTRY(type) \
    struct { \
        struct type *cqe_next; /* next element */ \
        struct type *cqe_prev; /* previous element */ \
    }

/*
 * Circular queue functions.
 */
#define CIRCLEQ_INIT(head) do { \
    (head)->cqh_first = CIRCLEQ_END(head); \
    (head)->cqh_last = CIRCLEQ_END(head); \
} while (/*CONSTCOND*/0)

#define CIRCLEQ_INSERT_AFTER(head, listelm, elm, field) do { \
    QUEUEDEBUG_CIRCLEQ_HEAD((head), field) \
    QUEUEDEBUG_CIRCLEQ_ELM((head), (listelm), field) \
    (elm)->field.cqe_next = (listelm)->field.cqe_next; \
    (elm)->field.cqe_prev = (listelm); \
    if ((listelm)->field.cqe_next == CIRCLEQ_ENDC(head)) \
        (head)->cqh_last = (elm); \
    else \
        (listelm)->field.cqe_next->field.cqe_prev = (elm); \
    (listelm)->field.cqe_next = (elm); \
} while (/*CONSTCOND*/0)

```

```
#define CIRCLEQ_INSERT_BEFORE(head,
listelm, elm, field) do { \
    QUEUEDEBBUG_CIRCLEQ_HEAD((head), field) \
    QUEUEDEBBUG_CIRCLEQ_ELM((head), (listelm), field) \
    (elm)->field.cqe_next = (listelm); \
    (elm)->field.cqe_prev = (listelm)->field.cqe_prev; \
    if ((listelm)->field.cqe_prev == CIRCLEQ_ENDC(head)) \
        (head)->cqh_first = (elm); \
    else \
        (listelm)->field.cqe_prev->field.cqe_next = (elm); \
    (listelm)->field.cqe_prev = (elm); \
} while (/*CONSTCOND*/0)
```

```
#define CIRCLEQ_INSERT_HEAD(head, elm, field) do { \
    QUEUEDEBBUG_CIRCLEQ_HEAD((head), field) \
    (elm)->field.cqe_next = (head)->cqh_first; \
    (elm)->field.cqe_prev = CIRCLEQ_END(head); \
    if ((head)->cqh_last == CIRCLEQ_ENDC(head)) \
        (head)->cqh_last = (elm); \
    else \
        (head)->cqh_first->field.cqe_prev = (elm); \
    (head)->cqh_first = (elm); \
} while (/*CONSTCOND*/0)
```

```
#define CIRCLEQ_INSERT_TAIL(head, elm, field) do { \
    QUEUEDEBBUG_CIRCLEQ_HEAD((head), field) \
    (elm)->field.cqe_next \
    = CIRCLEQ_END(head); \
    (elm)->field.cqe_prev = (head)->cqh_last; \
    if ((head)->cqh_first == CIRCLEQ_ENDC(head)) \
        (head)->cqh_first = (elm); \
    else \
        (head)->cqh_last->field.cqe_next = (elm); \
    (head)->cqh_last = (elm); \
} while (/*CONSTCOND*/0)
```

```
#define CIRCLEQ_REMOVE(head, elm, field) do { \
    QUEUEDEBBUG_CIRCLEQ_HEAD((head), field) \
    QUEUEDEBBUG_CIRCLEQ_ELM((head), (elm), field) \
    if ((elm)->field.cqe_next == CIRCLEQ_ENDC(head)) \
        (head)->cqh_last = (elm)->field.cqe_prev; \
    else \
        (elm)->field.cqe_next->field.cqe_prev = \
            (elm)->field.cqe_prev; \
    if ((elm)->field.cqe_prev == CIRCLEQ_ENDC(head)) \
        (head)->cqh_first = (elm)->field.cqe_next; \
    else \

```

```

(elm)->field.cqe_prev->field.cqe_next = \
    (elm)->field.cqe_next; \
QUEUEDEBUG_CIRCLEQ_POSTREMOVE((elm), field) \
} while (/*CONSTCOND*/0)

#define CIRCLEQ_FOREACH(var, head, field) \
for ((var) = ((head)->cqh_first); \
    (var) != CIRCLEQ_ENDC(head); \
    (var) \
    = ((var)->field.cqe_next))

#define CIRCLEQ_FOREACH_REVERSE(var, head, field) \
for ((var) = ((head)->cqh_last); \
    (var) != CIRCLEQ_ENDC(head); \
    (var) = ((var)->field.cqe_prev))

/*
 * Circular queue access methods.
 */

#define CIRCLEQ_FIRST(head) ((head)->cqh_first)
#define CIRCLEQ_LAST(head) ((head)->cqh_last)
/* For comparisons */
#define CIRCLEQ_ENDC(head) (__launter_type(head))
/* For assignments */
#define CIRCLEQ_END(head) ((void *)(head))
#define CIRCLEQ_NEXT(elm, field) ((elm)->field.cqe_next)
#define CIRCLEQ_PREV(elm, field) ((elm)->field.cqe_prev)
#define CIRCLEQ_EMPTY(head) \
    (CIRCLEQ_FIRST(head) == CIRCLEQ_ENDC(head))

#define CIRCLEQ_LOOP_NEXT(head, elm, field) \
    (((elm)->field.cqe_next == CIRCLEQ_ENDC(head)) \
    ? ((head)->cqh_first) \
    : (elm->field.cqe_next))
#define CIRCLEQ_LOOP_PREV(head, elm, field) \
    (((elm)->field.cqe_prev == CIRCLEQ_ENDC(head)) \
    ? ((head)->cqh_last) \
    : \
    (elm->field.cqe_prev))
#endif /* !_KERNEL */

#endif /* !_SYS_QUEUE_H_ */
#ifndef _SYS_CDEFS_H_
#define _SYS_CDEFS_H_

#warning usage of non-standard #include <sys/cdefs.h> is deprecated

#undef __P

```

```

#undef __PMT

#define __P(args) args
#define __PMT(args) args

#define __CONCAT(x,y) x ## y
#define __STRING(x) #x

#ifdef __cplusplus
# define __BEGIN_DECLS extern "C" {
# define __END_DECLS }
#else
# define __BEGIN_DECLS
# define __END_DECLS
#endif

#if defined(__GNUC__) && !defined(__cplusplus)
# define __THROW __attribute__((__nothrow__))
# define __NTH(fct) __attribute__((__nothrow__)) fct
#else
# define __THROW
# define __NTH(fct) fct
#endif

#endif /* _SYS_CDEFS_H_ */
# Contributor: Fabian Affolter <fabian@affolter-engineering.ch>
# Maintainer: Fabian Affolter <fabian@affolter-engineering.ch>
pkgname=py3-flake8-copyright
_pkgname=flake8-copyright
pkgver=0.2.4
pkgrel=3
pkgdesc="Extension for flake8 which checks for copyrights"
options="!check" # No testsuite
url="https://github.com/savoirfairelinux/flake8-copyright"
arch="noarch"
license="MIT"
depends="py3-flake8 py3-setuptools"
makedepends="py3-gpep517 py3-wheel"
subpackages="$pkgname-pyc"
source="https://files.pythonhosted.org/packages/source/${_pkgname:0:1}/${_pkgname}/${_pkgname}-${pkgver}.tar.gz"
builddir="$srcdir"/$_pkgname-$pkgver

replaces="py-flake8-copyright" # Backwards compatibility
provides="py-flake8-copyright=${pkgver}-r${pkgrel}" # Backwards compatibility

build() {
    gpep517 build-wheel \
        --wheel-dir .dist \

```

```
--output-fd 3 3>&1 >&2
}

package() {
gpep517 install-wheel --destdir "$pkgdir" \
.dist/*.whl
}

sha512sums="
a6ab47e1bb715618f075c51f398e18180404871b3b0faf1c2d30701d5203db6bc23771bf22ffb5bafcd8ee856b9b64237
b316bd503ae7dceed6ca284ccd5a74d
flake8-copyright-0.2.4.tar.gz
"
(The MIT License)
```

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/* \$NetBSD: tree.h,v 1.20 2013/09/14 13:20:45 joerg Exp \$ */

/* \$OpenBSD: tree.h,v 1.13 2011/07/09 00:19:45 pirofti Exp \$ */

/* Modified by Void Linux. */

/*

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*

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- */

```
#ifndef _SYS_TREE_H_
#define _SYS_TREE_H_
```

```
#ifdef __GNUC__
#define __GNUC_PREREQ__(x, y) \
((__GNUC__ == (x) && __GNUC_MINOR__ >= (y)) || \
 (__GNUC__ > (x)))
#else
#define __GNUC_PREREQ__(x, y) 0
#endif
```

```
#if __GNUC_PREREQ__(2, 7) || defined(__lint__)
#define _sys_tree_h_unused __attribute__((__unused__))
#else
#define _sys_tree_h_unused /* delete */
#endif
```

```
/*
* This file defines data structures for different types of trees:
* splay trees and red-black trees.
*
* A splay tree is a self-organizing
data structure. Every operation
* on the tree causes a splay to happen. The splay moves the requested
* node to the root of the tree and partly rebalances it.
*
* This has the benefit that request locality causes faster lookups as
* the requested nodes move to the top of the tree. On the other hand,
* every lookup causes memory writes.
*
* The Balance Theorem bounds the total access time for m operations
```

- * and n inserts on an initially empty tree as $O((m + n)\lg n)$. The
- * amortized cost for a sequence of m accesses to a splay tree is $O(\lg n)$;
- *
- * A red-black tree is a binary search tree with the node color as an
- * extra attribute. It fulfills a set of conditions:
- * - every search path from the root to a leaf consists of the
- * same number of black nodes,
- * - each red node (except for the root) has a black parent,
- * - each leaf node is black.
- *
- * Every operation on a red-black tree is bounded as $O(\lg n)$.
- * The maximum height of a red-black tree is $2\lg(n+1)$.
- */

```
#define SPLAY_HEAD(name, type) \
struct name { \
    struct type *sph_root; /* root of the tree */ \
}
```

```
#define SPLAY_INITIALIZER(root) \
{ NULL }
```

```
#define SPLAY_INIT(root) do { \
    (root)->sph_root = NULL; \
} while (/*CONSTCOND*/ 0)
```

```
#define SPLAY_ENTRY(type) \
struct { \
    struct type *spe_left; /* left element */ \
    struct type *spe_right; /* right element */ \
}
```

```
#define SPLAY_LEFT(elm, field) (elm)->field.spe_left
#define SPLAY_RIGHT(elm, field) (elm)->field.spe_right
#define SPLAY_ROOT(head) (head)->sph_root
#define SPLAY_EMPTY(head) (SPLAY_ROOT(head) == NULL)
```

```
/* SPLAY_ROTATE_{LEFT,RIGHT} expect that tmp hold SPLAY_{RIGHT,LEFT} */
#define SPLAY_ROTATE_RIGHT(head, tmp, field) do { \
    SPLAY_LEFT((head)->sph_root, field) = SPLAY_RIGHT(tmp, field); \
    SPLAY_RIGHT(tmp, field) = (head)->sph_root; \
    (head)->sph_root = tmp; \
} while (/*CONSTCOND*/ 0)
```

```
#define SPLAY_ROTATE_LEFT(head, tmp, field) do { \
    SPLAY_RIGHT((head)->sph_root, \
    field) = SPLAY_LEFT(tmp, field); \
    SPLAY_LEFT(tmp, field) = (head)->sph_root; \
}
```



```

(head)->sph_root = tmp;    \
} while (/*CONSTCOND*/ 0)

#define SPLAY_LINKLEFT(head, tmp, field) do {    \
    SPLAY_LEFT(tmp, field) = (head)->sph_root;    \
    tmp = (head)->sph_root;    \
    (head)->sph_root = SPLAY_LEFT((head)->sph_root, field);    \
} while (/*CONSTCOND*/ 0)

#define SPLAY_LINKRIGHT(head, tmp, field) do {    \
    SPLAY_RIGHT(tmp, field) = (head)->sph_root;    \
    tmp = (head)->sph_root;    \
    (head)->sph_root = SPLAY_RIGHT((head)->sph_root, field);    \
} while (/*CONSTCOND*/ 0)

#define SPLAY_ASSEMBLE(head, node, left, right, field) do {    \
    SPLAY_RIGHT(left, field) = SPLAY_LEFT((head)->sph_root, field);    \
    SPLAY_LEFT(right, field) = SPLAY_RIGHT((head)->sph_root, field);    \
    SPLAY_LEFT((head)->sph_root, field) = SPLAY_RIGHT(node, field);    \
    SPLAY_RIGHT((head)->sph_root, field) = SPLAY_LEFT(node, field);    \
} while (/*CONSTCOND*/ 0)

/* Generates prototypes and inline functions */

#define
    SPLAY_PROTOTYPE(name, type, field, cmp)    \
void name##_SPLAY(struct name *, struct type *);    \
void name##_SPLAY_MINMAX(struct name *, int);    \
struct type *name##_SPLAY_INSERT(struct name *, struct type *);    \
struct type *name##_SPLAY_REMOVE(struct name *, struct type *);    \
    \
/* Finds the node with the same key as elm */    \
static __inline struct type *    \
name##_SPLAY_FIND(struct name *head, struct type *elm)    \
{    \
    if (SPLAY_EMPTY(head))    \
        return(NULL);    \
    name##_SPLAY(head, elm);    \
    if ((cmp)(elm, (head)->sph_root) == 0)    \
        return (head->sph_root);    \
    return (NULL);    \
}    \
    \
static __inline _sys_tree_h_unused struct type *    \
name##_SPLAY_NEXT(struct name *head, struct type *elm)    \
{    \
    name##_SPLAY(head, elm);    \
    if (SPLAY_RIGHT(elm, field) != NULL) {    \

```

```

elm = SPLAY_RIGHT(elm, field); \
while (SPLAY_LEFT(elm, field) != NULL) { \
    elm = SPLAY_LEFT(elm, field); \
} \
}
else \
    elm = NULL; \
return (elm); \
} \
\

static _sys_tree_h_unused __inline struct type * \
name##_SPLAY_MIN_MAX(struct name *head, int val) \
{ \
    name##_SPLAY_MINMAX(head, val); \
    return (SPLAY_ROOT(head)); \
}

/* Main splay operation.
 * Moves node close to the key of elm to top
 */
#define SPLAY_GENERATE(name, type, field, cmp) \
struct type * \
name##_SPLAY_INSERT(struct name *head, struct type *elm) \
{ \
    if (SPLAY_EMPTY(head)) { \
        SPLAY_LEFT(elm, field) = SPLAY_RIGHT(elm, field) = NULL; \
    } else { \
        int __comp; \
        name##_SPLAY(head, elm); \
        __comp = (cmp)(elm, (head)->sph_root); \
        if (__comp < 0) { \
            SPLAY_LEFT(elm, field) = SPLAY_LEFT((head)->sph_root, field); \
            SPLAY_RIGHT(elm, field) = (head)->sph_root; \
            SPLAY_LEFT((head)->sph_root, field) = NULL; \
        } else if (__comp > 0) { \
            SPLAY_RIGHT(elm, \
field) = SPLAY_RIGHT((head)->sph_root, field); \
            SPLAY_LEFT(elm, field) = (head)->sph_root; \
            SPLAY_RIGHT((head)->sph_root, field) = NULL; \
        } else \
            return ((head)->sph_root); \
    } \
    (head)->sph_root = (elm); \
    return (NULL); \
} \
\

struct type * \
name##_SPLAY_REMOVE(struct name *head, struct type *elm) \

```

```

{
    \
    struct type *__tmp;    \
    if (SPLAY_EMPTY(head))    \
        return (NULL);    \
    name##_SPLAY(head, elm);    \
    if ((cmp)(elm, (head)->sph_root) == 0) {    \
        if (SPLAY_LEFT((head)->sph_root, field) == NULL) {    \
            (head)->sph_root = SPLAY_RIGHT((head)->sph_root, field);\
        } else {    \
            __tmp = SPLAY_RIGHT((head)->sph_root, field);    \
            (head)->sph_root = SPLAY_LEFT((head)->sph_root, field);\
            name##_SPLAY(head, elm);    \
            SPLAY_RIGHT((head)->sph_root, field) = __tmp;    \
        }    \
        return (elm);    \
    }    \
    return (NULL);    \
}    \
\
void    \
name##_SPLAY(struct
name *head, struct type *elm)    \
{
    \
    struct type __node, *__left, *__right, *__tmp;    \
    int __comp;    \
    \
    SPLAY_LEFT(&__node, field) = SPLAY_RIGHT(&__node, field) = NULL;\
    __left = __right = &__node;    \
    \
    while ((__comp = (cmp)(elm, (head)->sph_root)) != 0) {    \
        if (__comp < 0) {    \
            __tmp = SPLAY_LEFT((head)->sph_root, field);    \
            if (__tmp == NULL)    \
                break;    \
            if ((cmp)(elm, __tmp) < 0){    \
                SPLAY_ROTATE_RIGHT(head, __tmp, field);    \
                if (SPLAY_LEFT((head)->sph_root, field) == NULL)\
                    break;    \
            }    \
            SPLAY_LINKLEFT(head, __right, field);    \
        } else if (__comp > 0) {    \
            __tmp = SPLAY_RIGHT((head)->sph_root, field);    \
            if (__tmp == NULL)    \
                break;    \
            if ((cmp)(elm, __tmp) > 0){    \
                SPLAY_ROTATE_LEFT(head, __tmp, field);    \
                if (SPLAY_RIGHT((head)->sph_root, field) == NULL)\
                    break;    \
            }

```

```

    } \
    SPLAY_LINKRIGHT(head, __left, field); \
} \
} \
SPLAY_ASSEMBLE(head,
&__node, __left, __right, field); \
} \
\
/* Splay with either the minimum or the maximum element \
* Used to find minimum or maximum element in tree. \
*/ \
void name##_SPLAY_MINMAX(struct name *head, int __comp) \
{ \
    struct type __node, *__left, *__right, *__tmp; \
    \
    SPLAY_LEFT(&__node, field) = SPLAY_RIGHT(&__node, field) = NULL;\
    __left = __right = &__node; \
    \
    while (1) { \
        if (__comp < 0) { \
            __tmp = SPLAY_LEFT((head)->sph_root, field); \
            if (__tmp == NULL) \
                break; \
            if (__comp < 0){ \
                SPLAY_ROTATE_RIGHT(head, __tmp, field); \
                if (SPLAY_LEFT((head)->sph_root, field) == NULL)\
                    break; \
            } \
            SPLAY_LINKLEFT(head, __right, field); \
        } else if (__comp > 0) { \
            __tmp = SPLAY_RIGHT((head)->sph_root, field); \
            if (__tmp == NULL) \
                break; \
            if (__comp > 0) { \
                SPLAY_ROTATE_LEFT(head, __tmp, field); \
                if (SPLAY_RIGHT((head)->sph_root,
field) == NULL)\
                    break; \
            } \
            SPLAY_LINKRIGHT(head, __left, field); \
        } \
    } \
    SPLAY_ASSEMBLE(head, &__node, __left, __right, field); \
}

#define SPLAY_NEGINF -1
#define SPLAY_INF 1

```

```

#define SPLAY_INSERT(name, x, y) name##_SPLAY_INSERT(x, y)
#define SPLAY_REMOVE(name, x, y) name##_SPLAY_REMOVE(x, y)
#define SPLAY_FIND(name, x, y) name##_SPLAY_FIND(x, y)
#define SPLAY_NEXT(name, x, y) name##_SPLAY_NEXT(x, y)
#define SPLAY_MIN(name, x) (SPLAY_EMPTY(x) ? NULL \
    : name##_SPLAY_MIN_MAX(x, SPLAY_NEGINF))
#define SPLAY_MAX(name, x) (SPLAY_EMPTY(x) ? NULL \
    : name##_SPLAY_MIN_MAX(x, SPLAY_INF))

#define SPLAY_FOREACH(x, name, head) \
    for ((x) = SPLAY_MIN(name, head); \
        (x) != NULL; \
        (x) = SPLAY_NEXT(name, head, x))

/* Macros that define a red-black tree */
#define RB_HEAD(name, type) \
    struct name { \
        struct type *rbh_root; /* root of the tree */ \
    }

#define RB_INITIALIZER(root) \
    { \
        NULL \
    }

#define RB_INIT(root) do { \
    (root)->rbh_root = NULL; \
} while (/*CONSTCOND*/ 0)

#define RB_BLACK 0
#define RB_RED 1
#define RB_ENTRY(type) \
    struct { \
        struct type *rbe_left; /* left element */ \
        struct type *rbe_right; /* right element */ \
        struct type *rbe_parent; /* parent element */ \
        int rbe_color; /* node color */ \
    }

#define RB_LEFT(elm, field) (elm)->field.rbe_left
#define RB_RIGHT(elm, field) (elm)->field.rbe_right
#define RB_PARENT(elm, field) (elm)->field.rbe_parent
#define RB_COLOR(elm, field) (elm)->field.rbe_color
#define RB_ROOT(head) (head)->rbh_root
#define RB_EMPTY(head) (RB_ROOT(head) == NULL)

#define RB_SET(elm, parent, field) do { \
    RB_PARENT(elm, field) = parent; \
    RB_LEFT(elm, field) = RB_RIGHT(elm, field) = NULL; \
} while (0)

```

```

RB_COLOR(elm, field) = RB_RED;  \
} while (/*CONSTCOND*/ 0)

#define RB_SET_BLACKRED(black, red, field) do {  \
    RB_COLOR(black, field) = RB_BLACK;  \
    RB_COLOR(red, field) \
    = RB_RED;  \
} while (/*CONSTCOND*/ 0)

#ifndef RB_AUGMENT
#define RB_AUGMENT(x) do {} while (/*CONSTCOND*/ 0)
#endif

#define RB_ROTATE_LEFT(head, elm, tmp, field) do {  \
    (tmp) = RB_RIGHT(elm, field);  \
    if ((RB_RIGHT(elm, field) = RB_LEFT(tmp, field)) != NULL) { \
        RB_PARENT(RB_LEFT(tmp, field), field) = (elm); \
    }  \
    RB_AUGMENT(elm);  \
    if ((RB_PARENT(tmp, field) = RB_PARENT(elm, field)) != NULL) { \
        if ((elm) == RB_LEFT(RB_PARENT(elm, field), field)) \
            RB_LEFT(RB_PARENT(elm, field), field) = (tmp); \
        else  \
            RB_RIGHT(RB_PARENT(elm, field), field) = (tmp); \
    } else  \
        (head)->rbh_root = (tmp);  \
    RB_LEFT(tmp, field) = (elm);  \
    RB_PARENT(elm, field) = (tmp);  \
    RB_AUGMENT(tmp);  \
    if ((RB_PARENT(tmp, field)))  \
        RB_AUGMENT(RB_PARENT(tmp, field));  \
} while (/*CONSTCOND*/ 0)

#define RB_ROTATE_RIGHT(head, elm, tmp, field) do {  \
    (tmp) = RB_LEFT(elm, field);  \
    if ((RB_LEFT(elm, field) = RB_RIGHT(tmp, field)) \
    != NULL) { \
        RB_PARENT(RB_RIGHT(tmp, field), field) = (elm); \
    }  \
    RB_AUGMENT(elm);  \
    if ((RB_PARENT(tmp, field) = RB_PARENT(elm, field)) != NULL) { \
        if ((elm) == RB_LEFT(RB_PARENT(elm, field), field)) \
            RB_LEFT(RB_PARENT(elm, field), field) = (tmp); \
        else  \
            RB_RIGHT(RB_PARENT(elm, field), field) = (tmp); \
    } else  \
        (head)->rbh_root = (tmp);  \
    RB_RIGHT(tmp, field) = (elm);  \

```

```

RB_PARENT(elm, field) = (tmp); \
RB_AUGMENT(tmp); \
if ((RB_PARENT(tmp, field))) \
    RB_AUGMENT(RB_PARENT(tmp, field)); \
} while (/*CONSTCOND*/ 0)

/* Generates prototypes and inline functions */
#define RB_PROTOTYPE(name, type, field, cmp) \
    RB_PROTOTYPE_INTERNAL(name, type, field, cmp,)
#define RB_PROTOTYPE_STATIC(name, type, field, cmp) \
    RB_PROTOTYPE_INTERNAL(name, type, field, cmp, _sys_tree_h_unused static)
#define RB_PROTOTYPE_INTERNAL(name, type, field, cmp, attr) \
    attr void name##_RB_INSERT_COLOR(struct name *, struct \
        type *); \
    attr void name##_RB_REMOVE_COLOR(struct name *, struct type *, struct type *);\
    attr struct type *name##_RB_REMOVE(struct name *, struct type *); \
    attr struct type *name##_RB_INSERT(struct name *, struct type *); \
    attr struct type *name##_RB_FIND(struct name *, struct type *); \
    attr struct type *name##_RB_NFIND(struct name *, struct type *); \
    attr struct type *name##_RB_NEXT(struct type *); \
    attr struct type *name##_RB_PREV(struct type *); \
    attr struct type *name##_RB_MINMAX(struct name *, int); \
    \

/* Main rb operation.
 * Moves node close to the key of elm to top
 */
#define RB_GENERATE(name, type, field, cmp) \
    RB_GENERATE_INTERNAL(name, type, field, cmp,)
#define RB_GENERATE_STATIC(name, type, field, cmp) \
    RB_GENERATE_INTERNAL(name, type, field, cmp, _sys_tree_h_unused static)
#define RB_GENERATE_INTERNAL(name, type, field, cmp, attr) \
    attr void \
    name##_RB_INSERT_COLOR(struct name *head, struct type *elm) \
    { \
        \
        struct type \
        *parent, *gparent, *tmp; \
        while ((parent = RB_PARENT(elm, field)) != NULL && \
            RB_COLOR(parent, field) == RB_RED) { \
            \
            gparent = RB_PARENT(parent, field); \
            if (parent == RB_LEFT(gparent, field)) { \
                tmp = RB_RIGHT(gparent, field); \
                if (tmp && RB_COLOR(tmp, field) == RB_RED) { \
                    RB_COLOR(tmp, field) = RB_BLACK; \
                    RB_SET_BLACKRED(parent, gparent, field);\
                    elm = gparent; \
                    continue; \
                } \
            } \
        } \
    } \

```

```

if (RB_RIGHT(parent, field) == elm) { \
    RB_ROTATE_LEFT(head, parent, tmp, field);\
    tmp = parent; \
    parent = elm; \
    elm = tmp; \
} \
RB_SET_BLACKRED(parent, gparent, field);\
RB_ROTATE_RIGHT(head, gparent, tmp, field);\
} else { \
    tmp = RB_LEFT(gparent, field); \
    if (tmp && RB_COLOR(tmp, field) == RB_RED) { \
        RB_COLOR(tmp, field) = RB_BLACK;\
        RB_SET_BLACKRED(parent, gparent, field);\
        elm = gparent; \
        continue; \
    } \
    if (RB_LEFT(parent, field) == elm)
{ \
    RB_ROTATE_RIGHT(head, parent, tmp, field);\
    tmp = parent; \
    parent = elm; \
    elm = tmp; \
} \
    RB_SET_BLACKRED(parent, gparent, field);\
    RB_ROTATE_LEFT(head, gparent, tmp, field);\
} \
} \
RB_COLOR(head->rbh_root, field) = RB_BLACK; \
} \
\
attr void \
name##_RB_REMOVE_COLOR(struct name *head, struct type *parent, struct type *elm) \
{ \
    struct type *tmp; \
    while ((elm == NULL || RB_COLOR(elm, field) == RB_BLACK) && \
        elm != RB_ROOT(head)) { \
        if (RB_LEFT(parent, field) == elm) { \
            tmp = RB_RIGHT(parent, field); \
            if (RB_COLOR(tmp, field) == RB_RED) { \
                RB_SET_BLACKRED(tmp, parent, field);\
                RB_ROTATE_LEFT(head, parent, tmp, field);\
                tmp = RB_RIGHT(parent, field); \
            } \
            if ((RB_LEFT(tmp, field) == NULL || \
                RB_COLOR(RB_LEFT(tmp, field), field) == RB_BLACK) && \
                (RB_RIGHT(tmp, field) == NULL || \
                RB_COLOR(RB_RIGHT(tmp,

```



```

field), field) == RB_BLACK)) {\
    RB_COLOR(tmp, field) = RB_RED; \
    elm = parent; \
    parent = RB_PARENT(elm, field); \
} else { \
    if (RB_RIGHT(tmp, field) == NULL || \
        RB_COLOR(RB_RIGHT(tmp, field), field) == RB_BLACK) {\
        struct type *oleft; \
        if ((oleft = RB_LEFT(tmp, field)) \
            != NULL) \
            RB_COLOR(oleft, field) = RB_BLACK;\
        RB_COLOR(tmp, field) = RB_RED; \
        RB_ROTATE_RIGHT(head, tmp, oleft, field);\
        tmp = RB_RIGHT(parent, field); \
    } \
    RB_COLOR(tmp, field) = RB_COLOR(parent, field);\
    RB_COLOR(parent, field) = RB_BLACK; \
    if (RB_RIGHT(tmp, field)) \
        RB_COLOR(RB_RIGHT(tmp, field), field) = RB_BLACK;\
    RB_ROTATE_LEFT(head, parent, tmp, field);\
    elm = RB_ROOT(head); \
    break; \
} \
} else { \
    tmp = RB_LEFT(parent, field); \
    if (RB_COLOR(tmp, field) == RB_RED) { \
        RB_SET_BLACKRED(tmp, parent, field); \
        RB_ROTATE_RIGHT(head, parent, tmp, field);\
        tmp
= RB_LEFT(parent, field); \
    } \
    if ((RB_LEFT(tmp, field) == NULL || \
        RB_COLOR(RB_LEFT(tmp, field), field) == RB_BLACK) &&\
        (RB_RIGHT(tmp, field) == NULL || \
        RB_COLOR(RB_RIGHT(tmp, field), field) == RB_BLACK)) {\
        RB_COLOR(tmp, field) = RB_RED; \
        elm = parent; \
        parent = RB_PARENT(elm, field); \
    } else { \
        if (RB_LEFT(tmp, field) == NULL || \
            RB_COLOR(RB_LEFT(tmp, field), field) == RB_BLACK) {\
            struct type *oright; \
            if ((oright = RB_RIGHT(tmp, field)) \
                != NULL) \
                RB_COLOR(oright, field) = RB_BLACK;\
            RB_COLOR(tmp, field) = RB_RED; \
            RB_ROTATE_LEFT(head, tmp, oright, field);\
            tmp = RB_LEFT(parent, field); \

```

```

    } \
    RB_COLOR(tmp, field) = RB_COLOR(parent, field);\
    RB_COLOR(parent, field) = RB_BLACK;\
    if (RB_LEFT(tmp, field)) \
        RB_COLOR(RB_LEFT(tmp, field), field) = RB_BLACK;\
    RB_ROTATE_RIGHT(head, parent, tmp, field);\
    elm = RB_ROOT(head); \
    break; \
} \
} \
} \
if
(elm) \
    RB_COLOR(elm, field) = RB_BLACK; \
} \
\
attr struct type * \
name##_RB_REMOVE(struct name *head, struct type *elm) \
{ \
    struct type *child, *parent, *old = elm; \
    int color; \
    if (RB_LEFT(elm, field) == NULL) \
        child = RB_RIGHT(elm, field); \
    else if (RB_RIGHT(elm, field) == NULL) \
        child = RB_LEFT(elm, field); \
    else { \
        struct type *left; \
        elm = RB_RIGHT(elm, field); \
        while ((left = RB_LEFT(elm, field)) != NULL) \
            elm = left; \
        child = RB_RIGHT(elm, field); \
        parent = RB_PARENT(elm, field); \
        color = RB_COLOR(elm, field); \
        if (child) \
            RB_PARENT(child, field) = parent; \
        if (parent) { \
            if (RB_LEFT(parent, field) == elm) \
                RB_LEFT(parent, field) = child; \
            else \
                RB_RIGHT(parent, field) = child; \
            RB_AUGMENT(parent); \
        } else \
            RB_ROOT(head)
    = child; \
    if (RB_PARENT(elm, field) == old) \
        parent = elm; \
    (elm)->field = (old)->field; \
    if (RB_PARENT(old, field)) { \

```

```

if (RB_LEFT(RB_PARENT(old, field), field) == old)\
    RB_LEFT(RB_PARENT(old, field), field) = elm;\
else \
    RB_RIGHT(RB_PARENT(old, field), field) = elm;\
RB_AUGMENT(RB_PARENT(old, field)); \
} else \
    RB_ROOT(head) = elm; \
RB_PARENT(RB_LEFT(old, field), field) = elm; \
if (RB_RIGHT(old, field)) \
    RB_PARENT(RB_RIGHT(old, field), field) = elm; \
if (parent) { \
    left = parent; \
    do { \
        RB_AUGMENT(left); \
    } while ((left = RB_PARENT(left, field)) != NULL); \
} \
goto color; \
} \
parent = RB_PARENT(elm, field); \
color = RB_COLOR(elm, field); \
if (child) \
    RB_PARENT(child, field) = parent; \
if (parent) { \
    if (RB_LEFT(parent, field) == elm) \
        RB_LEFT(parent, field) = child; \
    else \
        RB_RIGHT(parent,
field) = child; \
    RB_AUGMENT(parent); \
} else \
    RB_ROOT(head) = child; \
color: \
if (color == RB_BLACK) \
    name##_RB_REMOVE_COLOR(head, parent, child); \
return (old); \
} \
\
/* Inserts a node into the RB tree */ \
attr struct type * \
name##_RB_INSERT(struct name *head, struct type *elm) \
{ \
    struct type *tmp; \
    struct type *parent = NULL; \
    int comp = 0; \
    tmp = RB_ROOT(head); \
    while (tmp) { \
        parent = tmp; \
        comp = (cmp)(elm, parent); \

```

```

    if (comp < 0)    \
        tmp = RB_LEFT(tmp, field); \
    else if (comp > 0) \
        tmp = RB_RIGHT(tmp, field); \
    else \
        return (tmp); \
} \
RB_SET(elm, parent, field); \
if (parent != NULL) { \
    if (comp < 0) \
        RB_LEFT(parent, field) = elm; \
    else \
        RB_RIGHT(parent, field) = elm; \
    RB_AUGMENT(parent); \
} else \
    RB_ROOT(head) = elm; \
name##_RB_INSERT_COLOR(head,
elm); \
return (NULL); \
} \
\
/* Finds the node with the same key as elm */ \
attr struct type * \
name##_RB_FIND(struct name *head, struct type *elm) \
{ \
    struct type *tmp = RB_ROOT(head); \
    int comp; \
    while (tmp) { \
        comp = cmp(elm, tmp); \
        if (comp < 0) \
            tmp = RB_LEFT(tmp, field); \
        else if (comp > 0) \
            tmp = RB_RIGHT(tmp, field); \
        else \
            return (tmp); \
    } \
    return (NULL); \
} \
\
/* Finds the first node greater than or equal to the search key */ \
attr struct type * \
name##_RB_NFIND(struct name *head, struct type *elm) \
{ \
    struct type *tmp = RB_ROOT(head); \
    struct type *res = NULL; \
    int comp; \
    while (tmp) { \
        comp = cmp(elm, tmp); \

```

```

if (comp < 0) {
    res = tmp;
    tmp = RB_LEFT(tmp, field);
}
else if (comp > 0)
    tmp =
RB_RIGHT(tmp, field);
else
    return (tmp);
}
return (res);
}

/* ARGSUSED */
attr struct type *
name##_RB_NEXT(struct type *elm)
{
    if (RB_RIGHT(elm, field)) {
        elm = RB_RIGHT(elm, field);
        while (RB_LEFT(elm, field))
            elm = RB_LEFT(elm, field);
    } else {
        if (RB_PARENT(elm, field) &&
            (elm == RB_LEFT(RB_PARENT(elm, field), field)))
            elm = RB_PARENT(elm, field);
        else {
            while (RB_PARENT(elm, field) &&
                (elm == RB_RIGHT(RB_PARENT(elm, field), field)))
                elm = RB_PARENT(elm, field);
            elm = RB_PARENT(elm, field);
        }
    }
    return (elm);
}

/* ARGSUSED */
attr struct type *
name##_RB_PREV(struct type *elm)
{
    if (RB_LEFT(elm, field)) {
        elm = RB_LEFT(elm, field);
        while (RB_RIGHT(elm, field))
            elm = RB_RIGHT(elm, field);
    }
    else {
        if (RB_PARENT(elm, field) &&
            (elm == RB_RIGHT(RB_PARENT(elm, field), field)))
            elm = RB_PARENT(elm, field);
    }
}

```

```

else {
    while (RB_PARENT(elm, field) &&
        (elm == RB_LEFT(RB_PARENT(elm, field), field)))
        elm = RB_PARENT(elm, field);
    elm = RB_PARENT(elm, field);
}
return (elm);
}

attr struct type *
name##_RB_MINMAX(struct name *head, int val)
{
    struct type *tmp = RB_ROOT(head);
    struct type *parent = NULL;
    while (tmp) {
        parent = tmp;
        if (val < 0)
            tmp = RB_LEFT(tmp, field);
        else
            tmp = RB_RIGHT(tmp, field);
    }
    return (parent);
}

#define RB_NEGINF -1
#define RB_INF 1

#define RB_INSERT(name, x, y) name##_RB_INSERT(x, y)
#define RB_REMOVE(name, x, y) name##_RB_REMOVE(x, y)
#define RB_FIND(name, x, y) name##_RB_FIND(x, y)
#define RB_NFIND(name, x, y) name##_RB_NFIND(x,
y)
#define RB_NEXT(name, x, y) name##_RB_NEXT(y)
#define RB_PREV(name, x, y) name##_RB_PREV(y)
#define RB_MIN(name, x) name##_RB_MINMAX(x, RB_NEGINF)
#define RB_MAX(name, x) name##_RB_MINMAX(x, RB_INF)

#define RB_FOREACH(x, name, head)
for ((x) = RB_MIN(name, head);
    (x) != NULL;
    (x) = name##_RB_NEXT(x))

#define RB_FOREACH_FROM(x, name, y)
for ((x) = (y);
    ((x) != NULL) && ((y) = name##_RB_NEXT(x), (x) != NULL);
    (x) = (y))

```

```

#define RB_FOREACH_SAFE(x, name, head, y) \
for ((x) = RB_MIN(name, head); \
    ((x) != NULL) && ((y) = name##_RB_NEXT(x), (x) != NULL); \
    (x) = (y))

#define RB_FOREACH_REVERSE(x, name, head) \
for ((x) = RB_MAX(name, head); \
    (x) != NULL; \
    (x) = name##_RB_PREV(x))

#define RB_FOREACH_REVERSE_FROM(x, name, y) \
for ((x) = (y); \
    ((x) != NULL) && ((y) = name##_RB_PREV(x), (x) != NULL); \
    (x) = (y))

#define RB_FOREACH_REVERSE_SAFE(x, name, \
head, y) \
for ((x) = RB_MAX(name, head); \
    ((x) != NULL) && ((y) = name##_RB_PREV(x), (x) != NULL); \
    (x) = (y))

#endif /* _SYS_TREE_H_ */
# Contributor: Wen Heping <wenhepingalpine@sohu.com>
# Maintainer: Wen Heping <wenhepingalpine@sohu.com>
pkgname=perl-software-license
pkgver=0.104007
pkgrel=0
# _pkgreal is used by apkbuild-cpan to find modules at MetaCpan
_pkgreal=Software-License
pkgdesc="packages that provide templated software licenses"
url="https://metacpan.org/release/Software-License/"
arch="noarch"
license="GPL-1.0-or-later OR Artistic-1.0-Perl"
depends="perl perl-data-section perl-text-template"
checkdepends="perl-try-tiny"
subpackages="$pkgname-doc"
source="https://cpan.metacpan.org/authors/id/L/LE/LEONT/Software-License-$pkgver.tar.gz"
builddir="$srcdir/${_pkgreal}-${pkgver}"

build() {
    export CFLAGS=$(perl -MConfig -E 'say $Config{ccflags}')
    PERL_MM_USE_DEFAULT=1 perl -I. Makefile.PL \
        INSTALLDIRS=vendor \
        NO_PACKLIST=1 \
        NO_PERLLOCAL=1
    make
}

```

```

check() {
    export CFLAGS=$(perl -MConfig -E 'say $Config{ccflags}')
    make test
}

package() {
    make DESTDIR="$pkgdir" install
}

sha512sums="
12d75e9583b3013d9b4a282467f1ac80ab6b7f3251926d66591d01404489b528f22adc396dfd4528a0f0ca650f0eed6d
9c959e69eace2169c6ed1cffe5277e4
    Software-License-0.104007.tar.gz
"
(The MIT License)

```

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Contributor: Dhruvin Gandhi <contact@dhruvin>

Maintainer: Patrycja Rosa <alpine@ptrcnull.me>

pkgname=py3-license-expression

_pkgname=license_expression

pkgver=30.4.4

pkgrel=0

pkgdesc="Library to parse, compare, simplify and normalize license expressions"

url="https://github.com/nexB/license-expression"

arch="noarch"

license="Apache-2.0"

depends="python3 py3-boolean.py"


```

makedepends="py3-setuptools py3-setuptools_scm py3-gpep517 py3-wheel"
checkdepends="py3-pytest py3-pytest-xdist"
subpackages="$pkgname-pyc"
source="https://files.pythonhosted.org/packages/source/l/${_pkgname}/${_pkgname}-${pkgver}.tar.gz"
builddir="$srcdir/${_pkgname}-${pkgver}"

build() {
    gpep517 build-wheel \
        --wheel-dir .dist \
        --output-fd 3 3>&1 >&2
}

check() {
    python3 -m venv --clear --without-pip --system-site-packages .testenv
    .testenv/bin/python3 -m installer .dist/*.whl
    .testenv/bin/python3 -m pytest
}

package() {
    python3 -m installer -d "$pkgdir" \
        .dist/*.whl
}

sha512sums="
f46dd4cf524b3962115fe26f5545bfdd6767275b482724af51e7ca07da79244969a3bfc5d2fd5b95bc0f19d1b95a26a8f3
ab36c676e56ec302178d7166588066
    license_expression-30.4.4.tar.gz
"

```

1.176 python-pip 25.0.1

1.176.1 Available under license :

```

UNRECOGNIZED LICENSE; MD5 sum: 45874240865793abc3a77b0bbdf3dc51
UNRECOGNIZED LICENSE; MD5 sum: b0eaf0c960a0f5d744339da436682707
UNRECOGNIZED LICENSE; MD5 sum: 856bd8901cf18d4edc40b86012a95b26
UNRECOGNIZED LICENSE; MD5 sum: d2e8c3bce80da2a2e51cffd44205a7b1
UNRECOGNIZED LICENSE; MD5 sum: 89c981cb43c0c7a860b8a18449e92a38
UNRECOGNIZED LICENSE; MD5 sum: f7cacecf6ff92c07405436643ace4302
PKu5Z\&#license.dist-0.2.dist-info/METADATAUT ggux]MN@s
J*VT$$ ~nH-dKp>NXw
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%W6Q:'nl|^?t){u-{Z0XPKa5Zhb'!license.dist-0.2.dist-info/RECORDUT ggux}r03l,HZK
m^2fXZ;wzmUnjWU]52+\Gfmy8sUP-"7DbuhoAUo9sM"T_ST
,9%=-la1?O"+l[0]y:4o$6}D
HzPs_`1rPK5d#Ahr6s%license.dist-0.2.dist-info/RECORD.jwsUT DPmgux%N@EHq()04@:*`w].9?`$mZK'3'
}g7.hl[zMeH4 TQzI9 +g\v7+L? iOU{RC3;>>p_,7:N-f@]i#
;_*bl-X,sZzoI]4a%JQy+KI(:d=^Su`t5U@d"R7PK

```

d#A~XY@@ license.dist-0.2.dist-info/WHEELUT FDPmguxWheel-Version: 0.1

Packager: bdist_wheel

Root-Is-Purelib: true

PK

o@licensedist/__init__.pyUT PBmguxPKu5Z\&#license.dist-0.2.dist-
info/METADATAUTguxPKa5Zhb'!)license.dist-0.2.dist-info/RECORDUTguxPK5d#Ahr6s%Vlicense.dist-0.2.dist-
info/RECORD.jwsUTDPuxPK

d#A~XY@@ license.dist-0.2.dist-info/WHEELUTFDPuxPK

o@licensedist/__init__.pyUTPuxPK

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History

Before (and including) argparse 1.1, the argparse package was licensed under Apache License v2.0.

After argparse 1.1, all project files from the argparse project were deleted due to license compatibility issues between Apache License 2.0 and GNU GPL v2.

The project repository then had a clean start with some files taken from Python 2.7.1, so definitely all files are under Python License now.

=====

Contributors

=====

- * Alex Grnholm
- * Alice Bevan-McGregor
- * Arfrever Frehtes Taifersar Arahesis
- * Christophe Combelles
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- * Noufal Ibrahim
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A. HISTORY OF THE SOFTWARE

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Python was created in the early 1990s by Guido van Rossum at Stichting Mathematisch Centrum (CWI, see <https://www.cwi.nl>) in the Netherlands as a successor of a language called ABC. Guido remains Python's principal author, although it includes many contributions from others.

In 1995, Guido continued his work on Python at the Corporation for National Research Initiatives (CNRI, see <https://www.cnri.reston.va.us>) in Reston, Virginia where he released several versions of the software.

In May 2000, Guido and the Python core development team moved to BeOpen.com to form the BeOpen PythonLabs team. In October of the same year, the PythonLabs team moved to Digital Creations, which became Zope Corporation. In 2001, the Python Software Foundation (PSF, see <https://www.python.org/psf/>) was formed, a non-profit organization created specifically to own Python-related Intellectual Property. Zope Corporation was a sponsoring member of the PSF.

All

Python releases are Open Source (see <https://opensource.org> for the Open Source Definition). Historically, most, but not all, Python releases have also been GPL-compatible; the table below summarizes the various releases.

Release	Derived from	Year	Owner	GPL-compatible? (1)
0.9.0 thru 1.2		1991-1995	CWI	yes
1.3 thru 1.5.2	1.2	1995-1999	CNRI	yes
1.6	1.5.2	2000	CNRI	no
2.0	1.6	2000	BeOpen.com	no
1.6.1	1.6	2001	CNRI	yes (2)
2.1	2.0+1.6.1	2001	PSF	no
2.0.1	2.0+1.6.1	2001	PSF	yes
2.1.1	2.1+2.0.1	2001	PSF	yes
2.1.2	2.1.1	2002	PSF	yes
2.1.3	2.1.2	2002	PSF	yes
2.2 and above	2.1.1	2001-now		
PSF	yes			

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A. HISTORY OF THE SOFTWARE

=====

Python was created in the early 1990s by Guido van Rossum at Stichting Mathematisch Centrum (CWI, see <http://www.cwi.nl>) in the Netherlands as a successor of a language called ABC. Guido remains Python's principal author, although it includes many contributions from others.

In 1995, Guido continued his work on Python at the Corporation for National Research Initiatives (CNRI, see <http://www.cnri.reston.va.us>) in Reston, Virginia where he released several versions of the software.

In May 2000, Guido and the Python core development team moved to BeOpen.com to form the BeOpen PythonLabs team. In October of the same year, the PythonLabs team moved to Digital Creations (now Zope Corporation, see <http://www.zope.com>). In 2001, the Python Software Foundation (PSF, see <http://www.python.org/psf/>) was formed, a non-profit organization created specifically to own Python-related Intellectual Property. Zope Corporation is a sponsoring member of the PSF.

All Python releases are Open Source (see <http://www.opensource.org> for the Open Source Definition). Historically, most, but not all, Python releases have also been GPL-compatible; the table below summarizes the various releases.

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1.3 thru 1.5.2	1.2	1995-1999	CNRI	yes
1.6	1.5.2	2000	CNRI	no
2.0	1.6	2000	BeOpen.com	no
1.6.1	1.6	2001	CNRI	yes (2)
2.1	2.0+1.6.1	2001	PSF	no
2.0.1	2.0+1.6.1	2001	PSF	yes
2.1.1	2.1+2.0.1	2001	PSF	yes

2.2	2.1.1	2001	PSF	yes
2.1.2	2.1.1	2002	PSF	yes
2.1.3				
2.1.2	2002	PSF	yes	
2.2.1	2.2	2002	PSF	yes
2.2.2	2.2.1	2002	PSF	yes
2.2.3	2.2.2	2003	PSF	yes
2.3	2.2.2	2002-2003	PSF	yes
2.3.1	2.3	2002-2003	PSF	yes
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2.3.4	2.3.3	2004	PSF	yes
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In 1995, Guido continued his work on Python at the Corporation for National Research Initiatives (CNRI, see <http://www.cnri.reston.va.us>) in Reston, Virginia where he released several versions of the software.

In May 2000, Guido and the Python core development team moved to BeOpen.com to form the BeOpen PythonLabs team. In October of the same year, the PythonLabs team moved to Digital Creations (now Zope Corporation, see <http://www.zope.com>). In 2001, the Python Software Foundation (PSF, see <http://www.python.org/psf/>) was formed, a non-profit organization created specifically to own Python-related Intellectual Property. Zope Corporation is a sponsoring member of the PSF.

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2.2.1	2.2	2002	PSF	yes
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2.6.1	2.6	2008	PSF	yes
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1.177 jansson 2.14.1-r0

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1.178 openssl 3.5.4-r0

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1.3.1

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1.182 google-uuid 1.6.0

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1.185 nuid 1.0.1

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1.186 protobuf-go 1.33.0

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1.187 pyparsing 3.2.3

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1.189 sh 1.14.3

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1.190 go-urn 1.4.0

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1.191 purell 1.1.1

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1.192 libxslt 1.1.43-r3

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1.194 go.yaml.in-yaml 2.4.3

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1.195 go-loc 0.7.2

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1.197 gorm.io-datatypes 1.2.7

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1.198 simpleclient-hotspot 0.16.0

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Manifest-Version: 1.0

Bnd-LastModified: 1655327979490

Build-Jdk: 11.0.15

Built-By: fabian

Bundle-Description: Collectors of data from Java Hotspot.

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Bundle-ManifestVersion: 2

Bundle-Name: Prometheus Java Simpleclient Hotspot

Bundle-SymbolicName: io.prometheus.simpleclient_hotspot

Bundle-Version: 0.16.0

Created-By: Apache Maven Bundle Plugin

Export-Package: io.prometheus.client.hotspot;uses:="io.prometheus.client

";version="0.16.0"

Import-Package: com.sun.management,io.prometheus.client;version="[0.16,1

);javax.management,javax.management.openmbean

Tool: Bnd-2.1.0.20130426-122213

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- * the License.
- */

Found in path(s):

- * /snakeyaml-2-4-sources-jar/org/yaml/snakeyaml/serializer/AnchorGenerator.java
- * /snakeyaml-2-4-sources-jar/org/yaml/snakeyaml/tokens/TagTuple.java
- * /snakeyaml-2-4-sources-jar/org/yaml/snakeyaml/extensions/compactnotation/CompactConstructor.java
- * /snakeyaml-2-4-sources-jar/org/yaml/snakeyaml/parser/ParserException.java
- *
- /snakeyaml-2-4-sources-jar/org/yaml/snakeyaml/constructor/ConstructorException.java
- * /snakeyaml-2-4-sources-jar/org/yaml/snakeyaml/resolver/ResolverTuple.java
- * /snakeyaml-2-4-sources-jar/org/yaml/snakeyaml/parser/Parser.java
- * /snakeyaml-2-4-sources-jar/org/yaml/snakeyaml/tokens/ValueToken.java
- * /snakeyaml-2-4-sources-jar/org/yaml/snakeyaml/tokens/Token.java
- * /snakeyaml-2-4-sources-jar/org/yaml/snakeyaml/emitter/EmitterState.java
- * /snakeyaml-2-4-sources-jar/org/yaml/snakeyaml/scanner/Constant.java
- * /snakeyaml-2-4-sources-jar/org/yaml/snakeyaml/util/PlatformFeatureDetector.java
- * /snakeyaml-2-4-sources-jar/org/yaml/snakeyaml/util/ArrayStack.java
- * /snakeyaml-2-4-sources-jar/org/yaml/snakeyaml/events/Event.java
- * /snakeyaml-2-4-sources-jar/org/yaml/snakeyaml/tokens/FlowEntryToken.java
- * /snakeyaml-2-4-sources-jar/org/yaml/snakeyaml/tokens/AliasToken.java
- * /snakeyaml-2-4-sources-jar/org/yaml/snakeyaml/events/NodeEvent.java
- * /snakeyaml-2-4-sources-jar/org/yaml/snakeyaml/tokens/FlowMappingStartToken.java
- *
- /snakeyaml-2-4-sources-jar/org/yaml/snakeyaml/constructor/Construct.java
- * /snakeyaml-2-4-sources-jar/org/yaml/snakeyaml/events/MappingStartEvent.java
- * /snakeyaml-2-4-sources-jar/org/yaml/snakeyaml/nodes/CollectionNode.java
- * /snakeyaml-2-4-sources-jar/org/yaml/snakeyaml/reader/ReaderException.java
- * /snakeyaml-2-4-sources-jar/org/yaml/snakeyaml/events/DocumentEndEvent.java
- * /snakeyaml-2-4-sources-jar/org/yaml/snakeyaml/comments/CommentLine.java
- * /snakeyaml-2-4-sources-jar/org/yaml/snakeyaml/composer/Composer.java
- * /snakeyaml-2-4-sources-jar/org/yaml/snakeyaml/scanner/Scanner.java
- * /snakeyaml-2-4-sources-jar/org/yaml/snakeyaml/tokens/BlockSequenceStartToken.java
- * /snakeyaml-2-4-sources-jar/org/yaml/snakeyaml/error/Mark.java
- * /snakeyaml-2-4-sources-jar/org/yaml/snakeyaml/nodes/SequenceNode.java
- * /snakeyaml-2-4-sources-jar/org/yaml/snakeyaml/resolver/Resolver.java
- * /snakeyaml-2-4-sources-jar/org/yaml/snakeyaml/tokens/KeyToken.java
- * /snakeyaml-2-4-sources-jar/org/yaml/snakeyaml/serializer/Serializer.java
- *
- /snakeyaml-2-4-sources-jar/org/yaml/snakeyaml/introspector/PropertySubstitute.java
- * /snakeyaml-2-4-sources-jar/org/yaml/snakeyaml/events/CollectionStartEvent.java
- * /snakeyaml-2-4-sources-jar/org/yaml/snakeyaml/util/UriEncoder.java
- * /snakeyaml-2-4-sources-jar/org/yaml/snakeyaml/extensions/compactnotation/PackageCompactConstructor.java
- * /snakeyaml-2-4-sources-jar/org/yaml/snakeyaml/reader/StreamReader.java
- * /snakeyaml-2-4-sources-jar/org/yaml/snakeyaml/error/MarkedYAMLEnvironmentException.java
- * /snakeyaml-2-4-sources-jar/org/yaml/snakeyaml/parser/VersionTagsTuple.java

- * /snakeyaml-2-4-sources-jar/org/yaml/snakeyaml/events/ScalarEvent.java
- * /snakeyaml-2-4-sources-jar/org/yaml/snakeyaml/inspector/TagInspector.java
- * /snakeyaml-2-4-sources-jar/org/yaml/snakeyaml/internal/Logger.java
- * /snakeyaml-2-4-sources-jar/org/yaml/snakeyaml/tokens/BlockMappingStartToken.java
- * /snakeyaml-2-4-sources-jar/org/yaml/snakeyaml/scanner/ScannerException.java
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- /snakeyaml-2-4-sources-jar/org/yaml/snakeyaml/tokens/CommentToken.java
- * /snakeyaml-2-4-sources-jar/org/yaml/snakeyaml/util/MergeUtils.java
- * /snakeyaml-2-4-sources-jar/org/yaml/snakeyaml/constructor/DuplicateKeyException.java
- * /snakeyaml-2-4-sources-jar/org/yaml/snakeyaml/comments/CommentType.java
- * /snakeyaml-2-4-sources-jar/org/yaml/snakeyaml/DumperOptions.java
- * /snakeyaml-2-4-sources-jar/org/yaml/snakeyaml/events/AliasEvent.java
- * /snakeyaml-2-4-sources-jar/org/yaml/snakeyaml/tokens/FlowMappingEndToken.java
- * /snakeyaml-2-4-sources-jar/org/yaml/snakeyaml/tokens/ScalarToken.java
- * /snakeyaml-2-4-sources-jar/org/yaml/snakeyaml/introspector/Property.java
- * /snakeyaml-2-4-sources-jar/org/yaml/snakeyaml/tokens/DocumentEndToken.java
- * /snakeyaml-2-4-sources-jar/org/yaml/snakeyaml/nodes/NodeId.java
- * /snakeyaml-2-4-sources-jar/org/yaml/snakeyaml/tokens/TagToken.java
- * /snakeyaml-2-4-sources-jar/org/yaml/snakeyaml/events/MappingEndEvent.java
- * /snakeyaml-2-4-sources-jar/org/yaml/snakeyaml/serializer/NumberAnchorGenerator.java
- *
- /snakeyaml-2-4-sources-jar/org/yaml/snakeyaml/inspector/UnTrustedTagInspector.java
- * /snakeyaml-2-4-sources-jar/org/yaml/snakeyaml/scanner/SimpleKey.java
- * /snakeyaml-2-4-sources-jar/org/yaml/snakeyaml/events/StreamEndEvent.java
- * /snakeyaml-2-4-sources-jar/org/yaml/snakeyaml/tokens/DirectiveToken.java
- * /snakeyaml-2-4-sources-jar/org/yaml/snakeyaml/nodes/Tag.java
- * /snakeyaml-2-4-sources-jar/org/yaml/snakeyaml/representer/BaseRepresenter.java
- * /snakeyaml-2-4-sources-jar/org/yaml/snakeyaml/tokens/BlockEntryToken.java
- * /snakeyaml-2-4-sources-jar/org/yaml/snakeyaml/tokens/AnchorToken.java
- * /snakeyaml-2-4-sources-jar/org/yaml/snakeyaml/tokens/FlowSequenceEndToken.java
- * /snakeyaml-2-4-sources-jar/org/yaml/snakeyaml/parser/ParserImpl.java
- * /snakeyaml-2-4-sources-jar/org/yaml/snakeyaml/TypeDescription.java
- * /snakeyaml-2-4-sources-jar/org/yaml/snakeyaml/introspector/FieldProperty.java
- * /snakeyaml-2-4-sources-jar/org/yaml/snakeyaml/constructor/SafeConstructor.java
- *
- /snakeyaml-2-4-sources-jar/org/yaml/snakeyaml/introspector/MethodProperty.java
- * /snakeyaml-2-4-sources-jar/org/yaml/snakeyaml/error/YAMLErrorException.java
- * /snakeyaml-2-4-sources-jar/org/yaml/snakeyaml/constructor/BaseConstructor.java
- * /snakeyaml-2-4-sources-jar/org/yaml/snakeyaml/emitter/Emitter.java
- * /snakeyaml-2-4-sources-jar/org/yaml/snakeyaml/nodes/AnchorNode.java
- * /snakeyaml-2-4-sources-jar/org/yaml/snakeyaml/composer/ComposerException.java
- * /snakeyaml-2-4-sources-jar/org/yaml/snakeyaml/tokens/DocumentStartToken.java
- * /snakeyaml-2-4-sources-jar/org/yaml/snakeyaml/util/EnumUtils.java
- * /snakeyaml-2-4-sources-jar/org/yaml/snakeyaml/constructor/Constructor.java
- * /snakeyaml-2-4-sources-jar/org/yaml/snakeyaml/env/EnvScalarConstructor.java
- * /snakeyaml-2-4-sources-jar/org/yaml/snakeyaml/introspector/BeanAccess.java
- * /snakeyaml-2-4-sources-jar/org/yaml/snakeyaml/introspector/GenericProperty.java
- * /snakeyaml-2-4-sources-jar/org/yaml/snakeyaml/serializer/SerializerException.java

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*
/snakeyaml-2-4-sources-jar/org/yaml/snakeyaml/nodes/MappingNode.java
* /snakeyaml-2-4-sources-jar/org/yaml/snakeyaml/events/CollectionEndEvent.java
* /snakeyaml-2-4-sources-jar/org/yaml/snakeyaml/extensions/compactnotation/CompactData.java
* /snakeyaml-2-4-sources-jar/org/yaml/snakeyaml/events/SequenceStartEvent.java
* /snakeyaml-2-4-sources-jar/org/yaml/snakeyaml/representer/JsonRepresenter.java
* /snakeyaml-2-4-sources-jar/org/yaml/snakeyaml/nodes/ScalarNode.java
* /snakeyaml-2-4-sources-jar/org/yaml/snakeyaml/emitter/Emitable.java
* /snakeyaml-2-4-sources-jar/org/yaml/snakeyaml/tokens/StreamEndToken.java
* /snakeyaml-2-4-sources-jar/org/yaml/snakeyaml/emitter/EmitterException.java
* /snakeyaml-2-4-sources-jar/org/yaml/snakeyaml/LoaderOptions.java
* /snakeyaml-2-4-sources-jar/org/yaml/snakeyaml/constructor/AbstractConstruct.java
* /snakeyaml-2-4-sources-jar/org/yaml/snakeyaml/scanner/ScannerImpl.java
* /snakeyaml-2-4-sources-jar/org/yaml/snakeyaml/tokens/BlockEndToken.java
*
/snakeyaml-2-4-sources-jar/org/yaml/snakeyaml/events/ImplicitTuple.java
* /snakeyaml-2-4-sources-jar/org/yaml/snakeyaml/nodes/Node.java
* /snakeyaml-2-4-sources-jar/org/yaml/snakeyaml/events/CommentEvent.java
* /snakeyaml-2-4-sources-jar/org/yaml/snakeyaml/emitter/ScalarAnalysis.java
* /snakeyaml-2-4-sources-jar/org/yaml/snakeyaml/tokens/FlowSequenceStartToken.java
* /snakeyaml-2-4-sources-jar/org/yaml/snakeyaml/comments/CommentEventsCollector.java
* /snakeyaml-2-4-sources-jar/org/yaml/snakeyaml/error/MissingEnvironmentVariableException.java
* /snakeyaml-2-4-sources-jar/org/yaml/snakeyaml/representer/Represent.java
* /snakeyaml-2-4-sources-jar/org/yaml/snakeyaml/reader/UnicodeReader.java
* /snakeyaml-2-4-sources-jar/org/yaml/snakeyaml/introspector/PropertyUtils.java
* /snakeyaml-2-4-sources-jar/org/yaml/snakeyaml/nodes/NodeTuple.java
* /snakeyaml-2-4-sources-jar/org/yaml/snakeyaml/tokens/StreamStartToken.java
* /snakeyaml-2-4-sources-jar/org/yaml/snakeyaml/util/ArrayUtils.java
*
/snakeyaml-2-4-sources-jar/org/yaml/snakeyaml/events/SequenceEndEvent.java
* /snakeyaml-2-4-sources-jar/org/yaml/snakeyaml/parser/Production.java
* /snakeyaml-2-4-sources-jar/org/yaml/snakeyaml/representer/SafeRepresenter.java
* /snakeyaml-2-4-sources-jar/org/yaml/snakeyaml/events/StreamStartEvent.java
* /snakeyaml-2-4-sources-jar/org/yaml/snakeyaml/representer/Representer.java
* /snakeyaml-2-4-sources-jar/org/yaml/snakeyaml/Yaml.java
* /snakeyaml-2-4-sources-jar/org/yaml/snakeyaml/events/DocumentStartEvent.java
* /snakeyaml-2-4-sources-jar/org/yaml/snakeyaml/introspector/MissingProperty.java
* /snakeyaml-2-4-sources-jar/org/yaml/snakeyaml/util/Tuple.java
* /snakeyaml-2-4-sources-jar/org/yaml/snakeyaml/constructor/CustomClassLoaderConstructor.java
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```

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Found in path(s):

```
* /snakeyaml-2-4-sources-jar/META-INF/maven/org.yaml/snakeyaml/pom.xml
```

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```

/*
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 */

```

Found in path(s):

```

* /snakeyaml-2-4-sources-
jar/org/yaml/snakeyaml/external/com/google/gdata/util/common/base/PercentEscaper.java
* /snakeyaml-2-4-sources-
jar/org/yaml/snakeyaml/external/com/google/gdata/util/common/base/UnicodeEscaper.java
* /snakeyaml-2-4-sources-jar/org/yaml/snakeyaml/external/com/google/gdata/util/common/base/Escaper.java

```

1.200 depth 1.2.1

1.200.1 Available under license :

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1.201 google-uuid 1.3.0

1.201.1 Available under license :

Paul Borman <borman@google.com>

bmatsuo

shawnp

theory

jboverfelt

dsymonds

cd1

wallclockbuilder

dansouza

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1.202 gson 2.13.2

1.202.1 Available under license :

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

Found in path(s):

* /gson-2-13-2-sources-jar/META-INF/maven/com.google.code.gson/gson/pom.xml

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

```
/opt/cola/permits/1701353823_1761207053.5308793/0/gson-2-13-2-sources-jar/com/google/gson/ExclusionStrategy.java/*
/opt/cola/permits/1701353823_1761207053.5308793/0/gson-2-13-2-sources-jar/com/google/gson/FieldAttributes.java/*
/opt/cola/permits/1701353823_1761207053.5308793/0/gson-2-13-2-sources-jar/com/google/gson/FieldNamingPolicy.java/*
/opt/cola/permits/1701353823_1761207053.5308793/0/gson-2-13-2-sources-jar/com/google/gson/FieldNamingStrategy.java/*
/opt/cola/permits/1701353823_1761207053.5308793/0/gson-2-13-2-sources-jar/com/google/gson/FormattingStyle.java/*
/opt/cola/permits/1701353823_1761207053.5308793/0/gson-2-13-2-sources-jar/com/google/gson/Gson.java/*
/opt/cola/permits/1701353823_1761207053.5308793/0/gson-2-13-2-sources-jar/com/google/gson/GsonBuilder.java/*
/opt/cola/permits/1701353823_1761207053.5308793/0/gson-2-13-2-sources-jar/com/google/gson/InstanceCreator.java/*
/opt/cola/permits/1701353823_1761207053.5308793/0/gson-2-13-2-sources-jar/com/google/gson/JsonArray.java/*
/opt/cola/permits/1701353823_1761207053.5308793/0/gson-2-13-2-sources-jar/com/google/gson/JsonDeserializationContext.java/*
/opt/cola/permits/1701353823_1761207053.5308793/0/gson-2-13-2-sources-jar/com/google/gson/JsonDeserializer.java/*
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/opt/cola/permits/1701353823_1761207053.5308793/0/gson-2-13-2-sources-jar/com/google/gson/JsonIOException.java/*
/opt/cola/permits/1701353823_1761207053.5308793/0/gson-2-13-2-sources-jar/com/google/gson/JsonNull.java/*
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/opt/cola/permits/1701353823_1761207053.5308793/0/gson-2-13-2-sources-jar/com/google/gson/JsonParseException.java/*
/opt/cola/permits/1701353823_1761207053.5308793/0/gson-2-13-2-sources-jar/com/google/gson/JsonParser.java/*
/opt/cola/permits/1701353823_1761207053.5308793/0/gson-2-13-2-sources-jar/com/google/gson/JsonPrimitive.java/*
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```

jar/com/google/gson/JsonSerializationContext.java/*
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jar/com/google/gson/JsonSerializer.java/*
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jar/com/google/gson/JsonSyntaxException.java/*
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/opt/cola/permits/1701353823_1761207053.5308793/0/gson-2-13-2-sources-
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/opt/cola/permits/1701353823_1761207053.5308793/0/gson-2-13-2-sources-
jar/com/google/gson/internal/bind/EnumTypeAdapter.java/*
/opt/cola/permits/1701353823_1761207053.5308793/0/gson-2-13-2-sources-
jar/com/google/gson/internal/bind/JsonAdapterAnnotationTypeAdapterFactory.java/*
/opt/cola/permits/1701353823_1761207053.5308793/0/gson-2-13-2-sources-
jar/com/google/gson/internal/bind/JsonElementTypeAdapter.java/*
/opt/cola/permits/1701353823_1761207053.5308793/0/gson-2-13-2-sources-
jar/com/google/gson/internal/bind/JsonTreeReader.java/*
/opt/cola/permits/1701353823_1761207053.5308793/0/gson-2-13-2-sources-
jar/com/google/gson/internal/bind/JsonTreeWriter.java/*
/opt/cola/permits/1701353823_1761207053.5308793/0/gson-2-13-2-sources-
jar/com/google/gson/internal/bind/MapTypeAdapterFactory.java/*
/opt/cola/permits/1701353823_1761207053.5308793/0/gson-2-13-2-sources-
jar/com/google/gson/internal/bind/NumberTypeAdapter.java/*
/opt/cola/permits/1701353823_1761207053.5308793/0/gson-2-13-2-sources-
jar/com/google/gson/internal/bind/ObjectTypeAdapter.java/*
/opt/cola/permits/1701353823_1761207053.5308793/0/gson-2-13-2-sources-
jar/com/google/gson/internal/bind/ReflectiveTypeAdapterFactory.java/*
/opt/cola/permits/1701353823_1761207053.5308793/0/gson-2-13-2-sources-
jar/com/google/gson/internal/bind/SerializationDelegatingTypeAdapter.java/*
/opt/cola/permits/1701353823_1761207053.5308793/0/gson-2-13-2-sources-
jar/com/google/gson/internal/bind/TreeTypeAdapter.java/*
/opt/cola/permits/1701353823_1761207053.5308793/0/gson-2-13-2-sources-
jar/com/google/gson/internal/bind/TypeAdapterRuntimeTypeWrapper.java/*
/opt/cola/permits/1701353823_1761207053.5308793/0/gson-2-13-2-sources-
jar/com/google/gson/internal/bind/TypeAdapters.java/*
/opt/cola/permits/1701353823_1761207053.5308793/0/gson-2-13-2-sources-
jar/com/google/gson/internal/bind/util/ISO8601Utils.java/*
/opt/cola/permits/1701353823_1761207053.5308793/0/gson-2-13-2-sources-jar/com/google/gson/internal/package-

info.java/*
/opt/cola/permits/1701353823_1761207053.5308793/0/gson-2-13-2-sources-jar/com/google/gson/internal/reflect/ReflectionHelper.java/*
/opt/cola/permits/1701353823_1761207053.5308793/0/gson-2-13-2-sources-jar/com/google/gson/internal/sql/SqlDateTypeAdapter.java/*
/opt/cola/permits/1701353823_1761207053.5308793/0/gson-2-13-2-sources-jar/com/google/gson/internal/sql/SqlTimeTypeAdapter.java/*
/opt/cola/permits/1701353823_1761207053.5308793/0/gson-2-13-2-sources-jar/com/google/gson/internal/sql/SqlTimestampTypeAdapter.java/*
/opt/cola/permits/1701353823_1761207053.5308793/0/gson-2-13-2-sources-jar/com/google/gson/internal/sql/SqlTypesSupport.java/*
/opt/cola/permits/1701353823_1761207053.5308793/0/gson-2-13-2-sources-jar/com/google/gson/package-info.java/*
/opt/cola/permits/1701353823_1761207053.5308793/0/gson-2-13-2-sources-jar/com/google/gson/reflect/TypeToken.java/*
/opt/cola/permits/1701353823_1761207053.5308793/0/gson-2-13-2-sources-jar/com/google/gson/reflect/package-info.java/*
/opt/cola/permits/1701353823_1761207053.5308793/0/gson-2-13-2-sources-jar/com/google/gson/stream/JsonReader.java/*
/opt/cola/permits/1701353823_1761207053.5308793/0/gson-2-13-2-sources-jar/com/google/gson/stream/JsonScope.java/*
/opt/cola/permits/1701353823_1761207053.5308793/0/gson-2-13-2-sources-jar/com/google/gson/stream/JsonToken.java/*
/opt/cola/permits/1701353823_1761207053.5308793/0/gson-2-13-2-sources-jar/com/google/gson/stream/JsonWriter.java/*
/opt/cola/permits/1701353823_1761207053.5308793/0/gson-2-13-2-sources-jar/com/google/gson/stream/MalformedJsonException.java/*
/opt/cola/permits/1701353823_1761207053.5308793/0/gson-2-13-2-sources-jar/com/google/gson/stream/package-info.java/*
/opt/cola/permits/1701353823_1761207053.5308793/0/gson-2-13-2-sources-jar/module-info.java/*

Found
in path(s):
*

1.203 go-sqlmock 1.5.2

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1.204 dlintw-goconf 0.0.0-20120228082610-dcc070983490

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1.205 alpine-keys 2.6-r0

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```
#!/bin/sh
```

Found in path(s):

- * /aports-v2-6-zip/aports-v2.6/abuild-keygen.in

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```
/opt/cola/permits/2709648019_1765119923.7026696/0/aports-v2-6-zip/aports-v2.6/abuild-sign.in#!/bin/sh
```

```
/opt/cola/permits/2709648019_1765119923.7026696/0/aports-v2-6-zip/aports-v2.6/abuild-tar.c/* abuild-tar.c - A
```

TAR mangling utility for .APK packages

```
/opt/cola/permits/2709648019_1765119923.7026696/0/aports-v2-6-zip/aports-v2.6/abuild.in#!/bin/sh
```

```
/opt/cola/permits/2709648019_1765119923.7026696/0/aports-v2-6-zip/aports-v2.6/newapkbuild.in#!/bin/sh
```

Found in path(s):

- *

1.206 bouncy-castle 1.79

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```
public DomainParameters(BigInteger p, BigInteger g, BigInteger q, BigInteger j,
```

Found in path(s):

- * /bcprov-jdk18on-1-79-sources-jar/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 C implementation

* by Andrew M (@floodyberry).
* @see Poly1305KeyGenerator
*/

Found in path(s):

* /bcprov-jdk18on-1-79-sources-jar/org/bouncycastle/crypto/mac/Poly1305.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):

* /bcprov-jdk18on-1-79-sources-jar/org/bouncycastle/pqc/crypto/sphincs/SPHINCS256Signer.java

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/**

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*

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*/

Found in path(s):

* /bcprov-jdk18on-1-79-sources-jar/org/bouncycastle/LICENSE.java

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/**

* Magic value for proprietary OpenSSH private key.

**/

Found in path(s):

* /bcprov-jdk18on-1-79-sources-jar/org/bouncycastle/crypto/util/OpenSSHPrivateKeyUtil.java

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/**

* An implementation of [RFC 7253](https://tools.ietf.org/html/rfc7253) on The OCB

* Authenticated-Encryption Algorithm. For those still concerned about the original patents

* around this, please see:

* <p>

* <https://mailarchive.ietf.org/arch/msg/cfrg/qLTveWOdTJcLn4HP3ev-vrj05Vg/>

* </p>

* Text reproduced below.

* <blockquote>

* Phillip Rogaway >rogaway@cs.ucdavis.edu< Sat, 27 February 2021 02:46 UTCShow header

*

* I can confirm that I have abandoned all OCB patents

* and placed into the public domain all OCB-related IP of mine.

* While I have been telling people this for quite some time, I don't

* think I ever made a proper announcement to the CFRG or on the

* OCB webpage. Consider that done.

* </blockquote>

*/

Found in path(s):

* /bcprov-jdk18on-1-79-sources-jar/org/bouncycastle/crypto/modes/OCBBlockCipher.java

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

/**

* 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):

```
* /bcprov-jdk18on-1-79-sources-jar/org/bouncycastle/pqc/math/ntru/package-info.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):

```
* /bcprov-jdk18on-1-79-sources-jar/org/bouncycastle/pqc/crypto/ntru/package-info.java
```

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```
// now keep space is free to use
```

Found in path(s):

```
* /bcprov-jdk18on-1-79-sources-jar/org/bouncycastle/pqc/legacy/crypto/gmss/GMSSPrivateKeyParameters.java
```

1.207 jboss-logging 3.6.1.Final

1.207.1 Available under license :

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1.208 xerces-j 2.12.2

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1.209 protobuf 1.5.4

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1.211 jakarta-annotation-api 2.1.1

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subpackages="$pkgname-list"

_types="html json rdfa rdfnt rdfturtle rdfxml template text"

for type in $_types; do
    subpackages="$subpackages $pkgname-$type:_subpkg"
done

package() {
    mkdir -p "$pkgdir"
}

_subpkg() {
    local type=${subpkgname/$pkgname-/}
    pkgdesc="$pkgdesc ($type)"
    install_if="$pkgname=$pkgver-r$pkgrel"
    mkdir -p "$subpkgdir"/usr/share/spdx
    cp -r "$builddir"/$type "$subpkgdir"/usr/share/spdx/
}

list() {
    pkgdesc="$pkgdesc (licence list)"
    mkdir -p "$subpkgdir"/usr/share/spdx
    local i; for i in "$builddir"/text/*.txt;
    do
        local license=${i##*/}
        echo ${license%.*} >> "$subpkgdir"/usr/share/spdx/license.lst
    done
}

sha512sums="
16d59c81e331b54b52639826f83408d98144cd4a70eacc3e8ce35dc3b13992e4794cf7515eb9db200efd390a0c0e35ae9
d4706fbe0ca6a8d236189e88870720c license-list-data-3.27.0.tar.gz
"

# Automatically generated by apkgbuild-cpan, template 4
# Contributor: Valery Kartel <valery.kartel@gmail.com>
# Maintainer: Celeste <cielesti@protonmail.com>
maintainer="Celeste <cielesti@protonmail.com>"

```

```

pkgname=perl-bsd-resource
pkgver=1.2911
pkgrel=11
#_pkgreal is used by apkbuild-cpan to find modules at MetaCpan
_pkgreal=BSD-Resource
pkgdesc="Perl extension implements the BSD process resource limit functions"
url="https://metacpan.org/release/BSD-Resource/"
arch="all"
license="Artistic-2.0 OR LGPL-2.0"
depends="perl"
makedepends="perl-dev"
subpackages="$pkgname-doc"
source="https://cpan.metacpan.org/authors/id/J/JH/JHI/BSD-Resource-$pkgver.tar.gz"
builddir="$srcdir/${_pkgreal}-$pkgver"

build() {
    export CFLAGS=$(perl -MConfig -E 'say $Config{ccflags}')
    PERL_MM_USE_DEFAULT=1 perl -I. Makefile.PL \
        INSTALLDIRS=vendor \
        NO_PACKLIST=1 \
        NO_PERLLOCAL=1
    make
}

check() {
    export CFLAGS=$(perl -MConfig -E 'say $Config{ccflags}')
    make test
}

package() {
    make DESTDIR="$pkgdir" install
}

sha512sums="
d0032d41c7c0468ed1c6d8f57b885f6cb97a5039d754c8cb60b2067daedaf53bd15fb6561a3d0f828df16dfa5417f663b
8065ba65f4fea16dc9262728b3b6b85
    BSD-Resource-1.2911.tar.gz
"

maintainer="Achill Gilgenast <achill@achill.org>"
pkgname=cargo-license
pkgver=0.7.0
pkgrel=1
pkgdesc="Cargo subcommand to see license of dependencies"
url="https://github.com/onur/cargo-license"
arch="all"
license="MIT"
makedepends="cargo cargo-auditable"
source="$pkgname-$pkgver.tar.gz::https://crates.io/api/v1/crates/cargo-license/$pkgver/download"

```



```

prepare() {
    default_prepare

    cargo fetch --target="$CTARGET" --locked
}

build() {
    cargo auditable build --release --frozen
}

check() {
    cargo test --frozen
}

package() {
    install -Dm755 target/release/cargo-license -t "$pkgdir"/usr/bin
}

sha512sums="
9b3f0ead35515e85ef4074ebdbdbe5b9ec8bcaec244fabe414e2ed60f90366e8b1692d8bf7ffe4c07d778e60d94bab86bc
0c8be9823232e9c360a38bc65e9c5a cargo-license-0.7.0.tar.gz
"

#!/sbin/openrc-run

command="/usr/libexec/xdg-permission-store"
supervisor=supervise-daemon
command_args="--replace $command_args"
error_logger="logger -t '${RC_SVCNAME}' -p daemon.error"

depend() {
    need dbus
}

# Contributor: Maxim Karasev <begs@disroot.org>
# Maintainer: mio <miyopan@e.email>
pkgname=bsd-games
pkgver=3.3
pkgrel=2
pkgdesc="traditional text mode games from BSD"
url="https://bsd-games.sourceforge.io/"
arch="all"
license="BSD-3-Clause"
install="$pkgname.post-install"
makedepends="ncurses-dev coreutils" # configure causes busybox expr error
subpackages="$pkgname-doc"
source="https://sourceforge.net/projects/bsd-games/files/bsd-games-$pkgver.tar.gz
0001-bsd-games-scores-dir.patch
"

```

```
options="!check" # no tests
```

```
build() {  
    # some GNU autoconf options are ignored, but it works  
    ./configure \  
    --build=$CBUILD \  
    --host=$CHOST \  
    --prefix=/usr \  
    --sysconfdir=/etc \  
    --mandir=/usr/share/man \  
    --scoredir=/usr/share/$pkgname  
    make  
}  
  
package() {  
    make DESTDIR="$pkgdir" install  
    install -Dm644 LICENSE "$pkgdir"/usr/share/licenses/bsd-games/LICENSE  
}
```

```
sha512sums="  
aaf36d09d4fe68514a5c279063d7e77a9a9a84c447037cba974b29faa07eb80c2aab2379d0699c196b5c27ffe1b2bb2c6  
8d3390143e0e62d5e3d210ccfb61294  
    bsd-games-3.3.tar.gz  
e1def0d4835a877242c4173fae862e278a7858738e0bacacbb045a42bcabec2aa7c72d000bbd2421ce35fe66cdc1f52c0  
577b7e278029ca5ed50f7aab22319f6 0001-bsd-games-scores-dir.patch  
"
```

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mini_sendmail - accept email on behalf of real sendmail

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Maintainer: Natanael Copa <ncopa@alpinelinux.org>

pkgname=libart-lgpl

pkgver=2.3.21

pkgrel=8

pkgdesc="A library for high-performance 2D graphics"

url="https://www.levien.com/libart/"

arch="all"

options="!check" # No test suite.

license="LGPL-2.0-or-later"

subpackages="\$pkgname-dev"

source="https://download.gnome.org/sources/libart-lgpl/2.3/libart-lgpl-\$pkgver.tar.bz2"

"

builddir="\$srcdir"/libart-lgpl-\$pkgver

```
prepare() {  
    update_config_sub  
    default_prepare  
}
```

```
build() {  
    ./configure \
```

```

--build=$CBUILD \
--host=$CHOST \
--prefix=/usr
make
}

package() {
    make DESTDIR="$pkgdir" install
}

sha512sums="8a632a6a4da59e5e8c02ec2f5a57e36d182b325b46513765425e5f171ff9ae326af1b133725beba28f7e7
6654309e001aee9bace727b5b4c8589405256a3c020 libart_lgpl-2.3.21.tar.bz2"
# Contributor: Patrycja Rosa <alpine@ptrcnull.me>
# Maintainer: Patrycja Rosa <alpine@ptrcnull.me>
pkgname=bsd-compat-headers
pkgver=0.7.2
pkgrel=6
pkgdesc="BSD compatibility headers (cdefs, queue, tree)"
url="https://gitlab.alpinelinux.org/alpine/aports"
arch="noarch"
license="BSD-2-Clause AND BSD-3-Clause"
source="
cdefs.h
queue.h
tree.h
"
builddir="$srcdir"
options="!check" # just headers

package() {
    mkdir -p "$pkgdir"
    install -Dm644 -t "$pkgdir"/usr/include/sys \
        cdefs.h queue.h tree.h
}
sha512sums="
37c8fc73c7aea7b490f7850927e2bb91d12137c9e59e22c084146d515696dbc7973b5de92f4c987ba080dd2502ba8312
7006442c3f019b6447a620c0cae73178 cdefs.h
2f0d5e6e4dc3350285cf17009265dddcbe12431c111868eea39bc8cb038ab7c1f2acacbb21735c4e9d4a1fd106a8fc0f86
11ea33987d4faba37dde5ce6da0750 queue.h
d9ac210d81feb8ad2655bc80fb065d3fe20ae4417b32b4a1711e6738a4870140005c13373b5d1846ef3ce5ae6da45f2da
cef2092881eded0a2e94f6a07752ef3 tree.h
"

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The text rotation code in w_rottext.c was written by Alan Richardson.

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The Kohonen neural network code for color optimization was written by Anthony Dekker.

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The X-Spline code was written Carole Blanc (blanc@labri.u-bordeaux.fr) and Christophe Schlick (schlick@labri.u-bordeaux.fr) starting from an initial implementation done by C. Feuille, S. Grosbois, L. Maziere and L. Minihot as a student practice (Universite Bordeaux, France). For additional information about X-splines, see:

"X-Splines: A Spline Model Designed for the End User" by C. Blanc and C. Schlick, Proceedings of SIGGRAPH'95
<http://dept-info.labri.u-bordeaux.fr/~schlick/DOC/sig1.html>

/* \$NetBSD: queue.h,v 1.70 2015/11/02 15:21:23 christos Exp \$ */

/*

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*

* @(#)queue.h 8.5 (Berkeley) 8/20/94

*/

#ifndef _SYS_QUEUE_H_

#define _SYS_QUEUE_H_

/*

* This file defines five types of data structures: singly-linked lists,
* lists, simple queues, tail queues, and circular queues.

*

* A singly-linked list is headed by a single forward pointer. The
* elements are singly linked for minimum space and
pointer manipulation
* overhead at the expense of O(n) removal for arbitrary elements. New
* elements can be added to the list after an existing element or at the
* head of the list. Elements being removed from the head of the list
* should use the explicit macro for this purpose for optimum
* efficiency. A singly-linked list may only be traversed in the forward
* direction. Singly-linked lists are ideal for applications with large
* datasets and few or no removals or for implementing a LIFO queue.

*

* A list is headed by a single forward pointer (or an array of forward
* pointers for a hash table header). The elements are doubly linked
* so that an arbitrary element can be removed without a need to
* traverse the list. New elements can be added to the list before
* or after an existing element or at the head of the list. A list
* may only be traversed in the forward direction.

*

* A simple queue is headed by a pair of pointers, one the head of the
* list and the
other to the tail of the list. The elements are singly
* linked to save space, so elements can only be removed from the
* head of the list. New elements can be added to the list after
* an existing element, at the head of the list, or at the end of the
* list. A simple queue may only be traversed in the forward direction.

*

* A tail queue is headed by a pair of pointers, one to the head of the
* list and the other to the tail of the list. The elements are doubly
* linked so that an arbitrary element can be removed without a need to
* traverse the list. New elements can be added to the list before or
* after an existing element, at the head of the list, or at the end of
* the list. A tail queue may be traversed in either direction.

```

*
* A circle queue is headed by a pair of pointers, one to the head of the
* list and the other to the tail of the list. The elements are doubly
* linked so that an arbitrary element can be removed without a need to
* traverse the list. New elements
* can be added to the list before or after
* an existing element, at the head of the list, or at the end of the list.
* A circle queue may be traversed in either direction, but has a more
* complex end of list detection.
*
* For details on the use of these macros, see the queue(3) manual page.
*/

```

```

/*
* Include the definition of NULL only on NetBSD because sys/null.h
* is not available elsewhere. This conditional makes the header
* portable and it can simply be dropped verbatim into any system.
* The caveat is that on other systems some other header
* must provide NULL before the macros can be used.
*/

```

```

#ifdef __NetBSD__
#include <sys/null.h>
#endif

```

```

#ifdef QUEUEDEBUG
# if defined(_KERNEL)
#  define QUEUEDEBUG_ABORT(...) panic(__VA_ARGS__)
# else
#  include <err.h>
#  define QUEUEDEBUG_ABORT(...) err(1, __VA_ARGS__)
# endif
#endif

```

```

/*
* Singly-linked List definitions.
*/
#define SLIST_HEAD(name, type) \
struct name { \
    struct type *slh_first; /* first \
    element */ \
}

#define SLIST_HEAD_INITIALIZER(head) \
{ NULL }

#define SLIST_ENTRY(type) \
struct { \
    struct type *sle_next; /* next element */ \
}

```

```

}

/*
 * Singly-linked List access methods.
 */
#define SLIST_FIRST(head) ((head)->slh_first)
#define SLIST_END(head) NULL
#define SLIST_EMPTY(head) ((head)->slh_first == NULL)
#define SLIST_NEXT(elm, field) ((elm)->field.sle_next)

#define SLIST_FOREACH(var, head, field) \
    for((var) = (head)->slh_first; \
        (var) != SLIST_END(head); \
        (var) = (var)->field.sle_next)

#define SLIST_FOREACH_SAFE(var, head, field, tvar) \
    for ((var) = SLIST_FIRST((head)); \
        (var) != SLIST_END(head) && \
        ((tvar) = SLIST_NEXT((var), field), 1); \
        (var) = (tvar))

/*
 * Singly-linked List functions.
 */
#define SLIST_INIT(head) do { \
    (head)->slh_first = SLIST_END(head); \
} while (/*CONSTCOND*/0)

#define SLIST_INSERT_AFTER(slistelm, elm, field) do { \
    (elm)->field.sle_next = (slistelm)->field.sle_next; \
    (slistelm)->field.sle_next \
    = (elm); \
} while (/*CONSTCOND*/0)

#define SLIST_INSERT_HEAD(head, elm, field) do { \
    (elm)->field.sle_next = (head)->slh_first; \
    (head)->slh_first = (elm); \
} while (/*CONSTCOND*/0)

#define SLIST_REMOVE_AFTER(slistelm, field) do { \
    (slistelm)->field.sle_next = \
        SLIST_NEXT(SLIST_NEXT((slistelm), field), field); \
} while (/*CONSTCOND*/0)

#define SLIST_REMOVE_HEAD(head, field) do { \
    (head)->slh_first = (head)->slh_first->field.sle_next; \
} while (/*CONSTCOND*/0)

```



```

#define SLIST_REMOVE(head, elm, type, field) do { \
    if ((head)->slh_first == (elm)) { \
        SLIST_REMOVE_HEAD((head), field); \
    } \
    else { \
        struct type *curelm = (head)->slh_first; \
        while(curelm->field.sle_next != (elm)) \
            curelm = curelm->field.sle_next; \
        curelm->field.sle_next = \
            curelm->field.sle_next->field.sle_next; \
    } \
} while (/*CONSTCOND*/0)

/*
 * List definitions.
 */
#define LIST_HEAD(name, type) \
struct name { \
    struct type *lh_first; /* first element */ \
}

#define LIST_HEAD_INITIALIZER(head) \
{ NULL }

#define LIST_ENTRY(type) \
struct { \
    struct type *le_next; /* next element */ \
    struct type **le_prev; /* address of previous next element */ \
}

/*
 * List access methods.
 */
#define LIST_FIRST(head) ((head)->lh_first)
#define LIST_END(head) NULL
#define LIST_EMPTY(head) ((head)->lh_first == LIST_END(head))
#define LIST_NEXT(elm, field) ((elm)->field.le_next)

#define LIST_FOREACH(var, head, field) \
for ((var) = ((head)->lh_first); \
     (var) != LIST_END(head); \
     (var) = ((var)->field.le_next))

#define LIST_FOREACH_SAFE(var, head, field, tvar) \
for ((var) = LIST_FIRST(head); \
     (var) != LIST_END(head) && \
     ((tvar) = LIST_NEXT(var, field), 1); \

```

```

    (var) = (tvar))

#define LIST_MOVE(head1, head2) do { \
    LIST_INIT((head2)); \
    if (!LIST_EMPTY((head1))) \
    { \
        (head2)->lh_first = (head1)->lh_first; \
        LIST_INIT((head1)); \
    } \
} while (/*CONSTCOND*/0)

/*
 * List functions.
 */

#if defined(QUEUEDEBUG)
#define QUEUEDEBUG_LIST_INSERT_HEAD(head, elm, field) \
    if ((head)->lh_first && \
        (head)->lh_first->field.le_prev != &(head)->lh_first) \
        QUEUEDEBUG_ABORT("LIST_INSERT_HEAD %p %s:%d", (head), \
            __FILE__, __LINE__);
#define QUEUEDEBUG_LIST_OP(elm, field) \
    if ((elm)->field.le_next && \
        (elm)->field.le_next->field.le_prev != \
        &(elm)->field.le_next) \
        QUEUEDEBUG_ABORT("LIST_* forw %p %s:%d", (elm), \
            __FILE__, __LINE__); \
    if (*(elm)->field.le_prev != (elm)) \
        QUEUEDEBUG_ABORT("LIST_* back %p %s:%d", (elm), \
            __FILE__, __LINE__);
#define QUEUEDEBUG_LIST_POSTREMOVE(elm, field) \
    (elm)->field.le_next = (void *)1L; \
    (elm)->field.le_prev = (void *)1L;
#else
#define QUEUEDEBUG_LIST_INSERT_HEAD(head, elm, field)
#define QUEUEDEBUG_LIST_OP(elm, field)
#define QUEUEDEBUG_LIST_POSTREMOVE(elm, field)
#endif

#define LIST_INIT(head) do { \
    (head)->lh_first = LIST_END(head); \
} while (/*CONSTCOND*/0)

#define LIST_INSERT_AFTER(listelm, elm, field) do { \
    QUEUEDEBUG_LIST_OP((listelm), field) \
    if (((elm)->field.le_next = (listelm)->field.le_next) != \
        LIST_END(head)) \
        (listelm)->field.le_next->field.le_prev = \

```

```

    &(elm)->field.le_next; \
(listelm)->field.le_next = (elm); \
(elm)->field.le_prev = &(listelm)->field.le_next; \
} while (/*CONSTCOND*/0)

#define LIST_INSERT_BEFORE(listelm, elm, field) do { \
    QUEUEDEBUG_LIST_OP((listelm), field) \
    (elm)->field.le_prev = (listelm)->field.le_prev; \
    (elm)->field.le_next = (listelm); \
    *(listelm)->field.le_prev = (elm); \
    (listelm)->field.le_prev = &(elm)->field.le_next; \
} while (/*CONSTCOND*/0)

#define LIST_INSERT_HEAD(head, elm, field) do { \
    QUEUEDEBUG_LIST_INSERT_HEAD((head), (elm), field) \
    if (((elm)->field.le_next \
    = (head)->lh_first) != LIST_END(head)) \
    (head)->lh_first->field.le_prev = &(elm)->field.le_next; \
    (head)->lh_first = (elm); \
    (elm)->field.le_prev = &(head)->lh_first; \
} while (/*CONSTCOND*/0)

#define LIST_REMOVE(elm, field) do { \
    QUEUEDEBUG_LIST_OP((elm), field) \
    if ((elm)->field.le_next != NULL) \
    (elm)->field.le_next->field.le_prev = \
    (elm)->field.le_prev; \
    *(elm)->field.le_prev = (elm)->field.le_next; \
    QUEUEDEBUG_LIST_POSTREMOVE((elm), field) \
} while (/*CONSTCOND*/0)

#define LIST_REPLACE(elm, elm2, field) do { \
    if (((elm2)->field.le_next = (elm)->field.le_next) != NULL) \
    (elm2)->field.le_next->field.le_prev = \
    &(elm2)->field.le_next; \
    (elm2)->field.le_prev = (elm)->field.le_prev; \
    *(elm2)->field.le_prev = (elm2); \
    QUEUEDEBUG_LIST_POSTREMOVE((elm), field) \
} while (/*CONSTCOND*/0)

/*
 * Simple queue definitions.
 */
#define SIMPLEQ_HEAD(name, type) \
struct name { \
    struct \
    type *sqh_first; /* first element */ \
    struct type **sqh_last; /* addr of last next element */ \

```

```

}

#define SIMPLEQ_HEAD_INITIALIZER(head) \
{ NULL, &(head).sqh_first }

#define SIMPLEQ_ENTRY(type) \
struct { \
    struct type *sqe_next; /* next element */ \
}

/*
 * Simple queue access methods.
 */

#define SIMPLEQ_FIRST(head) ((head)->sqh_first)
#define SIMPLEQ_END(head) NULL
#define SIMPLEQ_EMPTY(head) ((head)->sqh_first == SIMPLEQ_END(head))
#define SIMPLEQ_NEXT(elm, field) ((elm)->field.sqe_next)

#define SIMPLEQ_FOREACH(var, head, field) \
for ((var) = ((head)->sqh_first); \
    (var) != SIMPLEQ_END(head); \
    (var) = ((var)->field.sqe_next))

#define SIMPLEQ_FOREACH_SAFE(var, head, field, next) \
for ((var) = ((head)->sqh_first); \
    (var) != SIMPLEQ_END(head) && \
    ((next = ((var)->field.sqe_next)), 1); \
    (var) = (next))

/*
 * Simple queue functions.
 */

#define SIMPLEQ_INIT(head) do { \
    (head)->sqh_first = NULL; \
    (head)->sqh_last \
    = &(head)->sqh_first; \
} while (/*CONSTCOND*/0)

#define SIMPLEQ_INSERT_HEAD(head, elm, field) do { \
    if (((elm)->field.sqe_next = (head)->sqh_first) == NULL) \
        (head)->sqh_last = &(elm)->field.sqe_next; \
    (head)->sqh_first = (elm); \
} while (/*CONSTCOND*/0)

#define SIMPLEQ_INSERT_TAIL(head, elm, field) do { \
    (elm)->field.sqe_next = NULL; \
    *(head)->sqh_last = (elm); \
    (head)->sqh_last = &(elm)->field.sqe_next; \
} while (/*CONSTCOND*/0)

```

```

} while (/*CONSTCOND*/0)

#define SIMPLEQ_INSERT_AFTER(head, listelm, elm, field) do { \
if (((elm)->field.sqe_next = (listelm)->field.sqe_next) == NULL)\
(head)->sqh_last = &(elm)->field.sqe_next; \
(listelm)->field.sqe_next = (elm); \
} while (/*CONSTCOND*/0)

#define SIMPLEQ_REMOVE_HEAD(head, field) do { \
if (((head)->sqh_first = (head)->sqh_first->field.sqe_next) == NULL)\
(head)->sqh_last = &(head)->sqh_first; \
} while (/*CONSTCOND*/0)

#define SIMPLEQ_REMOVE_AFTER(head, elm, field) do { \
if \
(((elm)->field.sqe_next = (elm)->field.sqe_next->field.sqe_next) \
== NULL) \
(head)->sqh_last = &(elm)->field.sqe_next; \
} while (/*CONSTCOND*/0)

#define SIMPLEQ_REMOVE(head, elm, type, field) do { \
if ((head)->sqh_first == (elm)) { \
SIMPLEQ_REMOVE_HEAD((head), field); \
} else { \
struct type *curelm = (head)->sqh_first; \
while (curelm->field.sqe_next != (elm)) \
curelm = curelm->field.sqe_next; \
if ((curelm->field.sqe_next = \
curelm->field.sqe_next->field.sqe_next) == NULL) \
(head)->sqh_last = &(curelm)->field.sqe_next; \
} \
} while (/*CONSTCOND*/0)

#define SIMPLEQ_CONCAT(head1, head2) do { \
if (!SIMPLEQ_EMPTY((head2))) { \
*(head1)->sqh_last = (head2)->sqh_first; \
(head1)->sqh_last = (head2)->sqh_last; \
SIMPLEQ_INIT((head2)); \
} \
} while (/*CONSTCOND*/0)

#define SIMPLEQ_LAST(head, type, field) \
(SIMPLEQ_EMPTY((head)) ? \
NULL : \
((struct type \
*)(void *) \
((char *)((head)->sqh_last) - offsetof(struct type, field))))

```

```

/*
 * Tail queue definitions.
 */

#define _TAILQ_HEAD(name, type, qual) \
struct name { \
    qual type *tqh_first; /* first element */ \
    qual type *qual *tqh_last; /* addr of last next element */ \
}

#define TAILQ_HEAD(name, type) _TAILQ_HEAD(name, struct type,)

#define TAILQ_HEAD_INITIALIZER(head) \
    { TAILQ_END(head), &(head).tqh_first }

#define _TAILQ_ENTRY(type, qual) \
struct { \
    qual type *tqe_next; /* next element */ \
    qual type *qual *tqe_prev; /* address of previous next element */ \
}

#define TAILQ_ENTRY(type) _TAILQ_ENTRY(struct type,)

/*
 * Tail queue access methods.
 */

#define TAILQ_FIRST(head) ((head)->tqh_first)
#define TAILQ_END(head) (NULL)
#define TAILQ_NEXT(elm, field) ((elm)->field.tqe_next)
#define TAILQ_LAST(head, headname) \
    (((struct headname *) (void *) ((head)->tqh_last))->tqh_last)
#define TAILQ_PREV(elm, headname, field) \
    (((struct headname *) (void *) ((elm)->field.tqe_prev))->tqh_last)
#define TAILQ_EMPTY(head) (TAILQ_FIRST(head) == TAILQ_END(head))

#define TAILQ_FOREACH(var, head, field) \
    for ((var) = ((head)->tqh_first); \
        (var) != TAILQ_END(head); \
        (var) = ((var)->field.tqe_next))

#define TAILQ_FOREACH_SAFE(var, head, field, next) \
    for ((var) = ((head)->tqh_first); \
        (var) != TAILQ_END(head) && \
        ((next) = TAILQ_NEXT(var, field), 1); (var) = (next))

#define TAILQ_FOREACH_REVERSE(var, head, headname, field) \
    for ((var) = TAILQ_LAST((head), headname); \
        (var) != TAILQ_END(head); \
        (var) = TAILQ_PREV((var), headname, field))

```

```

#define TAILQ_FOREACH_REVERSE_SAFE(var, head, headname, field, prev) \
for ((var) = TAILQ_LAST((head), headname); \
    (var) != TAILQ_END(head) && \
    ((prev) = TAILQ_PREV((var), headname, field), 1); (var) = (prev))

/*
 * Tail queue functions.
 */
#if defined(QUEUEDEBUG)
#define QUEUEDEBUG_TAILQ_INSERT_HEAD(head, \
    elm, field) \
    if ((head)->tqh_first && \
        (head)->tqh_first->field.tqe_prev != &(head)->tqh_first) \
        QUEUEDEBUG_ABORT("TAILQ_INSERT_HEAD %p %s:%d", (head), \
            __FILE__, __LINE__);
#define QUEUEDEBUG_TAILQ_INSERT_TAIL(head, elm, field) \
    if (*(head)->tqh_last != NULL) \
        QUEUEDEBUG_ABORT("TAILQ_INSERT_TAIL %p %s:%d", (head), \
            __FILE__, __LINE__);
#define QUEUEDEBUG_TAILQ_OP(elm, field) \
    if ((elm)->field.tqe_next && \
        (elm)->field.tqe_next->field.tqe_prev != \
        &(elm)->field.tqe_next) \
        QUEUEDEBUG_ABORT("TAILQ_* forw %p %s:%d", (elm), \
            __FILE__, __LINE__); \
    if (*(elm)->field.tqe_prev != (elm)) \
        QUEUEDEBUG_ABORT("TAILQ_* back %p %s:%d", (elm), \
            __FILE__, __LINE__);
#define QUEUEDEBUG_TAILQ_PREREMOVE(head, elm, field) \
    if ((elm)->field.tqe_next == NULL && \
        (head)->tqh_last != &(elm)->field.tqe_next) \
        QUEUEDEBUG_ABORT("TAILQ_PREREMOVE head %p elm %p %s:%d", \
            (head), (elm), __FILE__, \
            __LINE__);
#define QUEUEDEBUG_TAILQ_POSTREMOVE(elm, field) \
    (elm)->field.tqe_next = (void *)1L; \
    (elm)->field.tqe_prev = (void *)1L;
#else
#define QUEUEDEBUG_TAILQ_INSERT_HEAD(head, elm, field)
#define QUEUEDEBUG_TAILQ_INSERT_TAIL(head, elm, field)
#define QUEUEDEBUG_TAILQ_OP(elm, field)
#define QUEUEDEBUG_TAILQ_PREREMOVE(head, elm, field)
#define QUEUEDEBUG_TAILQ_POSTREMOVE(elm, field)
#endif

#define TAILQ_INIT(head) do { \
    (head)->tqh_first = TAILQ_END(head); \

```

```

(head)->tqh_last = &(head)->tqh_first; \
} while (/*CONSTCOND*/0)

#define TAILQ_INSERT_HEAD(head, elm, field) do { \
    QUEUEDEBDEBUG_TAILQ_INSERT_HEAD((head), (elm), field) \
    if (((elm)->field.tqe_next = (head)->tqh_first) != TAILQ_END(head)) \
        (head)->tqh_first->field.tqe_prev = \
            &(elm)->field.tqe_next; \
    else \
        (head)->tqh_last = &(elm)->field.tqe_next; \
        (head)->tqh_first = (elm); \
        (elm)->field.tqe_prev = &(head)->tqh_first; \
    } while (/*CONSTCOND*/0)

#define TAILQ_INSERT_TAIL(head, \
    elm, field) do { \
        QUEUEDEBDEBUG_TAILQ_INSERT_TAIL((head), (elm), field) \
        (elm)->field.tqe_next = TAILQ_END(head); \
        (elm)->field.tqe_prev = (head)->tqh_last; \
        *(head)->tqh_last = (elm); \
        (head)->tqh_last = &(elm)->field.tqe_next; \
    } while (/*CONSTCOND*/0)

#define TAILQ_INSERT_AFTER(head, listelm, elm, field) do { \
    QUEUEDEBDEBUG_TAILQ_OP((listelm), field) \
    if (((elm)->field.tqe_next = (listelm)->field.tqe_next) != \
        TAILQ_END(head)) \
        (elm)->field.tqe_next->field.tqe_prev = \
            &(elm)->field.tqe_next; \
    else \
        (head)->tqh_last = &(elm)->field.tqe_next; \
        (listelm)->field.tqe_next = (elm); \
        (elm)->field.tqe_prev = &(listelm)->field.tqe_next; \
    } while (/*CONSTCOND*/0)

#define TAILQ_INSERT_BEFORE(listelm, elm, field) do { \
    QUEUEDEBDEBUG_TAILQ_OP((listelm), field) \
    (elm)->field.tqe_prev = (listelm)->field.tqe_prev; \
    (elm)->field.tqe_next = (listelm); \
    *(listelm)->field.tqe_prev = (elm); \
    (listelm)->field.tqe_prev \
        = &(elm)->field.tqe_next; \
    } while (/*CONSTCOND*/0)

#define TAILQ_REMOVE(head, elm, field) do { \
    QUEUEDEBDEBUG_TAILQ_PREREMOVE((head), (elm), field) \
    QUEUEDEBDEBUG_TAILQ_OP((elm), field) \
    if (((elm)->field.tqe_next != TAILQ_END(head)) \

```



```

(elm)->field.tqe_next->field.tqe_prev = \
    (elm)->field.tqe_prev; \
else \
    (head)->tqh_last = (elm)->field.tqe_prev; \
    *(elm)->field.tqe_prev = (elm)->field.tqe_next; \
    QUEUEDEBUG_TAILQ_POSTREMOVE((elm), field); \
} while (/*CONSTCOND*/0)

#define TAILQ_REPLACE(head, elm, elm2, field) do { \
    if (((elm2)->field.tqe_next = (elm)->field.tqe_next) != \
        TAILQ_END(head)) \
        (elm2)->field.tqe_next->field.tqe_prev = \
            &(elm2)->field.tqe_next; \
    else \
        (head)->tqh_last = &(elm2)->field.tqe_next; \
        (elm2)->field.tqe_prev = (elm)->field.tqe_prev; \
        *(elm2)->field.tqe_prev = (elm2); \
    QUEUEDEBUG_TAILQ_POSTREMOVE((elm), \
        field); \
} while (/*CONSTCOND*/0)

#define TAILQ_CONCAT(head1, head2, field) do { \
    if (!TAILQ_EMPTY(head2)) { \
        *(head1)->tqh_last = (head2)->tqh_first; \
        (head2)->tqh_first->field.tqe_prev = (head1)->tqh_last; \
        (head1)->tqh_last = (head2)->tqh_last; \
        TAILQ_INIT((head2)); \
    } \
} while (/*CONSTCOND*/0)

/*
 * Singly-linked Tail queue declarations.
 */
#define STAILQ_HEAD(name, type) \
struct name { \
    struct type *stqh_first; /* first element */ \
    struct type **stqh_last; /* addr of last next element */ \
}

#define STAILQ_HEAD_INITIALIZER(head) \
{ NULL, &(head).stqh_first }

#define STAILQ_ENTRY(type) \
struct { \
    struct type *stqe_next; /* next element */ \
}

/*

```

```

* Singly-linked Tail queue access methods.
*/
#define STAILQ_FIRST(head) ((head)->stqh_first)
#define STAILQ_END(head) NULL
#define STAILQ_NEXT(elm, field) ((elm)->field.stqe_next)
#define STAILQ_EMPTY(head) (STAILQ_FIRST(head)
== STAILQ_END(head))

/*
* Singly-linked Tail queue functions.
*/
#define STAILQ_INIT(head) do { \
    (head)->stqh_first = NULL; \
    (head)->stqh_last = &(head)->stqh_first; \
} while (/*CONSTCOND*/0)

#define STAILQ_INSERT_HEAD(head, elm, field) do { \
    if (((elm)->field.stqe_next = (head)->stqh_first) == NULL) \
        (head)->stqh_last = &(elm)->field.stqe_next; \
    (head)->stqh_first = (elm); \
} while (/*CONSTCOND*/0)

#define STAILQ_INSERT_TAIL(head, elm, field) do { \
    (elm)->field.stqe_next = NULL; \
    *(head)->stqh_last = (elm); \
    (head)->stqh_last = &(elm)->field.stqe_next; \
} while (/*CONSTCOND*/0)

#define STAILQ_INSERT_AFTER(head, listelm, elm, field) do { \
    if (((elm)->field.stqe_next = (listelm)->field.stqe_next) == NULL) \
        (head)->stqh_last = &(elm)->field.stqe_next; \
    (listelm)->field.stqe_next = (elm); \
} while (/*CONSTCOND*/0)

#define STAILQ_REMOVE_HEAD(head, field) do { \
    if (((head)->stqh_first = (head)->stqh_first->field.stqe_next) \
        == NULL) \
        (head)->stqh_last = &(head)->stqh_first; \
} while (/*CONSTCOND*/0)

#define STAILQ_REMOVE(head, elm, type, field) do { \
    if ((head)->stqh_first == (elm)) { \
        STAILQ_REMOVE_HEAD((head), field); \
    } else { \
        struct type *curelm = (head)->stqh_first; \
        while (curelm->field.stqe_next != (elm)) \
            curelm = curelm->field.stqe_next; \
        if ((curelm->field.stqe_next = \

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```

    curelm->field.stqe_next->field.stqe_next) == NULL) \
    (head)->stqh_last = &(curelm)->field.stqe_next; \
} \
} while (/*CONSTCOND*/0)

#define STAILQ_FOREACH(var, head, field) \
for ((var) = ((head)->stqh_first); \
     (var); \
     (var) = ((var)->field.stqe_next))

#define STAILQ_FOREACH_SAFE(var, head, field, tvar) \
for ((var) = STAILQ_FIRST((head)); \
     (var) && ((tvar) = STAILQ_NEXT((var), field), 1); \
     (var) = (tvar))

#define STAILQ_CONCAT(head1, head2) do { \
if (!STAILQ_EMPTY((head2))) { \
    *(head1)->stqh_last \
    = (head2)->stqh_first; \
    (head1)->stqh_last = (head2)->stqh_last; \
    STAILQ_INIT((head2)); \
} \
} while (/*CONSTCOND*/0)

#define STAILQ_LAST(head, type, field) \
(STAILQ_EMPTY((head)) ? \
    NULL : \
    ((struct type *) (void *) \
    ((char *) ((head)->stqh_last) - offsetof(struct type, field))))

#ifdef _KERNEL
/*
 * Circular queue definitions. Do not use. We still keep the macros
 * for compatibility but because of pointer aliasing issues their use
 * is discouraged!
 */

/*
 * __launder_type(): We use this ugly hack to work around the the compiler
 * noticing that two types may not alias each other and elide tests in code.
 * We hit this in the CIRCLEQ macros when comparing 'struct name *' and
 * 'struct type *' (see CIRCLEQ_HEAD()). Modern compilers (such as GCC
 * 4.8) declare these comparisons as always false, causing the code to
 * not run as designed.
 *
 * This hack is only to be used for comparisons and thus can be fully const.
 */

```

```

* Do not use for assignment.
*
* If we ever choose to change the ABI of the CIRCLEQ macros, we could fix
* this by changing the head/tail sentinel values, but see the note above
* this one.
*/
static __inline const void * __launder_type(const void *);
static __inline const void *
__launder_type(const void *__x)
{
    __asm __volatile("" : "+r" (__x));
    return __x;
}

#if defined(QUEUEDEBUG)
#define QUEUEDEBUG_CIRCLEQ_HEAD(head, field) \
    if ((head)->cqh_first != CIRCLEQ_ENDC(head) && \
        (head)->cqh_first->field.cqe_prev != CIRCLEQ_ENDC(head)) \
        QUEUEDEBUG_ABORT("CIRCLEQ head forw %p %s:%d", (head), \
            __FILE__, __LINE__); \
    if ((head)->cqh_last != CIRCLEQ_ENDC(head) && \
        (head)->cqh_last->field.cqe_next != CIRCLEQ_ENDC(head)) \
        QUEUEDEBUG_ABORT("CIRCLEQ head back %p %s:%d", (head), \
            __FILE__, __LINE__);
#define QUEUEDEBUG_CIRCLEQ_ELM(head, elm, field) \
    if ((elm)->field.cqe_next == CIRCLEQ_ENDC(head)) { \
        if ((head)->cqh_last != (elm)) \
            QUEUEDEBUG_ABORT("CIRCLEQ \
elm last %p %s:%d", \
                (elm), __FILE__, __LINE__); \
    } else { \
        if ((elm)->field.cqe_next->field.cqe_prev != (elm)) \
            QUEUEDEBUG_ABORT("CIRCLEQ elm forw %p %s:%d", \
                (elm), __FILE__, __LINE__); \
    } \
    if ((elm)->field.cqe_prev == CIRCLEQ_ENDC(head)) { \
        if ((head)->cqh_first != (elm)) \
            QUEUEDEBUG_ABORT("CIRCLEQ elm first %p %s:%d", \
                (elm), __FILE__, __LINE__); \
    } else { \
        if ((elm)->field.cqe_prev->field.cqe_next != (elm)) \
            QUEUEDEBUG_ABORT("CIRCLEQ elm prev %p %s:%d", \
                (elm), __FILE__, __LINE__); \
    }
#define QUEUEDEBUG_CIRCLEQ_POSTREMOVE(elm, field) \
    (elm)->field.cqe_next = (void *)1L; \
    (elm)->field.cqe_prev = (void *)1L;
#else

```

```

#define QUEUEDEBUG_CIRCLEQ_HEAD(head, field)
#define QUEUEDEBUG_CIRCLEQ_ELM(head, elm, field)
#define QUEUEDEBUG_CIRCLEQ_POSTREMOVE(elm, field)
#endif

#define CIRCLEQ_HEAD(name, type) \
struct name { \
    struct type *cqh_first; /* \
    first element */ \
    struct type *cqh_last; /* last element */ \
}

#define CIRCLEQ_HEAD_INITIALIZER(head) \
{ CIRCLEQ_END(&head), CIRCLEQ_END(&head) }

#define CIRCLEQ_ENTRY(type) \
struct { \
    struct type *cqe_next; /* next element */ \
    struct type *cqe_prev; /* previous element */ \
}

/*
 * Circular queue functions.
 */
#define CIRCLEQ_INIT(head) do { \
    (head)->cqh_first = CIRCLEQ_END(head); \
    (head)->cqh_last = CIRCLEQ_END(head); \
} while (/*CONSTCOND*/0)

#define CIRCLEQ_INSERT_AFTER(head, listelm, elm, field) do { \
    QUEUEDEBUG_CIRCLEQ_HEAD((head), field) \
    QUEUEDEBUG_CIRCLEQ_ELM((head), (listelm), field) \
    (elm)->field.cqe_next = (listelm)->field.cqe_next; \
    (elm)->field.cqe_prev = (listelm); \
    if ((listelm)->field.cqe_next == CIRCLEQ_ENDC(head)) \
        (head)->cqh_last = (elm); \
    else \
        (listelm)->field.cqe_next->field.cqe_prev = (elm); \
    (listelm)->field.cqe_next = (elm); \
} while (/*CONSTCOND*/0)

#define CIRCLEQ_INSERT_BEFORE(head, \
listelm, elm, field) do { \
    QUEUEDEBUG_CIRCLEQ_HEAD((head), field) \
    QUEUEDEBUG_CIRCLEQ_ELM((head), (listelm), field) \
    (elm)->field.cqe_next = (listelm); \
    (elm)->field.cqe_prev = (listelm)->field.cqe_prev; \
    if ((listelm)->field.cqe_prev == CIRCLEQ_ENDC(head)) \

```

```

(head)->cqh_first = (elm); \
else \
(listelm)->field.cqe_prev->field.cqe_next = (elm); \
(listelm)->field.cqe_prev = (elm); \
} while (/*CONSTCOND*/0)

#define CIRCLEQ_INSERT_HEAD(head, elm, field) do { \
    QUEUEDEBUG_CIRCLEQ_HEAD((head), field) \
    (elm)->field.cqe_next = (head)->cqh_first; \
    (elm)->field.cqe_prev = CIRCLEQ_END(head); \
    if ((head)->cqh_last == CIRCLEQ_ENDC(head)) \
        (head)->cqh_last = (elm); \
    else \
        (head)->cqh_first->field.cqe_prev = (elm); \
    (head)->cqh_first = (elm); \
} while (/*CONSTCOND*/0)

#define CIRCLEQ_INSERT_TAIL(head, elm, field) do { \
    QUEUEDEBUG_CIRCLEQ_HEAD((head), field) \
    (elm)->field.cqe_next \
    = CIRCLEQ_END(head); \
    (elm)->field.cqe_prev = (head)->cqh_last; \
    if ((head)->cqh_first == CIRCLEQ_ENDC(head)) \
        (head)->cqh_first = (elm); \
    else \
        (head)->cqh_last->field.cqe_next = (elm); \
    (head)->cqh_last = (elm); \
} while (/*CONSTCOND*/0)

#define CIRCLEQ_REMOVE(head, elm, field) do { \
    QUEUEDEBUG_CIRCLEQ_HEAD((head), field) \
    QUEUEDEBUG_CIRCLEQ_ELM((head), (elm), field) \
    if ((elm)->field.cqe_next == CIRCLEQ_ENDC(head)) \
        (head)->cqh_last = (elm)->field.cqe_prev; \
    else \
        (elm)->field.cqe_next->field.cqe_prev = \
            (elm)->field.cqe_prev; \
    if ((elm)->field.cqe_prev == CIRCLEQ_ENDC(head)) \
        (head)->cqh_first = (elm)->field.cqe_next; \
    else \
        (elm)->field.cqe_prev->field.cqe_next = \
            (elm)->field.cqe_next; \
    QUEUEDEBUG_CIRCLEQ_POSTREMOVE((elm), field) \
} while (/*CONSTCOND*/0)

#define CIRCLEQ_FOREACH(var, head, field) \
for ((var) = ((head)->cqh_first); \
    (var) != CIRCLEQ_ENDC(head); \

```

```

(var)
= ((var)->field.cqe_next))

#define CIRCLEQ_FOREACH_REVERSE(var, head, field) \
for ((var) = ((head)->cqh_last); \
     (var) != CIRCLEQ_ENDC(head); \
     (var) = ((var)->field.cqe_prev))

/*
 * Circular queue access methods.
 */
#define CIRCLEQ_FIRST(head) ((head)->cqh_first)
#define CIRCLEQ_LAST(head) ((head)->cqh_last)
/* For comparisons */
#define CIRCLEQ_ENDC(head) (__launter_type(head))
/* For assignments */
#define CIRCLEQ_END(head) ((void *)(head))
#define CIRCLEQ_NEXT(elm, field) ((elm)->field.cqe_next)
#define CIRCLEQ_PREV(elm, field) ((elm)->field.cqe_prev)
#define CIRCLEQ_EMPTY(head) \
    (CIRCLEQ_FIRST(head) == CIRCLEQ_ENDC(head))

#define CIRCLEQ_LOOP_NEXT(head, elm, field) \
    (((elm)->field.cqe_next == CIRCLEQ_ENDC(head)) \
     ? ((head)->cqh_first) \
     : (elm)->field.cqe_next)
#define CIRCLEQ_LOOP_PREV(head, elm, field) \
    (((elm)->field.cqe_prev == CIRCLEQ_ENDC(head)) \
     ? ((head)->cqh_last) \
     : \
     (elm)->field.cqe_prev)
#endif /* !_KERNEL */

#endif /* !_SYS_QUEUE_H_ */
#ifndef _SYS_CDEFS_H_
#define _SYS_CDEFS_H_

#warning usage of non-standard #include <sys/cdefs.h> is deprecated

#undef __P
#undef __PMT

#define __P(args) args
#define __PMT(args) args

#define __CONCAT(x,y) x ## y
#define __STRING(x) #x

```

```

#ifdef __cplusplus
# define __BEGIN_DECLS extern "C" {
# define __END_DECLS }
#else
# define __BEGIN_DECLS
# define __END_DECLS
#endif

#if defined(__GNUC__) && !defined(__cplusplus)
# define __THROW __attribute__((__nothrow__))
# define __NTH(fct) __attribute__((__nothrow__)) fct
#else
# define __THROW
# define __NTH(fct) fct
#endif

#endif /* _SYS_CDEFS_H_ */
# Contributor: Fabian Affolter <fabian@affolter-engineering.ch>
# Maintainer: Fabian Affolter <fabian@affolter-engineering.ch>
pkgname=py3-flake8-copyright
_pkgname=flake8-copyright
pkgver=0.2.4
pkgrel=3
pkgdesc="Extension for flake8 which checks for copyrights"
options="!check" # No testsuite
url="https://github.com/savoirfairelinux/flake8-copyright"
arch="noarch"
license="MIT"
depends="py3-flake8 py3-setuptools"
makedepends="py3-gpep517 py3-wheel"
subpackages="$pkgname-pyc"
source="https://files.pythonhosted.org/packages/source/${_pkgname:0:1}/${_pkgname}/${_pkgname}-${pkgver}.tar.gz"
builddir="$srcdir"/$_pkgname-$pkgver

replaces="py-flake8-copyright" # Backwards compatibility
provides="py-flake8-copyright=$pkgver-r$pkgrel" # Backwards compatibility

build() {
    gpep517 build-wheel \
        --wheel-dir .dist \
        --output-fd 3 3>&1 >&2
}

package() {
    gpep517 install-wheel --destdir "$pkgdir" \
        .dist/*.whl
}

```



```
sha512sums="
a6ab47e1bb715618f075c51f398e18180404871b3b0faf1c2d30701d5203db6bc23771bf22ffb5bafcd8ee856b9b64237
b316bd503ae7dceed6ca284ccd5a74d
flake8-copyright-0.2.4.tar.gz
"
(The MIT License)
```

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```
/* $NetBSD: tree.h,v 1.20 2013/09/14 13:20:45 joerg Exp $ */
```

```
/* $OpenBSD: tree.h,v 1.13 2011/07/09 00:19:45 pirofti Exp $ */
```

```
/* Modified by Void Linux. */
```

```
/*
```

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 * THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.
 */

```
#ifndef _SYS_TREE_H_
#define _SYS_TREE_H_
```

```
#ifdef __GNUC__
#define __GNUC_PREREQ__(x, y) \
  ((__GNUC__ == (x) && __GNUC_MINOR__ >= (y)) || \
   (__GNUC__ > (x)))
#else
#define __GNUC_PREREQ__(x, y) 0
#endif
```

```
#if __GNUC_PREREQ__(2, 7) || defined(__lint__)
#define _sys_tree_h_unused __attribute__((__unused__))
#else
#define _sys_tree_h_unused /* delete */
#endif
```

```
/*
 * This file defines data structures for different types of trees:
 * splay trees and red-black trees.
 *
 * A splay tree is a self-organizing
 * data structure. Every operation
 * on the tree causes a splay to happen. The splay moves the requested
 * node to the root of the tree and partly rebalances it.
 *
 * This has the benefit that request locality causes faster lookups as
 * the requested nodes move to the top of the tree. On the other hand,
 * every lookup causes memory writes.
 *
 * The Balance Theorem bounds the total access time for m operations
 * and n inserts on an initially empty tree as  $O((m + n)\lg n)$ . The
 * amortized cost for a sequence of m accesses to a splay tree is  $O(\lg n)$ ;
 *
 * A red-black tree is a binary search tree with the node color as an
 * extra attribute. It fulfills a set of conditions:
 * - every search path from the root to a leaf consists of the
 *   same number of black nodes,
 * - each red node (except for the root) has a black parent,
```

* - each leaf node is black.

*

* Every operation on a red-black tree is bounded as $O(\lg n)$.

* The maximum height of a red-black tree is $2\lg(n+1)$.

*/

```
#define SPLAY_HEAD(name, type) \
struct name { \
    struct type *sph_root; /* root of the tree */ \
}
```

```
#define SPLAY_INITIALIZER(root) \
{ NULL }
```

```
#define SPLAY_INIT(root) do { \
    (root)->sph_root = NULL; \
} while (/*CONSTCOND*/ 0)
```

```
#define SPLAY_ENTRY(type) \
struct { \
    struct type *spe_left; /* left element */ \
    struct type *spe_right; /* right element */ \
}
```

```
#define SPLAY_LEFT(elm, field) (elm)->field.spe_left
#define SPLAY_RIGHT(elm, field) (elm)->field.spe_right
#define SPLAY_ROOT(head) (head)->sph_root
#define SPLAY_EMPTY(head) (SPLAY_ROOT(head) == NULL)
```

```
/* SPLAY_ROTATE_{LEFT,RIGHT} expect that tmp hold SPLAY_{RIGHT,LEFT} */
#define SPLAY_ROTATE_RIGHT(head, tmp, field) do { \
    SPLAY_LEFT((head)->sph_root, field) = SPLAY_RIGHT(tmp, field); \
    SPLAY_RIGHT(tmp, field) = (head)->sph_root; \
    (head)->sph_root = tmp; \
} while (/*CONSTCOND*/ 0)
```

```
#define SPLAY_ROTATE_LEFT(head, tmp, field) do { \
    SPLAY_RIGHT((head)->sph_root, \
    field) = SPLAY_LEFT(tmp, field); \
    SPLAY_LEFT(tmp, field) = (head)->sph_root; \
    (head)->sph_root = tmp; \
} while (/*CONSTCOND*/ 0)
```

```
#define SPLAY_LINKLEFT(head, tmp, field) do { \
    SPLAY_LEFT(tmp, field) = (head)->sph_root; \
    tmp = (head)->sph_root; \
    (head)->sph_root = SPLAY_LEFT((head)->sph_root, field); \
} while (/*CONSTCOND*/ 0)
```

```

#define SPLAY_LINKRIGHT(head, tmp, field) do { \
    SPLAY_RIGHT(tmp, field) = (head)->sph_root; \
    tmp = (head)->sph_root; \
    (head)->sph_root = SPLAY_RIGHT((head)->sph_root, field); \
} while (/*CONSTCOND*/ 0)

#define SPLAY_ASSEMBLE(head, node, left, right, field) do { \
    SPLAY_RIGHT(left, field) = SPLAY_LEFT((head)->sph_root, field); \
    SPLAY_LEFT(right, field) = SPLAY_RIGHT((head)->sph_root, field); \
    SPLAY_LEFT((head)->sph_root, field) = SPLAY_RIGHT(node, field); \
    SPLAY_RIGHT((head)->sph_root, field) = SPLAY_LEFT(node, field); \
} while (/*CONSTCOND*/ 0)

```

/* Generates prototypes and inline functions */

```

#define
    SPLAY_PROTOTYPE(name, type, field, cmp) \
void name##_SPLAY(struct name *, struct type *); \
void name##_SPLAY_MINMAX(struct name *, int); \
struct type *name##_SPLAY_INSERT(struct name *, struct type *); \
struct type *name##_SPLAY_REMOVE(struct name *, struct type *); \
\
/* Finds the node with the same key as elm */ \
static __inline struct type * \
name##_SPLAY_FIND(struct name *head, struct type *elm) \
{ \
    if (SPLAY_EMPTY(head)) \
        return(NULL); \
    name##_SPLAY(head, elm); \
    if ((cmp)(elm, (head)->sph_root) == 0) \
        return (head->sph_root); \
    return (NULL); \
} \
\
static __inline _sys_tree_h_unused struct type * \
name##_SPLAY_NEXT(struct name *head, struct type *elm) \
{ \
    name##_SPLAY(head, elm); \
    if (SPLAY_RIGHT(elm, field) != NULL) { \
        elm = SPLAY_RIGHT(elm, field); \
        while (SPLAY_LEFT(elm, field) != NULL) { \
            elm = SPLAY_LEFT(elm, field); \
        } \
    } \
    else \
        elm = NULL; \
    return (elm); \
}

```

```

} \
\
static _sys_tree_h_unused __inline struct type * \
name##_SPLAY_MIN_MAX(struct name *head, int val) \
{ \
    name##_SPLAY_MINMAX(head, val); \
    return (SPLAY_ROOT(head)); \
}

/* Main splay operation.
 * Moves node close to the key of elm to top
 */
#define SPLAY_GENERATE(name, type, field, cmp) \
struct type * \
name##_SPLAY_INSERT(struct name *head, struct type *elm) \
{ \
    if (SPLAY_EMPTY(head)) { \
        SPLAY_LEFT(elm, field) = SPLAY_RIGHT(elm, field) = NULL; \
    } else { \
        int __comp; \
        name##_SPLAY(head, elm); \
        __comp = (cmp)(elm, (head)->sph_root); \
        if (__comp < 0) { \
            SPLAY_LEFT(elm, field) = SPLAY_LEFT((head)->sph_root, field); \
            SPLAY_RIGHT(elm, field) = (head)->sph_root; \
            SPLAY_LEFT((head)->sph_root, field) = NULL; \
        } else if (__comp > 0) { \
            SPLAY_RIGHT(elm, \
field) = SPLAY_RIGHT((head)->sph_root, field); \
            SPLAY_LEFT(elm, field) = (head)->sph_root; \
            SPLAY_RIGHT((head)->sph_root, field) = NULL; \
        } else \
            return ((head)->sph_root); \
    } \
    (head)->sph_root = (elm); \
    return (NULL); \
} \
\
struct type * \
name##_SPLAY_REMOVE(struct name *head, struct type *elm) \
{ \
    struct type *__tmp; \
    if (SPLAY_EMPTY(head)) \
        return (NULL); \
    name##_SPLAY(head, elm); \
    if ((cmp)(elm, (head)->sph_root) == 0) { \
        if (SPLAY_LEFT((head)->sph_root, field) == NULL) { \
            (head)->sph_root = SPLAY_RIGHT((head)->sph_root, field); \

```

```

    } else { \
        __tmp = SPLAY_RIGHT((head)->sph_root, field); \
        (head)->sph_root = SPLAY_LEFT((head)->sph_root, field);\
        name##_SPLAY(head, elm); \
        SPLAY_RIGHT((head)->sph_root, field) = __tmp; \
    } \
    return (elm); \
} \
return (NULL); \
} \
\
void \
name##_SPLAY(struct
name *head, struct type *elm) \
{ \
    struct type __node, *__left, *__right, *__tmp; \
    int __comp; \
    \
    SPLAY_LEFT(&__node, field) = SPLAY_RIGHT(&__node, field) = NULL;\
    __left = __right = &__node; \
    \
    while ((__comp = (cmp)(elm, (head)->sph_root)) != 0) { \
        if (__comp < 0) { \
            __tmp = SPLAY_LEFT((head)->sph_root, field); \
            if (__tmp == NULL) \
                break; \
            if ((cmp)(elm, __tmp) < 0){ \
                SPLAY_ROTATE_RIGHT(head, __tmp, field); \
                if (SPLAY_LEFT((head)->sph_root, field) == NULL)\
                    break; \
            } \
            SPLAY_LINKLEFT(head, __right, field); \
        } else if (__comp > 0) { \
            __tmp = SPLAY_RIGHT((head)->sph_root, field); \
            if (__tmp == NULL) \
                break; \
            if ((cmp)(elm, __tmp) > 0){ \
                SPLAY_ROTATE_LEFT(head, __tmp, field); \
                if (SPLAY_RIGHT((head)->sph_root, field) == NULL)\
                    break; \
            } \
            SPLAY_LINKRIGHT(head, __left, field); \
        } \
    } \
    \
    SPLAY_ASSEMBLE(head,
    &__node, __left, __right, field); \
} \
\

```

```

/* Splay with either the minimum or the maximum element \
* Used to find minimum or maximum element in tree. \
*/ \
void name##_SPLAY_MINMAX(struct name *head, int __comp) \
{ \
    struct type __node, *__left, *__right, *__tmp; \
    \
    SPLAY_LEFT(&__node, field) = SPLAY_RIGHT(&__node, field) = NULL;\
    __left = __right = &__node; \
    \
    while (1) { \
        if (__comp < 0) { \
            __tmp = SPLAY_LEFT((head)->sph_root, field);\
            if (__tmp == NULL) \
                break; \
            if (__comp < 0){ \
                SPLAY_ROTATE_RIGHT(head, __tmp, field);\
                if (SPLAY_LEFT((head)->sph_root, field) == NULL)\
                    break; \
            } \
            SPLAY_LINKLEFT(head, __right, field); \
        } else if (__comp > 0) { \
            __tmp = SPLAY_RIGHT((head)->sph_root, field);\
            if (__tmp == NULL) \
                break; \
            if (__comp > 0) { \
                SPLAY_ROTATE_LEFT(head, __tmp, field);\
                if (SPLAY_RIGHT((head)->sph_root, \
field) == NULL)\
                    break; \
            } \
            SPLAY_LINKRIGHT(head, __left, field); \
        } \
    } \
    SPLAY_ASSEMBLE(head, &__node, __left, __right, field); \
}

#define SPLAY_NEGINF -1
#define SPLAY_INF 1

#define SPLAY_INSERT(name, x, y) name##_SPLAY_INSERT(x, y)
#define SPLAY_REMOVE(name, x, y) name##_SPLAY_REMOVE(x, y)
#define SPLAY_FIND(name, x, y) name##_SPLAY_FIND(x, y)
#define SPLAY_NEXT(name, x, y) name##_SPLAY_NEXT(x, y)
#define SPLAY_MIN(name, x) (SPLAY_EMPTY(x) ? NULL \
    : name##_SPLAY_MIN_MAX(x, SPLAY_NEGINF))
#define SPLAY_MAX(name, x) (SPLAY_EMPTY(x) ? NULL \
    : name##_SPLAY_MIN_MAX(x, SPLAY_INF))

```

```

#define SPLAY_FOREACH(x, name, head) \
for ((x) = SPLAY_MIN(name, head); \
(x) != NULL; \
(x) = SPLAY_NEXT(name, head, x))

/* Macros that define a red-black tree */
#define RB_HEAD(name, type) \
struct name { \
    struct type *rbh_root; /* root of the tree */ \
}

#define RB_INITIALIZER(root) \
{ \
    NULL \
}

#define RB_INIT(root) do { \
    (root)->rbh_root = NULL; \
} while (/*CONSTCOND*/ 0)

#define RB_BLACK 0
#define RB_RED 1
#define RB_ENTRY(type) \
struct { \
    struct type *rbe_left; /* left element */ \
    struct type *rbe_right; /* right element */ \
    struct type *rbe_parent; /* parent element */ \
    int rbe_color; /* node color */ \
}

#define RB_LEFT(elm, field) (elm)->field.rbe_left
#define RB_RIGHT(elm, field) (elm)->field.rbe_right
#define RB_PARENT(elm, field) (elm)->field.rbe_parent
#define RB_COLOR(elm, field) (elm)->field.rbe_color
#define RB_ROOT(head) (head)->rbh_root
#define RB_EMPTY(head) (RB_ROOT(head) == NULL)

#define RB_SET(elm, parent, field) do { \
    RB_PARENT(elm, field) = parent; \
    RB_LEFT(elm, field) = RB_RIGHT(elm, field) = NULL; \
    RB_COLOR(elm, field) = RB_RED; \
} while (/*CONSTCOND*/ 0)

#define RB_SET_BLACKRED(black, red, field) do { \
    RB_COLOR(black, field) = RB_BLACK; \
    RB_COLOR(red, field) \
    = RB_RED; \
} while (/*CONSTCOND*/ 0)

```



```

#ifndef RB_AUGMENT
#define RB_AUGMENT(x) do { } while (/*CONSTCOND*/ 0)
#endif

#define RB_ROTATE_LEFT(head, elm, tmp, field) do { \
    (tmp) = RB_RIGHT(elm, field); \
    if ((RB_RIGHT(elm, field) = RB_LEFT(tmp, field)) != NULL) { \
        RB_PARENT(RB_LEFT(tmp, field), field) = (elm); \
    } \
    RB_AUGMENT(elm); \
    if ((RB_PARENT(tmp, field) = RB_PARENT(elm, field)) != NULL) { \
        if ((elm) == RB_LEFT(RB_PARENT(elm, field), field)) \
            RB_LEFT(RB_PARENT(elm, field), field) = (tmp); \
        else \
            RB_RIGHT(RB_PARENT(elm, field), field) = (tmp); \
    } else \
        (head)->rbh_root = (tmp); \
    RB_LEFT(tmp, field) = (elm); \
    RB_PARENT(elm, field) = (tmp); \
    RB_AUGMENT(tmp); \
    if ((RB_PARENT(tmp, field))) \
        RB_AUGMENT(RB_PARENT(tmp, field)); \
} while (/*CONSTCOND*/ 0)

#define RB_ROTATE_RIGHT(head, elm, tmp, field) do { \
    (tmp) = RB_LEFT(elm, field); \
    if ((RB_LEFT(elm, field) = RB_RIGHT(tmp, field)) \
        != NULL) { \
        RB_PARENT(RB_RIGHT(tmp, field), field) = (elm); \
    } \
    RB_AUGMENT(elm); \
    if ((RB_PARENT(tmp, field) = RB_PARENT(elm, field)) != NULL) { \
        if ((elm) == RB_LEFT(RB_PARENT(elm, field), field)) \
            RB_LEFT(RB_PARENT(elm, field), field) = (tmp); \
        else \
            RB_RIGHT(RB_PARENT(elm, field), field) = (tmp); \
    } else \
        (head)->rbh_root = (tmp); \
    RB_RIGHT(tmp, field) = (elm); \
    RB_PARENT(elm, field) = (tmp); \
    RB_AUGMENT(tmp); \
    if ((RB_PARENT(tmp, field))) \
        RB_AUGMENT(RB_PARENT(tmp, field)); \
} while (/*CONSTCOND*/ 0)

/* Generates prototypes and inline functions */
#define RB_PROTOTYPE(name, type, field, cmp) \

```

```

RB_PROTOTYPE_INTERNAL(name, type, field, cmp,)
#define RB_PROTOTYPE_STATIC(name, type, field, cmp) \
    RB_PROTOTYPE_INTERNAL(name, type, field, cmp, _sys_tree_h_unused static)
#define RB_PROTOTYPE_INTERNAL(name, type, field, cmp, attr) \
    attr void name##_RB_INSERT_COLOR(struct name *, struct
    type *); \
    attr void name##_RB_REMOVE_COLOR(struct name *, struct type *, struct type *);\
    attr struct type *name##_RB_REMOVE(struct name *, struct type *); \
    attr struct type *name##_RB_INSERT(struct name *, struct type *); \
    attr struct type *name##_RB_FIND(struct name *, struct type *); \
    attr struct type *name##_RB_NFIND(struct name *, struct type *); \
    attr struct type *name##_RB_NEXT(struct type *); \
    attr struct type *name##_RB_PREV(struct type *); \
    attr struct type *name##_RB_MINMAX(struct name *, int); \
    \

/* Main rb operation.
 * Moves node close to the key of elm to top
 */
#define RB_GENERATE(name, type, field, cmp) \
    RB_GENERATE_INTERNAL(name, type, field, cmp,)
#define RB_GENERATE_STATIC(name, type, field, cmp) \
    RB_GENERATE_INTERNAL(name, type, field, cmp, _sys_tree_h_unused static)
#define RB_GENERATE_INTERNAL(name, type, field, cmp, attr) \
    attr void \
    name##_RB_INSERT_COLOR(struct name *head, struct type *elm) \
    { \
        \
        struct type
        *parent, *gparent, *tmp; \
        while ((parent = RB_PARENT(elm, field)) != NULL && \
            RB_COLOR(parent, field) == RB_RED) { \
            \
            gparent = RB_PARENT(parent, field); \
            if (parent == RB_LEFT(gparent, field)) { \
                tmp = RB_RIGHT(gparent, field); \
                if (tmp && RB_COLOR(tmp, field) == RB_RED) { \
                    RB_COLOR(tmp, field) = RB_BLACK; \
                    RB_SET_BLACKRED(parent, gparent, field);\
                    elm = gparent; \
                    continue; \
                } \
            } \
            if (RB_RIGHT(parent, field) == elm) { \
                RB_ROTATE_LEFT(head, parent, tmp, field);\
                tmp = parent; \
                parent = elm; \
                elm = tmp; \
            } \
            RB_SET_BLACKRED(parent, gparent, field); \
            RB_ROTATE_RIGHT(head, gparent, tmp, field); \
    }

```

```

    } else { \
        tmp = RB_LEFT(gparent, field); \
        if (tmp && RB_COLOR(tmp, field) == RB_RED) { \
            RB_COLOR(tmp, field) = RB_BLACK; \
            RB_SET_BLACKRED(parent, gparent, field);\
            elm = gparent; \
            continue; \
        } \
        if (RB_LEFT(parent, field) == elm)
    { \
        RB_ROTATE_RIGHT(head, parent, tmp, field);\
        tmp = parent; \
        parent = elm; \
        elm = tmp; \
    } \
    RB_SET_BLACKRED(parent, gparent, field); \
    RB_ROTATE_LEFT(head, gparent, tmp, field);\
} \
} \
RB_COLOR(head->rbh_root, field) = RB_BLACK; \
} \
\
attr void \
name##_RB_REMOVE_COLOR(struct name *head, struct type *parent, struct type *elm) \
{ \
    struct type *tmp; \
    while ((elm == NULL || RB_COLOR(elm, field) == RB_BLACK) && \
        elm != RB_ROOT(head)) { \
        if (RB_LEFT(parent, field) == elm) { \
            tmp = RB_RIGHT(parent, field); \
            if (RB_COLOR(tmp, field) == RB_RED) { \
                RB_SET_BLACKRED(tmp, parent, field); \
                RB_ROTATE_LEFT(head, parent, tmp, field);\
                tmp = RB_RIGHT(parent, field); \
            } \
            if ((RB_LEFT(tmp, field) == NULL || \
                RB_COLOR(RB_LEFT(tmp, field), field) == RB_BLACK) && \
                (RB_RIGHT(tmp, field) == NULL || \
                RB_COLOR(RB_RIGHT(tmp, field), field) == RB_BLACK)) {\
                RB_COLOR(tmp, field) = RB_RED; \
                elm = parent; \
                parent = RB_PARENT(elm, field); \
            } else { \
                if (RB_RIGHT(tmp, field) == NULL || \
                    RB_COLOR(RB_RIGHT(tmp, field), field) == RB_BLACK) {\
                    struct type *oleft; \
                    if ((oleft = RB_LEFT(tmp, field)) \

```

```

    != NULL) \
    RB_COLOR(oleft, field) = RB_BLACK;\
    RB_COLOR(tmp, field) = RB_RED; \
    RB_ROTATE_RIGHT(head, tmp, oleft, field);\
    tmp = RB_RIGHT(parent, field); \
} \
RB_COLOR(tmp, field) = RB_COLOR(parent, field);\
RB_COLOR(parent, field) = RB_BLACK; \
if (RB_RIGHT(tmp, field)) \
    RB_COLOR(RB_RIGHT(tmp, field), field) = RB_BLACK;\
    RB_ROTATE_LEFT(head, parent, tmp, field);\
    elm = RB_ROOT(head); \
    break; \
} \
} else { \
    tmp = RB_LEFT(parent, field); \
    if (RB_COLOR(tmp, field) == RB_RED) { \
        RB_SET_BLACKRED(tmp, parent, field); \
        RB_ROTATE_RIGHT(head, parent, tmp, field);\
        tmp
= RB_LEFT(parent, field); \
    } \
    if ((RB_LEFT(tmp, field) == NULL || \
        RB_COLOR(RB_LEFT(tmp, field), field) == RB_BLACK) &&\
        (RB_RIGHT(tmp, field) == NULL || \
        RB_COLOR(RB_RIGHT(tmp, field), field) == RB_BLACK)) {\
        RB_COLOR(tmp, field) = RB_RED; \
        elm = parent; \
        parent = RB_PARENT(elm, field); \
    } else { \
        if (RB_LEFT(tmp, field) == NULL || \
            RB_COLOR(RB_LEFT(tmp, field), field) == RB_BLACK) {\
            struct type *oright; \
            if ((oright = RB_RIGHT(tmp, field)) \
                != NULL) \
                RB_COLOR(oright, field) = RB_BLACK;\
            RB_COLOR(tmp, field) = RB_RED; \
            RB_ROTATE_LEFT(head, tmp, oright, field);\
            tmp = RB_LEFT(parent, field); \
        } \
        RB_COLOR(tmp, field) = RB_COLOR(parent, field);\
        RB_COLOR(parent, field) = RB_BLACK; \
        if (RB_LEFT(tmp, field)) \
            RB_COLOR(RB_LEFT(tmp, field), field) = RB_BLACK;\
        RB_ROTATE_RIGHT(head, parent, tmp, field);\
        elm = RB_ROOT(head); \
        break; \
    } \
} \

```

```

    }    \
}    \
if
(elm)    \
    RB_COLOR(elm, field) = RB_BLACK; \
}    \
    \
attr struct type *    \
name##_RB_REMOVE(struct name *head, struct type *elm) \
{    \
    struct type *child, *parent, *old = elm; \
    int color;    \
    if (RB_LEFT(elm, field) == NULL) \
        child = RB_RIGHT(elm, field); \
    else if (RB_RIGHT(elm, field) == NULL) \
        child = RB_LEFT(elm, field); \
    else {    \
        struct type *left; \
        elm = RB_RIGHT(elm, field); \
        while ((left = RB_LEFT(elm, field)) != NULL) \
            elm = left; \
        child = RB_RIGHT(elm, field); \
        parent = RB_PARENT(elm, field); \
        color = RB_COLOR(elm, field); \
        if (child) \
            RB_PARENT(child, field) = parent; \
        if (parent) {    \
            if (RB_LEFT(parent, field) == elm) \
                RB_LEFT(parent, field) = child; \
            else \
                RB_RIGHT(parent, field) = child; \
            RB_AUGMENT(parent); \
        } else \
            RB_ROOT(head)
    = child; \
    if (RB_PARENT(elm, field) == old) \
        parent = elm; \
    (elm)->field = (old)->field; \
    if (RB_PARENT(old, field)) { \
        if (RB_LEFT(RB_PARENT(old, field), field) == old)\
            RB_LEFT(RB_PARENT(old, field), field) = elm;\
        else \
            RB_RIGHT(RB_PARENT(old, field), field) = elm;\
        RB_AUGMENT(RB_PARENT(old, field)); \
    } else \
        RB_ROOT(head) = elm; \
    RB_PARENT(RB_LEFT(old, field), field) = elm; \
    if (RB_RIGHT(old, field)) \

```

```

    RB_PARENT(RB_RIGHT(old, field), field) = elm; \
    if (parent) { \
        left = parent; \
        do { \
            RB_AUGMENT(left); \
        } while ((left = RB_PARENT(left, field)) != NULL); \
    } \
    goto color; \
} \
parent = RB_PARENT(elm, field); \
color = RB_COLOR(elm, field); \
if (child) \
    RB_PARENT(child, field) = parent; \
if (parent) { \
    if (RB_LEFT(parent, field) == elm) \
        RB_LEFT(parent, field) = child; \
    else \
        RB_RIGHT(parent, \
field) = child; \
    RB_AUGMENT(parent); \
} else \
    RB_ROOT(head) = child; \
color: \
if (color == RB_BLACK) \
    name##_RB_REMOVE_COLOR(head, parent, child); \
return (old); \
} \
\
/* Inserts a node into the RB tree */ \
attr struct type * \
name##_RB_INSERT(struct name *head, struct type *elm) \
{ \
    struct type *tmp; \
    struct type *parent = NULL; \
    int comp = 0; \
    tmp = RB_ROOT(head); \
    while (tmp) { \
        parent = tmp; \
        comp = (cmp)(elm, parent); \
        if (comp < 0) \
            tmp = RB_LEFT(tmp, field); \
        else if (comp > 0) \
            tmp = RB_RIGHT(tmp, field); \
        else \
            return (tmp); \
    } \
    RB_SET(elm, parent, field); \
    if (parent != NULL) { \

```

```

    if (comp < 0)    \
        RB_LEFT(parent, field) = elm; \
    else            \
        RB_RIGHT(parent, field) = elm; \
    RB_AUGMENT(parent); \
} else            \
    RB_ROOT(head) = elm; \
name##_RB_INSERT_COLOR(head,
elm); \
return (NULL); \
} \
\
/* Finds the node with the same key as elm */ \
attr struct type * \
name##_RB_FIND(struct name *head, struct type *elm) \
{ \
    struct type *tmp = RB_ROOT(head); \
    int comp; \
    while (tmp) { \
        comp = cmp(elm, tmp); \
        if (comp < 0) \
            tmp = RB_LEFT(tmp, field); \
        else if (comp > 0) \
            tmp = RB_RIGHT(tmp, field); \
        else \
            return (tmp); \
    } \
    return (NULL); \
} \
\
/* Finds the first node greater than or equal to the search key */ \
attr struct type * \
name##_RB_NFIND(struct name *head, struct type *elm) \
{ \
    struct type *tmp = RB_ROOT(head); \
    struct type *res = NULL; \
    int comp; \
    while (tmp) { \
        comp = cmp(elm, tmp); \
        if (comp < 0) { \
            res = tmp; \
            tmp = RB_LEFT(tmp, field); \
        } \
        else if (comp > 0) \
            tmp = \
RB_RIGHT(tmp, field); \
        else \
            return (tmp); \
    } \
}

```

```

    } \
    return (res); \
} \
\
/* ARGSUSED */ \
attr struct type * \
name##_RB_NEXT(struct type *elm) \
{ \
    if (RB_RIGHT(elm, field)) { \
        elm = RB_RIGHT(elm, field); \
        while (RB_LEFT(elm, field)) \
            elm = RB_LEFT(elm, field); \
    } else { \
        if (RB_PARENT(elm, field) && \
            (elm == RB_LEFT(RB_PARENT(elm, field), field))) \
            elm = RB_PARENT(elm, field); \
        else { \
            while (RB_PARENT(elm, field) && \
                (elm == RB_RIGHT(RB_PARENT(elm, field), field))) \
                elm = RB_PARENT(elm, field); \
            elm = RB_PARENT(elm, field); \
        } \
    } \
    return (elm); \
} \
\
/* ARGSUSED */ \
attr struct type * \
name##_RB_PREV(struct type *elm) \
{ \
    if (RB_LEFT(elm, field)) { \
        elm = RB_LEFT(elm, field); \
        while (RB_RIGHT(elm, field)) \
            elm = RB_RIGHT(elm, field); \
    } \
    else { \
        if (RB_PARENT(elm, field) && \
            (elm == RB_RIGHT(RB_PARENT(elm, field), field))) \
            elm = RB_PARENT(elm, field); \
        else { \
            while (RB_PARENT(elm, field) && \
                (elm == RB_LEFT(RB_PARENT(elm, field), field))) \
                elm = RB_PARENT(elm, field); \
            elm = RB_PARENT(elm, field); \
        } \
    } \
    return (elm); \
} \

```



```

    \
attr struct type *    \
name##_RB_MINMAX(struct name *head, int val)  \
{
    \
    struct type *tmp = RB_ROOT(head);  \
    struct type *parent = NULL;  \
    while (tmp) {
        \
        parent = tmp;  \
        if (val < 0)  \
            tmp = RB_LEFT(tmp, field);  \
        else  \
            tmp = RB_RIGHT(tmp, field);  \
    }  \
    return (parent);  \
}

#define RB_NEGINF -1
#define RB_INF 1

#define RB_INSERT(name, x, y) name##_RB_INSERT(x, y)
#define RB_REMOVE(name, x, y) name##_RB_REMOVE(x, y)
#define RB_FIND(name, x, y) name##_RB_FIND(x, y)
#define RB_NFIND(name, x, y) name##_RB_NFIND(x,
y)
#define RB_NEXT(name, x, y) name##_RB_NEXT(y)
#define RB_PREV(name, x, y) name##_RB_PREV(y)
#define RB_MIN(name, x) name##_RB_MINMAX(x, RB_NEGINF)
#define RB_MAX(name, x) name##_RB_MINMAX(x, RB_INF)

#define RB_FOREACH(x, name, head)  \
for ((x) = RB_MIN(name, head);  \
     (x) != NULL;  \
     (x) = name##_RB_NEXT(x))

#define RB_FOREACH_FROM(x, name, y)  \
for ((x) = (y);  \
     ((x) != NULL) && ((y) = name##_RB_NEXT(x), (x) != NULL); \
     (x) = (y))

#define RB_FOREACH_SAFE(x, name, head, y)  \
for ((x) = RB_MIN(name, head);  \
     ((x) != NULL) && ((y) = name##_RB_NEXT(x), (x) != NULL); \
     (x) = (y))

#define RB_FOREACH_REVERSE(x, name, head)  \
for ((x) = RB_MAX(name, head);  \
     (x) != NULL;  \
     (x) = name##_RB_PREV(x))

```

```

#define RB_FOREACH_REVERSE_FROM(x, name, y) \
for ((x) = (y); \
    ((x) != NULL) && ((y) = name##_RB_PREV(x), (x) != NULL); \
    (x) = (y))

#define RB_FOREACH_REVERSE_SAFE(x, name, \
head, y) \
for ((x) = RB_MAX(name, head); \
    ((x) != NULL) && ((y) = name##_RB_PREV(x), (x) != NULL); \
    (x) = (y))

#endif /* _SYS_TREE_H_ */
# Contributor: Wen Heping <wenhepingalpine@sohu.com>
# Maintainer: Wen Heping <wenhepingalpine@sohu.com>
pkgname=perl-software-license
pkgver=0.104007
pkgrel=0
# _pkgreal is used by apkbuild-cpan to find modules at MetaCpan
_pkgreal=Software-License
pkgdesc="packages that provide templated software licenses"
url="https://metacpan.org/release/Software-License/"
arch="noarch"
license="GPL-1.0-or-later OR Artistic-1.0-Perl"
depends="perl perl-data-section perl-text-template"
checkdepends="perl-try-tiny"
subpackages="$pkgname-doc"
source="https://cpan.metacpan.org/authors/id/L/LE/LEONT/Software-License-$pkgver.tar.gz"
buildid="$srcdir/${_pkgreal}-${pkgver}"

build() {
    export CFLAGS=$(perl -MConfig -E 'say $Config{ccflags}')
    PERL_MM_USE_DEFAULT=1 perl -I. Makefile.PL \
        INSTALLDIRS=vendor \
        NO_PACKLIST=1 \
        NO_PERLLOCAL=1
    make
}

check() {
    export CFLAGS=$(perl -MConfig -E 'say $Config{ccflags}')
    make test
}

package() {
    make DESTDIR="$pkgdir" install
}

```

```
sha512sums="
12d75e9583b3013d9b4a282467f1ac80ab6b7f3251926d66591d01404489b528f22adc396dfd4528a0f0ca650f0eed6d
9c959e69eace2169c6ed1cffe5277e4
Software-License-0.104007.tar.gz
"
(The MIT License)
```

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```
# Contributor: Dhruvin Gandhi <contact@dhruvin>
# Maintainer: Patrycja Rosa <alpine@ptrcnull.me>
pkgname=py3-license-expression
_pkgname=license_expression
pkgver=30.4.4
pkgrel=0
pkgdesc="Library to parse, compare, simplify and normalize license expressions"
url="https://github.com/nexB/license-expression"
arch="noarch"
license="Apache-2.0"
depends="python3 py3-boolean.py"
makedepends="py3-setuptools py3-setuptools_scm py3-gpep517 py3-wheel"
checkdepends="py3-pytest py3-pytest-xdist"
subpackages="$pkgname-pyc"
source="https://files.pythonhosted.org/packages/source/l/_$pkgname/_$pkgname-$pkgver.tar.gz"
buildid="$srcdir/$_pkgname-$pkgver"

build() {
    gpep517 build-wheel \
        --wheel-dir .dist \
```

```

--output-fd 3 3>&1 >&2
}

check() {
python3 -m venv --clear --without-pip --system-site-packages .testenv
.testenv/bin/python3 -m installer .dist/*.whl
.testenv/bin/python3 -m pytest
}

package() {
python3 -m installer -d "$pkgdir" \
.dist/*.whl
}

sha512sums="
f46dd4cf524b3962115fe26f5545bfdd6767275b482724af51e7ca07da79244969a3bfc5d2fd5b95bc0f19d1b95a26a8f3
ab36c676e56ec302178d7166588066
license_expression-30.4.4.tar.gz
"

```

1.215 spring-retry 1.3.1

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```

Found in path(s):

```

* /spring-retry-1-3-1-sources-7-
jar/org/springframework/retry/annotation/AnnotationAwareRetryOperationsInterceptor.java
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```

```

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```

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```

Found in path(s):

```

* /spring-retry-1-3-1-sources-7-jar/org/springframework/retry/backoff/UniformRandomBackOffPolicy.java
* /spring-retry-1-3-1-sources-7-jar/org/springframework/retry/backoff/FixedBackOffPolicy.java
* /spring-retry-1-3-1-sources-7-jar/org/springframework/retry/context/RetryContextSupport.java

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```

Found in path(s):

```

* /spring-retry-1-3-1-sources-7-jar/org/springframework/retry/RetryListener.java
* /spring-retry-1-3-1-sources-7-jar/org/springframework/retry/policy/SoftReferenceMapRetryContextCache.java
* /spring-retry-1-3-1-sources-7-jar/org/springframework/retry/listener/RetryListenerSupport.java
* /spring-retry-1-3-1-sources-7-jar/org/springframework/retry/policy/ExceptionClassifierRetryPolicy.java
*
/spring-retry-1-3-1-sources-7-jar/org/springframework/classify/annotation/Classifier.java
* /spring-retry-1-3-1-sources-7-jar/org/springframework/retry/backoff/BackOffContext.java
* /spring-retry-1-3-1-sources-7-jar/org/springframework/retry/RetryOperations.java
* /spring-retry-1-3-1-sources-7-jar/org/springframework/retry/support/RetrySimulation.java
* /spring-retry-1-3-1-sources-7-jar/org/springframework/retry/backoff/NoBackOffPolicy.java

```

```

* /spring-retry-1-3-1-sources-7-jar/org/springframework/retry/policy/RetryContextCache.java
* /spring-retry-1-3-1-sources-7-jar/org/springframework/classify/BackToBackPatternClassifier.java
* /spring-retry-1-3-1-sources-7-jar/org/springframework/retry/backoff/BackOffInterruptedException.java
* /spring-retry-1-3-1-sources-7-jar/org/springframework/retry/policy/AlwaysRetryPolicy.java
* /spring-retry-1-3-1-sources-7-jar/org/springframework/retry/policy/MapRetryContextCache.java
*
/spring-retry-1-3-1-sources-7-jar/org/springframework/retry/backoff/StatelessBackOffPolicy.java
* /spring-retry-1-3-1-sources-7-jar/org/springframework/retry/RetryCallback.java
* /spring-retry-1-3-1-sources-7-jar/org/springframework/retry/backoff/Sleeper.java
* /spring-retry-1-3-1-sources-7-jar/org/springframework/retry/policy/NeverRetryPolicy.java
* /spring-retry-1-3-1-sources-7-jar/org/springframework/classify/PatternMatchingClassifier.java
* /spring-retry-1-3-1-sources-7-jar/org/springframework/classify/ClassifierSupport.java
* /spring-retry-1-3-1-sources-7-jar/org/springframework/retry/support/DefaultRetryState.java
* /spring-retry-1-3-1-sources-7-jar/org/springframework/retry/RetryState.java
* /spring-retry-1-3-1-sources-7-jar/org/springframework/retry/support/RetrySynchronizationManager.java
* /spring-retry-1-3-1-sources-7-jar/org/springframework/classify/Classifier.java
* /spring-retry-1-3-1-sources-7-jar/org/springframework/retry/RetryPolicy.java
*
/spring-retry-1-3-1-sources-7-jar/org/springframework/retry/policy/CompositeRetryPolicy.java
* /spring-retry-1-3-1-sources-7-jar/org/springframework/retry/policy/TimeoutRetryPolicy.java
* /spring-retry-1-3-1-sources-7-jar/org/springframework/retry/backoff/SleepingBackOffPolicy.java
* /spring-retry-1-3-1-sources-7-jar/org/springframework/retry/interceptor/NewMethodArgumentsIdentifier.java
* /spring-retry-1-3-1-sources-7-jar/org/springframework/retry/RecoveryCallback.java
* /spring-retry-1-3-1-sources-7-jar/org/springframework/retry/support/RetrySimulator.java
* /spring-retry-1-3-1-sources-7-jar/org/springframework/retry/RetryContext.java
* /spring-retry-1-3-1-sources-7-jar/org/springframework/retry/interceptor/MethodArgumentsKeyGenerator.java
* /spring-retry-1-3-1-sources-7-jar/org/springframework/retry/policy/RetryCacheCapacityExceededException.java
* /spring-retry-1-3-1-sources-7-jar/org/springframework/classify/PatternMatcher.java
* /spring-retry-1-3-1-sources-7-jar/org/springframework/retry/interceptor/MethodInvocationRecoverer.java
*
/spring-retry-1-3-1-sources-7-jar/org/springframework/retry/RetryStatistics.java
* /spring-retry-1-3-1-sources-7-jar/org/springframework/retry/ExhaustedRetryException.java
* /spring-retry-1-3-1-sources-7-jar/org/springframework/classify/ClassifierAdapter.java
* /spring-retry-1-3-1-sources-7-jar/org/springframework/retry/RetryException.java
* /spring-retry-1-3-1-sources-7-jar/org/springframework/retry/backoff/BackOffPolicy.java
* /spring-retry-1-3-1-sources-7-jar/org/springframework/retry/TerminatedRetryException.java
* /spring-retry-1-3-1-sources-7-jar/org/springframework/retry/backoff/ObjectWaitSleeper.java
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* /spring-retry-1-3-1-sources-7-jar/org/springframework/classify/util/MethodInvokerUtils.java
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* /spring-retry-1-3-1-sources-7-jar/org/springframework/classify/util/MethodResolver.java
* /spring-retry-1-3-1-sources-7-jar/org/springframework/classify/util/AnnotationMethodResolver.java
* /spring-retry-1-3-1-sources-7-jar/org/springframework/classify/util/MethodInvoker.java
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- * /spring-retry-1-3-1-sources-7-jar/org/springframework/retry/stats/DefaultStatisticsRepository.java
- * /spring-retry-1-3-1-sources-7-jar/org/springframework/retry/stats/MutableRetryStatistics.java
- * /spring-retry-1-3-1-sources-7-jar/org/springframework/retry/stats/StatisticsListener.java
- *
- /spring-retry-1-3-1-sources-7-jar/org/springframework/retry/stats/ExponentialAverageRetryStatistics.java
- * /spring-retry-1-3-1-sources-7-jar/org/springframework/retry/stats/DefaultRetryStatisticsFactory.java
- * /spring-retry-1-3-1-sources-7-jar/org/springframework/retry/stats/DefaultRetryStatistics.java
- * /spring-retry-1-3-1-sources-7-jar/org/springframework/retry/stats/StatisticsRepository.java
- * /spring-retry-1-3-1-sources-7-jar/org/springframework/retry/stats/RetryStatisticsFactory.java

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*/

Found in path(s):

* /spring-retry-1-3-1-sources-7-jar/org/springframework/retry/support/RetryTemplateBuilder.java

* /spring-retry-1-3-1-sources-7-jar/org/springframework/retry/policy/ExpressionRetryPolicy.java

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* /spring-retry-1-3-1-sources-7-jar/org/springframework/classify/BinaryExceptionClassifierBuilder.java

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* /spring-retry-1-3-1-sources-7-jar/org/springframework/classify/SubclassClassifier.java

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Found in path(s):

```

* /spring-retry-1-3-1-sources-7-jar/org/springframework/retry/interceptor/RetryOperationsInterceptor.java

```

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Found in path(s):

```

* /spring-retry-1-3-1-sources-7-jar/org/springframework/retry/interceptor/FixedKeyGenerator.java

```

```

* /spring-retry-1-3-1-sources-7-jar/org/springframework/retry/policy/CircuitBreakerRetryPolicy.java

```

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* /spring-retry-1-3-1-sources-7-jar/org/springframework/retry/support/RetryTemplate.java
* /spring-retry-1-3-1-sources-7-jar/org/springframework/retry/backoff/ExponentialBackOffPolicy.java
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Found in path(s):

* /spring-retry-1-3-1-sources-7-jar/org/springframework/retry/annotation/Recover.java
* /spring-retry-1-3-1-sources-7-jar/org/springframework/retry/annotation/EnableRetry.java
* /spring-retry-1-3-1-sources-7-jar/org/springframework/retry/annotation/Backoff.java
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Found in path(s):

* /spring-retry-1-3-1-sources-7-jar/org/springframework/classify/BinaryExceptionClassifier.java

* /spring-retry-1-3-1-sources-7-jar/org/springframework/retry/policy/BinaryExceptionClassifierRetryPolicy.java

* /spring-retry-1-3-1-sources-7-jar/org/springframework/retry/interceptor/MethodInvocationRetryCallback.java

*

/* /spring-retry-1-3-1-sources-7-jar/org/springframework/retry/listener/MethodInvocationRetryListenerSupport.java

* /spring-retry-1-3-1-sources-7-jar/org/springframework/retry/policy/MaxAttemptsRetryPolicy.java

* /spring-retry-1-3-1-sources-7-jar/org/springframework/retry/interceptor/StatefulRetryOperationsInterceptor.java

* /spring-retry-1-3-1-sources-7-jar/org/springframework/retry/policy/SimpleRetryPolicy.java

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* /spring-retry-1-3-1-sources-7-jar/org/springframework/retry/annotation/RetryConfiguration.java

* /spring-retry-1-3-1-sources-7-jar/org/springframework/retry/interceptor/RetryInterceptorBuilder.java

* /spring-retry-1-3-1-sources-7-jar/org/springframework/retry/backoff/ThreadWaitSleeper.java

*

/spring-retry-1-3-1-sources-7-jar/org/springframework/classify/util/SimpleMethodInvoker.java

* /spring-retry-1-3-1-sources-7-jar/org/springframework/retry/interceptor/Retryable.java

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1.216 gopsutil 3.21.5

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1.217 go-isatty 0.0.20

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1.218 rich 14.0.0

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1.219 go-xerial-snappy 0.0.0-20230731223053-c322873962e3

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1.220 autocommand 2.2.2

1.220.1 Available under license :

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1.221 **bsd-compat-headers 0.7.2-r6**

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```
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# Maintainer: mio <miyopan@e.email>
pkgname=bsd-games
pkgver=3.3
pkgrel=1
pkgdesc="traditional text mode games from BSD"
url="https://bsd-games.sourceforge.io/"
arch="all"
license="BSD-3-Clause"
install="$pkgname.post-install"
makedepends="ncurses-dev coreutils" # configure causes busybox expr error
subpackages="$pkgname-doc"
source="https://sourceforge.net/projects/bsd-games/files/bsd-games-$pkgver.tar.gz"
options="!check" # no tests

build() {
    # some GNU autoconf options are ignored, but it works
    ./configure \
        --build=$CBUILD \
        --host=$CHOST \
        --prefix=/usr \
        --sysconfdir=/etc \
        --mandir=/usr/share/man \
        --localstatedir=/var/lib # it really shouldn't be in /var
    make
}

package() {
    make DESTDIR="$pkgdir" install
    install -Dm644 LICENSE "$pkgdir"/usr/share/licenses/bsd-games/LICENSE
}

sha512sums="
aaf36d09d4fe68514a5c279063d7e77a9a9a84c447037cba974b29faa07eb80c2aab2379d0699c196b5c27ffe1b2bb2c6
8d3390143e0e62d5e3d210ccfb61294"
```

```

bsd-games-3.3.tar.gz
"
# Automatically generated by apkbuidl-cpan, template 4
# Contributor: Valery Kartel <valery.kartel@gmail.com>
# Maintainer: Celeste <cielesti@protonmail.com>
pkgname=perl-bsd-resource
pkgver=1.2911
pkgrel=10
#_pkgreal is used by apkbuidl-cpan to find modules at MetaCpan
_pkgreal=BSD-Resource
pkgdesc="Perl extension implements the BSD process resource limit functions"
url="https://metacpan.org/release/BSD-Resource/"
arch="all"
license="Artistic-2.0 OR LGPL-2.0"
depends="perl"
makedepends="perl-dev"
subpackages="$pkgname-doc"
source="https://cpan.metacpan.org/authors/id/J/JH/JHI/BSD-Resource-$pkgver.tar.gz"
builddir="$srcdir/${_pkgreal}-$pkgver"

build() {
    export CFLAGS=$(perl -MConfig -E 'say $Config{ccflags}')
    PERL_MM_USE_DEFAULT=1 perl -I. Makefile.PL \
        INSTALLDIRS=vendor \
        NO_PACKLIST=1 \
        NO_PERLLOCAL=1
    make
}

check() {
    export CFLAGS=$(perl -MConfig -E 'say $Config{ccflags}')
    make test
}

package() {
    make DESTDIR="$pkgdir" install
}

sha512sums="
d0032d41c7c0468ed1c6d8f57b885f6cb97a5039d754c8cb60b2067daedaf53bd15fb6561a3d0f828df16dfa5417f663b
8065ba65f4fea16dc9262728b3b6b85
    BSD-Resource-1.2911.tar.gz
"
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<https://analoguesque.x10host.com/>

Contributor: Carlo Landmeter <clandmeter@alpinelinux.org>

Maintainer: Kevin Daudt <kdaudt@alpinelinux.org>

pkgname=spdx-licenses

pkgver=3.24.0

pkgrel=0

pkgdesc="Various data formats for the SPDX License List"

url="https://spdx.org/"

arch="noarch"

options="!check" # no test suite

license="CC-BY-3.0"

```

source="license-list-data-$pkgver.tar.gz::https://github.com/spdx/license-list-data/archive/v$pkgver.tar.gz"
builddir="$srcdir/license-list-data-$pkgver"
subpackages="$pkgname-list"

_types="html json rdfa rdft rdfturtle rdfxml template text"

for type in $_types; do
    subpackages="$subpackages $pkgname-$type:_subpkg"
done

package() {
    mkdir -p "$pkgdir"
}

_subpkg() {
    local type=${subpkgname/$pkgname-/}
    pkgdesc="$pkgdesc ($type)"
    install_if="$pkgname=$pkgver-r$pkgrel"
    mkdir -p "$subpkgdir"/usr/share/spdx
    cp -r "$builddir"/$type "$subpkgdir"/usr/share/spdx/
}

list() {
    pkgdesc="$pkgdesc (licence list)"
    mkdir -p "$subpkgdir"/usr/share/spdx
    local i; for i in "$builddir"/text/*.txt;
    do
        local license=${i##*/}
        echo ${license%.*} >> "$subpkgdir"/usr/share/spdx/license.lst
    done
}

sha512sums="
6eb81424e1b3173dbd8e17859b2e15dfe1c2af8f4da59b7dad0729c038a4cbdba95c34c2c546285fcdbbd41562e39575e
6a6ebb9463b70121e0a12b99d1307e7  license-list-data-3.24.0.tar.gz
"

# Maintainer: Natanael Copa <ncopa@alpinelinux.org>
pkgname=libart-lgpl
pkgver=2.3.21
pkgrel=8
pkgdesc="A library for high-performance 2D graphics"
url="https://www.levien.com/libart/"
arch="all"
options="!check" # No test suite.
license="GPL-2.0-or-later"
subpackages="$pkgname-dev"
source="https://download.gnome.org/sources/libart-lgpl/2.3/libart-lgpl-$pkgver.tar.bz2
"

```



```
builddir="$srcdir"/libart_lgpl-$pkgver
```

```
prepare() {  
    update_config_sub  
    default_prepare  
}
```

```
build() {  
    ./configure \  
    --build=$CBUILD \  
    --host=$CHOST \  
    --prefix=/usr  
    make  
}
```

```
package() {  
    make DESTDIR="$pkgdir" install  
}
```

```
sha512sums="8a632a6a4da59e5e8c02ec2f5a57e36d182b325b46513765425e5f171ff9ae326af1b133725beba28f7e7  
6654309e001aee9bace727b5b4c8589405256a3c020 libart_lgpl-2.3.21.tar.bz2"  
mini_sendmail - accept email on behalf of real sendmail
```

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SUCH DAMAGE.

```

# Contributor: Patrycja Rosa <alpine@ptrcnull.me>
# Maintainer: Patrycja Rosa <alpine@ptrcnull.me>
pkgname=bsd-compat-headers
pkgver=0.7.2
pkgrel=6
pkgdesc="BSD compatibility headers (cdefs, queue, tree)"
url="https://gitlab.alpinelinux.org/alpine/aports"
arch="noarch"
license="BSD-2-Clause AND BSD-3-Clause"
source="
cdefs.h
queue.h
tree.h
"
buildddir="$srcdir"
options="!check" # just headers

package() {
    mkdir -p "$pkgdir"
    install -Dm644 -t "$pkgdir"/usr/include/sys \
        cdefs.h queue.h tree.h
}
sha512sums="
37c8fc73c7aea7b490f7850927e2bb91d12137c9e59e22c084146d515696dbc7973b5de92f4c987ba080dd2502ba8312
7006442c3f019b6447a620cae73178 cdefs.h
2f0d5e6e4dc3350285cf17009265dddcbe12431c111868eea39bc8cb038ab7c1f2acacbb21735c4e9d4a1fd106a8fc0f86
11ea33987d4faba37dde5ce6da0750 queue.h
d9ac210d81feb8ad2655bc80fb065d3fe20ae4417b32b4a1711e6738a4870140005c13373b5d1846ef3ce5ae6da45f2da
cef2092881eded0a2e94f6a07752ef3 tree.h
"

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The X-Spline code was written Carole Blanc (blanc@labri.u-bordeaux.fr) and Christophe Schlick (schlick@labri.u-bordeaux.fr) starting from an initial implementation done by C. Feuille, S. Grosbois, L. Maziere and L. Minihot as a student practice (Universite Bordeaux, France). For additional information about X-splines, see:

"X-Splines: A Spline Model Designed for the End User" by C. Blanc and C. Schlick, Proceedings of SIGGRAPH'95

<http://dept-info.labri.u-bordeaux.fr/~schlick/DOC/sig1.html>

Contributor: Fabian Affolter <fabian@affolter-engineering.ch>

Maintainer: Fabian Affolter <fabian@affolter-engineering.ch>

pkgname=py3-flake8-copyright

_pkgname=flake8-copyright

pkgver=0.2.4

pkgrel=3

pkgdesc="Extension for flake8 which checks for copyrights"

options="!check" # No testsuite

url="https://github.com/savoirfairelinux/flake8-copyright"

arch="noarch"

license="MIT"

depends="py3-flake8 py3-setuptools"

makedepends="py3-gpep517 py3-wheel"

subpackages="\$pkgname-pyc"

source="https://files.pythonhosted.org/packages/source/\${_pkgname:0:1}/\${_pkgname}/\${_pkgname}-\${pkgver}.tar.gz"

builddir="\$srcdir"/\$_pkgname-\$pkgver

replaces="py-flake8-copyright" # Backwards compatibility

provides="py-flake8-copyright=\$pkgver-r\$pkgrel" # Backwards compatibility

build() {

gpep517 build-wheel \

--wheel-dir .dist \

--output-fd 3 3>&1 >&2

}

package() {

gpep517 install-wheel --destdir "\$pkgdir" \

.dist/*.whl

}

sha512sums="

a6ab47e1bb715618f075c51f398e18180404871b3b0faf1c2d30701d5203db6bc23771bf22ffb5bafcd8ee856b9b64237

b316bd503ae7dceed6ca284ccd5a74d

flake8-copyright-0.2.4.tar.gz

"

```

# Maintainer: fossdd <fossdd@pwned.life>
pkgname=cargo-license
pkgver=0.6.1
pkgrel=1
pkgdesc="Cargo subcommand to see license of dependencies"
url="https://github.com/onur/cargo-license"
arch="all"
license="MIT"
makedepends="cargo cargo-auditable"
source="$pkgname-$pkgver.tar.gz::https://crates.io/api/v1/crates/cargo-license/$pkgver/download"

prepare() {
    default_prepare

    cargo fetch --target="$CTARGET" --locked
}

build() {
    cargo auditable build --release --frozen
}

check() {
    cargo test --frozen
}

package() {
    install -Dm755 target/release/cargo-license -t "$pkgdir"/usr/bin
}

sha512sums="
36215145e79965be090ae2f5ce6f5eb208465eb67a94c26bed1fe70a131c46c6dc35695e30852759b7366883fbc3caf00
272d796ac634f0a5e1d49232b6b29d5  cargo-license-0.6.1.tar.gz
"

```

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Maintainer: Patrycja Rosa <alpine@ptrcnull.me>

pkgname=py3-license-expression

_pkgname=license_expression

pkgver=30.3.1

pkgrel=0

pkgdesc="Library to parse, compare, simplify and normalize license expressions"

url="https://github.com/nexB/license-expression"

arch="noarch"

license="Apache-2.0"

depends="python3 py3-boolean.py"

makedepends="py3-setuptools py3-setuptools_scm py3-gpep517 py3-wheel"

checkdepends="py3-pytest py3-pytest-xdist"

subpackages="\$pkgname-pyc"

source="https://files.pythonhosted.org/packages/source/l/_pkgname/_pkgname-\$pkgver.tar.gz"

builddir="\$srcdir/_pkgname-\$pkgver"

build() {

gpep517 build-wheel \

--wheel-dir .dist \

--output-fd 3 3>&1 >&2

}

check() {

python3 -m venv --clear --without-pip --system-site-packages .testenv

.testenv/bin/python3 -m installer .dist/*.whl

.testenv/bin/python3 -m pytest

```

}

package() {
    python3 -m installer -d "$pkgdir" \
        .dist/*.whl
}

sha512sums="
293fd862ba66f6fa449eac5326ae686225f08e6be6f27106523eaffcf16efa2fbc19e8b37748bb6ed3e8044bde1a726e3
68eca7006bb59b916ad2df6a11cfc
    license_expression-30.3.1.tar.gz
"

```

1.222 jaraco.text 3.12.1

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1.223 python-certifi 2024.08.30

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This is a bundle of X.509 certificates of public Certificate Authorities (CA). These were automatically extracted from Mozilla's root certificates file (certdata.txt). This file can be found in the mozilla source tree:

<https://hg.mozilla.org/mozilla-central/file/tip/security/nss/lib/ckfw/builtins/certdata.txt>

It contains the certificates in PEM format and therefore
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@(#) \$RCSfile: certdata.txt,v \$ \$Revision: 1.80 \$ \$Date: 2011/11/03 15:11:58 \$

1.224 utmps-libs 0.1.3.1-r0

1.224.1 Available under license :

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1.225 sqlx 1.4.0

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1.226 tomli 2.0.1

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1.227 blinker 1.9.0

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1.228 animal-sniffer-annotation 1.24

1.228.1 Available under license :

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Found in path(s):

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1.229 grpc-gateway 2.27.3

1.229.1 Available under license :

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1.230 python-setuptools 80.9.0

1.230.1 Available under license :

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```
python -m validate_pyproject.pre_compile --output-dir=setuptools/config/_validate_pyproject --enable-plugins
setuptools distutils --very-verbose -t setuptools=setuptools/config/setuptools.schema.json -t
distutils=setuptools/config/distutils.schema.json
```

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`validate-pyproject`

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A. HISTORY OF THE SOFTWARE

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Python was created in the early 1990s by Guido van Rossum at Stichting Mathematisch Centrum (CWI, see <https://www.cwi.nl>) in the Netherlands as a successor of a language called ABC. Guido remains Python's principal author, although it includes many contributions from others.

In 1995, Guido continued his work on Python at the Corporation for National Research Initiatives (CNRI, see <https://www.cnri.reston.va.us>) in Reston, Virginia where he released several versions of the software.

In May 2000, Guido and the Python core development team moved to BeOpen.com to form the BeOpen PythonLabs team. In October of the same year, the PythonLabs team moved to Digital Creations, which became Zope Corporation. In 2001, the Python Software Foundation (PSF, see <https://www.python.org/psf/>) was formed, a non-profit organization created specifically to own Python-related Intellectual Property. Zope Corporation was a sponsoring member of the PSF.

All

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0.9.0 thru 1.2		1991-1995	CWI	yes
1.3 thru 1.5.2	1.2	1995-1999	CNRI	yes
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2.0	1.6	2000	BeOpen.com	no
1.6.1	1.6	2001	CNRI	yes (2)
2.1	2.0+1.6.1	2001	PSF	no
2.0.1	2.0+1.6.1	2001	PSF	yes
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1.235 protobuf-java-util 3.25.8

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```
java.util.List<com.google.protobuf.DescriptorProtos.FieldOptions.OptionTargetType> getTargetsList();
getEditionDefaultsList();
public java.util.List<com.google.protobuf.DescriptorProtos.FieldOptions.OptionTargetType> getTargetsList() {
public java.util.List<com.google.protobuf.DescriptorProtos.FieldOptions.EditionDefault> getEditionDefaultsList() {
if (!getEditionDefaultsList()
.equals(other.getEditionDefaultsList())) return false;
hash = (53 * hash) + getEditionDefaultsList().hashCode();
public java.util.List<com.google.protobuf.DescriptorProtos.FieldOptions.OptionTargetType> getTargetsList() {
public java.util.List<com.google.protobuf.DescriptorProtos.FieldOptions.EditionDefault> getEditionDefaultsList() {
getDefaultsList();
public java.util.List<com.google.protobuf.DescriptorProtos.FeatureSetDefaults.FeatureSetEditionDefault>
getDefaultsList() {
if (!getDefaultsList()
.equals(other.getDefaultsList())) return false;
hash
= (53 * hash) + getDefaultsList().hashCode();
public java.util.List<com.google.protobuf.DescriptorProtos.FeatureSetDefaults.FeatureSetEditionDefault>
getDefaultsList() {
getLeadingDetachedCommentsList();
getLeadingDetachedCommentsList() {
size += 1 * getLeadingDetachedCommentsList().size();
if (!getLeadingDetachedCommentsList()
.equals(other.getLeadingDetachedCommentsList())) return false;
hash = (53 * hash) + getLeadingDetachedCommentsList().hashCode();
getLeadingDetachedCommentsList() {
```

Found in path(s):

* /protobuf-java-util-3-25-8-sources-jar/com/google/protobuf/DescriptorProtos.java

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Found in path(s):

* /protobuf-java-util-3-25-8-sources-jar/com/google/protobuf/util/FieldMaskUtil.java

* /protobuf-java-util-3-25-8-sources-jar/com/google/protobuf/ByteOutput.java

* /protobuf-java-util-3-25-8-sources-jar/com/google/protobuf/RpcCallback.java

- * /protobuf-java-util-3-25-8-sources-jar/com/google/protobuf/InlineMe.java
- * /protobuf-java-util-3-25-8-sources-jar/com/google/protobuf/UninitializedMessageException.java
- * /protobuf-java-util-3-25-8-sources-jar/com/google/protobuf/ArrayDecoders.java
- * /protobuf-java-util-3-25-8-sources-jar/com/google/protobuf/Internal.java
- * /protobuf-java-util-3-25-8-sources-jar/com/google/protobuf/UnknownFieldSchema.java
- * /protobuf-java-util-3-25-8-sources-jar/com/google/protobuf/util/Durations.java
- * /protobuf-java-util-3-25-8-sources-jar/com/google/protobuf/RpcChannel.java
- * /protobuf-java-util-3-25-8-sources-jar/com/google/protobuf/DescriptorMessageInfoFactory.java
- *
- /protobuf-java-util-3-25-8-sources-jar/com/google/protobuf/UnmodifiableLazyStringList.java
- * /protobuf-java-util-3-25-8-sources-jar/com/google/protobuf/Message.java
- * /protobuf-java-util-3-25-8-sources-jar/com/google/protobuf/TypeRegistry.java
- * /protobuf-java-util-3-25-8-sources-jar/com/google/protobuf/TextFormatParseInfoTree.java
- * /protobuf-java-util-3-25-8-sources-jar/com/google/protobuf/NioByteString.java
- * /protobuf-java-util-3-25-8-sources-jar/com/google/protobuf/FloatArrayList.java
- * /protobuf-java-util-3-25-8-sources-jar/com/google/protobuf/LazyStringArrayList.java
- * /protobuf-java-util-3-25-8-sources-jar/com/google/protobuf/MessageSetSchema.java
- * /protobuf-java-util-3-25-8-sources-jar/com/google/protobuf/MapFieldSchemaLite.java
- * /protobuf-java-util-3-25-8-sources-jar/com/google/protobuf/OneofInfo.java
- * /protobuf-java-util-3-25-8-sources-jar/com/google/protobuf/MessageLite.java
- * /protobuf-java-util-3-25-8-sources-jar/com/google/protobuf/RepeatedFieldBuilderV3.java
- *
- /protobuf-java-util-3-25-8-sources-jar/com/google/protobuf/AllocatedBuffer.java
- * /protobuf-java-util-3-25-8-sources-jar/com/google/protobuf/CheckReturnValue.java
- * /protobuf-java-util-3-25-8-sources-jar/com/google/protobuf/Parser.java
- * /protobuf-java-util-3-25-8-sources-jar/com/google/protobuf/Writer.java
- * /protobuf-java-util-3-25-8-sources-jar/com/google/protobuf/ProtoSyntax.java
- * /protobuf-java-util-3-25-8-sources-jar/com/google/protobuf/GeneratedMessageLite.java
- * /protobuf-java-util-3-25-8-sources-jar/com/google/protobuf/RpcController.java
- * /protobuf-java-util-3-25-8-sources-jar/com/google/protobuf/Utf8.java
- * /protobuf-java-util-3-25-8-sources-jar/com/google/protobuf/Java8Compatibility.java
- * /protobuf-java-util-3-25-8-sources-jar/com/google/protobuf/MapFieldBuilder.java
- * /protobuf-java-util-3-25-8-sources-jar/com/google/protobuf/WireFormat.java
- * /protobuf-java-util-3-25-8-sources-jar/com/google/protobuf/MapFieldReflectionAccessor.java
- *
- /protobuf-java-util-3-25-8-sources-jar/com/google/protobuf/DiscardUnknownFieldsParser.java
- * /protobuf-java-util-3-25-8-sources-jar/com/google/protobuf/ExperimentalApi.java
- * /protobuf-java-util-3-25-8-sources-jar/com/google/protobuf/InvalidProtocolBufferException.java
- * /protobuf-java-util-3-25-8-sources-jar/com/google/protobuf/BufferAllocator.java
- * /protobuf-java-util-3-25-8-sources-jar/com/google/protobuf/BooleanArrayList.java
- * /protobuf-java-util-3-25-8-sources-jar/com/google/protobuf/RpcUtil.java
- * /protobuf-java-util-3-25-8-sources-jar/com/google/protobuf/ProtocolMessageEnum.java
- * /protobuf-java-util-3-25-8-sources-jar/com/google/protobuf/MessageReflection.java
- * /protobuf-java-util-3-25-8-sources-jar/com/google/protobuf/TextFormatEscaper.java
- * /protobuf-java-util-3-25-8-sources-jar/com/google/protobuf/GeneratedMessageInfoFactory.java
- * /protobuf-java-util-3-25-8-sources-jar/com/google/protobuf/ProtocolStringList.java
- * /protobuf-java-util-3-25-8-sources-jar/com/google/protobuf/DoubleArrayList.java
- *

/protobuf-java-util-3-25-8-sources-jar/com/google/protobuf/MapField.java
 * /protobuf-java-util-3-25-8-sources-jar/com/google/protobuf/ServiceException.java
 * /protobuf-java-util-3-25-8-sources-jar/com/google/protobuf/NewInstanceSchemaLite.java
 * /protobuf-java-util-3-25-8-sources-jar/com/google/protobuf/CodedInputStream.java
 * /protobuf-java-util-3-25-8-sources-jar/com/google/protobuf/TextFormat.java
 * /protobuf-java-util-3-25-8-sources-jar/com/google/protobuf/RawMessageInfo.java
 * /protobuf-java-util-3-25-8-sources-jar/com/google/protobuf/ExtensionRegistry.java
 * /protobuf-java-util-3-25-8-sources-jar/com/google/protobuf/MessageOrBuilder.java
 * /protobuf-java-util-3-25-8-sources-jar/com/google/protobuf/ExtensionSchemaFull.java
 * /protobuf-java-util-3-25-8-sources-jar/com/google/protobuf/ExtensionRegistryLite.java
 * /protobuf-java-util-3-25-8-sources-jar/com/google/protobuf/MapEntryLite.java
 * /protobuf-java-util-3-25-8-sources-jar/com/google/protobuf/CanIgnoreReturnValue.java
 *
 /protobuf-java-util-3-25-8-sources-jar/com/google/protobuf/AbstractMessage.java
 * /protobuf-java-util-3-25-8-sources-jar/com/google/protobuf/CodedOutputStreamWriter.java
 * /protobuf-java-util-3-25-8-sources-jar/com/google/protobuf/MapFieldLite.java
 * /protobuf-java-util-3-25-8-sources-jar/com/google/protobuf/RepeatedFieldBuilder.java
 * /protobuf-java-util-3-25-8-sources-jar/com/google/protobuf/SingleFieldBuilder.java
 * /protobuf-java-util-3-25-8-sources-jar/com/google/protobuf/Extension.java
 * /protobuf-java-util-3-25-8-sources-jar/com/google/protobuf/MessageLiteOrBuilder.java
 * /protobuf-java-util-3-25-8-sources-jar/com/google/protobuf/MapFieldSchemas.java
 * /protobuf-java-util-3-25-8-sources-jar/com/google/protobuf/RopeByteString.java
 * /protobuf-java-util-3-25-8-sources-jar/com/google/protobuf/StructuralMessageInfo.java
 * /protobuf-java-util-3-25-8-sources-jar/com/google/protobuf/CodedInputStreamReader.java
 * /protobuf-java-util-3-25-8-sources-jar/com/google/protobuf/FieldType.java
 *
 /protobuf-java-util-3-25-8-sources-jar/com/google/protobuf/CodedOutputStream.java
 * /protobuf-java-util-3-25-8-sources-jar/com/google/protobuf/FieldSet.java
 * /protobuf-java-util-3-25-8-sources-jar/com/google/protobuf/NewInstanceSchema.java
 * /protobuf-java-util-3-25-8-sources-jar/com/google/protobuf/PrimitiveNonBoxingCollection.java
 * /protobuf-java-util-3-25-8-sources-jar/com/google/protobuf/MessageInfo.java
 * /protobuf-java-util-3-25-8-sources-jar/com/google/protobuf/Descriptors.java
 * /protobuf-java-util-3-25-8-sources-jar/com/google/protobuf/MessageSchema.java
 * /protobuf-java-util-3-25-8-sources-jar/com/google/protobuf/util/Structs.java
 * /protobuf-java-util-3-25-8-sources-jar/com/google/protobuf/ManifestSchemaFactory.java
 * /protobuf-java-util-3-25-8-sources-jar/com/google/protobuf/Schema.java
 * /protobuf-java-util-3-25-8-sources-jar/com/google/protobuf/AbstractProtobufList.java
 * /protobuf-java-util-3-25-8-sources-jar/com/google/protobuf/MessageLiteToString.java
 *
 /protobuf-java-util-3-25-8-sources-jar/com/google/protobuf/util/Timestamps.java
 * /protobuf-java-util-3-25-8-sources-jar/com/google/protobuf/CompileTimeConstant.java
 * /protobuf-java-util-3-25-8-sources-jar/com/google/protobuf/ProtobufArrayList.java
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- * /protobuf-java-util-3-25-8-sources-jar/com/google/protobuf/BlockingRpcChannel.java
- * /protobuf-java-util-3-25-8-sources-jar/com/google/protobuf/NewInstanceSchemas.java
- * /protobuf-java-util-3-25-8-sources-jar/com/google/protobuf/Android.java
- *
- /protobuf-java-util-3-25-8-sources-jar/com/google/protobuf/MapFieldSchemaFull.java
- * /protobuf-java-util-3-25-8-sources-jar/com/google/protobuf/UnsafeByteOperations.java
- * /protobuf-java-util-3-25-8-sources-jar/com/google/protobuf/ByteString.java
- * /protobuf-java-util-3-25-8-sources-jar/com/google/protobuf/LazyField.java
- * /protobuf-java-util-3-25-8-sources-jar/com/google/protobuf/ExtensionRegistryFactory.java
- * /protobuf-java-util-3-25-8-sources-jar/com/google/protobuf/util/Values.java
- * /protobuf-java-util-3-25-8-sources-jar/com/google/protobuf/LazyFieldLite.java
- * /protobuf-java-util-3-25-8-sources-jar/com/google/protobuf/util/FieldMaskTree.java
- * /protobuf-java-util-3-25-8-sources-jar/com/google/protobuf/IntArrayList.java
- * /protobuf-java-util-3-25-8-sources-jar/com/google/protobuf/TextFormatParseLocation.java
- * /protobuf-java-util-3-25-8-sources-jar/com/google/protobuf/SingleFieldBuilderV3.java
- * /protobuf-java-util-3-25-8-sources-jar/com/google/protobuf/ListFieldSchema.java
- *
- /protobuf-java-util-3-25-8-sources-jar/com/google/protobuf/UnknownFieldSetLiteSchema.java
- * /protobuf-java-util-3-25-8-sources-jar/com/google/protobuf/ByteBufferWriter.java
- * /protobuf-java-util-3-25-8-sources-jar/com/google/protobuf/UnknownFieldSet.java
- * /protobuf-java-util-3-25-8-sources-jar/com/google/protobuf/IterableByteBufferInputStream.java
- * /protobuf-java-util-3-25-8-sources-jar/com/google/protobuf/SchemaUtil.java
- * /protobuf-java-util-3-25-8-sources-jar/com/google/protobuf/AbstractParser.java
- * /protobuf-java-util-3-25-8-sources-jar/com/google/protobuf/BlockingService.java
- * /protobuf-java-util-3-25-8-sources-jar/com/google/protobuf/Reader.java
- * /protobuf-java-util-3-25-8-sources-jar/com/google/protobuf/LazyStringList.java
- * /protobuf-java-util-3-25-8-sources-jar/com/google/protobuf/DynamicMessage.java
- * /protobuf-java-util-3-25-8-sources-jar/com/google/protobuf/Protobuf.java
- * /protobuf-java-util-3-25-8-sources-jar/com/google/protobuf/ExtensionLite.java
- * /protobuf-java-util-3-25-8-sources-jar/com/google/protobuf/util/JsonFormat.java
- *
- /protobuf-java-util-3-25-8-sources-jar/com/google/protobuf/AbstractMessageLite.java
- * /protobuf-java-util-3-25-8-sources-jar/com/google/protobuf/GeneratedMessage.java
- * /protobuf-java-util-3-25-8-sources-jar/com/google/protobuf/MessageInfoFactory.java
- * /protobuf-java-util-3-25-8-sources-jar/com/google/protobuf/SchemaFactory.java
- * /protobuf-java-util-3-25-8-sources-jar/com/google/protobuf/GeneratedMessageV3.java
- * /protobuf-java-util-3-25-8-sources-jar/com/google/protobuf/UnsafeUtil.java
- * /protobuf-java-util-3-25-8-sources-jar/com/google/protobuf/Service.java
- * /protobuf-java-util-3-25-8-sources-jar/com/google/protobuf/BinaryWriter.java
- * /protobuf-java-util-3-25-8-sources-jar/com/google/protobuf/ExtensionSchemas.java
- * /protobuf-java-util-3-25-8-sources-jar/com/google/protobuf/JavaType.java
- * /protobuf-java-util-3-25-8-sources-jar/com/google/protobuf/FieldInfo.java
- * /protobuf-java-util-3-25-8-sources-jar/com/google/protobuf/ExtensionSchema.java
- *
- /protobuf-java-util-3-25-8-sources-jar/com/google/protobuf/UnknownFieldSetLite.java
- * /protobuf-java-util-3-25-8-sources-jar/com/google/protobuf/LegacyDescriptorsUtil.java
- * /protobuf-java-util-3-25-8-sources-jar/com/google/protobuf/LongArrayList.java
- * /protobuf-java-util-3-25-8-sources-jar/com/google/protobuf/NewInstanceSchemaFull.java

1.236 txw2 4.0.6

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- * Project: <https://maven.apache.org/plugin-tools/maven-plugin-annotations/>
- * Source:
<https://github.com/apache/maven-plugin-tools/tree/master/maven-plugin-annotations>

maven-plugin-api (3.5.2)

- * License: Apache-2.0

maven-resolver-api (1.1.1)

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maven-resolver-connector-basic (1.1.1)

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maven-resolver-impl (1.1.1)

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maven-resolver-spi (1.1.1)

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maven-resolver-transport-file (1.1.1)

* License: Apache-2.0

* Project: <https://maven.apache.org/resolver/maven-resolver-transport-file/>

* Source:

<https://github.com/apache/maven-resolver/tree/master/maven-resolver-transport-file>

maven-resolver-util (1.1.1)

* License: Apache-2.0

maven-settings

(3.5.2)

* License: Apache-2.0

* Source:

<https://mvnrepository.com/artifact/org.apache.maven/maven-settings/3.5.2>

OSGi Service Platform Core Companion Code (6.0)

* License: Apache License, 2.0

plexus-archiver (3.5)

* License: Apache-2.0

* Project: <https://codehaus-plexus.github.io/plexus-archiver/>

* Source: <https://github.com/codehaus-plexus/plexus-archiver>

plexus-io (3.0.0)

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plexus-utils (3.1.0)

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- * License: New BSD license

Sax (0.2)

- * License: SAX-PD

- * Project: <http://www.megginson.com/downloads/SAX/>

- * Source: http://sourceforge.net/project/showfiles.php?group_id=29449

testng (6.14.2)

- * License: Apache-2.0 AND (MIT OR GPL-1.0+)

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

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

wagon-http-lightweight (3.0.0)

- * License: Pending

- *

- Project: <https://maven.apache.org/wagon/>

- * Source:

- <https://mvnrepository.com/artifact/org.apache.maven.wagon/wagon-http-lightweight/3.0.0>

xz for java (1.8)

- * License: LicenseRef-Public-Domain

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1.237 javax-activation 2.1.4

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Source Code

The project maintains the following source code repositories:

- * <https://github.com/jakartaee/jaf-api>
- * <https://github.com/jakartaee/jaf-tck>

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- * License: (GPL-2.0 OR GPL-2.0 WITH Classpath-exception-2.0)
- * Project: <https://wiki.openjdk.java.net/display/CodeTools/JT+Harness>
- * Source: <http://hg.openjdk.java.net/code-tools/jtharness/>

JUnit (4.12)

- * License: Eclipse Public License

normalize.css (3.0.2)

* License: MIT

* Project:

<http://necolas.github.io/normalize.css/>

* Source: <http://necolas.github.io/normalize.css/>

SigTest (4.0)

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* Project: <https://wiki.openjdk.java.net/display/CodeTools/sigtest>

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1.238 libcrypto3 3.5.4-r0

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<signature of Ty Coon>, 1 April 1989
Ty Coon, President of Vice

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1.240 gojsonpointer 0.0.0-20190905194746-02993c407bfb

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1.241 jul-to-slf4j 2.0.17

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1.242 postgresql 42.7.3

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1.243 jctools-core 4.0.5

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* /jctools-core-4-0-5-6-jar/META-INF/maven/org.jctools/jctools-core/pom.xml

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Manifest-Version: 1.0

Bnd-LastModified: 1717253512851

Build-Jdk-Spec: 1.8

Bundle-Description: Java Concurrency Tools Core Library

Bundle-License: <http://www.apache.org/licenses/LICENSE-2.0.txt>

Bundle-ManifestVersion: 2

Bundle-Name: Java Concurrency Tools Core Library

Bundle-SymbolicName: org.jctools.core

Bundle-Version: 4.0.5

Created-By: Apache Maven Bundle Plugin 5.1.8

Export-Package: org.jctools.maps;version="4.0.5",org.jctools.util;version="4.0.5";uses="sun.misc",org.jctools.queues;version="4.0.5",org.jctools.queues.atomic;version="4.0.5";uses="org.jctools.queues",org.jctools.queues.atomic.unpadded;version="4.0.5";uses="org.jctools.queues",org.jctools.queues.unpadded;version="4.0.5";uses="org.jctools.queues",org.jctools.counters;version="4.0.5"

Import-Package: sun.misc;resolution:=optional

Require-Capability: osgi.ee;filter="(&(osgi.ee=JavaSE)(version=1.6))"

Tool: Bnd-6.3.1.202206071316

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*

/jctools-core-4-0-5-6-jar/META-INF/MANIFEST.MF

1.244 jakarta-transaction-api 2.0.1

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1.246 aws-sdk-go-v2-service-swf 2.0.0

1.246.1 Available under license :

// Code generated by smithy-go-codegen DO NOT EDIT.

package licensemanager

```
import (  
    "context"  
    "fmt"  
    awsmiddleware "github.com/aws/aws-sdk-go-v2/aws/middleware"  
    "github.com/aws/aws-sdk-go-v2/service/licensemanager/types"  
    "github.com/aws/smithy-go/middleware"
```

```

smithyhttp "github.com/aws/smithy-go/transport/http"
)

// Lists received licenses.
func (c *Client) ListReceivedLicenses(ctx context.Context, params *ListReceivedLicensesInput, optFns
...func(*Options)) (*ListReceivedLicensesOutput, error) {
    if params == nil {
        params = &ListReceivedLicensesInput{}
    }

    result, metadata, err := c.invokeOperation(ctx, "ListReceivedLicenses", params, optFns,
c.addOperationListReceivedLicensesMiddlewares)
    if err != nil {
        return nil, err
    }

    out := result.(*ListReceivedLicensesOutput)
    out.ResultMetadata = metadata
    return out, nil
}

type ListReceivedLicensesInput struct {

    // Filters to scope the results. The following filters are supported:
    //
    // - ProductSKU
    //
    // - Status
    //
    // - Fingerprint
    //
    // - IssuerName
    //
    // - Beneficiary
    Filters []types.Filter

    // Amazon Resource Names (ARNs) of the licenses.
    LicenseArns []string

    // Maximum number of results to return in a single call.
    MaxResults *int32

    // Token for the next set of results.
    NextToken *string

    noSmithyDocumentSerde
}

```

```

type ListReceivedLicensesOutput struct {

    // Received license details.
    Licenses []types.GrantedLicense

    // Token for the next set of results.
    NextToken *string

    // Metadata pertaining to the operation's result.
    ResultMetadata middleware.Metadata

    noSmithyDocumentSerde
}

func (c *Client) addOperationListReceivedLicensesMiddlewares(stack *middleware.Stack, options Options) (err
error) {
    if err := stack.Serialize.Add(&setOperationInputMiddleware{}, middleware.After); err != nil {
        return err
    }
    err = stack.Serialize.Add(&awsAwsjson11_serializeOpListReceivedLicenses{}, middleware.After)
    if err != nil {
        return err
    }
    err = stack.Deserialize.Add(&awsAwsjson11_deserializeOpListReceivedLicenses{},
middleware.After)
    if err != nil {
        return err
    }
    if err := addProtocolFinalizerMiddlewares(stack, options, "ListReceivedLicenses"); err != nil {
        return fmt.Errorf("add protocol finalizers: %v", err)
    }

    if err = addlegacyEndpointContextSetter(stack, options); err != nil {
        return err
    }
    if err = addSetLoggerMiddleware(stack, options); err != nil {
        return err
    }
    if err = addClientRequestID(stack); err != nil {
        return err
    }
    if err = addComputeContentLength(stack); err != nil {
        return err
    }
    if err = addResolveEndpointMiddleware(stack, options); err != nil {
        return err
    }
}

```

```

if err = addComputePayloadSHA256(stack); err != nil {
    return err
}
if err = addRetry(stack, options); err != nil {
    return err
}
if err = addRawResponseToMetadata(stack); err != nil {
    return err
}
if err = addRecordResponseTiming(stack); err != nil {
    return err
}
if err = addSpanRetryLoop(stack, options); err != nil {
    return err
}
if err =
addClientUserAgent(stack, options); err != nil {
    return err
}
if err = smithyhttp.AddErrorCloseResponseBodyMiddleware(stack); err != nil {
    return err
}
if err = smithyhttp.AddCloseResponseBodyMiddleware(stack); err != nil {
    return err
}
if err = addSetLegacyContextSigningOptionsMiddleware(stack); err != nil {
    return err
}
if err = addTimeOffsetBuild(stack, c); err != nil {
    return err
}
if err = addUserAgentRetryMode(stack, options); err != nil {
    return err
}
if err = addCredentialSource(stack, options); err != nil {
    return err
}
if err = stack.Initialize.Add(newServiceMetadataMiddleware_opListReceivedLicenses(options.Region),
middleware.Before); err != nil {
    return err
}
if err = addRecursionDetection(stack); err != nil {
    return err
}
if err = addRequestIDRetrieverMiddleware(stack); err != nil {
    return err
}
if err = addResponseErrorMiddleware(stack); err != nil {

```

```

    return err
}
if err = addRequestResponseLogging(stack, options); err != nil {
    return
err
}
if err = addDisableHTTPSMiddleware(stack, options); err != nil {
    return err
}
if err = addSpanInitializeStart(stack); err != nil {
    return err
}
if err = addSpanInitializeEnd(stack); err != nil {
    return err
}
if err = addSpanBuildRequestStart(stack); err != nil {
    return err
}
if err = addSpanBuildRequestEnd(stack); err != nil {
    return err
}
return nil
}

func newServiceMetadataMiddleware_opListReceivedLicenses(region string)
*awsmiddleware.RegisterServiceMetadata {
return &awsmiddleware.RegisterServiceMetadata{
    Region:    region,
    ServiceID: ServiceID,
    OperationName: "ListReceivedLicenses",
}
}
DeleteLicense
Initialize stack step
spanInitializeStart
RegisterServiceMetadata
legacyEndpointContextSetter
SetLogger
OperationInputValidation
spanInitializeEnd
Serialize stack step
spanBuildRequestStart
setOperationInput
ResolveEndpoint
OperationSerializer
Build stack step
ClientRequestID
ComputeContentLength

```

SetCredentialSourceMiddleware
UserAgent
AddTimeOffsetMiddleware
RecursionDetection
spanBuildRequestEnd
Finalize stack step
spanRetryLoop
Retry
RetryMetricsHeader
ResolveAuthScheme
GetIdentity
ResolveEndpointV2
disableHTTPS
ComputePayloadHash
setLegacyContextSigningOptions
Signing
Deserialize stack step
AddRawResponseToMetadata
ErrorCloseResponseBody
CloseResponseBody
ResponseErrorWrapper
RequestIDRetriever
OperationDeserializer
AddTimeOffsetMiddleware
RecordResponseTiming
RequestResponseLogger
name: License Scan

on: [pull_request]

jobs:

licensescan:

name: License Scan

runs-on: ubuntu-latest

strategy:

matrix:

python-version: [3.9]

steps:

- name: Checkout target

uses: actions/checkout@v2

with:

path: sdkbase

ref: \${{ github.base_ref }}

- name: Checkout this ref

uses: actions/checkout@v2

with:

path: new-ref

```

    fetch-depth: 0
- name: Get Diff
  run: git --git-dir ./new-ref/.git diff --name-only --diff-filter=ACMRT ${{ github.event.pull_request.base.sha }}
${{ github.sha }} > refDiffFiles.txt
- name: Get Target Files
  run: git --git-dir ./sdkbase/.git ls-files | grep -xf refDiffFiles.txt -> targetFiles.txt
- name: Checkout scancode
  uses: actions/checkout@v2
  with:
    repository: nexB/scancode-toolkit
    path: scancode-toolkit
    fetch-depth: 1
- name: Set up Python ${{ matrix.python-version }}
  uses: actions/setup-python@v2
  with:
    python-version: ${{ matrix.python-version }}
# ScanCode
- name: Self-configure scancode
  working-directory: ./scancode-toolkit
  run: ./scancode --help
- name: Run Scan code on target
  run: cat targetFiles.txt | while read filename; do echo ./sdkbase/$filename; done | xargs ./scancode-
toolkit/scancode -l -n 30 --json-pp - | grep short_name | sort | uniq >> old-licenses.txt
- name: Run Scan code on pr ref
  run: cat refDiffFiles.txt | while read filename; do echo ./new-ref/$filename; done | xargs ./scancode-
toolkit/scancode -l -n 30 --json-pp - | grep short_name | sort | uniq >> new-licenses.txt
# compare
- name: License test
  run: if ! cmp old-licenses.txt new-licenses.txt; then echo "Licenses differ! Failing."; exit -1; else echo "Licenses
are the same. Success."; exit 0; fi
ListLicenses
Initialize stack step
spanInitializeStart
RegisterServiceMetadata
legacyEndpointContextSetter
SetLogger
spanInitializeEnd
Serialize stack step
spanBuildRequestStart
setOperationInput
ResolveEndpoint
OperationSerializer
Build stack step
ClientRequestID
ComputeContentLength
SetCredentialSourceMiddleware
UserAgent
AddTimeOffsetMiddleware

```



```

RecursionDetection
spanBuildRequestEnd
Finalize stack step
spanRetryLoop
Retry
RetryMetricsHeader
ResolveAuthScheme
GetIdentity
ResolveEndpointV2
disableHTTPS
ComputePayloadHash
setLegacyContextSigningOptions
Signing
Deserialize stack step
AddRawResponseToMetadata
ErrorCloseResponseBody
CloseResponseBody
ResponseErrorWrapper
RequestIDRetriever
OperationDeserializer
AddTimeOffsetMiddleware
RecordResponseTiming
RequestResponseLogger
// Code generated by smithy-go-codegen DO NOT EDIT.

package grafana

import (
    "context"
    "fmt"
    awsmiddleware "github.com/aws/aws-sdk-go-v2/aws/middleware"
    "github.com/aws/aws-sdk-go-v2/service/grafana/types"
    "github.com/aws/smithy-go/middleware"
    smithyhttp "github.com/aws/smithy-go/transport/http"
)

// Removes the Grafana Enterprise license from a workspace.
func (c *Client) DisassociateLicense(ctx context.Context, params *DisassociateLicenseInput, optFns
...func(*Options)) (*DisassociateLicenseOutput, error) {
    if params == nil {
        params = &DisassociateLicenseInput{}
    }

    result, metadata, err := c.invokeOperation(ctx, "DisassociateLicense", params, optFns,
c.addOperationDisassociateLicenseMiddlewares)
    if err != nil {
        return nil, err
    }
}

```

```

out := result.(*DisassociateLicenseOutput)
out.ResultMetadata = metadata
return out, nil
}

```

```

type DisassociateLicenseInput struct {

    // The type of license to remove from the workspace.
    //
    // This member is required.
    LicenseType types.LicenseType

    //
    // The ID of the workspace to remove the Grafana Enterprise license from.
    //
    // This member is required.
    WorkspaceId *string

    noSmithyDocumentSerde
}

```

```

type DisassociateLicenseOutput struct {

    // A structure containing information about the workspace.
    //
    // This member is required.
    Workspace *types.WorkspaceDescription

    // Metadata pertaining to the operation's result.
    ResultMetadata middleware.Metadata

    noSmithyDocumentSerde
}

```

```

func (c *Client) addOperationDisassociateLicenseMiddlewares(stack *middleware.Stack, options Options) (err
error) {
    if err := stack.Serialize.Add(&setOperationInputMiddleware{}, middleware.After); err != nil {
        return err
    }
    err = stack.Serialize.Add(&awsRestjson1_serializeOpDisassociateLicense{}, middleware.After)
    if err != nil {
        return err
    }
    err = stack.Deserialize.Add(&awsRestjson1_deserializeOpDisassociateLicense{}, middleware.After)
    if err != nil {
        return err
    }
}

```

```

if err := addProtocolFinalizerMiddlewares(stack, options, "DisassociateLicense");
err != nil {
    return fmt.Errorf("add protocol finalizers: %v", err)
}

if err = addLegacyEndpointContextSetter(stack, options); err != nil {
    return err
}
if err = addSetLoggerMiddleware(stack, options); err != nil {
    return err
}
if err = addClientRequestID(stack); err != nil {
    return err
}
if err = addComputeContentLength(stack); err != nil {
    return err
}
if err = addResolveEndpointMiddleware(stack, options); err != nil {
    return err
}
if err = addComputePayloadSHA256(stack); err != nil {
    return err
}
if err = addRetry(stack, options); err != nil {
    return err
}
if err = addRawResponseToMetadata(stack); err != nil {
    return err
}
if err = addRecordResponseTiming(stack); err != nil {
    return err
}
if err = addSpanRetryLoop(stack, options); err != nil {
    return err
}
if err = addClientUserAgent(stack, options); err != nil {
    return err
}
if err = smithyhttp.AddErrorCloseResponseBodyMiddleware(stack); err != nil {
    return err
}
if
err = smithyhttp.AddCloseResponseBodyMiddleware(stack); err != nil {
    return err
}
if err = addSetLegacyContextSigningOptionsMiddleware(stack); err != nil {
    return err
}

```

```

if err = addTimeOffsetBuild(stack, c); err != nil {
    return err
}
if err = addUserAgentRetryMode(stack, options); err != nil {
    return err
}
if err = addCredentialSource(stack, options); err != nil {
    return err
}
if err = addOpDisassociateLicenseValidationMiddleware(stack); err != nil {
    return err
}
if err = stack.Initialize.Add(newServiceMetadataMiddleware_opDisassociateLicense(options.Region),
middleware.Before); err != nil {
    return err
}
if err = addRecursionDetection(stack); err != nil {
    return err
}
if err = addRequestIDRetrieverMiddleware(stack); err != nil {
    return err
}
if err = addResponseErrorMiddleware(stack); err != nil {
    return err
}
if err = addRequestResponseLogging(stack, options); err != nil {
    return err
}
if err = addDisableHTTPSMiddleware(stack, options);
err != nil {
    return err
}
if err = addSpanInitializeStart(stack); err != nil {
    return err
}
if err = addSpanInitializeEnd(stack); err != nil {
    return err
}
if err = addSpanBuildRequestStart(stack); err != nil {
    return err
}
if err = addSpanBuildRequestEnd(stack); err != nil {
    return err
}
return nil
}

```

```

func newServiceMetadataMiddleware_opDisassociateLicense(region string)

```

```

*awsmiddleware.RegisterServiceMetadata {
return &awsmiddleware.RegisterServiceMetadata{
    Region:    region,
    ServiceID: ServiceID,
    OperationName: "DisassociateLicense",
}
}
// Code generated by smithy-go-codegen DO NOT EDIT.

package licensemanager

import (
    "context"
    "fmt"
    awsmiddleware "github.com/aws/aws-sdk-go-v2/aws/middleware"
    "github.com/aws/aws-sdk-go-v2/service/licensemanager/types"
    "github.com/aws/smithy-go/middleware"
    smithyhttp "github.com/aws/smithy-go/transport/http"
)

// Deletes the specified license.
func (c *Client) DeleteLicense(ctx context.Context, params *DeleteLicenseInput, optFns ...func(*Options))
(*DeleteLicenseOutput, error) {
    if params == nil {
        params = &DeleteLicenseInput{}
    }

    result, metadata, err := c.invokeOperation(ctx, "DeleteLicense", params, optFns,
c.addOperationDeleteLicenseMiddlewares)
    if err != nil {
        return nil, err
    }

    out := result.(*DeleteLicenseOutput)
    out.ResultMetadata = metadata
    return out, nil
}

type DeleteLicenseInput struct {

    // Amazon Resource Name (ARN) of the license.
    //
    // This member is required.
    LicenseArn *string

    // Current version of the license.
    //
    // This member is required.

```

```

SourceVersion
*string

noSmithyDocumentSerde
}

type DeleteLicenseOutput struct {

    // Date when the license is deleted.
    DeletionDate *string

    // License status.
    Status types.LicenseDeletionStatus

    // Metadata pertaining to the operation's result.
    ResultMetadata middleware.Metadata

    noSmithyDocumentSerde
}

func (c *Client) addOperationDeleteLicenseMiddlewares(stack *middleware.Stack, options Options) (err error) {
    if err := stack.Serialize.Add(&setOperationInputMiddleware{}, middleware.After); err != nil {
        return err
    }
    err = stack.Serialize.Add(&awsAwsjson11_serializeOpDeleteLicense{}, middleware.After)
    if err != nil {
        return err
    }
    err = stack.Deserialize.Add(&awsAwsjson11_deserializeOpDeleteLicense{}, middleware.After)
    if err != nil {
        return err
    }
    if err := addProtocolFinalizerMiddlewares(stack, options, "DeleteLicense"); err != nil {
        return fmt.Errorf("add protocol finalizers: %v", err)
    }

    if err = addLegacyEndpointContextSetter(stack, options); err !=
    nil {
        return err
    }
    if err = addSetLoggerMiddleware(stack, options); err != nil {
        return err
    }
    if err = addClientRequestID(stack); err != nil {
        return err
    }
    if err = addComputeContentLength(stack); err != nil {
        return err
    }

```

```

}
if err = addResolveEndpointMiddleware(stack, options); err != nil {
    return err
}
if err = addComputePayloadSHA256(stack); err != nil {
    return err
}
if err = addRetry(stack, options); err != nil {
    return err
}
if err = addRawResponseToMetadata(stack); err != nil {
    return err
}
if err = addRecordResponseTiming(stack); err != nil {
    return err
}
if err = addSpanRetryLoop(stack, options); err != nil {
    return err
}
if err = addClientUserAgent(stack, options); err != nil {
    return err
}
if err = smithyhttp.AddErrorCloseResponseBodyMiddleware(stack); err != nil {
    return err
}
if err = smithyhttp.AddCloseResponseBodyMiddleware(stack); err != nil {
    return err
}
if err = addSetLegacyContextSigningOptionsMiddleware(stack); err
!= nil {
    return err
}
if err = addTimeOffsetBuild(stack, c); err != nil {
    return err
}
if err = addUserAgentRetryMode(stack, options); err != nil {
    return err
}
if err = addCredentialSource(stack, options); err != nil {
    return err
}
if err = addOpDeleteLicenseValidationMiddleware(stack); err != nil {
    return err
}
if err = stack.Initialize.Add(newServiceMetadataMiddleware_opDeleteLicense(options.Region),
middleware.Before); err != nil {
    return err
}
}

```

```

if err = addRecursionDetection(stack); err != nil {
    return err
}
if err = addRequestIDRetrieverMiddleware(stack); err != nil {
    return err
}
if err = addResponseErrorMiddleware(stack); err != nil {
    return err
}
if err = addRequestResponseLogging(stack, options); err != nil {
    return err
}
if err = addDisableHTTPSMiddleware(stack, options); err != nil {
    return err
}
if err = addSpanInitializeStart(stack); err != nil {
    return err
}
if err = addSpanInitializeEnd(stack); err != nil {
    return err
}
if
err = addSpanBuildRequestStart(stack); err != nil {
    return err
}
if err = addSpanBuildRequestEnd(stack); err != nil {
    return err
}
return nil
}

func newServiceMetadataMiddleware_opDeleteLicense(region string) *awsmiddleware.RegisterServiceMetadata {
    return &awsmiddleware.RegisterServiceMetadata{
        Region:    region,
        ServiceID: ServiceID,
        OperationName: "DeleteLicense",
    }
}
// Code generated by smithy-go-codegen DO NOT EDIT.

package licensemanager

import (
    "context"
    "fmt"
    awsmiddleware "github.com/aws/aws-sdk-go-v2/aws/middleware"
    "github.com/aws/aws-sdk-go-v2/service/licensemanager/types"
    "github.com/aws/smithy-go/middleware"

```



```

smithyhttp "github.com/aws/smithy-go/transport/http"
)

// Lists the licenses for your account.
func (c *Client) ListLicenses(ctx context.Context, params *ListLicensesInput, optFns ...func(*Options))
(*ListLicensesOutput, error) {
    if params == nil {
        params = &ListLicensesInput{}
    }

    result, metadata, err := c.invokeOperation(ctx, "ListLicenses", params, optFns,
c.addOperationListLicensesMiddlewares)
    if err != nil {
        return nil, err
    }

    out := result.(*ListLicensesOutput)
    out.ResultMetadata = metadata
    return out, nil
}

type ListLicensesInput struct {

    // Filters to scope the results. The following filters are supported:
    //
    // - Beneficiary
    //
    // - ProductSKU
    //
    // - Fingerprint
    //
    // - Status
    Filters
    []types.Filter

    // Amazon Resource Names (ARNs) of the licenses.
    LicenseArns []string

    // Maximum number of results to return in a single call.
    MaxResults *int32

    // Token for the next set of results.
    NextToken *string

    noSmithyDocumentSerde
}

type ListLicensesOutput struct {

```

```

// License details.
Licenses []types.License

// Token for the next set of results.
NextToken *string

// Metadata pertaining to the operation's result.
ResultMetadata middleware.Metadata

noSmithyDocumentSerde
}

func (c *Client) addOperationListLicensesMiddlewares(stack *middleware.Stack, options Options) (err error) {
    if err := stack.Serialize.Add(&setOperationInputMiddleware{}, middleware.After); err != nil {
        return err
    }
    err = stack.Serialize.Add(&awsAwsjson11_serializeOpListLicenses{}, middleware.After)
    if err != nil {
        return err
    }
    err = stack.Deserialize.Add(&awsAwsjson11_deserializeOpListLicenses{}, middleware.After)
    if err != nil {
        return err
    }
    if err := addProtocolFinalizerMiddlewares(stack,
        options, "ListLicenses"); err != nil {
        return fmt.Errorf("add protocol finalizers: %v", err)
    }

    if err = addLegacyEndpointContextSetter(stack, options); err != nil {
        return err
    }
    if err = addSetLoggerMiddleware(stack, options); err != nil {
        return err
    }
    if err = addClientRequestID(stack); err != nil {
        return err
    }
    if err = addComputeContentLength(stack); err != nil {
        return err
    }
    if err = addResolveEndpointMiddleware(stack, options); err != nil {
        return err
    }
    if err = addComputePayloadSHA256(stack); err != nil {
        return err
    }
}

```

```

if err = addRetry(stack, options); err != nil {
    return err
}
if err = addRawResponseToMetadata(stack); err != nil {
    return err
}
if err = addRecordResponseTiming(stack); err != nil {
    return err
}
if err = addSpanRetryLoop(stack, options); err != nil {
    return err
}
if err = addClientUserAgent(stack, options); err != nil {
    return err
}
if err = smithyhttp.AddErrorCloseResponseBodyMiddleware(stack);
err != nil {
    return err
}
if err = smithyhttp.AddCloseResponseBodyMiddleware(stack); err != nil {
    return err
}
if err = addSetLegacyContextSigningOptionsMiddleware(stack); err != nil {
    return err
}
if err = addTimeOffsetBuild(stack, c); err != nil {
    return err
}
if err = addUserAgentRetryMode(stack, options); err != nil {
    return err
}
if err = addCredentialSource(stack, options); err != nil {
    return err
}
if err = stack.Initialize.Add(newServiceMetadataMiddleware_opListLicenses(options.Region), middleware.Before);
err != nil {
    return err
}
if err = addRecursionDetection(stack); err != nil {
    return err
}
if err = addRequestIDRetrieverMiddleware(stack); err != nil {
    return err
}
if err = addResponseErrorMiddleware(stack); err != nil {
    return err
}
if err = addRequestResponseLogging(stack, options); err != nil {

```

```

    return err
}
if err = addDisableHTTPSMiddleware(stack, options); err != nil {
    return err
}
if err = addSpanInitializeStart(stack);
err != nil {
    return err
}
if err = addSpanInitializeEnd(stack); err != nil {
    return err
}
if err = addSpanBuildRequestStart(stack); err != nil {
    return err
}
if err = addSpanBuildRequestEnd(stack); err != nil {
    return err
}
return nil
}

func newServiceMetadataMiddleware_opListLicenses(region string) *awsmiddleware.RegisterServiceMetadata {
    return &awsmiddleware.RegisterServiceMetadata{
        Region:    region,
        ServiceID: ServiceID,
        OperationName: "ListLicenses",
    }
}
DisassociateLicense
Initialize stack step
spanInitializeStart
RegisterServiceMetadata
legacyEndpointContextSetter
SetLogger
OperationInputValidation
spanInitializeEnd
Serialize stack step
spanBuildRequestStart
setOperationInput
ResolveEndpoint
OperationSerializer
Build stack step
ClientRequestID
ComputeContentLength
SetCredentialSourceMiddleware
UserAgent
AddTimeOffsetMiddleware
RecursionDetection

```

spanBuildRequestEnd
Finalize stack step
spanRetryLoop
Retry
RetryMetricsHeader
ResolveAuthScheme
GetIdentity
ResolveEndpointV2
disableHTTPS
ComputePayloadHash
setLegacyContextSigningOptions
Signing
Deserialize stack step
AddRawResponseToMetadata
ErrorCloseResponseBody
CloseResponseBody
ResponseErrorWrapper
RequestIDRetriever
OperationDeserializer
AddTimeOffsetMiddleware
RecordResponseTiming
RequestResponseLogger
{
 "smithy": "2.0",
 "metadata": {
 "suppressions": [
 {
 "id": "HttpMethodSemantics",
 "namespace": "*"
 },
 {
 "id": "HttpStatusCodeSemantics",
 "namespace": "*"
 },
 {
 "id": "PaginatedTrait",
 "namespace": "*"
 },
 {
 "id": "HttpHeaderTrait",
 "namespace": "*"
 },
 {
 "id": "HttpUriConflict",
 "namespace": "*"
 },
 {
 "id": "Service",

```

        "namespace": "*"
    }
]
},
"shapes": {
    "com.amazonaws.licensemanager#AWSLicenseManager": {
        "type": "service",
        "version": "2018-08-01",
        "operations": [
            {
                "target": "com.amazonaws.licensemanager#AcceptGrant"
            },
            {
                "target": "com.amazonaws.licensemanager#CheckInLicense"
            },
            {
                "target": "com.amazonaws.licensemanager#CheckoutBorrowLicense"
            },
            {
                "target": "com.amazonaws.licensemanager#CheckoutLicense"
            },
            {
                "target": "com.amazonaws.licensemanager#CreateGrant"
            },
            {
                "target": "com.amazonaws.licensemanager#CreateGrantVersion"
            },
            {
                "target": "com.amazonaws.licensemanager#CreateLicense"
            },
            {
                "target": "com.amazonaws.licensemanager#CreateLicenseConfiguration"
            },
            {
                "target": "com.amazonaws.licensemanager#CreateLicenseConversionTaskForResource"
            },
            {
                "target": "com.amazonaws.licensemanager#CreateLicenseManagerReportGenerator"
            },
            {
                "target": "com.amazonaws.licensemanager#CreateLicenseVersion"
            },
            {
                "target": "com.amazonaws.licensemanager#CreateToken"
            },
            {
                "target": "com.amazonaws.licensemanager#DeleteGrant"
            }
        ]
    }
}

```

```

    },
    {
      "target": "com.amazonaws.licensemanager#DeleteLicense"
    },
    {
      "target": "com.amazonaws.licensemanager#DeleteLicenseConfiguration"
    },
    {
      "target": "com.amazonaws.licensemanager#DeleteLicenseManagerReportGenerator"
    },
    {
      "target": "com.amazonaws.licensemanager#DeleteToken"
    },
    {
      "target": "com.amazonaws.licensemanager#ExtendLicenseConsumption"
    }
  ],
  {
    {
      "target": "com.amazonaws.licensemanager#GetAccessToken"
    },
    {
      "target": "com.amazonaws.licensemanager#GetGrant"
    },
    {
      "target": "com.amazonaws.licensemanager#GetLicense"
    },
    {
      "target": "com.amazonaws.licensemanager#GetLicenseConfiguration"
    },
    {
      "target": "com.amazonaws.licensemanager#GetLicenseConversionTask"
    },
    {
      "target": "com.amazonaws.licensemanager#GetLicenseManagerReportGenerator"
    },
    {
      "target": "com.amazonaws.licensemanager#GetLicenseUsage"
    },
    {
      "target": "com.amazonaws.licensemanager#GetServiceSettings"
    },
    {
      "target": "com.amazonaws.licensemanager#ListAssociationsForLicenseConfiguration"
    },
    {
      "target": "com.amazonaws.licensemanager#ListDistributedGrants"
    },
    {

```

```

    "target": "com.amazonaws.licensemanager#ListFailuresForLicenseConfigurationOperations"
  },
  {
    "target": "com.amazonaws.licensemanager#ListLicenseConfigurations"
  },
  {
    "target": "com.amazonaws.licensemanager#ListLicenseConversionTasks"
  },
  {
    "target": "com.amazonaws.licensemanager#ListLicenseManagerReportGenerators"
  },
  {
    "target": "com.amazonaws.licensemanager#ListLicenses"
  },
  {
    "target": "com.amazonaws.licensemanager#ListLicenseSpecificationsForResource"
  },
  {
    "target": "com.amazonaws.licensemanager#ListLicenseVersions"
  },
  {
    "target": "com.amazonaws.licensemanager#ListReceivedGrants"
  },
  {
    "target": "com.amazonaws.licensemanager#ListReceivedGrantsForOrganization"
  },
  {
    "target": "com.amazonaws.licensemanager#ListReceivedLicenses"
  },
  {
    "target": "com.amazonaws.licensemanager#ListReceivedLicensesForOrganization"
  },
  {
    "target": "com.amazonaws.licensemanager#ListResourceInventory"
  },
  {
    "target": "com.amazonaws.licensemanager#ListTagsForResource"
  },
  {
    "target": "com.amazonaws.licensemanager#ListTokens"
  },
  {
    "target": "com.amazonaws.licensemanager#ListUsageForLicenseConfiguration"
  },
  {
    "target": "com.amazonaws.licensemanager#RejectGrant"
  },

```



```

{
  "target": "com.amazonaws.licensemanager#TagResource"
},
{
  "target": "com.amazonaws.licensemanager#UntagResource"
},
{
  "target": "com.amazonaws.licensemanager#UpdateLicenseConfiguration"
},
{
  "target": "com.amazonaws.licensemanager#UpdateLicenseManagerReportGenerator"
},
{
  "target": "com.amazonaws.licensemanager#UpdateLicenseSpecificationsForResource"
},
{
  "target": "com.amazonaws.licensemanager#UpdateServiceSettings"
}
],
"traits": {
  "aws.api#service": {
    "sdkId": "License Manager",
    "arnNamespace": "license-manager",
    "cloudFormationName": "LicenseManager",
    "cloudTrailEventSource": "license-manager.amazonaws.com",
    "endpointPrefix": "license-manager"
  },
  "aws.auth#sigv4": {
    "name": "license-manager"
  },
  "aws.protocols#awsJson1_1": {},
  "smithy.api#documentation": "<p>License Manager makes it easier to manage licenses from software vendors across multiple \n      Amazon Web Services accounts and on-premises servers.</p>",
  "smithy.api#title": "AWS License Manager",
  "smithy.api#xmlNamespace": {
    "uri": "https://license-manager.amazonaws.com/doc/2018_08_01"
  },
  "smithy.rules#endpointRuleSet": {
    "version": "1.0",
    "parameters": {
      "Region": {
        "builtIn": "AWS::Region",
        "required": false,
        "documentation": "The AWS region used to dispatch the request.",
        "type": "String"
      }
    },
    "UseDualStack": {
      "builtIn": "AWS::UseDualStack",

```

```

        "required": true,
        "default": false,
        "documentation": "When true, use the dual-stack endpoint. If the configured endpoint does not
support dual-stack, dispatching the request MAY return an error.",
        "type": "Boolean"
    },
    "UseFIPS": {
        "builtIn": "AWS::UseFIPS",
        "required": true,
        "default": false,
        "documentation": "When true,
send this request to the FIPS-compliant regional endpoint. If the configured endpoint does not have a FIPS
compliant endpoint, dispatching the request will return an error.",
        "type": "Boolean"
    },
    "Endpoint": {
        "builtIn": "SDK::Endpoint",
        "required": false,
        "documentation": "Override the endpoint used to send this request",
        "type": "String"
    }
},
"rules": [
    {
        "conditions": [
            {
                "fn": "isSet",
                "argv": [
                    {
                        "ref": "Endpoint"
                    }
                ]
            }
        ]
    }
],
"rules": [
    {
        "conditions": [
            {
                "fn": "booleanEquals",
                "argv": [
                    {
                        "ref": "UseFIPS"
                    },
                    true
                ]
            }
        ]
    }
],

```

```

        "error": "Invalid Configuration: FIPS and custom endpoint are not supported",
        "type": "error"
    },
    {
        "conditions": [
            {
                "fn": "booleanEquals",
                "argv": [
                    {
                        "ref": "UseDualStack"
                    },
                    true
                ]
            }
        ],
        "error": "Invalid Configuration: Dualstack and custom endpoint are not supported",
        "type": "error"
    },
    {
        "conditions": [],
        "endpoint": {
            "url": {
                "ref": "Endpoint"
            },
            "properties": {},
            "headers": {}
        },
        "type": "endpoint"
    }
],
"type": "tree"
},
{
    "conditions": [
        {
            "fn": "isSet",
            "argv": [
                {
                    "ref": "Region"
                }
            ]
        }
    ]
},
"rules": [
    {
        "conditions": [
            {

```

```

"fn": "aws.partition",
    "argv": [
        {
            "ref": "Region"
        }
    ],
    "assign": "PartitionResult"
}
],
"rules": [
    {
        "conditions": [
            {
                "fn": "booleanEquals",
                "argv": [
                    {
                        "ref": "UseFIPS"
                    },
                    true
                ]
            },
            {
                "fn": "booleanEquals",
                "argv": [
                    {
                        "ref": "UseDualStack"
                    },
                    true
                ]
            }
        ],
        "rules": [
            {
                "conditions": [
                    {
                        "fn": "booleanEquals",
                        "argv": [
                            true,
                            {
                                "fn": "getAttr",
                                "argv": [
                                    {
                                        "ref": "PartitionResult"
                                    },
                                    "supportsFIPS"
                                ]
                            }
                        ]
                    }
                ]
            }
        ]
    }
]

```

```

        ]
      }
    ]

    },

    {
      "fn": "booleanEquals",
      "argv": [
        true,
        {
          "fn": "getAttr",
          "argv": [
            {
              "ref": "PartitionResult"
            },
            "supportsDualStack"
          ]
        }
      ]
    }
  ]

  },

  ],
  "rules": [
    {
      "conditions": [],
      "endpoint": {
        "url": "https://license-manager-
fips.{Region}.{PartitionResult#dualStackDnsSuffix}",
        "properties": {},
        "headers": {}
      },
      "type": "endpoint"
    }
  ],

  "type": "tree"
},
{
  "conditions": [],
  "error": "FIPS and DualStack are enabled, but this partition does not support one or
both",
  "type": "error"
}
],
"type": "tree"
},
{
  "conditions": [

```

```

{
  "fn": "booleanEquals",
  "argv": [
    {
      "ref": "UseFIPS"
    },
    true
  ]
},
"rules": [
  {
    "conditions": [
      {
        "fn": "booleanEquals",
        "argv": [
          {
            "fn": "getAttr",
            "argv": [
              {
                "ref": "PartitionResult"
              },
              "supportsFIPS"
            ]
          },
          true
        ]
      }
    ],
    "url": "https://license-manager-fips.{Region}.{PartitionResult#dnsSuffix}",
    "properties": {},
    "headers": {}
  },
  {
    "type": "endpoint"
  }
],
"type": "tree"
},
{
  "conditions": [],
  "error": "FIPS is enabled but this partition does not support FIPS",

```

```

        "type": "error"
    }

    ],
    "type": "tree"
},
{
    "conditions": [
        {
            "fn": "booleanEquals",
            "argv": [
                {
                    "ref": "UseDualStack"
                },
                true
            ]
        }
    ],
    "rules": [
        {
            "conditions": [
                {
                    "fn": "booleanEquals",
                    "argv": [
                        true,
                        {
                            "fn": "getAttr",
                            "argv": [
                                {
                                    "ref": "PartitionResult"
                                },
                                "supportsDualStack"
                            ]
                        }
                    ]
                }
            ],
            "endpoint": {
                "url": "https://license-
manager.{Region}.{PartitionResult#dualStackDnsSuffix}",
                "properties": {},
                "headers": {}
            },
            "rules": [
                {
                    "conditions": [],
                    "endpoint": {
                        "url": "https://license-
manager.{Region}.{PartitionResult#dualStackDnsSuffix}",
                        "properties": {},
                        "headers": {}
                    },
                    "rules": [

```

```

        "type": "endpoint"
    }

],
    "type": "tree"
},
{
    "conditions": [],
    "error": "DualStack is enabled but this partition does not support DualStack",
    "type": "error"
}
],
    "type": "tree"
},
{
    "conditions": [],
    "endpoint": {
        "url": "https://license-manager.{Region}.{PartitionResult#dnsSuffix}",
        "properties": {},

        "headers": {}
    },
    "type": "endpoint"
}
],
    "type": "tree"
}
],
    "type": "tree"
},
{
    "conditions": [],
    "error": "Invalid Configuration: Missing Region",
    "type": "error"
}
]
},
"smithy.rules#endpointTests": {
    "testCases": [
        {
            "documentation": "For region af-south-1 with FIPS disabled and DualStack disabled",
            "expect": {
                "endpoint":
{
                    "url": "https://license-manager.af-south-1.amazonaws.com"
                }
            },
            "params": {

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        "Region": "af-south-1",
        "UseFIPS": false,
        "UseDualStack": false
    }
},
{
    "documentation": "For region ap-east-1 with FIPS disabled and DualStack disabled",
    "expect": {
        "endpoint": {
            "url": "https://license-manager.ap-east-1.amazonaws.com"
        }
    },
    "params": {
        "Region": "ap-east-1",
        "UseFIPS": false,
        "UseDualStack": false
    }
},
{
    "documentation": "For region ap-northeast-1 with FIPS disabled and DualStack disabled",
    "expect": {
        "endpoint": {
            "url": "https://license-manager.ap-northeast-1.amazonaws.com"
        }
    },
    "params": {
        "Region": "ap-northeast-1",
        "UseFIPS": false,
        "UseDualStack": false
    }
},
{
    "documentation": "For region ap-northeast-2 with FIPS disabled and DualStack disabled",
    "expect": {
        "endpoint": {
            "url": "https://license-manager.ap-northeast-2.amazonaws.com"
        }
    },
    "params": {
        "Region": "ap-northeast-2",
        "UseFIPS": false,
        "UseDualStack": false
    }
},
{
    "documentation": "For region ap-northeast-3 with FIPS disabled and DualStack disabled",
    "expect": {
        "endpoint": {

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        "url": "https://license-manager.ap-northeast-3.amazonaws.com"
    }
},
"params": {
    "Region": "ap-northeast-3",
    "UseFIPS": false,
    "UseDualStack": false
}
},
{
    "documentation": "For region ap-south-1 with FIPS disabled and DualStack disabled",
    "expect": {
        "endpoint": {
            "url": "https://license-manager.ap-south-1.amazonaws.com"
        }
    },
    "params": {
        "Region": "ap-south-1",
        "UseFIPS": false,
        "UseDualStack": false
    }
},
{
    "documentation": "For region ap-southeast-1 with FIPS disabled and DualStack disabled",
    "expect": {
        "endpoint": {
            "url": "https://license-manager.ap-southeast-1.amazonaws.com"
        }
    }
},
{
    "params": {
        "Region": "ap-southeast-1",
        "UseFIPS": false,
        "UseDualStack": false
    }
},
{
    "documentation": "For region ap-southeast-2 with FIPS disabled and DualStack disabled",
    "expect": {
        "endpoint": {
            "url": "https://license-manager.ap-southeast-2.amazonaws.com"
        }
    },
    "params": {
        "Region": "ap-southeast-2",
        "UseFIPS": false,
        "UseDualStack": false
    }
}

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    }
  },
  {
    "documentation": "For region ap-southeast-3 with FIPS disabled and DualStack disabled",
    "expect": {
      "endpoint": {
        "url": "https://license-manager.ap-southeast-3.amazonaws.com"
      }
    },
    "params": {
      "Region": "ap-southeast-3",
      "UseFIPS": false,
      "UseDualStack": false
    }
  },
  {
    "documentation": "For region ca-central-1 with FIPS disabled and DualStack disabled",
    "expect": {
      "endpoint": {
        "url": "https://license-manager.ca-central-1.amazonaws.com"
      }
    },
    "params": {
      "Region": "ca-central-1",
      "UseFIPS": false,
      "UseDualStack": false
    }
  },
  {
    "documentation": "For region eu-central-1 with FIPS disabled and DualStack disabled",
    "expect": {
      "endpoint": {
        "url": "https://license-manager.eu-central-1.amazonaws.com"
      }
    },
    "params": {
      "Region": "eu-central-1",
      "UseFIPS": false,
      "UseDualStack": false
    }
  },
  {
    "documentation": "For region eu-north-1 with
FIPS disabled and DualStack disabled",
    "expect": {
      "endpoint": {

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        "url": "https://license-manager.eu-north-1.amazonaws.com"
    }
},
"params": {
    "Region": "eu-north-1",
    "UseFIPS": false,
    "UseDualStack": false
}
},
{
    "documentation": "For region eu-south-1 with FIPS disabled and DualStack disabled",
    "expect": {
        "endpoint": {
            "url": "https://license-manager.eu-south-1.amazonaws.com"
        }
    },
    "params": {
        "Region":
"eu-south-1",
        "UseFIPS": false,
        "UseDualStack": false
    }
},
{
    "documentation": "For region eu-west-1 with FIPS disabled and DualStack disabled",
    "expect": {
        "endpoint": {
            "url": "https://license-manager.eu-west-1.amazonaws.com"
        }
    },
    "params": {
        "Region": "eu-west-1",
        "UseFIPS": false,
        "UseDualStack": false
    }
},
{
    "documentation": "For region eu-west-2 with FIPS disabled and DualStack disabled",
    "expect": {
        "endpoint": {
            "url": "https://license-manager.eu-west-2.amazonaws.com"
        }
    },
    "params": {
        "Region": "eu-west-2",
        "UseFIPS": false,
        "UseDualStack": false
    }
}

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    }
  },
  {
    "documentation": "For region eu-west-3 with FIPS disabled and DualStack disabled",
    "expect": {
      "endpoint": {
        "url": "https://license-manager.eu-west-3.amazonaws.com"
      }
    },
    "params": {
      "Region": "eu-west-3",
      "UseFIPS": false,
      "UseDualStack": false
    }
  },
  {
    "documentation": "For region me-south-1 with FIPS disabled and DualStack disabled",
    "expect": {
      "endpoint": {
        "url": "https://license-manager.me-south-1.amazonaws.com"
      }
    },
    "params": {
      "Region": "me-south-1",
      "UseFIPS": false,
      "UseDualStack": false
    }
  },
  {
    "documentation": "For region sa-east-1 with FIPS disabled and DualStack disabled",
    "expect": {
      "endpoint": {
        "url": "https://license-manager.sa-east-1.amazonaws.com"
      }
    },
    "params": {
      "Region": "sa-east-1",
      "UseFIPS": false,
      "UseDualStack": false
    }
  },
  {
    "documentation": "For region us-east-1 with FIPS disabled and DualStack disabled",
    "expect": {
      "endpoint": {
        "url": "https://license-manager.us-east-1.amazonaws.com"
      }
    }
  }
}

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    },
    "params": {
      "Region": "us-east-1",
      "UseFIPS": false,
      "UseDualStack": false
    }
  },
  {
    "documentation": "For region us-east-1 with FIPS enabled and DualStack disabled",
    "expect": {
      "endpoint": {
        "url": "https://license-manager-fips.us-east-1.amazonaws.com"
      }
    },
    "params": {
      "Region": "us-east-1",
      "UseFIPS": true,
      "UseDualStack": false
    }
  },
  {
    "documentation": "For region us-east-2 with FIPS disabled and DualStack disabled",
    "expect": {
      "endpoint": {
        "url": "https://license-manager.us-east-2.amazonaws.com"
      }
    },
    "params": {
      "Region": "us-east-2",
      "UseFIPS": false,
      "UseDualStack": false
    }
  },
  {
    "documentation": "For region us-east-2 with FIPS enabled and DualStack disabled",
    "expect": {
      "endpoint": {
        "url": "https://license-manager-fips.us-east-2.amazonaws.com"
      }
    },
    "params": {
      "Region": "us-east-2",
      "UseFIPS": true,
      "UseDualStack": false
    }
  },

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    {
      "documentation": "For region
us-west-1 with FIPS disabled and DualStack disabled",
      "expect": {
        "endpoint": {
          "url": "https://license-manager.us-west-1.amazonaws.com"
        }
      },
      "params": {
        "Region": "us-west-1",
        "UseFIPS": false,
        "UseDualStack": false
      }
    },
    {
      "documentation": "For region us-west-1 with FIPS enabled and DualStack disabled",
      "expect": {
        "endpoint": {
          "url": "https://license-manager-fips.us-west-1.amazonaws.com"
        }
      },
      "params": {
        "Region": "us-west-1",
        "UseFIPS": true,
        "UseDualStack": false
      }
    },
    {
      "documentation": "For region us-west-2 with FIPS disabled and DualStack disabled",
      "expect": {
        "endpoint": {
          "url": "https://license-manager.us-west-2.amazonaws.com"
        }
      },
      "params": {
        "Region": "us-west-2",
        "UseFIPS": false,
        "UseDualStack": false
      }
    },
    {
      "documentation": "For region us-west-2 with FIPS enabled and DualStack disabled",
      "expect": {
        "endpoint": {
          "url": "https://license-manager-fips.us-west-2.amazonaws.com"
        }
      }
    }
  ]
}

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    },
    "params": {
      "Region": "us-west-2",
      "UseFIPS": true,
      "UseDualStack": false
    }
  },
  {
    "documentation": "For region us-east-1 with FIPS enabled and DualStack enabled",
    "expect": {
      "endpoint": {
        "url": "https://license-manager-fips.us-east-1.api.aws"
      }
    },
    "params": {
      "Region": "us-east-1",
      "UseFIPS": true,
      "UseDualStack": true
    }
  },
  {
    "documentation": "For region us-east-1 with FIPS disabled and DualStack enabled",
    "expect": {
      "endpoint": {
        "url": "https://license-manager.us-east-1.api.aws"
      }
    },
    "params": {
      "Region": "us-east-1",
      "UseFIPS": false,
      "UseDualStack": true
    }
  },
  {
    "documentation": "For region cn-north-1 with FIPS disabled and DualStack disabled",
    "expect": {
      "endpoint": {
        "url":
"https://license-manager.cn-north-1.amazonaws.com.cn"
      }
    },
    "params": {
      "Region": "cn-north-1",
      "UseFIPS": false,
      "UseDualStack": false
    }
  },
  {

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    "documentation": "For region cn-northwest-1 with FIPS disabled and DualStack disabled",
    "expect": {
      "endpoint": {
        "url": "https://license-manager.cn-northwest-1.amazonaws.com.cn"
      }
    },
    "params": {
      "Region": "cn-northwest-1",
      "UseFIPS": false,
      "UseDualStack": false
    }
  },
  {
    "documentation": "For region cn-north-1 with FIPS enabled and DualStack enabled",
    "expect": {
      "endpoint": {
        "url": "https://license-manager-fips.cn-north-1.api.amazonwebservices.com.cn"
      }
    },
    "params": {
      "Region": "cn-north-1",
      "UseFIPS": true,
      "UseDualStack": true
    }
  },
  {
    "documentation": "For region cn-north-1 with FIPS enabled and DualStack disabled",
    "expect": {
      "endpoint": {
        "url": "https://license-manager-fips.cn-north-1.amazonaws.com.cn"
      }
    },
    "params": {
      "Region": "cn-north-1",
      "UseFIPS": true,
      "UseDualStack": false
    }
  },
  {
    "documentation": "For region cn-north-1 with FIPS disabled and DualStack enabled",
    "expect": {
      "endpoint": {
        "url": "https://license-manager.cn-north-1.api.amazonwebservices.com.cn"
      }
    },
    "params": {
      "Region": "cn-north-1",

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        "UseFIPS": false,
        "UseDualStack": true
    }
},

{
    "documentation": "For region us-gov-east-1 with FIPS disabled and DualStack disabled",
    "expect": {
        "endpoint": {
            "url": "https://license-manager.us-gov-east-1.amazonaws.com"
        }
    },
    "params": {
        "Region": "us-gov-east-1",
        "UseFIPS": false,
        "UseDualStack": false
    }
},
{
    "documentation": "For region us-gov-east-1 with FIPS enabled and DualStack disabled",
    "expect": {
        "endpoint": {
            "url": "https://license-manager-fips.us-gov-east-1.amazonaws.com"
        }
    }
},

{
    "params": {
        "Region": "us-gov-east-1",
        "UseFIPS": true,
        "UseDualStack": false
    }
},
{
    "documentation": "For region us-gov-west-1 with FIPS disabled and DualStack disabled",
    "expect": {
        "endpoint": {
            "url": "https://license-manager.us-gov-west-1.amazonaws.com"
        }
    },
    "params": {
        "Region": "us-gov-west-1",
        "UseFIPS": false,
        "UseDualStack": false
    }
},
{
    "documentation":

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```

"For region us-gov-west-1 with FIPS enabled and DualStack disabled",
    "expect": {
        "endpoint": {
            "url": "https://license-manager-fips.us-gov-west-1.amazonaws.com"
        }
    },
    "params": {
        "Region": "us-gov-west-1",
        "UseFIPS": true,
        "UseDualStack": false
    }
},
{
    "documentation": "For region us-gov-east-1 with FIPS enabled and DualStack enabled",
    "expect": {
        "endpoint": {
            "url": "https://license-manager-fips.us-gov-east-1.api.aws"
        }
    },
    "params": {
        "Region": "us-gov-east-1",
        "UseFIPS": true,
        "UseDualStack": true
    }
},
{
    "documentation": "For region us-gov-east-1 with FIPS disabled and DualStack enabled",
    "expect": {
        "endpoint": {
            "url": "https://license-manager.us-gov-east-1.api.aws"
        }
    },
    "params": {
        "Region": "us-gov-east-1",
        "UseFIPS": false,
        "UseDualStack": true
    }
},
{
    "documentation": "For region us-iso-east-1 with FIPS disabled and DualStack
disabled",
    "expect": {
        "endpoint": {
            "url": "https://license-manager.us-iso-east-1.c2s.ic.gov"
        }
    },
    "params": {

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        "Region": "us-iso-east-1",
        "UseFIPS": false,
        "UseDualStack": false
    },
    {
        "documentation": "For region us-iso-east-1 with FIPS enabled and DualStack enabled",
        "expect": {
            "error": "FIPS and DualStack are enabled, but this partition does not support one or both"
        },
        "params": {
            "Region": "us-iso-east-1",
            "UseFIPS": true,
            "UseDualStack": true
        }
    },
    {
        "documentation": "For region us-iso-east-1 with FIPS enabled and DualStack disabled",
        "expect": {
            "endpoint": {
                "url": "https://license-manager-fips.us-iso-east-1.c2s.ic.gov"
            }
        },
        "params": {
            "Region": "us-iso-east-1",
            "UseFIPS": true,
            "UseDualStack": false
        }
    },
    {
        "documentation": "For region us-iso-east-1 with FIPS disabled and DualStack enabled",
        "expect": {
            "error": "DualStack is enabled
but this partition does not support DualStack"
        },
        "params": {
            "Region": "us-iso-east-1",
            "UseFIPS": false,
            "UseDualStack": true
        }
    },
    {
        "documentation": "For region us-isob-east-1 with FIPS disabled and DualStack disabled",
        "expect": {
            "endpoint": {
                "url": "https://license-manager.us-isob-east-1.sc2s.sgov.gov"
            }
        },
    },

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    "params": {
      "Region": "us-isob-east-1",
      "UseFIPS": false,
      "UseDualStack": false
    }
  },

  {
    "documentation": "For region us-isob-east-1 with FIPS enabled and DualStack enabled",
    "expect": {
      "error": "FIPS and DualStack are enabled, but this partition does not support one or both"
    },
    "params": {
      "Region": "us-isob-east-1",
      "UseFIPS": true,
      "UseDualStack": true
    }
  },
  {
    "documentation": "For region us-isob-east-1 with FIPS enabled and DualStack disabled",
    "expect": {
      "endpoint": {
        "url": "https://license-manager-fips.us-isob-east-1.sc2s.sgov.gov"
      }
    },
  },

  "params": {
    "Region": "us-isob-east-1",
    "UseFIPS": true,
    "UseDualStack": false
  },
  {
    "documentation": "For region us-isob-east-1 with FIPS disabled and DualStack enabled",
    "expect": {
      "error": "DualStack is enabled but this partition does not support DualStack"
    },
    "params": {
      "Region": "us-isob-east-1",
      "UseFIPS": false,
      "UseDualStack": true
    }
  },
  {
    "documentation": "For custom endpoint with region set and fips disabled and dualstack disabled",
    "expect": {
      "endpoint": {

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        "url": "https://example.com"
    }
},
"params": {
    "Region": "us-east-1",
    "UseFIPS": false,
    "UseDualStack": false,
    "Endpoint": "https://example.com"
}
},
{
    "documentation": "For custom endpoint with region not set and fips disabled and dualstack
disabled",
    "expect": {
        "endpoint": {
            "url": "https://example.com"
        }
    },
    "params": {
        "UseFIPS": false,

"UseDualStack": false,
        "Endpoint": "https://example.com"
    }
},
{
    "documentation": "For custom endpoint with fips enabled and dualstack disabled",
    "expect": {
        "error": "Invalid Configuration: FIPS and custom endpoint are not supported"
    },
    "params": {
        "Region": "us-east-1",
        "UseFIPS": true,
        "UseDualStack": false,
        "Endpoint": "https://example.com"
    }
},
{
    "documentation": "For custom endpoint with fips disabled and dualstack enabled",
    "expect": {
        "error":
"Invalid Configuration: Dualstack and custom endpoint are not supported"
    },
    "params": {
        "Region": "us-east-1",
        "UseFIPS": false,
        "UseDualStack": true,
        "Endpoint": "https://example.com"
    }
}
}

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```

        }
      },
      {
        "documentation": "Missing region",
        "expect": {
          "error": "Invalid Configuration: Missing Region"
        }
      }
    ],
    "version": "1.0"
  }
},
"com.amazonaws.licensemanager#AcceptGrant": {
  "type": "operation",
  "input": {
    "target": "com.amazonaws.licensemanager#AcceptGrantRequest"
  },
  "output": {
    "target": "com.amazonaws.licensemanager#AcceptGrantResponse"
  },
  "errors": [
    {
      "target": "com.amazonaws.licensemanager#AccessDeniedException"
    },
    {
      "target": "com.amazonaws.licensemanager#AuthorizationException"
    },
    {
      "target": "com.amazonaws.licensemanager#InvalidParameterValueException"
    },
    {
      "target": "com.amazonaws.licensemanager#RateLimitExceededException"
    },
    {
      "target": "com.amazonaws.licensemanager#ResourceLimitExceededException"
    },
    {
      "target": "com.amazonaws.licensemanager#ServerInternalException"
    },
    {
      "target": "com.amazonaws.licensemanager#ValidationException"
    }
  ]
},
"traits": {
  "smithy.api#documentation": "<p>Accepts the specified grant.</p>"
}

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    }
  },
  "com.amazonaws.licensemanager#AcceptGrantRequest": {
    "type": "structure",
    "members": {
      "GrantArn": {
        "target": "com.amazonaws.licensemanager#Arn",
        "traits": {
          "smithy.api#documentation": "<p>Amazon Resource Name (ARN) of the grant.</p>",
          "smithy.api#required": {}
        }
      }
    }
  },
  "traits": {
    "smithy.api#input": {}
  }
},
"com.amazonaws.licensemanager#AcceptGrantResponse": {
  "type": "structure",
  "members": {
    "GrantArn": {
      "target": "com.amazonaws.licensemanager#Arn",
      "traits": {
        "smithy.api#documentation": "<p>Grant
ARN.</p>"
      }
    }
  },
  "Status": {
    "target": "com.amazonaws.licensemanager#GrantStatus",
    "traits": {
      "smithy.api#documentation": "<p>Grant status.</p>"
    }
  },
  "Version": {
    "target": "com.amazonaws.licensemanager#String",
    "traits": {
      "smithy.api#documentation": "<p>Grant version.</p>"
    }
  }
},
"traits": {
  "smithy.api#output": {}
}
},
"com.amazonaws.licensemanager#AccessDeniedException": {
  "type": "structure",
  "members": {
    "Message": {

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        "target": "com.amazonaws.licensemanager#Message"
    }
},
"traits": {
    "aws.protocols#awsQueryError": {

"code": "ServiceAccessDenied",
    "httpResponseCode": 401
    },
    "smithy.api#documentation": "<p>Access to resource denied.</p>",
    "smithy.api#error": "client",
    "smithy.api#httpError": 401
    }
},
"com.amazonaws.licensemanager#ActivationOverrideBehavior": {
    "type": "enum",
    "members": {
        "DISTRIBUTED_GRANTS_ONLY": {
            "target": "smithy.api#Unit",
            "traits": {
                "smithy.api#enumValue": "DISTRIBUTED_GRANTS_ONLY"
            }
        },
        "ALL_GRANTS_PERMITTED_BY_ISSUER": {
            "target": "smithy.api#Unit",
            "traits": {
                "smithy.api#enumValue": "ALL_GRANTS_PERMITTED_BY_ISSUER"
            }
        }
    }
},
"com.amazonaws.licensemanager#AllowedOperation": {

"type": "enum",
    "members": {
        "CREATE_GRANT": {
            "target": "smithy.api#Unit",
            "traits": {
                "smithy.api#enumValue": "CreateGrant"
            }
        },
        "CHECKOUT_LICENSE": {
            "target": "smithy.api#Unit",
            "traits": {
                "smithy.api#enumValue": "CheckoutLicense"
            }
        },
        "CHECKOUT_BORROW_LICENSE": {

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        "target": "smithy.api#Unit",
        "traits": {
            "smithy.api#enumValue": "CheckoutBorrowLicense"
        }
    },
    "CHECK_IN_LICENSE": {
        "target": "smithy.api#Unit",
        "traits": {
            "smithy.api#enumValue": "CheckInLicense"
        }
    },
    "EXTEND_CONSUMPTION_LICENSE":
{
    "target": "smithy.api#Unit",
    "traits": {
        "smithy.api#enumValue": "ExtendConsumptionLicense"
    }
},
    "LIST_PURCHASED_LICENSES": {
        "target": "smithy.api#Unit",
        "traits": {
            "smithy.api#enumValue": "ListPurchasedLicenses"
        }
    },
    "CREATE_TOKEN": {
        "target": "smithy.api#Unit",
        "traits": {
            "smithy.api#enumValue": "CreateToken"
        }
    }
},
    "com.amazonaws.licensemanager#AllowedOperationList": {
        "type": "list",
        "member": {
            "target": "com.amazonaws.licensemanager#AllowedOperation"
        },
        "traits": {
            "smithy.api#length": {
                "min": 1,
                "max":
8
            }
        }
    },
    "com.amazonaws.licensemanager#Arn": {
        "type": "string",
        "traits": {

```

```

    "smithy.api#length": {
      "min": 0,
      "max": 2048
    },
    "smithy.api#pattern": "^arn:aws(-(cn|us-gov|iso-b|iso-c|iso-d))?:[A-Za-z0-9][A-Za-z0-9_/.-]{0,62}:~{0,63}:[A-Za-z0-9_/.-]{0,63}:[A-Za-z0-9_/.-]{0,63}:[A-Za-z0-9][A-Za-z0-9:/+=,~-]{0,1023}$"
  }
},
"com.amazonaws.licensemanager#ArnList": {
  "type": "list",
  "member": {
    "target": "com.amazonaws.licensemanager#Arn"
  }
},
"com.amazonaws.licensemanager#AuthorizationException": {
  "type": "structure",
  "members": {
    "Message": {
      "target": "com.amazonaws.licensemanager#Message"
    }
  }
},
"traits": {
  "aws.protocols#awsQueryError":
{
  "code": "AuthorizationFailure",
  "httpResponseCode": 403
},
  "smithy.api#documentation": "<p>The Amazon Web Services user account does not have permission to perform the action. Check the IAM\n      policy associated with this account.</p>",
  "smithy.api#error": "client",
  "smithy.api#httpError": 403
}
},
"com.amazonaws.licensemanager#AutomatedDiscoveryInformation": {
  "type": "structure",
  "members": {
    "LastRunTime": {
      "target": "com.amazonaws.licensemanager#DateTime",
      "traits": {
        "smithy.api#documentation": "<p>Time that automated discovery last ran.</p>"
      }
    }
  }
},
"traits": {
  "smithy.api#documentation": "<p>Describes automated discovery.</p>"
}
},

```

```

"com.amazonaws.licensemanager#Boolean": {
  "type": "boolean",
  "traits": {
    "smithy.api#default": false
  }
},
"com.amazonaws.licensemanager#BorrowConfiguration": {
  "type": "structure",
  "members": {
    "AllowEarlyCheckIn": {
      "target": "com.amazonaws.licensemanager#BoxBoolean",
      "traits": {
        "smithy.api#documentation": "<p>Indicates whether early check-ins are allowed.</p>",
        "smithy.api#required": {}
      }
    },
    "MaxTimeToLiveInMinutes": {
      "target": "com.amazonaws.licensemanager#BoxInteger",
      "traits": {
        "smithy.api#documentation": "<p>Maximum time for the borrow configuration, in minutes.</p>",
        "smithy.api#required": {}
      }
    }
  },
  "traits": {
    "smithy.api#documentation": "<p>Details about a borrow configuration.</p>"
  }
},
"com.amazonaws.licensemanager#BoxBoolean": {
  "type": "boolean"
},
"com.amazonaws.licensemanager#BoxInteger": {
  "type": "integer"
},
"com.amazonaws.licensemanager#BoxLong": {
  "type": "long"
},
"com.amazonaws.licensemanager#CheckInLicense": {
  "type": "operation",
  "input": {
    "target": "com.amazonaws.licensemanager#CheckInLicenseRequest"
  },
  "output": {
    "target": "com.amazonaws.licensemanager#CheckInLicenseResponse"
  },
  "errors": [
    {

```

```

        "target": "com.amazonaws.licensemanager#AccessDeniedException"
    },
    {
        "target": "com.amazonaws.licensemanager#AuthorizationException"
    }
},
{
    "target": "com.amazonaws.licensemanager#ConflictException"
},
{
    "target": "com.amazonaws.licensemanager#InvalidParameterValueException"
},
{
    "target": "com.amazonaws.licensemanager#RateLimitExceededException"
},
{
    "target": "com.amazonaws.licensemanager#ResourceNotFoundException"
},
{
    "target": "com.amazonaws.licensemanager#ServerInternalException"
},
{
    "target": "com.amazonaws.licensemanager#ValidationException"
}
],
"traits": {
    "smithy.api#documentation": "<p>Checks in the specified license. Check in a license when it is no longer
in use.</p>"
}
},
"com.amazonaws.licensemanager#CheckInLicenseRequest":
{
    "type": "structure",
    "members": {
        "LicenseConsumptionToken": {
            "target": "com.amazonaws.licensemanager#String",
            "traits": {
                "smithy.api#documentation": "<p>License consumption token.</p>",
                "smithy.api#required": {}
            }
        },
        "Beneficiary": {
            "target": "com.amazonaws.licensemanager#String",
            "traits": {
                "smithy.api#documentation": "<p>License beneficiary.</p>"
            }
        }
    }
},

```

```

    "traits": {
      "smithy.api#input": {}
    }
  },
  "com.amazonaws.licensemanager#CheckInLicenseResponse": {
    "type": "structure",
    "members": {},
    "traits": {
      "smithy.api#output": {}
    }
  },
  "com.amazonaws.licensemanager#CheckoutBorrowLicense":
{
  "type": "operation",
  "input": {
    "target": "com.amazonaws.licensemanager#CheckoutBorrowLicenseRequest"
  },
  "output": {
    "target": "com.amazonaws.licensemanager#CheckoutBorrowLicenseResponse"
  },
  "errors": [
    {
      "target": "com.amazonaws.licensemanager#AccessDeniedException"
    },
    {
      "target": "com.amazonaws.licensemanager#AuthorizationException"
    },
    {
      "target": "com.amazonaws.licensemanager#EntitlementNotAllowedException"
    },
    {
      "target": "com.amazonaws.licensemanager#InvalidParameterValueException"
    },
    {
      "target": "com.amazonaws.licensemanager#NoEntitlementsAllowedException"
    },
    {
      "target": "com.amazonaws.licensemanager#RateLimitExceededException"
    },
    {
      "target": "com.amazonaws.licensemanager#RedirectException"
    },
    {
      "target": "com.amazonaws.licensemanager#ResourceNotFoundException"
    },
    {
      "target": "com.amazonaws.licensemanager#ServerInternalException"
    }
  ]
}

```

```

    },
    {
      "target": "com.amazonaws.licensemanager#UnsupportedDigitalSignatureMethodException"
    },
    {
      "target": "com.amazonaws.licensemanager#ValidationException"
    }
  ],
  "traits": {
    "smithy.api#documentation": "<p>Checks out the specified license for offline use.</p>"
  }
},
"com.amazonaws.licensemanager#CheckoutBorrowLicenseRequest": {
  "type": "structure",
  "members": {
    {
      "LicenseArn": {
        "target": "com.amazonaws.licensemanager#Arn",
        "traits": {
          "smithy.api#documentation": "<p>Amazon Resource Name (ARN) of the license. The license must use the borrow consumption configuration.</p>",
          "smithy.api#required": {}
        }
      },
    },
    "Entitlements": {
      "target": "com.amazonaws.licensemanager#EntitlementDataList",
      "traits": {
        "smithy.api#documentation": "<p>License entitlements. Partial checkouts are not supported.</p>",
        "smithy.api#required": {}
      }
    },
    },
    "DigitalSignatureMethod": {
      "target": "com.amazonaws.licensemanager#DigitalSignatureMethod",
      "traits": {
        "smithy.api#documentation": "<p>Digital signature method. The possible value is JSON Web Signature (JWS) algorithm PS384.\n    For more information, see <a href='\"https://tools.ietf.org/html/rfc7518#section-3.5\"'>RFC 7518 Digital Signature with RSASSA-PSS</a>.</p>",
        "smithy.api#required": {}
      }
    },
    },
    "NodeId": {
      "target": "com.amazonaws.licensemanager#String",
      "traits": {
        "smithy.api#documentation": "<p>Node ID.</p>"
      }
    },
    },
    "CheckoutMetadata": {
      "target": "com.amazonaws.licensemanager#MetadataList",

```

```

        "traits": {
            "smithy.api#documentation": "<p>Information about constraints.</p>"
        }
    },
    "ClientToken": {
        "target": "com.amazonaws.licensemanager#ClientToken",
        "traits": {
            "smithy.api#documentation":
"<p>Unique, case-sensitive identifier that you provide to ensure the idempotency of the request.</p>",
            "smithy.api#required": {}
        }
    },
    "traits": {
        "smithy.api#input": {}
    }
},
"com.amazonaws.licensemanager#CheckoutBorrowLicenseResponse": {
    "type": "structure",
    "members": {
        "LicenseArn": {
            "target": "com.amazonaws.licensemanager#Arn",
            "traits": {
                "smithy.api#documentation": "<p>Amazon Resource Name (ARN) of the license.</p>"
            }
        },
        "LicenseConsumptionToken": {
            "target": "com.amazonaws.licensemanager#String",
            "traits": {
                "smithy.api#documentation": "<p>License consumption token.</p>"
            }
        },
        "EntitlementsAllowed":
{
            "target": "com.amazonaws.licensemanager#EntitlementDataList",
            "traits": {
                "smithy.api#documentation": "<p>Allowed license entitlements.</p>"
            }
        },
        "NodeId": {
            "target": "com.amazonaws.licensemanager#String",
            "traits": {
                "smithy.api#documentation": "<p>Node ID.</p>"
            }
        },
        "SignedToken": {
            "target": "com.amazonaws.licensemanager#SignedToken",
            "traits": {

```



```

        "smithy.api#documentation": "<p>Signed token.</p>"
    },
    "IssuedAt": {
        "target": "com.amazonaws.licensemanager#ISO8601DateTime",
        "traits": {
            "smithy.api#documentation": "<p>Date and time at which the license checkout
is issued.</p>"
        }
    },
    "Expiration": {
        "target": "com.amazonaws.licensemanager#ISO8601DateTime",
        "traits": {
            "smithy.api#documentation": "<p>Date and time at which the license checkout expires.</p>"
        }
    },
    "CheckoutMetadata": {
        "target": "com.amazonaws.licensemanager#MetadataList",
        "traits": {
            "smithy.api#documentation": "<p>Information about constraints.</p>"
        }
    },
    "traits": {
        "smithy.api#output": {}
    }
},
"com.amazonaws.licensemanager#CheckoutLicense": {
    "type": "operation",
    "input": {
        "target": "com.amazonaws.licensemanager#CheckoutLicenseRequest"
    },
    "output": {
        "target": "com.amazonaws.licensemanager#CheckoutLicenseResponse"
    },
    "errors": [
        {
            "target": "com.amazonaws.licensemanager#AccessDeniedException"
        },
        {
            "target": "com.amazonaws.licensemanager#AuthorizationException"
        },
        {
            "target": "com.amazonaws.licensemanager#InvalidParameterValueException"
        },
        {
            "target": "com.amazonaws.licensemanager#NoEntitlementsAllowedException"
        }
    ]
}

```

```

    {
      "target": "com.amazonaws.licensemanager#RateLimitExceededException"
    },
    {
      "target": "com.amazonaws.licensemanager#RedirectException"
    },
    {
      "target": "com.amazonaws.licensemanager#ResourceNotFoundException"
    },
    {
      "target":
"com.amazonaws.licensemanager#ServerInternalException"
    },
    {
      "target": "com.amazonaws.licensemanager#UnsupportedDigitalSignatureMethodException"
    },
    {
      "target": "com.amazonaws.licensemanager#ValidationException"
    }
  ],
  "traits": {
    "smithy.api#documentation": "<p>Checks out the specified license.</p>\n    <note>\n    <p>If the
account that created the license is the same that is performing the check out, you must\n    specify the account
as the beneficiary.</p>\n    </note>"
  }
},
"com.amazonaws.licensemanager#CheckoutLicenseRequest": {
  "type": "structure",
  "members": {
    "ProductSKU": {
      "target": "com.amazonaws.licensemanager#String",
      "traits": {
        "smithy.api#documentation": "<p>Product
SKU.</p>",
        "smithy.api#required": {}
      }
    },
    "CheckoutType": {
      "target": "com.amazonaws.licensemanager#CheckoutType",
      "traits": {
        "smithy.api#documentation": "<p>Checkout type.</p>",
        "smithy.api#required": {}
      }
    }
  },
  "KeyFingerprint": {
    "target": "com.amazonaws.licensemanager#String",
    "traits": {
      "smithy.api#documentation": "<p>Key fingerprint identifying the license.</p>",

```

```

        "smithy.api#required": {}
    },
    "Entitlements": {
        "target": "com.amazonaws.licensemanager#EntitlementDataList",
        "traits": {
            "smithy.api#documentation": "<p>License entitlements.</p>",
        }
    },
    "smithy.api#required": {}
},
    "ClientToken": {
        "target": "com.amazonaws.licensemanager#ClientToken",
        "traits": {
            "smithy.api#documentation": "<p>Unique, case-sensitive identifier that you provide to ensure the idempotency of the request.</p>",
            "smithy.api#required": {}
        }
    },
    "Beneficiary": {
        "target": "com.amazonaws.licensemanager#String",
        "traits": {
            "smithy.api#documentation": "<p>License beneficiary.</p>"
        }
    },
    "NodeId": {
        "target": "com.amazonaws.licensemanager#String",
        "traits": {
            "smithy.api#documentation": "<p>Node ID.</p>"
        }
    },
    "traits": {
        "smithy.api#input": {}
    },
    "com.amazonaws.licensemanager#CheckoutLicenseResponse": {
        "type": "structure",
        "members": {
            "CheckoutType": {
                "target": "com.amazonaws.licensemanager#CheckoutType",
                "traits": {
                    "smithy.api#documentation": "<p>Checkout type.</p>"
                }
            },
            "LicenseConsumptionToken": {
                "target": "com.amazonaws.licensemanager#String",
            }
        }
    }
}

```

```

    "traits": {
      "smithy.api#documentation": "<p>License consumption token.</p>"
    }
  },
  "EntitlementsAllowed": {
    "target": "com.amazonaws.licensemanager#EntitlementDataList",
    "traits": {
      "smithy.api#documentation": "<p>Allowed license entitlements.</p>"
    }
  },
  "SignedToken": {
    "target": "com.amazonaws.licensemanager#SignedToken",
    "traits": {
      "smithy.api#documentation": "<p>Signed token.</p>"
    }
  },
  "NodeId": {
    "target": "com.amazonaws.licensemanager#String",
    "traits": {
      "smithy.api#documentation": "<p>Node ID.</p>"
    }
  },
  "IssuedAt": {
    "target": "com.amazonaws.licensemanager#ISO8601DateTime",
    "traits": {
      "smithy.api#documentation": "<p>Date and time at which the license checkout is issued.</p>"
    }
  },
  "Expiration": {
    "target": "com.amazonaws.licensemanager#ISO8601DateTime",
    "traits": {
      "smithy.api#documentation": "<p>Date and
time at which the license checkout expires.</p>"
    }
  },
  "LicenseArn": {
    "target": "com.amazonaws.licensemanager#String",
    "traits": {
      "smithy.api#documentation": "<p>Amazon Resource Name (ARN) of the checkout license.</p>"
    }
  },
  "traits": {
    "smithy.api#output": {}
  },
  "com.amazonaws.licensemanager#CheckoutType": {
    "type": "enum",

```

```

"members": {
  "PROVISIONAL": {
    "target": "smithy.api#Unit",
    "traits": {
      "smithy.api#enumValue": "PROVISIONAL"
    }
  },
  "PERPETUAL": {
    "target": "smithy.api#Unit",
    "traits": {
      "smithy.api#enumValue": "PERPETUAL"
    }
  }
},
"com.amazonaws.licensemanager#ClientRequestToken": {
  "type": "string",
  "traits": {
    "smithy.api#length": {
      "min": 1,
      "max": 36
    }
  }
},
"com.amazonaws.licensemanager#ClientToken": {
  "type": "string",
  "traits": {
    "smithy.api#length": {
      "min": 0,
      "max": 2048
    },
    "smithy.api#pattern": "^\\S+$"
  }
},
"com.amazonaws.licensemanager#ConflictException": {
  "type": "structure",
  "members": {
    "Message": {
      "target": "com.amazonaws.licensemanager#Message"
    }
  },
  "traits": {
    "aws.protocols#awsQueryError": {
      "code": "ConflictException",
      "httpResponseCode":

```

409

```

    },
    "smithy.api#documentation": "<p>There was a conflict processing the request. Try your request

```

```

again.</p>",
    "smithy.api#error": "client",
    "smithy.api#httpError": 409
  }
},
"com.amazonaws.licensemanager#ConsumedLicenseSummary": {
  "type": "structure",
  "members": {
    "ResourceType": {
      "target": "com.amazonaws.licensemanager#ResourceType",
      "traits": {
        "smithy.api#documentation": "<p>Resource type of the resource consuming a license.</p>"
      }
    },
    "ConsumedLicenses": {
      "target": "com.amazonaws.licensemanager#BoxLong",
      "traits": {
        "smithy.api#documentation": "<p>Number of licenses consumed by the resource.</p>"
      }
    }
  },
  "traits": {
    "smithy.api#documentation": "<p>Details about license consumption.</p>"
  }
},
"com.amazonaws.licensemanager#ConsumedLicenseSummaryList": {
  "type": "list",
  "member": {
    "target": "com.amazonaws.licensemanager#ConsumedLicenseSummary"
  }
},
"com.amazonaws.licensemanager#ConsumptionConfiguration": {
  "type": "structure",
  "members": {
    "RenewType": {
      "target": "com.amazonaws.licensemanager#RenewType",
      "traits": {
        "smithy.api#documentation": "<p>Renewal frequency.</p>"
      }
    },
    "ProvisionalConfiguration": {
      "target": "com.amazonaws.licensemanager#ProvisionalConfiguration",
      "traits": {
        "smithy.api#documentation": "<p>Details about a provisional configuration.</p>"
      }
    },
    "BorrowConfiguration": {

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```

    "target": "com.amazonaws.licensemanager#BorrowConfiguration",
    "traits": {
      "smithy.api#documentation": "<p>Details about a borrow configuration.</p>"
    }
  },
  "traits": {
    "smithy.api#documentation": "<p>Details about a consumption configuration.</p>"
  }
},
"com.amazonaws.licensemanager#CreateGrant": {
  "type": "operation",
  "input": {
    "target": "com.amazonaws.licensemanager#CreateGrantRequest"
  },
  "output": {
    "target": "com.amazonaws.licensemanager#CreateGrantResponse"
  },
  "errors": [
    {
      "target": "com.amazonaws.licensemanager#AccessDeniedException"
    },
    {
      "target":
"com.amazonaws.licensemanager#AuthorizationException"
    },
    {
      "target": "com.amazonaws.licensemanager#InvalidParameterValueException"
    },
    {
      "target": "com.amazonaws.licensemanager#RateLimitExceededException"
    },
    {
      "target": "com.amazonaws.licensemanager#ResourceLimitExceededException"
    },
    {
      "target": "com.amazonaws.licensemanager#ServerInternalException"
    },
    {
      "target": "com.amazonaws.licensemanager#ValidationException"
    }
  ],
  "traits": {
    "smithy.api#documentation": "<p>Creates a grant for the specified license. A grant shares the use of
license\n      entitlements with a specific Amazon Web Services account, an organization, or an\n
organizational unit (OU). For more
information, see <a href='\"https://docs.aws.amazon.com/license-manager/latest/userguide/granted-
licenses.html\">Granted licenses in License Manager</a> in the <i>License Manager User Guide</i>.</p>"

```

```

    }
  },
  "com.amazonaws.licensemanager#CreateGrantRequest": {
    "type": "structure",
    "members": {
      "ClientToken": {
        "target": "com.amazonaws.licensemanager#ClientToken",
        "traits": {
          "smithy.api#documentation": "<p>Unique, case-sensitive identifier that you provide to ensure the idempotency of the request.</p>",
          "smithy.api#required": {}
        }
      },
      "GrantName": {
        "target": "com.amazonaws.licensemanager#String",
        "traits": {
          "smithy.api#documentation": "<p>Grant name.</p>",
          "smithy.api#required": {}
        }
      }
    }
  },
  "LicenseArn": {
    "target": "com.amazonaws.licensemanager#Arn",
    "traits": {
      "smithy.api#documentation": "<p>Amazon Resource Name (ARN) of the license.</p>",
      "smithy.api#required": {}
    }
  },
  "Principals": {
    "target": "com.amazonaws.licensemanager#PrincipalArnList",
    "traits": {
      "smithy.api#documentation": "<p>The grant principals. You can specify one of the following as an Amazon Resource Name (ARN):</p>\n      <ul>\n        <li>\n          <p>An Amazon Web Services account, which includes only the account specified.</p>\n        </li>\n      </ul>\n      <p>An organizational unit (OU), which includes all accounts in the OU.</p>\n      <li>\n        <p>An organization, which will include all accounts across your organization.</p>\n      </li>\n    </ul>\n    ",
      "smithy.api#required": {}
    }
  },
  "HomeRegion": {
    "target": "com.amazonaws.licensemanager#String",
    "traits": {
      "smithy.api#documentation": "<p>Home Region of the grant.</p>",
      "smithy.api#required": {}
    }
  }
},

```



```

    "AllowedOperations": {
      "target": "com.amazonaws.licensemanager#AllowedOperationList",
      "traits": {
        "smithy.api#documentation": "<p>Allowed operations for the grant.</p>",
        "smithy.api#required": {}
      }
    },
    "Tags": {
      "target": "com.amazonaws.licensemanager#TagList",

      "traits": {
        "smithy.api#documentation": "<p>Tags to add to the grant. For more information about tagging
support in\n      License Manager, see the <a href=\"https://docs.aws.amazon.com/license-
manager/latest/APIReference/API_TagResource.html\">TagResource</a> operation.</p>"
      }
    },
    "traits": {
      "smithy.api#input": {}
    }
  },
  "com.amazonaws.licensemanager#CreateGrantResponse": {
    "type": "structure",
    "members": {
      "GrantArn": {
        "target": "com.amazonaws.licensemanager#Arn",
        "traits": {
          "smithy.api#documentation": "<p>Grant ARN.</p>"
        }
      },
      "Status": {
        "target": "com.amazonaws.licensemanager#GrantStatus",
        "traits": {
          "smithy.api#documentation":
"<p>Grant status.</p>"
        }
      },
      "Version": {
        "target": "com.amazonaws.licensemanager#String",
        "traits": {
          "smithy.api#documentation": "<p>Grant version.</p>"
        }
      }
    },
    "traits": {
      "smithy.api#output": {}
    }
  },

```

```

"com.amazonaws.licensemanager#CreateGrantVersion": {
  "type": "operation",
  "input": {
    "target": "com.amazonaws.licensemanager#CreateGrantVersionRequest"
  },
  "output": {
    "target": "com.amazonaws.licensemanager#CreateGrantVersionResponse"
  },
  "errors": [
    {
      "target": "com.amazonaws.licensemanager#AccessDeniedException"
    },
    {
      "target": "com.amazonaws.licensemanager#AuthorizationException"
    },
    {
      "target": "com.amazonaws.licensemanager#InvalidParameterValueException"
    },
    {
      "target": "com.amazonaws.licensemanager#RateLimitExceededException"
    },
    {
      "target": "com.amazonaws.licensemanager#ResourceLimitExceededException"
    },
    {
      "target": "com.amazonaws.licensemanager#ServerInternalException"
    },
    {
      "target": "com.amazonaws.licensemanager#ValidationException"
    }
  ],
  "traits": {
    "smithy.api#documentation": "<p>Creates a new version of the specified grant. For more information, see\n    <a href=\"https://docs.aws.amazon.com/license-manager/latest/userguide/granted-licenses.html\">Granted licenses in License Manager</a> in the <i>License Manager User Guide</i>.</p>"
  }
},
"com.amazonaws.licensemanager#CreateGrantVersionRequest": {
  "type": "structure",
  "members": {
    "ClientToken": {
      "target": "com.amazonaws.licensemanager#ClientToken",
      "traits": {
        "smithy.api#documentation": "<p>Unique, case-sensitive identifier that you provide to ensure the idempotency of the request.</p>",
        "smithy.api#required": {}
      }
    }
  }
}

```

```

    },
    "GrantArn": {
      "target": "com.amazonaws.licensemanager#Arn",
      "traits": {
        "smithy.api#documentation": "<p>Amazon Resource Name (ARN) of the grant.</p>",
        "smithy.api#required": {}
      }
    },
    "GrantName": {
      "target": "com.amazonaws.licensemanager#String",
      "traits": {
        "smithy.api#documentation": "<p>Grant name.</p>"
      }
    },
    "AllowedOperations": {
      "target": "com.amazonaws.licensemanager#AllowedOperationList",
      "traits": {
        "smithy.api#documentation": "<p>Allowed operations for the grant.</p>"
      }
    },
    "Status": {
      "target": "com.amazonaws.licensemanager#GrantStatus",
      "traits": {
        "smithy.api#documentation": "<p>Grant status.</p>"
      }
    },
    "StatusReason": {
      "target": "com.amazonaws.licensemanager#StatusReasonMessage",
      "traits": {
        "smithy.api#documentation": "<p>Grant status reason.</p>"
      }
    },
    "SourceVersion": {
      "target": "com.amazonaws.licensemanager#String",
      "traits": {
        "smithy.api#documentation": "<p>Current version of the grant.</p>"
      }
    },
    "Options": {
      "target": "com.amazonaws.licensemanager#Options",
      "traits": {
        "smithy.api#documentation": "<p>The options specified for the grant.</p>"
      }
    },
    "traits": {
      "smithy.api#input": {}
    }
  }

```

```

    }
  },
  "com.amazonaws.licensemanager#CreateGrantVersionResponse": {
    "type": "structure",
    "members": {
      "GrantArn": {
        "target": "com.amazonaws.licensemanager#Arn",
        "traits": {
          "smithy.api#documentation": "<p>Grant ARN.</p>"
        }
      },
      "Status": {
        "target": "com.amazonaws.licensemanager#GrantStatus",
        "traits": {
          "smithy.api#documentation": "<p>Grant status.</p>"
        }
      },
      "Version": {
        "target": "com.amazonaws.licensemanager#String",
        "traits": {
          "smithy.api#documentation": "<p>New version of the grant.</p>"
        }
      }
    },
    "traits": {
      "smithy.api#output": {}
    }
  },
  "com.amazonaws.licensemanager#CreateLicense": {
    "type": "operation",
    "input": {
      "target": "com.amazonaws.licensemanager#CreateLicenseRequest"
    },
    "output": {
      "target": "com.amazonaws.licensemanager#CreateLicenseResponse"
    },
    "errors": [
      {
        "target": "com.amazonaws.licensemanager#AccessDeniedException"
      },
      {
        "target": "com.amazonaws.licensemanager#AuthorizationException"
      },
      {
        "target": "com.amazonaws.licensemanager#InvalidParameterValueException"
      },
      {

```

```

        "target": "com.amazonaws.licensemanager#RateLimitExceededException"
    },
    {
        "target": "com.amazonaws.licensemanager#RedirectException"
    },
    {
        "target": "com.amazonaws.licensemanager#ServerInternalException"
    },
    {
        "target": "com.amazonaws.licensemanager#ValidationException"
    }
],
"traits": {
    "smithy.api#documentation": "<p>Creates a license.</p>"
}
},
"com.amazonaws.licensemanager#CreateLicenseConfiguration": {
    "type": "operation",
    "input": {
        "target": "com.amazonaws.licensemanager#CreateLicenseConfigurationRequest"
    },
    "output": {
        "target": "com.amazonaws.licensemanager#CreateLicenseConfigurationResponse"
    },
    "errors": [
        {
            "target": "com.amazonaws.licensemanager#AccessDeniedException"
        },
        {
            "target": "com.amazonaws.licensemanager#AuthorizationException"
        },
        {
            "target": "com.amazonaws.licensemanager#InvalidParameterValueException"
        },
        {
            "target": "com.amazonaws.licensemanager#RateLimitExceededException"
        },
        {
            "target": "com.amazonaws.licensemanager#ResourceLimitExceededException"
        },
        {
            "target": "com.amazonaws.licensemanager#ServerInternalException"
        }
    ]
},
"traits": {
    "smithy.api#documentation": "<p>Creates a license configuration.</p>\n    <p>A license configuration"
}

```

is an abstraction of a customer license agreement that can be consumed and enforced by License Manager. Components include specifications for the license type (licensing by instance, socket, CPU, or vCPU), allowed tenancy (shared tenancy, Dedicated Instance, Dedicated Host, or all of these), license affinity to host (how long a license must be associated with a host), and the number of licenses purchased and used.

```

    }
  },
  "com.amazonaws.licensemanager#CreateLicenseConfigurationRequest": {
    "type": "structure",
    "members": {
      "Name": {
        "target": "com.amazonaws.licensemanager#String",
        "traits": {
          "smithy.api#documentation": "<p>Name of the license configuration.</p>",
          "smithy.api#required": {}
        }
      },
      "Description": {
        "target": "com.amazonaws.licensemanager#String",
        "traits": {
          "smithy.api#documentation": "<p>Description of the license configuration.</p>"
        }
      },
      "LicenseCountingType": {
        "target": "com.amazonaws.licensemanager#LicenseCountingType",
        "traits": {
          "smithy.api#documentation": "<p>Dimension used to track the license inventory.</p>",
          "smithy.api#required": {}
        }
      },
      "LicenseCount": {
        "target": "com.amazonaws.licensemanager#BoxLong",
        "traits": {
          "smithy.api#documentation": "<p>Number of licenses managed by the license configuration.</p>"
        }
      },
      "LicenseCountHardLimit": {
        "target": "com.amazonaws.licensemanager#BoxBoolean",
        "traits": {
          "smithy.api#documentation": "<p>Indicates whether hard or soft license enforcement is used. Exceeding a hard limit blocks the launch of new instances.</p>"
        }
      },
      "LicenseRules": {
        "target": "com.amazonaws.licensemanager#StringList",
        "traits": {
          "smithy.api#documentation": "<p>License rules. The syntax is #name=value (for example,"

```

#allowedTenancy=EC2-DedicatedHost). The available rules vary by dimension, as follows.

- `Cores` dimension: `allowedTenancy` | `licenseAffinityToHost` | `maximumCores` | `minimumCores`
- `Instances` dimension: `allowedTenancy` | `maximumVcpus` | `minimumVcpus`
- `Sockets` dimension: `allowedTenancy` | `licenseAffinityToHost` | `maximumSockets` | `minimumSockets`
- `vCPUs` dimension: `allowedTenancy` | `honorVcpuOptimization` | `maximumVcpus` | `minimumVcpus`

The unit for `licenseAffinityToHost` is days and the range is 1 to 180. The possible values for `allowedTenancy` are `EC2-Default`, `EC2-DedicatedHost`, and `EC2-DedicatedInstance`. The possible values for `honorVcpuOptimization` are `True` and `False`.

```

    }
  },
  "Tags": {
    "target": "com.amazonaws.licensemanager#TagList",
    "traits": {
      "smithy.api#documentation": "<p>Tags to add to the license configuration.</p>"
    }
  },
  "DisassociateWhenNotFound": {
    "target": "com.amazonaws.licensemanager#BoxBoolean",
    "traits": {
      "smithy.api#documentation": "<p>When true, disassociates a resource when software is
uninstalled.</p>"
    }
  },
  "ProductInformationList": {
    "target": "com.amazonaws.licensemanager#ProductInformationList",
    "traits": {
      "smithy.api#documentation": "<p>Product information.</p>"
    }
  },
  "traits": {
    "smithy.api#input": {}
  }
},
"com.amazonaws.licensemanager#CreateLicenseConfigurationResponse": {
  "type": "structure",
  "members": {
    "LicenseConfigurationArn": {
      "target": "com.amazonaws.licensemanager#String",

```

```

        "traits": {
            "smithy.api#documentation": "<p>Amazon Resource Name (ARN) of the license configuration.</p>"
        }
    },
    "traits": {
        "smithy.api#output": {}
    }
},
"com.amazonaws.licensemanager#CreateLicenseConversionTaskForResource": {
    "type": "operation",
    "input": {
        "target": "com.amazonaws.licensemanager#CreateLicenseConversionTaskForResourceRequest"
    },
    "output": {
        "target": "com.amazonaws.licensemanager#CreateLicenseConversionTaskForResourceResponse"
    },
    "errors": [
        {
            "target": "com.amazonaws.licensemanager#AccessDeniedException"
        },
        {
            "target": "com.amazonaws.licensemanager#AuthorizationException"
        },
        {
            "target": "com.amazonaws.licensemanager#InvalidParameterValueException"
        },
        {
            "target": "com.amazonaws.licensemanager#RateLimitExceededException"
        },
        {
            "target": "com.amazonaws.licensemanager#ServerInternalException"
        },
        {
            "target": "com.amazonaws.licensemanager#ValidationException"
        }
    ],
    "traits": {
        "smithy.api#documentation": "<p>Creates a new license conversion task.</p>"
    }
},
"com.amazonaws.licensemanager#CreateLicenseConversionTaskForResourceRequest": {
    "type": "structure",
    "members": {
        "ResourceArn": {
            "target": "com.amazonaws.licensemanager#Arn",
            "traits": {

```



```

        "smithy.api#documentation": "<p>Amazon Resource Name (ARN) of the resource you are converting
the license type for.</p>",
        "smithy.api#required": {}
    },
    "SourceLicenseContext": {
        "target": "com.amazonaws.licensemanager#LicenseConversionContext",
        "traits": {
            "smithy.api#documentation": "<p>Information that identifies the license type you are converting
from. \n\n    For the structure of the source license, see <a href=\"https://docs.aws.amazon.com/license-
manager/latest/userguide/conversion-procedures.html#conversion-cli\">Convert
a license type using the CLI </a> in the <i>License Manager User Guide</i>.</p>",
            "smithy.api#required": {}
        }
    },
    "DestinationLicenseContext": {
        "target": "com.amazonaws.licensemanager#LicenseConversionContext",
        "traits": {
            "smithy.api#documentation": "<p>Information that identifies the license type you are converting to.
For the structure of the destination license, see <a href=\"https://docs.aws.amazon.com/license-
manager/latest/userguide/conversion-procedures.html#conversion-cli\">Convert a license type using the CLI </a> in
the <i>License Manager User Guide</i>.</p>",
            "smithy.api#required": {}
        }
    },
    "traits": {
        "smithy.api#input": {}
    }
},
"com.amazonaws.licensemanager#CreateLicenseConversionTaskForResourceResponse": {
    "type": "structure",
    "members": {
        "LicenseConversionTaskId": {
            "target": "com.amazonaws.licensemanager#LicenseConversionTaskId",
            "traits": {
                "smithy.api#documentation": "<p>The ID of the created license type conversion task.</p>"
            }
        }
    },
    "traits": {
        "smithy.api#output": {}
    }
},
"com.amazonaws.licensemanager#CreateLicenseManagerReportGenerator": {
    "type": "operation",
    "input": {
        "target": "com.amazonaws.licensemanager#CreateLicenseManagerReportGeneratorRequest"
    }
}

```

```

    },
    "output": {
      "target": "com.amazonaws.licensemanager#CreateLicenseManagerReportGeneratorResponse"
    },
    "errors":
  [
    {
      "target": "com.amazonaws.licensemanager#AccessDeniedException"
    },
    {
      "target": "com.amazonaws.licensemanager#AuthorizationException"
    },
    {
      "target": "com.amazonaws.licensemanager#InvalidParameterValueException"
    },
    {
      "target": "com.amazonaws.licensemanager#RateLimitExceededException"
    },
    {
      "target": "com.amazonaws.licensemanager#ResourceLimitExceededException"
    },
    {
      "target": "com.amazonaws.licensemanager#ResourceNotFoundException"
    },
    {
      "target": "com.amazonaws.licensemanager#ServerInternalException"
    },
    {
      "target": "com.amazonaws.licensemanager#ValidationException"
    }
  ],
  "traits": {
    "smithy.api#documentation": "<p>Creates a report generator.</p>"
  }
},
"com.amazonaws.licensemanager#CreateLicenseManagerReportGeneratorRequest": {
  "type": "structure",
  "members": {
    "ReportGeneratorName": {
      "target": "com.amazonaws.licensemanager#ReportGeneratorName",
      "traits": {
        "smithy.api#documentation": "<p>Name of the report generator.</p>",
        "smithy.api#required": {}
      }
    },
  },
  "Type": {
    "target": "com.amazonaws.licensemanager#ReportTypeList",

```

```

    "traits": {
      "smithy.api#documentation": "<p>Type of reports to generate. The following report types an be
generated:</p>\n      <ul>\n        <li>\n          <p>License configuration report - Reports the number and
details
of consumed licenses for a license configuration.</p>\n        </li>\n        <li>\n          <p>Resource report -
Reports the tracked licenses and resource consumption for a license configuration.</p>\n        </li>\n      </ul>",
      "smithy.api#required": {}
    }
  },
  "ReportContext": {
    "target": "com.amazonaws.licensemanager#ReportContext",
    "traits": {
      "smithy.api#documentation": "<p>Defines the type of license configuration the report generator
tracks.</p>",
      "smithy.api#required": {}
    }
  },
  "ReportFrequency": {
    "target": "com.amazonaws.licensemanager#ReportFrequency",
    "traits": {
      "smithy.api#documentation": "<p>Frequency by which reports are generated. Reports can be
generated daily, monthly, or
weekly.</p>",
      "smithy.api#required": {}
    }
  },
  "ClientToken": {
    "target": "com.amazonaws.licensemanager#ClientRequestToken",
    "traits": {
      "smithy.api#documentation": "<p>Unique, case-sensitive identifier that you provide to ensure the
idempotency of the request.</p>",
      "smithy.api#required": {}
    }
  },
  "Description": {
    "target": "com.amazonaws.licensemanager#String",
    "traits": {
      "smithy.api#documentation": "<p>Description of the report generator.</p>"
    }
  },
  "Tags": {
    "target": "com.amazonaws.licensemanager#TagList",
    "traits": {
      "smithy.api#documentation": "<p>Tags to add to the report generator.</p>"
    }
  }
},

```

```

    "traits": {
      "smithy.api#input": {}
    }
  },
  "com.amazonaws.licensemanager#CreateLicenseManagerReportGeneratorResponse": {
    "type": "structure",
    "members": {
      "LicenseManagerReportGeneratorArn": {
        "target": "com.amazonaws.licensemanager#String",
        "traits": {
          "smithy.api#documentation": "<p>The Amazon Resource Name (ARN) of the new report generator.</p>"
        }
      }
    },
    "traits": {
      "smithy.api#output": {}
    }
  },
  "com.amazonaws.licensemanager#CreateLicenseRequest": {
    "type": "structure",
    "members": {
      "LicenseName": {
        "target": "com.amazonaws.licensemanager#String",
        "traits": {
          "smithy.api#documentation":
            "<p>License name.</p>",
          "smithy.api#required": {}
        }
      },
      "ProductName": {
        "target": "com.amazonaws.licensemanager#String",
        "traits": {
          "smithy.api#documentation": "<p>Product name.</p>",
          "smithy.api#required": {}
        }
      },
      "ProductSKU": {
        "target": "com.amazonaws.licensemanager#String",
        "traits": {
          "smithy.api#documentation": "<p>Product SKU.</p>",
          "smithy.api#required": {}
        }
      },
      "Issuer": {
        "target": "com.amazonaws.licensemanager#Issuer",
        "traits": {
          "smithy.api#documentation": "<p>License issuer.</p>",

```

```

    "smithy.api#required": {}
  }
},
"HomeRegion": {
  "target": "com.amazonaws.licensemanager#String",
  "traits": {
    "smithy.api#documentation": "<p>Home Region for the license.</p>",
    "smithy.api#required": {}
  }
},
"Validity": {
  "target": "com.amazonaws.licensemanager#DatetimeRange",
  "traits": {
    "smithy.api#documentation": "<p>Date and time range during which the license is valid, in ISO8601-UTC format.</p>",
    "smithy.api#required": {}
  }
},
"Entitlements": {
  "target": "com.amazonaws.licensemanager#EntitlementList",
  "traits": {
    "smithy.api#documentation": "<p>License entitlements.</p>",
    "smithy.api#required": {}
  }
}
},
"Beneficiary": {
  "target": "com.amazonaws.licensemanager#String",
  "traits": {
    "smithy.api#documentation": "<p>License beneficiary.</p>",
    "smithy.api#required": {}
  }
},
"ConsumptionConfiguration": {
  "target": "com.amazonaws.licensemanager#ConsumptionConfiguration",
  "traits": {
    "smithy.api#documentation": "<p>Configuration for consumption of the license. Choose a provisional configuration for workloads\n      running with continuous connectivity. Choose a borrow configuration for workloads with offline\n      usage.</p>",
    "smithy.api#required": {}
  }
},
"LicenseMetadata": {
  "target": "com.amazonaws.licensemanager#MetadataList",
  "traits": {
    "smithy.api#documentation": "<p>Information about the license.</p>"
  }
}

```

```

    }
  },
  "ClientToken": {
    "target": "com.amazonaws.licensemanager#ClientToken",
    "traits": {
      "smithy.api#documentation": "<p>Unique, case-sensitive identifier that you provide to ensure the
idempotency of the request.</p>",
      "smithy.api#required": {}
    }
  },
  "Tags": {
    "target": "com.amazonaws.licensemanager#TagList",
    "traits": {
      "smithy.api#documentation": "<p>Tags to add to the license. For more information about tagging
support in\n      License Manager, see the <a href=\"https://docs.aws.amazon.com/license-
manager/latest/APIReference/API_TagResource.html\">TagResource</a> operation.</p>"
    }
  }
},
"traits": {
  "smithy.api#input": {}
}
},
"com.amazonaws.licensemanager#CreateLicenseResponse": {
  "type": "structure",
  "members": {
    "LicenseArn": {
      "target": "com.amazonaws.licensemanager#Arn",
      "traits": {
        "smithy.api#documentation": "<p>Amazon Resource Name (ARN) of the license.</p>"
      }
    },
    "Status": {
      "target": "com.amazonaws.licensemanager#LicenseStatus",
      "traits": {
        "smithy.api#documentation": "<p>License status.</p>"
      }
    },
    "Version": {
      "target": "com.amazonaws.licensemanager#String",
      "traits": {
        "smithy.api#documentation": "<p>License version.</p>"
      }
    }
  }
},
"traits": {

```

```

    "smithy.api#output": {}
  }
},
"com.amazonaws.licensemanager#CreateLicenseVersion": {
  "type": "operation",
  "input": {
    "target": "com.amazonaws.licensemanager#CreateLicenseVersionRequest"
  },
  "output": {
    "target": "com.amazonaws.licensemanager#CreateLicenseVersionResponse"
  },
  "errors": [
    {
      "target": "com.amazonaws.licensemanager#AccessDeniedException"
    },
    {
      "target": "com.amazonaws.licensemanager#AuthorizationException"
    },
    {
      "target": "com.amazonaws.licensemanager#ConflictException"
    },
    {
      "target": "com.amazonaws.licensemanager#RateLimitExceededException"
    },
    {
      "target": "com.amazonaws.licensemanager#RedirectException"
    },
    {
      "target": "com.amazonaws.licensemanager#ResourceNotFoundException"
    },
    {
      "target": "com.amazonaws.licensemanager#ServerInternalException"
    },
    {
      "target": "com.amazonaws.licensemanager#ValidationException"
    }
  ],
  "traits": {
    "smithy.api#documentation": "<p>Creates a new version of the specified license.</p>"
  }
},
"com.amazonaws.licensemanager#CreateLicenseVersionRequest": {
  "type": "structure",
  "members": {
    "LicenseArn": {
      "target": "com.amazonaws.licensemanager#Arn",
      "traits": {
        "smithy.api#documentation": "<p>Amazon Resource Name (ARN) of the license.</p>",

```

```

        "smithy.api#required":
    {}

    },
    "LicenseName": {
        "target": "com.amazonaws.licensemanager#String",
        "traits": {
            "smithy.api#documentation": "<p>License name.</p>",
            "smithy.api#required": {}
        }
    },
    "ProductName": {
        "target": "com.amazonaws.licensemanager#String",
        "traits": {
            "smithy.api#documentation": "<p>Product name.</p>",
            "smithy.api#required": {}
        }
    },
    "Issuer": {
        "target": "com.amazonaws.licensemanager#Issuer",
        "traits": {
            "smithy.api#documentation": "<p>License issuer.</p>",
            "smithy.api#required": {}
        }
    },
    "HomeRegion": {
        "target": "com.amazonaws.licensemanager#String",
        "traits": {
            "smithy.api#documentation": "<p>Home Region of the license.</p>",
            "smithy.api#required": {}
        }
    },
    "Validity": {
        "target": "com.amazonaws.licensemanager#DatetimeRange",
        "traits": {
            "smithy.api#documentation": "<p>Date and time range during which the license is valid, in ISO8601-UTC format.</p>",
            "smithy.api#required": {}
        }
    },
    "LicenseMetadata": {
        "target": "com.amazonaws.licensemanager#MetadataList",
        "traits": {
            "smithy.api#documentation": "<p>Information about the license.</p>"
        }
    },
    "Entitlements": {

```



```

    "target": "com.amazonaws.licensemanager#EntitlementList",
    "traits": {
      "smithy.api#documentation": "<p>License entitlements.</p>",
      "smithy.api#required": {}
    }
  },
  "ConsumptionConfiguration": {
    "target": "com.amazonaws.licensemanager#ConsumptionConfiguration",
    "traits": {
      "smithy.api#documentation": "<p>Configuration for consumption of the license. Choose a provisional configuration for workloads\n      running with continuous connectivity. Choose a borrow configuration for workloads with offline\n      usage.</p>",
      "smithy.api#required": {}
    }
  },
  "Status": {
    "target": "com.amazonaws.licensemanager#LicenseStatus",
    "traits": {
      "smithy.api#documentation": "<p>License status.</p>",
      "smithy.api#required": {}
    }
  },
  "ClientToken": {
    "target": "com.amazonaws.licensemanager#ClientToken",
    "traits": {
      "smithy.api#documentation": "<p>Unique, case-sensitive identifier that you provide to ensure the idempotency of the request.</p>",
      "smithy.api#required": {}
    }
  },
  "SourceVersion": {
    "target": "com.amazonaws.licensemanager#String",
    "traits": {
      "smithy.api#documentation": "<p>Current version of the license.</p>"
    }
  },
  "traits": {
    "smithy.api#input": {}
  }
},
"com.amazonaws.licensemanager#CreateLicenseVersionResponse": {
  "type": "structure",
  "members": {
    "LicenseArn": {

```

```

"target": "com.amazonaws.licensemanager#Arn",
  "traits": {
    "smithy.api#documentation": "<p>License ARN.</p>"
  }
},
"Version": {
  "target": "com.amazonaws.licensemanager#String",
  "traits": {
    "smithy.api#documentation": "<p>New version of the license.</p>"
  }
},
"Status": {
  "target": "com.amazonaws.licensemanager#LicenseStatus",
  "traits": {
    "smithy.api#documentation": "<p>License status.</p>"
  }
}
},
"traits": {
  "smithy.api#output": {}
}
},
"com.amazonaws.licensemanager#CreateToken": {
  "type": "operation",
  "input": {
    "target": "com.amazonaws.licensemanager#CreateTokenRequest"
  },
  "output": {
    "target": "com.amazonaws.licensemanager#CreateTokenResponse"
  },
  "errors": [
    {
      "target": "com.amazonaws.licensemanager#AccessDeniedException"
    },
    {
      "target": "com.amazonaws.licensemanager#AuthorizationException"
    },
    {
      "target": "com.amazonaws.licensemanager#RateLimitExceededException"
    },
    {
      "target": "com.amazonaws.licensemanager#RedirectException"
    },
    {
      "target": "com.amazonaws.licensemanager#ResourceLimitExceededException"
    },
    {
      "target": "com.amazonaws.licensemanager#ResourceNotFoundException"
    }
  ]
}

```

```

    },
    {
      "target": "com.amazonaws.licensemanager#ServerInternalException"
    },
    {
      "target": "com.amazonaws.licensemanager#ValidationException"
    }
  ],
  "traits": {
    "smithy.api#documentation": "<p>Creates a long-lived token.</p>\n    <p>A refresh token is a JWT token used to get an access token. With an access token,\n    you can call AssumeRoleWithWebIdentity to get role credentials that you can use to \n    call License Manager to manage the specified license.</p>"
  },
  "com.amazonaws.licensemanager#CreateTokenRequest": {
    "type": "structure",
    "members": {
      "LicenseArn": {
        "target": "com.amazonaws.licensemanager#Arn",
        "traits": {
          "smithy.api#documentation": "<p>Amazon Resource Name (ARN) of the license. The ARN is mapped to the aud claim of the\n    JWT token.</p>",
          "smithy.api#required": true
        }
      },
      "RoleArns": {
        "target": "com.amazonaws.licensemanager#ArnList",
        "traits": {
          "smithy.api#documentation": "<p>Amazon Resource Name (ARN) of the IAM roles to embed in the token. \n    License Manager does not check whether the roles are in use.</p>"
        }
      },
      "ExpirationInDays": {
        "target": "com.amazonaws.licensemanager#Integer",
        "traits": {
          "smithy.api#documentation": "<p>Token expiration, in days, counted from token creation. The default is 365 days.</p>"
        }
      },
      "TokenProperties": {
        "target": "com.amazonaws.licensemanager#MaxSize3StringList",
        "traits": {
          "smithy.api#documentation": "<p>Data specified by the caller to be included in the JWT token. The data is mapped\n    to the amr claim of the JWT token.</p>"
        }
      }
    },
  },

```

```

"ClientToken": {
  "target": "com.amazonaws.licensemanager#ClientToken",
  "traits": {
    "smithy.api#documentation": "<p>Idempotency token, valid for 10 minutes.</p>",
    "smithy.api#required": {}
  }
},
"traits": {
  "smithy.api#input": {}
},
"com.amazonaws.licensemanager#CreateTokenResponse": {
  "type": "structure",
  "members": {
    "TokenId": {
      "target": "com.amazonaws.licensemanager#String",
      "traits": {
        "smithy.api#documentation": "<p>Token ID.</p>"
      }
    },
    "TokenType": {
      "target": "com.amazonaws.licensemanager#TokenType",
      "traits": {
        "smithy.api#documentation": "<p>Token type.</p>"
      }
    },
    "Token": {
      "target": "com.amazonaws.licensemanager#TokenString",
      "traits": {
        "smithy.api#documentation": "<p>Refresh token, encoded as a JWT token.</p>"
      }
    }
  },
  "traits": {
    "smithy.api#output": {}
  }
},
"com.amazonaws.licensemanager#DateTime": {
  "type": "timestamp"
},
"com.amazonaws.licensemanager#DatetimeRange": {
  "type": "structure",
  "members": {
    "Begin": {
      "target": "com.amazonaws.licensemanager#ISO8601DateTime",
      "traits": {
        "smithy.api#documentation": "<p>Start of the time range.</p>",

```

```

        "smithy.api#required":
    {}

    }
  },
  "End": {
    "target": "com.amazonaws.licensemanager#ISO8601DateTime",
    "traits": {
      "smithy.api#documentation": "<p>End of the time range.</p>"
    }
  },
  "traits": {
    "smithy.api#documentation": "<p>Describes a time range, in ISO8601-UTC format.</p>"
  },
  "com.amazonaws.licensemanager#DeleteGrant": {
    "type": "operation",
    "input": {
      "target": "com.amazonaws.licensemanager#DeleteGrantRequest"
    },
    "output": {
      "target": "com.amazonaws.licensemanager#DeleteGrantResponse"
    },
    "errors": [
      {
        "target": "com.amazonaws.licensemanager#AccessDeniedException"
      },
      {
        "target": "com.amazonaws.licensemanager#AuthorizationException"
      },
      {
        "target": "com.amazonaws.licensemanager#InvalidParameterValueException"
      },
      {
        "target": "com.amazonaws.licensemanager#RateLimitExceededException"
      },
      {
        "target": "com.amazonaws.licensemanager#ResourceLimitExceededException"
      },
      {
        "target": "com.amazonaws.licensemanager#ServerInternalException"
      },
      {
        "target": "com.amazonaws.licensemanager#ValidationException"
      }
    ],
    "traits": {
      "smithy.api#documentation": "<p>Deletes the specified grant.</p>"
    }
  }
}

```

```

    }
  },
  "com.amazonaws.licensemanager#DeleteGrantRequest": {
    "type": "structure",
    "members": {
      "GrantArn": {

        "target": "com.amazonaws.licensemanager#Arn",
        "traits": {
          "smithy.api#documentation": "<p>Amazon Resource Name (ARN) of the grant.</p>",
          "smithy.api#required": {}
        }
      },
      "StatusReason": {
        "target": "com.amazonaws.licensemanager#StatusReasonMessage",
        "traits": {
          "smithy.api#documentation": "<p>The Status reason for the delete request.</p>"
        }
      },
      "Version": {
        "target": "com.amazonaws.licensemanager#String",
        "traits": {
          "smithy.api#documentation": "<p>Current version of the grant.</p>",
          "smithy.api#required": {}
        }
      },
      "traits": {
        "smithy.api#input": {}
      }
    },
    "com.amazonaws.licensemanager#DeleteGrantResponse":
  {
    "type": "structure",
    "members": {
      "GrantArn": {
        "target": "com.amazonaws.licensemanager#Arn",
        "traits": {
          "smithy.api#documentation": "<p>Grant ARN.</p>"
        }
      },
      "Status": {
        "target": "com.amazonaws.licensemanager#GrantStatus",
        "traits": {
          "smithy.api#documentation": "<p>Grant status.</p>"
        }
      },
      "Version": {

```

```

        "target": "com.amazonaws.licensemanager#String",
        "traits": {
            "smithy.api#documentation": "<p>Grant version.</p>"
        }
    },
    "traits": {
        "smithy.api#output": {}
    }
},
"com.amazonaws.licensemanager#DeleteLicense":
{
    "type": "operation",
    "input": {
        "target": "com.amazonaws.licensemanager#DeleteLicenseRequest"
    },
    "output": {
        "target": "com.amazonaws.licensemanager#DeleteLicenseResponse"
    },
    "errors": [
        {
            "target": "com.amazonaws.licensemanager#AccessDeniedException"
        },
        {
            "target": "com.amazonaws.licensemanager#AuthorizationException"
        },
        {
            "target": "com.amazonaws.licensemanager#ConflictException"
        },
        {
            "target": "com.amazonaws.licensemanager#InvalidParameterValueException"
        },
        {
            "target": "com.amazonaws.licensemanager#RateLimitExceededException"
        },
        {
            "target": "com.amazonaws.licensemanager#RedirectException"
        },
        {
            "target": "com.amazonaws.licensemanager#ServerInternalException"
        },
        {
            "target": "com.amazonaws.licensemanager#ValidationException"
        }
    ],
    "traits": {
        "smithy.api#documentation": "<p>Deletes the specified license.</p>"
    }
}

```

```

    },
    "com.amazonaws.licensemanager#DeleteLicenseConfiguration": {
      "type": "operation",
      "input": {
        "target": "com.amazonaws.licensemanager#DeleteLicenseConfigurationRequest"
      },
      "output": {
        "target": "com.amazonaws.licensemanager#DeleteLicenseConfigurationResponse"
      },
      "errors": [
        {
          "target": "com.amazonaws.licensemanager#AccessDeniedException"
        },
        {
          "target": "com.amazonaws.licensemanager#AuthorizationException"
        },
        {
          "target": "com.amazonaws.licensemanager#InvalidParameterValueException"
        },
        {
          "target": "com.amazonaws.licensemanager#RateLimitExceededException"
        },
        {
          "target": "com.amazonaws.licensemanager#ServerInternalException"
        }
      ],
      "traits": {
        "smithy.api#documentation": "<p>Deletes the specified license configuration.</p>\n      <p>You cannot delete a license configuration that is in use.</p>"
      }
    },
    "com.amazonaws.licensemanager#DeleteLicenseConfigurationRequest": {
      "type": "structure",
      "members": {
        "LicenseConfigurationArn": {
          "target": "com.amazonaws.licensemanager#String",
          "traits": {
            "smithy.api#documentation": "<p>ID of the license configuration.</p>",
            "smithy.api#required": {}
          }
        }
      },
      "traits": {
        "smithy.api#input": {}
      }
    },
    "com.amazonaws.licensemanager#DeleteLicenseConfigurationResponse": {

```



```

    "type": "structure",
    "members": {},
    "traits": {
      "smithy.api#output": {}
    }
  },
  "com.amazonaws.licensemanager#DeleteLicenseManagerReportGenerator": {
    "type": "operation",
    "input": {
      "target": "com.amazonaws.licensemanager#DeleteLicenseManagerReportGeneratorRequest"
    },
    "output": {
      "target": "com.amazonaws.licensemanager#DeleteLicenseManagerReportGeneratorResponse"
    },
    "errors": [
      {
        "target": "com.amazonaws.licensemanager#AccessDeniedException"
      },
      {
        "target": "com.amazonaws.licensemanager#AuthorizationException"
      },
      {
        "target": "com.amazonaws.licensemanager#InvalidParameterValueException"
      },
      {
        "target": "com.amazonaws.licensemanager#RateLimitExceededException"
      },
      {
        "target": "com.amazonaws.licensemanager#ResourceLimitExceededException"
      },
      {
        "target": "com.amazonaws.licensemanager#ResourceNotFoundException"
      },
      {
        "target": "com.amazonaws.licensemanager#ServerInternalException"
      },
      {
        "target": "com.amazonaws.licensemanager#ValidationException"
      }
    ],
    "traits": {
      "smithy.api#documentation": "<p>Deletes the specified report generator.</p>\n    <p>This action
deletes
the report generator, which stops it from generating future reports.\n    The action cannot be reversed. It has no
effect on the previous reports from this generator.</p>"
    }
  },

```

```

"com.amazonaws.licensemanager#DeleteLicenseManagerReportGeneratorRequest": {
  "type": "structure",
  "members": {
    "LicenseManagerReportGeneratorArn": {
      "target": "com.amazonaws.licensemanager#String",
      "traits": {
        "smithy.api#documentation": "<p>Amazon Resource Name (ARN) of the report generator to be
deleted.</p>",
        "smithy.api#required": {}
      }
    },
    "traits": {
      "smithy.api#input": {}
    }
  },
  "com.amazonaws.licensemanager#DeleteLicenseManagerReportGeneratorResponse": {
    "type": "structure",
    "members": {},
    "traits": {
      "smithy.api#output": {}
    }
  },
  "com.amazonaws.licensemanager#DeleteLicenseRequest": {
    "type": "structure",
    "members": {
      "LicenseArn": {
        "target": "com.amazonaws.licensemanager#Arn",
        "traits": {
          "smithy.api#documentation": "<p>Amazon Resource Name (ARN) of the license.</p>",
          "smithy.api#required": {}
        }
      },
      "SourceVersion": {
        "target": "com.amazonaws.licensemanager#String",
        "traits": {
          "smithy.api#documentation": "<p>Current version of the license.</p>",
          "smithy.api#required": {}
        }
      },
      "traits": {
        "smithy.api#input": {}
      }
    },
    "com.amazonaws.licensemanager#DeleteLicenseResponse": {

```

```

"type": "structure",
"members": {
  "Status": {
    "target": "com.amazonaws.licensemanager#LicenseDeletionStatus",
    "traits": {
      "smithy.api#documentation": "<p>License status.</p>"
    }
  },
  "DeletionDate": {
    "target": "com.amazonaws.licensemanager#ISO8601DateTime",
    "traits": {
      "smithy.api#documentation": "<p>Date when the license is deleted.</p>"
    }
  },
  "traits": {
    "smithy.api#output": {}
  }
},
"com.amazonaws.licensemanager#DeleteToken": {
  "type": "operation",
  "input": {
    "target": "com.amazonaws.licensemanager#DeleteTokenRequest"
  },
  "output": {
    "target": "com.amazonaws.licensemanager#DeleteTokenResponse"
  },
  "errors": [
    {
      "target": "com.amazonaws.licensemanager#AccessDeniedException"
    },
    {
      "target": "com.amazonaws.licensemanager#AuthorizationException"
    },
    {
      "target": "com.amazonaws.licensemanager#RateLimitExceededException"
    },
    {
      "target": "com.amazonaws.licensemanager#RedirectException"
    },
    {
      "target": "com.amazonaws.licensemanager#ResourceNotFoundException"
    },
    {
      "target": "com.amazonaws.licensemanager#ServerInternalException"
    },
    {
      "target": "com.amazonaws.licensemanager#ValidationException"
    }
  ]
}

```

```

    }
  ],
  "traits": {
    "smithy.api#documentation": "<p>Deletes the specified token.  
Must be called in the license home Region.</p>"
  }
},
"com.amazonaws.licensemanager#DeleteTokenRequest": {
  "type": "structure",
  "members": {
    "TokenId": {
      "target": "com.amazonaws.licensemanager#String",
      "traits": {
        "smithy.api#documentation": "<p>Token ID.</p>",
        "smithy.api#required": {}
      }
    }
  }
},
"traits": {
  "smithy.api#input": {}
}
},
"com.amazonaws.licensemanager#DeleteTokenResponse": {
  "type": "structure",
  "members": {},
  "traits": {
    "smithy.api#output": {}
  }
},
"com.amazonaws.licensemanager#DigitalSignatureMethod": {
  "type": "enum",
  "members": {
    "JWT_PS384": {
      "target": "smithy.api#Unit",

      "traits": {
        "smithy.api#enumValue": "JWT_PS384"
      }
    }
  }
},
"com.amazonaws.licensemanager#Entitlement": {
  "type": "structure",
  "members": {
    "Name": {
      "target": "com.amazonaws.licensemanager#String",
      "traits": {
        "smithy.api#documentation": "<p>Entitlement name.</p>",

```

```

        "smithy.api#required": {}
    },
    "Value": {
        "target": "com.amazonaws.licensemanager#String",
        "traits": {
            "smithy.api#documentation": "<p>Entitlement resource. Use only if the unit is None.</p>"
        }
    },
    "MaxCount": {
        "target": "com.amazonaws.licensemanager#Long",
        "traits": {
            "smithy.api#documentation":
"<p>Maximum entitlement count. Use if the unit is not None.</p>"
        }
    },
    "Overage": {
        "target": "com.amazonaws.licensemanager#BoxBoolean",
        "traits": {
            "smithy.api#documentation": "<p>Indicates whether overages are allowed.</p>"
        }
    },
    "Unit": {
        "target": "com.amazonaws.licensemanager#EntitlementUnit",
        "traits": {
            "smithy.api#documentation": "<p>Entitlement unit.</p>",
            "smithy.api#required": {}
        }
    },
    "AllowCheckIn": {
        "target": "com.amazonaws.licensemanager#BoxBoolean",
        "traits": {
            "smithy.api#documentation": "<p>Indicates whether check-ins are allowed.</p>"
        }
    }
},
"traits": {
    "smithy.api#documentation": "<p>Describes a resource entitled for use with a license.</p>"
}
},
"com.amazonaws.licensemanager#EntitlementData": {
    "type": "structure",
    "members": {
        "Name": {
            "target": "com.amazonaws.licensemanager#String",
            "traits": {
                "smithy.api#documentation": "<p>Entitlement data name.</p>",

```

```

        "smithy.api#required": {}
    },
    "Value": {
        "target": "com.amazonaws.licensemanager#String",
        "traits": {
            "smithy.api#documentation": "<p>Entitlement data value.</p>"
        }
    },
    "Unit": {
        "target": "com.amazonaws.licensemanager#EntitlementDataUnit",
        "traits": {

"smithy.api#documentation": "<p>Entitlement data unit.</p>",
            "smithy.api#required": {}
        }
    },
    "traits": {
        "smithy.api#documentation": "<p>Data associated with an entitlement resource.</p>"
    }
},
"com.amazonaws.licensemanager#EntitlementDataList": {
    "type": "list",
    "member": {
        "target": "com.amazonaws.licensemanager#EntitlementData"
    }
},
"com.amazonaws.licensemanager#EntitlementDataUnit": {
    "type": "enum",
    "members": {
        "COUNT": {
            "target": "smithy.api#Unit",
            "traits": {
                "smithy.api#enumValue": "Count"
            }
        },
        "NONE": {
            "target": "smithy.api#Unit",
            "traits": {
                "smithy.api#enumValue":
"None"
            }
        },
        "SECONDS": {
            "target": "smithy.api#Unit",
            "traits": {
                "smithy.api#enumValue": "Seconds"
            }
        }
    }
}

```

```

    }
  },
  "MICROSECONDS": {
    "target": "smithy.api#Unit",
    "traits": {
      "smithy.api#enumValue": "Microseconds"
    }
  },
  "MILLISECONDS": {
    "target": "smithy.api#Unit",
    "traits": {
      "smithy.api#enumValue": "Milliseconds"
    }
  },
  "BYTES": {
    "target": "smithy.api#Unit",
    "traits": {
      "smithy.api#enumValue": "Bytes"
    }
  },
  "KILOBYTES": {
    "target": "smithy.api#Unit",

"traits": {
  "smithy.api#enumValue": "Kilobytes"
}
},
"MEGABYTES": {
  "target": "smithy.api#Unit",
  "traits": {
    "smithy.api#enumValue": "Megabytes"
  }
},
"GIGABYTES": {
  "target": "smithy.api#Unit",
  "traits": {
    "smithy.api#enumValue": "Gigabytes"
  }
},
"TERABYTES": {
  "target": "smithy.api#Unit",
  "traits": {
    "smithy.api#enumValue": "Terabytes"
  }
},
"BITS": {
  "target": "smithy.api#Unit",
  "traits": {

```

```

        "smithy.api#enumValue": "Bits"
    }
},
"KILOBITS": {
    "target": "smithy.api#Unit",
    "traits": {
        "smithy.api#enumValue": "Kilobits"
    }
},
"MEGABITS": {
    "target": "smithy.api#Unit",
    "traits": {
        "smithy.api#enumValue": "Megabits"
    }
},
"GIGABITS": {
    "target": "smithy.api#Unit",
    "traits": {
        "smithy.api#enumValue": "Gigabits"
    }
},
"TERABITS": {
    "target": "smithy.api#Unit",
    "traits": {
        "smithy.api#enumValue": "Terabits"
    }
},
"PERCENT": {
    "target": "smithy.api#Unit",
    "traits": {
        "smithy.api#enumValue": "Percent"
    }
},
"BYTES_PER_SECOND": {
    "target": "smithy.api#Unit",
    "traits": {
        "smithy.api#enumValue": "Bytes/Second"
    }
},
"KILOBYTES_PER_SECOND": {
    "target": "smithy.api#Unit",
    "traits": {
        "smithy.api#enumValue": "Kilobytes/Second"
    }
},
"MEGABYTES_PER_SECOND": {

```



```

        "target": "smithy.api#Unit",
        "traits": {
            "smithy.api#enumValue": "Megabytes/Second"
        }
    },
    "GIGABYTES_PER_SECOND": {
        "target": "smithy.api#Unit",
        "traits": {
            "smithy.api#enumValue": "Gigabytes/Second"
        }
    },
    "TERABYTES_PER_SECOND": {
        "target":
"smithy.api#Unit",
        "traits": {
            "smithy.api#enumValue": "Terabytes/Second"
        }
    },
    "BITS_PER_SECOND": {
        "target": "smithy.api#Unit",
        "traits": {
            "smithy.api#enumValue": "Bits/Second"
        }
    },
    "KILOBITS_PER_SECOND": {
        "target": "smithy.api#Unit",
        "traits": {
            "smithy.api#enumValue": "Kilobits/Second"
        }
    },
    "MEGABITS_PER_SECOND": {
        "target": "smithy.api#Unit",
        "traits": {
            "smithy.api#enumValue": "Megabits/Second"
        }
    },
    "GIGABITS_PER_SECOND": {
        "target": "smithy.api#Unit",
        "traits": {
            "smithy.api#enumValue":
"Gigabits/Second"
        }
    },
    "TERABITS_PER_SECOND": {
        "target": "smithy.api#Unit",
        "traits": {
            "smithy.api#enumValue": "Terabits/Second"
        }
    }

```

```

    },
    "COUNT_PER_SECOND": {
      "target": "smithy.api#Unit",
      "traits": {
        "smithy.api#enumValue": "Count/Second"
      }
    }
  },
  "com.amazonaws.licensemanager#EntitlementList": {
    "type": "list",
    "member": {
      "target": "com.amazonaws.licensemanager#Entitlement"
    }
  },
  "com.amazonaws.licensemanager#EntitlementNotAllowedException": {
    "type": "structure",
    "members": {
      "Message": {
        "target": "com.amazonaws.licensemanager#Message"
      }
    }
  },
  "traits": {
    "smithy.api#documentation": "<p>The entitlement is not allowed.</p>",
    "smithy.api#error": "client",
    "smithy.api#httpError": 400
  }
},
"com.amazonaws.licensemanager#EntitlementUnit": {
  "type": "enum",
  "members": {
    "COUNT": {
      "target": "smithy.api#Unit",
      "traits": {
        "smithy.api#enumValue": "Count"
      }
    },
    "NONE": {
      "target": "smithy.api#Unit",
      "traits": {
        "smithy.api#enumValue": "None"
      }
    },
    "SECONDS": {
      "target": "smithy.api#Unit",
      "traits": {
        "smithy.api#enumValue": "Seconds"
      }
    }
  }
}

```

```

    }
  },
  "MICROSECONDS": {
    "target": "smithy.api#Unit",
    "traits": {
      "smithy.api#enumValue": "Microseconds"
    }
  },
  "MILLISECONDS": {
    "target": "smithy.api#Unit",
    "traits": {
      "smithy.api#enumValue": "Milliseconds"
    }
  },
  "BYTES": {
    "target": "smithy.api#Unit",
    "traits": {
      "smithy.api#enumValue": "Bytes"
    }
  },
  "KILOBYTES": {
    "target": "smithy.api#Unit",
    "traits": {
      "smithy.api#enumValue": "Kilobytes"
    }
  },
  "MEGABYTES": {
    "target": "smithy.api#Unit",
    "traits": {
      "smithy.api#enumValue": "Megabytes"
    }
  },
  "GIGABYTES": {
    "target": "smithy.api#Unit",
    "traits": {
      "smithy.api#enumValue": "Gigabytes"
    }
  },
  "TERABYTES": {
    "target": "smithy.api#Unit",
    "traits": {
      "smithy.api#enumValue": "Terabytes"
    }
  },
  "BITS": {
    "target": "smithy.api#Unit",

```

```

        "traits": {
            "smithy.api#enumValue": "Bits"
        }
    },
    "KILOBITS": {
        "target": "smithy.api#Unit",
        "traits": {
            "smithy.api#enumValue": "Kilobits"
        }
    },
    "MEGABITS": {
        "target": "smithy.api#Unit",
        "traits": {
            "smithy.api#enumValue": "Megabits"
        }
    },
    "GIGABITS": {
        "target": "smithy.api#Unit",
        "traits": {
            "smithy.api#enumValue": "Gigabits"
        }
    },
    "TERABITS": {
        "target": "smithy.api#Unit",
        "traits": {
            "smithy.api#enumValue": "Terabits"
        }
    },
    "PERCENT": {
        "target": "smithy.api#Unit",
        "traits": {
            "smithy.api#enumValue": "Percent"
        }
    },
    "BYTES_PER_SECOND": {
        "target": "smithy.api#Unit",
        "traits": {
            "smithy.api#enumValue": "Bytes/Second"
        }
    },
    "KILOBYTES_PER_SECOND": {
        "target":
"smithy.api#Unit",
        "traits": {
            "smithy.api#enumValue": "Kilobytes/Second"
        }
    },

```

```

"MEGABYTES_PER_SECOND": {
  "target": "smithy.api#Unit",
  "traits": {
    "smithy.api#enumValue": "Megabytes/Second"
  }
},
"GIGABYTES_PER_SECOND": {
  "target": "smithy.api#Unit",
  "traits": {
    "smithy.api#enumValue": "Gigabytes/Second"
  }
},
"TERABYTES_PER_SECOND": {
  "target": "smithy.api#Unit",
  "traits": {
    "smithy.api#enumValue": "Terabytes/Second"
  }
},
"BITS_PER_SECOND": {
  "target": "smithy.api#Unit",
  "traits": {
    "smithy.api#enumValue": "Bits/Second"
  }
},
"KILOBITS_PER_SECOND": {
  "target": "smithy.api#Unit",
  "traits": {
    "smithy.api#enumValue": "Kilobits/Second"
  }
},
"MEGABITS_PER_SECOND": {
  "target": "smithy.api#Unit",
  "traits": {
    "smithy.api#enumValue": "Megabits/Second"
  }
},
"GIGABITS_PER_SECOND": {
  "target": "smithy.api#Unit",
  "traits": {
    "smithy.api#enumValue": "Gigabits/Second"
  }
},
"TERABITS_PER_SECOND": {
  "target": "smithy.api#Unit",
  "traits": {
    "smithy.api#enumValue": "Terabits/Second"
  }
}

```

```

    },

    "COUNT_PER_SECOND": {
        "target": "smithy.api#Unit",
        "traits": {
            "smithy.api#enumValue": "Count/Second"
        }
    }
},

"com.amazonaws.licensemanager#EntitlementUsage": {
    "type": "structure",
    "members": {
        "Name": {
            "target": "com.amazonaws.licensemanager#String",
            "traits": {
                "smithy.api#documentation": "<p>Entitlement usage name.</p>",
                "smithy.api#required": {}
            }
        },
        "ConsumedValue": {
            "target": "com.amazonaws.licensemanager#String",
            "traits": {
                "smithy.api#documentation": "<p>Resource usage consumed.</p>",
                "smithy.api#required": {}
            }
        },
        "MaxCount": {
            "target": "com.amazonaws.licensemanager#String",
            "traits": {
                "smithy.api#documentation": "<p>Maximum entitlement usage count.</p>"
            }
        },
        "Unit": {
            "target": "com.amazonaws.licensemanager#EntitlementDataUnit",
            "traits": {
                "smithy.api#documentation": "<p>Entitlement usage unit.</p>",
                "smithy.api#required": {}
            }
        },
        "traits": {
            "smithy.api#documentation": "<p>Usage associated with an entitlement resource.</p>"
        }
    },

    "com.amazonaws.licensemanager#EntitlementUsageList": {
        "type": "list",

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    "member": {
      "target": "com.amazonaws.licensemanager#EntitlementUsage"
    }
  },
  "com.amazonaws.licensemanager#ExtendLicenseConsumption":
{
  "type": "operation",
  "input": {
    "target": "com.amazonaws.licensemanager#ExtendLicenseConsumptionRequest"
  },
  "output": {
    "target": "com.amazonaws.licensemanager#ExtendLicenseConsumptionResponse"
  },
  "errors": [
    {
      "target": "com.amazonaws.licensemanager#AccessDeniedException"
    },
    {
      "target": "com.amazonaws.licensemanager#AuthorizationException"
    },
    {
      "target": "com.amazonaws.licensemanager#InvalidParameterValueException"
    },
    {
      "target": "com.amazonaws.licensemanager#RateLimitExceededException"
    },
    {
      "target": "com.amazonaws.licensemanager#ResourceNotFoundException"
    },
    {
      "target": "com.amazonaws.licensemanager#ServerInternalException"
    },
    {
      "target": "com.amazonaws.licensemanager#ValidationException"
    }
  ],
  "traits": {
    "smithy.api#documentation": "<p>Extends the expiration date for license consumption.</p>"
  }
},
  "com.amazonaws.licensemanager#ExtendLicenseConsumptionRequest": {
    "type": "structure",
    "members": {
      "LicenseConsumptionToken": {
        "target": "com.amazonaws.licensemanager#String",
        "traits": {
          "smithy.api#documentation": "<p>License consumption token.</p>",
          "smithy.api#required": {}
        }
      }
    }
  }
}

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```

    }
  },
  "DryRun": {
    "target": "com.amazonaws.licensemanager#Boolean",
    "traits": {
      "smithy.api#default": false,

      "smithy.api#documentation": "<p>Checks whether you have the required permissions for the action,
without actually making the request. Provides an error response if you do not have the required permissions.</p>"
    }
  },
  "traits": {
    "smithy.api#input": {}
  },
  "com.amazonaws.licensemanager#ExtendLicenseConsumptionResponse": {
    "type": "structure",
    "members": {
      "LicenseConsumptionToken": {
        "target": "com.amazonaws.licensemanager#String",
        "traits": {
          "smithy.api#documentation": "<p>License consumption token.</p>"
        }
      },
      "Expiration": {
        "target": "com.amazonaws.licensemanager#ISO8601DateTime",
        "traits": {
          "smithy.api#documentation": "<p>Date and time at which the
license consumption expires.</p>"
        }
      }
    },
    "traits": {
      "smithy.api#output": {}
    }
  },
  "com.amazonaws.licensemanager#FailedDependencyException": {
    "type": "structure",
    "members": {
      "Message": {
        "target": "com.amazonaws.licensemanager#Message"
      },
      "ErrorCode": {
        "target": "com.amazonaws.licensemanager#String"
      }
    },
    "traits": {

```



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    "aws.protocols#awsQueryError": {
      "code": "FailedDependency",
      "httpResponseCode": 424
    },
    "smithy.api#documentation": "<p>A dependency required to run the API is missing.</p>",
    "smithy.api#error": "client",
    "smithy.api#httpError": 424
  }
},
"com.amazonaws.licensemanager#Filter":
{
  "type": "structure",
  "members": {
    "Name": {
      "target": "com.amazonaws.licensemanager#FilterName",
      "traits": {
        "smithy.api#documentation": "<p>Name of the filter. Filter names are case-sensitive.</p>"
      }
    },
    "Values": {
      "target": "com.amazonaws.licensemanager#FilterValues",
      "traits": {
        "smithy.api#documentation": "<p>The value of the filter, which is case-sensitive. You can only specify one value for the filter.</p>"
      }
    }
  },
  "traits": {
    "smithy.api#documentation": "<p>A filter name and value pair that is used to return more specific results from a\n      describe operation. Filters can be used to match a set of resources by specific criteria,\n      such as tags, attributes, or IDs.</p>"
  }
},
"com.amazonaws.licensemanager#FilterLimitExceededException": {
  "type": "structure",
  "members": {
    "Message": {
      "target": "com.amazonaws.licensemanager#Message"
    }
  },
  "traits": {
    "aws.protocols#awsQueryError": {
      "code": "FilterLimitExceeded",
      "httpResponseCode": 400
    },
    "smithy.api#documentation": "<p>The request uses too many filters or too many filter values.</p>",
    "smithy.api#error": "client",

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        "smithy.api#httpError": 400
    }
},
"com.amazonaws.licensemanager#FilterList": {
    "type": "list",
    "member": {
        "target": "com.amazonaws.licensemanager#Filter"
    }
},
"com.amazonaws.licensemanager#FilterName": {
    "type": "string"
},
"com.amazonaws.licensemanager#FilterValue":
{
    "type": "string"
},
"com.amazonaws.licensemanager#FilterValues": {
    "type": "list",
    "member": {
        "target": "com.amazonaws.licensemanager#FilterValue",
        "traits": {
            "smithy.api#xmlName": "item"
        }
    }
},
"com.amazonaws.licensemanager#Filters": {
    "type": "list",
    "member": {
        "target": "com.amazonaws.licensemanager#Filter",
        "traits": {
            "smithy.api#xmlName": "item"
        }
    }
},
"com.amazonaws.licensemanager#GetAccessToken": {
    "type": "operation",
    "input": {
        "target": "com.amazonaws.licensemanager#GetAccessTokenRequest"
    },
    "output": {
        "target": "com.amazonaws.licensemanager#GetAccessTokenResponse"
    },
},
"errors": [
    {
        "target": "com.amazonaws.licensemanager#AccessDeniedException"
    },
    {

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        "target": "com.amazonaws.licensemanager#AuthorizationException"
    },
    {
        "target": "com.amazonaws.licensemanager#RateLimitExceededException"
    },
    {
        "target": "com.amazonaws.licensemanager#ServerInternalException"
    },
    {
        "target": "com.amazonaws.licensemanager#ValidationException"
    }
],
"traits": {
    "smithy.api#documentation": "<p>Gets a temporary access token to use with
AssumeRoleWithWebIdentity. Access tokens\n        are valid for one hour.</p>"
},
},
"com.amazonaws.licensemanager#GetAccessTokenRequest": {
    "type": "structure",
    "members": {
        "Token":
    {
        "target": "com.amazonaws.licensemanager#TokenString",
        "traits": {
            "smithy.api#documentation": "<p>Refresh token, encoded as a JWT token.</p>",
            "smithy.api#required": {}
        }
    },
    },
    "TokenProperties": {
        "target": "com.amazonaws.licensemanager#MaxSize3StringList",
        "traits": {
            "smithy.api#documentation": "<p>Token properties to validate against those present in the JWT
token.</p>"
        }
    },
    },
    "traits": {
        "smithy.api#input": {}
    }
},
"com.amazonaws.licensemanager#GetAccessTokenResponse": {
    "type": "structure",
    "members": {
        "AccessToken": {
            "target": "com.amazonaws.licensemanager#TokenString",
            "traits": {

```

```

    "smithy.api#documentation": "<p>Temporary access token.</p>"
  }
},
"traits": {
  "smithy.api#output": {}
},
"com.amazonaws.licensemanager#GetGrant": {
  "type": "operation",
  "input": {
    "target": "com.amazonaws.licensemanager#GetGrantRequest"
  },
  "output": {
    "target": "com.amazonaws.licensemanager#GetGrantResponse"
  },
  "errors": [
    {
      "target": "com.amazonaws.licensemanager#AccessDeniedException"
    },
    {
      "target": "com.amazonaws.licensemanager#AuthorizationException"
    },
    {
      "target": "com.amazonaws.licensemanager#InvalidParameterValueException"
    },
    {
      "target": "com.amazonaws.licensemanager#RateLimitExceededException"
    },
    {
      "target": "com.amazonaws.licensemanager#ResourceLimitExceededException"
    },
    {
      "target": "com.amazonaws.licensemanager#ServerInternalException"
    },
    {
      "target": "com.amazonaws.licensemanager#ValidationException"
    }
  ],
  "traits": {
    "smithy.api#documentation": "<p>Gets detailed information about the specified grant.</p>"
  }
},
"com.amazonaws.licensemanager#GetGrantRequest": {
  "type": "structure",
  "members": {
    "GrantArn": {
      "target": "com.amazonaws.licensemanager#Arn",

```

```

    "traits": {
      "smithy.api#documentation": "<p>Amazon Resource Name (ARN) of the grant.</p>",
      "smithy.api#required": {}
    },
    "Version": {
      "target": "com.amazonaws.licensemanager#String",
      "traits": {
        "smithy.api#documentation": "<p>Grant version.</p>"
      }
    },
    "traits": {
      "smithy.api#input": {}
    },
    "com.amazonaws.licensemanager#GetGrantResponse": {
      "type": "structure",
      "members": {
        "Grant": {
          "target": "com.amazonaws.licensemanager#Grant",
          "traits": {
            "smithy.api#documentation": "<p>Grant details.</p>"
          }
        }
      },
      "traits": {
        "smithy.api#output": {}
      }
    },
    "com.amazonaws.licensemanager#GetLicense": {
      "type": "operation",
      "input": {
        "target": "com.amazonaws.licensemanager#GetLicenseRequest"
      },
      "output": {
        "target": "com.amazonaws.licensemanager#GetLicenseResponse"
      },
      "errors": [
        {
          "target": "com.amazonaws.licensemanager#AccessDeniedException"
        },
        {
          "target": "com.amazonaws.licensemanager#AuthorizationException"
        },
        {
          "target": "com.amazonaws.licensemanager#InvalidParameterValueException"
        }
      ],

```

```

    {
      "target": "com.amazonaws.licensemanager#RateLimitExceededException"
    },
    {
      "target": "com.amazonaws.licensemanager#ServerInternalException"
    },
    {
      "target": "com.amazonaws.licensemanager#ValidationException"
    }
  ],
  "traits": {
    "smithy.api#documentation": "<p>Gets detailed
information about the specified license.</p>"
  }
},
"com.amazonaws.licensemanager#GetLicenseConfiguration": {
  "type": "operation",
  "input": {
    "target": "com.amazonaws.licensemanager#GetLicenseConfigurationRequest"
  },
  "output": {
    "target": "com.amazonaws.licensemanager#GetLicenseConfigurationResponse"
  },
  "errors": [
    {
      "target": "com.amazonaws.licensemanager#AccessDeniedException"
    },
    {
      "target": "com.amazonaws.licensemanager#AuthorizationException"
    },
    {
      "target": "com.amazonaws.licensemanager#InvalidParameterValueException"
    },
    {
      "target": "com.amazonaws.licensemanager#RateLimitExceededException"
    },
    {
      "target": "com.amazonaws.licensemanager#ServerInternalException"
    }
  ],
  "traits": {
    "smithy.api#documentation": "<p>Gets detailed information about the specified license
configuration.</p>"
  }
},
"com.amazonaws.licensemanager#GetLicenseConfigurationRequest": {
  "type": "structure",
  "members": {

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```

    "LicenseConfigurationArn": {
      "target": "com.amazonaws.licensemanager#String",
      "traits": {
        "smithy.api#documentation": "<p>Amazon Resource Name (ARN) of the license
configuration.</p>",
        "smithy.api#required": {}
      }
    },
    "traits": {
      "smithy.api#input": {}
    }
  },
  "com.amazonaws.licensemanager#GetLicenseConfigurationResponse": {
    "type": "structure",
    "members": {
      "LicenseConfigurationId":
    {
      "target": "com.amazonaws.licensemanager#String",
      "traits": {
        "smithy.api#documentation": "<p>Unique ID for the license configuration.</p>"
      }
    },
    "LicenseConfigurationArn": {
      "target": "com.amazonaws.licensemanager#String",
      "traits": {
        "smithy.api#documentation": "<p>Amazon Resource Name (ARN) of the license configuration.</p>"
      }
    },
    "Name": {
      "target": "com.amazonaws.licensemanager#String",
      "traits": {
        "smithy.api#documentation": "<p>Name of the license configuration.</p>"
      }
    },
    "Description": {
      "target": "com.amazonaws.licensemanager#String",
      "traits": {
        "smithy.api#documentation":
        "<p>Description of the license configuration.</p>"
      }
    },
    "LicenseCountingType": {
      "target": "com.amazonaws.licensemanager#LicenseCountingType",
      "traits": {
        "smithy.api#documentation": "<p>Dimension for which the licenses are counted.</p>"
      }
    }
  },

```

```

"LicenseRules": {
  "target": "com.amazonaws.licensemanager#StringList",
  "traits": {
    "smithy.api#documentation": "<p>License rules.</p>"
  }
},
"LicenseCount": {
  "target": "com.amazonaws.licensemanager#BoxLong",
  "traits": {
    "smithy.api#documentation": "<p>Number of available licenses.</p>"
  }
},
"LicenseCountHardLimit": {
  "target": "com.amazonaws.licensemanager#BoxBoolean",
  "traits": {
    "smithy.api#documentation": "<p>Sets the number of available licenses as a hard limit.</p>"
  }
},
"ConsumedLicenses": {
  "target": "com.amazonaws.licensemanager#BoxLong",
  "traits": {
    "smithy.api#documentation": "<p>Number of licenses assigned to resources.</p>"
  }
},
"Status": {
  "target": "com.amazonaws.licensemanager#String",
  "traits": {
    "smithy.api#documentation": "<p>License configuration status.</p>"
  }
},
"OwnerAccountId": {
  "target": "com.amazonaws.licensemanager#String",
  "traits": {
    "smithy.api#documentation": "<p>Account ID of the owner
of the license configuration.</p>"
  }
},
"ConsumedLicenseSummaryList": {
  "target": "com.amazonaws.licensemanager#ConsumedLicenseSummaryList",
  "traits": {
    "smithy.api#documentation": "<p>Summaries of the licenses consumed by resources.</p>"
  }
},
"ManagedResourceSummaryList": {
  "target": "com.amazonaws.licensemanager#ManagedResourceSummaryList",
  "traits": {
    "smithy.api#documentation": "<p>Summaries of the managed resources.</p>"
  }
}

```



```

    }
  },
  "Tags": {
    "target": "com.amazonaws.licensemanager#TagList",
    "traits": {
      "smithy.api#documentation": "<p>Tags for the license configuration.</p>"
    }
  },
  "ProductInformationList":
{
  "target": "com.amazonaws.licensemanager#ProductInformationList",
  "traits": {
    "smithy.api#documentation": "<p>Product information.</p>"
  }
},
  "AutomatedDiscoveryInformation": {
    "target": "com.amazonaws.licensemanager#AutomatedDiscoveryInformation",
    "traits": {
      "smithy.api#documentation": "<p>Automated discovery information.</p>"
    }
  },
  "DisassociateWhenNotFound": {
    "target": "com.amazonaws.licensemanager#BoxBoolean",
    "traits": {
      "smithy.api#documentation": "<p>When true, disassociates a resource when software is
uninstalled.</p>"
    }
  }
},
  "traits": {
    "smithy.api#output": {}
  }
},
  "com.amazonaws.licensemanager#GetLicenseConversionTask":
{
  "type": "operation",
  "input": {
    "target": "com.amazonaws.licensemanager#GetLicenseConversionTaskRequest"
  },
  "output": {
    "target": "com.amazonaws.licensemanager#GetLicenseConversionTaskResponse"
  },
  "errors": [
    {
      "target": "com.amazonaws.licensemanager#AccessDeniedException"
    },
    {
      "target": "com.amazonaws.licensemanager#AuthorizationException"
    }
  ]
}

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    },
    {
      "target": "com.amazonaws.licensemanager#InvalidParameterValueException"
    },
    {
      "target": "com.amazonaws.licensemanager#RateLimitExceededException"
    },
    {
      "target": "com.amazonaws.licensemanager#ServerInternalException"
    }
  ],
  "traits": {
    "smithy.api#documentation": "<p>Gets information about the specified license type conversion task.</p>"
  }
},
"com.amazonaws.licensemanager#GetLicenseConversionTaskRequest": {
  "type": "structure",
  "members": {
    "LicenseConversionTaskId": {
      "target": "com.amazonaws.licensemanager#LicenseConversionTaskId",
      "traits": {
        "smithy.api#documentation": "<p>ID of the license type conversion task to retrieve information on.</p>",
        "smithy.api#required": {}
      }
    }
  },
  "traits": {
    "smithy.api#input": {}
  }
},
"com.amazonaws.licensemanager#GetLicenseConversionTaskResponse": {
  "type": "structure",
  "members": {
    "LicenseConversionTaskId": {
      "target": "com.amazonaws.licensemanager#LicenseConversionTaskId",
      "traits": {
        "smithy.api#documentation": "<p>ID of the license type conversion task.</p>"
      }
    },
    "ResourceArn": {
      "target": "com.amazonaws.licensemanager#String",
      "traits": {
        "smithy.api#documentation": "<p>Amazon Resource Names (ARN) of the resources the license conversion task is associated with.</p>"
      }
    }
  },
  "SourceLicenseContext": {

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```

    "target": "com.amazonaws.licensemanager#LicenseConversionContext",
    "traits": {
      "smithy.api#documentation": "<p>Information about the license type converted from.</p>"
    }
  },
  "DestinationLicenseContext": {
    "target": "com.amazonaws.licensemanager#LicenseConversionContext",
    "traits": {
      "smithy.api#documentation": "<p>Information about the license type converted to.</p>"
    }
  },
  "StatusMessage": {
    "target": "com.amazonaws.licensemanager#String",
    "traits": {
      "smithy.api#documentation": "<p>The status message for the conversion task.</p>"
    }
  },
  "Status": {
    "target": "com.amazonaws.licensemanager#LicenseConversionTaskStatus",
    "traits": {
      "smithy.api#documentation": "<p>Status of the license type conversion task.</p>"
    }
  },
  "StartTime": {
    "target": "com.amazonaws.licensemanager#DateTime",
    "traits": {
      "smithy.api#documentation": "<p>Time at which the license type conversion task
was started .</p>"
    }
  },
  "LicenseConversionTime": {
    "target": "com.amazonaws.licensemanager#DateTime",
    "traits": {
      "smithy.api#documentation": "<p>Amount of time to complete the license type conversion.</p>"
    }
  },
  "EndTime": {
    "target": "com.amazonaws.licensemanager#DateTime",
    "traits": {
      "smithy.api#documentation": "<p>Time at which the license type conversion task was
completed.</p>"
    }
  },
  "traits": {
    "smithy.api#output": {}
  }
},

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```

"com.amazonaws.licensemanager#GetLicenseManagerReportGenerator": {
  "type": "operation",
  "input": {
    "target": "com.amazonaws.licensemanager#GetLicenseManagerReportGeneratorRequest"
  },
  "output": {
    "target": "com.amazonaws.licensemanager#GetLicenseManagerReportGeneratorResponse"
  },
  "errors": [
    {
      "target": "com.amazonaws.licensemanager#AccessDeniedException"
    },
    {
      "target": "com.amazonaws.licensemanager#AuthorizationException"
    },
    {
      "target": "com.amazonaws.licensemanager#InvalidParameterValueException"
    },
    {
      "target": "com.amazonaws.licensemanager#RateLimitExceededException"
    },
    {
      "target": "com.amazonaws.licensemanager#ResourceLimitExceededException"
    },
    {
      "target": "com.amazonaws.licensemanager#ResourceNotFoundException"
    },
    {
      "target": "com.amazonaws.licensemanager#ServerInternalException"
    },
    {
      "target": "com.amazonaws.licensemanager#ValidationException"
    }
  ],
  "traits": {
    "smithy.api#documentation": "<p>Gets information about the specified report generator.</p>"
  }
},
"com.amazonaws.licensemanager#GetLicenseManagerReportGeneratorRequest": {
  "type": "structure",
  "members": {
    "LicenseManagerReportGeneratorArn": {
      "target": "com.amazonaws.licensemanager#String",
      "traits": {
        "smithy.api#documentation": "<p>Amazon Resource Name (ARN) of the report generator.</p>",
        "smithy.api#required": {}
      }
    }
  }
}

```

```

    }
  },
  "traits": {
    "smithy.api#input": {}
  }
},
"com.amazonaws.licensemanager#GetLicenseManagerReportGeneratorResponse":
{
  "type": "structure",
  "members": {
    "ReportGenerator": {
      "target": "com.amazonaws.licensemanager#ReportGenerator",
      "traits": {
        "smithy.api#documentation": "<p>A report generator that creates periodic reports about your license configurations.</p>"
      }
    }
  },
  "traits": {
    "smithy.api#output": {}
  }
},
"com.amazonaws.licensemanager#GetLicenseRequest": {
  "type": "structure",
  "members": {
    "LicenseArn": {
      "target": "com.amazonaws.licensemanager#Arn",
      "traits": {
        "smithy.api#documentation": "<p>Amazon Resource Name (ARN) of the license.</p>",
        "smithy.api#required": {}
      }
    }
  },
  "Version": {
    "target":
"com.amazonaws.licensemanager#String",
    "traits": {
      "smithy.api#documentation": "<p>License version.</p>"
    }
  },
  "traits": {
    "smithy.api#input": {}
  }
},
"com.amazonaws.licensemanager#GetLicenseResponse": {
  "type": "structure",
  "members": {
    "License": {

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```

        "target": "com.amazonaws.licensemanager#License",
        "traits": {
            "smithy.api#documentation": "<p>License details.</p>"
        }
    },
    "traits": {
        "smithy.api#output": {}
    }
},
"com.amazonaws.licensemanager#GetLicenseUsage": {
    "type": "operation",
    "input": {
        "target": "com.amazonaws.licensemanager#GetLicenseUsageRequest"
    },
    "output":
{
    "target": "com.amazonaws.licensemanager#GetLicenseUsageResponse"
},
    "errors": [
        {
            "target": "com.amazonaws.licensemanager#AccessDeniedException"
        },
        {
            "target": "com.amazonaws.licensemanager#AuthorizationException"
        },
        {
            "target": "com.amazonaws.licensemanager#InvalidParameterValueException"
        },
        {
            "target": "com.amazonaws.licensemanager#RateLimitExceededException"
        },
        {
            "target": "com.amazonaws.licensemanager#ServerInternalException"
        },
        {
            "target": "com.amazonaws.licensemanager#ValidationException"
        }
    ],
    "traits": {
        "smithy.api#documentation": "<p>Gets detailed information about the usage of the specified
license.</p>"
    }
},
"com.amazonaws.licensemanager#GetLicenseUsageRequest": {
    "type": "structure",
    "members": {
        "LicenseArn": {

```

```

        "target": "com.amazonaws.licensemanager#Arn",
        "traits": {
            "smithy.api#documentation": "<p>Amazon Resource Name (ARN) of the license.</p>",
            "smithy.api#required": {}
        }
    },
    "traits": {
        "smithy.api#input": {}
    }
},
"com.amazonaws.licensemanager#GetLicenseUsageResponse": {
    "type": "structure",
    "members": {
        "LicenseUsage": {
            "target": "com.amazonaws.licensemanager#LicenseUsage",
            "traits": {
                "smithy.api#documentation": "<p>License usage details.</p>"
            }
        }
    },
    "traits": {
        "smithy.api#output": {}
    }
},
"com.amazonaws.licensemanager#GetServiceSettings": {
    "type": "operation",
    "input": {
        "target": "com.amazonaws.licensemanager#GetServiceSettingsRequest"
    },
    "output": {
        "target": "com.amazonaws.licensemanager#GetServiceSettingsResponse"
    },
    "errors": [
        {
            "target": "com.amazonaws.licensemanager#AccessDeniedException"
        },
        {
            "target": "com.amazonaws.licensemanager#AuthorizationException"
        },
        {
            "target": "com.amazonaws.licensemanager#RateLimitExceededException"
        },
        {
            "target": "com.amazonaws.licensemanager#ServerInternalException"
        }
    ],
    "traits": {

```

```

    "smithy.api#documentation":
    "<p>Gets the License Manager settings for the current Region.</p>"
  },
  "com.amazonaws.licensemanager#GetServiceSettingsRequest": {
    "type": "structure",
    "members": {},
    "traits": {
      "smithy.api#input": {}
    }
  },
  "com.amazonaws.licensemanager#GetServiceSettingsResponse": {
    "type": "structure",
    "members": {
      "S3BucketArn": {
        "target": "com.amazonaws.licensemanager#String",
        "traits": {
          "smithy.api#documentation": "<p>Regional S3 bucket path for storing reports, license trail event data,
discovery data,\n      and so on.</p>"
        }
      },
      "SnsTopicArn": {
        "target": "com.amazonaws.licensemanager#String",
        "traits": {
          "smithy.api#documentation": "<p>SNS topic configured
to receive notifications from License Manager.</p>"
        }
      }
    },
    "OrganizationConfiguration": {
      "target": "com.amazonaws.licensemanager#OrganizationConfiguration",
      "traits": {
        "smithy.api#documentation": "<p>Indicates whether Organizations is integrated with License
Manager for\n      cross-account discovery.</p>"
      }
    },
    "EnableCrossAccountsDiscovery": {
      "target": "com.amazonaws.licensemanager#BoxBoolean",
      "traits": {
        "smithy.api#documentation": "<p>Indicates whether cross-account discovery is enabled.</p>"
      }
    },
    "LicenseManagerResourceShareArn": {
      "target": "com.amazonaws.licensemanager#String",
      "traits": {
        "smithy.api#documentation": "<p>Amazon
Resource Name (ARN) of the resource share. The License Manager management account \n      provides member
accounts with access to this share.</p>"
      }
    }
  }
}

```



```

    }
  },
  "traits": {
    "smithy.api#output": {}
  }
},
"com.amazonaws.licensemanager#Grant": {
  "type": "structure",
  "members": {
    "GrantArn": {
      "target": "com.amazonaws.licensemanager#Arn",
      "traits": {
        "smithy.api#documentation": "<p>Amazon Resource Name (ARN) of the grant.</p>",
        "smithy.api#required": {}
      }
    },
    "GrantName": {
      "target": "com.amazonaws.licensemanager#String",
      "traits": {
        "smithy.api#documentation": "<p>Grant name.</p>",
        "smithy.api#required": {}
      }
    }
  }
},
"ParentArn": {
  "target": "com.amazonaws.licensemanager#Arn",
  "traits": {
    "smithy.api#documentation": "<p>Parent ARN.</p>",
    "smithy.api#required": {}
  }
},
"LicenseArn": {
  "target": "com.amazonaws.licensemanager#Arn",
  "traits": {
    "smithy.api#documentation": "<p>License ARN.</p>",
    "smithy.api#required": {}
  }
},
"GranteePrincipalArn": {
  "target": "com.amazonaws.licensemanager#Arn",
  "traits": {
    "smithy.api#documentation": "<p>The grantee principal ARN.</p>",
    "smithy.api#required": {}
  }
},
"HomeRegion": {
  "target": "com.amazonaws.licensemanager#String",

```

```

    "traits": {
      "smithy.api#documentation": "<p>Home Region of the grant.</p>",
      "smithy.api#required": {}
    }
  },
  "GrantStatus": {
    "target": "com.amazonaws.licensemanager#GrantStatus",
    "traits": {
      "smithy.api#documentation": "<p>Grant status.</p>",
      "smithy.api#required": {}
    }
  },
  "StatusReason": {
    "target": "com.amazonaws.licensemanager#StatusReasonMessage",
    "traits": {
      "smithy.api#documentation": "<p>Grant status reason.</p>"
    }
  },
  "Version": {
    "target": "com.amazonaws.licensemanager#String",
    "traits": {
      "smithy.api#documentation":
"<p>Grant version.</p>",
      "smithy.api#required": {}
    }
  },
  "GrantedOperations": {
    "target": "com.amazonaws.licensemanager#AllowedOperationList",
    "traits": {
      "smithy.api#documentation": "<p>Granted operations.</p>",
      "smithy.api#required": {}
    }
  },
  "Options": {
    "target": "com.amazonaws.licensemanager#Options",
    "traits": {
      "smithy.api#documentation": "<p>The options specified for the grant.</p>"
    }
  },
  "traits": {
    "smithy.api#documentation": "<p>Describes a grant.</p>"
  },
  "com.amazonaws.licensemanager#GrantList": {
    "type": "list",
    "member": {
      "target": "com.amazonaws.licensemanager#Grant"
    }
  }

```

```

    }
  },
  "com.amazonaws.licensemanager#GrantStatus": {
    "type": "enum",
    "members": {
      "PENDING_WORKFLOW": {
        "target": "smithy.api#Unit",
        "traits": {
          "smithy.api#enumValue": "PENDING_WORKFLOW"
        }
      },
      "PENDING_ACCEPT": {
        "target": "smithy.api#Unit",
        "traits": {
          "smithy.api#enumValue": "PENDING_ACCEPT"
        }
      },
      "REJECTED": {
        "target": "smithy.api#Unit",
        "traits": {
          "smithy.api#enumValue": "REJECTED"
        }
      },
      "ACTIVE": {
        "target": "smithy.api#Unit",
        "traits": {
          "smithy.api#enumValue": "ACTIVE"
        }
      },
      "FAILED_WORKFLOW": {
        "target": "smithy.api#Unit",
        "traits": {
          "smithy.api#enumValue": "FAILED_WORKFLOW"
        }
      },
      "DELETED": {
        "target": "smithy.api#Unit",
        "traits": {
          "smithy.api#enumValue": "DELETED"
        }
      },
      "PENDING_DELETE": {
        "target": "smithy.api#Unit",
        "traits": {
          "smithy.api#enumValue": "PENDING_DELETE"
        }
      },
      "DISABLED": {

```

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        "target": "smithy.api#Unit",
        "traits": {
            "smithy.api#enumValue": "DISABLED"
        }
    },
    "WORKFLOW_COMPLETED": {
        "target": "smithy.api#Unit",
        "traits": {
            "smithy.api#enumValue": "WORKFLOW_COMPLETED"
        }
    }
},
"com.amazonaws.licensemanager#GrantedLicense": {
    "type": "structure",
    "members": {
        "LicenseArn": {
            "target": "com.amazonaws.licensemanager#Arn",
            "traits": {
                "smithy.api#documentation": "<p>Amazon Resource Name (ARN) of the license.</p>"
            }
        },
        "LicenseName": {
            "target": "com.amazonaws.licensemanager#String",
            "traits": {
                "smithy.api#documentation": "<p>License name.</p>"
            }
        },
        "ProductName": {
            "target": "com.amazonaws.licensemanager#String",
            "traits": {
                "smithy.api#documentation": "<p>Product name.</p>"
            }
        }
    },
    "ProductSKU": {
        "target": "com.amazonaws.licensemanager#String",
        "traits": {
            "smithy.api#documentation": "<p>Product SKU.</p>"
        }
    },
    "Issuer": {
        "target": "com.amazonaws.licensemanager#IssuerDetails",
        "traits": {
            "smithy.api#documentation": "<p>Granted license issuer.</p>"
        }
    },

```

```

    "HomeRegion": {
      "target": "com.amazonaws.licensemanager#String",
      "traits": {
        "smithy.api#documentation": "<p>Home Region of the granted license.</p>"
      }
    },
    "Status": {
      "target": "com.amazonaws.licensemanager#LicenseStatus",
      "traits": {
        "smithy.api#documentation":
"<p>Granted license status.</p>"
      }
    },
    "Validity": {
      "target": "com.amazonaws.licensemanager#DatetimeRange",
      "traits": {
        "smithy.api#documentation": "<p>Date and time range during which the granted license is valid, in
ISO8601-UTC format.</p>"
      }
    },
    "Beneficiary": {
      "target": "com.amazonaws.licensemanager#String",
      "traits": {
        "smithy.api#documentation": "<p>Granted license beneficiary.</p>"
      }
    },
    "Entitlements": {
      "target": "com.amazonaws.licensemanager#EntitlementList",
      "traits": {
        "smithy.api#documentation": "<p>License entitlements.</p>"
      }
    },
    "ConsumptionConfiguration": {
      "target": "com.amazonaws.licensemanager#ConsumptionConfiguration",
      "traits": {
        "smithy.api#documentation": "<p>Configuration for consumption of the license.</p>"
      }
    },
    "LicenseMetadata": {
      "target": "com.amazonaws.licensemanager#MetadataList",
      "traits": {
        "smithy.api#documentation": "<p>Granted license metadata.</p>"
      }
    },
    "CreateTime": {
      "target": "com.amazonaws.licensemanager#ISO8601DateTime",
      "traits": {

```

```

        "smithy.api#documentation": "<p>Creation time of the granted license.</p>"
    },
    "Version": {
        "target": "com.amazonaws.licensemanager#String",
        "traits": {
            "smithy.api#documentation": "<p>Version of the
granted license.</p>"
        }
    },
    "ReceivedMetadata": {
        "target": "com.amazonaws.licensemanager#ReceivedMetadata",
        "traits": {
            "smithy.api#documentation": "<p>Granted license received metadata.</p>"
        }
    },
    "traits": {
        "smithy.api#documentation": "<p>Describes a license that is granted to a grantee.</p>"
    },
    "com.amazonaws.licensemanager#GrantedLicenseList": {
        "type": "list",
        "member": {
            "target": "com.amazonaws.licensemanager#GrantedLicense"
        }
    },
    "com.amazonaws.licensemanager#ISO8601DateTime": {
        "type": "string",
        "traits": {
            "smithy.api#length": {
                "min": 0,
                "max": 50
            },
            "smithy.api#pattern": "^(-(?:[1-9][0-9]*)?[0-9]{4})-(1[0-2]|0[1-9])-(3[0-1]|0[1-9]|1-2)[0-9]T(2[0-3]|0-1)[0-9]:([0-5][0-9]):([0-5][0-9])(\\.([0-9]+)?(Z|[-+](?:2[0-3]|0-1)[0-9]:[0-5][0-9])+$"
        }
    },
    "com.amazonaws.licensemanager#Integer": {
        "type": "integer"
    },
    "com.amazonaws.licensemanager#InvalidParameterValueException": {
        "type": "structure",
        "members": {
            "Message": {
                "target": "com.amazonaws.licensemanager#Message"
            }
        }
    }

```

```

    },
    "traits": {
      "aws.protocols#awsQueryError": {
        "code": "InvalidParameterValueProvided",
        "httpResponseCode": 400
      },
      "smithy.api#documentation": "<p>One or more parameter values are not valid.</p>",
      "smithy.api#error": "client",
      "smithy.api#httpError": 400
    }
  },
  "com.amazonaws.licensemanager#InvalidResourceStateException":
{
  "type": "structure",
  "members": {
    "Message": {
      "target": "com.amazonaws.licensemanager#Message"
    }
  },
  "traits": {
    "aws.protocols#awsQueryError": {
      "code": "InvalidResourceState",
      "httpResponseCode": 400
    },
    "smithy.api#documentation": "<p>License Manager cannot allocate a license to a resource because of its
state. </p>\n    <p>For example, you cannot allocate a license to an instance in the process of shutting\n
down.</p>",
    "smithy.api#error": "client",
    "smithy.api#httpError": 400
  }
},
  "com.amazonaws.licensemanager#InventoryFilter": {
    "type": "structure",
    "members": {
      "Name": {
        "target": "com.amazonaws.licensemanager#String",

"traits": {
      "smithy.api#documentation": "<p>Name of the filter.</p>",
      "smithy.api#required": {}
    }
  },
  "Condition": {
    "target": "com.amazonaws.licensemanager#InventoryFilterCondition",
    "traits": {
      "smithy.api#documentation": "<p>Condition of the filter.</p>",
      "smithy.api#required": {}
    }
  }
}

```

```

    },
    "Value": {
      "target": "com.amazonaws.licensemanager#String",
      "traits": {
        "smithy.api#documentation": "<p>Value of the filter.</p>"
      }
    }
  },
  "traits": {
    "smithy.api#documentation": "<p>An inventory filter.</p>"
  }
},
"com.amazonaws.licensemanager#InventoryFilterCondition": {
  "type": "enum",
  "members": {
    "EQUALS": {
      "target": "smithy.api#Unit",
      "traits": {
        "smithy.api#enumValue": "EQUALS"
      }
    },
    "NOT_EQUALS": {
      "target": "smithy.api#Unit",
      "traits": {
        "smithy.api#enumValue": "NOT_EQUALS"
      }
    },
    "BEGINS_WITH": {
      "target": "smithy.api#Unit",
      "traits": {
        "smithy.api#enumValue": "BEGINS_WITH"
      }
    },
    "CONTAINS": {
      "target": "smithy.api#Unit",
      "traits": {
        "smithy.api#enumValue": "CONTAINS"
      }
    }
  }
},
"com.amazonaws.licensemanager#InventoryFilterList": {
  "type": "list",

  "member": {
    "target": "com.amazonaws.licensemanager#InventoryFilter"
  }
},

```



```

"com.amazonaws.licensemanager#Issuer": {
  "type": "structure",
  "members": {
    "Name": {
      "target": "com.amazonaws.licensemanager#String",
      "traits": {
        "smithy.api#documentation": "<p>Issuer name.</p>",
        "smithy.api#required": {}
      }
    },
    "SignKey": {
      "target": "com.amazonaws.licensemanager#String",
      "traits": {
        "smithy.api#documentation": "<p>Asymmetric KMS key from Key Management Service. The KMS
key must have a key usage of sign and verify, \n      and support the RSASSA-PSS SHA-256 signing
algorithm.</p>"
      }
    },
    "traits": {
      "smithy.api#documentation": "<p>Details
about the issuer of a license.</p>"
    }
  },
  "com.amazonaws.licensemanager#IssuerDetails": {
    "type": "structure",
    "members": {
      "Name": {
        "target": "com.amazonaws.licensemanager#String",
        "traits": {
          "smithy.api#documentation": "<p>Issuer name.</p>"
        }
      },
      "SignKey": {
        "target": "com.amazonaws.licensemanager#String",
        "traits": {
          "smithy.api#documentation": "<p>Asymmetric KMS key from Key Management Service. The KMS
key must have a key usage of sign and verify, \n      and support the RSASSA-PSS SHA-256 signing
algorithm.</p>"
        }
      },
      "KeyFingerprint": {
        "target": "com.amazonaws.licensemanager#String",
        "traits": {
          "smithy.api#documentation":
"<p>Issuer key fingerprint.</p>"
        }
      }
    }
  }
}

```

```

    },
    "traits": {
      "smithy.api#documentation": "<p>Details associated with the issuer of a license.</p>"
    }
  },
  "com.amazonaws.licensemanager#License": {
    "type": "structure",
    "members": {
      "LicenseArn": {
        "target": "com.amazonaws.licensemanager#Arn",
        "traits": {
          "smithy.api#documentation": "<p>Amazon Resource Name (ARN) of the license.</p>"
        }
      },
      "LicenseName": {
        "target": "com.amazonaws.licensemanager#String",
        "traits": {
          "smithy.api#documentation": "<p>License name.</p>"
        }
      },
      "ProductName": {
        "target": "com.amazonaws.licensemanager#String",
        "traits": {
          "smithy.api#documentation": "<p>Product name.</p>"
        }
      },
      "ProductSKU": {
        "target": "com.amazonaws.licensemanager#String",
        "traits": {
          "smithy.api#documentation": "<p>Product SKU.</p>"
        }
      },
      "Issuer": {
        "target": "com.amazonaws.licensemanager#IssuerDetails",
        "traits": {
          "smithy.api#documentation": "<p>License issuer.</p>"
        }
      },
      "HomeRegion": {
        "target": "com.amazonaws.licensemanager#String",
        "traits": {
          "smithy.api#documentation": "<p>Home Region of the license.</p>"
        }
      },
      "Status": {
        "target": "com.amazonaws.licensemanager#LicenseStatus",

```

```

    "traits": {
      "smithy.api#documentation": "<p>License status.</p>"
    }
  },
  "Validity": {
    "target": "com.amazonaws.licensemanager#DatetimeRange",
    "traits": {
      "smithy.api#documentation": "<p>Date and time range during which the license is valid, in ISO8601-
UTC format.</p>"
    }
  },
  "Beneficiary": {
    "target": "com.amazonaws.licensemanager#String",
    "traits": {
      "smithy.api#documentation": "<p>License beneficiary.</p>"
    }
  },
  "Entitlements": {
    "target": "com.amazonaws.licensemanager#EntitlementList",
    "traits": {
      "smithy.api#documentation": "<p>License entitlements.</p>"
    }
  },
  "ConsumptionConfiguration": {
    "target": "com.amazonaws.licensemanager#ConsumptionConfiguration",
    "traits": {
      "smithy.api#documentation": "<p>Configuration for consumption of the license.</p>"
    }
  },
  "LicenseMetadata": {
    "target": "com.amazonaws.licensemanager#MetadataList",
    "traits": {
      "smithy.api#documentation": "<p>License metadata.</p>"
    }
  },
  "CreateTime": {
    "target": "com.amazonaws.licensemanager#ISO8601DateTime",
    "traits": {
      "smithy.api#documentation": "<p>License creation time.</p>"
    }
  },
  "Version": {
    "target": "com.amazonaws.licensemanager#String",
    "traits": {
      "smithy.api#documentation":
"<p>License version.</p>"
    }
  }

```

```

    }
  },
  "traits": {
    "smithy.api#documentation": "<p>Software license that is managed in License Manager.</p>"
  }
},
"com.amazonaws.licensemanager#LicenseConfiguration": {
  "type": "structure",
  "members": {
    "LicenseConfigurationId": {
      "target": "com.amazonaws.licensemanager#String",
      "traits": {
        "smithy.api#documentation": "<p>Unique ID of the license configuration.</p>"
      }
    },
    "LicenseConfigurationArn": {
      "target": "com.amazonaws.licensemanager#String",
      "traits": {
        "smithy.api#documentation": "<p>Amazon Resource Name (ARN) of the license configuration.</p>"
      }
    },
    "Name": {
      "target": "com.amazonaws.licensemanager#String",
      "traits": {
        "smithy.api#documentation": "<p>Name of the license configuration.</p>"
      }
    },
    "Description": {
      "target": "com.amazonaws.licensemanager#String",
      "traits": {
        "smithy.api#documentation": "<p>Description of the license configuration.</p>"
      }
    },
    "LicenseCountingType": {
      "target": "com.amazonaws.licensemanager#LicenseCountingType",
      "traits": {
        "smithy.api#documentation": "<p>Dimension to use to track the license inventory.</p>"
      }
    },
    "LicenseRules": {
      "target": "com.amazonaws.licensemanager#StringList",
      "traits": {
        "smithy.api#documentation":
        "<p>License rules.</p>"
      }
    },
    "LicenseCount": {

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```

        "target": "com.amazonaws.licensemanager#BoxLong",
        "traits": {
            "smithy.api#documentation": "<p>Number of licenses managed by the license configuration.</p>"
        }
    },
    "LicenseCountHardLimit": {
        "target": "com.amazonaws.licensemanager#BoxBoolean",
        "traits": {
            "smithy.api#documentation": "<p>Number of available licenses as a hard limit.</p>"
        }
    },
    "DisassociateWhenNotFound": {
        "target": "com.amazonaws.licensemanager#BoxBoolean",
        "traits": {
            "smithy.api#documentation": "<p>When true, disassociates a resource when software is
uninstalled.</p>"
        }
    },
    "ConsumedLicenses":
    {
        "target": "com.amazonaws.licensemanager#BoxLong",
        "traits": {
            "smithy.api#documentation": "<p>Number of licenses consumed. </p>"
        }
    },
    "Status": {
        "target": "com.amazonaws.licensemanager#String",
        "traits": {
            "smithy.api#documentation": "<p>Status of the license configuration.</p>"
        }
    },
    "OwnerAccountId": {
        "target": "com.amazonaws.licensemanager#String",
        "traits": {
            "smithy.api#documentation": "<p>Account ID of the license configuration's owner.</p>"
        }
    },
    "ConsumedLicenseSummaryList": {
        "target": "com.amazonaws.licensemanager#ConsumedLicenseSummaryList",
        "traits": {
            "smithy.api#documentation": "<p>Summaries for licenses consumed by various resources.</p>"
        }
    },
    "ManagedResourceSummaryList": {
        "target": "com.amazonaws.licensemanager#ManagedResourceSummaryList",
        "traits": {
            "smithy.api#documentation": "<p>Summaries for managed resources.</p>"
        }
    }
}

```

```

    }
  },
  "ProductInformationList": {
    "target": "com.amazonaws.licensemanager#ProductInformationList",
    "traits": {
      "smithy.api#documentation": "<p>Product information.</p>"
    }
  },
  "AutomatedDiscoveryInformation": {
    "target": "com.amazonaws.licensemanager#AutomatedDiscoveryInformation",
    "traits": {
      "smithy.api#documentation": "<p>Automated discovery information.</p>"
    }
  }
},
"traits": {
  "smithy.api#documentation": "<p>A license configuration is an abstraction of a customer license agreement that can be\n      consumed and enforced by License Manager. Components include specifications for the license\n      type (licensing by instance, socket, CPU, or vCPU), allowed tenancy (shared tenancy, \n      Dedicated Instance, Dedicated Host, or all of these), host affinity (how long a VM\n      must be associated with a host), and the number of licenses purchased and used.</p>"
}
},
"com.amazonaws.licensemanager#LicenseConfigurationAssociation": {
  "type": "structure",
  "members": {
    "ResourceArn": {
      "target": "com.amazonaws.licensemanager#String",
      "traits": {
        "smithy.api#documentation": "<p>Amazon Resource Name (ARN) of the resource.</p>"
      }
    }
  }
},
"ResourceType": {
  "target": "com.amazonaws.licensemanager#ResourceType",
  "traits": {
    "smithy.api#documentation": "<p>Type of server resource.</p>"
  }
},
"ResourceOwnerId": {
  "target": "com.amazonaws.licensemanager#String",
  "traits": {
    "smithy.api#documentation": "<p>ID of the Amazon Web Services account that owns the resource consuming licenses.</p>"
  }
},
"AssociationTime": {

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```

        "target": "com.amazonaws.licensemanager#DateTime",
        "traits": {
            "smithy.api#documentation": "<p>Time when the license configuration was associated with the
resource.</p>"
        }
    },
    "AmiAssociationScope": {
        "target":
"com.amazonaws.licensemanager#String",
        "traits": {
            "smithy.api#documentation": "<p>Scope of AMI associations. The possible value is <code>cross-
account</code>.</p>"
        }
    },
    "traits": {
        "smithy.api#documentation": "<p>Describes an association with a license configuration.</p>"
    },
    "com.amazonaws.licensemanager#LicenseConfigurationAssociations": {
        "type": "list",
        "member": {
            "target": "com.amazonaws.licensemanager#LicenseConfigurationAssociation"
        }
    },
    "com.amazonaws.licensemanager#LicenseConfigurationStatus": {
        "type": "enum",
        "members": {
            "AVAILABLE": {
                "target": "smithy.api#Unit",
                "traits": {
                    "smithy.api#enumValue": "AVAILABLE"
                }
            },
            "DISABLED": {
                "target": "smithy.api#Unit",
                "traits": {
                    "smithy.api#enumValue": "DISABLED"
                }
            }
        }
    },
    "com.amazonaws.licensemanager#LicenseConfigurationUsage": {
        "type": "structure",
        "members": {
            "ResourceArn": {
                "target": "com.amazonaws.licensemanager#String",

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    "traits": {
      "smithy.api#documentation": "<p>Amazon Resource Name (ARN) of the resource.</p>"
    }
  },
  "ResourceType": {
    "target": "com.amazonaws.licensemanager#ResourceType",
    "traits": {
      "smithy.api#documentation": "<p>Type of resource.</p>"
    }
  },
  "ResourceStatus": {
    "target": "com.amazonaws.licensemanager#String",
    "traits": {
      "smithy.api#documentation": "<p>Status of the resource.</p>"
    }
  },
  "ResourceOwnerId": {
    "target": "com.amazonaws.licensemanager#String",
    "traits": {
      "smithy.api#documentation": "<p>ID of the account that owns the resource.</p>"
    }
  },
  "AssociationTime": {
    "target": "com.amazonaws.licensemanager#DateTime",
    "traits": {
      "smithy.api#documentation": "<p>Time when the license configuration was initially associated with
the resource.</p>"
    }
  },
  "ConsumedLicenses": {
    "target": "com.amazonaws.licensemanager#BoxLong",
    "traits": {
      "smithy.api#documentation": "<p>Number of licenses consumed by the resource.</p>"
    }
  },
  "traits": {
    "smithy.api#documentation": "<p>Details about the usage of a resource associated with a license
configuration.</p>"
  },
  "com.amazonaws.licensemanager#LicenseConfigurationUsageList": {
    "type": "list",
    "member": {
      "target": "com.amazonaws.licensemanager#LicenseConfigurationUsage"
    }
  },
  "com.amazonaws.licensemanager#LicenseConfigurations": {

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    "type": "list",
    "member": {
      "target": "com.amazonaws.licensemanager#LicenseConfiguration"
    }
  },
  "com.amazonaws.licensemanager#LicenseConversionContext": {
    "type": "structure",
    "members": {
      "UsageOperation": {
        "target": "com.amazonaws.licensemanager#UsageOperation",
        "traits": {
          "smithy.api#documentation":
            "<p>The Usage operation value that corresponds to the license type you are converting your resource from. For
            more information about which platforms correspond to which usage operation values see <a
            href='\"https://docs.aws.amazon.com/AWSEC2/latest/UserGuide/billing-info-fields.html#billing-info\">Sample
            data: usage operation by platform\\n    </a>\\n    </p>"
        }
      }
    },
    "traits": {
      "smithy.api#documentation": "<p>Information about a license type conversion task.</p>"
    }
  },
  "com.amazonaws.licensemanager#LicenseConversionTask": {
    "type": "structure",
    "members": {
      "LicenseConversionTaskId": {
        "target": "com.amazonaws.licensemanager#LicenseConversionTaskId",
        "traits": {
          "smithy.api#documentation": "<p>The ID of the license type conversion task.</p>"
        }
      }
    },
    "ResourceArn": {
      "target": "com.amazonaws.licensemanager#String",
      "traits": {
        "smithy.api#documentation": "<p>The Amazon Resource Name (ARN) of the resource associated
        with the license type\\n    conversion task.</p>"
      }
    },
    "SourceLicenseContext": {
      "target": "com.amazonaws.licensemanager#LicenseConversionContext",
      "traits": {
        "smithy.api#documentation": "<p>Information about the license type this conversion task converted
        from.</p>"
      }
    },
    "DestinationLicenseContext": {

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        "target": "com.amazonaws.licensemanager#LicenseConversionContext",
        "traits": {
            "smithy.api#documentation": "<p>Information about the license type this conversion task converted
to.</p>"
        }
    },
    "Status": {
        "target": "com.amazonaws.licensemanager#LicenseConversionTaskStatus",
        "traits": {
            "smithy.api#documentation": "<p>The status of the conversion task.</p>"
        }
    },
    "StatusMessage": {
        "target": "com.amazonaws.licensemanager#String",
        "traits": {
            "smithy.api#documentation": "<p>The status message for the conversion task.</p>"
        }
    },
    "StartTime": {
        "target": "com.amazonaws.licensemanager#DateTime",
        "traits": {
            "smithy.api#documentation": "<p>The time the conversion task was started at.</p>"
        }
    },
    "LicenseConversionTime": {
        "target": "com.amazonaws.licensemanager#DateTime",
        "traits": {
            "smithy.api#documentation": "<p>The time the usage operation value of the resource was
changed.</p>"
        }
    },
    "EndTime": {
        "target": "com.amazonaws.licensemanager#DateTime",
        "traits": {
            "smithy.api#documentation": "<p>The time the conversion task was completed.</p>"
        }
    },
    "traits": {
        "smithy.api#documentation": "<p>Information about a license type conversion task.</p>"
    }
},
"com.amazonaws.licensemanager#LicenseConversionTaskId": {
    "type": "string",
    "traits": {
        "smithy.api#length": {
            "min": 0,
            "max": 50
        }
    }
}

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    },
    "smithy.api#pattern": "^\\ct-[a-zA-Z0-9]*$"
  }
},
"com.amazonaws.licensemanager#LicenseConversionTaskStatus":
{
  "type": "enum",
  "members": {
    "IN_PROGRESS": {
      "target": "smithy.api#Unit",
      "traits": {
        "smithy.api#enumValue": "IN_PROGRESS"
      }
    },
    "SUCCEEDED": {
      "target": "smithy.api#Unit",
      "traits": {
        "smithy.api#enumValue": "SUCCEEDED"
      }
    },
    "FAILED": {
      "target": "smithy.api#Unit",
      "traits": {
        "smithy.api#enumValue": "FAILED"
      }
    }
  }
},
"com.amazonaws.licensemanager#LicenseConversionTasks": {
  "type": "list",
  "member": {
    "target": "com.amazonaws.licensemanager#LicenseConversionTask"
  }
},
"com.amazonaws.licensemanager#LicenseCountingType":
{
  "type": "enum",
  "members": {
    "VCPU": {
      "target": "smithy.api#Unit",
      "traits": {
        "smithy.api#enumValue": "vCPU"
      }
    },
    "INSTANCE": {
      "target": "smithy.api#Unit",
      "traits": {
        "smithy.api#enumValue": "Instance"
      }
    }
  }
}

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    }
  },
  "CORE": {
    "target": "smithy.api#Unit",
    "traits": {
      "smithy.api#enumValue": "Core"
    }
  },
  "SOCKET": {
    "target": "smithy.api#Unit",
    "traits": {
      "smithy.api#enumValue": "Socket"
    }
  }
}
},
"com.amazonaws.licensemanager#LicenseDeletionStatus":
{
  "type": "enum",
  "members": {
    "PENDING_DELETE": {
      "target": "smithy.api#Unit",
      "traits": {
        "smithy.api#enumValue": "PENDING_DELETE"
      }
    },
    "DELETED": {
      "target": "smithy.api#Unit",
      "traits": {
        "smithy.api#enumValue": "DELETED"
      }
    }
  }
},
"com.amazonaws.licensemanager#LicenseList": {
  "type": "list",
  "member": {
    "target": "com.amazonaws.licensemanager#License"
  }
},
"com.amazonaws.licensemanager#LicenseOperationFailure": {
  "type": "structure",
  "members": {
    "ResourceArn": {
      "target": "com.amazonaws.licensemanager#String",
      "traits": {
        "smithy.api#documentation":

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    "<p>Amazon Resource Name (ARN) of the resource.</p>"
  },
  "ResourceType": {
    "target": "com.amazonaws.licensemanager#ResourceType",
    "traits": {
      "smithy.api#documentation": "<p>Resource type.</p>"
    }
  },
  "ErrorMessage": {
    "target": "com.amazonaws.licensemanager#String",
    "traits": {
      "smithy.api#documentation": "<p>Error message.</p>"
    }
  },
  "FailureTime": {
    "target": "com.amazonaws.licensemanager#DateTime",
    "traits": {
      "smithy.api#documentation": "<p>Failure time.</p>"
    }
  },
  "OperationName": {
    "target": "com.amazonaws.licensemanager#String",
    "traits": {
      "smithy.api#documentation": "<p>Name of the operation.</p>"
    }
  },
  "ResourceOwnerId": {
    "target": "com.amazonaws.licensemanager#String",
    "traits": {
      "smithy.api#documentation": "<p>ID of the Amazon Web Services account that owns the
resource.</p>"
    }
  },
  "OperationRequestedBy": {
    "target": "com.amazonaws.licensemanager#String",
    "traits": {
      "smithy.api#documentation": "<p>The requester is \"License Manager Automated Discovery\".</p>"
    }
  },
  "MetadataList": {
    "target": "com.amazonaws.licensemanager#MetadataList",
    "traits": {
      "smithy.api#documentation": "<p>Reserved.</p>"
    }
  }
}

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    },
    "traits": {
      "smithy.api#documentation": "<p>Describes the failure of a license operation.</p>"
    }
  },
  "com.amazonaws.licensemanager#LicenseOperationFailureList": {
    "type": "list",
    "member": {
      "target": "com.amazonaws.licensemanager#LicenseOperationFailure"
    }
  },
  "com.amazonaws.licensemanager#LicenseSpecification": {
    "type": "structure",
    "members": {
      "LicenseConfigurationArn": {
        "target": "com.amazonaws.licensemanager#String",
        "traits": {
          "smithy.api#documentation": "<p>Amazon Resource Name (ARN) of the license configuration.</p>",
          "smithy.api#required": {}
        }
      },
      "AmiAssociationScope": {
        "target": "com.amazonaws.licensemanager#String",
        "traits": {
          "smithy.api#documentation": "<p>Scope of AMI associations. The possible value is <code>cross-account</code>.</p>"
        }
      }
    },
    "traits": {
      "smithy.api#documentation": "<p>Details for associating a license configuration with a resource.</p>"
    }
  },
  "com.amazonaws.licensemanager#LicenseSpecifications": {
    "type": "list",
    "member": {
      "target": "com.amazonaws.licensemanager#LicenseSpecification"
    }
  },
  "com.amazonaws.licensemanager#LicenseStatus": {
    "type": "enum",
    "members": {
      "AVAILABLE": {
        "target": "smithy.api#Unit",
        "traits": {
          "smithy.api#enumValue": "AVAILABLE"
        }
      }
    }
  }
}

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    }
  },
  "PENDING_AVAILABLE": {
    "target": "smithy.api#Unit",

    "traits": {
      "smithy.api#enumValue": "PENDING_AVAILABLE"
    }
  },
  "DEACTIVATED": {
    "target": "smithy.api#Unit",
    "traits": {
      "smithy.api#enumValue": "DEACTIVATED"
    }
  },
  "SUSPENDED": {
    "target": "smithy.api#Unit",
    "traits": {
      "smithy.api#enumValue": "SUSPENDED"
    }
  },
  "EXPIRED": {
    "target": "smithy.api#Unit",
    "traits": {
      "smithy.api#enumValue": "EXPIRED"
    }
  },
  "PENDING_DELETE": {
    "target": "smithy.api#Unit",
    "traits": {
      "smithy.api#enumValue": "PENDING_DELETE"
    }
  },
  "DELETED": {
    "target": "smithy.api#Unit",
    "traits": {
      "smithy.api#enumValue": "DELETED"
    }
  }
},
"com.amazonaws.licensemanager#LicenseUsage": {
  "type": "structure",
  "members": {
    "EntitlementUsages": {
      "target": "com.amazonaws.licensemanager#EntitlementUsageList",
      "traits": {

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        "smithy.api#documentation": "<p>License entitlement usages.</p>"
    }
}
},
"traits": {
    "smithy.api#documentation": "<p>Describes the entitlement usage associated with a license.</p>"
}
},
"com.amazonaws.licensemanager#LicenseUsageException": {
    "type": "structure",
    "members": {
        "Message": {
            "target": "com.amazonaws.licensemanager#Message"
        }
    },
    "traits": {
        "aws.protocols#awsQueryError": {
            "code": "LicenseUsageFailure",
            "httpResponseCode": 412
        },
        "smithy.api#documentation": "<p>You do not have enough licenses available to support a new resource
launch.</p>",
        "smithy.api#error": "client",
        "smithy.api#httpError": 412
    }
},
"com.amazonaws.licensemanager#ListAssociationsForLicenseConfiguration": {
    "type": "operation",
    "input": {
        "target": "com.amazonaws.licensemanager#ListAssociationsForLicenseConfigurationRequest"
    },
    "output": {
        "target": "com.amazonaws.licensemanager#ListAssociationsForLicenseConfigurationResponse"
    },
    "errors": [
        {
            "target": "com.amazonaws.licensemanager#AccessDeniedException"
        },
        {
            "target": "com.amazonaws.licensemanager#AuthorizationException"
        },
        {
            "target": "com.amazonaws.licensemanager#FilterLimitExceededException"
        },
        {
            "target": "com.amazonaws.licensemanager#InvalidParameterValueException"
        },
        {

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        "target": "com.amazonaws.licensemanager#RateLimitExceededException"
    },
    {
        "target": "com.amazonaws.licensemanager#ServerInternalException"
    }
],
"traits": {
    "smithy.api#documentation": "<p>Lists the resource associations for the specified license
configuration.</p>\n    <p>Resource associations need not consume licenses from a license configuration. \n
For example, an AMI or a stopped instance might not consume a license (depending
on \n    the license rules).</p>"
}
},
"com.amazonaws.licensemanager#ListAssociationsForLicenseConfigurationRequest": {
    "type": "structure",
    "members": {
        "LicenseConfigurationArn": {
            "target": "com.amazonaws.licensemanager#String",
            "traits": {
                "smithy.api#documentation": "<p>Amazon Resource Name (ARN) of a license configuration.</p>",
                "smithy.api#required": {}
            }
        },
        "MaxResults": {
            "target": "com.amazonaws.licensemanager#BoxInteger",
            "traits": {
                "smithy.api#documentation": "<p>Maximum number of results to return in a single call.</p>"
            }
        },
        "NextToken": {
            "target": "com.amazonaws.licensemanager#String",
            "traits": {
                "smithy.api#documentation": "<p>Token for the next set of results.</p>"
            }
        }
    },
    "traits": {
        "smithy.api#input": {}
    }
},
"com.amazonaws.licensemanager#ListAssociationsForLicenseConfigurationResponse": {
    "type": "structure",
    "members": {
        "LicenseConfigurationAssociations": {
            "target": "com.amazonaws.licensemanager#LicenseConfigurationAssociations",
            "traits": {
                "smithy.api#documentation": "<p>Information about the associations for the license

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configuration.</p>"
    }
  },
  "NextToken": {
    "target": "com.amazonaws.licensemanager#String",
    "traits": {
      "smithy.api#documentation": "<p>Token for the next set of results.</p>"
    }
  }
},
"traits": {
  "smithy.api#output": {}
},
"com.amazonaws.licensemanager#ListDistributedGrants": {
  "type": "operation",
  "input": {
    "target": "com.amazonaws.licensemanager#ListDistributedGrantsRequest"
  },
  "output": {
    "target": "com.amazonaws.licensemanager#ListDistributedGrantsResponse"
  },
  "errors": [
    {
      "target": "com.amazonaws.licensemanager#AccessDeniedException"
    },
    {
      "target": "com.amazonaws.licensemanager#AuthorizationException"
    },
    {
      "target": "com.amazonaws.licensemanager#InvalidParameterValueException"
    },
    {
      "target": "com.amazonaws.licensemanager#RateLimitExceededException"
    },
    {
      "target": "com.amazonaws.licensemanager#ResourceLimitExceededException"
    },
    {
      "target": "com.amazonaws.licensemanager#ServerInternalException"
    },
    {
      "target": "com.amazonaws.licensemanager#ValidationException"
    }
  ],
  "traits": {

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    "smithy.api#documentation": "<p>Lists the grants distributed for the specified license.</p>"
  }
},
"com.amazonaws.licensemanager#ListDistributedGrantsRequest": {
  "type": "structure",
  "members": {
    "GrantArns": {
      "target": "com.amazonaws.licensemanager#ArnList",
      "traits": {
        "smithy.api#documentation": "<p>Amazon Resource Names (ARNs) of the grants.</p>"
      }
    },
    "Filters": {
      "target": "com.amazonaws.licensemanager#FilterList",
      "traits": {
        "smithy.api#documentation": "<p>Filters to scope the results. The following filters are
supported:</p>\n      <ul>\n        <li>\n          <p>\n            <code>LicenseArn</code>\n          </p>\n          </li>\n          <li>\n            <p>\n              <code>GrantStatus</code>\n            </p>\n            </li>\n            <li>\n              <p>\n                <code>GranteePrincipalARN</code>\n              </p>\n              </li>\n              <li>\n                <p>\n                  <code>ProductSKU</code>\n                </p>\n                </li>\n                <li>\n                  <p>\n                    <code>LicenseIssuerName</code>\n                  </p>\n                  </li>\n                </ul>"
      }
    },
    "NextToken": {
      "target": "com.amazonaws.licensemanager#String",
      "traits": {
        "smithy.api#documentation": "<p>Token for the next set of results.</p>"
      }
    },
    "MaxResults": {
      "target": "com.amazonaws.licensemanager#MaxSize100",
      "traits": {
        "smithy.api#documentation": "<p>Maximum number of results to return in a single call.</p>"
      }
    }
  },
  "traits": {
    "smithy.api#input": {}
  }
},
"com.amazonaws.licensemanager#ListDistributedGrantsResponse": {
  "type": "structure",
  "members": {
    "Grants": {
      "target": "com.amazonaws.licensemanager#GrantList",
      "traits": {
        "smithy.api#documentation": "<p>Distributed grant details.</p>"
      }
    }
  }
}

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    },
    "NextToken": {
      "target": "com.amazonaws.licensemanager#String",
      "traits": {
        "smithy.api#documentation": "<p>Token for the next set of results.</p>"
      }
    },
    "traits": {
      "smithy.api#output": {}
    }
  },
  "com.amazonaws.licensemanager#ListFailuresForLicenseConfigurationOperations": {
    "type": "operation",
    "input": {
      "target": "com.amazonaws.licensemanager#ListFailuresForLicenseConfigurationOperationsRequest"
    },
    "output": {
      "target": "com.amazonaws.licensemanager#ListFailuresForLicenseConfigurationOperationsResponse"
    },
    "errors": [
      {
        "target": "com.amazonaws.licensemanager#AccessDeniedException"
      },
      {
        "target": "com.amazonaws.licensemanager#AuthorizationException"
      },
      {
        "target": "com.amazonaws.licensemanager#InvalidParameterValueException"
      },
      {
        "target": "com.amazonaws.licensemanager#RateLimitExceededException"
      },
      {
        "target": "com.amazonaws.licensemanager#ServerInternalException"
      }
    ],
    "traits": {
      "smithy.api#documentation": "<p>Lists the license configuration operations that failed.</p>"
    }
  },
  "com.amazonaws.licensemanager#ListFailuresForLicenseConfigurationOperationsRequest": {
    "type": "structure",
    "members": {
      "LicenseConfigurationArn": {
        "target": "com.amazonaws.licensemanager#String",
        "traits": {

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        "smithy.api#documentation": "<p>Amazon Resource Name of the license configuration.</p>",
        "smithy.api#required": {}
    },
    "MaxResults": {
        "target": "com.amazonaws.licensemanager#BoxInteger",
        "traits": {
            "smithy.api#documentation": "<p>Maximum number of results to return in a single call.</p>"
        }
    },
    "NextToken": {
        "target": "com.amazonaws.licensemanager#String",
        "traits": {
            "smithy.api#documentation": "<p>Token for the next set of results.</p>"
        }
    },
    "traits": {
        "smithy.api#input": {}
    }
},
"com.amazonaws.licensemanager#ListFailuresForLicenseConfigurationOperationsResponse": {
    "type": "structure",
    "members": {
        "LicenseOperationFailureList": {
            "target": "com.amazonaws.licensemanager#LicenseOperationFailureList",

"traits": {
            "smithy.api#documentation": "<p>License configuration operations that failed.</p>"
        }
    },
    "NextToken": {
        "target": "com.amazonaws.licensemanager#String",
        "traits": {
            "smithy.api#documentation": "<p>Token for the next set of results.</p>"
        }
    },
    "traits": {
        "smithy.api#output": {}
    }
},
"com.amazonaws.licensemanager#ListLicenseConfigurations": {
    "type": "operation",
    "input": {
        "target": "com.amazonaws.licensemanager#ListLicenseConfigurationsRequest"
    },

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"output": {
  "target": "com.amazonaws.licensemanager#ListLicenseConfigurationsResponse"
},
"errors": [
  {
    "target": "com.amazonaws.licensemanager#AccessDeniedException"
  },
  {
    "target": "com.amazonaws.licensemanager#AuthorizationException"
  },
  {
    "target": "com.amazonaws.licensemanager#FilterLimitExceededException"
  },
  {
    "target": "com.amazonaws.licensemanager#InvalidParameterValueException"
  },
  {
    "target": "com.amazonaws.licensemanager#RateLimitExceededException"
  },
  {
    "target": "com.amazonaws.licensemanager#ServerInternalException"
  }
],
"traits": {
  "smithy.api#documentation": "<p>Lists the license configurations for your account.</p>"
},
"com.amazonaws.licensemanager#ListLicenseConfigurationsRequest": {
  "type": "structure",
  "members": {
    "LicenseConfigurationArns":
    {
      "target": "com.amazonaws.licensemanager#StringList",
      "traits": {
        "smithy.api#documentation": "<p>Amazon Resource Names (ARN) of the license configurations.</p>"
      }
    },
    "MaxResults": {
      "target": "com.amazonaws.licensemanager#BoxInteger",
      "traits": {
        "smithy.api#documentation": "<p>Maximum number of results to return in a single call.</p>"
      }
    },
    "NextToken": {
      "target": "com.amazonaws.licensemanager#String",
      "traits": {
        "smithy.api#documentation": "<p>Token for the next set of results.</p>"
      }
    }
  }
}

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    }
  },
  "Filters": {
    "target": "com.amazonaws.licensemanager#Filters",
    "traits": {
      "smithy.api#documentation":
        "<p>Filters to scope the results. The following filters and logical operators\n      are supported:</p>\n      <ul>\n        <li>\n          <p>\n            <code>licenseCountingType</code> - The dimension for which licenses are\n            counted.\n            Possible values are <code>vCPU</code> | <code>Instance</code> | <code>Core</code> |  

            <code>Socket</code>.</p>\n          </li>\n          <li>\n            <p>\n              <code>enforceLicenseCount</code> - A Boolean value that indicates whether hard license enforcement is  

              used.</p>\n            </li>\n          <li>\n            <p>\n              <code>usagelimitExceeded</code> - A Boolean  

              value that indicates whether the available licenses have been exceeded.</p>\n            </li>\n          </ul>"
    }
  }
},
"traits": {
  "smithy.api#input": {}
}
},
"com.amazonaws.licensemanager#ListLicenseConfigurationsResponse":
{
  "type": "structure",
  "members": {
    "LicenseConfigurations": {
      "target": "com.amazonaws.licensemanager#LicenseConfigurations",
      "traits": {
        "smithy.api#documentation": "<p>Information about the license configurations.</p>"
      }
    },
    "NextToken": {
      "target": "com.amazonaws.licensemanager#String",
      "traits": {
        "smithy.api#documentation": "<p>Token for the next set of results.</p>"
      }
    }
  },
  "traits": {
    "smithy.api#output": {}
  }
},
"com.amazonaws.licensemanager#ListLicenseConversionTasks": {
  "type": "operation",
  "input": {
    "target": "com.amazonaws.licensemanager#ListLicenseConversionTasksRequest"
  },
  "output": {
    "target": "com.amazonaws.licensemanager#ListLicenseConversionTasksResponse"
  }
}

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    },
    "errors": [
      {
        "target": "com.amazonaws.licensemanager#AccessDeniedException"
      },
      {
        "target": "com.amazonaws.licensemanager#AuthorizationException"
      },
      {
        "target": "com.amazonaws.licensemanager#InvalidParameterValueException"
      },
      {
        "target": "com.amazonaws.licensemanager#RateLimitExceededException"
      },
      {
        "target": "com.amazonaws.licensemanager#ServerInternalException"
      }
    ],
    "traits": {
      "smithy.api#documentation": "<p>Lists the license type conversion tasks for your account.</p>"
    }
  },
  "com.amazonaws.licensemanager#ListLicenseConversionTasksRequest":
  {
    "type": "structure",
    "members": {
      "NextToken": {
        "target": "com.amazonaws.licensemanager#String",
        "traits": {
          "smithy.api#documentation": "<p>Token for the next set of results.</p>"
        }
      },
      "MaxResults": {
        "target": "com.amazonaws.licensemanager#BoxInteger",
        "traits": {
          "smithy.api#documentation": "<p>Maximum number of results to return in a single call.</p>"
        }
      },
      "Filters": {
        "target": "com.amazonaws.licensemanager#Filters",
        "traits": {
          "smithy.api#documentation": "<p>\n      Filters to scope the results. Valid filters are
<code>ResourceArns</code> and <code>Status</code>.\n    </p>"
        }
      }
    }
  },
  "traits": {

```



```

        "smithy.api#input": {}
    },
    "com.amazonaws.licensemanager#ListLicenseConversionTasksResponse": {
        "type": "structure",
        "members": {
            "LicenseConversionTasks": {
                "target": "com.amazonaws.licensemanager#LicenseConversionTasks",
                "traits": {
                    "smithy.api#documentation": "<p>Information about the license configuration tasks for your
account.</p>"
                }
            },
            "NextToken": {
                "target": "com.amazonaws.licensemanager#String",
                "traits": {
                    "smithy.api#documentation": "<p>Token for the next set of results.</p>"
                }
            }
        },
        "traits": {
            "smithy.api#output": {}
        }
    },
    "com.amazonaws.licensemanager#ListLicenseManagerReportGenerators":
{
    "type": "operation",
    "input": {
        "target": "com.amazonaws.licensemanager#ListLicenseManagerReportGeneratorsRequest"
    },
    "output": {
        "target": "com.amazonaws.licensemanager#ListLicenseManagerReportGeneratorsResponse"
    },
    "errors": [
        {
            "target": "com.amazonaws.licensemanager#AccessDeniedException"
        },
        {
            "target": "com.amazonaws.licensemanager#AuthorizationException"
        },
        {
            "target": "com.amazonaws.licensemanager#InvalidParameterValueException"
        },
        {
            "target": "com.amazonaws.licensemanager#RateLimitExceededException"
        },
        {
            "target": "com.amazonaws.licensemanager#ResourceLimitExceededException"
        }
    ]
}

```

```

    },
    {
      "target": "com.amazonaws.licensemanager#ResourceNotFoundException"
    },
    {
      "target": "com.amazonaws.licensemanager#ServerInternalException"
    },
    {
      "target": "com.amazonaws.licensemanager#ValidationException"
    }
  ],
  "traits": {
    "smithy.api#documentation": "<p>Lists the report generators for your account.</p>"
  }
},
"com.amazonaws.licensemanager#ListLicenseManagerReportGeneratorsRequest": {
  "type": "structure",
  "members": {
    "Filters": {
      "target": "com.amazonaws.licensemanager#FilterList",
      "traits": {
        "smithy.api#documentation": "<p>Filters to scope the results. The following filters are supported:
</p>\n      <ul>\n        <li>\n          <p>\n            <code>LicenseConfigurationArn</code>\n          </p>\n        </li>\n      </ul>"
      }
    },
    "NextToken": {
      "target": "com.amazonaws.licensemanager#String",
      "traits": {
        "smithy.api#documentation": "<p>Token for the next set of results.</p>"
      }
    },
    "MaxResults": {
      "target": "com.amazonaws.licensemanager#MaxSize100",
      "traits": {
        "smithy.api#documentation": "<p>Maximum number of results to return in a single call.</p>"
      }
    }
  },
  "traits": {
    "smithy.api#input": {}
  }
},
"com.amazonaws.licensemanager#ListLicenseManagerReportGeneratorsResponse": {
  "type": "structure",
  "members": {
    "ReportGenerators": {
      "target": "com.amazonaws.licensemanager#ReportGeneratorList",

```

```

        "traits": {
            "smithy.api#documentation": "<p>A report generator that creates periodic reports about your license
configurations.</p>"
        }
    },
    "NextToken": {
        "target": "com.amazonaws.licensemanager#String",
        "traits": {
            "smithy.api#documentation": "<p>Token for the next set of results.</p>"
        }
    },
    "traits": {
        "smithy.api#output": {}
    }
},
"com.amazonaws.licensemanager#ListLicenseSpecificationsForResource": {
    "type": "operation",
    "input": {
        "target": "com.amazonaws.licensemanager#ListLicenseSpecificationsForResourceRequest"
    },
    "output": {
        "target": "com.amazonaws.licensemanager#ListLicenseSpecificationsForResourceResponse"
    },
    "errors": [
        {
            "target": "com.amazonaws.licensemanager#AccessDeniedException"
        },
        {
            "target": "com.amazonaws.licensemanager#AuthorizationException"
        },
        {
            "target": "com.amazonaws.licensemanager#InvalidParameterValueException"
        },
        {
            "target": "com.amazonaws.licensemanager#RateLimitExceededException"
        },
        {
            "target": "com.amazonaws.licensemanager#ServerInternalException"
        }
    ],
    "traits": {
        "smithy.api#documentation": "<p>Describes the license configurations for the specified resource.</p>"
    }
},
"com.amazonaws.licensemanager#ListLicenseSpecificationsForResourceRequest": {
    "type": "structure",
    "members": {

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```

    "ResourceArn": {
      "target": "com.amazonaws.licensemanager#String",
      "traits": {
        "smithy.api#documentation": "<p>Amazon Resource Name (ARN) of a resource that has an
associated license configuration.</p>",
        "smithy.api#required": {}
      }
    },
    "MaxResults": {
      "target": "com.amazonaws.licensemanager#BoxInteger",
      "traits": {
        "smithy.api#documentation": "<p>Maximum number of results to return in a single call.</p>"
      }
    },
    "NextToken": {
      "target": "com.amazonaws.licensemanager#String",
      "traits": {
        "smithy.api#documentation": "<p>Token for the next set of results.</p>"
      }
    },
    "traits": {
      "smithy.api#input": {}
    }
  },
  "com.amazonaws.licensemanager#ListLicenseSpecificationsForResourceResponse": {
    "type": "structure",
    "members": {
      "LicenseSpecifications": {
        "target": "com.amazonaws.licensemanager#LicenseSpecifications",
        "traits": {
          "smithy.api#documentation": "<p>License configurations associated with a resource.</p>"
        }
      },
      "NextToken": {
        "target": "com.amazonaws.licensemanager#String",
        "traits": {
          "smithy.api#documentation": "<p>Token for the next set of results.</p>"
        }
      }
    },
    "traits": {
      "smithy.api#output": {}
    }
  },
  "com.amazonaws.licensemanager#ListLicenseVersions": {

```

```

    "type": "operation",
    "input": {
      "target":
"com.amazonaws.licensemanager#ListLicenseVersionsRequest"
    },
    "output": {
      "target": "com.amazonaws.licensemanager#ListLicenseVersionsResponse"
    },
    "errors": [
      {
        "target": "com.amazonaws.licensemanager#AccessDeniedException"
      },
      {
        "target": "com.amazonaws.licensemanager#AuthorizationException"
      },
      {
        "target": "com.amazonaws.licensemanager#InvalidParameterValueException"
      },
      {
        "target": "com.amazonaws.licensemanager#RateLimitExceededException"
      },
      {
        "target": "com.amazonaws.licensemanager#ServerInternalException"
      }
    ],
    "traits": {
      "smithy.api#documentation": "<p>Lists all versions of the specified license.</p>"
    }
  },
  "com.amazonaws.licensemanager#ListLicenseVersionsRequest": {
    "type": "structure",
    "members": {
      "LicenseArn": {
        "target": "com.amazonaws.licensemanager#Arn",
        "traits": {
          "smithy.api#documentation": "<p>Amazon Resource Name (ARN) of the license.</p>",
          "smithy.api#required": {}
        }
      },
      "NextToken": {
        "target": "com.amazonaws.licensemanager#String",
        "traits": {
          "smithy.api#documentation": "<p>Token for the next set of results.</p>"
        }
      },
      "MaxResults": {
        "target": "com.amazonaws.licensemanager#MaxSize100",

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        "traits": {
            "smithy.api#documentation": "<p>Maximum number of results to return in a single call.</p>"
        }
    },
    "traits": {
        "smithy.api#input": {}
    }
},
"com.amazonaws.licensemanager#ListLicenseVersionsResponse": {
    "type": "structure",
    "members": {
        "Licenses": {
            "target": "com.amazonaws.licensemanager#LicenseList",
            "traits": {
                "smithy.api#documentation": "<p>License details.</p>"
            }
        },
        "NextToken": {
            "target": "com.amazonaws.licensemanager#String",
            "traits": {
                "smithy.api#documentation": "<p>Token for the next set of results.</p>"
            }
        }
    },
    "traits": {
        "smithy.api#output": {}
    }
},
"com.amazonaws.licensemanager#ListLicenses": {
    "type": "operation",
    "input": {
        "target": "com.amazonaws.licensemanager#ListLicensesRequest"
    },
    "output": {
        "target": "com.amazonaws.licensemanager#ListLicensesResponse"
    },
    "errors": [
        {
            "target": "com.amazonaws.licensemanager#AccessDeniedException"
        },
        {
            "target": "com.amazonaws.licensemanager#AuthorizationException"
        },
        {
            "target": "com.amazonaws.licensemanager#InvalidParameterValueException"
        }
    ],

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    {
      "target": "com.amazonaws.licensemanager#RateLimitExceededException"
    },
    {
      "target": "com.amazonaws.licensemanager#ServerInternalException"
    },
    {
      "target": "com.amazonaws.licensemanager#ValidationException"
    }
  ],
  "traits": {

    "smithy.api#documentation": "<p>Lists the licenses for your account.</p>"
  },
  "com.amazonaws.licensemanager#ListLicensesRequest": {
    "type": "structure",
    "members": {
      "LicenseArns": {
        "target": "com.amazonaws.licensemanager#ArnList",
        "traits": {
          "smithy.api#documentation": "<p>Amazon Resource Names (ARNs) of the licenses.</p>"
        }
      },
      "Filters": {
        "target": "com.amazonaws.licensemanager#FilterList",
        "traits": {
          "smithy.api#documentation": "<p>Filters to scope the results. The following filters are
supported:</p>\n    <ul>\n      <li>\n        <p>\n          <code>Beneficiary</code>\n        </p>\n      </li>\n      <li>\n        <p>\n          <code>ProductSKU</code>\n        </p>\n      </li>\n      <li>\n        <p>\n          <code>Fingerprint</code>\n        </p>\n      </li>\n      <li>\n        <p>\n          <code>Status</code>\n        </p>\n      </li>\n    </ul>"
        }
      },
      "NextToken": {
        "target": "com.amazonaws.licensemanager#String",
        "traits": {
          "smithy.api#documentation": "<p>Token for the next set of results.</p>"
        }
      },
      "MaxResults": {
        "target": "com.amazonaws.licensemanager#MaxSize100",
        "traits": {
          "smithy.api#documentation": "<p>Maximum number of results to return in a single call.</p>"
        }
      }
    }
  },
  "traits": {

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```

        "smithy.api#input": {}
    }
},
"com.amazonaws.licensemanager#ListLicensesResponse":
{
    "type": "structure",
    "members": {
        "Licenses": {
            "target": "com.amazonaws.licensemanager#LicenseList",
            "traits": {
                "smithy.api#documentation": "<p>License details.</p>"
            }
        },
        "NextToken": {
            "target": "com.amazonaws.licensemanager#String",
            "traits": {
                "smithy.api#documentation": "<p>Token for the next set of results.</p>"
            }
        }
    },
    "traits": {
        "smithy.api#output": {}
    }
},
"com.amazonaws.licensemanager#ListReceivedGrants": {
    "type": "operation",
    "input": {
        "target": "com.amazonaws.licensemanager#ListReceivedGrantsRequest"
    },
    "output": {
        "target":
"com.amazonaws.licensemanager#ListReceivedGrantsResponse"
    },
    "errors": [
        {
            "target": "com.amazonaws.licensemanager#AccessDeniedException"
        },
        {
            "target": "com.amazonaws.licensemanager#AuthorizationException"
        },
        {
            "target": "com.amazonaws.licensemanager#InvalidParameterValueException"
        },
        {
            "target": "com.amazonaws.licensemanager#RateLimitExceededException"
        },
        {
            "target": "com.amazonaws.licensemanager#ResourceLimitExceededException"
        }
    ]
}

```



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    },
    {
      "target": "com.amazonaws.licensemanager#ServerInternalException"
    },
    {
      "target": "com.amazonaws.licensemanager#ValidationException"
    }
  ],
  "traits":
{
  "smithy.api#documentation": "<p>Lists grants that are received. Received grants are grants created while specifying the\n    recipient as this Amazon Web Services account, your organization, or an organizational unit\n    (OU) to which this member account belongs.</p>"
  }
},
"com.amazonaws.licensemanager#ListReceivedGrantsForOrganization": {
  "type": "operation",
  "input": {
    "target": "com.amazonaws.licensemanager#ListReceivedGrantsForOrganizationRequest"
  },
  "output": {
    "target": "com.amazonaws.licensemanager#ListReceivedGrantsForOrganizationResponse"
  },
  "errors": [
    {
      "target": "com.amazonaws.licensemanager#AccessDeniedException"
    },
    {
      "target": "com.amazonaws.licensemanager#AuthorizationException"
    },
    {
      "target": "com.amazonaws.licensemanager#InvalidParameterValueException"
    },
    {
      "target": "com.amazonaws.licensemanager#RateLimitExceededException"
    },
    {
      "target": "com.amazonaws.licensemanager#ResourceLimitExceededException"
    },
    {
      "target": "com.amazonaws.licensemanager#ServerInternalException"
    },
    {
      "target": "com.amazonaws.licensemanager#ValidationException"
    }
  ],
  "traits": {

```

```

    "smithy.api#documentation": "<p>Lists the grants received for all accounts in the organization.</p>"
  }
},
"com.amazonaws.licensemanager#ListReceivedGrantsForOrganizationRequest": {
  "type": "structure",
  "members": {
    "LicenseArn": {
      "target": "com.amazonaws.licensemanager#Arn",
      "traits": {
        "smithy.api#documentation": "<p>The Amazon Resource Name (ARN) of the received license.</p>",
        "smithy.api#required": {}
      }
    },
    "Filters": {
      "target": "com.amazonaws.licensemanager#FilterList",
      "traits": {
        "smithy.api#documentation": "<p>Filters to scope the results. The following filters are supported:</p>\n      <ul>\n        <li>\n          <p>\n            <code>ParentArn</code>\n          </p>\n        </li>\n        <li>\n          <p>\n            <code>GranteePrincipalArn</code>\n          </p>\n        </li>\n      </ul>"
      }
    },
    "NextToken": {
      "target": "com.amazonaws.licensemanager#String",
      "traits": {
        "smithy.api#documentation": "<p>Token for the next set of results.</p>"
      }
    },
    "MaxResults": {
      "target": "com.amazonaws.licensemanager#MaxSize100",
      "traits": {
        "smithy.api#documentation": "<p>Maximum number of results to return in a single call.</p>"
      }
    }
  },
  "traits": {
    "smithy.api#input": {}
  }
},
"com.amazonaws.licensemanager#ListReceivedGrantsForOrganizationResponse": {
  "type": "structure",
  "members": {
    "Grants": {
      "target": "com.amazonaws.licensemanager#GrantList",
      "traits": {
        "smithy.api#documentation": "<p>Lists the grants the organization has received.</p>"
      }
    }
  }
}

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```

    },
    "NextToken": {
      "target": "com.amazonaws.licensemanager#String",
      "traits": {
        "smithy.api#documentation": "<p>Token for the next set of results.</p>"
      }
    }
  },
  "traits": {
    "smithy.api#output": {}
  }
},
"com.amazonaws.licensemanager#ListReceivedGrantsRequest": {
  "type": "structure",
  "members": {
    "GrantArns": {
      "target": "com.amazonaws.licensemanager#ArnList",
      "traits": {
        "smithy.api#documentation": "<p>Amazon Resource Names (ARNs) of the grants.</p>"
      }
    },
    "Filters": {
      "target": "com.amazonaws.licensemanager#FilterList",
      "traits": {
        "smithy.api#documentation": "<p>Filters to scope the results. The following filters are supported:</p>\n      <ul>\n        <li>\n          <p>\n            <code>ProductSKU</code>\n          </p>\n          </li>\n          <li>\n            <p>\n              <code>LicenseIssuerName</code>\n            </p>\n            </li>\n            <li>\n              <p>\n                <code>LicenseArn</code>\n              </p>\n              </li>\n              <li>\n                <p>\n                  <code>GrantStatus</code>\n                </p>\n                </li>\n                <li>\n                  <p>\n                    <code>GranterAccountId</code>\n                  </p>\n                  </li>\n                </ul>"
            }
          },
      "NextToken": {
        "target": "com.amazonaws.licensemanager#String",
        "traits": {
          "smithy.api#documentation": "<p>Token for the next set of results.</p>"
        }
      },
      "MaxResults": {
        "target": "com.amazonaws.licensemanager#MaxSize100",
        "traits": {
          "smithy.api#documentation": "<p>Maximum number of results to return in a single call.</p>"
        }
      }
    },
    "traits": {
      "smithy.api#input": {}
    }
  }
}

```

```

    }
  },
  "com.amazonaws.licensemanager#ListReceivedGrantsResponse": {
    "type": "structure",
    "members": {
      "Grants": {
        "target": "com.amazonaws.licensemanager#GrantList",
        "traits": {
          "smithy.api#documentation": "<p>Received grant details.</p>"
        }
      },
      "NextToken": {
        "target": "com.amazonaws.licensemanager#String",
        "traits": {
          "smithy.api#documentation": "<p>Token for the next set of results.</p>"
        }
      }
    }
  },
  "traits": {
    "smithy.api#output": {}
  },
  "com.amazonaws.licensemanager#ListReceivedLicenses": {
    "type": "operation",
    "input": {
      "target": "com.amazonaws.licensemanager#ListReceivedLicensesRequest"
    },
    "output": {
      "target": "com.amazonaws.licensemanager#ListReceivedLicensesResponse"
    },
    "errors": [
      {
        "target": "com.amazonaws.licensemanager#AccessDeniedException"
      },
      {
        "target": "com.amazonaws.licensemanager#AuthorizationException"
      },
      {
        "target": "com.amazonaws.licensemanager#InvalidParameterValueException"
      },
      {
        "target": "com.amazonaws.licensemanager#RateLimitExceededException"
      },
      {
        "target": "com.amazonaws.licensemanager#ResourceLimitExceededException"
      },
      {

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```

        "target": "com.amazonaws.licensemanager#ServerInternalException"
    },
    {
        "target": "com.amazonaws.licensemanager#ValidationException"
    }
],
"traits": {
    "smithy.api#documentation": "<p>Lists received licenses.</p>"
}
},
"com.amazonaws.licensemanager#ListReceivedLicensesForOrganization": {
    "type": "operation",
    "input": {
        "target": "com.amazonaws.licensemanager#ListReceivedLicensesForOrganizationRequest"
    },
    "output": {
        "target": "com.amazonaws.licensemanager#ListReceivedLicensesForOrganizationResponse"
    },
    "errors": [
        {
            "target": "com.amazonaws.licensemanager#AccessDeniedException"
        },
        {
            "target": "com.amazonaws.licensemanager#AuthorizationException"
        },
        {
            "target": "com.amazonaws.licensemanager#InvalidParameterValueException"
        },
        {
            "target": "com.amazonaws.licensemanager#RateLimitExceededException"
        },
        {
            "target": "com.amazonaws.licensemanager#ResourceLimitExceededException"
        },
        {
            "target": "com.amazonaws.licensemanager#ServerInternalException"
        },
        {
            "target": "com.amazonaws.licensemanager#ValidationException"
        }
    ],
    "traits": {
        "smithy.api#documentation": "<p>Lists the licenses received for all accounts in the organization.</p>"
    }
},
"com.amazonaws.licensemanager#ListReceivedLicensesForOrganizationRequest": {

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```

    "type": "structure",
    "members": {
      "Filters": {
        "target": "com.amazonaws.licensemanager#FilterList",
        "traits": {
          "smithy.api#documentation": "<p>Filters to scope the results. The following filters are
supported:</p>\n      <ul>\n        <li>\n          <p>\n            <code>Beneficiary</code>\n          </p>\n        </li>\n        <li>\n          <p>\n            <code>ProductSKU</code>\n          </p>\n        </li>\n      </ul>"
        }
      },
      "NextToken": {
        "target": "com.amazonaws.licensemanager#String",
        "traits": {
          "smithy.api#documentation": "<p>Token for the next set of results.</p>"
        }
      },
      "MaxResults": {
        "target": "com.amazonaws.licensemanager#MaxSize100",
        "traits": {
          "smithy.api#documentation": "<p>Maximum number of results to return in a single call.</p>"
        }
      }
    },
    "traits": {
      "smithy.api#input": {}
    }
  },
  "com.amazonaws.licensemanager#ListReceivedLicensesForOrganizationResponse": {
    "type": "structure",
    "members": {
      "Licenses": {
        "target": "com.amazonaws.licensemanager#GrantedLicenseList",
        "traits": {
          "smithy.api#documentation": "<p>Lists the licenses the organization has received.</p>"
        }
      },
      "NextToken": {
        "target": "com.amazonaws.licensemanager#String",
        "traits": {
          "smithy.api#documentation": "<p>Token for the next set of results.</p>"
        }
      }
    },
    "traits": {
      "smithy.api#output": {}
    }
  },

```

```

"com.amazonaws.licensemanager#ListReceivedLicensesRequest": {
  "type": "structure",
  "members": {
    "LicenseArns": {
      "target": "com.amazonaws.licensemanager#ArnList",
      "traits": {
        "smithy.api#documentation": "<p>Amazon Resource Names (ARNs) of the licenses.</p>"
      }
    },
    "Filters": {
      "target": "com.amazonaws.licensemanager#FilterList",
      "traits": {
        "smithy.api#documentation": "<p>Filters to scope the results. The following filters are supported:</p>\n      <ul>\n        <li>\n          <p>\n            <code>ProductSKU</code>\n          </p>\n        </li>\n        <li>\n          <p>\n            <code>Status</code>\n          </p>\n        </li>\n        <li>\n          <p>\n            <code>Fingerprint</code>\n          </p>\n        </li>\n        <li>\n          <p>\n            <code>IssuerName</code>\n          </p>\n        </li>\n        <li>\n          <p>\n            <code>Beneficiary</code>\n          </p>\n        </li>\n      </ul>"
      }
    },
    "NextToken": {
      "target": "com.amazonaws.licensemanager#String",
      "traits": {
        "smithy.api#documentation": "<p>Token for the next set of results.</p>"
      }
    },
    "MaxResults": {
      "target": "com.amazonaws.licensemanager#MaxSize100",
      "traits": {
        "smithy.api#documentation": "<p>Maximum number of results to return in a single call.</p>"
      }
    }
  },
  "traits": {
    "smithy.api#input": {}
  }
},
"com.amazonaws.licensemanager#ListReceivedLicensesResponse": {
  "type": "structure",
  "members": {
    "Licenses": {
      "target": "com.amazonaws.licensemanager#GrantedLicenseList",
      "traits": {
        "smithy.api#documentation": "<p>Received license details.</p>"
      }
    },
    "NextToken": {

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```

        "target": "com.amazonaws.licensemanager#String",
        "traits": {
            "smithy.api#documentation": "<p>Token for the next set of results.</p>"
        }
    },
    "traits": {
        "smithy.api#output": {}
    }
},
"com.amazonaws.licensemanager#ListResourceInventory": {
    "type": "operation",
    "input":
{
    "target": "com.amazonaws.licensemanager#ListResourceInventoryRequest"
},
    "output": {
        "target": "com.amazonaws.licensemanager#ListResourceInventoryResponse"
    },
    "errors": [
        {
            "target": "com.amazonaws.licensemanager#AccessDeniedException"
        },
        {
            "target": "com.amazonaws.licensemanager#AuthorizationException"
        },
        {
            "target": "com.amazonaws.licensemanager#FailedDependencyException"
        },
        {
            "target": "com.amazonaws.licensemanager#FilterLimitExceededException"
        },
        {
            "target": "com.amazonaws.licensemanager#InvalidParameterValueException"
        },
        {
            "target": "com.amazonaws.licensemanager#RateLimitExceededException"
        }
    ],
    {
        "target": "com.amazonaws.licensemanager#ServerInternalException"
    }
},
    "traits": {
        "smithy.api#documentation": "<p>Lists resources managed using Systems Manager inventory.</p>"
    }
},
"com.amazonaws.licensemanager#ListResourceInventoryRequest": {

```



```

"type": "structure",
"members": {
  "MaxResults": {
    "target": "com.amazonaws.licensemanager#BoxInteger",
    "traits": {
      "smithy.api#documentation": "<p>Maximum number of results to return in a single call.</p>"
    }
  },
  "NextToken": {
    "target": "com.amazonaws.licensemanager#String",
    "traits": {
      "smithy.api#documentation": "<p>Token for the next set of results.</p>"
    }
  },
  "Filters": {
    "target": "com.amazonaws.licensemanager#InventoryFilterList",
    "traits": {
      "smithy.api#documentation": "<p>Filters to scope the results. The following filters and logical
operators\n    are supported:</p>\n    <ul>\n      <li>\n        <p>\n          <code>account_id</code>
- The ID of the Amazon Web Services account that owns the resource.\n          Logical operators are
<code>EQUALS</code> | <code>NOT_EQUALS</code>.</p>\n        </li>\n      <li>\n        <p>\n          <code>application_name</code> - The name of the application. \n          Logical operators are
<code>EQUALS</code> | <code>BEGINS_WITH</code>.</p>\n        </li>\n      <li>\n        <p>\n          <code>license_included</code> - The type of license included. \n          Logical operators are
<code>EQUALS</code> | <code>NOT_EQUALS</code>.\n          Possible values are <code>sql-server-enterprise</code> | \n          <code>sql-server-standard</code> |
\n          <code>sql-server-web</code> | \n          <code>windows-server-datacenter</code>.</p>\n        </li>\n      <li>\n        <p>\n          <code>platform</code> - The platform of the resource.\n          Logical operators are <code>EQUALS</code> | <code>BEGINS_WITH</code>.</p>\n        </li>\n      <li>\n        <p>\n          <code>resource_id</code> - The ID of the resource. \n          Logical operators
are <code>EQUALS</code> | <code>NOT_EQUALS</code>.</p>\n        </li>\n      <li>\n        <p>\n          <code>tag:<key></code> - The key/value combination of a tag assigned \n          to the resource. Logical
operators are <code>EQUALS</code> (single account) or\n          <code>EQUALS</code> |
<code>NOT_EQUALS</code> (cross account).</p>\n        </li>\n      </ul>"
    }
  },
  "traits": {
    "smithy.api#input": {}
  }
},
"com.amazonaws.licensemanager#ListResourceInventoryResponse": {
  "type": "structure",
  "members": {
    "ResourceInventoryList": {
      "target": "com.amazonaws.licensemanager#ResourceInventoryList",

```

```

    "traits": {
      "smithy.api#documentation": "<p>Information about the resources.</p>"
    }
  },
  "NextToken": {
    "target": "com.amazonaws.licensemanager#String",
    "traits": {
      "smithy.api#documentation": "<p>Token for the next set of results.</p>"
    }
  }
},
"traits": {
  "smithy.api#output": {}
}
},
"com.amazonaws.licensemanager#ListTagsForResource":
{
  "type": "operation",
  "input": {
    "target": "com.amazonaws.licensemanager#ListTagsForResourceRequest"
  },
  "output": {
    "target": "com.amazonaws.licensemanager#ListTagsForResourceResponse"
  },
  "errors": [
    {
      "target": "com.amazonaws.licensemanager#AccessDeniedException"
    },
    {
      "target": "com.amazonaws.licensemanager#AuthorizationException"
    },
    {
      "target": "com.amazonaws.licensemanager#InvalidParameterValueException"
    },
    {
      "target": "com.amazonaws.licensemanager#RateLimitExceededException"
    },
    {
      "target": "com.amazonaws.licensemanager#ServerInternalException"
    }
  ],
  "traits": {
    "smithy.api#documentation": "<p>Lists the tags for the specified resource. For more information about tagging support in\n      License Manager, see the <a href=\"https://docs.aws.amazon.com/license-manager/latest/APIReference/API_TagResource.html\">TagResource</a> operation.</p>"
  }
},

```

```

"com.amazonaws.licensemanager#ListTagsForResourceRequest": {
  "type": "structure",
  "members": {
    "ResourceArn": {
      "target": "com.amazonaws.licensemanager#String",
      "traits": {
        "smithy.api#documentation": "<p>Amazon Resource Name (ARN) of the resource.</p>",
        "smithy.api#required": {}
      }
    }
  },
  "traits": {
    "smithy.api#input": {}
  }
},
"com.amazonaws.licensemanager#ListTagsForResourceResponse": {
  "type": "structure",
  "members": {
    "Tags": {
      "target": "com.amazonaws.licensemanager#TagList",
      "traits": {
        "smithy.api#documentation": "<p>Information about the tags.</p>"
      }
    }
  },
  "traits": {
    "smithy.api#output": {}
  }
},
"com.amazonaws.licensemanager#ListTokens": {
  "type": "operation",
  "input": {
    "target": "com.amazonaws.licensemanager#ListTokensRequest"
  },
  "output": {
    "target": "com.amazonaws.licensemanager#ListTokensResponse"
  },
  "errors": [
    {
      "target": "com.amazonaws.licensemanager#AccessDeniedException"
    },
    {
      "target": "com.amazonaws.licensemanager#AuthorizationException"
    },
    {
      "target": "com.amazonaws.licensemanager#RateLimitExceededException"
    }
  ]
}

```

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    },
    {
      "target": "com.amazonaws.licensemanager#ServerInternalException"
    },
    {
      "target": "com.amazonaws.licensemanager#ValidationException"
    }
  ],
  "traits": {
    "smithy.api#documentation": "<p>Lists your tokens.</p>"
  }
},
"com.amazonaws.licensemanager#ListTokensRequest": {
  "type": "structure",
  "members": {
    "TokenIds": {
      "target": "com.amazonaws.licensemanager#StringList",
      "traits": {
        "smithy.api#documentation": "<p>Token IDs.</p>"
      }
    },
    "Filters": {
      "target": "com.amazonaws.licensemanager#FilterList",
      "traits": {
        "smithy.api#documentation": "<p>Filters
to scope the results. The following filter is supported:</p>\n    <ul>\n      <li>\n        <p>\n<code>LicenseArns</code>\n      </p>\n    </li>\n    </ul>"
      }
    },
    "NextToken": {
      "target": "com.amazonaws.licensemanager#String",
      "traits": {
        "smithy.api#documentation": "<p>Token for the next set of results.</p>"
      }
    }
  },
  "MaxResults": {
    "target": "com.amazonaws.licensemanager#MaxSize100",
    "traits": {
      "smithy.api#documentation": "<p>Maximum number of results to return in a single call.</p>"
    }
  }
},
"traits": {
  "smithy.api#input": {}
}
},
"com.amazonaws.licensemanager#ListTokensResponse": {
  "type":

```

```

"structure",
  "members": {
    "Tokens": {
      "target": "com.amazonaws.licensemanager#TokenList",
      "traits": {
        "smithy.api#documentation": "<p>Received token details.</p>"
      }
    },
    "NextToken": {
      "target": "com.amazonaws.licensemanager#String",
      "traits": {
        "smithy.api#documentation": "<p>Token for the next set of results.</p>"
      }
    }
  },
  "traits": {
    "smithy.api#output": {}
  }
},
"com.amazonaws.licensemanager#ListUsageForLicenseConfiguration": {
  "type": "operation",
  "input": {
    "target": "com.amazonaws.licensemanager#ListUsageForLicenseConfigurationRequest"
  },
  "output": {
    "target": "com.amazonaws.licensemanager#ListUsageForLicenseConfigurationResponse"
  },
  "errors": [
    {
      "target": "com.amazonaws.licensemanager#AccessDeniedException"
    },
    {
      "target": "com.amazonaws.licensemanager#AuthorizationException"
    },
    {
      "target": "com.amazonaws.licensemanager#FilterLimitExceededException"
    },
    {
      "target": "com.amazonaws.licensemanager#InvalidParameterValueException"
    },
    {
      "target": "com.amazonaws.licensemanager#RateLimitExceededException"
    },
    {
      "target": "com.amazonaws.licensemanager#ServerInternalException"
    }
  ],
  "traits": {

```

```

    "smithy.api#documentation": "<p>Lists all license usage records for a license configuration, displaying
license\n      consumption
details by resource at a selected point in time. Use this action to audit the\n      current license consumption for
any license inventory and configuration.</p>"
  }
},
"com.amazonaws.licensemanager#ListUsageForLicenseConfigurationRequest": {
  "type": "structure",
  "members": {
    "LicenseConfigurationArn": {
      "target": "com.amazonaws.licensemanager#String",
      "traits": {
        "smithy.api#documentation": "<p>Amazon Resource Name (ARN) of the license
configuration.</p>",
        "smithy.api#required": {}
      }
    },
    "MaxResults": {
      "target": "com.amazonaws.licensemanager#BoxInteger",
      "traits": {
        "smithy.api#documentation": "<p>Maximum number of results to return in a single call.</p>"
      }
    }
  },
  "NextToken": {
    "target": "com.amazonaws.licensemanager#String",
    "traits": {
      "smithy.api#documentation": "<p>Token for the next set of results.</p>"
    }
  },
  "Filters": {
    "target": "com.amazonaws.licensemanager#Filters",
    "traits": {
      "smithy.api#documentation": "<p>Filters to scope the results. The following filters and logical
operators\n      are supported:</p>\n      <ul>\n        <li>\n          <p>\n            <code>resourceArn</code> - The ARN of the license configuration resource.</p>\n            </li>\n            <li>\n              <p>\n                <code>resourceType</code> - The resource type (<code>EC2_INSTANCE</code> | \n                \t<code>EC2_HOST</code> | <code>EC2_AMI</code> | \n                <code>SYSTEMS_MANAGER_MANAGED_INSTANCE</code>).</p>\n                </li>\n                <li>\n                  <p>\n                    <code>resourceAccount</code> - The ID of the account that owns the resource.</p>\n                    \n                  </li>\n            </ul>"
    }
  },
  "traits": {
    "smithy.api#input": {}
  }
},

```

```

"com.amazonaws.licensemanager#ListUsageForLicenseConfigurationResponse": {
  "type": "structure",
  "members": {
    "LicenseConfigurationUsageList": {
      "target": "com.amazonaws.licensemanager#LicenseConfigurationUsageList",
      "traits": {
        "smithy.api#documentation": "<p>Information about the license configurations.</p>"
      }
    },
    "NextToken": {
      "target": "com.amazonaws.licensemanager#String",
      "traits": {
        "smithy.api#documentation": "<p>Token for the next set of results.</p>"
      }
    }
  },
  "traits": {
    "smithy.api#output": {}
  }
},
"com.amazonaws.licensemanager#Location": {
  "type": "string"
},
"com.amazonaws.licensemanager#Long": {
  "type": "long"
},
"com.amazonaws.licensemanager#ManagedResourceSummary": {
  "type": "structure",
  "members": {
    "ResourceType": {
      "target": "com.amazonaws.licensemanager#ResourceType",
      "traits": {
        "smithy.api#documentation": "<p>Type of resource associated with a license.</p>"
      }
    },
    "AssociationCount": {
      "target": "com.amazonaws.licensemanager#BoxLong",
      "traits": {
        "smithy.api#documentation": "<p>Number of resources associated with licenses.</p>"
      }
    }
  }
},
"traits": {
  "smithy.api#documentation": "<p>Summary information about a managed resource.</p>"
}
},

```

```

"com.amazonaws.licensemanager#ManagedResourceSummaryList": {
  "type": "list",
  "member": {
    "target": "com.amazonaws.licensemanager#ManagedResourceSummary"
  }
},
"com.amazonaws.licensemanager#MaxSize100": {
  "type": "integer",
  "traits": {
    "smithy.api#range": {
      "min": 1,
      "max": 100
    }
  }
},
"com.amazonaws.licensemanager#MaxSize3StringList": {
  "type": "list",
  "member": {
    "target": "com.amazonaws.licensemanager#String"
  },
  "traits": {
    "smithy.api#length": {
      "min": 0,
      "max": 3
    }
  }
},
},
"com.amazonaws.licensemanager#Message": {
  "type": "string"
},
"com.amazonaws.licensemanager#Metadata": {
  "type": "structure",
  "members": {
    "Name": {
      "target": "com.amazonaws.licensemanager#String",
      "traits": {
        "smithy.api#documentation": "<p>The key name.</p>"
      }
    },
    "Value": {
      "target": "com.amazonaws.licensemanager#String",
      "traits": {
        "smithy.api#documentation": "<p>The value.</p>"
      }
    }
  }
},
"traits": {

```



```

    "smithy.api#documentation": "<p>Describes key/value pairs.</p>"
  },
  "com.amazonaws.licensemanager#MetadataList": {
    "type": "list",
    "member": {
      "target": "com.amazonaws.licensemanager#Metadata"
    }
  },
  "com.amazonaws.licensemanager#NoEntitlementsAllowedException": {
    "type": "structure",
    "members": {
      "Message": {
        "target": "com.amazonaws.licensemanager#Message"
      }
    }
  },
  "traits": {
    "smithy.api#documentation": "<p>There are no entitlements found for this license, or the entitlement
maximum count is reached.</p>",
    "smithy.api#error": "client",
    "smithy.api#httpError": 400
  }
},
"com.amazonaws.licensemanager#Options": {
  "type": "structure",
  "members": {
    "ActivationOverrideBehavior": {
      "target": "com.amazonaws.licensemanager#ActivationOverrideBehavior",
      "traits": {
        "smithy.api#documentation": "<p>An activation option for your grant that determines the behavior of
activating a grant.\n
        Activation options can only be used with granted licenses sourced from the Amazon Web Services
Marketplace. Additionally, the operation must specify the value of <code>ACTIVE</code> for the\n
<code>Status</code> parameter.</p>\n
        <ul>\n
          <li>\n
            <p>As a license administrator, you can
optionally specify an\n
            <code>ActivationOverrideBehavior</code> when activating a grant.</p>\n
          </li>\n
          <li>\n
            <p>As a grantor, you can optionally specify an\n
            <code>ActivationOverrideBehavior</code> when you activate a grant for a grantee\n
            account in your
organization.</p>\n
          </li>\n
          <li>\n
            <p>As a grantee, if the grantor creating the distributed
grant doesnt specify an\n
            <code>ActivationOverrideBehavior</code>, you can optionally specify one
when you\n
            are activating the grant.</p>\n
          </li>\n
        </ul>\n
        <dl>\n
          <dt>DISTRIBUTED_GRANTS_ONLY</dt>\n
          <dd>\n
            <p>Use this
value to activate a grant without replacing any member accounts\n
            active grants for the same
product.</p>\n
          </dd>\n
          <dt>ALL_GRANTS_PERMITTED_BY_ISSUER</dt>\n
          <dd>\n
            <p>Use this value to activate a grant and disable other active grants in any\n
            member accounts for the
same product. This action will also replace their\n
            previously activated grants with this activated
grant.</p>\n
          </dd>\n
        </dl>"
      }
    }
  }
}

```

```

    },
    "traits": {
      "smithy.api#documentation": "<p>The options you can specify when you create a new version of a grant,
such as activation\n      override behavior. For more information, see <a
href=\"https://docs.aws.amazon.com/license-manager/latest/userguide/granted-licenses.html\">Granted
licenses in License Manager</a> in the <i>License Manager User Guide</i>.</p>"
    }
  },
  "com.amazonaws.licensemanager#OrganizationConfiguration": {
    "type": "structure",
    "members": {
      "EnableIntegration": {
        "target": "com.amazonaws.licensemanager#Boolean",
        "traits": {
          "smithy.api#default": false,
          "smithy.api#documentation": "<p>Enables Organizations integration.</p>",
          "smithy.api#required": {}
        }
      }
    }
  },
  "traits": {
    "smithy.api#documentation": "<p>Configuration information for Organizations.</p>"
  }
},
"com.amazonaws.licensemanager#PrincipalArnList": {
  "type": "list",
  "member": {
    "target": "com.amazonaws.licensemanager#Arn"
  },
  "traits": {

"smithy.api#length": {
  "min": 1,
  "max": 1
}
},
"com.amazonaws.licensemanager#ProductInformation": {
  "type": "structure",
  "members": {
    "ResourceType": {
      "target": "com.amazonaws.licensemanager#String",
      "traits": {
        "smithy.api#documentation": "<p>Resource type. The possible values are
<code>SSM_MANAGED</code> | <code>RDS</code>.</p>",
        "smithy.api#required": {}
      }
    }
  },

```

```

"ProductInformationFilterList": {
  "target": "com.amazonaws.licensemanager#ProductInformationFilterList",
  "traits": {
    "smithy.api#documentation": "<p>A Product information filter consists of a
<code>ProductInformationFilterComparator</code> which is a logical operator, a
<code>ProductInformationFilterName</code>
which specifies the type of filter being declared, and a <code>ProductInformationFilterValue</code> that specifies
the value to filter on. </p>\n    <p>Accepted values for <code>ProductInformationFilterName</code> are listed
here along with descriptions and valid options for <code>ProductInformationFilterComparator</code>. </p>\n
<p>The following filters and are supported when the resource type \n    is
<code>SSM_MANAGED</code>:</p>\n    <ul>\n      <li>\n        <p>\n          <code>Application
Name</code> - The name of the application.\n          Logical operator is <code>EQUALS</code>.</p>\n
</li>\n      <li>\n        <p>\n          <code>Application Publisher</code> - The publisher of the
application.\n          Logical operator is <code>EQUALS</code>.</p>\n
</li>\n      <li>\n        <p>\n          <code>Application Version</code> - The version of the
application.\n          Logical operator is <code>EQUALS</code>.</p>\n
</li>\n      <li>\n        <p>\n          <code>Platform Name</code> - The name of the platform.\n          Logical operator is
<code>EQUALS</code>.</p>\n
</li>\n      <li>\n        <p>\n          <code>Platform
Type</code> - The platform type.\n          Logical operator is <code>EQUALS</code>.</p>\n
</li>\n      <li>\n        <p>\n          <code>Tag:key</code> - The key of a tag attached to an Amazon Web Services
resource you wish to exclude from automated discovery. Logical operator is <code>NOT_EQUALS</code>. The
key for your tag must be appended to <code>Tag:</code> following the example: <code>Tag:name-of-your-
key</code>. <code>ProductInformationFilterValue</code> is optional if you are not using values for the key.\n
</p>\n
<code>AccountId</code> - The 12-digit ID of an Amazon Web Services account you wish to exclude
from automated discovery.\n          Logical operator is <code>NOT_EQUALS</code>.</p>\n
<li>\n        <p>\n          <code>License Included</code> - The type of license included.\n          Logical
operators are <code>EQUALS</code> and <code>NOT_EQUALS</code>.\n          Possible values are:
<code>sql-server-enterprise</code> | \n          <code>sql-server-standard</code> | \n          <code>sql-server-
web</code> | \n          <code>windows-server-datacenter</code>.</p>\n
</li>\n    </ul>\n
<p>The following filters and logical operators are supported when the resource type\n    is
<code>RDS</code>:</p>\n    <ul>\n      <li>\n        <p>\n          <code>Engine Edition</code> -
The edition of the database engine.\n          Logical operator is <code>EQUALS</code>.\n
          Possible values are: <code>oracle-ee</code> | <code>oracle-se</code> | <code>oracle-se1</code> |
<code>oracle-se2</code> \n          \t| <code>db2-se</code> | <code>db2-ae</code>.</p>\n
</li>\n      <li>\n        <p>\n          <code>License Pack</code> - The license pack.\n          Logical operator is
<code>EQUALS</code>.\n          Possible values are: <code>data guard</code> | \n          <code>diagnostic
pack sqlt</code> | \n          <code>tuning pack sqlt</code> | \n          <code>ols</code> | \n
<code>olap</code>.</p>\n
</li>\n    </ul>,"
    "smithy.api#required": {}
  }
},
"traits": {
  "smithy.api#documentation": "<p>Describes product information for a license configuration.</p>"
}
},
"com.amazonaws.licensemanager#ProductInformationFilter":

```

```

{
  "type": "structure",
  "members": {
    "ProductInformationFilterName": {
      "target": "com.amazonaws.licensemanager#String",
      "traits": {
        "smithy.api#documentation": "<p>Filter name.</p>",
        "smithy.api#required": {}
      }
    },
    "ProductInformationFilterValue": {
      "target": "com.amazonaws.licensemanager#StringList",
      "traits": {
        "smithy.api#documentation": "<p>Filter value.</p>"
      }
    },
    "ProductInformationFilterComparator": {
      "target": "com.amazonaws.licensemanager#String",
      "traits": {
        "smithy.api#documentation": "<p>Logical operator.</p>",
        "smithy.api#required": {}
      }
    },
    "traits": {
      "smithy.api#documentation": "<p>Describes product information filters.</p>"
    }
  },
  "com.amazonaws.licensemanager#ProductInformationFilterList": {
    "type": "list",
    "member": {
      "target": "com.amazonaws.licensemanager#ProductInformationFilter"
    }
  },
  "com.amazonaws.licensemanager#ProductInformationList": {
    "type": "list",
    "member": {
      "target": "com.amazonaws.licensemanager#ProductInformation"
    }
  },
  "com.amazonaws.licensemanager#ProvisionalConfiguration": {
    "type": "structure",
    "members": {
      "MaxTimeToLiveInMinutes": {
        "target": "com.amazonaws.licensemanager#BoxInteger",
        "traits": {
          "smithy.api#documentation": "<p>Maximum time for the provisional configuration, in minutes.</p>",

```



```

"smithy.api#required": {}
    }
  },
  "traits": {
    "smithy.api#documentation": "<p>Details about a provisional configuration.</p>"
  },
  "com.amazonaws.licensemanager#RateLimitExceededException": {
    "type": "structure",
    "members": {
      "Message": {
        "target": "com.amazonaws.licensemanager#Message"
      }
    },
    "traits": {
      "aws.protocols#awsQueryError": {
        "code": "RateLimitExceeded",
        "httpResponseCode": 429
      },
      "smithy.api#documentation": "<p>Too many requests have been submitted. Try again after a brief
wait.</p>",
      "smithy.api#error": "client",
      "smithy.api#httpError": 429
    }
  },
  "com.amazonaws.licensemanager#ReceivedMetadata": {
    "type": "structure",
    "members": {
      "ReceivedStatus": {
        "target": "com.amazonaws.licensemanager#ReceivedStatus",
        "traits": {
          "smithy.api#documentation": "<p>Received status.</p>"
        }
      },
      "ReceivedStatusReason": {
        "target": "com.amazonaws.licensemanager#StatusReasonMessage",
        "traits": {
          "smithy.api#documentation": "<p>Received status reason.</p>"
        }
      },
      "AllowedOperations": {
        "target": "com.amazonaws.licensemanager#AllowedOperationList",
        "traits": {
          "smithy.api#documentation": "<p>Allowed operations.</p>"
        }
      }
    }
  },

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```

    "traits": {
      "smithy.api#documentation": "<p>Metadata associated with received licenses and grants.</p>"
    }
  },
  "com.amazonaws.licensemanager#ReceivedStatus": {
    "type": "enum",
    "members": {
      "PENDING_WORKFLOW": {
        "target": "smithy.api#Unit",
        "traits": {
          "smithy.api#enumValue": "PENDING_WORKFLOW"
        }
      },
      "PENDING_ACCEPT": {
        "target": "smithy.api#Unit",
        "traits": {
          "smithy.api#enumValue": "PENDING_ACCEPT"
        }
      },
      "REJECTED": {
        "target": "smithy.api#Unit",
        "traits": {
          "smithy.api#enumValue": "REJECTED"
        }
      },
      "ACTIVE": {
        "target": "smithy.api#Unit",
        "traits": {
          "smithy.api#enumValue": "ACTIVE"
        }
      }
    }
  },
  "FAILED_WORKFLOW": {
    "target": "smithy.api#Unit",
    "traits": {
      "smithy.api#enumValue": "FAILED_WORKFLOW"
    }
  },
  "DELETED": {
    "target": "smithy.api#Unit",
    "traits": {
      "smithy.api#enumValue": "DELETED"
    }
  },
  "DISABLED": {
    "target": "smithy.api#Unit",
    "traits": {
      "smithy.api#enumValue": "DISABLED"
    }
  }
}

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    }
  },
  "WORKFLOW_COMPLETED": {
    "target": "smithy.api#Unit",
    "traits": {
      "smithy.api#enumValue": "WORKFLOW_COMPLETED"
    }
  }
},
"com.amazonaws.licensemanager#RedirectException": {
  "type": "structure",

  "members": {
    "Location": {
      "target": "com.amazonaws.licensemanager#Location",
      "traits": {
        "smithy.api#httpHeader": "Location"
      }
    },
    "Message": {
      "target": "com.amazonaws.licensemanager#Message"
    }
  },
  "traits": {
    "smithy.api#documentation": "<p>This is not the correct Region for the resource. Try again.</p>",
    "smithy.api#error": "client",
    "smithy.api#httpError": 308
  }
},
"com.amazonaws.licensemanager#RejectGrant": {
  "type": "operation",
  "input": {
    "target": "com.amazonaws.licensemanager#RejectGrantRequest"
  },
  "output": {
    "target": "com.amazonaws.licensemanager#RejectGrantResponse"
  },
  "errors": [
    {
      "target": "com.amazonaws.licensemanager#AccessDeniedException"
    },
    {
      "target": "com.amazonaws.licensemanager#AuthorizationException"
    },
    {
      "target": "com.amazonaws.licensemanager#InvalidParameterValueException"
    }
  ],

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    {
      "target": "com.amazonaws.licensemanager#RateLimitExceededException"
    },
    {
      "target": "com.amazonaws.licensemanager#ResourceLimitExceededException"
    },
    {
      "target": "com.amazonaws.licensemanager#ServerInternalException"
    },
    {
      "target": "com.amazonaws.licensemanager#ValidationException"
    }
  ],
  "traits": {
    "smithy.api#documentation": "<p>Rejects the specified grant.</p>"
  }
},
"com.amazonaws.licensemanager#RejectGrantRequest":
{
  "type": "structure",
  "members": {
    "GrantArn": {
      "target": "com.amazonaws.licensemanager#Arn",
      "traits": {
        "smithy.api#documentation": "<p>Amazon Resource Name (ARN) of the grant.</p>",
        "smithy.api#required": {}
      }
    }
  },
  "traits": {
    "smithy.api#input": {}
  }
},
"com.amazonaws.licensemanager#RejectGrantResponse": {
  "type": "structure",
  "members": {
    "GrantArn": {
      "target": "com.amazonaws.licensemanager#Arn",
      "traits": {
        "smithy.api#documentation": "<p>Grant ARN.</p>"
      }
    }
  },
  "Status": {
    "target": "com.amazonaws.licensemanager#GrantStatus",

    "traits": {
      "smithy.api#documentation": "<p>Grant status.</p>"
    }
  }
}

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    },
    "Version": {
      "target": "com.amazonaws.licensemanager#String",
      "traits": {
        "smithy.api#documentation": "<p>Grant version.</p>"
      }
    }
  },
  "traits": {
    "smithy.api#output": {}
  }
},
"com.amazonaws.licensemanager#RenewType": {
  "type": "enum",
  "members": {
    "NONE": {
      "target": "smithy.api#Unit",
      "traits": {
        "smithy.api#enumValue": "None"
      }
    },
    "WEEKLY": {
      "target": "smithy.api#Unit",
      "traits": {
        "smithy.api#enumValue": "Weekly"
      }
    }
  },
  "MONTHLY": {
    "target": "smithy.api#Unit",
    "traits": {
      "smithy.api#enumValue": "Monthly"
    }
  }
},
"com.amazonaws.licensemanager#ReportContext": {
  "type": "structure",
  "members": {
    "licenseConfigurationArns": {
      "target": "com.amazonaws.licensemanager#ArnList",
      "traits": {
        "smithy.api#documentation": "<p>Amazon Resource Name (ARN) of the license configuration that  
this generator reports on.</p>",
        "smithy.api#required": {}
      }
    }
  }
},

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    "traits": {
      "smithy.api#documentation": "<p>Details of the license configuration that this generator reports on.</p>"
    }
  },
  "com.amazonaws.licensemanager#ReportFrequency": {

"type": "structure",
    "members": {
      "value": {
        "target": "com.amazonaws.licensemanager#Integer",
        "traits": {
          "smithy.api#documentation": "<p>Number of times within the frequency period that a report is
generated. \n      The only supported value is <code>1</code>.</p>"
        }
      },
      "period": {
        "target": "com.amazonaws.licensemanager#ReportFrequencyType",
        "traits": {
          "smithy.api#documentation": "<p>Time period between each report. The period can be daily, weekly,
or monthly.</p>"
        }
      }
    },
    "traits": {
      "smithy.api#documentation": "<p>Details about how frequently reports are generated.</p>"
    }
  },
  "com.amazonaws.licensemanager#ReportFrequencyType": {
    "type": "enum",
    "members":
  {
    "DAY": {
      "target": "smithy.api#Unit",
      "traits": {
        "smithy.api#enumValue": "DAY"
      }
    },
    "WEEK": {
      "target": "smithy.api#Unit",
      "traits": {
        "smithy.api#enumValue": "WEEK"
      }
    },
    "MONTH": {
      "target": "smithy.api#Unit",
      "traits": {
        "smithy.api#enumValue": "MONTH"
      }
    }
  }
}

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    }
  },
  "com.amazonaws.licensemanager#ReportGenerator": {
    "type": "structure",
    "members": {
      "ReportGeneratorName": {
        "target": "com.amazonaws.licensemanager#String",
        "traits": {
          "smithy.api#documentation": "<p>Name of the report generator.</p>"
        }
      },
      "ReportType": {
        "target": "com.amazonaws.licensemanager#ReportTypeList",
        "traits": {
          "smithy.api#documentation": "<p>Type of reports that are generated.</p>"
        }
      },
      "ReportContext": {
        "target": "com.amazonaws.licensemanager#ReportContext",
        "traits": {
          "smithy.api#documentation": "<p>License configuration type for this generator.</p>"
        }
      },
      "ReportFrequency": {
        "target": "com.amazonaws.licensemanager#ReportFrequency",
        "traits": {
          "smithy.api#documentation": "<p>Details about how frequently reports are generated.</p>"
        }
      },
      "LicenseManagerReportGeneratorArn": {
        "target": "com.amazonaws.licensemanager#String",
        "traits": {
          "smithy.api#documentation": "<p>Amazon Resource Name (ARN) of the report generator.</p>"
        }
      },
      "LastRunStatus": {
        "target": "com.amazonaws.licensemanager#String",
        "traits": {
          "smithy.api#documentation": "<p>Status of the last report generation attempt.</p>"
        }
      },
      "LastRunFailureReason": {
        "target": "com.amazonaws.licensemanager#String",
        "traits": {
          "smithy.api#documentation": "<p>Failure message for the last report generation attempt.</p>"
        }
      }
    }
  }
}

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    },
    "LastReportGenerationTime": {
      "target": "com.amazonaws.licensemanager#String",
      "traits": {
        "smithy.api#documentation": "<p>Time
the last report was generated at.</p>"
      }
    },
    "ReportCreatorAccount": {
      "target": "com.amazonaws.licensemanager#String",
      "traits": {
        "smithy.api#documentation": "<p>The Amazon Web Services account ID used to create the report
generator.</p>"
      }
    },
    "Description": {
      "target": "com.amazonaws.licensemanager#String",
      "traits": {
        "smithy.api#documentation": "<p>Description of the report generator.</p>"
      }
    },
    "S3Location": {
      "target": "com.amazonaws.licensemanager#S3Location",
      "traits": {
        "smithy.api#documentation": "<p>Details of the S3 bucket that report generator reports are published
to.</p>"
      }
    },
    "CreateTime": {
      "target": "com.amazonaws.licensemanager#String",
      "traits": {
        "smithy.api#documentation": "<p>Time the report was created.</p>"
      }
    },
    "Tags": {
      "target": "com.amazonaws.licensemanager#TagList",
      "traits": {
        "smithy.api#documentation": "<p>Tags associated with the report generator.</p>"
      }
    },
    "traits": {
      "smithy.api#documentation": "<p>Describe the details of a report generator.</p>"
    },
    "com.amazonaws.licensemanager#ReportGeneratorList": {
      "type": "list",

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    "member": {
      "target": "com.amazonaws.licensemanager#ReportGenerator"
    }
  },
  "com.amazonaws.licensemanager#ReportGeneratorName": {
    "type": "string",

"traits": {
  "smithy.api#length": {
    "min": 1,
    "max": 100
  }
}
},
"com.amazonaws.licensemanager#ReportType": {
  "type": "enum",
  "members": {
    "LICENSE_CONFIGURATION_SUMMARY_REPORT": {
      "target": "smithy.api#Unit",
      "traits": {
        "smithy.api#enumValue": "LicenseConfigurationSummaryReport"
      }
    },
    "LICENSE_CONFIGURATION_USAGE_REPORT": {
      "target": "smithy.api#Unit",
      "traits": {
        "smithy.api#enumValue": "LicenseConfigurationUsageReport"
      }
    }
  }
},
"com.amazonaws.licensemanager#ReportTypeList": {
  "type": "list",
  "member": {
    "target": "com.amazonaws.licensemanager#ReportType"
  }
}
},
"com.amazonaws.licensemanager#ResourceInventory": {
  "type": "structure",
  "members": {
    "ResourceId": {
      "target": "com.amazonaws.licensemanager#String",
      "traits": {
        "smithy.api#documentation": "<p>ID of the resource.</p>"
      }
    }
  },
  "ResourceType": {

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    "target": "com.amazonaws.licensemanager#ResourceType",
    "traits": {
      "smithy.api#documentation": "<p>Type of resource.</p>"
    }
  },
  "ResourceArn": {
    "target": "com.amazonaws.licensemanager#String",
    "traits": {
      "smithy.api#documentation": "<p>Amazon Resource Name (ARN) of the resource.</p>"
    }
  },
  "Platform": {
    "target": "com.amazonaws.licensemanager#String",
    "traits": {
      "smithy.api#documentation": "<p>Platform of the resource.</p>"
    }
  },
  "PlatformVersion": {
    "target": "com.amazonaws.licensemanager#String",
    "traits": {
      "smithy.api#documentation": "<p>Platform version of the resource in the inventory.</p>"
    }
  },
  "ResourceOwningAccountId": {
    "target": "com.amazonaws.licensemanager#String",
    "traits": {
      "smithy.api#documentation": "<p>ID of the account that owns the resource.</p>"
    }
  },
  "traits": {
    "smithy.api#documentation": "<p>Details about a resource.</p>"
  }
},
"com.amazonaws.licensemanager#ResourceInventoryList": {
  "type": "list",
  "member": {
    "target": "com.amazonaws.licensemanager#ResourceInventory"
  }
},
"com.amazonaws.licensemanager#ResourceLimitExceededException": {
  "type": "structure",
  "members": {
    "Message": {
      "target": "com.amazonaws.licensemanager#Message"
    }
  }
},
"traits": {

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    "aws.protocols#awsQueryError": {
      "code": "ResourceLimitExceeded",
      "httpResponseCode": 400
    },
    "smithy.api#documentation": "<p>Your resource limits have been exceeded.</p>",
    "smithy.api#error": "client",
    "smithy.api#httpError": 400
  }
},
"com.amazonaws.licensemanager#ResourceNotFoundException": {
  "type": "structure",
  "members": {
    "Message": {
      "target": "com.amazonaws.licensemanager#Message"
    }
  },
  "traits": {
    "aws.protocols#awsQueryError": {
      "code": "InvalidResource.NotFound",
      "httpResponseCode": 400
    },
    "smithy.api#documentation": "<p>The resource cannot be found.</p>",
    "smithy.api#error": "client",
    "smithy.api#httpError": 400
  }
},
"com.amazonaws.licensemanager#ResourceType": {
  "type": "enum",
  "members": {
    "EC2_INSTANCE": {
      "target": "smithy.api#Unit",
      "traits": {
        "smithy.api#enumValue": "EC2_INSTANCE"
      }
    },
    "EC2_HOST": {
      "target": "smithy.api#Unit",
      "traits": {
        "smithy.api#enumValue": "EC2_HOST"
      }
    },
    "EC2_AMI": {
      "target": "smithy.api#Unit",
      "traits": {
        "smithy.api#enumValue": "EC2_AMI"
      }
    },
    "RDS": {

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        "target": "smithy.api#Unit",
        "traits": {
            "smithy.api#enumValue": "RDS"
        }
    },
    "SYSTEMS_MANAGER_MANAGED_INSTANCE": {
        "target": "smithy.api#Unit",
        "traits": {
            "smithy.api#enumValue": "SYSTEMS_MANAGER_MANAGED_INSTANCE"
        }
    }
},
"com.amazonaws.licensemanager#S3Location": {
    "type": "structure",
    "members": {
        "bucket": {
            "target": "com.amazonaws.licensemanager#String",
            "traits": {
                "smithy.api#documentation": "<p>Name of the S3 bucket reports are published
to.</p>"
            }
        },
        "keyPrefix": {
            "target": "com.amazonaws.licensemanager#String",
            "traits": {
                "smithy.api#documentation": "<p>Prefix of the S3 bucket reports are published to.</p>"
            }
        }
    },
    "traits": {
        "smithy.api#documentation": "<p>Details of the S3 bucket that report generator reports are published
to.</p>"
    }
},
"com.amazonaws.licensemanager#ServerInternalException": {
    "type": "structure",
    "members": {
        "Message": {
            "target": "com.amazonaws.licensemanager#Message"
        }
    },
    "traits": {
        "aws.protocols#awsQueryError": {
            "code": "InternalServerError",
            "httpResponseCode": 500
        },
        "smithy.api#documentation":

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"<p>The server experienced an internal error. Try again.</p>",
  "smithy.api#error": "server",
  "smithy.api#httpError": 500
}
},
"com.amazonaws.licensemanager#SignedToken": {
  "type": "string",
  "traits": {
    "smithy.api#length": {
      "min": 4096
    }
  }
},
"com.amazonaws.licensemanager#StatusReasonMessage": {
  "type": "string",
  "traits": {
    "smithy.api#length": {
      "min": 0,
      "max": 400
    },
    "smithy.api#pattern": "^[\\s\\S]+$"
  }
},
"com.amazonaws.licensemanager#String": {
  "type": "string"
},
"com.amazonaws.licensemanager#StringList": {
  "type": "list",
  "member": {
    "target": "com.amazonaws.licensemanager#String"
  }
},
"com.amazonaws.licensemanager#Tag": {
  "type": "structure",
  "members": {
    "Key": {
      "target": "com.amazonaws.licensemanager#String",
      "traits": {
        "smithy.api#documentation": "<p>The tag key.</p>"
      }
    },
    "Value": {
      "target": "com.amazonaws.licensemanager#String",
      "traits": {
        "smithy.api#documentation": "<p>The tag value.</p>"
      }
    }
  }
}

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    },
    "traits": {
      "smithy.api#documentation": "<p>Details about the tags for a resource. For more information about
tagging support in\n      License Manager, see the <a href=\"https://docs.aws.amazon.com/license-
manager/latest/APIReference/API_TagResource.html\">TagResource</a> operation.</p>"
    }
  },
  "com.amazonaws.licensemanager#TagKeyList":
{
  "type": "list",
  "member": {
    "target": "com.amazonaws.licensemanager#String"
  }
},
  "com.amazonaws.licensemanager#TagList": {
    "type": "list",
    "member": {
      "target": "com.amazonaws.licensemanager#Tag"
    }
  },
  "com.amazonaws.licensemanager#TagResource": {
    "type": "operation",
    "input": {
      "target": "com.amazonaws.licensemanager#TagResourceRequest"
    },
    "output": {
      "target": "com.amazonaws.licensemanager#TagResourceResponse"
    },
    "errors": [
      {
        "target": "com.amazonaws.licensemanager#AccessDeniedException"
      },
      {
        "target": "com.amazonaws.licensemanager#AuthorizationException"
      },
      {
        "target": "com.amazonaws.licensemanager#InvalidParameterValueException"
      },
      {
        "target": "com.amazonaws.licensemanager#RateLimitExceededException"
      },
      {
        "target": "com.amazonaws.licensemanager#ServerInternalException"
      }
    ],
    "traits": {
      "smithy.api#documentation": "<p>Adds the specified tags to the specified resource. The following
resources support\n      tagging in License Manager:</p>\n      <ul>\n        <li>\n          <p>Licenses</p>\n

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        </li>\n        <li>\n        <p>Grants</p>\n        </li>\n        <li>\n        <p>License
configurations</p>\n        </li>\n        <li>\n        <p>Report generators</p>\n        </li>\n        </ul>"
    }
},
"com.amazonaws.licensemanager#TagResourceRequest": {
    "type": "structure",
    "members": {
        "ResourceArn":
    {
        "target": "com.amazonaws.licensemanager#String",
        "traits": {
            "smithy.api#documentation": "<p>Amazon Resource Name (ARN) of the resource. The following
examples provide an example\n        ARN for each supported resource in License Manager:</p>\n        <ul>\n
<li>\n        <p>Licenses -\n        <code>arn:aws:license-manager::111122223333:license:l-
EXAMPLE2da7646d6861033667f20e895</code>\n        </p>\n        </li>\n        <li>\n        <p>Grants
-\n        <code>arn:aws:license-manager::111122223333:grant:g-
EXAMPLE7b19f4a0ab73679b0beb52707</code>\n        </p>\n        </li>\n        <li>\n
<p>License configurations -\n        <code>arn:aws:license-manager:us-east-1:111122223333:license-
configuration:lic-EXAMPLE6a788d4c8acd4264ff0ecf2ed2d</code>\n        </p>\n        </li>\n        <li>\n
<p>Report generators -\n        <code>arn:aws:license-manager:us-east-1:111122223333:report-
generator:r-EXAMPLE825b4a4f8fe5a3e0c88824e5fc6</code>\n        </p>\n        </li>\n        </ul>",
            "smithy.api#required": {}
        }
    },
    "Tags": {
        "target": "com.amazonaws.licensemanager#TagList",
        "traits": {
            "smithy.api#documentation": "<p>One or more tags.</p>",
            "smithy.api#required": {}
        }
    }
},
"traits": {
    "smithy.api#input": {}
}
},
"com.amazonaws.licensemanager#TagResourceResponse": {
    "type": "structure",
    "members": {},
    "traits": {
        "smithy.api#output": {}
    }
},
"com.amazonaws.licensemanager#TokenData": {
    "type": "structure",
    "members": {
        "TokenId": {

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        "target": "com.amazonaws.licensemanager#String",
        "traits": {
            "smithy.api#documentation": "<p>Token ID.</p>"
        }
    },
    "TokenType": {
        "target": "com.amazonaws.licensemanager#String",
        "traits": {
            "smithy.api#documentation": "<p>Type of token generated. The supported value is
<code>REFRESH_TOKEN</code>.</p>"
        }
    },
    "LicenseArn": {
        "target": "com.amazonaws.licensemanager#String",
        "traits": {
            "smithy.api#documentation": "<p>Amazon Resource Name (ARN) of the license.</p>"
        }
    },
    "ExpirationTime": {
        "target": "com.amazonaws.licensemanager#ISO8601DateTime",
        "traits": {
            "smithy.api#documentation": "<p>Token expiration time, in ISO8601-UTC format.</p>"
        }
    },
    "TokenProperties": {
        "target": "com.amazonaws.licensemanager#MaxSize3StringList",
        "traits": {
            "smithy.api#documentation": "<p>Data specified by the caller.</p>"
        }
    },
    "RoleArns": {
        "target": "com.amazonaws.licensemanager#ArnList",
        "traits": {
            "smithy.api#documentation": "<p>Amazon Resource Names (ARN) of the roles included in the
token.</p>"
        }
    },
    "Status": {
        "target": "com.amazonaws.licensemanager#String",
        "traits": {
            "smithy.api#documentation": "<p>Token status. The possible values are
<code>AVAILABLE</code> and <code>DELETED</code>.</p>"
        }
    },
    "traits": {
        "smithy.api#documentation": "<p>Describes a token.</p>"
    }
}

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    }
  },
  "com.amazonaws.licensemanager#TokenList": {
    "type": "list",
    "member": {
      "target": "com.amazonaws.licensemanager#TokenData"
    }
  },
  "com.amazonaws.licensemanager#TokenString": {
    "type": "string",
    "traits": {
      "smithy.api#length": {
        "min": 0,
        "max": 4096
      },
      "smithy.api#pattern": "^\\S+$"
    }
  },
  "com.amazonaws.licensemanager#TokenType": {
    "type": "enum",
    "members": {
      "REFRESH_TOKEN": {
        "target": "smithy.api#Unit",
        "traits": {
          "smithy.api#enumValue": "REFRESH_TOKEN"
        }
      }
    }
  },
  "com.amazonaws.licensemanager#UnsupportedDigitalSignatureMethodException": {
    "type": "structure",
    "members": {
      "Message": {
        "target": "com.amazonaws.licensemanager#Message"
      }
    },
    "traits": {
      "smithy.api#documentation": "<p>The digital signature method is unsupported. Try your request again.</p>",
      "smithy.api#error": "client",
      "smithy.api#httpError": 400
    }
  },
  "com.amazonaws.licensemanager#UntagResource": {
    "type": "operation",
    "input": {
      "target": "com.amazonaws.licensemanager#UntagResourceRequest"
    }
  }
}

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    },
    "output": {
      "target": "com.amazonaws.licensemanager#UntagResourceResponse"
    },
    "errors": [
      {
        "target": "com.amazonaws.licensemanager#AccessDeniedException"
      },
      {
        "target": "com.amazonaws.licensemanager#AuthorizationException"
      },
      {
        "target": "com.amazonaws.licensemanager#InvalidParameterValueException"
      },
      {
        "target": "com.amazonaws.licensemanager#RateLimitExceededException"
      },
      {
        "target": "com.amazonaws.licensemanager#ServerInternalException"
      }
    ],
    "traits": {
      "smithy.api#documentation": "<p>Removes the specified tags from the specified resource.</p>"
    }
  },
  "com.amazonaws.licensemanager#UntagResourceRequest": {
    "type": "structure",
    "members": {
      "ResourceArn": {
        "target": "com.amazonaws.licensemanager#String",
        "traits": {
          "smithy.api#documentation":
            "<p>Amazon Resource Name (ARN) of the resource.</p>",
          "smithy.api#required": {}
        }
      },
      "TagKeys": {
        "target": "com.amazonaws.licensemanager#TagKeyList",
        "traits": {
          "smithy.api#documentation": "<p>Keys identifying the tags to remove.</p>",
          "smithy.api#required": {}
        }
      }
    },
    "traits": {
      "smithy.api#input": {}
    }
  },

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```

"com.amazonaws.licensemanager#UntagResourceResponse": {
  "type": "structure",
  "members": {},
  "traits": {
    "smithy.api#output": {}
  }
},
"com.amazonaws.licensemanager#UpdateLicenseConfiguration": {
  "type": "operation",
  "input": {
    "target": "com.amazonaws.licensemanager#UpdateLicenseConfigurationRequest"
  },
  "output": {
    "target": "com.amazonaws.licensemanager#UpdateLicenseConfigurationResponse"
  },
  "errors": [
    {
      "target": "com.amazonaws.licensemanager#AccessDeniedException"
    },
    {
      "target": "com.amazonaws.licensemanager#AuthorizationException"
    },
    {
      "target": "com.amazonaws.licensemanager#ConflictException"
    },
    {
      "target": "com.amazonaws.licensemanager#InvalidParameterValueException"
    },
    {
      "target": "com.amazonaws.licensemanager#RateLimitExceededException"
    },
    {
      "target": "com.amazonaws.licensemanager#ResourceLimitExceededException"
    },
    {
      "target": "com.amazonaws.licensemanager#ServerInternalException"
    }
  ],
  "traits": {
    "smithy.api#documentation": "<p>Modifies the attributes of an existing license configuration.</p>"
  }
},
"com.amazonaws.licensemanager#UpdateLicenseConfigurationRequest": {
  "type": "structure",
  "members": {
    "LicenseConfigurationArn": {
      "target": "com.amazonaws.licensemanager#String",
      "traits": {

```

```

        "smithy.api#documentation": "<p>Amazon Resource Name (ARN) of the license
configuration.</p>",
        "smithy.api#required": {}
    },
    "LicenseConfigurationStatus": {
        "target": "com.amazonaws.licensemanager#LicenseConfigurationStatus",
        "traits": {
            "smithy.api#documentation": "<p>New status of the license configuration.</p>"
        }
    },
    "LicenseRules": {
        "target": "com.amazonaws.licensemanager#StringList",
        "traits": {
            "smithy.api#documentation": "<p>New license rule. The only rule that you can add after you create a
license\n    configuration is licenseAffinityToHost.</p>"
        }
    },
    "LicenseCount": {
        "target": "com.amazonaws.licensemanager#BoxLong",
        "traits": {
            "smithy.api#documentation": "<p>New number of licenses managed by the license
configuration.</p>"
        }
    },
    "LicenseCountHardLimit": {
        "target": "com.amazonaws.licensemanager#BoxBoolean",
        "traits": {
            "smithy.api#documentation": "<p>New hard limit of the number of available licenses.</p>"
        }
    },
    "Name": {
        "target": "com.amazonaws.licensemanager#String",
        "traits": {
            "smithy.api#documentation": "<p>New name of the license configuration.</p>"
        }
    },
    "Description": {
        "target": "com.amazonaws.licensemanager#String",
        "traits": {
            "smithy.api#documentation": "<p>New description of the license configuration.</p>"
        }
    },
    "ProductInformationList": {
        "target": "com.amazonaws.licensemanager#ProductInformationList",
        "traits": {

```

```

        "smithy.api#documentation": "<p>New product information.</p>"
    }
},
"DisassociateWhenNotFound": {
    "target": "com.amazonaws.licensemanager#BoxBoolean",
    "traits": {

"smithy.api#documentation": "<p>When true, disassociates a resource when software is uninstalled.</p>"
    }
}
},
"traits": {
    "smithy.api#input": {}
}
},
"com.amazonaws.licensemanager#UpdateLicenseConfigurationResponse": {
    "type": "structure",
    "members": {},
    "traits": {
        "smithy.api#output": {}
    }
},
"com.amazonaws.licensemanager#UpdateLicenseManagerReportGenerator": {
    "type": "operation",
    "input": {
        "target": "com.amazonaws.licensemanager#UpdateLicenseManagerReportGeneratorRequest"
    },
    "output": {
        "target": "com.amazonaws.licensemanager#UpdateLicenseManagerReportGeneratorResponse"
    },
    "errors": [
        {
            "target": "com.amazonaws.licensemanager#AccessDeniedException"

        },
        {
            "target": "com.amazonaws.licensemanager#AuthorizationException"
        },
        {
            "target": "com.amazonaws.licensemanager#InvalidParameterValueException"
        },
        {
            "target": "com.amazonaws.licensemanager#RateLimitExceededException"
        },
        {
            "target": "com.amazonaws.licensemanager#ResourceLimitExceededException"
        },
        {

```

```

        "target": "com.amazonaws.licensemanager#ResourceNotFoundException"
    },
    {
        "target": "com.amazonaws.licensemanager#ServerInternalException"
    },
    {
        "target": "com.amazonaws.licensemanager#ValidationException"
    }
],
"traits": {
    "smithy.api#documentation": "<p>Updates a report generator.</p>\n
    <p>After you make changes to a report generator, it starts generating new reports within 60 minutes of being
    updated.</p>"
},
},
"com.amazonaws.licensemanager#UpdateLicenseManagerReportGeneratorRequest": {
    "type": "structure",
    "members": {
        "LicenseManagerReportGeneratorArn": {
            "target": "com.amazonaws.licensemanager#String",
            "traits": {
                "smithy.api#documentation": "<p>Amazon Resource Name (ARN) of the report generator to
                update.</p>",
                "smithy.api#required": {}
            }
        },
        "ReportGeneratorName": {
            "target": "com.amazonaws.licensemanager#ReportGeneratorName",
            "traits": {
                "smithy.api#documentation": "<p>Name of the report generator.</p>",
                "smithy.api#required": {}
            }
        }
    },
    "Type": {
        "target": "com.amazonaws.licensemanager#ReportTypeList",
        "traits": {
            "smithy.api#documentation": "<p>Type of reports to generate. The following report types are
            supported:</p>\n
            <ul>\n
            <li>\n
            <p>License configuration report - Reports the number and
            details of consumed licenses for a license configuration.</p>\n
            </li>\n
            <li>\n
            <p>Resource
            report - Reports the tracked licenses and resource consumption for a license configuration.</p>\n
            </li>\n
            </ul>",
            "smithy.api#required": {}
        }
    },
    "ReportContext": {
        "target": "com.amazonaws.licensemanager#ReportContext",
        "traits": {

```

```

        "smithy.api#documentation": "<p>The report context.</p>",
        "smithy.api#required":
    {}

    },
    "ReportFrequency": {
        "target": "com.amazonaws.licensemanager#ReportFrequency",
        "traits": {
            "smithy.api#documentation": "<p>Frequency by which reports are generated.</p>",
            "smithy.api#required": {}
        }
    },
    "ClientToken": {
        "target": "com.amazonaws.licensemanager#ClientRequestToken",
        "traits": {
            "smithy.api#documentation": "<p>Unique, case-sensitive identifier that you provide to ensure the
idempotency of the request.</p>",
            "smithy.api#required": {}
        }
    },
    "Description": {
        "target": "com.amazonaws.licensemanager#String",
        "traits": {
            "smithy.api#documentation": "<p>Description of the report
generator.</p>"
        }
    },
    "traits": {
        "smithy.api#input": {}
    }
},
"com.amazonaws.licensemanager#UpdateLicenseManagerReportGeneratorResponse": {
    "type": "structure",
    "members": {},
    "traits": {
        "smithy.api#output": {}
    }
},
"com.amazonaws.licensemanager#UpdateLicenseSpecificationsForResource": {
    "type": "operation",
    "input": {
        "target": "com.amazonaws.licensemanager#UpdateLicenseSpecificationsForResourceRequest"
    },
    "output": {
        "target": "com.amazonaws.licensemanager#UpdateLicenseSpecificationsForResourceResponse"
    },
    "errors": [

```

```

    {
      "target": "com.amazonaws.licensemanager#AccessDeniedException"
    },
    {
      "target": "com.amazonaws.licensemanager#AuthorizationException"
    },
    {
      "target": "com.amazonaws.licensemanager#ConflictException"
    },
    {
      "target": "com.amazonaws.licensemanager#InvalidParameterValueException"
    },
    {
      "target": "com.amazonaws.licensemanager#InvalidResourceStateException"
    },
    {
      "target": "com.amazonaws.licensemanager#LicenseUsageException"
    },
    {
      "target": "com.amazonaws.licensemanager#RateLimitExceededException"
    },
    {
      "target": "com.amazonaws.licensemanager#ServerInternalException"
    }
  ],
  "traits": {
    "smithy.api#documentation": "<p>Adds or removes the specified license configurations for the specified Amazon Web Services resource.</p>\n    <p>You can update the license specifications of AMIs, instances, and hosts.\n    You cannot update the license specifications for launch templates and CloudFormation templates, \n    as they send license configurations to the operation that creates the resource.</p>"
  },
  "com.amazonaws.licensemanager#UpdateLicenseSpecificationsForResourceRequest": {
    "type": "structure",
    "members": {
      "ResourceArn": {
        "target": "com.amazonaws.licensemanager#String",
        "traits": {
          "smithy.api#documentation": "<p>Amazon Resource Name (ARN) of the Amazon Web Services resource.</p>",
          "smithy.api#required": {}
        }
      }
    },
    "AddLicenseSpecifications": {
      "target": "com.amazonaws.licensemanager#LicenseSpecifications",
      "traits": {
        "smithy.api#documentation":

```



```

"<p>ARNs of the license configurations to add.</p>"
    }
  },
  "RemoveLicenseSpecifications": {
    "target": "com.amazonaws.licensemanager#LicenseSpecifications",
    "traits": {
      "smithy.api#documentation": "<p>ARNs of the license configurations to remove.</p>"
    }
  }
},
"traits": {
  "smithy.api#input": {}
}
},
"com.amazonaws.licensemanager#UpdateLicenseSpecificationsForResourceResponse": {
  "type": "structure",
  "members": {},
  "traits": {
    "smithy.api#output": {}
  }
},
"com.amazonaws.licensemanager#UpdateServiceSettings": {
  "type": "operation",
  "input": {
    "target": "com.amazonaws.licensemanager#UpdateServiceSettingsRequest"
  },
  "output":
{
  "target": "com.amazonaws.licensemanager#UpdateServiceSettingsResponse"
},
"errors": [
  {
    "target": "com.amazonaws.licensemanager#AccessDeniedException"
  },
  {
    "target": "com.amazonaws.licensemanager#AuthorizationException"
  },
  {
    "target": "com.amazonaws.licensemanager#InvalidParameterValueException"
  },
  {
    "target": "com.amazonaws.licensemanager#RateLimitExceededException"
  },
  {
    "target": "com.amazonaws.licensemanager#ServerInternalException"
  }
],
"traits": {

```

```

    "smithy.api#documentation": "<p>Updates License Manager settings for the current Region.</p>"
  },
  "com.amazonaws.licensemanager#UpdateServiceSettingsRequest": {
    "type": "structure",
    "members": {
      "S3BucketArn": {
        "target": "com.amazonaws.licensemanager#String",
        "traits": {
          "smithy.api#documentation": "<p>Amazon Resource Name (ARN) of the Amazon S3 bucket where the License Manager information is stored.</p>"
        }
      },
      "SnsTopicArn": {
        "target": "com.amazonaws.licensemanager#String",
        "traits": {
          "smithy.api#documentation": "<p>Amazon Resource Name (ARN) of the Amazon SNS topic used for License Manager alerts.</p>"
        }
      },
      "OrganizationConfiguration": {
        "target": "com.amazonaws.licensemanager#OrganizationConfiguration",
        "traits": {
          "smithy.api#documentation": "<p>Enables integration with Organizations for cross-account discovery.</p>"
        }
      },
      "EnableCrossAccountsDiscovery": {
        "target": "com.amazonaws.licensemanager#BoxBoolean",
        "traits": {
          "smithy.api#documentation": "<p>Activates cross-account discovery.</p>"
        }
      }
    },
    "traits": {
      "smithy.api#input": {}
    }
  },
  "com.amazonaws.licensemanager#UpdateServiceSettingsResponse": {
    "type": "structure",
    "members": {},
    "traits": {
      "smithy.api#output": {}
    }
  },
  "com.amazonaws.licensemanager#UsageOperation": {
    "type": "string",

```

```

    "traits": {
      "smithy.api#length": {
        "min": 0,
        "max": 50
      }
    },
    "com.amazonaws.licensemanager#ValidationException": {
      "type": "structure",
      "members": {
        "Message": {
          "target": "com.amazonaws.licensemanager#Message"
        }
      },
      "traits": {
        "smithy.api#documentation": "<p>The provided input is not valid. Try your request again.</p>",
        "smithy.api#error": "client",
        "smithy.api#httpError": 400
      }
    }
  }
}

```

CheckoutBorrowLicense

Initialize stack step

spanInitializeStart

RegisterServiceMetadata

legacyEndpointContextSetter

SetLogger

OperationInputValidation

spanInitializeEnd

Serialize stack step

spanBuildRequestStart

setOperationInput

ResolveEndpoint

OperationSerializer

Build stack step

ClientRequestID

ComputeContentLength

SetCredentialSourceMiddleware

UserAgent

AddTimeOffsetMiddleware

RecursionDetection

spanBuildRequestEnd

Finalize stack step

spanRetryLoop

Retry

RetryMetricsHeader

ResolveAuthScheme

GetIdentity
ResolveEndpointV2
disableHTTPS
ComputePayloadHash
setLegacyContextSigningOptions
Signing
Deserialize stack step
AddRawResponseToMetadata
ErrorCloseResponseBody
CloseResponseBody
ResponseErrorWrapper
RequestIDRetriever
OperationDeserializer
AddTimeOffsetMiddleware
RecordResponseTiming
RequestResponseLogger
CheckInLicense
Initialize stack step
spanInitializeStart
RegisterServiceMetadata
legacyEndpointContextSetter
SetLogger
OperationInputValidation
spanInitializeEnd
Serialize stack step
spanBuildRequestStart
setOperationInput
ResolveEndpoint
OperationSerializer
Build stack step
ClientRequestID
ComputeContentLength
SetCredentialSourceMiddleware
UserAgent
AddTimeOffsetMiddleware
RecursionDetection
spanBuildRequestEnd
Finalize stack step
spanRetryLoop
Retry
RetryMetricsHeader
ResolveAuthScheme
GetIdentity
ResolveEndpointV2
disableHTTPS
ComputePayloadHash
setLegacyContextSigningOptions
Signing

```

Deserialize stack step
AddRawResponseToMetadata
ErrorCloseResponseBody
CloseResponseBody
ResponseErrorWrapper
RequestIDRetriever
OperationDeserializer
AddTimeOffsetMiddleware
RecordResponseTiming
RequestResponseLogger
// Code generated by smithy-go-codegen DO NOT EDIT.

package licensemanager

import (
    "context"
    "fmt"
    awsmiddleware "github.com/aws/aws-sdk-go-v2/aws/middleware"
    "github.com/aws/aws-sdk-go-v2/service/licensemanager/types"
    "github.com/aws/smithy-go/middleware"
    smithyhttp "github.com/aws/smithy-go/transport/http"
)

// Gets detailed information about the specified license.
func (c *Client) GetLicense(ctx context.Context, params *GetLicenseInput, optFns ...func(*Options))
(*GetLicenseOutput, error) {
    if params == nil {
        params = &GetLicenseInput{}
    }

    result, metadata, err := c.invokeOperation(ctx, "GetLicense", params, optFns,
c.addOperationGetLicenseMiddlewares)
    if err != nil {
        return nil, err
    }

    out := result.(*GetLicenseOutput)
    out.ResultMetadata = metadata
    return out, nil
}

type GetLicenseInput struct {

    // Amazon Resource Name (ARN) of the license.
    //
    // This member is required.
    LicenseArn *string

```

```

// License version.
Version *string

noSmithyDocumentSerde
}

type
GetLicenseOutput struct {

// License details.
License *types.License

// Metadata pertaining to the operation's result.
ResultMetadata middleware.Metadata

noSmithyDocumentSerde
}

func (c *Client) addOperationGetLicenseMiddlewares(stack *middleware.Stack, options Options) (err error) {
if err := stack.Serialize.Add(&setOperationInputMiddleware{}, middleware.After); err != nil {
return err
}
err = stack.Serialize.Add(&awsAwsjson11_serializeOpGetLicense{}, middleware.After)
if err != nil {
return err
}
err = stack.Deserialize.Add(&awsAwsjson11_deserializeOpGetLicense{}, middleware.After)
if err != nil {
return err
}
if err := addProtocolFinalizerMiddlewares(stack, options, "GetLicense"); err != nil {
return fmt.Errorf("add protocol finalizers: %v", err)
}

if err = addLegacyEndpointContextSetter(stack, options); err != nil {
return err
}
if err = addSetLoggerMiddleware(stack, options); err != nil {
return err
}
if err = addClientRequestID(stack); err
!= nil {
return err
}
if err = addComputeContentLength(stack); err != nil {
return err
}
if err = addResolveEndpointMiddleware(stack, options); err != nil {

```

```

    return err
}
if err = addComputePayloadSHA256(stack); err != nil {
    return err
}
if err = addRetry(stack, options); err != nil {
    return err
}
if err = addRawResponseToMetadata(stack); err != nil {
    return err
}
if err = addRecordResponseTiming(stack); err != nil {
    return err
}
if err = addSpanRetryLoop(stack, options); err != nil {
    return err
}
if err = addClientUserAgent(stack, options); err != nil {
    return err
}
if err = smithyhttp.AddErrorCloseResponseBodyMiddleware(stack); err != nil {
    return err
}
if err = smithyhttp.AddCloseResponseBodyMiddleware(stack); err != nil {
    return err
}
if err = addSetLegacyContextSigningOptionsMiddleware(stack); err != nil {
    return err
}
if err = addTimeOffsetBuild(stack, c); err != nil {
    return err
}
if err = addUserAgentRetryMode(stack, options);
err != nil {
    return err
}
if err = addCredentialSource(stack, options); err != nil {
    return err
}
if err = addOpGetLicenseValidationMiddleware(stack); err != nil {
    return err
}
if err = stack.Initialize.Add(newServiceMetadataMiddleware_opGetLicense(options.Region), middleware.Before);
err != nil {
    return err
}
if err = addRecursionDetection(stack); err != nil {
    return err
}

```

```

    }
    if err = addRequestIDRetrieverMiddleware(stack); err != nil {
        return err
    }
    if err = addResponseErrorMiddleware(stack); err != nil {
        return err
    }
    if err = addRequestResponseLogging(stack, options); err != nil {
        return err
    }
    if err = addDisableHTTPSMiddleware(stack, options); err != nil {
        return err
    }
    if err = addSpanInitializeStart(stack); err != nil {
        return err
    }
    if err = addSpanInitializeEnd(stack); err != nil {
        return err
    }
    if err = addSpanBuildRequestStart(stack); err != nil {
        return err
    }
    if err = addSpanBuildRequestEnd(stack); err != nil {
        return err
    }
    return
    nil
}

func newServiceMetadataMiddleware_opGetLicense(region string) *awsmiddleware.RegisterServiceMetadata {
    return &awsmiddleware.RegisterServiceMetadata{
        Region:    region,
        ServiceID: ServiceID,
        OperationName: "GetLicense",
    }
}

// Code generated by smithy-go-codegen DO NOT EDIT.

package licensemanager

import (
    "context"
    "fmt"
    awsmiddleware "github.com/aws/aws-sdk-go-v2/aws/middleware"
    "github.com/aws/aws-sdk-go-v2/service/licensemanager/types"
    "github.com/aws/smithy-go/middleware"
    smithyhttp "github.com/aws/smithy-go/transport/http"
)

```



```

// Creates a license.
func (c *Client) CreateLicense(ctx context.Context, params *CreateLicenseInput, optFns ...func(*Options))
(*CreateLicenseOutput, error) {
    if params == nil {
        params = &CreateLicenseInput{}
    }

    result, metadata, err := c.invokeOperation(ctx, "CreateLicense", params, optFns,
c.addOperationCreateLicenseMiddlewares)
    if err != nil {
        return nil, err
    }

    out := result.(*CreateLicenseOutput)
    out.ResultMetadata = metadata
    return out, nil
}

type CreateLicenseInput struct {

    // License beneficiary.
    //
    // This member is required.
    Beneficiary *string

    // Unique, case-sensitive identifier that you provide to ensure the idempotency of
    // the request.
    //
    //
    // This member is required.
    ClientToken *string

    // Configuration for consumption of the license. Choose a provisional
    // configuration for workloads running with continuous connectivity. Choose a
    // borrow configuration for workloads with offline usage.
    //
    // This member is required.
    ConsumptionConfiguration *types.ConsumptionConfiguration

    // License entitlements.
    //
    // This member is required.
    Entitlements []types.Entitlement

    // Home Region for the license.
    //
    // This member is required.

```

```

HomeRegion *string

// License issuer.
//
// This member is required.
Issuer *types.Issuer

// License name.
//
// This member is required.
LicenseName *string

// Product name.
//
// This member is required.
ProductName *string

// Product SKU.
//
// This member is required.
ProductSKU *string

// Date and time range during which the license is valid, in ISO8601-UTC format.
//
// This member is required.
Validity *types.DatetimeRange

// Information about
the license.
LicenseMetadata []types.Metadata

// Tags to add to the license. For more information about tagging support in
// License Manager, see the [TagResource]operation.
//
// [TagResource]: https://docs.aws.amazon.com/license-manager/latest/APIReference/API\_TagResource.html
Tags []types.Tag

noSmithyDocumentSerde
}

type CreateLicenseOutput struct {

// Amazon Resource Name (ARN) of the license.
LicenseArn *string

// License status.
Status types.LicenseStatus

```

```

// License version.
Version *string

// Metadata pertaining to the operation's result.
ResultMetadata middleware.Metadata

noSmithyDocumentSerde
}

func (c *Client) addOperationCreateLicenseMiddlewares(stack *middleware.Stack, options Options) (err error) {
    if err := stack.Serialize.Add(&setOperationInputMiddleware{}, middleware.After); err != nil {
        return err
    }
    err = stack.Serialize.Add(&awsAwsjson11_serializeOpCreateLicense{}, middleware.After)
    if err != nil {
        return err
    }
    err = stack.Deserialize.Add(&awsAwsjson11_deserializeOpCreateLicense{},
        middleware.After)
    if err != nil {
        return err
    }
    if err := addProtocolFinalizerMiddlewares(stack, options, "CreateLicense"); err != nil {
        return fmt.Errorf("add protocol finalizers: %v", err)
    }

    if err = addLegacyEndpointContextSetter(stack, options); err != nil {
        return err
    }
    if err = addSetLoggerMiddleware(stack, options); err != nil {
        return err
    }
    if err = addClientRequestID(stack); err != nil {
        return err
    }
    if err = addComputeContentLength(stack); err != nil {
        return err
    }
    if err = addResolveEndpointMiddleware(stack, options); err != nil {
        return err
    }
    if err = addComputePayloadSHA256(stack); err != nil {
        return err
    }
    if err = addRetry(stack, options); err != nil {
        return err
    }
    if err = addRawResponseToMetadata(stack); err != nil {

```

```

return err
}
if err = addRecordResponseTiming(stack); err != nil {
return err
}
if err = addSpanRetryLoop(stack, options); err != nil {
return err
}
if err
= addClientUserAgent(stack, options); err != nil {
return err
}
if err = smithyhttp.AddErrorCloseResponseBodyMiddleware(stack); err != nil {
return err
}
if err = smithyhttp.AddCloseResponseBodyMiddleware(stack); err != nil {
return err
}
if err = addSetLegacyContextSigningOptionsMiddleware(stack); err != nil {
return err
}
if err = addTimeOffsetBuild(stack, c); err != nil {
return err
}
if err = addUserAgentRetryMode(stack, options); err != nil {
return err
}
if err = addCredentialSource(stack, options); err != nil {
return err
}
if err = addOpCreateLicenseValidationMiddleware(stack); err != nil {
return err
}
if err = stack.Initialize.Add(newServiceMetadataMiddleware_opCreateLicense(options.Region),
middleware.Before); err != nil {
return err
}
if err = addRecursionDetection(stack); err != nil {
return err
}
if err = addRequestIDRetrieverMiddleware(stack); err != nil {
return err
}
if err = addResponseErrorMiddleware(stack); err != nil {
return
err
}
if err = addRequestResponseLogging(stack, options); err != nil {

```

```

    return err
}
if err = addDisableHTTPSMiddleware(stack, options); err != nil {
    return err
}
if err = addSpanInitializeStart(stack); err != nil {
    return err
}
if err = addSpanInitializeEnd(stack); err != nil {
    return err
}
if err = addSpanBuildRequestStart(stack); err != nil {
    return err
}
if err = addSpanBuildRequestEnd(stack); err != nil {
    return err
}
return nil
}

```

```

func newServiceMetadataMiddleware_opCreateLicense(region string) *awsmiddleware.RegisterServiceMetadata {
    return &awsmiddleware.RegisterServiceMetadata{
        Region:    region,
        ServiceID: ServiceID,
        OperationName: "CreateLicense",
    }
}

```

AWS SDK for Go

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AssociateLicense

Initialize stack step

spanInitializeStart

RegisterServiceMetadata

legacyEndpointContextSetter

SetLogger

OperationInputValidation

spanInitializeEnd

Serialize stack step

spanBuildRequestStart

setOperationInput

ResolveEndpoint

OperationSerializer

Build stack step

ClientRequestID

ComputeContentLength

SetCredentialSourceMiddleware

UserAgent

```

AddTimeOffsetMiddleware
RecursionDetection
spanBuildRequestEnd
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spanRetryLoop
Retry
RetryMetricsHeader
ResolveAuthScheme
GetIdentity
ResolveEndpointV2
disableHTTPS
ComputePayloadHash
setLegacyContextSigningOptions
Signing
Deserialize stack step
AddRawResponseToMetadata
ErrorCloseResponseBody
CloseResponseBody
ResponseErrorWrapper
RequestIDRetriever
OperationDeserializer
AddTimeOffsetMiddleware
RecordResponseTiming
RequestResponseLogger
// Code generated by smithy-go-codegen DO NOT EDIT.

```

```

package licensemanager

```

```

import (
    "context"
    "fmt"
    awsmiddleware "github.com/aws/aws-sdk-go-v2/aws/middleware"
    "github.com/aws/aws-sdk-go-v2/service/licensemanager/types"
    "github.com/aws/smithy-go/middleware"
    smithyhttp "github.com/aws/smithy-go/transport/http"
)

```

```

// Checks out the specified license for offline use.
func (c *Client) CheckoutBorrowLicense(ctx context.Context, params *CheckoutBorrowLicenseInput, optFns
...func(*Options)) (*CheckoutBorrowLicenseOutput, error) {
    if params == nil {
        params = &CheckoutBorrowLicenseInput{}
    }

    result, metadata, err := c.invokeOperation(ctx, "CheckoutBorrowLicense", params, optFns,
c.addOperationCheckoutBorrowLicenseMiddlewares)
    if err != nil {
        return nil, err
    }
}

```

```

}

out := result.(*CheckoutBorrowLicenseOutput)
out.ResultMetadata = metadata
return out, nil
}

type CheckoutBorrowLicenseInput struct {

    // Unique, case-sensitive identifier that you provide to ensure the idempotency of
    //
    // the request.
    //
    // This member is required.
    ClientToken *string

    // Digital signature method. The possible value is JSON Web Signature (JWS)
    // algorithm PS384. For more information, see [RFC 7518 Digital Signature with RSASSA-PSS].
    //
    // [RFC 7518 Digital Signature with RSASSA-PSS]: https://tools.ietf.org/html/rfc7518#section-3.5
    //
    // This member is required.
    DigitalSignatureMethod types.DigitalSignatureMethod

    // License entitlements. Partial checkouts are not supported.
    //
    // This member is required.
    Entitlements []types.EntitlementData

    // Amazon Resource Name (ARN) of the license. The license must use the borrow
    // consumption configuration.
    //
    // This member is required.
    LicenseArn *string

    // Information about constraints.
    CheckoutMetadata []types.Metadata

    // Node ID.
    NodeId *string

    noSmithyDocumentSerde
}

type CheckoutBorrowLicenseOutput struct {

    // Information about constraints.
    CheckoutMetadata []types.Metadata

```

```

// Allowed license entitlements.
EntitlementsAllowed
[]types.EntitlementData

// Date and time at which the license checkout expires.
Expiration *string

// Date and time at which the license checkout is issued.
IssuedAt *string

// Amazon Resource Name (ARN) of the license.
LicenseArn *string

// License consumption token.
LicenseConsumptionToken *string

// Node ID.
NodeId *string

// Signed token.
SignedToken *string

// Metadata pertaining to the operation's result.
ResultMetadata middleware.Metadata

noSmithyDocumentSerde
}

func (c *Client) addOperationCheckoutBorrowLicenseMiddlewares(stack *middleware.Stack, options Options) (err
error) {
    if err := stack.Serialize.Add(&setOperationInputMiddleware{}, middleware.After); err != nil {
        return err
    }
    err = stack.Serialize.Add(&awsAwsjson11_serializeOpCheckoutBorrowLicense{}, middleware.After)
    if err != nil {
        return err
    }
    err = stack.Deserialize.Add(&awsAwsjson11_deserializeOpCheckoutBorrowLicense{}, middleware.After)
    if err != nil {
        return
    }
    err
}
if err := addProtocolFinalizerMiddlewares(stack, options, "CheckoutBorrowLicense"); err != nil {
    return fmt.Errorf("add protocol finalizers: %v", err)
}

if err = addLegacyEndpointContextSetter(stack, options); err != nil {

```



```

return err
}
if err = addSetLoggerMiddleware(stack, options); err != nil {
return err
}
if err = addClientRequestID(stack); err != nil {
return err
}
if err = addComputeContentLength(stack); err != nil {
return err
}
if err = addResolveEndpointMiddleware(stack, options); err != nil {
return err
}
if err = addComputePayloadSHA256(stack); err != nil {
return err
}
if err = addRetry(stack, options); err != nil {
return err
}
if err = addRawResponseToMetadata(stack); err != nil {
return err
}
if err = addRecordResponseTiming(stack); err != nil {
return err
}
if err = addSpanRetryLoop(stack, options); err != nil {
return err
}
if err = addClientUserAgent(stack, options); err != nil {
return err
}
if err = smithyhttp.AddErrorCloseResponseBodyMiddleware(stack);
err != nil {
return err
}
if err = smithyhttp.AddCloseResponseBodyMiddleware(stack); err != nil {
return err
}
if err = addSetLegacyContextSigningOptionsMiddleware(stack); err != nil {
return err
}
if err = addTimeOffsetBuild(stack, c); err != nil {
return err
}
if err = addUserAgentRetryMode(stack, options); err != nil {
return err
}
}

```

```

if err = addCredentialSource(stack, options); err != nil {
    return err
}
if err = addOpCheckoutBorrowLicenseValidationMiddleware(stack); err != nil {
    return err
}
if err = stack.Initialize.Add(newServiceMetadataMiddleware_opCheckoutBorrowLicense(options.Region),
middleware.Before); err != nil {
    return err
}
if err = addRecursionDetection(stack); err != nil {
    return err
}
if err = addRequestIDRetrieverMiddleware(stack); err != nil {
    return err
}
if err = addResponseErrorMiddleware(stack); err != nil {
    return err
}
if err = addRequestResponseLogging(stack, options);
err != nil {
    return err
}
if err = addDisableHTTPSMiddleware(stack, options); err != nil {
    return err
}
if err = addSpanInitializeStart(stack); err != nil {
    return err
}
if err = addSpanInitializeEnd(stack); err != nil {
    return err
}
if err = addSpanBuildRequestStart(stack); err != nil {
    return err
}
if err = addSpanBuildRequestEnd(stack); err != nil {
    return err
}
return nil
}

```

```

func newServiceMetadataMiddleware_opCheckoutBorrowLicense(region string)
*awsmiddleware.RegisterServiceMetadata {
return &awsmiddleware.RegisterServiceMetadata{
    Region:    region,
    ServiceID: ServiceID,
    OperationName: "CheckoutBorrowLicense",
}
}

```

```

}
{
  "smithy": "2.0",
  "shapes": {
    "com.amazonaws.licensemanagerlinuxsubscriptions#BoxInteger": {
      "type": "integer"
    },
    "com.amazonaws.licensemanagerlinuxsubscriptions#BoxLong": {
      "type": "long"
    },
    "com.amazonaws.licensemanagerlinuxsubscriptions#DeregisterSubscriptionProvider": {
      "type": "operation",
      "input": {
        "target": "com.amazonaws.licensemanagerlinuxsubscriptions#DeregisterSubscriptionProviderRequest"
      },
      "output": {
        "target": "com.amazonaws.licensemanagerlinuxsubscriptions#DeregisterSubscriptionProviderResponse"
      },
      "errors": [
        {
          "target": "com.amazonaws.licensemanagerlinuxsubscriptions#InternalServerErrorException"
        },
        {
          "target": "com.amazonaws.licensemanagerlinuxsubscriptions#ResourceNotFoundException"
        }
      ],
      {
        "target": "com.amazonaws.licensemanagerlinuxsubscriptions#ThrottlingException"
      },
      {
        "target": "com.amazonaws.licensemanagerlinuxsubscriptions#ValidationException"
      }
    ],
    "traits": {
      "smithy.api#documentation": "<p>Remove a third-party subscription provider from the Bring Your Own License (BYOL) subscriptions \n\t\t\tregistered to your account.</p>",
      "smithy.api#http": {
        "code": 200,
        "method": "POST",
        "uri": "/subscription/DeregisterSubscriptionProvider"
      },
      "smithy.api#idempotent": {}
    }
  },
  "com.amazonaws.licensemanagerlinuxsubscriptions#DeregisterSubscriptionProviderRequest": {
    "type": "structure",
    "members": {
      "SubscriptionProviderArn": {

```

```

        "target": "com.amazonaws.licensemanagerlinuxsubscriptions#SubscriptionProviderArn",
        "traits": {
            "smithy.api#documentation": "<p>The Amazon Resource Name (ARN) of the subscription provider
resource to deregister.</p>",
            "smithy.api#required": {}
        }
    },
    "traits": {
        "smithy.api#input": {}
    }
},
"com.amazonaws.licensemanagerlinuxsubscriptions#DeregisterSubscriptionProviderResponse": {
    "type": "structure",
    "members": {},
    "traits": {
        "smithy.api#output": {}
    }
},
"com.amazonaws.licensemanagerlinuxsubscriptions#Filter": {
    "type": "structure",
    "members": {
        "Name": {
            "target": "smithy.api#String",
            "traits": {
                "smithy.api#documentation": "<p>The type of name to filter by.</p>"
            }
        },
        "Values": {
            "target": "com.amazonaws.licensemanagerlinuxsubscriptions#StringList",
            "traits": {
                "smithy.api#documentation": "<p>One or more values for the name to filter by.</p>"
            }
        },
        "Operator": {
            "target": "com.amazonaws.licensemanagerlinuxsubscriptions#Operator",
            "traits": {
                "smithy.api#documentation": "<p>An operator for filtering results.</p>"
            }
        }
    },
    "traits": {
        "smithy.api#documentation": "<p>A filter object that is used to return more specific results from a describe
operation.\n    Filters can be used to match a set of resources by specific criteria.</p>"
    }
},
"com.amazonaws.licensemanagerlinuxsubscriptions#FilterList": {
    "type":

```

```

"list",
  "member": {
    "target": "com.amazonaws.licensemanagerlinuxsubscriptions#Filter"
  }
},
"com.amazonaws.licensemanagerlinuxsubscriptions#GetRegisteredSubscriptionProvider": {
  "type": "operation",
  "input": {
    "target": "com.amazonaws.licensemanagerlinuxsubscriptions#GetRegisteredSubscriptionProviderRequest"
  },
  "output": {
    "target":
"com.amazonaws.licensemanagerlinuxsubscriptions#GetRegisteredSubscriptionProviderResponse"
  },
  "errors": [
    {
      "target": "com.amazonaws.licensemanagerlinuxsubscriptions#InternalServerErrorException"
    },
    {
      "target": "com.amazonaws.licensemanagerlinuxsubscriptions#ResourceNotFoundException"
    },
    {
      "target": "com.amazonaws.licensemanagerlinuxsubscriptions#ThrottlingException"
    },
    {
      "target": "com.amazonaws.licensemanagerlinuxsubscriptions#ValidationException"
    }
  ],
  "traits": {
    "smithy.api#documentation": "<p>Get details for a Bring Your Own License (BYOL) subscription that's
registered to your account.</p>",
    "smithy.api#http": {
      "code": 200,
      "method": "POST",
      "uri": "/subscription/GetRegisteredSubscriptionProvider"
    },
    "smithy.api#idempotent": {}
  }
},
"com.amazonaws.licensemanagerlinuxsubscriptions#GetRegisteredSubscriptionProviderRequest": {
  "type": "structure",
  "members": {
    "SubscriptionProviderArn": {
      "target": "com.amazonaws.licensemanagerlinuxsubscriptions#SubscriptionProviderArn",
      "traits": {
        "smithy.api#documentation":
"<p>The Amazon Resource Name (ARN) of the BYOL registration resource to get details for.</p>",
        "smithy.api#required": {}
      }
    }
  }
}

```

```
    }  
  },  
  "traits": {  
    "smithy.api#input": {}  
  }  
},  
"com.amazonaws.licensemanagerlinuxsubscriptions#GetRegisteredSubscriptionProviderResponse": {  
  "type": "structure",  
  "members": {  
    "SubscriptionProviderArn": {  
      "target": "com.amazonaws.licensemanagerlinuxsubscriptions#SubscriptionProviderArn",  
      "traits": {  
        "smithy.api#documentation": "<p>The Amazon Resource Name (ARN) for the BYOL registration  
resource specified in the request.</p>"  
      }  
    },  
    "SubscriptionProviderSource": {  
      "target": "com.amazonaws.licensemanagerlinuxsubscriptions#SubscriptionProviderSource",  
  
      "traits": {  
        "smithy.api#documentation": "<p>The subscription provider for the BYOL registration resource  
specified \n\t\t\tin the request.</p>"  
      }  
    },  
    "SecretArn": {  
      "target": "com.amazonaws.licensemanagerlinuxsubscriptions#SecretArn",  
      "traits": {  
        "smithy.api#documentation": "<p>The Amazon Resource Name (ARN) of the third-party access  
secret stored in Secrets Manager for the BYOL \n\t\t\tregistration resource specified in the request.</p>"  
      }  
    },  
    "SubscriptionProviderStatus": {  
      "target": "com.amazonaws.licensemanagerlinuxsubscriptions#SubscriptionProviderStatus",  
      "traits": {  
        "smithy.api#documentation": "<p>The status of the Linux subscription provider access token from the  
last \n\t\t\tsuccessful subscription data request.</p>"  
      }  
    },  
    "SubscriptionProviderStatusMessage": {  
      "target": "smithy.api#String",  
      "traits": {  
        "smithy.api#documentation": "<p>The detailed message from your subscription provider token  
status.</p>"  
      }  
    },  
    "LastSuccessfulDataRetrievalTime": {  
      "target": "smithy.api#String",
```

```

    "traits": {
      "smithy.api#documentation": "<p>The timestamp from the last time License Manager retrieved
subscription details \n\t\t\tfrom your registered third-party Linux subscription provider.</p>"
    }
  },
  "traits": {
    "smithy.api#output": {}
  },
  "com.amazonaws.licensemanagerlinuxsubscriptions#GetServiceSettings": {
    "type": "operation",
    "input": {
      "target":
"com.amazonaws.licensemanagerlinuxsubscriptions#GetServiceSettingsRequest"
    },
    "output": {
      "target": "com.amazonaws.licensemanagerlinuxsubscriptions#GetServiceSettingsResponse"
    },
    "errors": [
      {
        "target": "com.amazonaws.licensemanagerlinuxsubscriptions#InternalServerError"
      },
      {
        "target": "com.amazonaws.licensemanagerlinuxsubscriptions#ThrottlingException"
      },
      {
        "target": "com.amazonaws.licensemanagerlinuxsubscriptions#ValidationException"
      }
    ],
    "traits": {
      "smithy.api#documentation": "<p>Lists the Linux subscriptions service settings for your account.</p>",
      "smithy.api#http": {
        "code": 200,
        "method": "POST",
        "uri": "/subscription/GetServiceSettings"
      }
    },
    "smithy.api#idempotent": {}
  },
  "com.amazonaws.licensemanagerlinuxsubscriptions#GetServiceSettingsRequest": {
    "type": "structure",
    "members": {}
  },
  "com.amazonaws.licensemanagerlinuxsubscriptions#GetServiceSettingsResponse": {
    "type": "structure",
    "members": {

```

```

"LinuxSubscriptionsDiscovery": {
  "target": "com.amazonaws.licensemanagerlinuxsubscriptions#LinuxSubscriptionsDiscovery",
  "traits": {
    "smithy.api#documentation": "<p>Lists if discovery has been enabled for Linux subscriptions.</p>"
  }
},
"LinuxSubscriptionsDiscoverySettings": {
  "target": "com.amazonaws.licensemanagerlinuxsubscriptions#LinuxSubscriptionsDiscoverySettings",
  "traits": {
    "smithy.api#documentation": "<p>Lists
the settings defined for Linux subscriptions discovery. The settings include ifn    Organizations integration has
been enabled, and which Regions data will be aggregated from.</p>"
  }
},
"Status": {
  "target": "com.amazonaws.licensemanagerlinuxsubscriptions#Status",
  "traits": {
    "smithy.api#documentation": "<p>Indicates the status of Linux subscriptions settings being
applied.</p>"
  }
},
"StatusMessage": {
  "target": "com.amazonaws.licensemanagerlinuxsubscriptions#StringMap",
  "traits": {
    "smithy.api#documentation": "<p>A message which details the Linux subscriptions service settings
current status.</p>"
  }
},
"HomeRegions": {
  "target": "com.amazonaws.licensemanagerlinuxsubscriptions#StringList",
  "traits": {
    "smithy.api#documentation": "<p>The Region in which License Manager displays the aggregated
data for Linux\n    subscriptions.</p>"
  }
}
},
"com.amazonaws.licensemanagerlinuxsubscriptions#Instance": {
  "type": "structure",
  "members": {
    "AmiId": {
      "target": "smithy.api#String",
      "traits": {
        "smithy.api#documentation": "<p>The AMI ID used to launch the instance.</p>"
      }
    },
    "InstanceID": {
      "target": "smithy.api#String",

```



```

    "traits": {
      "smithy.api#documentation": "<p>The instance ID of the resource.</p>"
    }
  },
  "InstanceType": {
    "target": "smithy.api#String",
    "traits": {
      "smithy.api#documentation": "<p>The instance type of the resource.</p>"
    }
  },
  "AccountID": {
    "target": "smithy.api#String",
    "traits": {
      "smithy.api#documentation": "<p>The account ID which owns the instance.</p>"
    }
  },
  "Status": {
    "target": "smithy.api#String",
    "traits": {
      "smithy.api#documentation": "<p>The status of the instance.</p>"
    }
  },
  "Region": {
    "target": "smithy.api#String",
    "traits": {
      "smithy.api#documentation": "<p>The Region the instance is running in.</p>"
    }
  },
  "UsageOperation": {
    "target": "smithy.api#String",

    "traits": {
      "smithy.api#documentation": "<p>The usage operation of the instance. For more information, see For
more information, see\n      <a href=\"https://docs.aws.amazon.com/license-manager/latest/userguide/linux-
subscriptions-usage-operation.html\">Usage\n      operation values</a> in the <i>License Manager User
Guide</i>.</p>"
    }
  },
  "ProductCode": {
    "target": "com.amazonaws.licensemanagerlinuxsubscriptions#ProductCodeList",
    "traits": {
      "smithy.api#documentation": "<p>The product code for the instance. For more information, see <a
href=\"https://docs.aws.amazon.com/license-manager/latest/userguide/linux-subscriptions-usage-
operation.html\">Usage\n      operation values</a> in the <i>License Manager User Guide</i> .</p>"
    }
  },
  "LastUpdatedTime": {

```



```

    },
    "traits": {
      "smithy.api#documentation": "<p>Details discovered information about a running instance using Linux
subscriptions.</p>"
    }
  },
  "com.amazonaws.licensemanagerlinuxsubscriptions#InstanceList": {
    "type": "list",
    "member": {
      "target": "com.amazonaws.licensemanagerlinuxsubscriptions#Instance"
    }
  },
  "com.amazonaws.licensemanagerlinuxsubscriptions#InternalServerError": {
    "type": "structure",
    "members": {
      "message": {
        "target": "smithy.api#String"
      }
    },
    "traits": {
      "smithy.api#documentation":
"<p>An exception occurred with the service.</p>",
      "smithy.api#error": "server"
    }
  },
  "com.amazonaws.licensemanagerlinuxsubscriptions#LicenseManagerLinuxSubscriptions": {
    "type": "service",
    "version": "2018-05-10",
    "operations": [
      {
        "target": "com.amazonaws.licensemanagerlinuxsubscriptions#DeregisterSubscriptionProvider"
      },
      {
        "target": "com.amazonaws.licensemanagerlinuxsubscriptions#GetRegisteredSubscriptionProvider"
      },
      {
        "target": "com.amazonaws.licensemanagerlinuxsubscriptions#GetServiceSettings"
      },
      {
        "target": "com.amazonaws.licensemanagerlinuxsubscriptions#ListLinuxSubscriptionInstances"
      },
      {
        "target": "com.amazonaws.licensemanagerlinuxsubscriptions#ListLinuxSubscriptions"
      },
      {
        "target": "com.amazonaws.licensemanagerlinuxsubscriptions#ListRegisteredSubscriptionProviders"
      },
      {

```

```

    "target": "com.amazonaws.licensemanagerlinuxsubscriptions#ListTagsForResource"
  },
  {
    "target": "com.amazonaws.licensemanagerlinuxsubscriptions#RegisterSubscriptionProvider"
  },
  {
    "target": "com.amazonaws.licensemanagerlinuxsubscriptions#TagResource"
  },
  {
    "target": "com.amazonaws.licensemanagerlinuxsubscriptions#UntagResource"
  },
  {
    "target": "com.amazonaws.licensemanagerlinuxsubscriptions#UpdateServiceSettings"
  }
],
"traits": {
  "aws.api#service": {
    "sdkId": "License Manager Linux Subscriptions",
    "arnNamespace": "license-manager-linux-subscriptions",
    "cloudTrailEventSource": "license-manager-linux-subscriptions.amazonaws.com"
  },
  "aws.auth#sigv4": {
    "name": "license-manager-linux-subscriptions"
  },
  "aws.protocols#restJson1": {},
  "smithy.api#cors": {
    "additionalAllowedHeaders": [
      "*",
      "content-type",
      "x-amz-content-sha256",
      "x-amz-user-agent",
      "x-amzn-platform-id",
      "x-amzn-trace-id"
    ],
    "additionalExposedHeaders": [
      "x-amzn-errortype",
      "x-amzn-requestid",
      "x-amzn-trace-id"
    ]
  },
  "smithy.api#documentation": "<p>With License Manager,  
you can discover and track your commercial Linux subscriptions on running Amazon EC2 instances.</p>",
  "smithy.api#title": "AWS License Manager Linux Subscriptions",
  "smithy.rules#endpointRuleSet": {
    "version": "1.0",
    "parameters": {
      "Region": {
        "builtIn": "AWS::Region",

```

```

        "required": false,
        "documentation": "The AWS region used to dispatch the request.",
        "type": "String"
    },
    "UseDualStack": {
        "builtIn": "AWS::UseDualStack",
        "required": true,
        "default": false,
        "documentation": "When true, use the dual-stack endpoint. If the configured endpoint does not
support dual-stack, dispatching the request MAY return an error.",
        "type": "Boolean"
    },
    "UseFIPS": {
        "builtIn": "AWS::UseFIPS",
        "required": true,
        "default": false,
        "documentation": "When true, send this request to the FIPS-compliant regional endpoint. If the
configured endpoint does not have a FIPS compliant endpoint, dispatching the request will return an error.",
        "type": "Boolean"
    },
    "Endpoint": {
        "builtIn": "SDK::Endpoint",
        "required": false,
        "documentation": "Override the endpoint used to send this request",
        "type": "String"
    }
},
"rules": [
    {
        "conditions": [
            {
                "fn": "isSet",
                "argv": [
                    {
                        "ref": "Endpoint"
                    }
                ]
            }
        ]
    }
],
"rules": [
    {
        "conditions": [
            {
                "fn": "booleanEquals",
                "argv": [
                    {
                        "ref": "UseFIPS"
                    }
                ],
            },

```

```

        true
      ]
    }
  ],
  "error": "Invalid Configuration: FIPS and custom endpoint are not supported",
  "type": "error"
},
{
  "conditions": [],
  "rules": [
    {
      "conditions": [
        {
          "fn": "booleanEquals",
          "argv": [
            {
              "ref": "UseDualStack"
            },
            true
          ]
        }
      ]
    }
  ]
}

],
"error": "Invalid Configuration: Dualstack and custom endpoint are not supported",
"type": "error"
},
{
  "conditions": [],
  "endpoint": {
    "url": {
      "ref": "Endpoint"
    },
    "properties": {},
    "headers": {}
  },
  "type": "endpoint"
}
],
"type": "tree"
}
],
"type": "tree"
},
{
  "conditions": [],
  "rules": [

```

```

{
  "conditions": [
    {
      "fn": "isSet",
      "argv": [
        {
          "ref": "Region"
        }
      ]
    }
  ],
  "rules": [
    {
      "conditions": [
        {
          "fn": "aws.partition",
          "argv": [
            {
              "ref": "Region"
            }
          ],
          "assign": "PartitionResult"
        }
      ],
      "rules": [
        {
          "conditions": [
            {
              "fn": "booleanEquals",
              "argv": [
                {
                  "ref": "UseFIPS"
                },
                true
              ]
            },
            {
              "fn": "booleanEquals",
              "argv": [
                {
                  "ref": "UseDualStack"
                },
                true
              ]
            }
          ]
        }
      ]
    }
  ]
}

```

```

    ],
    "rules": [
      {
        "conditions": [
          {
            "fn": "booleanEquals",
            "argv": [
              true,
              {
                "fn": "getAttr",
                "argv": [
                  {
                    "ref": "PartitionResult"
                  }
                ]
              }
            ]
          },
          {
            "fn": "booleanEquals",
            "argv": [
              true,
              {
                "fn": "getAttr",
                "argv": [
                  {
                    "ref": "PartitionResult"
                  }
                ]
              }
            ]
          }
        ]
      },
      {
        "conditions": [],
        "endpoint": {
          "url": "https://license-manager-linux-subscriptions-
fips.{Region}.{PartitionResult#dualStackDnsSuffix}",
          "properties": {},

```



```

        "headers": {}
      },
      "type": "endpoint"
    }
  ],

  "type": "tree"
},
  "type": "tree"
},
{
  "conditions": [],
  "error": "FIPS and DualStack are enabled, but this partition does not support
one or both",
  "type": "error"
},
  "type": "tree"
},
{
  "conditions": [
    {
      "fn": "booleanEquals",
      "argv": [
        {
          "ref": "UseFIPS"
        },
        true
      ]
    }
  ],
  "rules": [
    {
      "conditions": [
        {
          "fn": "booleanEquals",
          "argv": [
            {
              "fn": "getAttr",
              "argv": [
                {
                  "ref": "PartitionResult"
                },
                "supportsFIPS"
              ]
            }
          ]
        }
      ]
    }
  ]
}

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        },
        true

    ]
    }
  ],
  "rules": [
    {
      "conditions": [],
      "rules": [
        {
          "conditions": [],
          "endpoint": {
            "url": "https://license-manager-linux-subscriptions-
fips.{Region}.{PartitionResult#dnsSuffix}",

          "properties": {},

          "headers": {}
        },
        "type": "endpoint"
      ]
    },
    "type": "tree"
  ]
  "type": "tree"
},
{
  "conditions": [],
  "error": "FIPS is enabled
but this partition does not support FIPS",
  "type": "error"
}
],
"type": "tree"
},
{
  "conditions": [
    {
      "fn": "booleanEquals",
      "argv": [
        {
          "ref": "UseDualStack"
        },
        true
      ]
    }
  ]
}
}

```

```

],
"rules": [
  {
    "conditions": [
      {
        "fn": "booleanEquals",
        "argv": [
          true,
          {
            "fn": "getAttr",
            "argv": [
              {
                "ref": "PartitionResult"
              },
              "supportsDualStack"
            ]
          }
        ]
      }
    ]
  }
],
"rules": [
  {
    "conditions": [],
    "rules": [
      {
        "conditions": [],
        "endpoint": {
          "url": "https://license-manager-linux-
subscriptions.{Region}.{PartitionResult#dualStackDnsSuffix}",
          "properties": {},
          "headers": {}
        },
        "type": "endpoint"
      }
    ],
    "type": "tree"
  }
],
"rules": [
  {
    "conditions": [],
    "error": "DualStack is enabled but this partition does not support DualStack",
    "type": "error"
  }
]

```

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        ],
        "type": "tree"
    },
    {
        "conditions": [],
        "rules": [
            {
                "conditions": [],
                "endpoint": {
                    "url": "https://license-manager-linux-
subscriptions.{Region}.{PartitionResult#dnsSuffix}",
                    "properties": {},
                    "headers": {}
                },
                "type": "endpoint"
            }
        ],
        "type": "tree"
    }
],
    "type": "tree"
}
],
    "type": "tree"
}
],
    "type": "tree"
},
{
    "conditions": [],
    "error": "Invalid Configuration: Missing Region",
    "type": "error"
}
],
    "type": "tree"
}
],
    "type": "tree"
},
    "smithy.rules#endpointTests": {
        "testCases": [
            {
                "documentation": "For region us-east-1 with FIPS enabled and DualStack enabled",
                "expect": {
                    "endpoint": {
                        "url": "https://license-manager-linux-subscriptions-fips.us-east-1.api.aws"
                    }
                }
            }
        ],
        "params": {
            "Region": "us-east-1",
            "UseFIPS": true,

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        "UseDualStack": true
    }
},
{
    "documentation": "For region us-east-1 with FIPS enabled and DualStack disabled",
    "expect": {
        "endpoint": {
            "url": "https://license-manager-linux-subscriptions-fips.us-east-1.amazonaws.com"
        }
    },
    "params": {
        "Region": "us-east-1",
        "UseFIPS": true,
        "UseDualStack": false
    }
},
{
    "documentation": "For region us-east-1 with FIPS disabled and DualStack enabled",
    "expect": {
        "endpoint": {
            "url": "https://license-manager-linux-subscriptions.us-east-1.api.aws"
        }
    },
    "params": {
        "Region": "us-east-1",
        "UseFIPS": false,
        "UseDualStack": true
    }
},
{
    "documentation": "For region us-east-1 with FIPS disabled and DualStack disabled",
    "expect": {
        "endpoint": {
            "url": "https://license-manager-linux-subscriptions.us-east-1.amazonaws.com"
        }
    },
    "params": {
        "Region": "us-east-1",
        "UseFIPS": false,
        "UseDualStack": false
    }
},
{
    "documentation": "For region cn-north-1 with FIPS enabled and DualStack enabled",
    "expect": {
        "endpoint": {

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        "url": "https://license-manager-linux-subscriptions-fips.cn-north-1.api.amazonwebservices.com.cn"
    },
    "params": {
        "Region": "cn-north-1",
        "UseFIPS": true,
        "UseDualStack": true
    }
},
{
    "documentation": "For region cn-north-1 with FIPS enabled and DualStack disabled",
    "expect": {
        "endpoint": {
            "url": "https://license-manager-linux-subscriptions-fips.cn-north-1.amazonaws.com.cn"
        }
    },
    "params": {
        "Region": "cn-north-1",
        "UseFIPS": true,
        "UseDualStack": false
    }
},
{
    "documentation": "For region cn-north-1 with FIPS disabled and DualStack enabled",
    "expect": {
        "endpoint": {
            "url": "https://license-manager-linux-subscriptions.cn-north-1.api.amazonwebservices.com.cn"
        }
    },
    "params": {
        "Region": "cn-north-1",
        "UseFIPS": false,
        "UseDualStack": true
    }
},
{
    "documentation": "For region cn-north-1 with FIPS disabled and DualStack disabled",
    "expect": {
        "endpoint": {
            "url": "https://license-manager-linux-subscriptions.cn-north-1.amazonaws.com.cn"
        }
    },
    "params": {
        "Region": "cn-north-1",
        "UseFIPS": false,
        "UseDualStack": false
    }
}

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    }
  },
  {
    "documentation": "For region us-gov-east-1 with FIPS enabled and DualStack enabled",
    "expect": {
      "endpoint": {
        "url": "https://license-manager-linux-subscriptions-fips.us-gov-east-1.api.aws"
      }
    },
    "params": {
      "Region": "us-gov-east-1",
      "UseFIPS": true,
      "UseDualStack": true
    }
  },
  {
    "documentation": "For region us-gov-east-1 with FIPS enabled and DualStack disabled",
    "expect": {
      "endpoint": {
        "url": "https://license-manager-linux-subscriptions-fips.us-gov-east-1.amazonaws.com"
      }
    },
    "params": {
      "Region": "us-gov-east-1",
      "UseFIPS": true,
      "UseDualStack": false
    }
  },
  {
    "documentation": "For region us-gov-east-1 with FIPS disabled and DualStack enabled",
    "expect": {
      "endpoint": {
        "url": "https://license-manager-linux-subscriptions.us-gov-east-1.api.aws"
      }
    },
    "params": {
      "Region": "us-gov-east-1",
      "UseFIPS": false,
      "UseDualStack": true
    }
  },
  {
    "documentation": "For region us-gov-east-1 with FIPS disabled and DualStack disabled",
    "expect": {
      "endpoint": {

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        "url": "https://license-manager-linux-subscriptions.us-gov-east-1.amazonaws.com"
    },
    "params": {
        "Region": "us-gov-east-1",
        "UseFIPS": false,
        "UseDualStack": false
    }
},
{
    "documentation": "For region us-iso-east-1 with FIPS enabled and DualStack enabled",
    "expect": {
        "error": "FIPS and DualStack are enabled, but this partition does not support one or both"
    },
    "params": {
        "Region": "us-iso-east-1",
        "UseFIPS": true,
        "UseDualStack": true
    }
},
{
    "documentation": "For region us-iso-east-1 with FIPS enabled and DualStack disabled",
    "expect": {
        "endpoint": {
            "url": "https://license-manager-linux-subscriptions-fips.us-iso-east-1.c2s.ic.gov"
        }
    },
    "params": {
        "Region": "us-iso-east-1",
        "UseFIPS": true,
        "UseDualStack": false
    }
},
{
    "documentation": "For region us-iso-east-1 with FIPS disabled and DualStack
enabled",
    "expect": {
        "error": "DualStack is enabled but this partition does not support DualStack"
    },
    "params": {
        "Region": "us-iso-east-1",
        "UseFIPS": false,
        "UseDualStack": true
    }
},
{
    "documentation": "For region us-iso-east-1 with FIPS disabled and DualStack disabled",

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    "expect": {
      "endpoint": {
        "url": "https://license-manager-linux-subscriptions.us-iso-east-1.c2s.ic.gov"
      }
    },
    "params": {
      "Region": "us-iso-east-1",
      "UseFIPS":
false,
      "UseDualStack": false
    }
  },
  {
    "documentation": "For region us-isob-east-1 with FIPS enabled and DualStack enabled",
    "expect": {
      "error": "FIPS and DualStack are enabled, but this partition does not support one or both"
    },
    "params": {
      "Region": "us-isob-east-1",
      "UseFIPS": true,
      "UseDualStack": true
    }
  },
  {
    "documentation": "For region us-isob-east-1 with FIPS enabled and DualStack disabled",
    "expect": {
      "endpoint": {
        "url": "https://license-manager-linux-subscriptions-fips.us-isob-east-1.sc2s.sgov.gov"
      }
    },
    "params": {
      "Region": "us-isob-east-1",
      "UseFIPS": true,
      "UseDualStack": false
    }
  },
  {
    "documentation": "For region us-isob-east-1 with FIPS disabled and DualStack enabled",
    "expect": {
      "error": "DualStack is enabled but this partition does not support DualStack"
    },
    "params": {
      "Region": "us-isob-east-1",
      "UseFIPS": false,
      "UseDualStack": true
    }
  },
  {

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```

    "documentation": "For region us-isob-east-1 with FIPS disabled and DualStack disabled",
    "expect": {
      "endpoint": {
        "url": "https://license-manager-linux-subscriptions.us-isob-east-1.sc2s.sgov.gov"
      }
    },
    "params": {
      "Region": "us-isob-east-1",
      "UseFIPS": false,
      "UseDualStack": false
    }
  },
  {
    "documentation": "For custom endpoint with region set and fips disabled and dualstack disabled",
    "expect": {
      "endpoint": {
        "url": "https://example.com"
      }
    },
    "params": {
      "Region": "us-east-1",
      "UseFIPS": false,
      "UseDualStack": false,
      "Endpoint": "https://example.com"
    }
  },
  {
    "documentation": "For custom endpoint with region not set and fips disabled and dualstack
disabled",
    "expect": {
      "endpoint": {
        "url": "https://example.com"
      }
    },
    "params": {
      "UseFIPS": false,
      "UseDualStack": false,
      "Endpoint": "https://example.com"
    }
  },
  {
    "documentation": "For custom endpoint with fips enabled and dualstack disabled",
    "expect": {
      "error": "Invalid Configuration: FIPS and custom endpoint are not supported"
    },

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```

        "params": {
            "Region": "us-east-1",
            "UseFIPS": true,
            "UseDualStack": false,
            "Endpoint": "https://example.com"
        }
    },
    {
        "documentation": "For custom endpoint with fips disabled and dualstack enabled",
        "expect": {
            "error": "Invalid Configuration: Dualstack and custom endpoint are not supported"
        },
        "params": {
            "Region": "us-east-1",
            "UseFIPS": false,
            "UseDualStack": true,
            "Endpoint": "https://example.com"
        }
    },
    {
        "documentation": "Missing region",
        "expect": {
            "error": "Invalid Configuration: Missing Region"
        }
    }
],
"version": "1.0"
}
},
"com.amazonaws.licensemanagerlinuxsubscriptions#LinuxSubscriptionsDiscovery": {
    "type": "string",
    "traits": {
        "smithy.api#enum": [
            {
                "name": "Enabled",
                "value": "Enabled",
                "documentation": "Enabled LinuxSubscriptionsDiscovery"
            },
            {
                "name": "Disabled",
                "value": "Disabled",
                "documentation": "Disabled LinuxSubscriptionsDiscovery"
            }
        ]
    }
}

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    },
    "com.amazonaws.licensemanagerlinuxsubscriptions#LinuxSubscriptionsDiscoverySettings": {
      "type": "structure",
      "members": {
        "SourceRegions": {
          "target": "com.amazonaws.licensemanagerlinuxsubscriptions#StringList",
          "traits": {
            "smithy.api#documentation": "<p>The Regions in which to discover data for Linux
subscriptions.</p>",
            "smithy.api#required": {}
          }
        },
        "OrganizationIntegration": {
          "target": "com.amazonaws.licensemanagerlinuxsubscriptions#OrganizationIntegration",
          "traits": {
            "smithy.api#documentation":
"<p>Details if you have enabled resource discovery across your accounts in Organizations.</p>",
            "smithy.api#required": {}
          }
        }
      },
      "traits": {
        "smithy.api#documentation": "<p>Lists the settings defined for discovering Linux subscriptions.</p>"
      }
    },
    "com.amazonaws.licensemanagerlinuxsubscriptions#ListLinuxSubscriptionInstances": {
      "type": "operation",
      "input": {
        "target": "com.amazonaws.licensemanagerlinuxsubscriptions#ListLinuxSubscriptionInstancesRequest"
      },
      "output": {
        "target": "com.amazonaws.licensemanagerlinuxsubscriptions#ListLinuxSubscriptionInstancesResponse"
      },
      "errors": [
        {
          "target": "com.amazonaws.licensemanagerlinuxsubscriptions#InternalServerException"
        },
        {
          "target": "com.amazonaws.licensemanagerlinuxsubscriptions#ThrottlingException"
        },
        {
          "target": "com.amazonaws.licensemanagerlinuxsubscriptions#ValidationException"
        }
      ],
      "traits": {
        "smithy.api#documentation": "<p>Lists the running Amazon EC2 instances that were discovered with
commercial Linux\n    subscriptions.</p>",

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```

    "smithy.api#http": {
      "code": 200,
      "method": "POST",
      "uri": "/subscription/ListLinuxSubscriptionInstances"
    },
    "smithy.api#idempotent": {},
    "smithy.api#paginated": {
      "inputToken": "NextToken",
      "outputToken": "NextToken",
      "pageSize": "MaxResults",
      "items": "Instances"
    }
  }
},
"com.amazonaws.licensemanagerlinuxsubscriptions#ListLinuxSubscriptionInstancesRequest":
{
  "type": "structure",
  "members": {
    "Filters": {
      "target": "com.amazonaws.licensemanagerlinuxsubscriptions#FilterList",
      "traits": {
        "smithy.api#documentation": "<p>An array of structures that you can use to filter the results by your
specified criteria. \n \tFor example, you can specify <code>Region</code> in the <code>Name</code>, with the
\n \t<code>contains</code> operator to list all subscriptions that match a partial string in the \n
\n \t<code>Value</code>, such as <code>us-west</code>.</p>\n      <p>For each filter, you can specify one of the
following values for the <code>Name</code> key \n \tto streamline results:</p>\n      <ul>\n          <li>\n
<p>\n          <code>AccountID</code>\n          </p>\n          </li>\n          <li>\n
<p>\n          <code>AmiID</code>\n          </p>\n          </li>\n          <li>\n
<p>\n          <code>DualSubscription</code>\n          </p>\n          </li>\n          <li>\n
<p>\n          <code>InstanceID</code>\n          </p>\n          </li>\n          <li>\n
<p>\n          <code>InstanceType</code>\n          </p>\n          </li>\n          <li>\n
<p>\n          <code>ProductCode</code>\n          </p>\n          </li>\n          <li>\n
<p>\n          <code>Region</code>\n          </p>\n          </li>\n          <li>\n
<p>\n          <code>Status</code>\n          </p>\n          </li>\n          <li>\n
<p>\n          <code>UsageOperation</code>\n          </p>\n          </li>\n        </ul>\n      <p>For each filter, you can use
one of the following <code>Operator</code>
values to \n \tto define the behavior of the filter:</p>\n      <ul>\n          <li>\n
<p>\n          <code>contains</code>\n          </p>\n          </li>\n          <li>\n
<p>\n          <code>equals</code>\n          </p>\n          </li>\n          <li>\n
<p>\n          <code>Notequal</code>\n          </p>\n          </li>\n        </ul>"
      }
    },
    "MaxResults": {
      "target": "com.amazonaws.licensemanagerlinuxsubscriptions#BoxInteger",
      "traits": {
        "smithy.api#documentation": "<p>The maximum items to return in a request.</p>"
      }
    }
  },

```

```

    "NextToken": {
      "target": "smithy.api#String",
      "traits": {
        "smithy.api#documentation": "<p>A token to specify where to
start paginating. This \n\tis the nextToken from a previously truncated response.</p>",
        "smithy.api#length": {
          "min": 1,
          "max": 16384
        }
      }
    },
    "traits": {
      "smithy.api#documentation": "NextToken length limit is half of ddb accepted limit.\nIncrease this limit if
parameters in request increases."
    }
  },
  "com.amazonaws.licensemanagerlinuxsubscriptions#ListLinuxSubscriptionInstancesResponse": {
    "type": "structure",
    "members": {
      "Instances": {
        "target": "com.amazonaws.licensemanagerlinuxsubscriptions#InstanceList",
        "traits": {
          "smithy.api#documentation": "<p>An array that contains instance objects.</p>"
        }
      }
    },
    "NextToken": {
      "target": "smithy.api#String",
      "traits": {
        "smithy.api#documentation": "<p>The next token used for paginated responses. When this \n\tfield
isn't empty, there are additional elements that the service hasn't \n\tincluded in this request. Use this token with the
next request to retrieve \n\tadditional objects.</p>"
      }
    }
  },
  "com.amazonaws.licensemanagerlinuxsubscriptions#ListLinuxSubscriptions": {
    "type": "operation",
    "input": {
      "target": "com.amazonaws.licensemanagerlinuxsubscriptions#ListLinuxSubscriptionsRequest"
    },
    "output": {
      "target": "com.amazonaws.licensemanagerlinuxsubscriptions#ListLinuxSubscriptionsResponse"
    },
    "errors": [
      {
        "target": "com.amazonaws.licensemanagerlinuxsubscriptions#InternalServerError"
      }
    ]
  }
}

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    },
    {
      "target": "com.amazonaws.licensemanagerlinuxsubscriptions#ThrottlingException"
    },
    {
      "target": "com.amazonaws.licensemanagerlinuxsubscriptions#ValidationException"
    }
  ],
  "traits": {
    "smithy.api#documentation": "<p>Lists the Linux subscriptions that have been discovered. If you have linked your\n    organization, the returned results will include data aggregated across your accounts in\nOrganizations.</p>",
    "smithy.api#http": {
      "code": 200,
      "method": "POST",
      "uri": "/subscription/ListLinuxSubscriptions"
    },
    "smithy.api#idempotent": {},
    "smithy.api#paginated": {
      "inputToken": "NextToken",
      "outputToken": "NextToken",
      "pageSize": "MaxResults",
    }
  },
  "items": "Subscriptions"
}
},
"com.amazonaws.licensemanagerlinuxsubscriptions#ListLinuxSubscriptionsRequest": {
  "type": "structure",
  "members": {
    "Filters": {
      "target": "com.amazonaws.licensemanagerlinuxsubscriptions#FilterList",
      "traits": {
        "smithy.api#documentation": "<p>An array of structures that you can use to filter the results to those that match one or\n    more sets of key-value pairs that you specify. For example, you can filter by the name of\n    <code>Subscription</code> with an optional operator to see subscriptions that match,\n    partially match, or don't match a certain subscription's name.</p>\n    <p>The valid names for this filter are:</p>\n    <ul>\n    <li>\n      <p>\n        <code>Subscription</code>\n      </p>\n    </li>\n    </ul>\n    <p>The valid Operators for this filter are:</p>\n    <ul>\n    <li>\n      <p>\n        <code>contains</code>\n      </p>\n    </li>\n    <li>\n      <p>\n        <code>>equals</code>\n      </p>\n    </li>\n    <li>\n      <p>\n        <code>Notequal</code>\n      </p>\n    </li>\n    </ul>"
      }
    },
    "MaxResults": {
      "target": "com.amazonaws.licensemanagerlinuxsubscriptions#BoxInteger",
      "traits": {

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```

        "smithy.api#documentation": "<p>The maximum items to return in a request.</p>"
    }
},
"NextToken": {
    "target": "smithy.api#String",
    "traits": {
        "smithy.api#documentation": "<p>A token to specify where to start paginating. This \n\tis the nextToken from a previously truncated response.</p>",
        "smithy.api#length": {
            "min": 1,
            "max": 16384
        }
    }
}
},
"traits": {
    "smithy.api#documentation": "NextToken length limit is half of ddb accepted limit.\nIncrease this limit if parameters in request increases."
}
},
"com.amazonaws.licensemanagerlinuxsubscriptions#ListLinuxSubscriptionsResponse": {
    "type": "structure",
    "members": {
        "Subscriptions": {
            "target": "com.amazonaws.licensemanagerlinuxsubscriptions#SubscriptionList",
            "traits": {
                "smithy.api#documentation": "<p>An array that contains subscription objects.</p>"
            }
        },
        "NextToken": {
            "target": "smithy.api#String",
            "traits": {
                "smithy.api#documentation": "<p>The next token used for paginated responses. When this \n\tfield isn't empty, there are additional elements that the service hasn't \n\tincluded in this request. Use this token with the next request to retrieve \n\tadditional objects.</p>"
            }
        }
    }
},
"com.amazonaws.licensemanagerlinuxsubscriptions#ListRegisteredSubscriptionProviders": {
    "type": "operation",
    "input": {
        "target":
"com.amazonaws.licensemanagerlinuxsubscriptions#ListRegisteredSubscriptionProvidersRequest"
    },
    "output": {
        "target":
"com.amazonaws.licensemanagerlinuxsubscriptions#ListRegisteredSubscriptionProvidersResponse"
    }
}

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    },
    "errors": [
      {
        "target": "com.amazonaws.licensemanagerlinuxsubscriptions#InternalServerErrorException"
      },
      {
        "target": "com.amazonaws.licensemanagerlinuxsubscriptions#ThrottlingException"
      },
      {
        "target": "com.amazonaws.licensemanagerlinuxsubscriptions#ValidationException"
      }
    ],
    "traits": {
      "smithy.api#documentation": "<p>List Bring Your Own License (BYOL) subscription registration resources for your account.</p>",
      "smithy.api#http": {
        "code": 200,
        "method": "POST",
        "uri": "/subscription/ListRegisteredSubscriptionProviders"
      },
      "smithy.api#idempotent": {},
      "smithy.api#paginated": {
        "inputToken": "NextToken",
        "outputToken": "NextToken",
        "pageSize": "MaxResults",
        "items": "RegisteredSubscriptionProviders"
      }
    }
  },
  "com.amazonaws.licensemanagerlinuxsubscriptions#ListRegisteredSubscriptionProvidersRequest": {
    "type": "structure",
    "members": {
      "SubscriptionProviderSources": {
        "target": "com.amazonaws.licensemanagerlinuxsubscriptions#SubscriptionProviderSourceList",
        "traits": {
          "smithy.api#documentation": "<p>To filter your results, specify which subscription providers to return \n\t\t\t\tin the list.</p>"
        }
      },
      "MaxResults": {
        "target": "com.amazonaws.licensemanagerlinuxsubscriptions#BoxInteger",
        "traits": {
          "smithy.api#documentation": "<p>The maximum items to return in a request.</p>",
          "smithy.api#range": {
            "min": 1,
            "max": 100
          }
        }
      }
    }
  }
}

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```

    },
    "traits": {
      "smithy.api#output": {}
    }
  },
  "com.amazonaws.licensemanagerlinuxsubscriptions#Operator": {
    "type": "string",
    "traits": {
      "smithy.api#enum": [
        {
          "name": "EQUAL",
          "value": "Equal",
          "documentation": "Equal operator"
        },
        {
          "name": "NOT_EQUAL",
          "value": "NotEqual",
          "documentation": "Not equal operator"
        },
        {
          "name": "CONTAINS",
          "value": "Contains",
          "documentation": "Contains operator"
        }
      ],
      "smithy.api#length": {
        "min": 1,
        "max": 20
      }
    }
  },
  "com.amazonaws.licensemanagerlinuxsubscriptions#OrganizationIntegration":
{
  "type": "string",
  "traits": {
    "smithy.api#enum": [
      {
        "name": "Enabled",
        "value": "Enabled",
        "documentation": "Enabled OrganizationIntegration"
      },
      {
        "name": "Disabled",
        "value": "Disabled",
        "documentation": "Disabled OrganizationIntegration"
      }
    ]
  }
}

```

```

    },
    "com.amazonaws.licensemanagerlinuxsubscriptions#ProductCodeList": {
      "type": "list",
      "member": {
        "target": "smithy.api#String"
      }
    },
    "com.amazonaws.licensemanagerlinuxsubscriptions#RegisterSubscriptionProvider": {
      "type": "operation",
      "input": {
        "target": "com.amazonaws.licensemanagerlinuxsubscriptions#RegisterSubscriptionProviderRequest"
      },
      "output": {
        "target": "com.amazonaws.licensemanagerlinuxsubscriptions#RegisterSubscriptionProviderResponse"
      },
      "errors": [
        {
          "target": "com.amazonaws.licensemanagerlinuxsubscriptions#InternalServerErrorException"
        },
        {
          "target": "com.amazonaws.licensemanagerlinuxsubscriptions#ThrottlingException"
        },
        {
          "target": "com.amazonaws.licensemanagerlinuxsubscriptions#ValidationException"
        }
      ],
      "traits": {
        "smithy.api#documentation": "<p>Register the supported third-party subscription provider for your Bring Your Own License (BYOL) subscription.</p>",
        "smithy.api#http": {
          "code": 200,
          "method": "POST",
          "uri": "/subscription/RegisterSubscriptionProvider"
        },
        "smithy.api#idempotent": {}
      }
    },
    "com.amazonaws.licensemanagerlinuxsubscriptions#RegisterSubscriptionProviderRequest": {
      "type": "structure",
      "members": {
        "SubscriptionProviderSource": {
          "target": "com.amazonaws.licensemanagerlinuxsubscriptions#SubscriptionProviderSource",
          "traits": {
            "smithy.api#documentation": "<p>The supported Linux subscription provider to register.</p>",
            "smithy.api#required": {}
          }
        }
      },
    },

```



```

    }
  },
  "com.amazonaws.licensemanagerlinuxsubscriptions#RegisteredSubscriptionProvider":
  {
    "type": "structure",
    "members": {
      "SubscriptionProviderArn": {
        "target": "com.amazonaws.licensemanagerlinuxsubscriptions#SubscriptionProviderArn",
        "traits": {
          "smithy.api#documentation": "<p>The Amazon Resource Name (ARN) of the Linux subscription
provider resource that you registered.</p>"
        }
      },
      "SubscriptionProviderSource": {
        "target": "com.amazonaws.licensemanagerlinuxsubscriptions#SubscriptionProviderSource",
        "traits": {
          "smithy.api#documentation": "<p>A supported third-party Linux subscription provider. License
Manager currently supports \n\t\t\tRed Hat subscriptions.</p>"
        }
      },
      "SecretArn": {
        "target": "com.amazonaws.licensemanagerlinuxsubscriptions#SecretArn",
        "traits": {
          "smithy.api#documentation": "<p>The Amazon Resource Name (ARN) of the Secrets Manager secret
that stores your registered Linux subscription provider \n\t\t\taccess token. For RHEL account subscriptions, this is
the offline token.</p>"
        }
      },
      "SubscriptionProviderStatus": {
        "target": "com.amazonaws.licensemanagerlinuxsubscriptions#SubscriptionProviderStatus",
        "traits": {
          "smithy.api#documentation": "<p>Indicates the status of your registered Linux subscription provider
access token \n\t\t\tfrom the last time License Manager retrieved subscription data. For RHEL account subscriptions,
\n\t\t\tthis is the status of the offline token.</p>"
        }
      },
      "SubscriptionProviderStatusMessage": {
        "target": "smithy.api#String",
        "traits":
      {
        "smithy.api#documentation": "<p>A detailed message that's associated with your BYOL subscription
\n\t\t\tprovider token status.</p>"
      }
    },
    "LastSuccessfulDataRetrievalTime": {
      "target": "smithy.api#String",
      "traits": {
        "smithy.api#documentation": "<p>The timestamp from the last time that License Manager accessed

```

```

third-party subscription data \n\t\t\tfor your account from your registered Linux subscription provider.</p>"
    }
  },
  "traits": {
    "smithy.api#documentation": "<p>A third-party provider for operating system (OS) platform software and
license \n\t\t\tsubscriptions, such as Red Hat. When you register a third-party Linux subscription \n\t\t\tprovider,
License Manager can get subscription data from the registered provider.</p>"
  },
  "com.amazonaws.licensemanagerlinuxsubscriptions#RegisteredSubscriptionProviderList":
{
  "type": "list",
  "member": {
    "target": "com.amazonaws.licensemanagerlinuxsubscriptions#RegisteredSubscriptionProvider"
  },
  "com.amazonaws.licensemanagerlinuxsubscriptions#ResourceNotFoundException": {
    "type": "structure",
    "members": {
      "message": {
        "target": "smithy.api#String"
      },
      "traits": {
        "smithy.api#documentation": "<p>Unable to find the requested Amazon Web Services resource.</p>",
        "smithy.api#error": "client"
      },
      "com.amazonaws.licensemanagerlinuxsubscriptions#SecretArn": {
        "type": "string",
        "traits": {
          "smithy.api#pattern": "^arn:[a-z0-9-\\.]{1,63}:secretsmanager:[a-z0-9-\\.]{0,63}:[a-z0-9-
\\.]{0,63}:secret:[^/]{1,1023}$"
        }
      },
      "com.amazonaws.licensemanagerlinuxsubscriptions#Status": {
        "type": "string",
        "traits": {
          "smithy.api#enum": [
            {
              "name": "InProgress",
              "value": "InProgress",
              "documentation": "InProgress status"
            },
            {
              "name": "Completed",

```



```

        "value": "Completed",
        "documentation": "Completed status"
    },
    {
        "name": "Successful",
        "value": "Successful",
        "documentation": "Successful status"
    },
    {
        "name": "Failed",
        "value": "Failed",
        "documentation": "Failed status"
    }
]
}
},

"com.amazonaws.licensemanagerlinuxsubscriptions#StringList": {
    "type": "list",
    "member": {
        "target": "smithy.api#String",
        "traits": {
            "smithy.api#length": {
                "min": 1,
                "max": 100
            }
        }
    },
    "traits": {
        "smithy.api#length": {
            "min": 1,
            "max": 100
        },
        "smithy.api#uniqueItems": {}
    }
},

"com.amazonaws.licensemanagerlinuxsubscriptions#StringMap": {
    "type": "map",
    "key": {
        "target": "smithy.api#String"
    },
    "value": {
        "target": "smithy.api#String"
    }
},

"com.amazonaws.licensemanagerlinuxsubscriptions#Subscription": {
    "type": "structure",
    "members": {

```

```

    "Name":
  {
    "target": "smithy.api#String",
    "traits": {
      "smithy.api#documentation": "<p>The name of the subscription.</p>"
    }
  },
  "Type": {
    "target": "smithy.api#String",
    "traits": {
      "smithy.api#documentation": "<p>The type of subscription. The type can be subscription-included
with Amazon EC2, Bring Your Own\n    Subscription model (BYOS), or from the Amazon Web Services
Marketplace. Certain subscriptions may use licensing from the\n    Amazon Web Services Marketplace as well as
OS licensing from Amazon EC2 or BYOS.</p>"
    }
  },
  "InstanceCount": {
    "target": "com.amazonaws.licensemanagerlinuxsubscriptions#BoxLong",
    "traits": {
      "smithy.api#documentation": "<p>The total amount of running instances using this
subscription.</p>"
    }
  },
  "traits": {
    "smithy.api#documentation": "<p>An object which details a discovered Linux subscription.</p>"
  },
  "com.amazonaws.licensemanagerlinuxsubscriptions#SubscriptionList": {
    "type": "list",
    "member": {
      "target": "com.amazonaws.licensemanagerlinuxsubscriptions#Subscription"
    }
  },
  "com.amazonaws.licensemanagerlinuxsubscriptions#SubscriptionProviderArn": {
    "type": "string",
    "traits": {
      "smithy.api#pattern": "^arn:[a-z0-9-\\.]{1,63}:[a-z0-9-\\.]{1,63}:[a-z0-9-\\.]{1,63}:[a-z0-9-\\.]{1,510}/[a-z0-9-\\.]{1,510}$"
    }
  },
  "com.amazonaws.licensemanagerlinuxsubscriptions#SubscriptionProviderSource": {
    "type": "string",
    "traits": {
      "smithy.api#enum": [
{
    "name": "RedHat",

```

```

        "value": "RedHat",
        "documentation": "RedHat subscription provider namespace"
    }
]
}
},
"com.amazonaws.licensemanagerlinuxsubscriptions#SubscriptionProviderSourceList": {
    "type": "list",
    "member": {
        "target": "com.amazonaws.licensemanagerlinuxsubscriptions#SubscriptionProviderSource"
    }
},
"com.amazonaws.licensemanagerlinuxsubscriptions#SubscriptionProviderStatus": {
    "type": "string",
    "traits": {
        "smithy.api#enum": [
            {
                "name": "ACTIVE",
                "value": "ACTIVE",
                "documentation": "ACTIVE status"
            },
            {
                "name": "INVALID",
                "value": "INVALID",
                "documentation": "INVALID status"
            }
        ]
    }
},
"com.amazonaws.licensemanagerlinuxsubscriptions#TagKeyList": {
    "type": "list",
    "member": {
        "target": "smithy.api#String"
    },
    "traits": {
        "smithy.api#length": {
            "min": 0,
            "max": 50
        },
        "smithy.api#sensitive": {}
    }
},

```



```

    }
  },
  "traits": {
    "smithy.api#input": {}
  }
},
"com.amazonaws.licensemanagerlinuxsubscriptions#TagResourceResponse": {
  "type": "structure",
  "members": {},
  "traits": {
    "smithy.api#output": {}
  }
},
"com.amazonaws.licensemanagerlinuxsubscriptions#Tags": {
  "type": "map",
  "key": {
    "target": "smithy.api#String"
  },
  "value": {
    "target": "smithy.api#String"
  },
  "traits": {
    "smithy.api#length": {
      "min": 0,
      "max": 50
    },
    "smithy.api#sensitive": {}
  }
},
"com.amazonaws.licensemanagerlinuxsubscriptions#ThrottlingException": {
  "type": "structure",
  "members": {
    "message": {
      "target": "smithy.api#String"
    }
  },
  "traits": {
    "smithy.api#documentation":
    "<p>The request was denied due to request throttling.</p>",
    "smithy.api#error": "client"
  }
},
"com.amazonaws.licensemanagerlinuxsubscriptions#UntagResource": {
  "type": "operation",
  "input": {
    "target": "com.amazonaws.licensemanagerlinuxsubscriptions#UntagResourceRequest"
  }
}

```

```

    },
    "output": {
      "target": "com.amazonaws.licensemanagerlinuxsubscriptions#UntagResourceResponse"
    },
    "errors": [
      {
        "target": "com.amazonaws.licensemanagerlinuxsubscriptions#InternalServerErrorException"
      },
      {
        "target": "com.amazonaws.licensemanagerlinuxsubscriptions#ResourceNotFoundException"
      }
    ],
    "traits": {
      "smithy.api#documentation": "<p>Remove one or more metadata tag from the specified Amazon Web Services resource.</p>",
      "smithy.api#http": {
        "method": "DELETE",
        "uri": "/tags/{resourceArn}"
      },
      "smithy.api#idempotent": {}
    }
  },
  "com.amazonaws.licensemanagerlinuxsubscriptions#UntagResourceRequest": {
    "type": "structure",
    "members": {
      "resourceArn": {
        "target": "com.amazonaws.licensemanagerlinuxsubscriptions#SubscriptionProviderArn",
        "traits": {
          "smithy.api#documentation": "<p>The Amazon Resource Name (ARN) of the Amazon Web Services resource to remove the metadata tags from.</p>",
          "smithy.api#httpLabel": {},
          "smithy.api#required": {}
        }
      },
      "tagKeys": {
        "target": "com.amazonaws.licensemanagerlinuxsubscriptions#TagKeyList",
        "traits": {
          "smithy.api#documentation": "<p>A list of metadata tag keys to remove from the requested resource.</p>",
          "smithy.api#httpQuery": "tagKeys",
          "smithy.api#required": {}
        }
      }
    },
    "traits": {
      "smithy.api#input": {}
    }
  }
}

```

```

    },
    "com.amazonaws.licensemanagerlinuxsubscriptions#UntagResourceResponse": {
      "type": "structure",
      "members": {},
      "traits": {
        "smithy.api#output": {}
      }
    },
    "com.amazonaws.licensemanagerlinuxsubscriptions#UpdateServiceSettings": {
      "type": "operation",
      "input": {
        "target": "com.amazonaws.licensemanagerlinuxsubscriptions#UpdateServiceSettingsRequest"
      },
      "output": {
        "target": "com.amazonaws.licensemanagerlinuxsubscriptions#UpdateServiceSettingsResponse"
      }
    },
    "errors": [
      {
        "target": "com.amazonaws.licensemanagerlinuxsubscriptions#InternalServerException"
      },
      {
        "target": "com.amazonaws.licensemanagerlinuxsubscriptions#ThrottlingException"
      },
      {
        "target": "com.amazonaws.licensemanagerlinuxsubscriptions#ValidationException"
      }
    ],
    "traits": {
      "smithy.api#documentation": "<p>Updates the service settings for Linux subscriptions.</p>",
      "smithy.api#http": {
        "code": 200,
        "method": "POST",
        "uri": "/subscription/UpdateServiceSettings"
      },
      "smithy.api#idempotent": {}
    }
  },
  "com.amazonaws.licensemanagerlinuxsubscriptions#UpdateServiceSettingsRequest": {
    "type": "structure",
    "members": {
      "LinuxSubscriptionsDiscovery": {
        "target": "com.amazonaws.licensemanagerlinuxsubscriptions#LinuxSubscriptionsDiscovery",
        "traits": {
          "smithy.api#documentation": "<p>Describes if the discovery of Linux subscriptions is enabled.</p>",
          "smithy.api#required": {}
        }
      }
    }
  },

```

```

"LinuxSubscriptionsDiscoverySettings": {
  "target": "com.amazonaws.licensemanagerlinuxsubscriptions#LinuxSubscriptionsDiscoverySettings",
  "traits": {
    "smithy.api#documentation": "<p>The settings defined for Linux subscriptions discovery. The
settings include if Organizations\n    integration has been enabled, and which Regions data will be aggregated
from.</p>",
    "smithy.api#required": {}
  }
},
"AllowUpdate": {
  "target":
"smithy.api#Boolean",
  "traits": {
    "smithy.api#documentation": "<p>Describes if updates are allowed to the service settings for Linux
subscriptions. If you\n    allow updates, you can aggregate Linux subscription data in more than one home
Region.</p>"
  }
}
},
"com.amazonaws.licensemanagerlinuxsubscriptions#UpdateServiceSettingsResponse": {
  "type": "structure",
  "members": {
    "LinuxSubscriptionsDiscovery": {
      "target": "com.amazonaws.licensemanagerlinuxsubscriptions#LinuxSubscriptionsDiscovery",
      "traits": {
        "smithy.api#documentation": "<p>Lists if discovery has been enabled for Linux subscriptions.</p>"
      }
    },
    "LinuxSubscriptionsDiscoverySettings": {
      "target": "com.amazonaws.licensemanagerlinuxsubscriptions#LinuxSubscriptionsDiscoverySettings",
      "traits": {
        "smithy.api#documentation": "<p>The settings defined for Linux subscriptions discovery. The
settings include if Organizations\n    integration has been enabled, and which Regions data will be aggregated
from.</p>"
      }
    },
    "Status": {
      "target": "com.amazonaws.licensemanagerlinuxsubscriptions#Status",
      "traits": {
        "smithy.api#documentation": "<p>Indicates the status of Linux subscriptions settings being
applied.</p>"
      }
    },
    "StatusMessage": {
      "target": "com.amazonaws.licensemanagerlinuxsubscriptions#StringMap",
      "traits": {
        "smithy.api#documentation": "<p>A message which details the Linux subscriptions service settings

```



```

current status.</p>"
    }

    },
    "HomeRegions": {
        "target": "com.amazonaws.licensemanagerlinuxsubscriptions#StringList",
        "traits": {
            "smithy.api#documentation": "<p>The Region in which License Manager displays the aggregated
data for Linux\n    subscriptions.</p>"
        }
    }
},
"com.amazonaws.licensemanagerlinuxsubscriptions#ValidationException": {
    "type": "structure",
    "members": {
        "message": {
            "target": "smithy.api#String"
        }
    },
    "traits": {
        "smithy.api#documentation": "<p>The provided input is not valid. Try your request again.</p>",
        "smithy.api#error": "client"
    }
}
}
}
}
// Code generated by smithy-go-codegen DO NOT EDIT.

```

```
package grafana
```

```

import (
    "context"
    "fmt"
    awsmiddleware "github.com/aws/aws-sdk-go-v2/aws/middleware"
    "github.com/aws/aws-sdk-go-v2/service/grafana/types"
    "github.com/aws/smithy-go/middleware"
    smithyhttp "github.com/aws/smithy-go/transport/http"
)

```

```

// Assigns a Grafana Enterprise license to a workspace. To upgrade, you must use
// ENTERPRISE for the licenseType , and pass in a valid Grafana Labs token for the
// grafanaToken . Upgrading to Grafana Enterprise incurs additional fees. For more
// information, see [Upgrade a workspace to Grafana Enterprise].
//
// [Upgrade a workspace to Grafana Enterprise]: https://docs.aws.amazon.com/grafana/latest/userguide/upgrade-to-
Grafana-Enterprise.html
func (c *Client) AssociateLicense(ctx context.Context, params *AssociateLicenseInput, optFns ...func(*Options))

```

```

(*AssociateLicenseOutput, error) {
    if params == nil {
        params = &AssociateLicenseInput{}
    }

    result, metadata, err := c.invokeOperation(ctx,
        "AssociateLicense", params, optFns, c.addOperationAssociateLicenseMiddlewares)
    if err != nil {
        return nil, err
    }

    out := result.(*AssociateLicenseOutput)
    out.ResultMetadata = metadata
    return out, nil
}

type AssociateLicenseInput struct {

    // The type of license to associate with the workspace.
    //
    // Amazon Managed Grafana workspaces no longer support Grafana Enterprise free
    // trials.
    //
    // This member is required.
    LicenseType types.LicenseType

    // The ID of the workspace to associate the license with.
    //
    // This member is required.
    WorkspaceId *string

    // A token from Grafana Labs that ties your Amazon Web Services account with a
    // Grafana Labs account. For more information, see [Link your account with Grafana Labs].
    //
    // [Link your account with Grafana Labs]: https://docs.aws.amazon.com/grafana/latest/userguide/upgrade-to-Grafana-Enterprise.html#AMG-workspace-register-enterprise
    GrafanaToken *string

    noSmithyDocumentSerde
}

type AssociateLicenseOutput
struct {

    // A structure containing data about the workspace.
    //
    // This member is required.
    Workspace *types.WorkspaceDescription

```

```

// Metadata pertaining to the operation's result.
ResultMetadata middleware.Metadata

noSmithyDocumentSerde
}

func (c *Client) addOperationAssociateLicenseMiddlewares(stack *middleware.Stack, options Options) (err error) {
    if err := stack.Serialize.Add(&setOperationInputMiddleware{}, middleware.After); err != nil {
        return err
    }
    err = stack.Serialize.Add(&awsRestjson1_serializeOpAssociateLicense{}, middleware.After)
    if err != nil {
        return err
    }
    err = stack.Deserialize.Add(&awsRestjson1_deserializeOpAssociateLicense{}, middleware.After)
    if err != nil {
        return err
    }
    if err := addProtocolFinalizerMiddlewares(stack, options, "AssociateLicense"); err != nil {
        return fmt.Errorf("add protocol finalizers: %v", err)
    }

    if err = addLegacyEndpointContextSetter(stack, options); err != nil {
        return err
    }
    if err = addSetLoggerMiddleware(stack,
options); err != nil {
        return err
    }
    if err = addClientRequestID(stack); err != nil {
        return err
    }
    if err = addComputeContentLength(stack); err != nil {
        return err
    }
    if err = addResolveEndpointMiddleware(stack, options); err != nil {
        return err
    }
    if err = addComputePayloadSHA256(stack); err != nil {
        return err
    }
    if err = addRetry(stack, options); err != nil {
        return err
    }
    if err = addRawResponseToMetadata(stack); err != nil {
        return err
    }
}

```

```

if err = addRecordResponseTiming(stack); err != nil {
    return err
}
if err = addSpanRetryLoop(stack, options); err != nil {
    return err
}
if err = addClientUserAgent(stack, options); err != nil {
    return err
}
if err = smithyhttp.AddErrorCloseResponseBodyMiddleware(stack); err != nil {
    return err
}
if err = smithyhttp.AddCloseResponseBodyMiddleware(stack); err != nil {
    return err
}
if err = addSetLegacyContextSigningOptionsMiddleware(stack); err != nil {
    return err
}
if err = addTimeOffsetBuild(stack,
c); err != nil {
    return err
}
if err = addUserAgentRetryMode(stack, options); err != nil {
    return err
}
if err = addCredentialSource(stack, options); err != nil {
    return err
}
if err = addOpAssociateLicenseValidationMiddleware(stack); err != nil {
    return err
}
if err = stack.Initialize.Add(newServiceMetadataMiddleware_opAssociateLicense(options.Region),
middleware.Before); err != nil {
    return err
}
if err = addRecursionDetection(stack); err != nil {
    return err
}
if err = addRequestIDRetrieverMiddleware(stack); err != nil {
    return err
}
if err = addResponseErrorMiddleware(stack); err != nil {
    return err
}
if err = addRequestResponseLogging(stack, options); err != nil {
    return err
}
if err = addDisableHTTPSMiddleware(stack, options); err != nil {

```

```

    return err
}
if err = addSpanInitializeStart(stack); err != nil {
    return err
}
if err = addSpanInitializeEnd(stack); err != nil {
    return err
}
if err = addSpanBuildRequestStart(stack);
err != nil {
    return err
}
if err = addSpanBuildRequestEnd(stack); err != nil {
    return err
}
return nil
}

func newServiceMetadataMiddleware_opAssociateLicense(region string)
*awsmiddleware.RegisterServiceMetadata {
return &awsmiddleware.RegisterServiceMetadata{
    Region:    region,
    ServiceID: ServiceID,
    OperationName: "AssociateLicense",
}
}
// Code generated by smithy-go-codegen DO NOT EDIT.

package licensemanager

import (
    "context"
    "fmt"
    awsmiddleware "github.com/aws/aws-sdk-go-v2/aws/middleware"
    "github.com/aws/aws-sdk-go-v2/service/licensemanager/types"
    "github.com/aws/smithy-go/middleware"
    smithyhttp "github.com/aws/smithy-go/transport/http"
)

// Checks out the specified license.
//
// If the account that created the license is the same that is performing the
// check out, you must specify the account as the beneficiary.
func (c *Client) CheckoutLicense(ctx context.Context, params *CheckoutLicenseInput, optFns ...func(*Options))
(*CheckoutLicenseOutput, error) {
    if params == nil {
        params = &CheckoutLicenseInput{}
    }

```

```

    result, metadata, err := c.invokeOperation(ctx, "CheckoutLicense", params, optFns,
c.addOperationCheckoutLicenseMiddlewares)
    if err != nil {
        return nil, err
    }

    out := result.(*CheckoutLicenseOutput)
    out.ResultMetadata = metadata
    return out, nil
}

type CheckoutLicenseInput struct {

    //
    Checkout type.
    //
    // This member is required.
    CheckoutType types.CheckoutType

    // Unique, case-sensitive identifier that you provide to ensure the idempotency of
    // the request.
    //
    // This member is required.
    ClientToken *string

    // License entitlements.
    //
    // This member is required.
    Entitlements []types.EntitlementData

    // Key fingerprint identifying the license.
    //
    // This member is required.
    KeyFingerprint *string

    // Product SKU.
    //
    // This member is required.
    ProductSKU *string

    // License beneficiary.
    Beneficiary *string

    // Node ID.
    NodeId *string

    noSmithyDocumentSerde

```

```

}

type CheckoutLicenseOutput struct {

    // Checkout type.
    CheckoutType types.CheckoutType

    // Allowed license entitlements.
    EntitlementsAllowed []types.EntitlementData

    // Date and time at which the license checkout expires.
    Expiration *string

    // Date and time at which the license checkout is issued.
    IssuedAt *string

    // Amazon Resource Name (ARN) of the checkout license.
    LicenseArn
    *string

    // License consumption token.
    LicenseConsumptionToken *string

    // Node ID.
    NodeId *string

    // Signed token.
    SignedToken *string

    // Metadata pertaining to the operation's result.
    ResultMetadata middleware.Metadata

    noSmithyDocumentSerde
}

func (c *Client) addOperationCheckoutLicenseMiddlewares(stack *middleware.Stack, options Options) (err error) {
    if err := stack.Serialize.Add(&setOperationInputMiddleware{}, middleware.After); err != nil {
        return err
    }
    err = stack.Serialize.Add(&awsAwsjson11_serializeOpCheckoutLicense{}, middleware.After)
    if err != nil {
        return err
    }
    err = stack.Deserialize.Add(&awsAwsjson11_deserializeOpCheckoutLicense{}, middleware.After)
    if err != nil {
        return err
    }
    if err := addProtocolFinalizerMiddlewares(stack, options, "CheckoutLicense"); err != nil {

```

```

return fmt.Errorf("add protocol finalizers: %v", err)
}

if err = addLegacyEndpointContextSetter(stack, options); err != nil {
    return err
}
if err = addSetLoggerMiddleware(stack,
options); err != nil {
    return err
}
if err = addClientRequestID(stack); err != nil {
    return err
}
if err = addComputeContentLength(stack); err != nil {
    return err
}
if err = addResolveEndpointMiddleware(stack, options); err != nil {
    return err
}
if err = addComputePayloadSHA256(stack); err != nil {
    return err
}
if err = addRetry(stack, options); err != nil {
    return err
}
if err = addRawResponseToMetadata(stack); err != nil {
    return err
}
if err = addRecordResponseTiming(stack); err != nil {
    return err
}
if err = addSpanRetryLoop(stack, options); err != nil {
    return err
}
if err = addClientUserAgent(stack, options); err != nil {
    return err
}
if err = smithyhttp.AddErrorCloseResponseBodyMiddleware(stack); err != nil {
    return err
}
if err = smithyhttp.AddCloseResponseBodyMiddleware(stack); err != nil {
    return err
}
if err = addSetLegacyContextSigningOptionsMiddleware(stack); err != nil {
    return err
}
if err = addTimeOffsetBuild(stack,

```



```

c); err != nil {
    return err
}
if err = addUserAgentRetryMode(stack, options); err != nil {
    return err
}
if err = addCredentialSource(stack, options); err != nil {
    return err
}
if err = addOpCheckoutLicenseValidationMiddleware(stack); err != nil {
    return err
}
if err = stack.Initialize.Add(newServiceMetadataMiddleware_opCheckoutLicense(options.Region),
middleware.Before); err != nil {
    return err
}
if err = addRecursionDetection(stack); err != nil {
    return err
}
if err = addRequestIDRetrieverMiddleware(stack); err != nil {
    return err
}
if err = addResponseErrorMiddleware(stack); err != nil {
    return err
}
if err = addRequestResponseLogging(stack, options); err != nil {
    return err
}
if err = addDisableHTTPSMiddleware(stack, options); err != nil {
    return err
}
if err = addSpanInitializeStart(stack); err != nil {
    return err
}
if err = addSpanInitializeEnd(stack); err != nil {
    return err
}
if err = addSpanBuildRequestStart(stack);
err != nil {
    return err
}
if err = addSpanBuildRequestEnd(stack); err != nil {
    return err
}
return nil
}

func newServiceMetadataMiddleware_opCheckoutLicense(region string) *awsmiddleware.RegisterServiceMetadata

```

```

{
return &awsmiddleware.RegisterServiceMetadata{
  Region:    region,
  ServiceID: ServiceID,
  OperationName: "CheckoutLicense",
}
}

```

CreateLicense

Initialize stack step

spanInitializeStart

RegisterServiceMetadata

legacyEndpointContextSetter

SetLogger

OperationInputValidation

spanInitializeEnd

Serialize stack step

spanBuildRequestStart

setOperationInput

ResolveEndpoint

OperationSerializer

Build stack step

ClientRequestID

ComputeContentLength

SetCredentialSourceMiddleware

UserAgent

AddTimeOffsetMiddleware

RecursionDetection

spanBuildRequestEnd

Finalize stack step

spanRetryLoop

Retry

RetryMetricsHeader

ResolveAuthScheme

GetIdentity

ResolveEndpointV2

disableHTTPS

ComputePayloadHash

setLegacyContextSigningOptions

Signing

Deserialize stack step

AddRawResponseToMetadata

ErrorCloseResponseBody

CloseResponseBody

ResponseErrorWrapper

RequestIDRetriever

OperationDeserializer

AddTimeOffsetMiddleware

RecordResponseTiming

RequestResponseLogger
GetLicense
Initialize stack step
spanInitializeStart
RegisterServiceMetadata
legacyEndpointContextSetter
SetLogger
OperationInputValidation
spanInitializeEnd
Serialize stack step
spanBuildRequestStart
setOperationInput
ResolveEndpoint
OperationSerializer
Build stack step
ClientRequestID
ComputeContentLength
SetCredentialSourceMiddleware
UserAgent
AddTimeOffsetMiddleware
RecursionDetection
spanBuildRequestEnd
Finalize stack step
spanRetryLoop
Retry
RetryMetricsHeader
ResolveAuthScheme
GetIdentity
ResolveEndpointV2
disableHTTPS
ComputePayloadHash
setLegacyContextSigningOptions
Signing
Deserialize stack step
AddRawResponseToMetadata
ErrorCloseResponseBody
CloseResponseBody
ResponseErrorWrapper
RequestIDRetriever
OperationDeserializer
AddTimeOffsetMiddleware
RecordResponseTiming
RequestResponseLogger

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```
{
  "smithy": "2.0",
  "shapes": {
    "com.amazonaws.licenseanagerusersubscriptions#AccessDeniedException": {
      "type": "structure",
      "members": {
        "message": {
          "target": "smithy.api#String"
        }
      },
      "traits": {
        "smithy.api#documentation": "<p>You don't have sufficient access to perform this action.</p>",
        "smithy.api#error": "client"
      }
    },
    "com.amazonaws.licenseanagerusersubscriptions#ActiveDirectoryIdentityProvider": {
      "type": "structure",
      "members": {
        "DirectoryId": {
          "target": "com.amazonaws.licenseanagerusersubscriptions#Directory",
          "traits": {
            "smithy.api#documentation": "<p>The directory ID for an Active Directory identity provider.</p>"
          }
        }
      },
      "ActiveDirectorySettings":
```

```

{
    "target": "com.amazonaws.licensemanagerusersubscriptions#ActiveDirectorySettings",
    "traits": {
        "smithy.api#documentation": "<p>The <code>ActiveDirectorySettings</code> resource contains
details about \n\t\t\tthe Active Directory, including network access details such as domain name and IP
\n\t\t\taddresses, and the credential provider for user administration.</p>"
    }
},
    "ActiveDirectoryType": {
        "target": "com.amazonaws.licensemanagerusersubscriptions#ActiveDirectoryType",
        "traits": {
            "smithy.api#documentation": "<p>The type of Active Directory  either a self-managed Active
Directory or an \n\t\t\tAmazon Web Services Managed Active Directory.</p>"
        }
    },
    "traits": {
        "smithy.api#documentation": "<p>Details about an Active Directory identity
provider.</p>"
    }
},
    "com.amazonaws.licensemanagerusersubscriptions#ActiveDirectorySettings": {
        "type": "structure",
        "members": {
            "DomainName": {
                "target": "smithy.api#String",
                "traits": {
                    "smithy.api#documentation": "<p>The domain name for the Active Directory.</p>"
                }
            },
            "DomainIpv4List": {
                "target": "com.amazonaws.licensemanagerusersubscriptions#IpV4List",
                "traits": {
                    "smithy.api#documentation": "<p>A list of domain IPv4 addresses that are used for the Active
Directory.</p>",
                    "smithy.api#length": {
                        "min": 1,
                        "max": 2
                    }
                }
            },
            "DomainCredentialsProvider": {
                "target":
"com.amazonaws.licensemanagerusersubscriptions#CredentialsProvider",
                "traits": {
                    "smithy.api#documentation": "<p>Points to the <code>CredentialsProvider</code> resource that
contains \n\t\t\tinformation about the credential provider for user administration.</p>"
                }
            }
        }
    }
}

```

```

    },
    "DomainNetworkSettings": {
      "target": "com.amazonaws.licensemanagerusersubscriptions#DomainNetworkSettings",
      "traits": {
        "smithy.api#documentation": "<p>The <code>DomainNetworkSettings</code> resource contains an
array of \n\t\t\tsubnets that apply for the Active Directory.</p>"
      }
    }
  },
  "traits": {
    "smithy.api#documentation": "<p>Contains network access and credential details that are needed for
\n\t\t\tuser administration in the Active Directory.</p>"
  }
},
"com.amazonaws.licensemanagerusersubscriptions#ActiveDirectoryType":
{
  "type": "string",
  "traits": {
    "smithy.api#enum": [
      {
        "name": "SELF_MANAGED",
        "value": "SELF_MANAGED",
        "documentation": "SELF_MANAGED type of Active Directory"
      },
      {
        "name": "AWS_MANAGED",
        "value": "AWS_MANAGED",
        "documentation": "AWS_MANAGED type of Active Directory"
      }
    ]
  }
},
"com.amazonaws.licensemanagerusersubscriptions#Arn": {
  "type": "string",
  "traits": {
    "smithy.api#pattern": "^arn:[a-z0-9-\\.]{1,63}:[a-z0-9-\\.]{1,63}:[a-z0-9-\\.]{1,63}:[a-
zA-Z0-9-\\.]{1,510}/[a-zA-Z0-9-\\.]{1,510}$"
  }
},
"com.amazonaws.licensemanagerusersubscriptions#AssociateUser":
{
  "type": "operation",
  "input": {
    "target": "com.amazonaws.licensemanagerusersubscriptions#AssociateUserRequest"
  },
  "output": {
    "target": "com.amazonaws.licensemanagerusersubscriptions#AssociateUserResponse"
  },

```

[illegible]

```

    },
    "InstanceId": {
      "target": "smithy.api#String",
      "traits": {
        "smithy.api#documentation": "<p>The ID of the EC2 instance that provides the user-based
subscription.</p>",
        "smithy.api#required": {}
      }
    },
    "IdentityProvider": {
      "target": "com.amazonaws.licenseanagerusersubscriptions#IdentityProvider",
      "traits": {
        "smithy.api#documentation": "<p>The identity provider for the user.</p>",
        "smithy.api#required": {}
      }
    },
    "Domain": {
      "target": "smithy.api#String",
      "traits": {
        "smithy.api#documentation": "<p>The domain name of the  Active Directory that contains
information for the user to associate.</p>"
      }
    },
    "Tags": {
      "target": "com.amazonaws.licenseanagerusersubscriptions#Tags",
      "traits": {
        "smithy.api#documentation": "<p>The tags that apply for the user association.</p>"
      }
    },
    "traits": {
      "smithy.api#input": {}
    },
    "com.amazonaws.licenseanagerusersubscriptions#AssociateUserResponse": {
      "type": "structure",
      "members": {
        "InstanceUserSummary": {
          "target": "com.amazonaws.licenseanagerusersubscriptions#InstanceUserSummary",
          "traits": {
            "smithy.api#documentation": "<p>Metadata that describes the associate user operation.</p>",
            "smithy.api#required": {}
          }
        }
      },
      "traits": {
        "smithy.api#output": {}
      }
    }
  }

```



```

    }
  },
  "com.amazonaws.licenseanagerusersubscriptions#BoxInteger": {
    "type": "integer"
  },
  "com.amazonaws.licenseanagerusersubscriptions#ConflictException": {
    "type": "structure",
    "members": {
      "message": {
        "target": "smithy.api#String"
      }
    },
    "traits": {
      "smithy.api#documentation": "<p>The request couldn't be completed because it conflicted with the current state of the\n\t\t\t\tresource.</p>",
      "smithy.api#error": "server"
    }
  },
  "com.amazonaws.licenseanagerusersubscriptions#CreateLicenseServerEndpoint": {
    "type": "operation",
    "input": {
      "target": "com.amazonaws.licenseanagerusersubscriptions#CreateLicenseServerEndpointRequest"
    },
    "output": {
      "target": "com.amazonaws.licenseanagerusersubscriptions#CreateLicenseServerEndpointResponse"
    },
    "errors": [
      {
        "target": "com.amazonaws.licenseanagerusersubscriptions#AccessDeniedException"
      },
      {
        "target": "com.amazonaws.licenseanagerusersubscriptions#ConflictException"
      },
      {
        "target": "com.amazonaws.licenseanagerusersubscriptions#InternalServerError"
      },
      {
        "target": "com.amazonaws.licenseanagerusersubscriptions#ResourceNotFoundException"
      },
      {
        "target": "com.amazonaws.licenseanagerusersubscriptions#ServiceQuotaExceededException"
      },
      {
        "target": "com.amazonaws.licenseanagerusersubscriptions#ThrottlingException"
      },
      {
        "target": "com.amazonaws.licenseanagerusersubscriptions#ValidationException"
      }
    ]
  }
}

```



```

{
  "type": "structure",
  "members": {
    "IdentityProviderArn": {
      "target": "com.amazonaws.licensemanagerusersubscriptions#Arn",
      "traits": {
        "smithy.api#documentation": "<p>The Amazon Resource Name (ARN) of the identity provider
specified in the request.</p>"
      }
    },
    "LicenseServerEndpointArn": {
      "target": "com.amazonaws.licensemanagerusersubscriptions#Arn",
      "traits": {
        "smithy.api#documentation": "<p>The ARN of the <code>LicenseServerEndpoint</code>
resource.</p>"
      }
    },
    "traits": {
      "smithy.api#output": {}
    }
  },
  "com.amazonaws.licensemanagerusersubscriptions#CredentialsProvider": {
    "type": "union",
    "members": {
      "SecretsManagerCredentialsProvider": {
        {
          "target": "com.amazonaws.licensemanagerusersubscriptions#SecretsManagerCredentialsProvider",
          "traits": {
            "smithy.api#documentation": "<p>Identifies the Secrets Manager secret that contains credentials
needed for \n\t\t\t\t\tuser administration in the Active Directory.</p>"
          }
        },
        {
          "target": "com.amazonaws.licensemanagerusersubscriptions#DeleteLicenseServerEndpointRequest",
          "traits": {
            "smithy.api#documentation": "<p>Contains information about the credential provider for user
\n\t\t\t\t\tadministration.</p>"
          }
        }
      },
      "com.amazonaws.licensemanagerusersubscriptions#DeleteLicenseServerEndpoint": {
        "type": "operation",
        "input": {
          "target": "com.amazonaws.licensemanagerusersubscriptions#DeleteLicenseServerEndpointRequest"
        },
        "output": {
          "target": "com.amazonaws.licensemanagerusersubscriptions#DeleteLicenseServerEndpointResponse"
        },
        "errors": [

```

```

    {
      "target": "com.amazonaws.licensemanagerusersubscriptions#AccessDeniedException"
    },
    {
      "target": "com.amazonaws.licensemanagerusersubscriptions#ConflictException"
    },
    {
      "target": "com.amazonaws.licensemanagerusersubscriptions#InternalServerErrorException"
    },
    {
      "target": "com.amazonaws.licensemanagerusersubscriptions#ResourceNotFoundException"
    },
    {
      "target": "com.amazonaws.licensemanagerusersubscriptions#ServiceQuotaExceededException"
    },
    {
      "target": "com.amazonaws.licensemanagerusersubscriptions#ThrottlingException"
    },
    {
      "target": "com.amazonaws.licensemanagerusersubscriptions#ValidationException"
    }
  ],
  "traits": {
    "smithy.api#documentation": "<p>Deletes a <code>LicenseServerEndpoint</code> resource.</p>",
    "smithy.api#http": {
      "code": 200,
      "method": "POST",
      "uri": "/license-server/DeleteLicenseServerEndpoint"
    },
    "smithy.api#idempotent": {}
  }
},
"com.amazonaws.licensemanagerusersubscriptions#DeleteLicenseServerEndpointRequest": {
  "type": "structure",
  "members": {
    "LicenseServerEndpointArn": {
      "target": "com.amazonaws.licensemanagerusersubscriptions#Arn",
      "traits": {
        "smithy.api#documentation": "<p>The Amazon Resource Name (ARN) that identifies the  
<code>LicenseServerEndpoint</code> \n\t\t\t\tresource to delete.</p>",
        "smithy.api#required": {}
      }
    }
  },
  "ServerType": {
    "target": "com.amazonaws.licensemanagerusersubscriptions#ServerType",
    "traits": {
      "smithy.api#documentation": "<p>The type of License Server that the delete request refers to.</p>",

```

```

        "smithy.api#required": {}
    }
},
"traits": {
    "smithy.api#input": {}
},
"com.amazonaws.licensemanagerusersubscriptions#DeleteLicenseServerEndpointResponse": {
    "type": "structure",
    "members": {
        "LicenseServerEndpoint": {
            "target": "com.amazonaws.licensemanagerusersubscriptions#LicenseServerEndpoint",
            "traits": {
                "smithy.api#documentation": "<p>Shows details from the <code>LicenseServerEndpoint</code> resource that was deleted.</p>"
            }
        }
    },
    "traits": {
        "smithy.api#output": {}
    }
},
"com.amazonaws.licensemanagerusersubscriptions#DeregisterIdentityProvider": {
    "type": "operation",
    "input": {
        "target": "com.amazonaws.licensemanagerusersubscriptions#DeregisterIdentityProviderRequest"
    },
    "output": {
        "target": "com.amazonaws.licensemanagerusersubscriptions#DeregisterIdentityProviderResponse"
    },
    "errors": [
        {
            "target": "com.amazonaws.licensemanagerusersubscriptions#AccessDeniedException"
        },
        {
            "target": "com.amazonaws.licensemanagerusersubscriptions#ConflictException"
        },
        {
            "target": "com.amazonaws.licensemanagerusersubscriptions#InternalServerError"
        },
        {
            "target": "com.amazonaws.licensemanagerusersubscriptions#ResourceNotFoundException"
        },
        {
            "target": "com.amazonaws.licensemanagerusersubscriptions#ServiceQuotaExceededException"
        },
        {

```

```

        "target": "com.amazonaws.licenseanagerusersubscriptions#ThrottlingException"
    },
    {
        "target": "com.amazonaws.licenseanagerusersubscriptions#ValidationException"
    }
],
"traits": {
    "smithy.api#documentation": "<p>Deregisters the Active Directory identity provider from License
Manager user-based subscriptions.</p>",
    "smithy.api#http": {
        "code": 200,
        "method": "POST",
        "uri": "/identity-provider/DeregisterIdentityProvider"
    },
    "smithy.api#idempotent": {}
}
},
"com.amazonaws.licenseanagerusersubscriptions#DeregisterIdentityProviderRequest":
{
    "type": "structure",
    "members": {
        "IdentityProvider": {
            "target": "com.amazonaws.licenseanagerusersubscriptions#IdentityProvider",
            "traits": {
                "smithy.api#documentation": "<p>An object that specifies details for the Active Directory identity
provider.</p>"
            }
        },
        "Product": {
            "target": "smithy.api#String",
            "traits": {
                "smithy.api#documentation": "<p>The name of the user-based subscription product.</p>\n
<p>Valid values: <code>VISUAL_STUDIO_ENTERPRISE</code> |
<code>VISUAL_STUDIO_PROFESSIONAL</code> | <code>OFFICE_PROFESSIONAL_PLUS</code> |
\n<code>REMOTE_DESKTOP_SERVICES</code>\n      </p>"
            }
        },
        "IdentityProviderArn": {
            "target": "com.amazonaws.licenseanagerusersubscriptions#Arn",
            "traits": {
                "smithy.api#documentation": "<p>The Amazon Resource Name (ARN) that identifies the identity
provider to deregister.</p>"
            }
        }
    },
    "traits": {
        "smithy.api#input": {}
    }
}

```

```

    },
    "com.amazonaws.licenseanagerusersubscriptions#DeregisterIdentityProviderResponse": {
      "type": "structure",
      "members": {
        "IdentityProviderSummary": {
          "target": "com.amazonaws.licenseanagerusersubscriptions#IdentityProviderSummary",
          "traits": {
            "smithy.api#documentation": "<p>Metadata that describes the results of an identity provider
operation.</p>",
            "smithy.api#required": {}
          }
        }
      },
      "traits": {
        "smithy.api#output": {}
      }
    }
  },
  "com.amazonaws.licenseanagerusersubscriptions#Directory": {
    "type": "string",
    "traits": {
      "smithy.api#pattern": "^(d|sd)-[0-9a-f]{10}$"
    }
  },
  "com.amazonaws.licenseanagerusersubscriptions#DisassociateUser": {
    "type": "operation",
    "input": {
      "target": "com.amazonaws.licenseanagerusersubscriptions#DisassociateUserRequest"
    },
    "output": {
      "target": "com.amazonaws.licenseanagerusersubscriptions#DisassociateUserResponse"
    },
    "errors": [
      {
        "target": "com.amazonaws.licenseanagerusersubscriptions#AccessDeniedException"
      },
      {
        "target": "com.amazonaws.licenseanagerusersubscriptions#ConflictException"
      },
      {
        "target": "com.amazonaws.licenseanagerusersubscriptions#InternalServerErrorException"
      },
      {
        "target": "com.amazonaws.licenseanagerusersubscriptions#ResourceNotFoundException"
      },
      {
        "target": "com.amazonaws.licenseanagerusersubscriptions#ServiceQuotaExceededException"
      }
    ]
  }
}

```

```

    {
      "target": "com.amazonaws.licenseanagerusersubscriptions#ThrottlingException"
    },
    {
      "target": "com.amazonaws.licenseanagerusersubscriptions#ValidationException"
    }
  ],
  "traits": {
    "smithy.api#documentation": "<p>Disassociates the user from an EC2 instance providing user-based
subscriptions.</p>",
    "smithy.api#http": {
      "code": 200,
      "method": "POST",
      "uri": "/user/DisassociateUser"
    },
    "smithy.api#idempotent": {}
  }
},
"com.amazonaws.licenseanagerusersubscriptions#DisassociateUserRequest": {
  "type": "structure",
  "members": {
    "Username": {
      "target": "smithy.api#String",
      "traits": {
        "smithy.api#documentation": "<p>The user name from the Active Directory identity provider for the
user.</p>"
      }
    },
    "InstanceId": {
      "target": "smithy.api#String",
      "traits": {
        "smithy.api#documentation": "<p>The ID of the EC2 instance which provides user-based
subscriptions.</p>"
      }
    },
    "IdentityProvider": {
      "target": "com.amazonaws.licenseanagerusersubscriptions#IdentityProvider",
      "traits": {
        "smithy.api#documentation": "<p>An object that specifies details for the Active
Directory identity provider.</p>"
      }
    },
    "InstanceUserArn": {
      "target": "com.amazonaws.licenseanagerusersubscriptions#Arn",
      "traits": {
        "smithy.api#documentation": "<p>The Amazon Resource Name (ARN) of the user to disassociate
from the EC2 instance.</p>"
      }
    }
  }
}

```



```

    }
  },
  "Domain": {
    "target": "smithy.api#String",
    "traits": {
      "smithy.api#documentation": "<p>The domain name of the Active Directory that contains
information for the user to disassociate.</p>"
    }
  }
},
"traits": {
  "smithy.api#input": {}
}
},
"com.amazonaws.licenseanagerusersubscriptions#DisassociateUserResponse": {
  "type": "structure",
  "members": {
    "InstanceUserSummary":
{
      "target": "com.amazonaws.licenseanagerusersubscriptions#InstanceUserSummary",
      "traits": {
        "smithy.api#documentation": "<p>Metadata that describes the associate user operation.</p>",
        "smithy.api#required": {}
      }
    }
  },
  "traits": {
    "smithy.api#output": {}
  }
},
"com.amazonaws.licenseanagerusersubscriptions#DomainNetworkSettings": {
  "type": "structure",
  "members": {
    "Subnets": {
      "target": "com.amazonaws.licenseanagerusersubscriptions#Subnets",
      "traits": {
        "smithy.api#documentation": "<p>Contains a list of subnets that apply for the Active Directory
domain.</p>",
        "smithy.api#length": {
          "min": 1
        },
        "smithy.api#required": {}
      }
    }
  },
  "traits": {
    "smithy.api#documentation": "<p>Contains network settings for the Active Directory domain.</p>"
  }
}

```

```
{  
    },  
    "com.amazonaws.licensemanagerusersubscriptions#Filter": {  
        "type": "structure",  
        "members": {  
            "Attribute": {  
                "target": "smithy.api#String",  
                "traits": {  
                    "smithy.api#documentation": "<p>The name of an attribute to use as a filter.</p>"  
                }  
            },  
            "Operation": {  
                "target": "smithy.api#String",  
                "traits": {  
                    "smithy.api#documentation": "<p>The type of search (For example, eq, geq, leq)</p>"  
                }  
            },  
            "Value": {  
                "target": "smithy.api#String",  
                "traits": {  
  
                    "smithy.api#documentation": "<p>Value of the filter.</p>"  
                }  
            }  
        },  
        "traits": {  
            "smithy.api#documentation": "<p>A filter name and value pair that is used to return more specific results from a describe\n\t\t\t\ttor list operation. You can use filters can be used to match a set of resources by specific \n\t\t\t\tcriteria, such as tags, attributes, or IDs.</p>"  
        }  
    },  
    "com.amazonaws.licensemanagerusersubscriptions#FilterList": {  
        "type": "list",  
        "member": {  
            "target": "com.amazonaws.licensemanagerusersubscriptions#Filter"  
        }  
    },  
    "com.amazonaws.licensemanagerusersubscriptions#IdentityProvider": {  
        "type": "union",  
        "members": {  
            "ActiveDirectoryIdentityProvider": {  
                "target": "com.amazonaws.licensemanagerusersubscriptions#ActiveDirectoryIdentityProvider",  
                "traits": {  
                    "smithy.api#documentation": "<p>The <code>ActiveDirectoryIdentityProvider</code> resource contains settings \n\t\t\t\tand other details about a specific Active Directory identity provider.</p>"  
                }  
            }  
        }  
    },
```

```

    "traits": {
      "smithy.api#documentation": "<p>Refers to an identity provider.</p>"
    }
  },
  "com.amazonaws.licenseanagerusersubscriptions#IdentityProviderSummary": {
    "type": "structure",
    "members": {
      "IdentityProvider": {
        "target": "com.amazonaws.licenseanagerusersubscriptions#IdentityProvider",
        "traits": {
          "smithy.api#documentation": "<p>The <code>IdentityProvider</code> resource contains information about \n\t\t\t\tan identity provider.</p>",
          "smithy.api#required": {}
        }
      },
      "Settings": {
        "target": "com.amazonaws.licenseanagerusersubscriptions#Settings",
        "traits": {
          "smithy.api#documentation": "<p>The <code>Settings</code> resource contains details about the registered \n\t\t\t\tidentity providers product related configuration settings, such as the \n\t\t\t\tsubnets to provision VPC endpoints.</p>",
          "smithy.api#required": {}
        }
      },
      "Product": {
        "target": "smithy.api#String",
        "traits": {
          "smithy.api#documentation": "<p>The name of the user-based subscription product.</p>",
          "smithy.api#required": {}
        }
      },
      "Status": {
        "target": "smithy.api#String",
        "traits": {
          "smithy.api#documentation": "<p>The status of the identity provider.</p>",
          "smithy.api#required": {}
        }
      },
      "IdentityProviderArn": {
        "target": "com.amazonaws.licenseanagerusersubscriptions#Arn",
        "traits": {
          "smithy.api#documentation": "<p>The Amazon Resource Name (ARN) of the identity provider.</p>"
        }
      },
      "FailureMessage": {
        "target": "smithy.api#String",
        "traits": {

```

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        "smithy.api#documentation": "<p>The failure message associated with an identity provider.</p>"
    }
}
},
"traits": {
    "smithy.api#documentation": "<p>Describes an identity provider.</p>"
}
},
"com.amazonaws.licenseanagerusersubscriptions#IdentityProviderSummaryList": {
    "type": "list",
    "member": {

        "target": "com.amazonaws.licenseanagerusersubscriptions#IdentityProviderSummary"
    }
},
"com.amazonaws.licenseanagerusersubscriptions#InstanceSummary": {
    "type": "structure",
    "members": {
        "InstanceId": {
            "target": "smithy.api#String",
            "traits": {
                "smithy.api#documentation": "<p>The ID of the EC2 instance, which provides user-based
subscriptions.</p>",
                "smithy.api#required": {}
            }
        },
        "Status": {
            "target": "smithy.api#String",
            "traits": {
                "smithy.api#documentation": "<p>The status of an EC2 instance resource.</p>",
                "smithy.api#required": {}
            }
        },
        "Products": {
            "target": "com.amazonaws.licenseanagerusersubscriptions#StringList",
            "traits": {
                "smithy.api#documentation": "<p>A list of provided user-based subscription products.</p>",
                "smithy.api#required": {}
            }
        },
        "LastStatusCheckDate": {
            "target": "smithy.api#String",
            "traits": {
                "smithy.api#documentation": "<p>The date of the last status check.</p>"
            }
        },
        "StatusMessage": {
            "target": "smithy.api#String",

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        "traits": {
            "smithy.api#documentation": "<p>The status message for an EC2 instance.</p>"
        }
    },
    "traits": {
        "smithy.api#documentation": "<p>Describes an EC2 instance providing user-based subscriptions.</p>"
    }
},
"com.amazonaws.licenseanagerusersubscriptions#InstanceSummaryList":
{
    "type": "list",
    "member": {
        "target": "com.amazonaws.licenseanagerusersubscriptions#InstanceSummary"
    }
},
"com.amazonaws.licenseanagerusersubscriptions#InstanceUserSummary": {
    "type": "structure",
    "members": {
        "Username": {
            "target": "smithy.api#String",
            "traits": {
                "smithy.api#documentation": "<p>The user name from the identity provider for the user.</p>",
                "smithy.api#required": {}
            }
        },
        "InstanceId": {
            "target": "smithy.api#String",
            "traits": {
                "smithy.api#documentation": "<p>The ID of the EC2 instance that provides user-based
subscriptions.</p>",
                "smithy.api#required": {}
            }
        }
    },
    "IdentityProvider": {
        "target": "com.amazonaws.licenseanagerusersubscriptions#IdentityProvider",
        "traits": {
            "smithy.api#documentation": "<p>The <code>IdentityProvider</code> resource specifies details
about the identity provider.</p>",
            "smithy.api#required": {}
        }
    },
    "Status": {
        "target": "smithy.api#String",
        "traits": {
            "smithy.api#documentation": "<p>The status of a user associated with an EC2 instance.</p>",
            "smithy.api#required": {}
        }
    }
}

```

```

    }
  },
  "InstanceUserArn": {
    "target": "com.amazonaws.licenseanagerusersubscriptions#Arn",
    "traits": {
      "smithy.api#documentation": "<p>The Amazon Resource Name (ARN) that identifies the instance
user.</p>"
    }
  },
  "StatusMessage": {
    "target": "smithy.api#String",
    "traits": {
      "smithy.api#documentation": "<p>The status message for users of an EC2 instance.</p>"
    }
  },
  "Domain": {
    "target": "smithy.api#String",
    "traits": {
      "smithy.api#documentation": "<p>The domain name of the Active Directory that contains the user
information for the product subscription.</p>"
    }
  },
  "AssociationDate": {
    "target": "smithy.api#String",
    "traits": {
      "smithy.api#documentation": "<p>The date a user was associated with an EC2 instance.</p>"
    }
  },
  "DisassociationDate": {
    "target": "smithy.api#String",
    "traits": {
      "smithy.api#documentation": "<p>The date a user was disassociated from an EC2 instance.</p>"
    }
  },
  "traits": {
    "smithy.api#documentation": "<p>Describes users of an EC2 instance providing user-based
subscriptions.</p>"
  },
  "com.amazonaws.licenseanagerusersubscriptions#InstanceUserSummaryList": {
    "type": "list",
    "member": {
      "target": "com.amazonaws.licenseanagerusersubscriptions#InstanceUserSummary"
    }
  },
  "com.amazonaws.licenseanagerusersubscriptions#InternalServerException": {
    "type": "structure",

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"members": {
  "message": {
    "target": "smithy.api#String"
  }
},
"traits": {
  "smithy.api#documentation": "<p>An exception occurred with the service.</p>",
  "smithy.api#error": "server",
  "smithy.api#httpError": 500
}
},
"com.amazonaws.licensemanagerusersubscriptions#IPv4": {
  "type": "string",
  "traits": {
    "smithy.api#pattern": "^(?:(25[0-5]|2[0-4][0-9]|1[0-9][0-9]|[1-9][0-9]|[0-9])(\\.(?!$)|$)){4}$"
  }
},
"com.amazonaws.licensemanagerusersubscriptions#IPv4List": {
  "type": "list",
  "member": {
    "target": "com.amazonaws.licensemanagerusersubscriptions#IPv4"
  }
},
"com.amazonaws.licensemanagerusersubscriptions#LicenseManagerUserSubscriptions": {
  "type": "service",
  "version": "2018-05-10",
  "operations": [
    {
      "target": "com.amazonaws.licensemanagerusersubscriptions#AssociateUser"
    },
    {
      "target": "com.amazonaws.licensemanagerusersubscriptions#CreateLicenseServerEndpoint"
    },
    {
      "target": "com.amazonaws.licensemanagerusersubscriptions#DeleteLicenseServerEndpoint"
    },
    {
      "target": "com.amazonaws.licensemanagerusersubscriptions#DeregisterIdentityProvider"
    },
    {
      "target": "com.amazonaws.licensemanagerusersubscriptions#DisassociateUser"
    },
    {
      "target": "com.amazonaws.licensemanagerusersubscriptions#ListIdentityProviders"
    },
    {
      "target": "com.amazonaws.licensemanagerusersubscriptions#ListInstances"
    }
  ],

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    {
      "target": "com.amazonaws.licensemanagerusersubscriptions#ListLicenseServerEndpoints"
    },
    {
      "target": "com.amazonaws.licensemanagerusersubscriptions#ListProductSubscriptions"
    },
    {
      "target": "com.amazonaws.licensemanagerusersubscriptions#ListTagsForResource"
    },
    {
      "target": "com.amazonaws.licensemanagerusersubscriptions#ListUserAssociations"
    },
    {
      "target": "com.amazonaws.licensemanagerusersubscriptions#RegisterIdentityProvider"
    },
    {
      "target": "com.amazonaws.licensemanagerusersubscriptions#StartProductSubscription"
    },
    {
      "target": "com.amazonaws.licensemanagerusersubscriptions#StopProductSubscription"
    },
    {
      "target": "com.amazonaws.licensemanagerusersubscriptions#TagResource"
    },
    {
      "target": "com.amazonaws.licensemanagerusersubscriptions#UntagResource"
    },
    {
      "target": "com.amazonaws.licensemanagerusersubscriptions#UpdateIdentityProviderSettings"
    }
  ],
  "traits": {
    "aws.api#service": {
      "sdkId": "License Manager User Subscriptions",
      "arnNamespace": "license-manager-user-subscriptions",
      "cloudTrailEventSource": "license-manager-user-subscriptions.amazonaws.com"
    },
    "aws.auth#sigv4": {
      "name": "license-manager-user-subscriptions"
    },
    "aws.protocols#restJson1": {},
    "smithy.api#cors": {
      "additionalAllowedHeaders": [
        "*",
        "content-type",
        "x-amz-content-sha256",
        "x-amz-user-agent"
      ]
    }
  }
}

```



```
"x-amzn-platform-id",
"x-amzn-trace-id",
"content-length",

"x-api-key",
    "authorization",
    "x-amz-date",
    "x-amz-security-token",
    "Access-Control-Allow-Headers",
    "Access-Control-Allow-Methods",
    "Access-Control-Allow-Origin"
],
"additionalExposedHeaders": [
    "x-amzn-errortype",
    "x-amzn-requestid",
    "x-amzn-trace-id"
]
},
"smithy.api#documentation": "<p>With License Manager, you can create user-based subscriptions to utilize licensed software with\n\tta per user subscription fee on Amazon EC2 instances.</p>",
"smithy.api#title": "AWS License Manager User Subscriptions",
"smithy.rules#endpointRuleSet": {
    "version": "1.0",
    "parameters": {
        "Region":
{
            "builtIn": "AWS::Region",
            "required": false,
            "documentation": "The AWS region used to dispatch the request.",
            "type": "String"
        },
        "UseDualStack": {
            "builtIn": "AWS::UseDualStack",
            "required": true,
            "default": false,
            "documentation": "When true, use the dual-stack endpoint. If the configured endpoint does not support dual-stack, dispatching the request MAY return an error.",
            "type": "Boolean"
        },
        "UseFIPS": {
            "builtIn": "AWS::UseFIPS",
            "required": true,
            "default": false,
            "documentation": "When true, send this request to the FIPS-compliant regional endpoint. If the configured endpoint does not have a FIPS compliant endpoint, dispatching the request will return an error.",
            "type": "Boolean"
        }
    }
}
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    "Endpoint": {
      "builtIn": "SDK::Endpoint",
      "required": false,
      "documentation": "Override the endpoint used to send this request",
      "type": "String"
    }
  },
  "rules": [
    {
      "conditions": [
        {
          "fn": "isSet",
          "argv": [
            {
              "ref": "Endpoint"
            }
          ]
        }
      ]
    }
  ],
  "rules": [
    {
      "conditions": [
        {
          "fn": "booleanEquals",
          "argv": [
            {
              "ref": "UseFIPS"
            },
            true
          ]
        }
      ]
    },
    {
      "error": "Invalid Configuration: FIPS and custom endpoint are not supported",
      "type": "error"
    }
  ],
  {
    "conditions": [
      {
        "fn": "booleanEquals",
        "argv": [
          {
            "ref": "UseDualStack"
          },
          true
        ]
      }
    ]
  },

```

```

        "error": "Invalid Configuration: Dualstack and custom endpoint are not supported",
        "type": "error"
    },
    {
        "conditions": [],
        "endpoint": {
            "url": {
                "ref": "Endpoint"
            },
        },
    },
    "properties": {},
    "headers": {}
},
"type": "endpoint"
}
],
"type": "tree"
},
{
    "conditions": [
        {
            "fn": "isSet",
            "argv": [
                {
                    "ref": "Region"
                }
            ]
        }
    ]
},
],
"rules": [
    {
        "conditions": [
            {
                "fn": "aws.partition",

                "argv": [
                    {
                        "ref": "Region"
                    }
                ]
            },
        ],
        "assign": "PartitionResult"
    }
],
"rules": [
    {
        "conditions": [
            {
                "fn": "booleanEquals",

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      "argv": [
        {
          "ref": "UseFIPS"
        },
        true
      ]
    },
    {
      "fn": "booleanEquals",
      "argv": [
        {
          "ref": "UseDualStack"
        },
        true
      ]
    }
  ],
  "rules": [
    {
      "conditions": [
        {
          "fn": "booleanEquals",
          "argv": [
            true,
            {
              "fn": "getAttr",
              "argv": [
                {
                  "ref": "PartitionResult"
                },
                "supportsFIPS"
              ]
            }
          ]
        }
      ]
    },
    {
      "fn": "booleanEquals",
      "argv": [
        true,
        {
          "fn": "getAttr",
          "argv": [
            {
              "ref": "PartitionResult"
            }
          ]
        }
      ]
    }
  ]
}

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        "supportsDualStack"
      ]
    }
  ]
}

],
"rules": [
  {
    "conditions": [],
    "endpoint": {
      "url": "https://license-manager-user-subscriptions-
fips.{Region}.{PartitionResult#dualStackDnsSuffix}",
      "properties": {},
      "headers": {}
    },
    "type": "endpoint"
  }

],

  "type": "tree"
},
{
  "conditions": [],
  "error": "FIPS and DualStack are enabled, but this partition does not support one or
both",
  "type": "error"
}
],
"type": "tree"
},
{
  "conditions": [
    {
      "fn": "booleanEquals",
      "argv": [
        {
          "ref": "UseFIPS"
        },
        true
      ]
    }
  ],
  "rules": [
    {
      "conditions": [
        {

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```

        "fn": "booleanEquals",
        "argv": [
            {
                "fn": "getAttr",
                "argv": [
                    {
                        "ref": "PartitionResult"
                    },
                    "supportsFIPS"
                ]
            },
            true
        ]
    },
    "rules": [
        {
            "conditions": [],
            "endpoint": {
                "url": "https://license-manager-user-subscriptions-fips.{Region}.{PartitionResult#dnsSuffix}",
                "properties": {},
                "headers": {}
            },
            "type": "endpoint"
        },
        {
            "type": "tree"
        },
        {
            "conditions": [],
            "error": "FIPS is enabled but this partition does not support FIPS",
            "type": "error"
        }
    ],
    "type": "tree"
},
{
    "conditions": [
        {
            "fn": "booleanEquals",
            "argv": [
                {
                    "ref": "UseDualStack"
                },
                true
            ]
        }
    ]
}

```

```

        ]
      }
    ],
    "rules": [
      {
        "conditions": [
          {
            "fn": "booleanEquals",
            "argv": [
              true,
              {
                "fn": "getAttr",
                "argv": [
                  {
                    "ref": "PartitionResult"
                  },
                  "supportsDualStack"
                ]
              }
            ]
          }
        ]
      }
    ],
    "rules": [
      {
        "conditions": [],
        "endpoint": {
          "url": "https://license-manager-user-
subscriptions.{Region}.{PartitionResult#dualStackDnsSuffix}",
          "properties": {},
          "headers": {}
        },
        "type": "endpoint"
      }
    ],
    "type": "tree"
  },
  {
    "conditions": [],
    "error": "DualStack is enabled but this partition does not support DualStack",
    "type": "error"
  }
],
"type": "tree"
},
{

```

```

        "conditions": [],
        "endpoint": {
            "url": "https://license-manager-user-
subscriptions.{Region}.{PartitionResult#dnsSuffix}",

        "properties": {},
        "headers": {}
    },
    "type": "endpoint"
},
"type": "tree"
},
],
"type": "tree"
},
{
    "conditions": [],
    "error": "Invalid Configuration: Missing Region",
    "type": "error"
}
],
},
"smithy.rules#endpointTests": {
    "testCases": [
        {
            "documentation": "For region us-east-1 with FIPS enabled and DualStack enabled",
            "expect":
{
                "endpoint": {
                    "url": "https://license-manager-user-subscriptions-fips.us-east-1.api.aws"
                }
            },
            "params": {
                "Region": "us-east-1",
                "UseFIPS": true,
                "UseDualStack": true
            }
        },
        {
            "documentation": "For region us-east-1 with FIPS enabled and DualStack disabled",
            "expect": {
                "endpoint": {
                    "url": "https://license-manager-user-subscriptions-fips.us-east-1.amazonaws.com"
                }
            },
            "params": {
                "Region": "us-east-1",

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    "UseFIPS": true,
        "UseDualStack": false
    }
},
{
    "documentation": "For region us-east-1 with FIPS disabled and DualStack enabled",
    "expect": {
        "endpoint": {
            "url": "https://license-manager-user-subscriptions.us-east-1.api.aws"
        }
    },
    "params": {
        "Region": "us-east-1",
        "UseFIPS": false,
        "UseDualStack": true
    }
},
{
    "documentation": "For region us-east-1 with FIPS disabled and DualStack disabled",
    "expect": {
        "endpoint": {
            "url": "https://license-manager-user-subscriptions.us-east-1.amazonaws.com"
        }
    },
    "params": {
        "Region": "us-east-1",
        "UseFIPS": false,
        "UseDualStack": false
    }
},
{
    "documentation": "For region cn-north-1 with FIPS enabled and DualStack enabled",
    "expect": {
        "endpoint": {
            "url": "https://license-manager-user-subscriptions-fips.cn-north-
1.api.amazonwebservices.com.cn"
        }
    },
    "params": {
        "Region": "cn-north-1",
        "UseFIPS":
true,
        "UseDualStack": true
    }
},
{

```

```

    "documentation": "For region cn-north-1 with FIPS enabled and DualStack disabled",
    "expect": {
      "endpoint": {
        "url": "https://license-manager-user-subscriptions-fips.cn-north-1.amazonaws.com.cn"
      }
    },
    "params": {
      "Region": "cn-north-1",
      "UseFIPS": true,
      "UseDualStack": false
    }
  },
  {
    "documentation": "For region cn-north-1 with FIPS disabled and DualStack enabled",
    "expect": {
      "endpoint": {
        "url": "https://license-manager-user-subscriptions.cn-north-1.api.amazonwebservices.com.cn"
      }
    },
    "params": {
      "Region": "cn-north-1",
      "UseFIPS": false,
      "UseDualStack": true
    }
  },
  {
    "documentation": "For region cn-north-1 with FIPS disabled and DualStack disabled",
    "expect": {
      "endpoint": {
        "url": "https://license-manager-user-subscriptions.cn-north-1.amazonaws.com.cn"
      }
    },
    "params": {
      "Region": "cn-north-1",
      "UseFIPS": false,
      "UseDualStack": false
    }
  },
  {
    "documentation": "For region us-gov-east-1 with FIPS enabled and DualStack enabled",
    "expect": {
      "endpoint": {
        "url": "https://license-manager-user-subscriptions-fips.us-gov-east-1.api.aws"
      }
    },
    "params": {
      "Region": "us-gov-east-1",

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        "UseFIPS": true,
        "UseDualStack": true
    }
},
{
    "documentation": "For region us-gov-east-1 with FIPS enabled and DualStack disabled",
    "expect": {
        "endpoint":
{
            "url": "https://license-manager-user-subscriptions-fips.us-gov-east-1.amazonaws.com"
        }
    },
    "params": {
        "Region": "us-gov-east-1",
        "UseFIPS": true,
        "UseDualStack": false
    }
},
{
    "documentation": "For region us-gov-east-1 with FIPS disabled and DualStack enabled",
    "expect": {
        "endpoint": {
            "url": "https://license-manager-user-subscriptions.us-gov-east-1.api.aws"
        }
    },
    "params": {
        "Region": "us-gov-east-1",
        "UseFIPS": false,
        "UseDualStack": true
    }
},
{
    "documentation": "For region us-gov-east-1 with FIPS disabled and DualStack disabled",
    "expect": {
        "endpoint": {
            "url": "https://license-manager-user-subscriptions.us-gov-east-1.amazonaws.com"
        }
    },
    "params": {
        "Region": "us-gov-east-1",
        "UseFIPS": false,
        "UseDualStack": false
    }
},
{
    "documentation": "For region us-iso-east-1 with FIPS enabled and DualStack enabled",
    "expect": {
        "error": "FIPS

```

and DualStack are enabled, but this partition does not support one or both"

```
    },
    "params": {
      "Region": "us-iso-east-1",
      "UseFIPS": true,
      "UseDualStack": true
    }
  },
  {
    "documentation": "For region us-iso-east-1 with FIPS enabled and DualStack disabled",
    "expect": {
      "endpoint": {
        "url": "https://license-manager-user-subscriptions-fips.us-iso-east-1.c2s.ic.gov"
      }
    },
    "params": {
      "Region": "us-iso-east-1",
      "UseFIPS": true,
      "UseDualStack": false
    }
  }
},
{
  "documentation": "For region us-iso-east-1 with FIPS disabled and DualStack enabled",
  "expect": {
    "error": "DualStack is enabled but this partition does not support DualStack"
  },
  "params": {
    "Region": "us-iso-east-1",
    "UseFIPS": false,
    "UseDualStack": true
  }
},
{
  "documentation": "For region us-iso-east-1 with FIPS disabled and DualStack disabled",
  "expect": {
    "endpoint": {
      "url": "https://license-manager-user-subscriptions.us-iso-east-1.c2s.ic.gov"
    }
  },
  "params": {
    "Region": "us-iso-east-1",
    "UseFIPS": false,
    "UseDualStack": false
  }
},
{
```

```

        "documentation": "For region us-isob-east-1 with FIPS enabled and DualStack enabled",
        "expect": {
            "error": "FIPS and DualStack are enabled, but this partition does not support one or both"
        },
        "params": {
            "Region": "us-isob-east-1",
            "UseFIPS": true,
            "UseDualStack": true
        }
    },
    {
        "documentation": "For region us-isob-east-1 with FIPS enabled and DualStack
disabled",
        "expect": {
            "endpoint": {
                "url": "https://license-manager-user-subscriptions-fips.us-isob-east-1.sc2s.sgov.gov"
            }
        },
        "params": {
            "Region": "us-isob-east-1",
            "UseFIPS": true,
            "UseDualStack": false
        }
    },
    {
        "documentation": "For region us-isob-east-1 with FIPS disabled and DualStack enabled",
        "expect": {
            "error": "DualStack is enabled but this partition does not support DualStack"
        },
        "params": {
            "Region": "us-isob-east-1",
            "UseFIPS": false,
            "UseDualStack": true
        }
    },
    {
        "documentation": "For region us-isob-east-1 with FIPS disabled and DualStack disabled",
        "expect": {
            "endpoint": {
                "url": "https://license-manager-user-subscriptions.us-isob-east-1.sc2s.sgov.gov"
            }
        },
        "params": {
            "Region": "us-isob-east-1",
            "UseFIPS": false,
            "UseDualStack": false
        }
    }

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    },
    {
      "documentation": "For custom endpoint with region set and fips disabled and dualstack disabled",
      "expect": {

        "endpoint": {
          "url": "https://example.com"
        }
      },
      "params": {
        "Region": "us-east-1",
        "UseFIPS": false,
        "UseDualStack": false,
        "Endpoint": "https://example.com"
      }
    },
    {
      "documentation": "For custom endpoint with region not set and fips disabled and dualstack
disabled",
      "expect": {
        "endpoint": {
          "url": "https://example.com"
        }
      },
      "params": {
        "UseFIPS": false,
        "UseDualStack":
false,
        "Endpoint": "https://example.com"
      }
    },
    {
      "documentation": "For custom endpoint with fips enabled and dualstack disabled",
      "expect": {
        "error": "Invalid Configuration: FIPS and custom endpoint are not supported"
      },
      "params": {
        "Region": "us-east-1",
        "UseFIPS": true,
        "UseDualStack": false,
        "Endpoint": "https://example.com"
      }
    },
    {
      "documentation": "For custom endpoint with fips disabled and dualstack enabled",
      "expect": {
        "error": "Invalid Configuration:

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[illegible]

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about a Remote Desktop Services (RDS) license server.</p>"
    }
  },
  "com.amazonaws.licensemanagerusersubscriptions#LicenseServerEndpoint": {
    "type": "structure",
    "members": {
      "IdentityProviderArn": {
        "target": "smithy.api#String",
        "traits": {
          "smithy.api#documentation": "<p>The Amazon Resource Name (ARN) of the identity provider that's
associated with \n\t\t\tthe RDS license server endpoint.</p>"
        }
      },
      "ServerType": {
        "target": "com.amazonaws.licensemanagerusersubscriptions#ServerType",
        "traits": {
          "smithy.api#documentation": "<p>The type of license server.</p>"
        }
      },
      "ServerEndpoint": {
        "target": "com.amazonaws.licensemanagerusersubscriptions#ServerEndpoint",

        "traits": {
          "smithy.api#documentation": "<p>The <code>ServerEndpoint</code> resource contains the network
\n\t\t\taddress of the RDS license server endpoint.</p>"
        }
      },
      "StatusMessage": {
        "target": "smithy.api#String",
        "traits": {
          "smithy.api#documentation": "<p>The message associated with the provisioning status, if there is
one.</p>"
        }
      },
      "LicenseServerEndpointId": {
        "target": "com.amazonaws.licensemanagerusersubscriptions#LicenseServerEndpointId",
        "traits": {
          "smithy.api#documentation": "<p>The ID of the license server endpoint.</p>"
        }
      },
      "LicenseServerEndpointArn": {
        "target": "com.amazonaws.licensemanagerusersubscriptions#Arn",
        "traits": {
          "smithy.api#documentation": "<p>The ARN of the <code>ServerEndpoint</code> resource for the
RDS \n\t\t\tlicense server.</p>"
        }
      },
    },
  },

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    "LicenseServerEndpointProvisioningStatus": {
      "target":
"com.amazonaws.licensemanagerusersubscriptions#LicenseServerEndpointProvisioningStatus",
      "traits": {
        "smithy.api#documentation": "<p>The current state of the provisioning process for the RDS license
\n\t\t\tserver endpoint</p>"
      }
    },
    "LicenseServers": {
      "target": "com.amazonaws.licensemanagerusersubscriptions#LicenseServerList",
      "traits": {
        "smithy.api#documentation": "<p>An array of <code>LicenseServer</code> resources that represent
the \n\t\t\tlicense servers that are accessed through this endpoint.</p>"
      }
    },
    "CreationTime": {
      "target": "smithy.api#Timestamp",
      "traits": {
        "smithy.api#documentation": "<p>The timestamp when License Manager created the license server
endpoint.</p>"
      }
    },
    "traits": {
      "smithy.api#documentation": "<p>Contains details about a network endpoint for a Remote Desktop
Services (RDS) \n\t\t\tlicense server.</p>"
    },
    "com.amazonaws.licensemanagerusersubscriptions#LicenseServerEndpointId": {
      "type": "string"
    },
    "com.amazonaws.licensemanagerusersubscriptions#LicenseServerEndpointList": {
      "type": "list",
      "member": {
        "target": "com.amazonaws.licensemanagerusersubscriptions#LicenseServerEndpoint"
      }
    },
    "com.amazonaws.licensemanagerusersubscriptions#LicenseServerEndpointProvisioningStatus": {
      "type": "string",
      "traits": {
        "smithy.api#enum": [
          {
            "name": "PROVISIONING",
            "value": "PROVISIONING",
            "documentation": ""
          },
        ],
      },
    },

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    {
      "name": "PROVISIONING_FAILED",
      "value": "PROVISIONING_FAILED",
      "documentation": ""
    },
    {
      "name": "PROVISIONED",
      "value": "PROVISIONED",
      "documentation": ""
    },
    {
      "name": "DELETING",
      "value": "DELETING",
      "documentation": ""
    },
    {
      "name": "DELETION_FAILED",
      "value": "DELETION_FAILED",
      "documentation": ""
    }
  ],
  {
    "name": "DELETED",
    "value": "DELETED",
    "documentation": ""
  }
]
}
},
"com.amazonaws.licensemanagerusersubscriptions#LicenseServerHealthStatus": {
  "type": "string",
  "traits": {
    "smithy.api#enum": [
      {
        "name": "HEALTHY",
        "value": "HEALTHY",
        "documentation": ""
      },
      {
        "name": "UNHEALTHY",
        "value": "UNHEALTHY",
        "documentation": ""
      },
      {
        "name": "NOT_APPLICABLE",
        "value": "NOT_APPLICABLE",
        "documentation": ""
      }
    ]
  }
}

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    ]
  }
},
"com.amazonaws.licensemanagerusersubscriptions#LicenseServerList": {
  "type": "list",
  "member": {
    "target": "com.amazonaws.licensemanagerusersubscriptions#LicenseServer"
  }
},
"com.amazonaws.licensemanagerusersubscriptions#LicenseServerSettings": {
  "type": "structure",
  "members": {
    "ServerType": {
      "target": "com.amazonaws.licensemanagerusersubscriptions#ServerType",
      "traits": {
        "smithy.api#documentation": "<p>The type of license server.</p>",
        "smithy.api#required": {}
      }
    },
    "ServerSettings": {
      "target": "com.amazonaws.licensemanagerusersubscriptions#ServerSettings",
      "traits": {
        "smithy.api#documentation": "<p>The <code>ServerSettings</code> resource contains the settings
for
your \n\t\t\tserver.</p>",
        "smithy.api#required": {}
      }
    },
    "traits": {
      "smithy.api#documentation": "<p>The settings to configure your license server.</p>"
    }
  },
"com.amazonaws.licensemanagerusersubscriptions#ListIdentityProviders": {
  "type": "operation",
  "input": {
    "target": "com.amazonaws.licensemanagerusersubscriptions#ListIdentityProvidersRequest"
  },
  "output": {
    "target": "com.amazonaws.licensemanagerusersubscriptions#ListIdentityProvidersResponse"
  },
  "errors": [
    {
      "target": "com.amazonaws.licensemanagerusersubscriptions#AccessDeniedException"
    },
    {
      "target": "com.amazonaws.licensemanagerusersubscriptions#ConflictException"
    },
  ],

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{
  "target": "com.amazonaws.licenseanagerusersubscriptions#InternalServerError"
},
{
  "target": "com.amazonaws.licenseanagerusersubscriptions#ResourceNotFoundException"
},
{
  "target": "com.amazonaws.licenseanagerusersubscriptions#ServiceQuotaExceededException"
},
{
  "target": "com.amazonaws.licenseanagerusersubscriptions#ThrottlingException"
},
{
  "target": "com.amazonaws.licenseanagerusersubscriptions#ValidationException"
}
],
"traits": {
  "smithy.api#documentation": "<p>Lists the Active Directory identity providers for user-based
subscriptions.</p>",
  "smithy.api#http": {
    "code": 200,
    "method": "POST",
    "uri": "/identity-provider/ListIdentityProviders"
  },
  "smithy.api#paginated": {
    "inputToken": "NextToken",
    "outputToken": "NextToken",
    "pageSize": "MaxResults",
    "items": "IdentityProviderSummaries"
  }
}
},
"com.amazonaws.licenseanagerusersubscriptions#ListIdentityProvidersRequest": {
  "type": "structure",
  "members": {
    "MaxResults": {
      "target": "com.amazonaws.licenseanagerusersubscriptions#BoxInteger",
      "traits": {
        "smithy.api#documentation": "<p>The maximum number of results to return from a single
request.</p>"
      }
    },
    "Filters": {
      "target": "com.amazonaws.licenseanagerusersubscriptions#FilterList",
      "traits": {
        "smithy.api#documentation": "<p>You can use

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    },
    "errors": [
      {
        "target": "com.amazonaws.licenseanagerusersubscriptions#AccessDeniedException"
      },
      {
        "target": "com.amazonaws.licenseanagerusersubscriptions#ConflictException"
      },
      {
        "target": "com.amazonaws.licenseanagerusersubscriptions#InternalServerError"
      },
      {
        "target": "com.amazonaws.licenseanagerusersubscriptions#ResourceNotFoundException"
      },
      {
        "target": "com.amazonaws.licenseanagerusersubscriptions#ServiceQuotaExceededException"
      },
    ],
    {
      "target": "com.amazonaws.licenseanagerusersubscriptions#ThrottlingException"
    },
    {
      "target": "com.amazonaws.licenseanagerusersubscriptions#ValidationException"
    }
  ],
  "traits": {
    "smithy.api#documentation": "<p>Lists the EC2 instances providing user-based subscriptions.</p>",
    "smithy.api#http": {
      "code": 200,
      "method": "POST",
      "uri": "/instance/ListInstances"
    },
    "smithy.api#paginated": {
      "inputToken": "NextToken",
      "outputToken": "NextToken",
      "pageSize": "MaxResults",
      "items": "InstanceSummaries"
    }
  }
},
"com.amazonaws.licenseanagerusersubscriptions#ListInstancesRequest": {
  "type": "structure",
  "members":
{
  "MaxResults": {
    "target": "com.amazonaws.licenseanagerusersubscriptions#BoxInteger",
    "traits": {
      "smithy.api#documentation": "<p>The maximum number of results to return from a single

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request.</p>"
  }
},
"NextToken": {
  "target": "smithy.api#String",
  "traits": {
    "smithy.api#documentation": "<p>A token to specify where to start paginating. This is the nextToken
\n\tfrom a previously truncated response.</p>"
  }
},
"Filters": {
  "target": "com.amazonaws.licensemanagerusersubscriptions#FilterList",
  "traits": {
    "smithy.api#documentation": "<p>You can use the following filters to streamline results:</p>\n
<ul>\n  <li>\n    <p>Status</p>\n    </li>\n  <li>\n    <p>InstanceId</p>\n    </li>\n  </ul>"
  }
},
"traits": {
  "smithy.api#input": {}
}
},
"com.amazonaws.licensemanagerusersubscriptions#ListInstancesResponse": {
  "type": "structure",
  "members": {
    "InstanceSummaries": {
      "target": "com.amazonaws.licensemanagerusersubscriptions#InstanceSummaryList",
      "traits": {
        "smithy.api#documentation": "<p>An array of <code>InstanceSummary</code> resources that
contain details \n\t\t\tabout the instances that provide user-based subscriptions and also meet the \n\t\t\trequest
criteria.</p>"
      }
    },
    "NextToken": {
      "target": "smithy.api#String",
      "traits": {
        "smithy.api#documentation": "<p>The next
token used for paginated responses. When this field isn't empty, \n\t\tthere are additional elements that the service
hasn't included in this request. Use this token \n\t\t\twith the next request to retrieve additional objects.</p>"
      }
    }
  },
  "traits": {
    "smithy.api#output": {}
  }
},
"com.amazonaws.licensemanagerusersubscriptions#ListLicenseServerEndpoints": {
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    "type": "operation",
    "input": {
      "target": "com.amazonaws.licenseanagerusersubscriptions#ListLicenseServerEndpointsRequest"
    },
    "output": {
      "target": "com.amazonaws.licenseanagerusersubscriptions#ListLicenseServerEndpointsResponse"
    },
    "errors": [
      {
        "target": "com.amazonaws.licenseanagerusersubscriptions#AccessDeniedException"
      },
      {
        "target": "com.amazonaws.licenseanagerusersubscriptions#ConflictException"
      },
      {
        "target": "com.amazonaws.licenseanagerusersubscriptions#InternalServerErrorException"
      },
      {
        "target": "com.amazonaws.licenseanagerusersubscriptions#ServiceQuotaExceededException"
      },
      {
        "target": "com.amazonaws.licenseanagerusersubscriptions#ThrottlingException"
      },
      {
        "target": "com.amazonaws.licenseanagerusersubscriptions#ValidationException"
      }
    ],
    "traits": {
      "smithy.api#documentation": "<p>List the Remote Desktop Services (RDS) License Server endpoints
    </p>",
      "smithy.api#http": {
        "code": 200,
        "method": "POST",
        "uri": "/license-server/ListLicenseServerEndpoints"
      },
      "smithy.api#paginated": {
        "inputToken": "NextToken",
        "outputToken": "NextToken",
        "pageSize": "MaxResults",
        "items": "LicenseServerEndpoints"
      }
    },
    "com.amazonaws.licenseanagerusersubscriptions#ListLicenseServerEndpointsRequest": {
      "type": "structure",
      "members": {
        "MaxResults": {

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    "traits": {
      "smithy.api#output": {}
    },
    "com.amazonaws.licenseanagerusersubscriptions#ListProductSubscriptions": {
      "type":
"operation",
      "input": {
        "target": "com.amazonaws.licenseanagerusersubscriptions#ListProductSubscriptionsRequest"
      },
      "output": {
        "target": "com.amazonaws.licenseanagerusersubscriptions#ListProductSubscriptionsResponse"
      },
      "errors": [
        {
          "target": "com.amazonaws.licenseanagerusersubscriptions#AccessDeniedException"
        },
        {
          "target": "com.amazonaws.licenseanagerusersubscriptions#ConflictException"
        },
        {
          "target": "com.amazonaws.licenseanagerusersubscriptions#InternalServerErrorException"
        },
        {
          "target": "com.amazonaws.licenseanagerusersubscriptions#ResourceNotFoundException"
        },
        {
          "target": "com.amazonaws.licenseanagerusersubscriptions#ServiceQuotaExceededException"
        },
        {
          "target": "com.amazonaws.licenseanagerusersubscriptions#ThrottlingException"
        },
        {
          "target": "com.amazonaws.licenseanagerusersubscriptions#ValidationException"
        }
      ],
      "traits": {
        "smithy.api#documentation": "<p>Lists the user-based subscription products available from an identity
provider.</p>",
        "smithy.api#http": {
          "code": 200,
          "method": "POST",
          "uri": "/user/ListProductSubscriptions"
        },
        "smithy.api#paginated": {
          "inputToken": "NextToken",
          "outputToken": "NextToken",
          "pageSize": "MaxResults",

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        "items": "ProductUserSummaries"
    }
}
},
"com.amazonaws.licenseanagerusersubscriptions#ListProductSubscriptionsRequest":
{
    "type": "structure",
    "members": {
        "Product": {
            "target": "smithy.api#String",
            "traits": {
                "smithy.api#documentation": "<p>The name of the user-based subscription product.</p>\n
<p>Valid values: <code>VISUAL_STUDIO_ENTERPRISE</code> | 
<code>VISUAL_STUDIO_PROFESSIONAL</code> | <code>OFFICE_PROFESSIONAL_PLUS</code> | 
\n<code>REMOTE_DESKTOP_SERVICES</code>\n      </p>"
            }
        },
        "IdentityProvider": {
            "target": "com.amazonaws.licenseanagerusersubscriptions#IdentityProvider",
            "traits": {
                "smithy.api#documentation": "<p>An object that specifies details for the identity provider.</p>",
                "smithy.api#required": {}
            }
        },
        "MaxResults": {
            "target": "com.amazonaws.licenseanagerusersubscriptions#BoxInteger",
            "traits": {
                "smithy.api#documentation": "<p>The maximum number of results to return from a single
request.</p>"
            }
        },
        "Filters": {
            "target": "com.amazonaws.licenseanagerusersubscriptions#FilterList",
            "traits": {
                "smithy.api#documentation": "<p>You can use the following filters to streamline results:</p>\n
<ul>\n      <li>\n        <p>Status</p>\n      </li>\n      <li>\n        <p>Username</p>\n      </li>\n      <li>\n        <p>Domain</p>\n      </li>\n    </ul>"
            }
        },
        "NextToken": {
            "target": "smithy.api#String",
            "traits": {
                "smithy.api#documentation": "<p>A token to specify where to start paginating.
This is the nextToken \n\tfrom a previously truncated response.</p>"
            }
        }
    },
    "traits": {

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    "smithy.api#input": {}
  },
  "com.amazonaws.licenseanagerusersubscriptions#ListProductSubscriptionsResponse": {
    "type": "structure",
    "members": {
      "ProductUserSummaries": {
        "target": "com.amazonaws.licenseanagerusersubscriptions#ProductUserSummaryList",
        "traits": {
          "smithy.api#documentation": "<p>Metadata that describes the list product subscriptions
operation.</p>"
        }
      },
      "NextToken": {
        "target": "smithy.api#String",
        "traits": {
          "smithy.api#documentation": "<p>The next token used for paginated responses. When this field isn't
empty, \n\tthere are additional elements that the service
hasn't included in this request. Use this token \n\t\twith the next request to retrieve additional objects.</p>"
        }
      }
    },
    "traits": {
      "smithy.api#output": {}
    }
  },
  "com.amazonaws.licenseanagerusersubscriptions#ListTagsForResource": {
    "type": "operation",
    "input": {
      "target": "com.amazonaws.licenseanagerusersubscriptions#ListTagsForResourceRequest"
    },
    "output": {
      "target": "com.amazonaws.licenseanagerusersubscriptions#ListTagsForResourceResponse"
    },
    "errors": [
      {
        "target": "com.amazonaws.licenseanagerusersubscriptions#InternalServerErrorException"
      },
      {
        "target": "com.amazonaws.licenseanagerusersubscriptions#ResourceNotFoundException"
      },
      {
        "target":
"com.amazonaws.licenseanagerusersubscriptions#ValidationException"
      }
    ],
    "traits": {
      "smithy.api#documentation": "<p>Returns the list of tags for the specified resource.</p>",

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    "smithy.api#http": {
      "method": "GET",
      "uri": "/tags/{ResourceArn}"
    },
    "smithy.api#readonly": {}
  },
  "com.amazonaws.licenseanagerusersubscriptions#ListTagsForResourceRequest": {
    "type": "structure",
    "members": {
      "ResourceArn": {
        "target": "com.amazonaws.licenseanagerusersubscriptions#ResourceArn",
        "traits": {
          "smithy.api#documentation": "<p>The Amazon Resource Name (ARN) of the resource whose tags  
you want to retrieve.</p>",
          "smithy.api#httpLabel": {},
          "smithy.api#required": {}
        }
      }
    },
    "traits": {
      "smithy.api#input": {}
    }
  },
  "com.amazonaws.licenseanagerusersubscriptions#ListTagsForResourceResponse": {
    "type": "structure",
    "members": {
      "Tags": {
        "target": "com.amazonaws.licenseanagerusersubscriptions#Tags",
        "traits": {
          "smithy.api#documentation": "<p>The tags for the specified resource.</p>"
        }
      }
    },
    "traits": {
      "smithy.api#output": {}
    }
  },
  "com.amazonaws.licenseanagerusersubscriptions#ListUserAssociations": {
    "type": "operation",
    "input": {
      "target": "com.amazonaws.licenseanagerusersubscriptions#ListUserAssociationsRequest"
    },
    "output": {
      "target": "com.amazonaws.licenseanagerusersubscriptions#ListUserAssociationsResponse"
    },
    "errors": [

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    {
      "target": "com.amazonaws.licenseanagerusersubscriptions#AccessDeniedException"
    },
    {
      "target": "com.amazonaws.licenseanagerusersubscriptions#ConflictException"
    },
    {
      "target": "com.amazonaws.licenseanagerusersubscriptions#InternalServerErrorException"
    },
    {
      "target": "com.amazonaws.licenseanagerusersubscriptions#ResourceNotFoundException"
    },
    {
      "target": "com.amazonaws.licenseanagerusersubscriptions#ServiceQuotaExceededException"
    },
    {
      "target": "com.amazonaws.licenseanagerusersubscriptions#ThrottlingException"
    },
    {
      "target": "com.amazonaws.licenseanagerusersubscriptions#ValidationException"
    }
  ],
  "traits": {
    "smithy.api#documentation": "<p>Lists user associations for an identity provider.</p>",
    "smithy.api#http": {
      "code": 200,
      "method": "POST",
      "uri": "/user/ListUserAssociations"
    },
    "smithy.api#paginated": {
      "inputToken": "NextToken",
      "outputToken": "NextToken",
      "pageSize": "MaxResults",
      "items": "InstanceUserSummaries"
    }
  }
},
"com.amazonaws.licenseanagerusersubscriptions#ListUserAssociationsRequest": {
  "type": "structure",
  "members": {
    "InstanceId": {
      "target": "smithy.api#String",
      "traits": {
        "smithy.api#documentation": "<p>The ID of the EC2 instance, which  
provides user-based subscriptions.</p>",
        "smithy.api#required": {}
      }
    }
  },

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    "IdentityProvider": {
      "target": "com.amazonaws.licenseanagerusersubscriptions#IdentityProvider",
      "traits": {
        "smithy.api#documentation": "<p>An object that specifies details for the identity provider.</p>",
        "smithy.api#required": {}
      }
    },
    "MaxResults": {
      "target": "com.amazonaws.licenseanagerusersubscriptions#BoxInteger",
      "traits": {
        "smithy.api#documentation": "<p>The maximum number of results to return from a single
request.</p>"
      }
    },
    "Filters": {
      "target": "com.amazonaws.licenseanagerusersubscriptions#FilterList",
      "traits": {
        "smithy.api#documentation": "<p>You can use the following filters to streamline results:</p>\n      <ul>\n
<li>\n      <p>Status</p>\n      </li>\n      <li>\n      <p>Username</p>\n      </li>\n
<li>\n      <p>Domain</p>\n      </li>\n      </ul>"
      }
    },
    "NextToken": {
      "target": "smithy.api#String",
      "traits": {
        "smithy.api#documentation": "<p>A token to specify where to start paginating. This is the nextToken
\n\tfrom a previously truncated response.</p>"
      }
    }
  },
  "traits": {
    "smithy.api#input": {}
  }
},
"com.amazonaws.licenseanagerusersubscriptions#ListUserAssociationsResponse": {
  "type": "structure",
  "members": {
    "InstanceUserSummaries": {
      "target": "com.amazonaws.licenseanagerusersubscriptions#InstanceUserSummaryList",
      "traits": {
        "smithy.api#documentation": "<p>Metadata that describes the list user association operation.</p>"
      }
    },
    "NextToken": {
      "target": "smithy.api#String",
      "traits": {

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"smithy.api#documentation": "<p>The next token used for paginated responses. When this field isn't empty, \n\tthere are additional elements that the service hasn't included in this request. Use this token \n\t\twith the next request to retrieve additional objects.</p>"

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    }
  },
  "traits": {
    "smithy.api#output": {}
  },
  "com.amazonaws.licenseanagerusersubscriptions#ProductUserSummary": {
    "type": "structure",
    "members": {
      "Username": {
        "target": "smithy.api#String",
        "traits": {
          "smithy.api#documentation": "<p>The user name from the identity provider for this product user.</p>",
          "smithy.api#required": {}
        }
      },
      "Product": {
        "target": "smithy.api#String",
        "traits": {
          "smithy.api#documentation": "<p>The name of the user-based subscription product.</p>",
          "smithy.api#required": {}
        }
      },
      "IdentityProvider": {
        "target": "com.amazonaws.licenseanagerusersubscriptions#IdentityProvider",
        "traits": {
          "smithy.api#documentation": "<p>An object that specifies details for the identity provider.</p>",
          "smithy.api#required": {}
        }
      },
      "Status": {
        "target": "smithy.api#String",
        "traits": {
          "smithy.api#documentation": "<p>The status of a product for this user.</p>",
          "smithy.api#required": {}
        }
      },
      "ProductUserArn": {
        "target": "com.amazonaws.licenseanagerusersubscriptions#Arn",
        "traits": {
          "smithy.api#documentation": "<p>The Amazon Resource Name (ARN) for this product user.</p>"
        }
      }
    }
  }
}
```



```

    },
    "StatusMessage": {
      "target": "smithy.api#String",
      "traits": {
        "smithy.api#documentation": "<p>The status message for a product for this user.</p>"
      }
    },
    "Domain": {
      "target": "smithy.api#String",
      "traits": {
        "smithy.api#documentation": "<p>The domain name of the Active Directory that contains the user
information for the product subscription.</p>"
      }
    },
    "SubscriptionStartDate": {
      "target": "smithy.api#String",
      "traits": {
        "smithy.api#documentation": "<p>The start date of a subscription.</p>"
      }
    },
    "SubscriptionEndDate": {
      "target": "smithy.api#String",
      "traits": {
        "smithy.api#documentation": "<p>The end date of a subscription.</p>"
      }
    },
    "traits": {
      "smithy.api#documentation": "<p>A summary of the user-based subscription products for a specific
user.</p>"
    },
    "com.amazonaws.licenseanagerusersubscriptions#ProductUserSummaryList": {
      "type":
"list",
      "member": {
        "target": "com.amazonaws.licenseanagerusersubscriptions#ProductUserSummary"
      }
    },
    "com.amazonaws.licenseanagerusersubscriptions#RdsSalSettings": {
      "type": "structure",
      "members": {
        "RdsSalCredentialsProvider": {
          "target": "com.amazonaws.licenseanagerusersubscriptions#CredentialsProvider",
          "traits": {
            "smithy.api#documentation": "<p>The <code>CredentialsProvider</code> resource contains a
reference to \n\t\tthe credentials provider that's used for RDS license server user administration.</p>",

```

```

        "smithy.api#required": {}
    }
},
"traits": {
    "smithy.api#documentation": "<p>Server settings that are specific to a Remote Desktop Services (RDS)
license server.</p>"
}
},
"com.amazonaws.licenseanagerusersubscriptions#RegisterIdentityProvider":
{
    "type": "operation",
    "input": {
        "target": "com.amazonaws.licenseanagerusersubscriptions#RegisterIdentityProviderRequest"
    },
    "output": {
        "target": "com.amazonaws.licenseanagerusersubscriptions#RegisterIdentityProviderResponse"
    },
    "errors": [
        {
            "target": "com.amazonaws.licenseanagerusersubscriptions#AccessDeniedException"
        },
        {
            "target": "com.amazonaws.licenseanagerusersubscriptions#ConflictException"
        },
        {
            "target": "com.amazonaws.licenseanagerusersubscriptions#InternalServerError"
        },
        {
            "target": "com.amazonaws.licenseanagerusersubscriptions#ResourceNotFoundException"
        },
        {
            "target":
"com.amazonaws.licenseanagerusersubscriptions#ServiceQuotaExceededException"
        },
        {
            "target": "com.amazonaws.licenseanagerusersubscriptions#ThrottlingException"
        },
        {
            "target": "com.amazonaws.licenseanagerusersubscriptions#ValidationException"
        }
    ],
    "traits": {
        "smithy.api#documentation": "<p>Registers an identity provider for user-based subscriptions.</p>",
        "smithy.api#http": {
            "code": 200,
            "method": "POST",
            "uri": "/identity-provider/RegisterIdentityProvider"
        }
    }
}

```

```

    },
    "smithy.api#idempotent": {}
  }
},
"com.amazonaws.licensemanagerusersubscriptions#RegisterIdentityProviderRequest": {
  "type": "structure",
  "members": {
    "IdentityProvider": {

      "target": "com.amazonaws.licensemanagerusersubscriptions#IdentityProvider",
      "traits": {
        "smithy.api#documentation": "<p>An object that specifies details for the identity provider to
register.</p>",
        "smithy.api#required": {}
      }
    },
    "Product": {
      "target": "smithy.api#String",
      "traits": {
        "smithy.api#documentation": "<p>The name of the user-based subscription product.</p>\n
<p>Valid values: <code>VISUAL_STUDIO_ENTERPRISE</code> |
<code>VISUAL_STUDIO_PROFESSIONAL</code> | <code>OFFICE_PROFESSIONAL_PLUS</code> |
\n<code>REMOTE_DESKTOP_SERVICES</code>\n      </p>",
        "smithy.api#required": {}
      }
    },
    "Settings": {
      "target": "com.amazonaws.licensemanagerusersubscriptions#Settings",
      "traits": {
        {
          "smithy.api#documentation": "<p>The registered identity providers product related configuration
\n\t\t\tsettings such as the subnets to provision VPC endpoints.</p>"
        }
      }
    },
    "Tags": {
      "target": "com.amazonaws.licensemanagerusersubscriptions#Tags",
      "traits": {
        "smithy.api#documentation": "<p>The tags that apply to the identity provider's registration.</p>"
      }
    }
  },
  "traits": {
    "smithy.api#input": {}
  }
},
"com.amazonaws.licensemanagerusersubscriptions#RegisterIdentityProviderResponse": {
  "type": "structure",
  "members": {

```

```

    "IdentityProviderSummary": {
      "target": "com.amazonaws.licenseanagerusersubscriptions#IdentityProviderSummary",
      "traits": {
        "smithy.api#documentation":
"<p>Metadata that describes the results of an identity provider operation.</p>",
        "smithy.api#required": {}
      }
    },
    "traits": {
      "smithy.api#output": {}
    }
  },
  "com.amazonaws.licenseanagerusersubscriptions#ResourceArn": {
    "type": "string",
    "traits": {
      "smithy.api#pattern": "^arn:([a-z0-9-\\.]{1,63}):([a-z0-9-\\.]{1,63}):([a-z0-9-\\.]{1,63}):([a-z0-9-\\.]{1,63}):([a-z0-9-\\.]{1,510})/([a-z0-9-\\.]{1,510})$"
    }
  },
  "com.amazonaws.licenseanagerusersubscriptions#ResourceNotFoundException": {
    "type": "structure",
    "members": {
      "message": {
        "target": "smithy.api#String"
      }
    },
    "traits": {
      "smithy.api#documentation": "<p>The resource couldn't be found.</p>",
      "smithy.api#error": "client",
      "smithy.api#httpError": 404
    }
  },
  "com.amazonaws.licenseanagerusersubscriptions#SecretsManagerCredentialsProvider": {
    "type": "structure",
    "members": {
      "SecretId": {
        "target": "smithy.api#String",
        "traits": {
          "smithy.api#documentation": "<p>The ID of the Secrets Manager secret that contains
credentials.</p>",
          "smithy.api#length": {
            "min": 1
          }
        }
      }
    }
  },

```



```

    "smithy.api#enum": [
      {
        "name": "RDS_SAL",
        "value": "RDS_SAL",
        "documentation": ""
      }
    ]
  },
  "com.amazonaws.licenseanagerusersubscriptions#ServiceQuotaExceededException": {
    "type": "structure",
    "members": {
      "message": {
        "target": "smithy.api#String"
      }
    },
    "traits": {
      "smithy.api#documentation": "<p>The request failed because a service quota is exceeded.</p>",
      "smithy.api#error": "client"
    }
  },
  "com.amazonaws.licenseanagerusersubscriptions#Settings": {
    "type": "structure",
    "members": {
      "Subnets": {
        "target": "com.amazonaws.licenseanagerusersubscriptions#Subnets",
        "traits": {
          "smithy.api#documentation": "<p>The subnets defined for the registered identity provider.</p>",
          "smithy.api#length": {
            "min": 1
          },
          "smithy.api#required": {}
        }
      },
      "SecurityGroupId": {
        "target": "com.amazonaws.licenseanagerusersubscriptions#SecurityGroup",
        "traits": {
          "smithy.api#documentation": "<p>A security group ID that allows inbound TCP port 1688 communication between resources in\n\\t\\t\\tyour VPC and the VPC endpoint for activation servers.</p>",
          "smithy.api#required": {}
        }
      }
    },
    "traits": {
      "smithy.api#documentation": "<p>The registered identity providers product related configuration settings such as the\n\\t\\t\\tsubnets to provision VPC endpoints, and the security group ID that is associated with the"
    }
  }
}

```



```

    }
  },
  "com.amazonaws.licenseanagerusersubscriptions#StartProductSubscriptionRequest": {
    "type": "structure",
    "members": {
      "Username": {
        "target": "smithy.api#String",
        "traits": {
          "smithy.api#documentation": "<p>The user name from the identity provider of the user.</p>",
          "smithy.api#required": {}
        }
      },
    },
    "IdentityProvider": {
      "target": "com.amazonaws.licenseanagerusersubscriptions#IdentityProvider",
      "traits": {
        "smithy.api#documentation": "<p>An object that specifies details for the identity provider.</p>",
        "smithy.api#required": {}
      }
    },
    "Product": {
      "target": "smithy.api#String",
      "traits": {
        "smithy.api#documentation": "<p>The name of the user-based subscription product.</p>\n      <p>Valid values:  
<code>VISUAL_STUDIO_ENTERPRISE</code> | <code>VISUAL_STUDIO_PROFESSIONAL</code> |  
<code>OFFICE_PROFESSIONAL_PLUS</code> | \n<code>REMOTE_DESKTOP_SERVICES</code></p>",
        "smithy.api#required": {}
      }
    },
    "Domain": {
      "target": "smithy.api#String",
      "traits": {
        "smithy.api#documentation": "<p>The domain name of the Active Directory that contains the user  
for whom to start the product \n\t\t\t\t\tsubscription.</p>"
      }
    },
    "Tags": {
      "target": "com.amazonaws.licenseanagerusersubscriptions#Tags",
      "traits": {
        "smithy.api#documentation": "<p>The tags that apply to the product subscription.</p>"
      }
    }
  },
  "traits": {
    "smithy.api#input": {}
  }
}

```



```

    }
  },
  "com.amazonaws.licenseanagerusersubscriptions#StartProductSubscriptionResponse": {
    "type": "structure",
    "members": {
      "ProductUserSummary": {
        "target": "com.amazonaws.licenseanagerusersubscriptions#ProductUserSummary",
        "traits": {
          "smithy.api#documentation": "<p>Metadata that describes the start product subscription
operation.</p>",
          "smithy.api#required": {}
        }
      }
    },
    "traits": {
      "smithy.api#output": {}
    }
  },
  "com.amazonaws.licenseanagerusersubscriptions#StopProductSubscription": {
    "type": "operation",
    "input": {
      "target": "com.amazonaws.licenseanagerusersubscriptions#StopProductSubscriptionRequest"
    },
    "output": {
      "target": "com.amazonaws.licenseanagerusersubscriptions#StopProductSubscriptionResponse"
    },
    "errors": [
      {
        "target": "com.amazonaws.licenseanagerusersubscriptions#AccessDeniedException"
      },
      {
        "target": "com.amazonaws.licenseanagerusersubscriptions#ConflictException"
      },
      {
        "target": "com.amazonaws.licenseanagerusersubscriptions#InternalServerErrorException"
      },
      {
        "target": "com.amazonaws.licenseanagerusersubscriptions#ResourceNotFoundException"
      },
      {
        "target": "com.amazonaws.licenseanagerusersubscriptions#ServiceQuotaExceededException"
      },
      {
        "target": "com.amazonaws.licenseanagerusersubscriptions#ThrottlingException"
      }
    ]
  },
  {

```

```

        "target": "com.amazonaws.licenseanagerusersubscriptions#ValidationException"
    }
},
"traits": {
    "smithy.api#documentation": "<p>Stops a product subscription for a user with the specified identity
provider.</p>",
    "smithy.api#http": {
        "code": 200,
        "method": "POST",
        "uri": "/user/StopProductSubscription"
    }
}
},
"com.amazonaws.licenseanagerusersubscriptions#StopProductSubscriptionRequest": {
    "type": "structure",
    "members": {
        "Username": {
            "target": "smithy.api#String",
            "traits": {
                "smithy.api#documentation": "<p>The user name from the identity provider for the user.</p>"
            }
        },
        "IdentityProvider": {
            "target":
"com.amazonaws.licenseanagerusersubscriptions#IdentityProvider",
            "traits": {
                "smithy.api#documentation": "<p>An object that specifies details for the identity provider.</p>"
            }
        },
        "Product": {
            "target": "smithy.api#String",
            "traits": {
                "smithy.api#documentation": "<p>The name of the user-based subscription product.</p>\n
<p>Valid values: <code>VISUAL_STUDIO_ENTERPRISE</code> |
<code>VISUAL_STUDIO_PROFESSIONAL</code> | <code>OFFICE_PROFESSIONAL_PLUS</code> |
\n<code>REMOTE_DESKTOP_SERVICES</code>\n      </p>"
            }
        },
        "ProductUserArn": {
            "target": "com.amazonaws.licenseanagerusersubscriptions#Arn",
            "traits": {
                "smithy.api#documentation": "<p>The Amazon Resource Name (ARN) of the product user.</p>"
            }
        },
        "Domain": {
            "target": "smithy.api#String",
            "traits": {

```

```

        "smithy.api#documentation": "<p>The domain name of the Active Directory that contains the user
for whom to stop the product \n\t\t\tsubscription.</p>"
    }
}
},
"traits": {
    "smithy.api#input": {}
}
},
"com.amazonaws.licenseanagerusersubscriptions#StopProductSubscriptionResponse": {
    "type": "structure",
    "members": {
        "ProductUserSummary": {
            "target": "com.amazonaws.licenseanagerusersubscriptions#ProductUserSummary",
            "traits": {
                "smithy.api#documentation": "<p>Metadata that describes the start product subscription
operation.</p>",
                "smithy.api#required": {}
            }
        }
    }
},
"traits": {
    "smithy.api#output": {}
}
},
"com.amazonaws.licenseanagerusersubscriptions#StringList": {
    "type": "list",
    "member": {
        "target": "smithy.api#String"
    }
},
"com.amazonaws.licenseanagerusersubscriptions#Subnet": {
    "type": "string",
    "traits": {
        "smithy.api#pattern": "^subnet-[a-z0-9]{8,17}"
    }
},
"com.amazonaws.licenseanagerusersubscriptions#Subnets": {
    "type": "list",
    "member": {
        "target": "com.amazonaws.licenseanagerusersubscriptions#Subnet"
    }
},
"com.amazonaws.licenseanagerusersubscriptions#TagKeyList": {
    "type": "list",
    "member": {
        "target": "smithy.api#String"
    }
}

```

```

    },
    "traits": {
      "smithy.api#length": {
        "min": 0,
        "max": 50
      },
      "smithy.api#sensitive": {}
    }
  },
  "com.amazonaws.licenseanagerusersubscriptions#TagResource": {
    "type": "operation",
    "input": {
      "target": "com.amazonaws.licenseanagerusersubscriptions#TagResourceRequest"
    },
    "output": {
      "target": "com.amazonaws.licenseanagerusersubscriptions#TagResourceResponse"
    },
    "errors": [
      {
        "target": "com.amazonaws.licenseanagerusersubscriptions#InternalServerError"
      },
      {
        "target": "com.amazonaws.licenseanagerusersubscriptions#ResourceNotFoundException"
      },
      {
        "target": "com.amazonaws.licenseanagerusersubscriptions#ValidationException"
      }
    ],
    "traits": {
      "smithy.api#documentation":
        "<p>Adds tags to a resource.</p>",
      "smithy.api#http": {
        "method": "PUT",
        "uri": "/tags/{ResourceArn}"
      },
      "smithy.api#idempotent": {}
    }
  },
  "com.amazonaws.licenseanagerusersubscriptions#TagResourceRequest": {
    "type": "structure",
    "members": {
      "ResourceArn": {
        "target": "com.amazonaws.licenseanagerusersubscriptions#ResourceArn",
        "traits": {
          "smithy.api#documentation": "<p>The Amazon Resource Name (ARN) of the resource that you want
to tag.</p>",
          "smithy.api#httpLabel": {},

```

```

        "smithy.api#required": {}
    },
    "Tags": {
        "target": "com.amazonaws.licenseanagerusersubscriptions#Tags",
        "traits": {
            "smithy.api#documentation":
"<p>The tags to apply to the specified resource.</p>",
            "smithy.api#required": {}
        }
    },
    "traits": {
        "smithy.api#input": {}
    }
},
"com.amazonaws.licenseanagerusersubscriptions#TagResourceResponse": {
    "type": "structure",
    "members": {},
    "traits": {
        "smithy.api#output": {}
    }
},
"com.amazonaws.licenseanagerusersubscriptions#Tags": {
    "type": "map",
    "key": {
        "target": "smithy.api#String"
    },
    "value": {
        "target": "smithy.api#String"
    },
    "traits": {
        "smithy.api#length": {
            "min": 0,
            "max": 50
        },
        "smithy.api#sensitive": {}
    }
},
"com.amazonaws.licenseanagerusersubscriptions#ThrottlingException":
{
    "type": "structure",
    "members": {
        "message": {
            "target": "smithy.api#String"
        }
    },
    "traits": {

```

```

    "smithy.api#documentation": "<p>The request was denied because of request throttling. Retry the
request.</p>",
    "smithy.api#error": "client"
  }
},
"com.amazonaws.licensemanagerusersubscriptions#UntagResource": {
  "type": "operation",
  "input": {
    "target": "com.amazonaws.licensemanagerusersubscriptions#UntagResourceRequest"
  },
  "output": {
    "target": "com.amazonaws.licensemanagerusersubscriptions#UntagResourceResponse"
  },
  "errors": [
    {
      "target": "com.amazonaws.licensemanagerusersubscriptions#InternalServerErrorException"
    },
    {
      "target": "com.amazonaws.licensemanagerusersubscriptions#ResourceNotFoundException"
    }
  ],
  "traits": {
    "smithy.api#documentation": "<p>Removes tags from a resource.</p>",
    "smithy.api#http": {
      "method": "DELETE",
      "uri": "/tags/{ResourceArn}"
    },
    "smithy.api#idempotent": {}
  }
},
"com.amazonaws.licensemanagerusersubscriptions#UntagResourceRequest": {
  "type": "structure",
  "members": {
    "ResourceArn": {
      "target": "com.amazonaws.licensemanagerusersubscriptions#ResourceArn",
      "traits": {
        "smithy.api#documentation": "<p>The Amazon Resource Name (ARN) of the resource that you want
to remove tags from.</p>",
        "smithy.api#httpLabel": {},
        "smithy.api#required": {}
      }
    }
  },
  "TagKeys": {
    "target": "com.amazonaws.licensemanagerusersubscriptions#TagKeyList",
    "traits": {
      "smithy.api#documentation": "<p>The tag keys to remove from the resource.</p>",

```



```

    }
  },
  "com.amazonaws.licenseanagerusersubscriptions#UpdateIdentityProviderSettingsRequest": {
    "type": "structure",
    "members": {
      "IdentityProvider": {
        "target": "com.amazonaws.licenseanagerusersubscriptions#IdentityProvider"
      },
      "Product": {
        "target": "smithy.api#String",
        "traits": {
          "smithy.api#documentation": "<p>The name of the user-based subscription product.</p>\n
          <p>Valid values: <code>VISUAL_STUDIO_ENTERPRISE</code> |
          <code>VISUAL_STUDIO_PROFESSIONAL</code> | <code>OFFICE_PROFESSIONAL_PLUS</code> |
          \n<code>REMOTE_DESKTOP_SERVICES</code>\n      </p>"
        }
      },
      "IdentityProviderArn": {
        "target": "com.amazonaws.licenseanagerusersubscriptions#Arn",
        "traits": {
          "smithy.api#documentation": "<p>The Amazon Resource Name (ARN) of the identity provider to
          update.</p>"
        }
      },
      "UpdateSettings": {
        "target": "com.amazonaws.licenseanagerusersubscriptions#UpdateSettings",
        "traits": {
          "smithy.api#documentation": "<p>Updates the registered identity providers product related
          configuration settings. You can\n\t\t\t\t\tupdate any combination of settings in a single operation such as the:</p>\n
          <ul>\n      <li>\n      <p>Subnets which you want to add to provision VPC endpoints.</p>\n      </li>\n
          <li>\n      <p>Subnets which you want to remove the VPC endpoints from.</p>\n      </li>\n
          <li>\n      <p>Security
          group ID which permits traffic to the VPC endpoints.</p>\n      </li>\n      </ul>",
          "smithy.api#required": {}
        }
      },
      "traits": {
        "smithy.api#input": {}
      }
    },
  },
  "com.amazonaws.licenseanagerusersubscriptions#UpdateIdentityProviderSettingsResponse": {
    "type": "structure",
    "members": {
      "IdentityProviderSummary": {
        "target": "com.amazonaws.licenseanagerusersubscriptions#IdentityProviderSummary",
        "traits": {

```



```

    "traits": {
      "smithy.api#documentation": "<p>A parameter is not valid.</p>",
      "smithy.api#error": "client"
    }
  }
}

```

ListReceivedLicenses

Initialize stack step

spanInitializeStart

RegisterServiceMetadata

legacyEndpointContextSetter

SetLogger

spanInitializeEnd

Serialize stack step

spanBuildRequestStart

setOperationInput

ResolveEndpoint

OperationSerializer

Build stack step

ClientRequestID

ComputeContentLength

SetCredentialSourceMiddleware

UserAgent

AddTimeOffsetMiddleware

RecursionDetection

spanBuildRequestEnd

Finalize stack step

spanRetryLoop

Retry

RetryMetricsHeader

ResolveAuthScheme

GetIdentity

ResolveEndpointV2

disableHTTPS

ComputePayloadHash

setLegacyContextSigningOptions

Signing

Deserialize stack step

AddRawResponseToMetadata

ErrorCloseResponseBody

CloseResponseBody

ResponseErrorWrapper

RequestIDRetriever

OperationDeserializer

AddTimeOffsetMiddleware

RecordResponseTiming

RequestResponseLogger

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// Code generated by smithy-go-codegen DO NOT EDIT.

package licensemanager

```
import (  
    "context"  
    "fmt"  
    awsmiddleware "github.com/aws/aws-sdk-go-v2/aws/middleware"  
    "github.com/aws/smithy-go/middleware"  
    smithyhttp "github.com/aws/smithy-go/transport/http"  
)
```

// Checks in the specified license. Check in a license when it is no longer in use.

```
func (c *Client) CheckInLicense(ctx context.Context, params *CheckInLicenseInput, optFns ...func(*Options))  
(*CheckInLicenseOutput, error) {  
    if params == nil {  
        params = &CheckInLicenseInput{  
    }  
    }
```

```
    result, metadata, err := c.invokeOperation(ctx, "CheckInLicense", params, optFns,  
    c.addOperationCheckInLicenseMiddlewares)  
    if err != nil {  
        return nil, err  
    }
```

```
    out := result.(*CheckInLicenseOutput)  
    out.ResultMetadata = metadata  
    return out, nil  
}
```

```

type CheckInLicenseInput struct {

    // License consumption token.
    //
    // This member is required.
    LicenseConsumptionToken *string

    // License beneficiary.
    Beneficiary *string

    noSmithyDocumentSerde
}

type
    CheckInLicenseOutput struct {
        // Metadata pertaining to the operation's result.
        ResultMetadata middleware.Metadata

        noSmithyDocumentSerde
    }

func (c *Client) addOperationCheckInLicenseMiddlewares(stack *middleware.Stack, options Options) (err error) {
    if err := stack.Serialize.Add(&setOperationInputMiddleware{}, middleware.After); err != nil {
        return err
    }
    err = stack.Serialize.Add(&awsAwsjson11_serializeOpCheckInLicense{}, middleware.After)
    if err != nil {
        return err
    }
    err = stack.Deserialize.Add(&awsAwsjson11_deserializeOpCheckInLicense{}, middleware.After)
    if err != nil {
        return err
    }
    if err := addProtocolFinalizerMiddlewares(stack, options, "CheckInLicense"); err != nil {
        return fmt.Errorf("add protocol finalizers: %v", err)
    }

    if err = addLegacyEndpointContextSetter(stack, options); err != nil {
        return err
    }
    if err = addSetLoggerMiddleware(stack, options); err != nil {
        return err
    }
    if err = addClientRequestID(stack); err != nil {
        return err
    }
    if

```



```

err = addComputeContentLength(stack); err != nil {
    return err
}
if err = addResolveEndpointMiddleware(stack, options); err != nil {
    return err
}
if err = addComputePayloadSHA256(stack); err != nil {
    return err
}
if err = addRetry(stack, options); err != nil {
    return err
}
if err = addRawResponseToMetadata(stack); err != nil {
    return err
}
if err = addRecordResponseTiming(stack); err != nil {
    return err
}
if err = addSpanRetryLoop(stack, options); err != nil {
    return err
}
if err = addClientUserAgent(stack, options); err != nil {
    return err
}
if err = smithyhttp.AddErrorCloseResponseBodyMiddleware(stack); err != nil {
    return err
}
if err = smithyhttp.AddCloseResponseBodyMiddleware(stack); err != nil {
    return err
}
if err = addSetLegacyContextSigningOptionsMiddleware(stack); err != nil {
    return err
}
if err = addTimeOffsetBuild(stack, c); err != nil {
    return err
}
if err = addUserAgentRetryMode(stack, options); err != nil {
    return err
}
if
err = addCredentialSource(stack, options); err != nil {
    return err
}
if err = addOpCheckInLicenseValidationMiddleware(stack); err != nil {
    return err
}
if err = stack.Initialize.Add(newServiceMetadataMiddleware_opCheckInLicense(options.Region),
middleware.Before); err != nil {

```

```

    return err
}
if err = addRecursionDetection(stack); err != nil {
    return err
}
if err = addRequestIDRetrieverMiddleware(stack); err != nil {
    return err
}
if err = addResponseErrorMiddleware(stack); err != nil {
    return err
}
if err = addRequestResponseLogging(stack, options); err != nil {
    return err
}
if err = addDisableHTTPSMiddleware(stack, options); err != nil {
    return err
}
if err = addSpanInitializeStart(stack); err != nil {
    return err
}
if err = addSpanInitializeEnd(stack); err != nil {
    return err
}
if err = addSpanBuildRequestStart(stack); err != nil {
    return err
}
if err = addSpanBuildRequestEnd(stack); err != nil {
    return err
}
return nil
}

```

```

func newServiceMetadataMiddleware_opCheckInLicense(region
string) *awsmiddleware.RegisterServiceMetadata {
return &awsmiddleware.RegisterServiceMetadata{
    Region:    region,
    ServiceID: ServiceID,
    OperationName: "CheckInLicense",
}
}

```

```

CheckoutLicense
Initialize stack step
spanInitializeStart
RegisterServiceMetadata
legacyEndpointContextSetter
SetLogger
OperationInputValidation
spanInitializeEnd

```

Serialize stack step
spanBuildRequestStart
setOperationInput
ResolveEndpoint
OperationSerializer
Build stack step
ClientRequestID
ComputeContentLength
SetCredentialSourceMiddleware
UserAgent
AddTimeOffsetMiddleware
RecursionDetection
spanBuildRequestEnd
Finalize stack step
spanRetryLoop
Retry
RetryMetricsHeader
ResolveAuthScheme
GetIdentity
ResolveEndpointV2
disableHTTPS
ComputePayloadHash
setLegacyContextSigningOptions
Signing
Deserialize stack step
AddRawResponseToMetadata
ErrorCloseResponseBody
CloseResponseBody
ResponseErrorWrapper
RequestIDRetriever
OperationDeserializer
AddTimeOffsetMiddleware
RecordResponseTiming
RequestResponseLogger

1.247 go-timezone-local 0.0.7

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1.248 python 3.12.12-r0

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=====

Python was created in the early 1990s by Guido van Rossum at Stichting Mathematisch Centrum (CWI, see <https://www.cwi.nl>) in the Netherlands as a successor of a language called ABC. Guido remains Python's principal author, although it includes many contributions from others.

In 1995, Guido continued his work on Python at the Corporation for National Research Initiatives (CNRI, see <https://www.cnri.reston.va.us>) in Reston, Virginia where he released several versions of the software.

In May 2000, Guido and the Python core development team moved to BeOpen.com to form the BeOpen PythonLabs team. In October of the same year, the PythonLabs team moved to Digital Creations, which became Zope Corporation. In 2001, the Python Software Foundation (PSF, see <https://www.python.org/psf/>) was formed, a non-profit organization created specifically to own Python-related Intellectual Property. Zope Corporation was a sponsoring member of the PSF.

All

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1.3 thru 1.5.2	1.2	1995-1999	CNRI	yes
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2.1.1	2.1+2.0.1	2001	PSF	yes
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man/bitstring.3bsd

man/errc.3bsd

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man/fgetln.3bsd

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man/pwcache.3bsd

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man/radixsort.3bsd

man/reallocarray.3bsd

man/reallocf.3bsd

man/setmode.3bsd

man/strmode.3bsd

man/strnstr.3bsd

man/strtoi.3bsd

man/strtou.3bsd

man/unvis.3bsd

man/vis.3bsd

man/wcslcpy.3bsd

src/getbsize.c

src/heapsort.c

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man/readpassphrase.3bsd
man/strncpy.3bsd
man/strtonum.3bsd
src/arc4random.c
src/arc4random_linux.h
src/arc4random_uniform.c
src/arc4random_unix.h
src/arc4random_win.h
src/closefrom.c
src/freezero.c
src/getentropy_aix.c
src/getentropy_bsd.c
src/getentropy_hpux.c
src/getentropy_hurd.c
src/getentropy_linux.c
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src/getentropy_solaris.c
src/getentropy_win.c
src/readpassphrase.c
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1.262 gojsonreference 0.0.0-20180127040603-bd5ef7bd5415

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1.263 docbook-xml 4.5-r10

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<!-- DocBook notations module V4.5 ..... -->
<!-- File dbnotnx.mod ..... -->
```

```
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```

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-->

<!-- -->

<!-- This module contains the notation declarations used by DocBook.

In DTD driver files referring to this module, please use an entity declaration that uses the public identifier shown below:

```
<!ENTITY % dbnotn PUBLIC
"-//OASIS//ENTITIES DocBook Notations V4.5//EN"
"dbnotnx.mod">
%dbnotn;
```

See the documentation for detailed information on the parameter entity and module scheme used in DocBook, customizing DocBook and planning for interchange, and changes made since the last release of DocBook.

-->

```
<!ENTITY % local.notation.class "">
<!ENTITY % notation.class
"BMP| CGM-CHAR | CGM-BINARY | CGM-CLEAR | DITROFF | DVI
| EPS | EQN | FAX | GIF | GIF87a | GIF89a
```

| JPG | JPEG | IGES | PCX
| PIC | PNG | PS | SGML | TBL | TEX | TIFF | WMF | WPG
| SVG | PDF | SWF
| linespecific
%localnotation.class;">

```
<!NOTATION BMP PUBLIC
"+//ISBN 0-7923-94.2-1::Graphic Notation//NOTATION Microsoft Windows bitmap//EN">
<!NOTATION CGM-CHAR PUBLIC "ISO 8632/2//NOTATION Character encoding//EN">
<!NOTATION CGM-BINARY PUBLIC "ISO 8632/3//NOTATION Binary encoding//EN">
<!NOTATION CGM-CLEAR PUBLIC "ISO 8632/4//NOTATION Clear text encoding//EN">
<!NOTATION DITROFF SYSTEM "DITROFF">
<!NOTATION DVI SYSTEM "DVI">
<!NOTATION EPS PUBLIC
"+//ISBN 0-201-18127-4::Adobe//NOTATION PostScript Language Ref.
Manual//EN">
<!NOTATION EQN SYSTEM "EQN">
<!NOTATION FAX PUBLIC
"-//USA-DOD//NOTATION CCITT Group 4 Facsimile Type 1 Untiled Raster//EN">
<!NOTATION GIF SYSTEM "GIF">
<!NOTATION GIF87a PUBLIC
"-//CompuServe//NOTATION Graphics Interchange Format 87a//EN">

<!NOTATION GIF89a PUBLIC
"-//CompuServe//NOTATION Graphics Interchange Format 89a//EN">
<!NOTATION JPG SYSTEM "JPG">
<!NOTATION JPEG SYSTEM "JPG">
<!NOTATION IGES PUBLIC
"-//USA-DOD//NOTATION (ASME/ANSI Y14.26M-1987) Initial Graphics Exchange Specification//EN">
<!NOTATION PCX PUBLIC
"+//ISBN 0-7923-94.2-1::Graphic Notation//NOTATION ZSoft PCX bitmap//EN">
<!NOTATION PIC SYSTEM "PIC">
<!NOTATION PNG SYSTEM "http://www.w3.org/TR/REC-png">
<!NOTATION PS SYSTEM "PS">
<!NOTATION SGML PUBLIC
"ISO 8879:1986//NOTATION Standard Generalized Markup Language//EN">
<!NOTATION TBL SYSTEM "TBL">
<!NOTATION TEX PUBLIC
"+//ISBN 0-201-13448-9::Knuth//NOTATION The TeXbook//EN">
<!NOTATION TIFF SYSTEM "TIFF">
<!NOTATION
WMF PUBLIC
"+//ISBN 0-7923-94.2-1::Graphic Notation//NOTATION Microsoft Windows Metafile//EN">
<!NOTATION WPG SYSTEM "WPG"> <!--WordPerfect Graphic format-->
<!NOTATION SVG SYSTEM "http://www.w3.org/TR/SVG/">
<!NOTATION PDF SYSTEM "http://www.adobe.com/products/acrobat/adobepdf.html">
<!NOTATION SWF SYSTEM "http://www.macromedia.com/software/flash">
<!NOTATION linespecific SYSTEM "linespecific">
```

<!-- End of DocBook notations module V4.5 -->
<!-- -->

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<!ELEMENT blockquote %ho; (blockinfo?, title?, attribution?, (%component.mix;)+)

<!ENTITY % attribution.module "INCLUDE">

<![%attribution.module;[

<!ENTITY % local.attribution.attrib "">

<!ENTITY % attribution.role.attrib "%role.attrib;">

<!ENTITY % attribution.element "INCLUDE">

<![%attribution.element;[

<!ELEMENT attribution %ho; (%para.char.mix;)*>

<!--end of attribution.element-->]]>

<!ENTITY % attribution.attlist "INCLUDE">

<![%attribution.attlist;[

<!ATTLIST attribution

%attribution.role.attrib;

%local.attribution.attrib;

<!--end of attribution.attlist-->]]>

<!--end of attribution.module-->]]>

<!ELEMENT epigraph %ho; (attribution?, ((%para.class;)|literallayout)+)>

<!-- Attribution (defined above)-->

Found in path(s):

* /docbook-xml-4-5-zip/dbpoolx.mod

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<!-- -->

<!-- DocBook XML HTML Table Module V4.5 -->

<!-- File htmllibx.mod -->

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-->

<!-- -->

<!-- This module contains the definitions for elements that are isomorphic to the HTML elements. One could argue we should instead have based ourselves on the XHTML Table Module, but the HTML one is more like what browsers are likely to accept today and users are likely to use.

This module has been developed for use with the DocBook V4.5 "union table model" in which elements and attlists common to both models are defined (as the union) in the CALS table module by setting various parameter entities appropriately in this file.

In DTD driver files referring to this module, please use an entity declaration that uses the public identifier shown below:

```
<!ENTITY % htmltbl PUBLIC
"-//OASIS//ELEMENTS DocBook XML HTML Tables V4.5//EN"
"htmltblx.mod">
%htmltbl;
```

See the documentation for detailed information on the parameter entity and module scheme used in DocBook, customizing DocBook and planning for interchange, and changes made since the last release of DocBook.

-->

<!--===== XHTML Tables =====-->

```
<!ENTITY % html.coreattrs
"%common.attrib;
class    CDATA    #IMPLIED
style    CDATA    #IMPLIED
```

```

title    CDATA    #IMPLIED"
>

<!-- Does not contain lang or dir because they are in %common.attrs -->
<![%sgml.features;[
<!ENTITY % i18n "">
]]>
<!ENTITY % i18n
"xml:lang
    NMTOKEN    #IMPLIED"
>

<!ENTITY % events
"onclick    CDATA    #IMPLIED
ondblclick  CDATA    #IMPLIED
onmousedown CDATA    #IMPLIED
onmouseup   CDATA    #IMPLIED
onmouseover CDATA    #IMPLIED
onmousemove CDATA    #IMPLIED
onmouseout  CDATA    #IMPLIED
onkeypress  CDATA    #IMPLIED
onkeydown   CDATA    #IMPLIED
onkeyup     CDATA    #IMPLIED"
>

<!ENTITY % attrs "%html.coreattrs; %i18n; %events;">

<!ENTITY % cellhalign
"align    (left|center|right|justify|char) #IMPLIED
char      CDATA    #IMPLIED
charoff   CDATA    #IMPLIED"
>

<!ENTITY % cellvalign
"valign    (top|middle|bottom|baseline) #IMPLIED"
>

<!--doc:A group of columns in an HTML table.-->
<!ELEMENT colgroup %ho; (col)*>
<!--doc:Specifications for a column in an HTML table.-->
<!ELEMENT col %ho; EMPTY>
<!--doc:A row in an HTML table.-->
<!ELEMENT tr %ho; (th|td)+>
<!--doc:A table header entry in an HTML table.-->
<!ELEMENT th %ho; (%para.char.mix;
| %tabentry.mix; | table | informaltable)*>
<!--doc:A table ntry in an HTML table.-->
<!ELEMENT td %ho; (%para.char.mix; | %tabentry.mix; | table | informaltable)*>

```

```
<!--ATTLIST colgroup
%attrs;
span    CDATA    "1"
width    CDATA #IMPLIED
%cellhalign;
%cellvalign;
-->
```

```
<!--ATTLIST col
%attrs;
span    CDATA    "1"
width    CDATA #IMPLIED
%cellhalign;
%cellvalign;
-->
```

```
<!--ATTLIST tr
%attrs;
%cellhalign;
%cellvalign;
bgcolor CDATA    #IMPLIED
-->
```

```
<!--ATTLIST th
%attrs;
abbr    CDATA    #IMPLIED
axis    CDATA    #IMPLIED
headers IDREFS    #IMPLIED
scope   (row|col|rowgroup|colgroup) #IMPLIED
rowspan CDATA    "1"
colspan CDATA    "1"
%cellhalign;
%cellvalign;
nowrap  (nowrap)  #IMPLIED
bgcolor CDATA    #IMPLIED
width   CDATA    #IMPLIED
height  CDATA    #IMPLIED
-->
```

```
<!--ATTLIST td
%attrs;
abbr    CDATA    #IMPLIED
axis    CDATA    #IMPLIED
headers IDREFS    #IMPLIED
scope   (row|col|rowgroup|colgroup) #IMPLIED
rowspan CDATA    "1"
colspan CDATA    "1"
-->
```

```

%cellhalign;
%cellvalign;
nowrap    (nowrap)    #IMPLIED
bgcolor   CDATA       #IMPLIED
width     CDATA       #IMPLIED
height    CDATA       #IMPLIED
>

<!-- ===== -->
<!--      Set up to read in the CALS model configured to
           merge with the XHTML table model          -->
<!-- ===== -->

<!ENTITY % tables.role.attrib "%role.attrib;">

<!-- Add label and role attributes to table and informaltable -->
<!ENTITY % bodyatt "
floatstyle CDATA  #IMPLIED
rowheader (firstcol|norowheader) #IMPLIED
           %label.attrib;"
>

<!-- Add common attributes to Table, TGroup, TBody, THead, TFoot, Row,
      EntryTbl, and Entry (and InformalTable element). -->

<!ENTITY
% secur "
%common.attrib;
class   CDATA      #IMPLIED
style   CDATA      #IMPLIED
title   CDATA      #IMPLIED
%i18n;
%events;
%tables.role.attrib;">

<!ENTITY % common.table.attribs
"%bodyatt;
%secur;">

<!-- Content model for Table (that also allows HTML tables) -->
<!ENTITY % tbl.table.mdl
"((blockinfo?,
  (%formalobject.title.content;),
  (%ndxterm.class;)*,
  textobject*,
  (graphic+|mediaobject+|tgroup+))
 |(caption, (col*|colgroup*), thead?, tfoot?, (tbody+|tr+)))">

```

```
<!ENTITY % informal.tbl.table.mdl
"(textobject*,
  (graphic+|mediaobject+|tgroup+))
| ((col*|colgroup*), thead?, tfoot?, (tbody+|tr+))">

<!-- Attributes for Table (including HTML ones) -->

<!-- N.B. rules = (none | groups | rows | cols | all) but it can't be spec'd -->
<!-- that way because 'all' already occurs in a different enumeration in -->
<!-- CALS tables (frame). -->

<!ENTITY % tbl.table.att      '
  tabstyle      CDATA      #IMPLIED
  tocentry      %yesorno.attvals;  #IMPLIED
  shortentry    %yesorno.attvals;  #IMPLIED
  orient        (port|land) #IMPLIED
  pgwide        %yesorno.attvals;  #IMPLIED
  summary       CDATA      #IMPLIED
  width         CDATA      #IMPLIED
  border        CDATA      #IMPLIED
  rules         CDATA      #IMPLIED
  cellspacing   CDATA      #IMPLIED
  cellpadding   CDATA      #IMPLIED
  align         (left|center|right) #IMPLIED
  bgcolor       CDATA      #IMPLIED
'>

<!ENTITY % tbl.frame.attval "void|above|below|hside|lhs|rhs|vside|box|border|
top|bottom|topbot|all|side|none">

<!-- Allow either objects or inlines; beware of REs between elements. -->
<!ENTITY % tbl.entry.mdl "%para.char.mix; |%tabentry.mix;">

<!-- thead, tfoot, and tbody are defined in both table models,
    so we set up parameter entities to define union models for them
-->

<!ENTITY % tbl.hdft.mdl      "(tr+|(colspec*,row+))">
<!ENTITY % tbl.tbody.mdl
  "(tr+|row+)">
<!ENTITY % tbl.valign.attval "top|middle|bottom|baseline">

<!-- End of DocBook XML HTML Table Module V4.5 ..... -->
<!-- ..... -->
```

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03 13:23:24Z nwalsh \$

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<!-- File dbcentx.mod ..... -->
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Standards (OASIS).
```

\$Id: dbcentx.mod 6340 2006-10-03 13:23:24Z nwalsh \$

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If you modify the DocBook DTD in any way, except for declaring and referencing additional sets of general entities and declaring additional notations, label your DTD as a variant of DocBook. See

the maintenance documentation for more information.

Please direct all questions, bug reports, or suggestions for changes to the docbook@lists.oasis-open.org mailing list. For more information, see <http://www.oasis-open.org/docbook/>.

-->

<!-- -->

<!-- This module contains the entity declarations for the standard ISO entity sets used by DocBook.

In DTD driver files referring to this module, please use an entity declaration that uses the public identifier shown below:

```
<!ENTITY % dbcent PUBLIC
"-//OASIS//ENTITIES DocBook Character Entities V4.5//EN"
"dbcentx.mod">
%dbcent;
```

See the documentation for detailed information on the parameter entity and module scheme used in DocBook, customizing DocBook and planning for interchange, and changes made since the last release of DocBook.

-->

<!-- -->

<![%sgml.features;[

```
<!ENTITY % ISOamsa.module "INCLUDE">
<![ %ISOamsa.module; [
<!ENTITY % ISOamsa PUBLIC
"ISO 8879:1986//ENTITIES Added Math Symbols: Arrow Relations//EN">
<!--end of ISOamsa.module-->]]>
```

```
<!ENTITY % ISOamsb.module "INCLUDE">
<![ %ISOamsb.module; [
<!ENTITY % ISOamsb PUBLIC
"ISO 8879:1986//ENTITIES Added Math Symbols: Binary Operators//EN">
<!--end of ISOamsb.module-->]]>
```

```
<!ENTITY % ISOamsc.module "INCLUDE">
<![ %ISOamsc.module; [
<!ENTITY % ISOamsc PUBLIC
"ISO 8879:1986//ENTITIES Added Math Symbols: Delimiters//EN">
<!--end of ISOamsc.module-->]]>
```

```
<!ENTITY % ISOamsn.module "INCLUDE">
<![ %ISOamsn.module; [
<!ENTITY % ISOamsn PUBLIC
"ISO 8879:1986//ENTITIES
Added Math Symbols: Negated Relations//EN">
<!--end of ISOamsn.module-->]]>
```

```
<!ENTITY % ISOamso.module "INCLUDE">
<![ %ISOamso.module; [
<!ENTITY % ISOamso PUBLIC
"ISO 8879:1986//ENTITIES Added Math Symbols: Ordinary//EN">
<!--end of ISOamso.module-->]]>
```

```
<!ENTITY % ISOamsr.module "INCLUDE">
<![ %ISOamsr.module; [
<!ENTITY % ISOamsr PUBLIC
"ISO 8879:1986//ENTITIES Added Math Symbols: Relations//EN">
<!--end of ISOamsr.module-->]]>
```

```
<!ENTITY % ISObox.module "INCLUDE">
<![ %ISObox.module; [
<!ENTITY % ISObox PUBLIC
"ISO 8879:1986//ENTITIES Box and Line Drawing//EN">
<!--end of ISObox.module-->]]>
```

```
<!ENTITY % ISOcyr1.module "INCLUDE">
<![ %ISOcyr1.module; [
<!ENTITY % ISOcyr1 PUBLIC
"ISO 8879:1986//ENTITIES Russian Cyrillic//EN">
<!--end of ISOcyr1.module-->]]>
```

```
<!ENTITY % ISOcyr2.module "INCLUDE">
<![ %ISOcyr2.module; [
<!ENTITY % ISOcyr2 PUBLIC
"ISO 8879:1986//ENTITIES Non-Russian Cyrillic//EN">
<!--end of ISOcyr2.module-->]]>
```

```
<!ENTITY % ISODia.module "INCLUDE">
<![ %ISODia.module; [
<!ENTITY
% ISODia PUBLIC
"ISO 8879:1986//ENTITIES Diacritical Marks//EN">
<!--end of ISODia.module-->]]>
```

```
<!ENTITY % ISOgrk1.module "INCLUDE">
<![ %ISOgrk1.module; [
<!ENTITY % ISOgrk1 PUBLIC
"ISO 8879:1986//ENTITIES Greek Letters//EN">
```


<!--end of ISOgrk1.module-->]]>

<!ENTITY % ISOgrk2.module "INCLUDE">

<![%ISOgrk2.module; [

<!ENTITY % ISOgrk2 PUBLIC

"ISO 8879:1986//ENTITIES Monotoniko Greek//EN">

<!--end of ISOgrk2.module-->]]>

<!ENTITY % ISOgrk3.module "INCLUDE">

<![%ISOgrk3.module; [

<!ENTITY % ISOgrk3 PUBLIC

"ISO 8879:1986//ENTITIES Greek Symbols//EN">

<!--end of ISOgrk3.module-->]]>

<!ENTITY % ISOgrk4.module "INCLUDE">

<![%ISOgrk4.module; [

<!ENTITY % ISOgrk4 PUBLIC

"ISO 8879:1986//ENTITIES Alternative Greek Symbols//EN">

<!--end of ISOgrk4.module-->]]>

<!ENTITY % ISolat1.module "INCLUDE">

<![%ISolat1.module; [

<!ENTITY % ISolat1 PUBLIC

"ISO 8879:1986//ENTITIES Added Latin 1//EN">

<!--end of ISolat1.module-->]]>

<!ENTITY % ISolat2.module "INCLUDE">

<![%ISolat2.module;

[

<!ENTITY % ISolat2 PUBLIC

"ISO 8879:1986//ENTITIES Added Latin 2//EN">

<!--end of ISolat2.module-->]]>

<!ENTITY % ISOnum.module "INCLUDE">

<![%ISOnum.module; [

<!ENTITY % ISOnum PUBLIC

"ISO 8879:1986//ENTITIES Numeric and Special Graphic//EN">

<!--end of ISOnum.module-->]]>

<!ENTITY % ISOpub.module "INCLUDE">

<![%ISOpub.module; [

<!ENTITY % ISOpub PUBLIC

"ISO 8879:1986//ENTITIES Publishing//EN">

<!--end of ISOpub.module-->]]>

<!ENTITY % ISOtech.module "INCLUDE">

<![%ISOtech.module; [

<!ENTITY % ISOtech PUBLIC

```

"ISO 8879:1986//ENTITIES General Technical//EN">
<!--end of ISOtech.module-->]]>

<!--end of sgml.features-->]]>

<![%xml.features;[

<!ENTITY % ISOamsa.module "INCLUDE">
<![%ISOamsa.module;[
<!ENTITY % ISOamsa PUBLIC
"ISO 8879:1986//ENTITIES Added Math Symbols: Arrow Relations//EN//XML"
"ent/isoamsa.ent">
<!--end of ISOamsa.module-->]]>

<!ENTITY % ISOamsb.module "INCLUDE">
<![%ISOamsb.module;[
<!ENTITY % ISOamsb PUBLIC
"ISO 8879:1986//ENTITIES Added Math Symbols: Binary
Operators//EN//XML"
"ent/isoamsb.ent">
<!--end of ISOamsb.module-->]]>

<!ENTITY % ISOamsc.module "INCLUDE">
<![%ISOamsc.module;[
<!ENTITY % ISOamsc PUBLIC
"ISO 8879:1986//ENTITIES Added Math Symbols: Delimiters//EN//XML"
"ent/isoamsc.ent">
<!--end of ISOamsc.module-->]]>

<!ENTITY % ISOamsn.module "INCLUDE">
<![%ISOamsn.module;[
<!ENTITY % ISOamsn PUBLIC
"ISO 8879:1986//ENTITIES Added Math Symbols: Negated Relations//EN//XML"
"ent/isoamsn.ent">
<!--end of ISOamsn.module-->]]>

<!ENTITY % ISOamso.module "INCLUDE">
<![%ISOamso.module;[
<!ENTITY % ISOamso PUBLIC
"ISO 8879:1986//ENTITIES Added Math Symbols: Ordinary//EN//XML"
"ent/isoamso.ent">
<!--end of ISOamso.module-->]]>

<!ENTITY % ISOamsr.module "INCLUDE">
<![%ISOamsr.module;[
<!ENTITY % ISOamsr PUBLIC
"ISO 8879:1986//ENTITIES Added Math Symbols: Relations//EN//XML"
"ent/isoamsr.ent">

```

<!--end of ISOamsr.module-->]]>

<!ENTITY % ISObox.module "INCLUDE">

<![%ISObox.module;[

<!ENTITY % ISObox PUBLIC

"ISO 8879:1986//ENTITIES Box and Line

Drawing//EN//XML"

"ent/isobox.ent">

<!--end of ISObox.module-->]]>

<!ENTITY % ISOcyr1.module "INCLUDE">

<![%ISOcyr1.module;[

<!ENTITY % ISOcyr1 PUBLIC

"ISO 8879:1986//ENTITIES Russian Cyrillic//EN//XML"

"ent/isocyr1.ent">

<!--end of ISOcyr1.module-->]]>

<!ENTITY % ISOcyr2.module "INCLUDE">

<![%ISOcyr2.module;[

<!ENTITY % ISOcyr2 PUBLIC

"ISO 8879:1986//ENTITIES Non-Russian Cyrillic//EN//XML"

"ent/isocyr2.ent">

<!--end of ISOcyr2.module-->]]>

<!ENTITY % ISODia.module "INCLUDE">

<![%ISODia.module;[

<!ENTITY % ISODia PUBLIC

"ISO 8879:1986//ENTITIES Diacritical Marks//EN//XML"

"ent/isodia.ent">

<!--end of ISODia.module-->]]>

<!ENTITY % ISOgrk1.module "INCLUDE">

<![%ISOgrk1.module;[

<!ENTITY % ISOgrk1 PUBLIC

"ISO 8879:1986//ENTITIES Greek Letters//EN//XML"

"ent/isogr1.ent">

<!--end of ISOgrk1.module-->]]>

<!ENTITY % ISOgrk2.module "INCLUDE">

<![%ISOgrk2.module;[

<!ENTITY % ISOgrk2 PUBLIC

"ISO 8879:1986//ENTITIES Monotoniko Greek//EN//XML"

"ent/isogr2.ent">

<!--end of ISOgrk2.module-->]]>

<!ENTITY

% ISOgrk3.module "INCLUDE">

<![%ISOgrk3.module;[

```

<!ENTITY % ISOgrk3 PUBLIC
"ISO 8879:1986//ENTITIES Greek Symbols//EN//XML"
"ent/isogr3.ent">
<!--end of ISOgrk3.module-->]]>

<!ENTITY % ISOgrk4.module "INCLUDE">
<![%ISOgrk4.module;[
<!ENTITY % ISOgrk4 PUBLIC
"ISO 8879:1986//ENTITIES Alternative Greek Symbols//EN//XML"
"ent/isogr4.ent">
<!--end of ISOgrk4.module-->]]>

<!ENTITY % ISolat1.module "INCLUDE">
<![%ISolat1.module;[
<!ENTITY % ISolat1 PUBLIC
"ISO 8879:1986//ENTITIES Added Latin 1//EN//XML"
"ent/isolat1.ent">
<!--end of ISolat1.module-->]]>

<!ENTITY % ISolat2.module "INCLUDE">
<![%ISolat2.module;[
<!ENTITY % ISolat2 PUBLIC
"ISO 8879:1986//ENTITIES Added Latin 2//EN//XML"
"ent/isolat2.ent">
<!--end of ISolat2.module-->]]>

<!ENTITY % ISOnum.module "INCLUDE">
<![%ISOnum.module;[
<!ENTITY % ISOnum PUBLIC
"ISO 8879:1986//ENTITIES Numeric and Special Graphic//EN//XML"
"ent/isonum.ent">
<!--end of ISOnum.module-->]]>

<!ENTITY % ISOpub.module "INCLUDE">
<![%ISOpub.module;[
<!ENTITY
% ISOpub PUBLIC
"ISO 8879:1986//ENTITIES Publishing//EN//XML"
"ent/isopub.ent">
<!--end of ISOpub.module-->]]>

<!ENTITY % ISOtech.module "INCLUDE">
<![%ISOtech.module;[
<!ENTITY % ISOtech PUBLIC
"ISO 8879:1986//ENTITIES General Technical//EN//XML"
"ent/isotech.ent">
<!--end of ISOtech.module-->]]>

```

<!--end of xml.features-->]]>

<![%ISOamsa.module; [
%ISOamsa;
]]>

<![%ISOamsb.module; [
%ISOamsb;
]]>

<![%ISOamsc.module; [
%ISOamsc;
]]>

<![%ISOamsn.module; [
%ISOamsn;
]]>

<![%ISOamso.module; [
%ISOamso;
]]>

<![%ISOamsr.module; [
%ISOamsr;
]]>

<![%ISObox.module; [
%ISObox;
]]>

<![%ISOcyr1.module; [
%ISOcyr1;
]]>

<![%ISOcyr2.module; [
%ISOcyr2;
]]>

<![%ISODia.module; [
%ISODia;
]]>

<![%ISOgrk1.module; [
%ISOgrk1;
]]>

<![%ISOgrk2.module; [
%ISOgrk2;

]]>

```
<![ %ISOgrk3.module; [  
%ISOgrk3;  
]]>
```

```
<![ %ISOgrk4.module; [  
%ISOgrk4;  
]]>
```

```
<![ %ISolat1.module; [  
%ISolat1;  
]]>
```

```
<![ %ISolat2.module; [  
%ISolat2;  
]]>
```

```
<![ %ISONum.module; [  
%ISONum;  
]]>
```

```
<![ %ISOpub.module;  
[  
%ISOpub;  
]]>
```

```
<![ %ISOtech.module; [  
%ISOtech;  
]]>
```

```
<!-- End of DocBook character entity sets module V4.5 ..... -->  
<!-- ..... -->
```

Found in path(s):

* /docbook-xml-4-5-zip/dbcentx.mod

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

```
<!-- ..... -->  
<!-- DocBook document hierarchy module V4.5 ..... -->  
<!-- File dbhierx.mod ..... -->
```

```
<!-- Copyright 1992-2004 HaL Computer Systems, Inc.,  
O'Reilly & Associates, Inc., ArborText, Inc., Fujitsu Software  
Corporation, Norman Walsh, Sun Microsystems, Inc., and the  
Organization for the Advancement of Structured Information  
Standards (OASIS).
```

\$Id: dbhierx.mod 6340 2006-10-03 13:23:24Z nwalsh \$

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Please direct all questions, bug reports, or suggestions for changes to the docbook@lists.oasis-open.org mailing list. For more information, see <http://www.oasis-open.org/docbook/>.

-->

<!-- -->

<!-- This module contains the definitions for the overall document hierarchies of DocBook documents. It covers computer documentation manuals and manual fragments, as well as reference entries (such as man pages) and technical journals or anthologies containing articles.

This module depends on the DocBook information pool module. All

elements and entities referenced but not defined here are assumed to be defined in the information pool module.

In DTD driver files referring to this module, please use an entity declaration that uses the public identifier shown below:

```
<!ENTITY % dbhier PUBLIC
"-//OASIS//ELEMENTS DocBook Document Hierarchy V4.5//EN"
"dbhierx.mod">
%dbhier;
```

See the documentation for detailed information on the parameter entity and module scheme used in DocBook, customizing DocBook and planning for interchange, and changes made since the last release of DocBook.

-->

```

<!-- ..... -->
<!-- Entities for module inclusions ..... -->

<!ENTITY % dbhier.redecl.module "IGNORE">
<!ENTITY % dbhier.redecl2.module "IGNORE">

<!-- ..... -->
<!-- Entities for element classes .....
-->

<!ENTITY % local.appendix.class "">
<!ENTITY % appendix.class "appendix %local.appendix.class;">

<!ENTITY % local.article.class "">
<!ENTITY % article.class "article %local.article.class;">

<!ENTITY % local.book.class "">
<!ENTITY % book.class "book %local.book.class;">

<!ENTITY % local.chapter.class "">
<!ENTITY % chapter.class "chapter %local.chapter.class;">

<!ENTITY % local.index.class "">
<!ENTITY % index.class "index|setindex %local.index.class;">

<!ENTITY % local.refentry.class "">
<!ENTITY % refentry.class "refentry %local.refentry.class;">

<!ENTITY % local.section.class "">
<!ENTITY % section.class "section %local.section.class;">

<!ENTITY % local.nav.class "">
<!ENTITY % nav.class "toc|lot|index|glossary|bibliography
%local.nav.class;">

<!-- Redecclaration placeholder ..... -->

<!-- For redeclaring entities that are declared after this point while
      retaining their references to the entities that
      are declared before
      this point -->

<![%dbhier.redecl.module;[
<!-- Defining rdbhier here makes some buggy XML parsers happy. -->
<!ENTITY % rdbhier "">
%rdbhier;
<!--end of dbhier.redecl.module-->]]>

```



```

<!-- ..... -->
<!-- Entities for element mixtures ..... -->

<!ENTITY % local.divcomponent.mix "">
<!ENTITY % divcomponent.mix
"%list.class; |%admon.class;
|%linespecific.class; |%synop.class;
|%para.class; |%informal.class;
|%formal.class; |%compound.class;
|%genobj.class; |%descobj.class;
|%ndxterm.class;    |beginpage
    %forms.hook;
%local.divcomponent.mix;">

<!ENTITY % local.refcomponent.mix "">
<!ENTITY % refcomponent.mix
"%list.class; |%admon.class;
|%linespecific.class; |%synop.class;
|%para.class; |%informal.class;
|%formal.class; |%compound.class;
|%genobj.class; |%descobj.class;
|%ndxterm.class;    |beginpage
    %forms.hook;
%local.refcomponent.mix;">

<!ENTITY % local.indexdivcomponent.mix "">
<!ENTITY % indexdivcomponent.mix
"itemizedlist|orderedlist|variablelist|simplelist
|%linespecific.class; |%synop.class;
|%para.class; |%informal.class;
|anchor|remark
|%link.char.class;
    |beginpage
%local.indexdivcomponent.mix;">

<!ENTITY % local.refname.char.mix "">
<!ENTITY % refname.char.mix
"#PCDATA
|%tech.char.class;
%local.refname.char.mix;">

<!ENTITY % local.partcontent.mix "">
<!ENTITY % partcontent.mix
"%appendix.class;|%chapter.class;|%nav.class;|%article.class;
|preface|%refentry.class;|reference %local.partcontent.mix;">

<!ENTITY % local.refinline.char.mix "">
<!ENTITY % refinline.char.mix

```

```

"#PCDATA
|%xref.char.class; |%gen.char.class;
|%link.char.class; |%tech.char.class;
|%base.char.class; |%docinfo.char.class;
|%other.char.class;
|%ndxterm.class;    |beginpage
%local.refinline.char.mix;">

<!ENTITY % local.refclass.char.mix
"">
<!ENTITY % refclass.char.mix
"#PCDATA
|application
%local.refclass.char.mix;">

<!-- Redecoration placeholder 2 ..... -->

<!-- For redeclaring entities that are declared after this point while
      retaining their references to the entities that are declared before
      this point -->

<![%dbhier.redecl2.module;[
<!-- Defining rdbhier2 here makes some buggy XML parsers happy. -->
<!ENTITY % rdbhier2 "">
%rdbhier2;
<!--end of dbhier.redecl2.module-->]]>

<!-- ..... -->
<!-- Entities for content models ..... -->

<!ENTITY % div.title.content
"title, subtitle?, titleabbrev?">

<!ENTITY % bookcomponent.title.content
"title, subtitle?, titleabbrev?">

<!ENTITY % sect.title.content
"title, subtitle?, titleabbrev?">

<!ENTITY % refsect.title.content
"title, subtitle?, titleabbrev?">

<!ENTITY % bookcomponent.content
"((%divcomponent.mix;)+,
(sect1*|(%refentry.class;)*|simplesect*|(%section.class;)*))
|
(sect1+|(%refentry.class;)+|simplesect+|(%section.class;)+)">

```

```

<!-- ..... -->
<!-- Set and SetInfo ..... -->

<!ENTITY % set.content.module "INCLUDE">
<![%set.content.module;[
<!ENTITY % set.module "INCLUDE">
<![%set.module;[
<!ENTITY % local.set.attrib "">
<!ENTITY % set.role.attrib "%role.attrib;">

<!ENTITY % set.element "INCLUDE">
<![%set.element;[
<!--doc:A collection of books.-->
<!ELEMENT set %ho; ((%div.title.content;)?, setinfo?, toc?, (set[%book.class;]+,
    setindex?)
    %ubiq.inclusion;)>
<!--end of set.element-->]]>

<!-- FPI: SGML formal public identifier -->

<!ENTITY % set.attlist "INCLUDE">
<![%set.attlist;[
<!ATTLIST set
    fpi CDATA #IMPLIED
    %status.attrib;
    %common.attrib;
    %set.role.attrib;
    %local.set.attrib;
>
<!--end of set.attlist-->]]>
<!--end of set.module-->]]>

<!ENTITY
% setinfo.module "INCLUDE">
<![%setinfo.module;[
<!ENTITY % local.setinfo.attrib "">
<!ENTITY % setinfo.role.attrib "%role.attrib;">

<!ENTITY % setinfo.element "INCLUDE">
<![%setinfo.element;[
<!--doc:Meta-information for a Set.-->
<!ELEMENT setinfo %ho; ((%info.class;)+
    %beginpage.exclusion;)>
<!--end of setinfo.element-->]]>

<!-- Contents: IDs of the ToC, Books, and SetIndex that comprise
the set, in the order of their appearance -->

```

```

<!ENTITY % setinfo.attlist "INCLUDE">
<![%setinfo.attlist;[
<!ATTLIST setinfo
  contents IDREFS #IMPLIED
  %common.attrib;
  %setinfo.role.attrib;
  %local.setinfo.attrib;
>
<!--end of setinfo.attlist-->]]>
<!--end of setinfo.module-->]]>
<!--end of set.content.module-->]]>

<!-- ..... -->
<!-- Book and BookInfo ..... -->

<!ENTITY % book.content.module "INCLUDE">
<![%book.content.module;[
<!ENTITY % book.module "INCLUDE">
<![%book.module;[

<!ENTITY
  % local.book.attrib "">
<!ENTITY % book.role.attrib "%role.attrib;">

<!ENTITY % book.element "INCLUDE">
<![%book.element;[
<!--doc:A book.-->
<!ELEMENT book %ho; ((%div.title.content)?, bookinfo?,
  (dedication | toc | lot
  | glossary | bibliography | preface
  | %chapter.class; | reference | part
  | %article.class;
  | %appendix.class;
  | %index.class;
  | colophon)*)
  %ubiq.inclusion;>
<!--end of book.element-->]]>

<!-- FPI: SGML formal public identifier -->

<!ENTITY % book.attlist "INCLUDE">
<![%book.attlist;[
<!ATTLIST book fpi CDATA #IMPLIED
  %label.attrib;
  %status.attrib;

```

```

%common.attrib;
%book.role.attrib;
%local.book.attrib;
>
<!--end of book.attlist-->]]>
<!--end of book.module-->]]>

<!ENTITY % bookinfo.module "INCLUDE">
<![%bookinfo.module;[
<!ENTITY % local.bookinfo.attrib "">
<!ENTITY % bookinfo.role.attrib "%role.attrib;">

<!ENTITY % bookinfo.element "INCLUDE">
<![%bookinfo.element;[
<!--doc:Meta-information for a Book.-->
<!ELEMENT
bookinfo %ho; ((%info.class;)+
%beginpage.exclusion;>
<!--end of bookinfo.element-->]]>

<!-- Contents: IDs of the ToC, LoTs, Prefaces, Parts, Chapters,
Appendixes, References, GLossary, Bibliography, and indexes
comprising the Book, in the order of their appearance -->

<!ENTITY % bookinfo.attlist "INCLUDE">
<![%bookinfo.attlist;[
<!ATTLIST bookinfo
contents IDREFS #IMPLIED
%common.attrib;
%bookinfo.role.attrib;
%local.bookinfo.attrib;
>
<!--end of bookinfo.attlist-->]]>
<!--end of bookinfo.module-->]]>
<!--end of book.content.module-->]]>

<!-- ..... -->
<!-- Dedication, ToC, and LoT ..... -->

<!ENTITY % dedication.module "INCLUDE">
<![%dedication.module;[
<!ENTITY % local.dedication.attrib "">
<!ENTITY % dedication.role.attrib "%role.attrib;">

<!ENTITY % dedication.element "INCLUDE">
<![%dedication.element;[
<!--doc:A wrapper for the dedication section

```

```

of a book.-->
<!ELEMENT dedication %ho; ((%sect.title.content;)?, (%legalnotice.mix;)+)>
<!--end of dedication.element-->]]>

<!ENTITY % dedication.attlist "INCLUDE">
<![%dedication.attlist;[
<!ATTLIST dedication
    %status.attrib;
    %common.attrib;
    %dedication.role.attrib;
    %local.dedication.attrib;
>
<!--end of dedication.attlist-->]]>
<!--end of dedication.module-->]]>

<!ENTITY % colophon.module "INCLUDE">
<![ %colophon.module; [
<!ENTITY % local.colophon.attrib "">
<!ENTITY % colophon.role.attrib "%role.attrib;">

<!ENTITY % colophon.element "INCLUDE">
<![ %colophon.element; [
<!--doc:Text at the back of a book describing facts about its production.-->
<!ELEMENT colophon %ho; ((%sect.title.content;)?, (%textobject.mix;)+)>
<!--end of colophon.element-->]]>

<!ENTITY % colophon.attlist "INCLUDE">
<![ %colophon.attlist; [
<!ATTLIST colophon
    %status.attrib;
    %common.attrib;
    %colophon.role.attrib;
    %local.colophon.attrib;>
<!--end of colophon.attlist-->]]>
<!--end of colophon.module-->]]>

<!ENTITY
% toc.content.module "INCLUDE">
<![%toc.content.module;[
<!ENTITY % toc.module "INCLUDE">
<![%toc.module;[
<!ENTITY % local.toc.attrib "">
<!ENTITY % toc.role.attrib "%role.attrib;">

<!ENTITY % toc.element "INCLUDE">
<![%toc.element;[
<!--doc:A table of contents.-->
<!ELEMENT toc %ho; (beginpage?,

```

```

(%bookcomponent.title.content;)?,
tocfront*,
(tocpart | tocchap)*, toback*>
<!--end of toc.element-->]]>

<!ENTITY % toc.attlist "INCLUDE">
<![%toc.attlist;[
<!ATTLIST toc
    %pagenum.attrib;
    %common.attrib;
    %toc.role.attrib;
    %local.toc.attrib;
>
<!--end of toc.attlist-->]]>
<!--end of toc.module-->]]>

<!ENTITY % tocfront.module "INCLUDE">
<![%tocfront.module;[
<!ENTITY % local.tocfront.attrib "">
<!ENTITY % tocfront.role.attrib "%role.attrib;">

<!ENTITY % tocfront.element "INCLUDE">
<![%tocfront.element;[
<!--doc:An entry in a table of contents for a front matter component.-->
<!ELEMENT tocfront %ho; (%para.char.mix;)*>
<!--end of tocfront.element-->]]>

<!--
to element that this entry represents -->

<!ENTITY % tocfront.attlist "INCLUDE">
<![%tocfront.attlist;[
<!ATTLIST tocfront
    %label.attrib;
    %linkend.attrib; %pagenum.attrib;
    %common.attrib;
    %tocfront.role.attrib;
    %local.tocfront.attrib;
>
<!--end of tocfront.attlist-->]]>
<!--end of tocfront.module-->]]>

<!ENTITY % tocentry.module "INCLUDE">
<![%tocentry.module;[
<!ENTITY % local.tocentry.attrib "">
<!ENTITY % tocentry.role.attrib "%role.attrib;">

```

```

<!ENTITY % tocentry.element "INCLUDE">
<![%tocentry.element;[
<!--doc:A component title in a table of contents.-->
<!ELEMENT tocentry %ho; (%para.char.mix;)*>
<!--end of tocentry.element-->]]>

<!-- to element that this entry represents -->

<!ENTITY % tocentry.attlist "INCLUDE">
<![%tocentry.attlist;[
<!ATTLIST tocentry
    %linkend.attrib; %pagenum.attrib;
    %common.attrib;
    %tocentry.role.attrib;
    %local.tocentry.attrib;
>
<!--end of tocentry.attlist-->]]>
<!--end of tocentry.module-->]]>

<!ENTITY % tocpart.module
    "INCLUDE">
<![%tocpart.module;[
<!ENTITY % local.tocpart.attrib "">
<!ENTITY % tocpart.role.attrib "%role.attrib;">

<!ENTITY % tocpart.element "INCLUDE">
<![%tocpart.element;[
<!--doc:An entry in a table of contents for a part of a book.-->
<!ELEMENT tocpart %ho; (tocentry+, tocchap*)>
<!--end of tocpart.element-->]]>

<!ENTITY % tocpart.attlist "INCLUDE">
<![%tocpart.attlist;[
<!ATTLIST tocpart
    %common.attrib;
    %tocpart.role.attrib;
    %local.tocpart.attrib;
>
<!--end of tocpart.attlist-->]]>
<!--end of tocpart.module-->]]>

<!ENTITY % tocchap.module "INCLUDE">
<![%tocchap.module;[
<!ENTITY % local.tocchap.attrib "">
<!ENTITY % tocchap.role.attrib "%role.attrib;">

<!ENTITY % tocchap.element "INCLUDE">

```



```

<![%tocchap.element;[
<!--doc:An entry in a table of contents for a component in the body of a document.-->
<!ELEMENT tocchap %ho; (tocentry+, toplevel1*)>
<!--end of tocchap.element-->]]>

<!ENTITY % tocchap.attlist "INCLUDE">
<![%tocchap.attlist;[
<!ATTLIST tocchap
    %label.attrib;
    %common.attrib;
    %tocchap.role.attrib;
    %local.tocchap.attrib;
>
<!--end
of tocchap.attlist-->]]>
<!--end of tocchap.module-->]]>

<!ENTITY % toplevel1.module "INCLUDE">
<![%toplevel1.module;[
<!ENTITY % local.toplevel1.attrib "">
<!ENTITY % toplevel1.role.attrib "%role.attrib;">

<!ENTITY % toplevel1.element "INCLUDE">
<![%toplevel1.element;[
<!--doc:A top-level entry within a table of contents entry for a chapter-like component.-->
<!ELEMENT toplevel1 %ho; (tocentry+, toplevel2*)>
<!--end of toplevel1.element-->]]>

<!ENTITY % toplevel1.attlist "INCLUDE">
<![%toplevel1.attlist;[
<!ATTLIST toplevel1
    %common.attrib;
    %toplevel1.role.attrib;
    %local.toplevel1.attrib;
>
<!--end of toplevel1.attlist-->]]>
<!--end of toplevel1.module-->]]>

<!ENTITY % toplevel2.module "INCLUDE">
<![%toplevel2.module;[
<!ENTITY % local.toplevel2.attrib "">
<!ENTITY % toplevel2.role.attrib "%role.attrib;">

<!ENTITY % toplevel2.element "INCLUDE">
<![%toplevel2.element;[
<!--doc:A second-level entry
within a table of contents entry for a chapter-like component.-->
<!ELEMENT toplevel2 %ho; (tocentry+, toplevel3*)>

```

```

<!--end of toplevel2.element-->]]>

<!ENTITY % toplevel2.attlist "INCLUDE">
<![%toplevel2.attlist;[
<!ATTLIST toplevel2
    %common.attrib;
    %toplevel2.role.attrib;
    %local.toplevel2.attrib;
>
<!--end of toplevel2.attlist-->]]>
<!--end of toplevel2.module-->]]>

<!ENTITY % toplevel3.module "INCLUDE">
<![%toplevel3.module;[
<!ENTITY % local.toplevel3.attrib "">
<!ENTITY % toplevel3.role.attrib "%role.attrib;">

<!ENTITY % toplevel3.element "INCLUDE">
<![%toplevel3.element;[
<!--doc:A third-level entry within a table of contents entry for a chapter-like component.-->
<!ELEMENT toplevel3 %ho; (tocentry+, toplevel4*)>
<!--end of toplevel3.element-->]]>

<!ENTITY % toplevel3.attlist "INCLUDE">
<![%toplevel3.attlist;[
<!ATTLIST toplevel3
    %common.attrib;
    %toplevel3.role.attrib;
    %local.toplevel3.attrib;
>
<!--end of toplevel3.attlist-->]]>
<!--end of toplevel3.module-->]]>

<!ENTITY
    % toplevel4.module "INCLUDE">
<![%toplevel4.module;[
<!ENTITY % local.toplevel4.attrib "">
<!ENTITY % toplevel4.role.attrib "%role.attrib;">

<!ENTITY % toplevel4.element "INCLUDE">
<![%toplevel4.element;[
<!--doc:A fourth-level entry within a table of contents entry for a chapter-like component.-->
<!ELEMENT toplevel4 %ho; (tocentry+, toplevel5*)>
<!--end of toplevel4.element-->]]>

<!ENTITY % toplevel4.attlist "INCLUDE">
<![%toplevel4.attlist;[
<!ATTLIST toplevel4

```

```

%common.attrib;
%toclevel4.role.attrib;
%local.toclevel4.attrib;
>
<!--end of toclevel4.attlist-->]]>
<!--end of toclevel4.module-->]]>

<!ENTITY % toclevel5.module "INCLUDE">
<![%toclevel5.module;[
<!ENTITY % local.toclevel5.attrib "">
<!ENTITY % toclevel5.role.attrib "%role.attrib;">

<!ENTITY % toclevel5.element "INCLUDE">
<![%toclevel5.element;[
<!--doc:A fifth-level entry within a table of contents entry for a chapter-like component.-->
<!ELEMENT toclevel5 %ho; (tocentry+)>
<!--end of toclevel5.element-->]]>

<!ENTITY
% toclevel5.attlist "INCLUDE">
<![%toclevel5.attlist;[
<!ATTLIST toclevel5
%common.attrib;
%toclevel5.role.attrib;
%local.toclevel5.attrib;
>
<!--end of toclevel5.attlist-->]]>
<!--end of toclevel5.module-->]]>

<!ENTITY % tocbac.module "INCLUDE">
<![%tocbac.module;[
<!ENTITY % local.tocbac.attrib "">
<!ENTITY % tocbac.role.attrib "%role.attrib;">

<!ENTITY % tocbac.element "INCLUDE">
<![%tocbac.element;[
<!--doc:An entry in a table of contents for a back matter component.-->
<!ELEMENT tocbac %ho; (%para.char.mix;)*>
<!--end of tocbac.element-->]]>

<!-- to element that this entry represents -->

<!ENTITY % tocbac.attlist "INCLUDE">
<![%tocbac.attlist;[
<!ATTLIST tocbac
%label.attrib;
%linkend.attrib; %pagenum.attrib;

```

```

%common.attrib;
%tocback.role.attrib;
%local.tocback.attrib;
>
<!--end of tocback.attlist-->]]>
<!--end of tocback.module-->]]>
<!--end of toc.content.module-->]]>

<!ENTITY % lot.content.module "INCLUDE">
<![%lot.content.module;[
<!ENTITY
% lot.module "INCLUDE">
<![%lot.module;[
<!ENTITY % local.lot.attrib "">
<!ENTITY % lot.role.attrib "%role.attrib;">

<!ENTITY % lot.element "INCLUDE">
<![%lot.element;[
<!--doc:A list of the titles of formal objects (as tables or figures) in a document.-->
<!ELEMENT lot %ho; (beginpage?, (%bookcomponent.title.content;)?, lotentry*)>
<!--end of lot.element-->]]>

<!ENTITY % lot.attlist "INCLUDE">
<![%lot.attlist;[
<!ATTLIST lot
%label.attrib;
%common.attrib;
%lot.role.attrib;
%local.lot.attrib;
>
<!--end of lot.attlist-->]]>
<!--end of lot.module-->]]>

<!ENTITY % lotentry.module "INCLUDE">
<![%lotentry.module;[
<!ENTITY % local.lotentry.attrib "">
<!ENTITY % lotentry.role.attrib "%role.attrib;">

<!ENTITY % lotentry.element "INCLUDE">
<![%lotentry.element;[
<!--doc:An entry in a list of titles.-->
<!ELEMENT lotentry %ho; (%para.char.mix;)*>
<!--end of lotentry.element-->]]>

<!-- SrcCredit: Information about the source of the entry,
as for a list of illustrations
-->
<!-- linkend: to element that this entry represents-->

```

```

<!ENTITY % lotentry.attlist "INCLUDE">
<![%lotentry.attlist;[
<!ATTLIST lotentry
    %linkend.attrib;
    %pagenum.attrib;
    srccredit CDATA #IMPLIED
    %common.attrib;
    %lotentry.role.attrib;
    %local.lotentry.attrib;
>
<!--end of lotentry.attlist-->]]>
<!--end of lotentry.module-->]]>
<!--end of lot.content.module-->]]>

<!-- ..... -->
<!-- Appendix, Chapter, Part, Preface, Reference, PartIntro ..... -->

<!ENTITY % appendix.module "INCLUDE">
<![%appendix.module;[
<!ENTITY % local.appendix.attrib "">
<!ENTITY % appendix.role.attrib "%role.attrib;">

<!ENTITY % appendix.element "INCLUDE">
<![%appendix.element;[
<!--doc:An appendix in a Book or Article.-->
<!ELEMENT appendix %ho; (beginpage?,
    appendixinfo?,
    (%bookcomponent.title.content;),
    (%nav.class;)*,
    tocchap?,

    (%bookcomponent.content;),
    (%nav.class;)*
    %ubiq.inclusion;>
<!--end of appendix.element-->]]>

<!ENTITY % appendix.attlist "INCLUDE">
<![%appendix.attlist;[
<!ATTLIST appendix
    %label.attrib;
    %status.attrib;
    %common.attrib;
    %appendix.role.attrib;
    %local.appendix.attrib;
>
<!--end of appendix.attlist-->]]>
<!--end of appendix.module-->]]>

```

```

<!ENTITY % chapter.module "INCLUDE">
<![%chapter.module;[
<!ENTITY % local.chapter.attrib "">
<!ENTITY % chapter.role.attrib "%role.attrib;">

```

```

<!ENTITY % chapter.element "INCLUDE">
<![%chapter.element;[
<!--doc:A chapter, as of a book.-->
<!ELEMENT chapter %ho; (beginpage?,
    chapterinfo?,
    (%bookcomponent.title.content;),
    (%nav.class;)*,
    tocchap?,
    (%bookcomponent.content;),
    (%nav.class;)*
    %ubiq.inclusion;]>
<!--end of chapter.element-->]]>

```

```

<!ENTITY % chapter.attlist "INCLUDE">
<![%chapter.attlist;[
<!ATTLIST
chapter
    %label.attrib;
    %status.attrib;
    %common.attrib;
    %chapter.role.attrib;
    %local.chapter.attrib;
>
<!--end of chapter.attlist-->]]>
<!--end of chapter.module-->]]>

```

```

<!ENTITY % part.module "INCLUDE">
<![%part.module;[

```

<!-- Note that Part was to have its content model reduced in V4.5. This change will not be made after all. -->

```

<!ENTITY % local.part.attrib "">
<!ENTITY % part.role.attrib "%role.attrib;">

```

```

<!ENTITY % part.element "INCLUDE">
<![%part.element;[
<!--doc:A division in a book.-->
<!ELEMENT part %ho; (beginpage?,
    partinfo?, (%bookcomponent.title.content;), partintro?,
    (%partcontent.mix;)+
    %ubiq.inclusion;]>
<!--end of part.element-->]]>

```

```

<!ENTITY % part.attlist "INCLUDE">
<![%part.attlist;[
<!ATTLIST part
  %label.attrib;
  %status.attrib;
  %common.attrib;
  %part.role.attrib;
  %local.part.attrib;
>
<!--end of part.attlist-->]]>
<!--ELEMENT PartIntro (defined below)-->
<!--end of part.module-->]]>

<!ENTITY % preface.module
  "INCLUDE">
<![%preface.module;[
<!ENTITY % local.preface.attrib "">
<!ENTITY % preface.role.attrib "%role.attrib;">

<!ENTITY % preface.element "INCLUDE">
<![%preface.element;[
<!--doc:Introductory matter preceding the first chapter of a book.-->
<!ELEMENT preface %ho; (beginpage?,
  prefaceinfo?,
  (%bookcomponent.title.content;),
  (%nav.class;)*,
  tocchap?,
  (%bookcomponent.content;),
  (%nav.class;)*
  %ubiq.inclusion;>
<!--end of preface.element-->]]>

<!ENTITY % preface.attlist "INCLUDE">
<![%preface.attlist;[
<!ATTLIST preface
  %status.attrib;
  %common.attrib;
  %preface.role.attrib;
  %local.preface.attrib;
>
<!--end of preface.attlist-->]]>
<!--end of preface.module-->]]>

<!ENTITY % reference.module "INCLUDE">
<![%reference.module;[
<!ENTITY % local.reference.attrib "">
<!ENTITY % reference.role.attrib "%role.attrib;">

```

```

<!ENTITY % reference.element "INCLUDE">
<![%reference.element;[
<!--doc:A
collection of reference entries.-->
<!ELEMENT reference %ho; (beginpage?,
        referenceinfo?,
        (%bookcomponent.title.content;), partintro?,
        (%refentry.class;)+)
%ubiq.inclusion;]>
<!--end of reference.element-->]]>

<!ENTITY % reference.attlist "INCLUDE">
<![%reference.attlist;[
<!ATTLIST reference
    %label.attrib;
    %status.attrib;
    %common.attrib;
    %reference.role.attrib;
    %local.reference.attrib;
>
<!--end of reference.attlist-->]]>
<!--ELEMENT PartIntro (defined below)-->
<!--end of reference.module-->]]>

<!ENTITY % partintro.module "INCLUDE">
<![%partintro.module;[
<!ENTITY % local.partintro.attrib "">
<!ENTITY % partintro.role.attrib "%role.attrib;">

<!ENTITY % partintro.element "INCLUDE">
<![%partintro.element;[
<!--doc:An introduction to the contents of a part.-->
<!ELEMENT partintro %ho; ((%div.title.content;)?, (%bookcomponent.content;))
%ubiq.inclusion;]>
<!--end of partintro.element-->]]>

<!ENTITY
% partintro.attlist "INCLUDE">
<![%partintro.attlist;[
<!ATTLIST partintro
    %label.attrib;
    %common.attrib;
    %partintro.role.attrib;
    %local.partintro.attrib;
>
<!--end of partintro.attlist-->]]>
<!--end of partintro.module-->]]>

```



```

<!-- ..... -->
<!-- Other Info elements ..... -->

<!ENTITY % appendixinfo.module "INCLUDE">
<![ %appendixinfo.module; [
<!ENTITY % local.appendixinfo.attrib "">
<!ENTITY % appendixinfo.role.attrib "%role.attrib;">

<!ENTITY % appendixinfo.element "INCLUDE">
<![ %appendixinfo.element; [
<!--doc:Meta-information for an Appendix.-->
<!ELEMENT appendixinfo %ho; ((%info.class;)+
    %beginpage.exclusion;>
<!--end of appendixinfo.element-->]]>

<!ENTITY % appendixinfo.attlist "INCLUDE">
<![ %appendixinfo.attlist; [
<!ATTLIST appendixinfo
    %common.attrib;
    %appendixinfo.role.attrib;
    %local.appendixinfo.attrib;
>
<!--end of appendixinfo.attlist-->]]>
<!--end
of appendixinfo.module-->]]>

<!ENTITY % bibliographyinfo.module "INCLUDE">
<![ %bibliographyinfo.module; [
<!ENTITY % local.bibliographyinfo.attrib "">
<!ENTITY % bibliographyinfo.role.attrib "%role.attrib;">

<!ENTITY % bibliographyinfo.element "INCLUDE">
<![ %bibliographyinfo.element; [
<!--doc:Meta-information for a Bibliography.-->
<!ELEMENT bibliographyinfo %ho; ((%info.class;)+
    %beginpage.exclusion;>
<!--end of bibliographyinfo.element-->]]>

<!ENTITY % bibliographyinfo.attlist "INCLUDE">
<![ %bibliographyinfo.attlist; [
<!ATTLIST bibliographyinfo
    %common.attrib;
    %bibliographyinfo.role.attrib;
    %local.bibliographyinfo.attrib;
>
<!--end of bibliographyinfo.attlist-->]]>
<!--end of bibliographyinfo.module-->]]>

```

```

<!ENTITY % chapterinfo.module "INCLUDE">
<![ %chapterinfo.module; [
<!ENTITY % local.chapterinfo.attrib "">
<!ENTITY % chapterinfo.role.attrib "%role.attrib;">

```

```

<!ENTITY % chapterinfo.element "INCLUDE">
<![ %chapterinfo.element; [
<!--doc:Meta-information
for a Chapter.-->
<!ELEMENT chapterinfo %ho; ((%info.class;)+)
%beginpage.exclusion;>
<!--end of chapterinfo.element-->]]>

```

```

<!ENTITY % chapterinfo.attlist "INCLUDE">
<![ %chapterinfo.attlist; [
<!ATTLIST chapterinfo
%common.attrib;
%chapterinfo.role.attrib;
%local.chapterinfo.attrib;
>
<!--end of chapterinfo.attlist-->]]>
<!--end of chapterinfo.module-->]]>

```

```

<!ENTITY % glossaryinfo.module "INCLUDE">
<![ %glossaryinfo.module; [
<!ENTITY % local.glossaryinfo.attrib "">
<!ENTITY % glossaryinfo.role.attrib "%role.attrib;">

```

```

<!ENTITY % glossaryinfo.element "INCLUDE">
<![ %glossaryinfo.element; [
<!--doc:Meta-information for a Glossary.-->
<!ELEMENT glossaryinfo %ho; ((%info.class;)+)
%beginpage.exclusion;>
<!--end of glossaryinfo.element-->]]>

```

```

<!ENTITY % glossaryinfo.attlist "INCLUDE">
<![ %glossaryinfo.attlist; [
<!ATTLIST glossaryinfo
%common.attrib;
%glossaryinfo.role.attrib;
%local.glossaryinfo.attrib;
>
<!--end of glossaryinfo.attlist-->]]>
<!--end
of glossaryinfo.module-->]]>

```

```

<!ENTITY % indexinfo.module "INCLUDE">

```

```

<![ %indexinfo.module; [
<!ENTITY % local.indexinfo.attrib "">
<!ENTITY % indexinfo.role.attrib "%role.attrib;">

<!ENTITY % indexinfo.element "INCLUDE">
<![ %indexinfo.element; [
<!--doc:Meta-information for an Index.-->
<!ELEMENT indexinfo %ho; ((%info.class;)+)>
<!--end of indexinfo.element-->]]>

<!ENTITY % indexinfo.attlist "INCLUDE">
<![ %indexinfo.attlist; [
<!ATTLIST indexinfo
    %common.attrib;
    %indexinfo.role.attrib;
    %local.indexinfo.attrib;
>
<!--end of indexinfo.attlist-->]]>
<!--end of indexinfo.module-->]]>

<!ENTITY % setindexinfo.module "INCLUDE">
<![ %setindexinfo.module; [
<!ENTITY % local.setindexinfo.attrib "">
<!ENTITY % setindexinfo.role.attrib "%role.attrib;">

<!ENTITY % setindexinfo.element "INCLUDE">
<![ %setindexinfo.element; [
<!--doc:Meta-information for a SetIndex.-->
<!ELEMENT setindexinfo %ho; ((%info.class;)+
    %beginpage.exclusion;>
<!--end of setindexinfo.element-->]]>

<!ENTITY
% setindexinfo.attlist "INCLUDE">
<![ %setindexinfo.attlist; [
<!ATTLIST setindexinfo
    %common.attrib;
    %setindexinfo.role.attrib;
    %local.setindexinfo.attrib;
>
<!--end of setindexinfo.attlist-->]]>
<!--end of setindexinfo.module-->]]>

<!ENTITY % partinfo.module "INCLUDE">
<![ %partinfo.module; [
<!ENTITY % local.partinfo.attrib "">
<!ENTITY % partinfo.role.attrib "%role.attrib;">

```

```

<!ENTITY % partinfo.element "INCLUDE">
<![ %partinfo.element; [
<!--doc:Meta-information for a Part.-->
<!ELEMENT partinfo %ho; ((%info.class;)+
    %beginpage.exclusion;>
<!--end of partinfo.element-->]]>

<!ENTITY % partinfo.attlist "INCLUDE">
<![ %partinfo.attlist; [
<!ATTLIST partinfo
    %common.attrib;
    %partinfo.role.attrib;
    %local.partinfo.attrib;
>
<!--end of partinfo.attlist-->]]>
<!--end of partinfo.module-->]]>

<!ENTITY % prefaceinfo.module "INCLUDE">
<![ %prefaceinfo.module; [
<!ENTITY % local.prefaceinfo.attrib "">
<!ENTITY % prefaceinfo.role.attrib "%role.attrib;">

<!ENTITY % prefaceinfo.element
    "INCLUDE">
<![ %prefaceinfo.element; [
<!--doc:Meta-information for a Preface.-->
<!ELEMENT prefaceinfo %ho; ((%info.class;)+
    %beginpage.exclusion;>
<!--end of prefaceinfo.element-->]]>

<!ENTITY % prefaceinfo.attlist "INCLUDE">
<![ %prefaceinfo.attlist; [
<!ATTLIST prefaceinfo
    %common.attrib;
    %prefaceinfo.role.attrib;
    %local.prefaceinfo.attrib;
>
<!--end of prefaceinfo.attlist-->]]>
<!--end of prefaceinfo.module-->]]>

<!ENTITY % refentryinfo.module "INCLUDE">
<![ %refentryinfo.module; [
<!ENTITY % local.refentryinfo.attrib "">
<!ENTITY % refentryinfo.role.attrib "%role.attrib;">

<!ENTITY % refentryinfo.element "INCLUDE">
<![ %refentryinfo.element; [
<!--doc:Meta-information for a Refentry.-->

```

```

<!ELEMENT refentryinfo %ho; ((%info.class;)+)
%beginpage.exclusion;>
<!--end of refentryinfo.element-->]]>

<!ENTITY % refentryinfo.attlist "INCLUDE">
<![ %refentryinfo.attlist; [
<!ATTLIST refentryinfo
%common.attrib;
%refentryinfo.role.attrib;
%local.refentryinfo.attrib;
>
<!--end
of refentryinfo.attlist-->]]>
<!--end of refentryinfo.module-->]]>

<!ENTITY % refsectioninfo.module "INCLUDE">
<![ %refsectioninfo.module; [
<!ENTITY % local.refsectioninfo.attrib "">
<!ENTITY % refsectioninfo.role.attrib "%role.attrib;">

<!ENTITY % refsectioninfo.element "INCLUDE">
<![ %refsectioninfo.element; [
<!--doc:Meta-information for a refsection.-->
<!ELEMENT refsectioninfo %ho; ((%info.class;)+)
%beginpage.exclusion;>
<!--end of refsectioninfo.element-->]]>

<!ENTITY % refsectioninfo.attlist "INCLUDE">
<![ %refsectioninfo.attlist; [
<!ATTLIST refsectioninfo
%common.attrib;
%refsectioninfo.role.attrib;
%local.refsectioninfo.attrib;
>
<!--end of refsectioninfo.attlist-->]]>
<!--end of refsectioninfo.module-->]]>

<!ENTITY % refsect1info.module "INCLUDE">
<![ %refsect1info.module; [
<!ENTITY % local.refsect1info.attrib "">
<!ENTITY % refsect1info.role.attrib "%role.attrib;">

<!ENTITY % refsect1info.element "INCLUDE">
<![ %refsect1info.element; [
<!--doc:Meta-information
for a RefSect1.-->
<!ELEMENT refsect1info %ho; ((%info.class;)+)
%beginpage.exclusion;>

```

```

<!--end of refsect1info.element-->]]>

<!ENTITY % refsect1info.attlist "INCLUDE">
<![ %refsect1info.attlist; [
<!ATTLIST refsect1info
    %common.attrib;
    %refsect1info.role.attrib;
    %local.refsect1info.attrib;
>
<!--end of refsect1info.attlist-->]]>
<!--end of refsect1info.module-->]]>

<!ENTITY % refsect2info.module "INCLUDE">
<![ %refsect2info.module; [
<!ENTITY % local.refsect2info.attrib "">
<!ENTITY % refsect2info.role.attrib "%role.attrib;">

<!ENTITY % refsect2info.element "INCLUDE">
<![ %refsect2info.element; [
<!--doc:Meta-information for a RefSect2.-->
<!ELEMENT refsect2info %ho; ((%info.class;)+)
    %beginpage.exclusion;>
<!--end of refsect2info.element-->]]>

<!ENTITY % refsect2info.attlist "INCLUDE">
<![ %refsect2info.attlist; [
<!ATTLIST refsect2info
    %common.attrib;
    %refsect2info.role.attrib;
    %local.refsect2info.attrib;
>
<!--end of refsect2info.attlist-->]]>
<!--end
of refsect2info.module-->]]>

<!ENTITY % refsect3info.module "INCLUDE">
<![ %refsect3info.module; [
<!ENTITY % local.refsect3info.attrib "">
<!ENTITY % refsect3info.role.attrib "%role.attrib;">

<!ENTITY % refsect3info.element "INCLUDE">
<![ %refsect3info.element; [
<!--doc:Meta-information for a RefSect3.-->
<!ELEMENT refsect3info %ho; ((%info.class;)+)
    %beginpage.exclusion;>
<!--end of refsect3info.element-->]]>

<!ENTITY % refsect3info.attlist "INCLUDE">

```

```

<![ %refsect3info.attlist; [
<!ATTLIST refsect3info
    %common.attrib;
    %refsect3info.role.attrib;
    %local.refsect3info.attrib;
>
<!--end of refsect3info.attlist-->]]>
<!--end of refsect3info.module-->]]>

<!ENTITY % refsynopsisdivinfo.module "INCLUDE">
<![ %refsynopsisdivinfo.module; [
<!ENTITY % local.refsynopsisdivinfo.attrib "">
<!ENTITY % refsynopsisdivinfo.role.attrib "%role.attrib;">

<!ENTITY % refsynopsisdivinfo.element "INCLUDE">
<![ %refsynopsisdivinfo.element; [
<!--doc:Meta-information for a RefSynopsisDiv.-->
<!ELEMENT
    refsynopsisdivinfo %ho; ((%info.class;)+
    %beginpage.exclusion;>
<!--end of refsynopsisdivinfo.element-->]]>

<!ENTITY % refsynopsisdivinfo.attlist "INCLUDE">
<![ %refsynopsisdivinfo.attlist; [
<!ATTLIST refsynopsisdivinfo
    %common.attrib;
    %refsynopsisdivinfo.role.attrib;
    %local.refsynopsisdivinfo.attrib;
>
<!--end of refsynopsisdivinfo.attlist-->]]>
<!--end of refsynopsisdivinfo.module-->]]>

<!ENTITY % referenceinfo.module "INCLUDE">
<![ %referenceinfo.module; [
<!ENTITY % local.referenceinfo.attrib "">
<!ENTITY % referenceinfo.role.attrib "%role.attrib;">

<!ENTITY % referenceinfo.element "INCLUDE">
<![ %referenceinfo.element; [
<!--doc:Meta-information for a Reference.-->
<!ELEMENT referenceinfo %ho; ((%info.class;)+
    %beginpage.exclusion;>
<!--end of referenceinfo.element-->]]>

<!ENTITY % referenceinfo.attlist "INCLUDE">
<![ %referenceinfo.attlist; [
<!ATTLIST referenceinfo
    %common.attrib;

```

```

%referenceinfo.role.attrib;
%local.referenceinfo.attrib;
>
<!--end
of referenceinfo.attlist-->]]>
<!--end of referenceinfo.module-->]]>

<!ENTITY % local.sect1info.attrib "">
<!ENTITY % sect1info.role.attrib "%role.attrib;">

<!ENTITY % sect1info.element "INCLUDE">
<![%sect1info.element;[
<!--doc:Meta-information for a Sect1.-->
<!ELEMENT sect1info %ho; ((%info.class;)+)
%beginpage.exclusion;>
<!--end of sect1info.element-->]]>

<!ENTITY % sect1info.attlist "INCLUDE">
<![%sect1info.attlist;[
<!ATTLIST sect1info
%common.attrib;
%sect1info.role.attrib;
%local.sect1info.attrib;
>
<!--end of sect1info.attlist-->]]>

<!ENTITY % local.sect2info.attrib "">
<!ENTITY % sect2info.role.attrib "%role.attrib;">

<!ENTITY % sect2info.element "INCLUDE">
<![%sect2info.element;[
<!--doc:Meta-information for a Sect2.-->
<!ELEMENT sect2info %ho; ((%info.class;)+)
%beginpage.exclusion;>
<!--end of sect2info.element-->]]>

<!ENTITY % sect2info.attlist "INCLUDE">
<![%sect2info.attlist;[
<!ATTLIST sect2info
%common.attrib;
%sect2info.role.attrib;
%local.sect2info.attrib;
>
<!--end
of sect2info.attlist-->]]>

<!ENTITY % local.sect3info.attrib "">
<!ENTITY % sect3info.role.attrib "%role.attrib;">

```



```

<!ENTITY % sect3info.element "INCLUDE">
<![%sect3info.element;[
<!--doc:Meta-information for a Sect3.-->
<!ELEMENT sect3info %ho; ((%info.class;)+
    %beginpage.exclusion;]>
<!--end of sect3info.element-->]]>

<!ENTITY % sect3info.attlist "INCLUDE">
<![%sect3info.attlist;[
<!ATTLIST sect3info
    %common.attrib;
    %sect3info.role.attrib;
    %local.sect3info.attrib;
>
<!--end of sect3info.attlist-->]]>

<!ENTITY % local.sect4info.attrib "">
<!ENTITY % sect4info.role.attrib "%role.attrib;">

<!ENTITY % sect4info.element "INCLUDE">
<![%sect4info.element;[
<!--doc:Meta-information for a Sect4.-->
<!ELEMENT sect4info %ho; ((%info.class;)+
    %beginpage.exclusion;]>
<!--end of sect4info.element-->]]>

<!ENTITY % sect4info.attlist "INCLUDE">
<![%sect4info.attlist;[
<!ATTLIST sect4info
    %common.attrib;
    %sect4info.role.attrib;
    %local.sect4info.attrib;
>
<!--end
of sect4info.attlist-->]]>

<!ENTITY % local.sect5info.attrib "">
<!ENTITY % sect5info.role.attrib "%role.attrib;">

<!ENTITY % sect5info.element "INCLUDE">
<![%sect5info.element;[
<!--doc:Meta-information for a Sect5.-->
<!ELEMENT sect5info %ho; ((%info.class;)+
    %beginpage.exclusion;]>
<!--end of sect5info.element-->]]>

<!ENTITY % sect5info.attlist "INCLUDE">

```

```

<![%sect5info.attlist;[
<!ATTLIST sect5info
    %common.attrib;
    %sect5info.role.attrib;
    %local.sect5info.attrib;
>
<!--end of sect5info.attlist-->]]>

<!-- ..... -->
<!-- Section (parallel to Sect*) ..... -->

<!ENTITY % section.content.module "INCLUDE">
<![ %section.content.module; [
<!ENTITY % section.module "INCLUDE">
<![ %section.module; [
<!ENTITY % local.section.attrib "">
<!ENTITY % section.role.attrib "%role.attrib;">

<!ENTITY % section.element "INCLUDE">
<![ %section.element; [
<!--doc:A recursive section.-->
<!ELEMENT
section %ho; (sectioninfo?,
    (%sect.title.content;),
    (%nav.class;)*,
    (((%divcomponent.mix;)+,
        ((%refentry.class;)*|(%section.class;)*|simplesect*))
    | (%refentry.class;)+|(%section.class;)+|simplesect+),
    (%nav.class;)*
    %ubiq.inclusion;>
<!--end of section.element-->]]>

<!ENTITY % section.attlist "INCLUDE">
<![ %section.attlist; [
<!ATTLIST section
    %label.attrib;
    %status.attrib;
    %common.attrib;
    %section.role.attrib;
    %local.section.attrib;
>
<!--end of section.attlist-->]]>
<!--end of section.module-->]]>

<!ENTITY % sectioninfo.module "INCLUDE">
<![ %sectioninfo.module; [
<!ENTITY % sectioninfo.role.attrib "%role.attrib;">
<!ENTITY % local.sectioninfo.attrib "">

```

```

<!ENTITY % sectioninfo.element "INCLUDE">
<![ %sectioninfo.element; [
<!--doc:Meta-information for a recursive section.-->
<!ELEMENT sectioninfo %ho; ((%info.class;)+)
    %beginpage.exclusion;>
<!--end of sectioninfo.element-->]]>

<!ENTITY % sectioninfo.attlist "INCLUDE">
<![
    %sectioninfo.attlist; [
<!ATTLIST sectioninfo
    %common.attrib;
    %sectioninfo.role.attrib;
    %local.sectioninfo.attrib;
>
<!--end of sectioninfo.attlist-->]]>
<!--end of sectioninfo.module-->]]>
<!--end of section.content.module-->]]>

<!-- ..... -->
<!-- Sect1, Sect2, Sect3, Sect4, Sect5 ..... -->

<!ENTITY % sect1.module "INCLUDE">
<![%sect1.module;[
<!ENTITY % local.sect1.attrib "">
<!ENTITY % sect1.role.attrib "%role.attrib;">

<!ENTITY % sect1.element "INCLUDE">
<![%sect1.element;[
<!--doc:A top-level section of document.-->
<!ELEMENT sect1 %ho; (sect1info?, (%sect.title.content;), (%nav.class;)*,
    (((%divcomponent.mix;)+,
    ((%refentry.class;)* | sect2* | simplesect*))
    | (%refentry.class;)+ | sect2+ | simplesect+), (%nav.class;)*
    %ubiq.inclusion;>
<!--end of sect1.element-->]]>

<!-- Renderas: Indicates the format in which the heading should
    appear -->

<!ENTITY % sect1.attlist
    "INCLUDE">
<![%sect1.attlist;[
<!ATTLIST sect1
    renderas (sect2
        |sect3

```

```

|sect4
|sect5) #IMPLIED
%label.attrib;
%status.attrib;
%common.attrib;
%sect1.role.attrib;
%local.sect1.attrib;
>
<!--end of sect1.attlist-->]]>
<!--end of sect1.module-->]]>

<!ENTITY % sect2.module "INCLUDE">
<![%sect2.module;[
<!ENTITY % local.sect2.attrib "">
<!ENTITY % sect2.role.attrib "%role.attrib;">

<!ENTITY % sect2.element "INCLUDE">
<![%sect2.element;[
<!--doc:A subsection within a Sect1.-->
<!ELEMENT sect2 %ho; (sect2info?, (%sect.title.content;), (%nav.class;)*,
((%divcomponent.mix;)+,
((%refentry.class;)* | sect3* | simplesect*))
| (%refentry.class;)+ | sect3+ | simplesect+), (%nav.class;)*>
<!--end of sect2.element-->]]>

<!-- Renderas: Indicates the format in which the heading should
appear -->

<!ENTITY % sect2.attlist "INCLUDE">
<![%sect2.attlist;[
<!ATTLIST sect2
renderas (sect1
|sect3
|sect4
|sect5) #IMPLIED
%label.attrib;
%status.attrib;
%common.attrib;
%sect2.role.attrib;
%local.sect2.attrib;
>
<!--end
of sect2.attlist-->]]>
<!--end of sect2.module-->]]>

<!ENTITY % sect3.module "INCLUDE">
<![%sect3.module;[

```

```

<!ENTITY % local.sect3.attrib "">
<!ENTITY % sect3.role.attrib "%role.attrib;">

<!ENTITY % sect3.element "INCLUDE">
<![%sect3.element;[
<!--doc:A subsection within a Sect2.-->
<!ELEMENT sect3 %ho; (sect3info?, (%sect.title.content;), (%nav.class;)*,
  (((%divcomponent.mix;)+,
  ((%refentry.class;)* | sect4* | simplesect*))
  | (%refentry.class;)+ | sect4+ | simplesect+), (%nav.class;)*)>
<!--end of sect3.element-->]]>

```

```

<!-- Renderas: Indicates the format in which the heading should
appear -->

```

```

<!ENTITY % sect3.attlist "INCLUDE">
<![%sect3.attlist;[
<!ATTLIST sect3
  renderas (sect1
    |sect2
    |sect4
    |sect5) #IMPLIED
  %label.attrib;
  %status.attrib;
  %common.attrib;
  %sect3.role.attrib;
  %local.sect3.attrib;
>
<!--end of sect3.attlist-->]]>
<!--end of sect3.module-->]]>

```

```

<!ENTITY % sect4.module
"INCLUDE">
<![%sect4.module;[
<!ENTITY % local.sect4.attrib "">
<!ENTITY % sect4.role.attrib "%role.attrib;">

```

```

<!ENTITY % sect4.element "INCLUDE">
<![%sect4.element;[
<!--doc:A subsection within a Sect3.-->
<!ELEMENT sect4 %ho; (sect4info?, (%sect.title.content;), (%nav.class;)*,
  (((%divcomponent.mix;)+,
  ((%refentry.class;)* | sect5* | simplesect*))
  | (%refentry.class;)+ | sect5+ | simplesect+), (%nav.class;)*)>
<!--end of sect4.element-->]]>

```

```

<!-- Renderas: Indicates the format in which the heading should

```

appear -->

```
<!ENTITY % sect4.attlist "INCLUDE">
```

```
<![%sect4.attlist;
```

```
<!ATTLIST sect4
```

```
renderas (sect1
```

```
  |sect2
```

```
  |sect3
```

```
  |sect5) #IMPLIED
```

```
%label.attrib;
```

```
%status.attrib;
```

```
%common.attrib;
```

```
%sect4.role.attrib;
```

```
%local.sect4.attrib;
```

```
>
```

```
<!--end of sect4.attlist-->]]>
```

```
<!--end of sect4.module-->]]>
```

```
<!ENTITY % sect5.module "INCLUDE">
```

```
<![%sect5.module;
```

```
<!ENTITY % local.sect5.attrib "">
```

```
<!ENTITY % sect5.role.attrib "%role.attrib;">
```

```
<!ENTITY % sect5.element "INCLUDE">
```

```
<![%sect5.element;
```

```
<!--doc:A
```

```
subsection within a Sect4.-->
```

```
<!ELEMENT sect5 %ho; (sect5info?, (%sect.title.content;), (%nav.class;)*,
```

```
  (((%divcomponent.mix;)+, ((%refentry.class;)* | simplesect*))
```

```
  | (%refentry.class;)+ | simplesect+), (%nav.class;)*>
```

```
<!--end of sect5.element-->]]>
```

```
<!-- Renderas: Indicates the format in which the heading should  
appear -->
```

```
<!ENTITY % sect5.attlist "INCLUDE">
```

```
<![%sect5.attlist;
```

```
<!ATTLIST sect5
```

```
renderas (sect1
```

```
  |sect2
```

```
  |sect3
```

```
  |sect4) #IMPLIED
```

```
%label.attrib;
```

```
%status.attrib;
```

```
%common.attrib;
```

```
%sect5.role.attrib;
```

```

    %local.sect5.attrib;
>
<!--end of sect5.attlist-->]]>
<!--end of sect5.module-->]]>

<!ENTITY % simplesect.module "INCLUDE">
<![%simplesect.module;[
<!ENTITY % local.simplesect.attrib "">
<!ENTITY % simplesect.role.attrib "%role.attrib;">

<!ENTITY % simplesect.element "INCLUDE">
<![%simplesect.element;[
<!--doc:A section of a document with no subdivisions.-->
<!ELEMENT simplesect %ho; ((%sect.title.content;), (%divcomponent.mix;)+)
    %ubiq.inclusion;>
<!--end
of simplesect.element-->]]>

<!ENTITY % simplesect.attlist "INCLUDE">
<![%simplesect.attlist;[
<!ATTLIST simplesect
    %common.attrib;
    %simplesect.role.attrib;
    %local.simplesect.attrib;
>
<!--end of simplesect.attlist-->]]>
<!--end of simplesect.module-->]]>

<!-- ..... -->
<!-- Bibliography ..... -->

<!ENTITY % bibliography.content.module "INCLUDE">
<![%bibliography.content.module;[
<!ENTITY % bibliography.module "INCLUDE">
<![%bibliography.module;[
<!ENTITY % local.bibliography.attrib "">
<!ENTITY % bibliography.role.attrib "%role.attrib;">

<!ENTITY % bibliography.element "INCLUDE">
<![%bibliography.element;[
<!--doc:A bibliography.-->
<!ELEMENT bibliography %ho; (bibliographyinfo?,
    (%bookcomponent.title.content;)?,
    (%component.mix;)*,
    (bibliodiv+
| (biblioentry|bibliomixed)+))>
<!--end of bibliography.element-->]]>

```

```

<!ENTITY % bibliography.attlist "INCLUDE">
<![%bibliography.attlist;[
<!ATTLIST bibliography
    %status.attrib;
    %common.attrib;
    %bibliography.role.attrib;
    %local.bibliography.attrib;
>
<!--end of bibliography.attlist-->]]>
<!--end of bibliography.module-->]]>

<!ENTITY % bibliodiv.module "INCLUDE">
<![%bibliodiv.module;[
<!ENTITY % local.bibliodiv.attrib "">
<!ENTITY % bibliodiv.role.attrib "%role.attrib;">

<!ENTITY % bibliodiv.element "INCLUDE">
<![%bibliodiv.element;[
<!--doc:A section of a Bibliography.-->
<!ELEMENT bibliodiv %ho; ((%sect.title.content;)?, (%component.mix;)*,
    (biblioentry|bibliomixed)+)>
<!--end of bibliodiv.element-->]]>

<!ENTITY % bibliodiv.attlist "INCLUDE">
<![%bibliodiv.attlist;[
<!ATTLIST bibliodiv
    %status.attrib;
    %common.attrib;
    %bibliodiv.role.attrib;
    %local.bibliodiv.attrib;
>
<!--end of bibliodiv.attlist-->]]>
<!--end of bibliodiv.module-->]]>
<!--end of bibliography.content.module-->]]>

<!--
..... -->
<!-- Glossary ..... -->

<!ENTITY % glossary.content.module "INCLUDE">
<![%glossary.content.module;[
<!ENTITY % glossary.module "INCLUDE">
<![%glossary.module;[
<!ENTITY % local.glossary.attrib "">
<!ENTITY % glossary.role.attrib "%role.attrib;">

<!ENTITY % glossary.element "INCLUDE">
<![%glossary.element;[

```



```

<!--doc:A glossary.-->
<!ELEMENT glossary %ho; (glossaryinfo?,
    (%bookcomponent.title.content;)?,
    (%component.mix;)*,
    (glossdiv+ | glossentry+), bibliography?)>
<!--end of glossary.element-->]]>

<!ENTITY % glossary.attlist "INCLUDE">
<![%glossary.attlist;[
<!ATTLIST glossary
    %status.attrib;
    %common.attrib;
    %glossary.role.attrib;
    %local.glossary.attrib;
>
<!--end of glossary.attlist-->]]>
<!--end of glossary.module-->]]>

<!ENTITY % glossdiv.module "INCLUDE">
<![%glossdiv.module;[
<!ENTITY
    % local.glossdiv.attrib "">
<!ENTITY % glossdiv.role.attrib "%role.attrib;">

<!ENTITY % glossdiv.element "INCLUDE">
<![%glossdiv.element;[
<!--doc:A division in a Glossary.-->
<!ELEMENT glossdiv %ho; ((%sect.title.content;), (%component.mix;)*,
    glossentry+)>
<!--end of glossdiv.element-->]]>

<!ENTITY % glossdiv.attlist "INCLUDE">
<![%glossdiv.attlist;[
<!ATTLIST glossdiv
    %status.attrib;
    %common.attrib;
    %glossdiv.role.attrib;
    %local.glossdiv.attrib;
>
<!--end of glossdiv.attlist-->]]>
<!--end of glossdiv.module-->]]>
<!--end of glossary.content.module-->]]>

<!-- ..... -->
<!-- Index and SetIndex ..... -->

<!ENTITY % index.content.module "INCLUDE">
<![%index.content.module;[

```

```

<!ENTITY % indexes.module "INCLUDE">
<![%indexes.module;[
<!ENTITY % local.indexes.attrib "">
<!ENTITY % indexes.role.attrib "%role.attrib;">

```

```

<!ENTITY % index.element
"INCLUDE">
<![%index.element;[
<!--doc:An index.-->
<!ELEMENT index %ho; (indexinfo?,
    (%bookcomponent.title.content;)?,
    (%component.mix;)*,
    (indexdiv* | indexentry*))
    %ndxterm.exclusion;>
<!--end of index.element-->]]>

```

```

<!ENTITY % index.attlist "INCLUDE">
<![%index.attlist;[
<!ATTLIST index
    type CDATA #IMPLIED
    %common.attrib;
    %indexes.role.attrib;
    %local.indexes.attrib;
>
<!--end of index.attlist-->]]>

```

```

<!ENTITY % setindex.element "INCLUDE">
<![%setindex.element;[
<!--doc:An index to a set of books.-->
<!ELEMENT setindex %ho; (setindexinfo?,
    (%bookcomponent.title.content;)?,
    (%component.mix;)*,
    (indexdiv* | indexentry*))
    %ndxterm.exclusion;>
<!--end of setindex.element-->]]>

```

```

<!ENTITY % setindex.attlist "INCLUDE">
<![%setindex.attlist;[
<!ATTLIST setindex
    %common.attrib;
    %indexes.role.attrib;
    %local.indexes.attrib;
>
<!--end of setindex.attlist-->]]>
<!--end
of indexes.module-->]]>

```

```

<!ENTITY % indexdiv.module "INCLUDE">

```

```

<![%indexdiv.module;[

<!-- SegmentedList in this content is useful for marking up permuted
indices. -->

<!ENTITY % local.indexdiv.attrib "">
<!ENTITY % indexdiv.role.attrib "%role.attrib;">

<!ENTITY % indexdiv.element "INCLUDE">
<![%indexdiv.element;[
<!--doc:A division in an index.-->
<!ELEMENT indexdiv %ho; ((%sect.title.content;)?, ((%indexdivcomponent.mix;)*,
(indexentry+ | segmentedlist)))>
<!--end of indexdiv.element-->]]>

<!ENTITY % indexdiv.attlist "INCLUDE">
<![%indexdiv.attlist;[
<!ATTLIST indexdiv
    %common.attrib;
    %indexdiv.role.attrib;
    %local.indexdiv.attrib;
>
<!--end of indexdiv.attlist-->]]>
<!--end of indexdiv.module-->]]>

<!ENTITY % indexentry.module "INCLUDE">
<![%indexentry.module;[
<!-- Index entries appear in the index, not the text. -->

<!ENTITY % local.indexentry.attrib "">
<!ENTITY % indexentry.role.attrib "%role.attrib;">

<!ENTITY % indexentry.element "INCLUDE">
<![%indexentry.element;[
<!--doc:An
entry in an index.-->
<!ELEMENT indexentry %ho; (primaryie, (seeie|seealsoie)*,
(secondaryie, (seeie|seealsoie|tertiaryie)*))*>
<!--end of indexentry.element-->]]>

<!ENTITY % indexentry.attlist "INCLUDE">
<![%indexentry.attlist;[
<!ATTLIST indexentry
    %common.attrib;
    %indexentry.role.attrib;
    %local.indexentry.attrib;
>
<!--end of indexentry.attlist-->]]>

```

```

<!--end of indexentry.module-->]]>

<!ENTITY % primsecterie.module "INCLUDE">
<![%primsecterie.module;[
<!ENTITY % local.primsecterie.attrib "">
<!ENTITY % primsecterie.role.attrib "%role.attrib;">

<!ENTITY % primaryie.element "INCLUDE">
<![%primaryie.element;[
<!--doc:A primary term in an index entry, not in the text.-->
<!ELEMENT primaryie %ho; (%ndxterm.char.mix;)*>
<!--end of primaryie.element-->]]>

<!-- to IndexTerms that these entries represent -->

<!ENTITY % primaryie.attlist "INCLUDE">
<![%primaryie.attlist;[
<!ATTLIST primaryie
    %linkends.attrib; %common.attrib;
    %primsecterie.role.attrib;
    %local.primsecterie.attrib;
>
<!--end
of primaryie.attlist-->]]>

<!ENTITY % secondaryie.element "INCLUDE">
<![%secondaryie.element;[
<!--doc:A secondary term in an index entry, rather than in the text.-->
<!ELEMENT secondaryie %ho; (%ndxterm.char.mix;)*>
<!--end of secondaryie.element-->]]>

<!-- to IndexTerms that these entries represent -->

<!ENTITY % secondaryie.attlist "INCLUDE">
<![%secondaryie.attlist;[
<!ATTLIST secondaryie
    %linkends.attrib; %common.attrib;
    %primsecterie.role.attrib;
    %local.primsecterie.attrib;
>
<!--end of secondaryie.attlist-->]]>

<!ENTITY % tertiaryie.element "INCLUDE">
<![%tertiaryie.element;[
<!--doc:A tertiary term in an index entry, rather than in the text.-->
<!ELEMENT tertiaryie %ho; (%ndxterm.char.mix;)*>
<!--end of tertiaryie.element-->]]>

```

<!-- to IndexTerms that these entries represent -->

<!ENTITY % tertiaryie.attlist "INCLUDE">

<![%tertiaryie.attlist;[

<!ATTLIST tertiaryie

 %linkends.attrib; %common.attrib;

 %primsecterie.role.attrib;

 %local.primsecterie.attrib;

>

<!--end

 of tertiaryie.attlist-->]]>

<!--end of primsecterie.module-->]]>

<!ENTITY % seeie.module "INCLUDE">

<![%seeie.module;[

<!ENTITY % local.seeie.attrib "">

<!ENTITY % seeie.role.attrib "%role.attrib;">

<!ENTITY % seeie.element "INCLUDE">

<![%seeie.element;[

<!--doc:A See entry in an index, rather than in the text.-->

<!ELEMENT seeie %ho; (%ndxterm.char.mix;)*>

<!--end of seeie.element-->]]>

<!-- to IndexEntry to look up -->

<!ENTITY % seeie.attlist "INCLUDE">

<![%seeie.attlist;[

<!ATTLIST seeie

 %linkend.attrib; %common.attrib;

 %seeie.role.attrib;

 %local.seeie.attrib;

>

<!--end of seeie.attlist-->]]>

<!--end of seeie.module-->]]>

<!ENTITY % seealsoie.module "INCLUDE">

<![%seealsoie.module;[

<!ENTITY % local.seealsoie.attrib "">

<!ENTITY % seealsoie.role.attrib "%role.attrib;">

<!ENTITY % seealsoie.element "INCLUDE">

<![%seealsoie.element;[

<!--doc:A See also entry in an index, rather than in the text.-->

<!ELEMENT seealsoie %ho; (%ndxterm.char.mix;)*>

<!--end

of seealsoie.element-->]]>

<!-- to related IndexEntries -->

<!ENTITY % seealsoie.attlist "INCLUDE">

<![%seealsoie.attlist;[

<!ATTLIST seealsoie

%linkends.attrib; %common.attrib;

%seealsoie.role.attrib;

%local.seealsoie.attrib;

>

<!--end of seealsoie.attlist-->]]>

<!--end of seealsoie.module-->]]>

<!--end of index.content.module-->]]>

<!-- -->

<!-- RefEntry -->

<!ENTITY % refentry.content.module "INCLUDE">

<![%refentry.content.module;[

<!ENTITY % refentry.module "INCLUDE">

<![%refentry.module;[

<!ENTITY % local.refentry.attrib "">

<!ENTITY % refentry.role.attrib "%role.attrib;">

<!ENTITY % refentry.element "INCLUDE">

<![%refentry.element;[

<!--doc:A reference page (originally a UNIX man-style reference page).-->

<!ELEMENT refentry %ho; (beginpage?,

(%ndxterm.class;)*,

refentryinfo?,

refmeta?, (remark[%link.char.class;)*,

refnamediv+, refsynopsisdiv?, (refsect1+|refsection+))

%ubiq.inclusion;>

<!--end of refentry.element-->]]>

<!ENTITY % refentry.attlist "INCLUDE">

<![%refentry.attlist;[

<!ATTLIST refentry

%status.attrib;

%common.attrib;

%refentry.role.attrib;

%local.refentry.attrib;

>

<!--end of refentry.attlist-->]]>

<!--end of refentry.module-->]]>

```

<!ENTITY % refmeta.module "INCLUDE">
<![%refmeta.module;[
<!ENTITY % local.refmeta.attrib "">
<!ENTITY % refmeta.role.attrib "%role.attrib;">

<!ENTITY % refmeta.element "INCLUDE">
<![%refmeta.element;[
<!--doc:Meta-information for a reference entry.-->
<!ELEMENT refmeta %ho; ((%ndxterm.class;)*,
    refentrytitle, manvolnum?, refmiscinfo*,
    (%ndxterm.class;)*
    %beginpage.exclusion;>
<!--end of refmeta.element-->]]>

<!ENTITY % refmeta.attlist "INCLUDE">
<![%refmeta.attlist;[
<!ATTLIST refmeta
    %common.attrib;
    %refmeta.role.attrib;
    %local.refmeta.attrib;
>
<!--end
of refmeta.attlist-->]]>
<!--end of refmeta.module-->]]>

<!ENTITY % refmiscinfo.module "INCLUDE">
<![%refmiscinfo.module;[
<!ENTITY % local.refmiscinfo.attrib "">
<!ENTITY % refmiscinfo.role.attrib "%role.attrib;">

<!ENTITY % refmiscinfo.element "INCLUDE">
<![%refmiscinfo.element;[
<!--doc:Meta-information for a reference entry other than the title and volume number.-->
<!ELEMENT refmiscinfo %ho; (%docinfo.char.mix;)*>
<!--end of refmiscinfo.element-->]]>

<!-- Class: Freely assignable parameter; no default -->

<!ENTITY % refmiscinfo.attlist "INCLUDE">
<![%refmiscinfo.attlist;[
<!ATTLIST refmiscinfo
    class CDATA #IMPLIED
    %common.attrib;
    %refmiscinfo.role.attrib;
    %local.refmiscinfo.attrib;
>
<!--end of refmiscinfo.attlist-->]]>

```

```

<!--end of refmiscinfo.module-->]]>

<!ENTITY % refnamediv.module "INCLUDE">
<![%refnamediv.module;[
<!ENTITY % local.refnamediv.attrib "">
<!ENTITY % refnamediv.role.attrib "%role.attrib;">

<!ENTITY % refnamediv.element "INCLUDE">
<![%refnamediv.element;[
<!--doc:The
name, purpose, and classification of a reference page.-->
<!ELEMENT refnamediv %ho; (refdescriptor?, refname+, refpurpose, refclass*,
(remark|%link.char.class;)*>
<!--end of refnamediv.element-->]]>

<!ENTITY % refnamediv.attlist "INCLUDE">
<![%refnamediv.attlist;[
<!ATTLIST refnamediv
%common.attrib;
%refnamediv.role.attrib;
%local.refnamediv.attrib;
>
<!--end of refnamediv.attlist-->]]>
<!--end of refnamediv.module-->]]>

<!ENTITY % refdescriptor.module "INCLUDE">
<![%refdescriptor.module;[
<!ENTITY % local.refdescriptor.attrib "">
<!ENTITY % refdescriptor.role.attrib "%role.attrib;">

<!ENTITY % refdescriptor.element "INCLUDE">
<![%refdescriptor.element;[
<!--doc:A description of the topic of a reference page.-->
<!ELEMENT refdescriptor %ho; (%refname.char.mix;)*>
<!--end of refdescriptor.element-->]]>

<!ENTITY % refdescriptor.attlist "INCLUDE">
<![%refdescriptor.attlist;[
<!ATTLIST refdescriptor
%common.attrib;
%refdescriptor.role.attrib;
%local.refdescriptor.attrib;
>
<!--end
of refdescriptor.attlist-->]]>
<!--end of refdescriptor.module-->]]>

<!ENTITY % refname.module "INCLUDE">

```



```

<![%refname.module;[
<!ENTITY % local.refname.attrib "">
<!ENTITY % refname.role.attrib "%role.attrib;">

<!ENTITY % refname.element "INCLUDE">
<![%refname.element;[
<!--doc:The name of (one of) the subject(s) of a reference page.-->
<!ELEMENT refname %ho; (%refname.char.mix;)*>
<!--end of refname.element-->]]>

<!ENTITY % refname.attlist "INCLUDE">
<![%refname.attlist;[
<!ATTLIST refname
    %common.attrib;
    %refname.role.attrib;
    %local.refname.attrib;
>
<!--end of refname.attlist-->]]>
<!--end of refname.module-->]]>

<!ENTITY % refpurpose.module "INCLUDE">
<![%refpurpose.module;[
<!ENTITY % local.refpurpose.attrib "">
<!ENTITY % refpurpose.role.attrib "%role.attrib;">

<!ENTITY % refpurpose.element "INCLUDE">
<![%refpurpose.element;[
<!--doc:A short (one sentence) synopsis of the topic of a reference page.-->
<!ELEMENT
    refpurpose %ho; (%refinline.char.mix;)*>
<!--end of refpurpose.element-->]]>

<!ENTITY % refpurpose.attlist "INCLUDE">
<![%refpurpose.attlist;[
<!ATTLIST refpurpose
    %common.attrib;
    %refpurpose.role.attrib;
    %local.refpurpose.attrib;
>
<!--end of refpurpose.attlist-->]]>
<!--end of refpurpose.module-->]]>

<!ENTITY % refclass.module "INCLUDE">
<![%refclass.module;[
<!ENTITY % local.refclass.attrib "">
<!ENTITY % refclass.role.attrib "%role.attrib;">

<!ENTITY % refclass.element "INCLUDE">

```

```

<![%refclass.element;[
<!--doc:The scope or other indication of applicability of a reference entry.-->
<!ELEMENT refclass %ho; (%refclass.char.mix;)*>
<!--end of refclass.element-->]]>

<!ENTITY % refclass.attlist "INCLUDE">
<![%refclass.attlist;[
<!ATTLIST refclass
    %common.attrib;
    %refclass.role.attrib;
    %local.refclass.attrib;
>
<!--end of refclass.attlist-->]]>
<!--end of refclass.module-->]]>

<!ENTITY % refsynopsisdiv.module "INCLUDE">
<![%refsynopsisdiv.module;[
<!ENTITY % local.refsynopsisdiv.attrib
    "">
<!ENTITY % refsynopsisdiv.role.attrib "%role.attrib;">

<!ENTITY % refsynopsisdiv.element "INCLUDE">
<![%refsynopsisdiv.element;[
<!--doc:A syntactic synopsis of the subject of the reference page.-->
<!ELEMENT refsynopsisdiv %ho; (refsynopsisdivinfo?, (%refsect.title.content;)?,
    (((%refcomponent.mix;)+, refsect2*) | (refsect2+)))>
<!--end of refsynopsisdiv.element-->]]>

<!ENTITY % refsynopsisdiv.attlist "INCLUDE">
<![%refsynopsisdiv.attlist;[
<!ATTLIST refsynopsisdiv
    %common.attrib;
    %refsynopsisdiv.role.attrib;
    %local.refsynopsisdiv.attrib;
>
<!--end of refsynopsisdiv.attlist-->]]>
<!--end of refsynopsisdiv.module-->]]>

<!ENTITY % refsection.module "INCLUDE">
<![%refsection.module;[
<!ENTITY % local.refsection.attrib "">
<!ENTITY % refsection.role.attrib "%role.attrib;">

<!ENTITY % refsection.element "INCLUDE">
<![%refsection.element;[
<!--doc:A recursive section in a refentry.-->
<!ELEMENT refsection %ho; (refsectioninfo?, (%refsect.title.content;),
    (((%refcomponent.mix;)+,

```

```

refsection*) | refsection+))>
<!--end of refsection.element-->]]>

<!ENTITY % refsection.attlist "INCLUDE">
<![%refsection.attlist;[
<!ATTLIST refsection
    %status.attrib;
    %common.attrib;
    %refsection.role.attrib;
    %local.refsection.attrib;
>
<!--end of refsection.attlist-->]]>
<!--end of refsection.module-->]]>

<!ENTITY % refsect1.module "INCLUDE">
<![%refsect1.module;[
<!ENTITY % local.refsect1.attrib "">
<!ENTITY % refsect1.role.attrib "%role.attrib;">

<!ENTITY % refsect1.element "INCLUDE">
<![%refsect1.element;[
<!--doc:A major subsection of a reference entry.-->
<!ELEMENT refsect1 %ho; (refsect1info?, (%refsect.title.content;),
    (((%refcomponent.mix;)+, refsect2*) | refsect2+))>
<!--end of refsect1.element-->]]>

<!ENTITY % refsect1.attlist "INCLUDE">
<![%refsect1.attlist;[
<!ATTLIST refsect1
    %status.attrib;
    %common.attrib;
    %refsect1.role.attrib;
    %local.refsect1.attrib;
>
<!--end of refsect1.attlist-->]]>
<!--end of refsect1.module-->]]>

<!ENTITY
% refsect2.module "INCLUDE">
<![%refsect2.module;[
<!ENTITY % local.refsect2.attrib "">
<!ENTITY % refsect2.role.attrib "%role.attrib;">

<!ENTITY % refsect2.element "INCLUDE">
<![%refsect2.element;[
<!--doc:A subsection of a RefSect1.-->
<!ELEMENT refsect2 %ho; (refsect2info?, (%refsect.title.content;),
    (((%refcomponent.mix;)+, refsect3*) | refsect3+))>

```

```

<!--end of refsect2.element-->]]>

<!ENTITY % refsect2.attlist "INCLUDE">
<![%refsect2.attlist;[
<!ATTLIST refsect2
    %status.attrib;
    %common.attrib;
    %refsect2.role.attrib;
    %local.refsect2.attrib;
>
<!--end of refsect2.attlist-->]]>
<!--end of refsect2.module-->]]>

<!ENTITY % refsect3.module "INCLUDE">
<![%refsect3.module;[
<!ENTITY % local.refsect3.attrib "">
<!ENTITY % refsect3.role.attrib "%role.attrib;">

<!ENTITY % refsect3.element "INCLUDE">
<![%refsect3.element;[
<!--doc:A subsection of a RefSect2.-->
<!ELEMENT refsect3 %ho; (refsect3info?, (%refsect.title.content;),
    (%refcomponent.mix;)+)>
<!--end of refsect3.element-->]]>

<!ENTITY
    % refsect3.attlist "INCLUDE">
<![%refsect3.attlist;[
<!ATTLIST refsect3
    %status.attrib;
    %common.attrib;
    %refsect3.role.attrib;
    %local.refsect3.attrib;
>
<!--end of refsect3.attlist-->]]>
<!--end of refsect3.module-->]]>
<!--end of refentry.content.module-->]]>

<!-- ..... -->
<!-- Article ..... -->

<!ENTITY % article.module "INCLUDE">
<![%article.module;[
<!-- An Article is a chapter-level, stand-alone document that is often,
    but need not be, collected into a Book. -->

<!ENTITY % local.article.attrib "">
<!ENTITY % article.role.attrib "%role.attrib;">

```

```

<!ENTITY % article.element "INCLUDE">
<![%article.element;[
<!--doc:An article.-->
<!ELEMENT article %ho; ((%div.title.content;)?, articleinfo?, tocchap?, lot*,
    (%bookcomponent.content;),
    (%nav.class;|%appendix.class;|colophon|ackno)*)
    %ubiq.inclusion;]>
<!--end of article.element-->]]>

```

```

<!--
Class: Indicates the type of a particular article;
all articles have the same structure and general purpose.
No default. -->
<!-- ParentBook: ID of the enclosing Book -->

```

```

<!ENTITY % article.attlist "INCLUDE">
<![%article.attlist;[
<!ATTLIST article
    class (journalarticle
        |productsheet
        |whitepaper
        |techreport
            |specification
        |faq) #IMPLIED
    parentbook IDREF #IMPLIED
    %status.attrib;
    %common.attrib;
    %article.role.attrib;
    %local.article.attrib;
>
<!--end of article.attlist-->]]>
<!--end of article.module-->]]>

```

```

<!-- End of DocBook document hierarchy module V4.5 ..... -->
<!-- ..... -->

```

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1.264 mapstruct 1.6.3

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freemarker/ext/jsp/web-app_2_3.dtd
freemarker/ext/jsp/web-app_2_4.xsd
freemarker/ext/jsp/web-app_2_5.xsd
freemarker/ext/jsp/web-jsptaglibrary_1_1.dtd
freemarker/ext/jsp/web-jsptaglibrary_1_2.dtd
freemarker/ext/jsp/web-jsptaglibrary_2_0.xsd
freemarker/ext/jsp/web-jsptaglibrary_2_1.xsd
```

1.265 timefmt-go 0.1.7

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1.266 py3-parsing-pyc 3.2.3-r0

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1.267 golang-snappy 1.0.0

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# This is the official list of people who can contribute
# (and typically have contributed) code to the Go repository.
# The AUTHORS file lists the copyright holders; this file
# lists people. For example, Google employees are listed here
# but not in AUTHORS, because Google holds the copyright.
#
# Names should be added to this file only after verifying that
```

```
# the individual or the individual's organization has agreed to
# the appropriate Contributor License Agreement, found here:
#
# http://code.google.com/legal/individual-cla-v1.0.html
# http://code.google.com/legal/corporate-cla-v1.0.html
#
# The agreement for individuals can be filled out on the web.

# Names should be added to this file like so:
# Individual's name <submission email address>
# Individual's name <submission email address> <email2> <emailN>
#
# An entry with multiple email addresses specifies that the
# first address should be used in the submit logs and
# that the other addresses should be recognized
# as the
# same person when interacting with Gerrit.

# Please keep the list sorted.
```

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Albert Strasheim <fullung@gmail.com>
Albert Yu <yukinying@gmail.com>
Alberto Bertogli <albertito@blitiri.com.ar>
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1.268 kdomanski-iso9660 0.4.0

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1.269 httpcore5-h 5.3.6

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1.270 gettext 0.24.1-r1

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in the program `Gnomovision'

(which makes passes at compilers) written

by James Hacker.

signature of Moe Ghoul, 1 April 1989

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pkgname=spdx-licenses

pkgver=3.27.0

pkgrel=0

pkgdesc="Various data formats for the SPDX License List"

url="https://spdx.org/"

arch="noarch"

options="!check" # no test suite

license="CC-BY-3.0"

```

source="license-list-data-$pkgver.tar.gz::https://github.com/spdx/license-list-data/archive/v$pkgver.tar.gz"
builddir="$srcdir/license-list-data-$pkgver"
subpackages="$pkgname-list"

_types="html json rdfa rdft rdfturtle rdfxml template text"

for type in $_types; do
    subpackages="$subpackages $pkgname-$type:_subpkg"
done

package() {
    mkdir -p "$pkgdir"
}

_subpkg() {
    local type=${subpkgname/$pkgname-/}
    pkgdesc="$pkgdesc ($type)"
    install_if="$pkgname=$pkgver-r$pkgrel"
    mkdir -p "$subpkgdir"/usr/share/spdx
    cp -r "$builddir"/$type "$subpkgdir"/usr/share/spdx/
}

list() {
    pkgdesc="$pkgdesc (licence list)"
    mkdir -p "$subpkgdir"/usr/share/spdx
    local i; for i in "$builddir"/text/*.txt;
    do
        local license=${i##*/}
        echo ${license%.*} >> "$subpkgdir"/usr/share/spdx/license.lst
    done
}

sha512sums="
16d59c81e331b54b52639826f83408d98144cdaa70eacc3e8ce35dc3b13992e4794cf7515eb9db200efd390a0c0e35ae9
d4706fbe0ca6a8d236189e88870720c license-list-data-3.27.0.tar.gz
"

# Automatically generated by apkgbuild-cpan, template 4
# Contributor: Valery Kartel <valery.kartel@gmail.com>
# Maintainer: Celeste <cielesti@protonmail.com>
maintainer="Celeste <cielesti@protonmail.com>"
pkgname=perl-bsd-resource
pkgver=1.2911
pkgrel=11
#_pkgreal is used by apkgbuild-cpan to find modules at MetaCpan
_pkgreal=BSD-Resource
pkgdesc="Perl extension implements the BSD process resource limit functions"
url="https://metacpan.org/release/BSD-Resource/"
arch="all"

```



```

license="Artistic-2.0 OR LGPL-2.0"
depends="perl"
makedepends="perl-dev"
subpackages="$pkgname-doc"
source="https://cpan.metacpan.org/authors/id/J/JH/JHI/BSD-Resource-$pkgver.tar.gz"
builddir="$srcdir/$_pkgreal-$pkgver"

build() {
    export CFLAGS=$(perl -MConfig -E 'say $Config{ccflags}')
    PERL_MM_USE_DEFAULT=1 perl -I. Makefile.PL \
        INSTALLDIRS=vendor \
        NO_PACKLIST=1 \
        NO_PERLLOCAL=1
    make
}

check() {
    export CFLAGS=$(perl -MConfig -E 'say $Config{ccflags}')
    make test
}

package() {
    make DESTDIR="$pkgdir" install
}

sha512sums="
d0032d41c7c0468ed1c6d8f57b885f6cb97a5039d754c8cb60b2067daedaf53bd15fb6561a3d0f828df16dfa5417f663b
8065ba65f4fea16dc9262728b3b6b85
    BSD-Resource-1.2911.tar.gz
"

maintainer="Achill Gilgenast <achill@achill.org>"
pkgname=cargo-license
pkgver=0.7.0
pkgrel=1
pkgdesc="Cargo subcommand to see license of dependencies"
url="https://github.com/onur/cargo-license"
arch="all"
license="MIT"
makedepends="cargo cargo-auditable"
source="$pkgname-$pkgver.tar.gz::https://crates.io/api/v1/crates/cargo-license/$pkgver/download"

prepare() {
    default_prepare

    cargo fetch --target="$CTARGET" --locked
}

build() {

```

```

cargo auditable build --release --frozen
}

check() {
    cargo test --frozen
}

package() {
    install -Dm755 target/release/cargo-license -t "$pkgdir"/usr/bin
}

sha512sums="
9b3f0ead35515e85ef4074ebdbdbe5b9ec8bcaec244fabe414e2ed60f90366e8b1692d8bf7ffe4c07d778e60d94bab86bc
0c8be9823232e9c360a38bc65e9c5a cargo-license-0.7.0.tar.gz
"

#!/sbin/openrc-run

command="/usr/libexec/xdg-permission-store"
supervisor=supervise-daemon
command_args="--replace $command_args"
error_logger="logger -t '${RC_SVCNAME}' -p daemon.error"

depend() {
    need dbus
}

# Contributor: Maxim Karasev <begs@disroot.org>
# Maintainer: mio <miyopan@e.email>
pkgname=bsd-games
pkgver=3.3
pkgrel=2
pkgdesc="traditional text mode games from BSD"
url="https://bsd-games.sourceforge.io/"
arch="all"
license="BSD-3-Clause"
install="$pkgname.post-install"
makedepends="ncurses-dev coreutils" # configure causes busybox expr error
subpackages="$pkgname-doc"
source="https://sourceforge.net/projects/bsd-games/files/bsd-games-$pkgver.tar.gz
0001-bsd-games-scores-dir.patch
"

options="!check" # no tests

build() {
    # some GNU autoconf options are ignored, but it works
    ./configure \
    --build=$CBUILD \
    --host=$CHOST \
    --prefix=/usr \

```

```

--sysconfdir=/etc \
--mandir=/usr/share/man \
--scoredir=/usr/share/$pkgname
make
}

package() {
make DESTDIR="$pkgdir" install
install -Dm644 LICENSE "$pkgdir"/usr/share/licenses/bsd-games/LICENSE
}

sha512sums="
aaf36d09d4fe68514a5c279063d7e77a9a9a84c447037cba974b29faa07eb80c2aab2379d0699c196b5c27ffe1b2bb2c6
8d3390143e0e62d5e3d210ccfb61294
    bsd-games-3.3.tar.gz
e1def0d4835a877242c4173fae862e278a7858738e0bacacbb045a42bcabec2aa7c72d000bbd2421ce35fe66cdc1f52c0
577b7e278029ca5ed50f7aab22319f6 0001-bsd-games-scores-dir.patch
"
MIT License

```

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mini_sendmail - accept email on behalf of real sendmail

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Maintainer: Natanael Copa <ncopa@alpinelinux.org>

pkgname=libart-lgpl

pkgver=2.3.21

pkgrel=8

pkgdesc="A library for high-performance 2D graphics"

url="https://www.levien.com/libart/"

arch="all"

options="!check" # No test suite.

license="LGPL-2.0-or-later"

subpackages="\$pkgname-dev"

source="https://download.gnome.org/sources/libart-lgpl/2.3/libart-lgpl-\$pkgver.tar.bz2"

"

builddir="\$srcdir"/libart-lgpl-\$pkgver

```
prepare() {  
    update_config_sub  
    default_prepare  
}
```

```
build() {  
    ./configure \  
        --build=$CBUILD \  
        --host=$CHOST \  
        --prefix=/usr  
    make  
}
```

```
package() {  
    make DESTDIR="$pkgdir" install  
}
```

```
}
```

```
sha512sums="8a632a6a4da59e5e8c02ec2f5a57e36d182b325b46513765425e5f171ff9ae326af1b133725beba28f7e7
6654309e001aee9bace727b5b4c8589405256a3c020 libart_lgpl-2.3.21.tar.bz2"
# Contributor: Patrycja Rosa <alpine@ptrcnull.me>
# Maintainer: Patrycja Rosa <alpine@ptrcnull.me>
pkgname=bsd-compat-headers
pkgver=0.7.2
pkgrel=6
pkgdesc="BSD compatibility headers (cdefs, queue, tree)"
url="https://gitlab.alpinelinux.org/alpine/aports"
arch="noarch"
license="BSD-2-Clause AND BSD-3-Clause"
source=""
cdefs.h
queue.h
tree.h
"

builddir="$srcdir"
options="!check" # just headers

package() {
    mkdir -p "$pkgdir"
    install -Dm644 -t "$pkgdir"/usr/include/sys \
        cdefs.h queue.h tree.h
}
sha512sums="
37c8fc73c7aea7b490f7850927e2bb91d12137c9e59e22c084146d515696dbc7973b5de92f4c987ba080dd2502ba8312
7006442c3f019b6447a620c0cae73178 cdefs.h
2f0d5e6e4dc3350285cf17009265dddcbe12431c111868eea39bc8cb038ab7c1f2acacbb21735c4e9d4a1fd106a8fc0f86
11ea33987d4faba37dde5ce6da0750 queue.h
d9ac210d81feb8ad2655bc80fb065d3fe20ae4417b32b4a1711e6738a4870140005c13373b5d1846ef3ce5ae6da45f2da
cef2092881eded0a2e94f6a07752ef3 tree.h
"

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The X-Spline code was written Carole Blanc (blanc@labri.u-bordeaux.fr) and Christophe Schlick (schlick@labri.u-bordeaux.fr) starting from an initial implementation done by C. Feuille, S. Grosbois, L. Maziere and L. Minihot as a student practice (Universite Bordeaux, France). For additional information about X-splines, see:

"X-Splines: A Spline Model Designed for the End User" by C. Blanc and C. Schlick, Proceedings of SIGGRAPH'95

<http://dept-info.labri.u-bordeaux.fr/~schlick/DOC/sig1.html>

/* \$NetBSD: queue.h,v 1.70 2015/11/02 15:21:23 christos Exp \$ */

/*

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*

* @(#)queue.h 8.5 (Berkeley) 8/20/94

*/

```

#ifndef _SYS_QUEUE_H_
#define _SYS_QUEUE_H_

/*
 * This file defines five types of data structures: singly-linked lists,
 * lists, simple queues, tail queues, and circular queues.
 *
 * A singly-linked list is headed by a single forward pointer. The
 * elements are singly linked for minimum space and
 * pointer manipulation
 * overhead at the expense of O(n) removal for arbitrary elements. New
 * elements can be added to the list after an existing element or at the
 * head of the list. Elements being removed from the head of the list
 * should use the explicit macro for this purpose for optimum
 * efficiency. A singly-linked list may only be traversed in the forward
 * direction. Singly-linked lists are ideal for applications with large
 * datasets and few or no removals or for implementing a LIFO queue.
 *
 * A list is headed by a single forward pointer (or an array of forward
 * pointers for a hash table header). The elements are doubly linked
 * so that an arbitrary element can be removed without a need to
 * traverse the list. New elements can be added to the list before
 * or after an existing element or at the head of the list. A list
 * may only be traversed in the forward direction.
 *
 * A simple queue is headed by a pair of pointers, one the head of the
 * list and the
 * other to the tail of the list. The elements are singly
 * linked to save space, so elements can only be removed from the
 * head of the list. New elements can be added to the list after
 * an existing element, at the head of the list, or at the end of the
 * list. A simple queue may only be traversed in the forward direction.
 *
 * A tail queue is headed by a pair of pointers, one to the head of the
 * list and the other to the tail of the list. The elements are doubly
 * linked so that an arbitrary element can be removed without a need to
 * traverse the list. New elements can be added to the list before or
 * after an existing element, at the head of the list, or at the end of
 * the list. A tail queue may be traversed in either direction.
 *
 * A circle queue is headed by a pair of pointers, one to the head of the
 * list and the other to the tail of the list. The elements are doubly
 * linked so that an arbitrary element can be removed without a need to
 * traverse the list. New elements
 * can be added to the list before or after
 * an existing element, at the head of the list, or at the end of the list.
 * A circle queue may be traversed in either direction, but has a more

```

```

* complex end of list detection.
*
* For details on the use of these macros, see the queue(3) manual page.
*/

/*
* Include the definition of NULL only on NetBSD because sys/null.h
* is not available elsewhere. This conditional makes the header
* portable and it can simply be dropped verbatim into any system.
* The caveat is that on other systems some other header
* must provide NULL before the macros can be used.
*/
#ifdef __NetBSD__
#include <sys/null.h>
#endif

#if defined(QUEUEDEBUG)
# if defined(_KERNEL)
#  define QUEUEDEBUG_ABORT(...) panic(__VA_ARGS__)
# else
#  include <err.h>
#  define QUEUEDEBUG_ABORT(...) err(1, __VA_ARGS__)
# endif
#endif

/*
* Singly-linked List definitions.
*/
#define SLIST_HEAD(name, type) \
struct name { \
    struct type *slh_first; /* first \
    element */ \
}

#define SLIST_HEAD_INITIALIZER(head) \
{ NULL }

#define SLIST_ENTRY(type) \
struct { \
    struct type *sle_next; /* next element */ \
}

/*
* Singly-linked List access methods.
*/
#define SLIST_FIRST(head) ((head)->slh_first)
#define SLIST_END(head) NULL
#define SLIST_EMPTY(head) ((head)->slh_first == NULL)

```



```

#define SLIST_NEXT(elm, field) ((elm)->field.sle_next)

#define SLIST_FOREACH(var, head, field) \
for((var) = (head)->slh_first; \
    (var) != SLIST_END(head); \
    (var) = (var)->field.sle_next)

#define SLIST_FOREACH_SAFE(var, head, field, tvar) \
for ((var) = SLIST_FIRST((head)); \
    (var) != SLIST_END(head) && \
    ((tvar) = SLIST_NEXT((var), field), 1); \
    (var) = (tvar))

/*
 * Singly-linked List functions.
 */
#define SLIST_INIT(head) do { \
    (head)->slh_first = SLIST_END(head); \
} while (/*CONSTCOND*/0)

#define SLIST_INSERT_AFTER(slistelm, elm, field) do { \
    (elm)->field.sle_next = (slistelm)->field.sle_next; \
    (slistelm)->field.sle_next \
    = (elm); \
} while (/*CONSTCOND*/0)

#define SLIST_INSERT_HEAD(head, elm, field) do { \
    (elm)->field.sle_next = (head)->slh_first; \
    (head)->slh_first = (elm); \
} while (/*CONSTCOND*/0)

#define SLIST_REMOVE_AFTER(slistelm, field) do { \
    (slistelm)->field.sle_next = \
        SLIST_NEXT(SLIST_NEXT((slistelm), field), field); \
} while (/*CONSTCOND*/0)

#define SLIST_REMOVE_HEAD(head, field) do { \
    (head)->slh_first = (head)->slh_first->field.sle_next; \
} while (/*CONSTCOND*/0)

#define SLIST_REMOVE(head, elm, type, field) do { \
    if ((head)->slh_first == (elm)) { \
        SLIST_REMOVE_HEAD((head), field); \
    } \
    else { \
        struct type *curelm = (head)->slh_first; \
        while(curelm->field.sle_next != (elm)) \
            curelm = curelm->field.sle_next; \
    } \
} while (/*CONSTCOND*/0)

```

```

    curelm->field.sle_next = \
        curelm->field.sle_next->field.sle_next; \
    } \
} while (/*CONSTCOND*/0)

/*
 * List definitions.
 */
#define LIST_HEAD(name, type) \
struct name { \
    struct type *lh_first; /* first element */ \
}

#define LIST_HEAD_INITIALIZER(head) \
{ NULL }

#define LIST_ENTRY(type) \
struct { \
    struct type *le_next; /* next element */ \
    struct type **le_prev; /* address of previous next element */ \
}

/*
 * List access methods.
 */
#define LIST_FIRST(head) ((head)->lh_first)
#define LIST_END(head) NULL
#define LIST_EMPTY(head) ((head)->lh_first == LIST_END(head))
#define LIST_NEXT(elm, field) ((elm)->field.le_next)

#define LIST_FOREACH(var, head, field) \
for ((var) = ((head)->lh_first); \
    (var) != LIST_END(head); \
    (var) = ((var)->field.le_next))

#define LIST_FOREACH_SAFE(var, head, field, tvar) \
for ((var) = LIST_FIRST((head)); \
    (var) != LIST_END(head) && \
    ((tvar) = LIST_NEXT((var), field), 1); \
    (var) = (tvar))

#define LIST_MOVE(head1, head2) do { \
    LIST_INIT((head2)); \
    if (!LIST_EMPTY((head1))) \
    { \
        (head2)->lh_first = (head1)->lh_first; \
        LIST_INIT((head1)); \
    } \
} while (0)

```

```

} \
} while (/*CONSTCOND*/0)

/*
 * List functions.
 */
#ifdef QUEUEDEBUG
#define QUEUEDEBUG_LIST_INSERT_HEAD(head, elm, field) \
if ((head)->lh_first && \
    (head)->lh_first->field.le_prev != &(head)->lh_first) \
    QUEUEDEBUG_ABORT("LIST_INSERT_HEAD %p %s:%d", (head), \
        __FILE__, __LINE__);
#define QUEUEDEBUG_LIST_OP(elm, field) \
if ((elm)->field.le_next && \
    (elm)->field.le_next->field.le_prev != \
    &(elm)->field.le_next) \
    QUEUEDEBUG_ABORT("LIST_* forw %p %s:%d", (elm), \
        __FILE__, __LINE__); \
if (*(elm)->field.le_prev != (elm)) \
    QUEUEDEBUG_ABORT("LIST_* back %p %s:%d", (elm), \
        __FILE__, __LINE__);
#define QUEUEDEBUG_LIST_POSTREMOVE(elm, field) \
(elm)->field.le_next = (void *)1L; \
(elm)->field.le_prev = (void *)1L;
#else
#define QUEUEDEBUG_LIST_INSERT_HEAD(head, elm, field)
#define QUEUEDEBUG_LIST_OP(elm,
    field)
#define QUEUEDEBUG_LIST_POSTREMOVE(elm, field)
#endif

#define LIST_INIT(head) do { \
    (head)->lh_first = LIST_END(head); \
} while (/*CONSTCOND*/0)

#define LIST_INSERT_AFTER(listelm, elm, field) do { \
    QUEUEDEBUG_LIST_OP((listelm), field) \
    if (((elm)->field.le_next = (listelm)->field.le_next) != \
        LIST_END(head)) \
        (listelm)->field.le_next->field.le_prev = \
            &(elm)->field.le_next; \
    (listelm)->field.le_next = (elm); \
    (elm)->field.le_prev = &(listelm)->field.le_next; \
} while (/*CONSTCOND*/0)

#define LIST_INSERT_BEFORE(listelm, elm, field) do { \
    QUEUEDEBUG_LIST_OP((listelm), field) \
    (elm)->field.le_prev = (listelm)->field.le_prev; \

```

```

(elm)->field.le_next = (listelm); \
*(listelm)->field.le_prev = (elm); \
(listelm)->field.le_prev = &(elm)->field.le_next; \
} while (/*CONSTCOND*/0)

#define LIST_INSERT_HEAD(head, elm, field) do { \
    QUEUEDEBUG_LIST_INSERT_HEAD((head), (elm), field) \
    if (((elm)->field.le_next \
    = (head)->lh_first) != LIST_END(head)) \
        (head)->lh_first->field.le_prev = &(elm)->field.le_next; \
    (head)->lh_first = (elm); \
    (elm)->field.le_prev = &(head)->lh_first; \
} while (/*CONSTCOND*/0)

#define LIST_REMOVE(elm, field) do { \
    QUEUEDEBUG_LIST_OP((elm), field) \
    if ((elm)->field.le_next != NULL) \
        (elm)->field.le_next->field.le_prev = \
            (elm)->field.le_prev; \
    *(elm)->field.le_prev = (elm)->field.le_next; \
    QUEUEDEBUG_LIST_POSTREMOVE((elm), field) \
} while (/*CONSTCOND*/0)

#define LIST_REPLACE(elm, elm2, field) do { \
    if (((elm2)->field.le_next = (elm)->field.le_next) != NULL) \
        (elm2)->field.le_next->field.le_prev = \
            &(elm2)->field.le_next; \
    (elm2)->field.le_prev = (elm)->field.le_prev; \
    *(elm2)->field.le_prev = (elm2); \
    QUEUEDEBUG_LIST_POSTREMOVE((elm), field) \
} while (/*CONSTCOND*/0)

/*
 * Simple queue definitions.
 */
#define SIMPLEQ_HEAD(name, type) \
struct name { \
    struct \
    type *sqh_first; /* first element */ \
    struct type **sqh_last; /* addr of last next element */ \
}

#define SIMPLEQ_HEAD_INITIALIZER(head) \
{ NULL, &(head).sqh_first }

#define SIMPLEQ_ENTRY(type) \
struct { \
    struct type *sqe_next; /* next element */ \

```

```

}

/*
 * Simple queue access methods.
 */

#define SIMPLEQ_FIRST(head) ((head)->sqh_first)
#define SIMPLEQ_END(head) NULL
#define SIMPLEQ_EMPTY(head) ((head)->sqh_first == SIMPLEQ_END(head))
#define SIMPLEQ_NEXT(elm, field) ((elm)->field.sqe_next)

#define SIMPLEQ_FOREACH(var, head, field) \
    for ((var) = ((head)->sqh_first); \
         (var) != SIMPLEQ_END(head); \
         (var) = ((var)->field.sqe_next))

#define SIMPLEQ_FOREACH_SAFE(var, head, field, next) \
    for ((var) = ((head)->sqh_first); \
         (var) != SIMPLEQ_END(head) && \
         ((next = ((var)->field.sqe_next)), 1); \
         (var) = (next))

/*
 * Simple queue functions.
 */

#define SIMPLEQ_INIT(head) do { \
    (head)->sqh_first = NULL; \
    (head)->sqh_last \
    = &(head)->sqh_first; \
} while (/*CONSTCOND*/)

#define SIMPLEQ_INSERT_HEAD(head, elm, field) do { \
    if (((elm)->field.sqe_next = (head)->sqh_first) == NULL) \
        (head)->sqh_last = &(elm)->field.sqe_next; \
    (head)->sqh_first = (elm); \
} while (/*CONSTCOND*/)

#define SIMPLEQ_INSERT_TAIL(head, elm, field) do { \
    (elm)->field.sqe_next = NULL; \
    *(head)->sqh_last = (elm); \
    (head)->sqh_last = &(elm)->field.sqe_next; \
} while (/*CONSTCOND*/)

#define SIMPLEQ_INSERT_AFTER(head, listelm, elm, field) do { \
    if (((elm)->field.sqe_next = (listelm)->field.sqe_next) == NULL) \
        (head)->sqh_last = &(elm)->field.sqe_next; \
    (listelm)->field.sqe_next = (elm); \
} while (/*CONSTCOND*/)

```

```
#define SIMPLEQ_REMOVE_HEAD(head, field) do { \
    if (((head)->sqh_first = (head)->sqh_first->field.sqe_next) == NULL) \
        (head)->sqh_last = &(head)->sqh_first; \
} while (/*CONSTCOND*/0)
```

```
#define SIMPLEQ_REMOVE_AFTER(head, elm, field) do { \
    if \
        (((elm)->field.sqe_next = (elm)->field.sqe_next->field.sqe_next) \
         == NULL) \
        (head)->sqh_last = &(elm)->field.sqe_next; \
} while (/*CONSTCOND*/0)
```

```
#define SIMPLEQ_REMOVE(head, elm, type, field) do { \
    if ((head)->sqh_first == (elm)) { \
        SIMPLEQ_REMOVE_HEAD((head), field); \
    } else { \
        struct type *curelm = (head)->sqh_first; \
        while (curelm->field.sqe_next != (elm)) \
            curelm = curelm->field.sqe_next; \
        if ((curelm->field.sqe_next = \
            curelm->field.sqe_next->field.sqe_next) == NULL) \
            (head)->sqh_last = &(curelm)->field.sqe_next; \
    } \
} while (/*CONSTCOND*/0)
```

```
#define SIMPLEQ_CONCAT(head1, head2) do { \
    if (!SIMPLEQ_EMPTY((head2))) { \
        *(head1)->sqh_last = (head2)->sqh_first; \
        (head1)->sqh_last = (head2)->sqh_last; \
        SIMPLEQ_INIT((head2)); \
    } \
} while (/*CONSTCOND*/0)
```

```
#define SIMPLEQ_LAST(head, type, field) \
    (SIMPLEQ_EMPTY((head)) ? \
     NULL : \
     ((struct type \
      *) (void *) \
      ((char *)((head)->sqh_last) - offsetof(struct type, field))))
```

```
/*
```

```
* Tail queue definitions.
```

```
*/
```

```
#define _TAILQ_HEAD(name, type, qual) \
struct name { \
    qual type *tqh_first; /* first element */ \
    qual type *qual *tqh_last; /* addr of last next element */ \
}
```

```

#define TAILQ_HEAD(name, type) _TAILQ_HEAD(name, struct type,)

#define TAILQ_HEAD_INITIALIZER(head) \
    { TAILQ_END(head), &(head).tqh_first }

#define _TAILQ_ENTRY(type, qual) \
struct { \
    qual type *tqe_next; /* next element */ \
    qual type *qual *tqe_prev; /* address of previous next element */ \
}

#define TAILQ_ENTRY(type) _TAILQ_ENTRY(struct type,)

/*
 * Tail queue access methods.
 */

#define TAILQ_FIRST(head) ((head)->tqh_first)
#define TAILQ_END(head) (NULL)
#define TAILQ_NEXT(elm, field) ((elm)->field.tqe_next)
#define TAILQ_LAST(head, headname) \
    (((struct headname *) (void *) ((head)->tqh_last))->tqh_last)
#define TAILQ_PREV(elm, headname, field) \
    (((struct headname *) (void *) ((elm)->field.tqe_prev))->tqh_last)
#define TAILQ_EMPTY(head) (TAILQ_FIRST(head) == TAILQ_END(head))

#define TAILQ_FOREACH(var, head, field) \
    for ((var) = ((head)->tqh_first); \
        (var) != TAILQ_END(head); \
        (var) = ((var)->field.tqe_next))

#define TAILQ_FOREACH_SAFE(var, head, field, next) \
    for ((var) = ((head)->tqh_first); \
        (var) != TAILQ_END(head) && \
        ((next) = TAILQ_NEXT(var, field), 1); (var) = (next))

#define TAILQ_FOREACH_REVERSE(var, head, headname, field) \
    for ((var) = TAILQ_LAST((head), headname); \
        (var) != TAILQ_END(head); \
        (var) = TAILQ_PREV((var), headname, field))

#define TAILQ_FOREACH_REVERSE_SAFE(var, head, headname, field, prev) \
    for ((var) = TAILQ_LAST((head), headname); \
        (var) != TAILQ_END(head) && \
        ((prev) = TAILQ_PREV((var), headname, field), 1); (var) = (prev))

/*
 * Tail queue functions.

```

```

*/
#if defined(QUEUEDEBUG)
#define QUEUEDEBUG_TAILQ_INSERT_HEAD(head,
elm, field) \
if ((head)->tqh_first && \
    (head)->tqh_first->field.tqe_prev != &(head)->tqh_first) \
    QUEUEDEBUG_ABORT("TAILQ_INSERT_HEAD %p %s:%d", (head), \
        __FILE__, __LINE__);
#define QUEUEDEBUG_TAILQ_INSERT_TAIL(head, elm, field) \
if (*(head)->tqh_last != NULL) \
    QUEUEDEBUG_ABORT("TAILQ_INSERT_TAIL %p %s:%d", (head), \
        __FILE__, __LINE__);
#define QUEUEDEBUG_TAILQ_OP(elm, field) \
if ((elm)->field.tqe_next && \
    (elm)->field.tqe_next->field.tqe_prev != \
    &(elm)->field.tqe_next) \
    QUEUEDEBUG_ABORT("TAILQ_* forw %p %s:%d", (elm), \
        __FILE__, __LINE__); \
if (*(elm)->field.tqe_prev != (elm)) \
    QUEUEDEBUG_ABORT("TAILQ_* back %p %s:%d", (elm), \
        __FILE__, __LINE__);
#define QUEUEDEBUG_TAILQ_PREREMOVE(head, elm, field) \
if ((elm)->field.tqe_next == NULL && \
    (head)->tqh_last != &(elm)->field.tqe_next) \
    QUEUEDEBUG_ABORT("TAILQ_PREREMOVE head %p elm %p %s:%d", \
        (head), (elm), __FILE__, \
        __LINE__);
#define QUEUEDEBUG_TAILQ_POSTREMOVE(elm, field) \
(elm)->field.tqe_next = (void *)1L; \
(elm)->field.tqe_prev = (void *)1L;
#else
#define QUEUEDEBUG_TAILQ_INSERT_HEAD(head, elm, field)
#define QUEUEDEBUG_TAILQ_INSERT_TAIL(head, elm, field)
#define QUEUEDEBUG_TAILQ_OP(elm, field)
#define QUEUEDEBUG_TAILQ_PREREMOVE(head, elm, field)
#define QUEUEDEBUG_TAILQ_POSTREMOVE(elm, field)
#endif

#define TAILQ_INIT(head) do { \
    (head)->tqh_first = TAILQ_END(head); \
    (head)->tqh_last = &(head)->tqh_first; \
} while (/*CONSTCOND*/0)

#define TAILQ_INSERT_HEAD(head, elm, field) do { \
    QUEUEDEBUG_TAILQ_INSERT_HEAD((head), (elm), field) \
    if (((elm)->field.tqe_next = (head)->tqh_first) != TAILQ_END(head)) \
        (head)->tqh_first->field.tqe_prev = \
            &(elm)->field.tqe_next; \
} while (0)

```



```

else    \
    (head)->tqh_last = &(elm)->field.tqe_next; \
    (head)->tqh_first = (elm);    \
    (elm)->field.tqe_prev = &(head)->tqh_first; \
} while (/*CONSTCOND*/0)

#define TAILQ_INSERT_TAIL(head,
elm, field) do { \
    QUEUEDEBBUG_TAILQ_INSERT_TAIL((head), (elm), field) \
    (elm)->field.tqe_next = TAILQ_END(head); \
    (elm)->field.tqe_prev = (head)->tqh_last; \
    *(head)->tqh_last = (elm);    \
    (head)->tqh_last = &(elm)->field.tqe_next; \
} while (/*CONSTCOND*/0)

#define TAILQ_INSERT_AFTER(head, listelm, elm, field) do { \
    QUEUEDEBBUG_TAILQ_OP((listelm), field) \
    if (((elm)->field.tqe_next = (listelm)->field.tqe_next) != \
        TAILQ_END(head))    \
    (elm)->field.tqe_next->field.tqe_prev = \
        &(elm)->field.tqe_next; \
    else    \
    (head)->tqh_last = &(elm)->field.tqe_next; \
    (listelm)->field.tqe_next = (elm);    \
    (elm)->field.tqe_prev = &(listelm)->field.tqe_next; \
} while (/*CONSTCOND*/0)

#define TAILQ_INSERT_BEFORE(listelm, elm, field) do { \
    QUEUEDEBBUG_TAILQ_OP((listelm), field) \
    (elm)->field.tqe_prev = (listelm)->field.tqe_prev; \
    (elm)->field.tqe_next = (listelm);    \
    *(listelm)->field.tqe_prev = (elm);    \
    (listelm)->field.tqe_prev
= &(elm)->field.tqe_next; \
} while (/*CONSTCOND*/0)

#define TAILQ_REMOVE(head, elm, field) do { \
    QUEUEDEBBUG_TAILQ_PREREMOVE((head), (elm), field) \
    QUEUEDEBBUG_TAILQ_OP((elm), field) \
    if (((elm)->field.tqe_next) != TAILQ_END(head)) \
    (elm)->field.tqe_next->field.tqe_prev = \
        (elm)->field.tqe_prev; \
    else    \
    (head)->tqh_last = (elm)->field.tqe_prev; \
    *(elm)->field.tqe_prev = (elm)->field.tqe_next; \
    QUEUEDEBBUG_TAILQ_POSTREMOVE((elm), field); \
} while (/*CONSTCOND*/0)

```

```

#define TAILQ_REPLACE(head, elm, elm2, field) do { \
    if (((elm2)->field.tqe_next = (elm)->field.tqe_next) != \
        TAILQ_END(head)) \
        (elm2)->field.tqe_next->field.tqe_prev = \
            &(elm2)->field.tqe_next; \
    else \
        (head)->tqh_last = &(elm2)->field.tqe_next; \
        (elm2)->field.tqe_prev = (elm)->field.tqe_prev; \
        *(elm2)->field.tqe_prev = (elm2); \
    QUEUEDEBUG_TAILQ_POSTREMOVE((elm), \
        field); \
} while (/*CONSTCOND*/0)

#define TAILQ_CONCAT(head1, head2, field) do { \
    if (!TAILQ_EMPTY(head2)) { \
        *(head1)->tqh_last = (head2)->tqh_first; \
        (head2)->tqh_first->field.tqe_prev = (head1)->tqh_last; \
        (head1)->tqh_last = (head2)->tqh_last; \
        TAILQ_INIT((head2)); \
    } \
} while (/*CONSTCOND*/0)

/*
 * Singly-linked Tail queue declarations.
 */
#define STAILQ_HEAD(name, type) \
struct name { \
    struct type *stqh_first; /* first element */ \
    struct type **stqh_last; /* addr of last next element */ \
}

#define STAILQ_HEAD_INITIALIZER(head) \
{ NULL, &(head).stqh_first }

#define STAILQ_ENTRY(type) \
struct { \
    struct type *stqe_next; /* next element */ \
}

/*
 * Singly-linked Tail queue access methods.
 */
#define STAILQ_FIRST(head) ((head)->stqh_first)
#define STAILQ_END(head) NULL
#define STAILQ_NEXT(elm, field) ((elm)->field.stqe_next)
#define STAILQ_EMPTY(head) (STAILQ_FIRST(head) \
    == STAILQ_END(head))

```

```

/*
 * Singly-linked Tail queue functions.
 */
#define STAILQ_INIT(head) do { \
    (head)->stqh_first = NULL; \
    (head)->stqh_last = &(head)->stqh_first; \
} while (/*CONSTCOND*/0)

#define STAILQ_INSERT_HEAD(head, elm, field) do { \
    if (((elm)->field.stqe_next = (head)->stqh_first) == NULL) \
        (head)->stqh_last = &(elm)->field.stqe_next; \
    (head)->stqh_first = (elm); \
} while (/*CONSTCOND*/0)

#define STAILQ_INSERT_TAIL(head, elm, field) do { \
    (elm)->field.stqe_next = NULL; \
    *(head)->stqh_last = (elm); \
    (head)->stqh_last = &(elm)->field.stqe_next; \
} while (/*CONSTCOND*/0)

#define STAILQ_INSERT_AFTER(head, listelm, elm, field) do { \
    if (((elm)->field.stqe_next = (listelm)->field.stqe_next) == NULL) \
        (head)->stqh_last = &(elm)->field.stqe_next; \
    (listelm)->field.stqe_next = (elm); \
} while (/*CONSTCOND*/0)

#define STAILQ_REMOVE_HEAD(head, field) do { \
    if (((head)->stqh_first = (head)->stqh_first->field.stqe_next) \
        == NULL) \
        (head)->stqh_last = &(head)->stqh_first; \
} while (/*CONSTCOND*/0)

#define STAILQ_REMOVE(head, elm, type, field) do { \
    if ((head)->stqh_first == (elm)) { \
        STAILQ_REMOVE_HEAD((head), field); \
    } else { \
        struct type *curelm = (head)->stqh_first; \
        while (curelm->field.stqe_next != (elm)) \
            curelm = curelm->field.stqe_next; \
        if ((curelm->field.stqe_next = \
            curelm->field.stqe_next->field.stqe_next) == NULL) \
            (head)->stqh_last = &(curelm)->field.stqe_next; \
    } \
} while (/*CONSTCOND*/0)

#define STAILQ_FOREACH(var, head, field) \
    for ((var) = ((head)->stqh_first); \
        (var); \

```

```

(var) = ((var)->field.stqe_next))

#define STAILQ_FOREACH_SAFE(var, head, field, tvar) \
for ((var) = STAILQ_FIRST((head)); \
    (var) && ((tvar) = STAILQ_NEXT((var), field), 1); \
    (var) = (tvar))

#define STAILQ_CONCAT(head1, head2) do { \
    if (!STAILQ_EMPTY((head2))) { \
        *(head1)->stqh_last \
        = (head2)->stqh_first; \
        (head1)->stqh_last = (head2)->stqh_last; \
        STAILQ_INIT((head2)); \
    } \
} while (/*CONSTCOND*/0)

#define STAILQ_LAST(head, type, field) \
(STAILQ_EMPTY((head)) ? \
    NULL : \
    ((struct type *) (void *) \
    ((char *) ((head)->stqh_last) - offsetof(struct type, field))))

#ifdef _KERNEL
/*
 * Circular queue definitions. Do not use. We still keep the macros
 * for compatibility but because of pointer aliasing issues their use
 * is discouraged!
 */

/*
 * __launder_type(): We use this ugly hack to work around the the compiler
 * noticing that two types may not alias each other and elide tests in code.
 * We hit this in the CIRCLEQ macros when comparing 'struct name *' and
 * 'struct type *' (see CIRCLEQ_HEAD()). Modern compilers (such as GCC
 * 4.8) declare these comparisons as always false, causing the code to
 * not run as designed.
 *
 * This hack is only to be used for comparisons and thus can be fully const.
 * Do not use for assignment.
 *
 * If we ever choose to change the ABI of the CIRCLEQ macros, we could fix
 * this by changing the head/tail sentinel values, but see the note above
 * this one.
 */
static __inline const void * __launder_type(const void *);
static __inline const void *
__launder_type(const void *__x)

```

```

{
__asm __volatile("" : "+r" (__x));
return __x;
}

#if defined(QUEUEDEBUG)
#define QUEUEDEBUG_CIRCLEQ_HEAD(head, field) \
if ((head)->cqh_first != CIRCLEQ_ENDC(head) && \
    (head)->cqh_first->field.cqe_prev != CIRCLEQ_ENDC(head)) \
    QUEUEDEBUG_ABORT("CIRCLEQ head forw %p %s:%d", (head), \
        __FILE__, __LINE__); \
if ((head)->cqh_last != CIRCLEQ_ENDC(head) && \
    (head)->cqh_last->field.cqe_next != CIRCLEQ_ENDC(head)) \
    QUEUEDEBUG_ABORT("CIRCLEQ head back %p %s:%d", (head), \
        __FILE__, __LINE__);
#define QUEUEDEBUG_CIRCLEQ_ELM(head, elm, field) \
if ((elm)->field.cqe_next == CIRCLEQ_ENDC(head)) { \
    if ((head)->cqh_last != (elm)) \
        QUEUEDEBUG_ABORT("CIRCLEQ \
elm last %p %s:%d", \
            (elm), __FILE__, __LINE__); \
} else { \
    if ((elm)->field.cqe_next->field.cqe_prev != (elm)) \
        QUEUEDEBUG_ABORT("CIRCLEQ elm forw %p %s:%d", \
            (elm), __FILE__, __LINE__); \
} \
if ((elm)->field.cqe_prev == CIRCLEQ_ENDC(head)) { \
    if ((head)->cqh_first != (elm)) \
        QUEUEDEBUG_ABORT("CIRCLEQ elm first %p %s:%d", \
            (elm), __FILE__, __LINE__); \
} else { \
    if ((elm)->field.cqe_prev->field.cqe_next != (elm)) \
        QUEUEDEBUG_ABORT("CIRCLEQ elm prev %p %s:%d", \
            (elm), __FILE__, __LINE__); \
}
#define QUEUEDEBUG_CIRCLEQ_POSTREMOVE(elm, field) \
(elm)->field.cqe_next = (void *)1L; \
(elm)->field.cqe_prev = (void *)1L;
#else
#define QUEUEDEBUG_CIRCLEQ_HEAD(head, field)
#define QUEUEDEBUG_CIRCLEQ_ELM(head, elm, field)
#define QUEUEDEBUG_CIRCLEQ_POSTREMOVE(elm, field)
#endif

#define CIRCLEQ_HEAD(name, type) \
struct name { \
    struct type *cqh_first; /*

```

```

first element */ \
struct type *cqh_last; /* last element */ \
}

#define CIRCLEQ_HEAD_INITIALIZER(head) \
{ CIRCLEQ_END(&head), CIRCLEQ_END(&head) }

#define CIRCLEQ_ENTRY(type) \
struct { \
    struct type *cqe_next; /* next element */ \
    struct type *cqe_prev; /* previous element */ \
}

/*
 * Circular queue functions.
 */
#define CIRCLEQ_INIT(head) do { \
    (head)->cqh_first = CIRCLEQ_END(head); \
    (head)->cqh_last = CIRCLEQ_END(head); \
} while (/*CONSTCOND*/0)

#define CIRCLEQ_INSERT_AFTER(head, listelm, elm, field) do { \
    QUEUEDEBBUG_CIRCLEQ_HEAD((head), field) \
    QUEUEDEBBUG_CIRCLEQ_ELM((head), (listelm), field) \
    (elm)->field.cqe_next = (listelm)->field.cqe_next; \
    (elm)->field.cqe_prev = (listelm); \
    if ((listelm)->field.cqe_next == CIRCLEQ_ENDC(head)) \
        (head)->cqh_last = (elm); \
    else \
        (listelm)->field.cqe_next->field.cqe_prev = (elm); \
    (listelm)->field.cqe_next = (elm); \
} while (/*CONSTCOND*/0)

#define CIRCLEQ_INSERT_BEFORE(head, \
listelm, elm, field) do { \
    QUEUEDEBBUG_CIRCLEQ_HEAD((head), field) \
    QUEUEDEBBUG_CIRCLEQ_ELM((head), (listelm), field) \
    (elm)->field.cqe_next = (listelm); \
    (elm)->field.cqe_prev = (listelm)->field.cqe_prev; \
    if ((listelm)->field.cqe_prev == CIRCLEQ_ENDC(head)) \
        (head)->cqh_first = (elm); \
    else \
        (listelm)->field.cqe_prev->field.cqe_next = (elm); \
    (listelm)->field.cqe_prev = (elm); \
} while (/*CONSTCOND*/0)

#define CIRCLEQ_INSERT_HEAD(head, elm, field) do { \
    QUEUEDEBBUG_CIRCLEQ_HEAD((head), field) \

```

```

(elm)->field.cqe_next = (head)->cqh_first; \
(elm)->field.cqe_prev = CIRCLEQ_END(head); \
if ((head)->cqh_last == CIRCLEQ_ENDC(head)) \
    (head)->cqh_last = (elm); \
else \
    (head)->cqh_first->field.cqe_prev = (elm); \
    (head)->cqh_first = (elm); \
} while (/*CONSTCOND*/0)

#define CIRCLEQ_INSERT_TAIL(head, elm, field) do { \
    QUEUEDEBUG_CIRCLEQ_HEAD((head), field) \
    (elm)->field.cqe_next \
    = CIRCLEQ_END(head); \
    (elm)->field.cqe_prev = (head)->cqh_last; \
    if ((head)->cqh_first == CIRCLEQ_ENDC(head)) \
        (head)->cqh_first = (elm); \
    else \
        (head)->cqh_last->field.cqe_next = (elm); \
        (head)->cqh_last = (elm); \
} while (/*CONSTCOND*/0)

#define CIRCLEQ_REMOVE(head, elm, field) do { \
    QUEUEDEBUG_CIRCLEQ_HEAD((head), field) \
    QUEUEDEBUG_CIRCLEQ_ELM((head), (elm), field) \
    if ((elm)->field.cqe_next == CIRCLEQ_ENDC(head)) \
        (head)->cqh_last = (elm)->field.cqe_prev; \
    else \
        (elm)->field.cqe_next->field.cqe_prev = \
            (elm)->field.cqe_prev; \
    if ((elm)->field.cqe_prev == CIRCLEQ_ENDC(head)) \
        (head)->cqh_first = (elm)->field.cqe_next; \
    else \
        (elm)->field.cqe_prev->field.cqe_next = \
            (elm)->field.cqe_next; \
    QUEUEDEBUG_CIRCLEQ_POSTREMOVE((elm), field) \
} while (/*CONSTCOND*/0)

#define CIRCLEQ_FOREACH(var, head, field) \
for ((var) = ((head)->cqh_first); \
    (var) != CIRCLEQ_ENDC(head); \
    (var) \
    = ((var)->field.cqe_next))

#define CIRCLEQ_FOREACH_REVERSE(var, head, field) \
for ((var) = ((head)->cqh_last); \
    (var) != CIRCLEQ_ENDC(head); \
    (var) = ((var)->field.cqe_prev))

```

```

/*
 * Circular queue access methods.
 */

#define CIRCLEQ_FIRST(head) ((head)->cqh_first)
#define CIRCLEQ_LAST(head) ((head)->cqh_last)
/* For comparisons */
#define CIRCLEQ_ENDC(head) (__launter_type(head))
/* For assignments */
#define CIRCLEQ_END(head) ((void *)(head))
#define CIRCLEQ_NEXT(elm, field) ((elm)->field.cqe_next)
#define CIRCLEQ_PREV(elm, field) ((elm)->field.cqe_prev)
#define CIRCLEQ_EMPTY(head) \
    (CIRCLEQ_FIRST(head) == CIRCLEQ_ENDC(head))

#define CIRCLEQ_LOOP_NEXT(head, elm, field) \
    (((elm)->field.cqe_next == CIRCLEQ_ENDC(head)) \
     ? ((head)->cqh_first) \
     : (elm->field.cqe_next))
#define CIRCLEQ_LOOP_PREV(head, elm, field) \
    (((elm)->field.cqe_prev == CIRCLEQ_ENDC(head)) \
     ? ((head)->cqh_last) \
     : \
     (elm->field.cqe_prev))
#endif /* !_KERNEL */

#endif /* !_SYS_QUEUE_H_ */

# Contributor: Fabian Affolter <fabian@affolter-engineering.ch>
# Maintainer: Fabian Affolter <fabian@affolter-engineering.ch>
pkgname=py3-flake8-copyright
_pkgname=flake8-copyright
pkgver=0.2.4
pkgrel=3
pkgdesc="Extension for flake8 which checks for copyrights"
options="!check" # No testsuite
url="https://github.com/savoirfairelinux/flake8-copyright"
arch="noarch"
license="MIT"
depends="py3-flake8 py3-setuptools"
makedepends="py3-gpep517 py3-wheel"
subpackages="$pkgname-pyc"
source="https://files.pythonhosted.org/packages/source/${_pkgname:0:1}/${_pkgname}/${_pkgname}-${pkgver}.tar.gz"
buildid="$_srcdir"/$_pkgname-$pkgver

replaces="py-flake8-copyright" # Backwards compatibility
provides="py-flake8-copyright=$pkgver-r$pkgrel" # Backwards compatibility

build() {
    gpep517 build-wheel \

```



```

--wheel-dir .dist \
--output-fd 3 3>&1 >&2
}

package() {
gpep517 install-wheel --destdir "$pkgdir" \
.dist/*.whl
}

sha512sums="
a6ab47e1bb715618f075c51f398e18180404871b3b0faf1c2d30701d5203db6bc23771bf22ffb5bafcd8ee856b9b64237
b316bd503ae7dceed6ca284ccd5a74d
flake8-copyright-0.2.4.tar.gz
"
(The MIT License)

```

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/* \$NetBSD: tree.h,v 1.20 2013/09/14 13:20:45 joerg Exp \$ */

/* \$OpenBSD: tree.h,v 1.13 2011/07/09 00:19:45 pirofti Exp \$ */

/* Modified by Void Linux. */

/*

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*

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- * THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.
- */

```
#ifndef _SYS_TREE_H_
#define _SYS_TREE_H_
```

```
#ifdef __GNUC__
#define __GNUC_PREREQ__(x, y) \
((__GNUC__ == (x) && __GNUC_MINOR__ >= (y)) || \
 (__GNUC__ > (x)))
#else
#define __GNUC_PREREQ__(x, y) 0
#endif
```

```
#if __GNUC_PREREQ__(2, 7) || defined(__lint__)
#define _sys_tree_h_unused __attribute__((__unused__))
#else
#define _sys_tree_h_unused /* delete */
#endif
```

```
/*
```

- * This file defines data structures for different types of trees:
- * splay trees and red-black trees.
- *
- * A splay tree is a self-organizing
- data structure. Every operation
- * on the tree causes a splay to happen. The splay moves the requested
- * node to the root of the tree and partly rebalances it.
- *
- * This has the benefit that request locality causes faster lookups as
- * the requested nodes move to the top of the tree. On the other hand,
- * every lookup causes memory writes.
- *

- * The Balance Theorem bounds the total access time for m operations
- * and n inserts on an initially empty tree as $O((m + n)\lg n)$. The
- * amortized cost for a sequence of m accesses to a splay tree is $O(\lg n)$;
- *
- * A red-black tree is a binary search tree with the node color as an
- * extra attribute. It fulfills a set of conditions:
- * - every search path from the root to a leaf consists of the
- * same number of black nodes,
- * - each red node (except for the root) has a black parent,
- * - each leaf node is black.
- *
- * Every operation on a red-black tree is bounded as $O(\lg n)$.
- * The maximum height of a red-black tree is $2\lg(n+1)$.
- */

```
#define SPLAY_HEAD(name, type) \
struct name { \
    struct type *sph_root; /* root of the tree */ \
}
```

```
#define SPLAY_INITIALIZER(root) \
{ NULL }
```

```
#define SPLAY_INIT(root) do { \
    (root)->sph_root = NULL; \
} while (/*CONSTCOND*/ 0)
```

```
#define SPLAY_ENTRY(type) \
struct { \
    struct type *spe_left; /* left element */ \
    struct type *spe_right; /* right element */ \
}
```

```
#define SPLAY_LEFT(elm, field) (elm)->field.spe_left
#define SPLAY_RIGHT(elm, field) (elm)->field.spe_right
#define SPLAY_ROOT(head) (head)->sph_root
#define SPLAY_EMPTY(head) (SPLAY_ROOT(head) == NULL)
```

```
/* SPLAY_ROTATE_{LEFT,RIGHT} expect that tmp hold SPLAY_{RIGHT,LEFT} */
#define SPLAY_ROTATE_RIGHT(head, tmp, field) do { \
    SPLAY_LEFT((head)->sph_root, field) = SPLAY_RIGHT(tmp, field); \
    SPLAY_RIGHT(tmp, field) = (head)->sph_root; \
    (head)->sph_root = tmp; \
} while (/*CONSTCOND*/ 0)
```

```
#define SPLAY_ROTATE_LEFT(head, tmp, field) do { \
    SPLAY_RIGHT((head)->sph_root,
```

```

field) = SPLAY_LEFT(tmp, field); \
SPLAY_LEFT(tmp, field) = (head)->sph_root; \
(head)->sph_root = tmp; \
} while (/*CONSTCOND*/ 0)

#define SPLAY_LINKLEFT(head, tmp, field) do { \
SPLAY_LEFT(tmp, field) = (head)->sph_root; \
tmp = (head)->sph_root; \
(head)->sph_root = SPLAY_LEFT((head)->sph_root, field); \
} while (/*CONSTCOND*/ 0)

#define SPLAY_LINKRIGHT(head, tmp, field) do { \
SPLAY_RIGHT(tmp, field) = (head)->sph_root; \
tmp = (head)->sph_root; \
(head)->sph_root = SPLAY_RIGHT((head)->sph_root, field); \
} while (/*CONSTCOND*/ 0)

#define SPLAY_ASSEMBLE(head, node, left, right, field) do { \
SPLAY_RIGHT(left, field) = SPLAY_LEFT((head)->sph_root, field); \
SPLAY_LEFT(right, field) = SPLAY_RIGHT((head)->sph_root, field); \
SPLAY_LEFT((head)->sph_root, field) = SPLAY_RIGHT(node, field); \
SPLAY_RIGHT((head)->sph_root, field) = SPLAY_LEFT(node, field); \
} while (/*CONSTCOND*/ 0)

/* Generates prototypes and inline functions */

#define
SPLAY_PROTOTYPE(name, type, field, cmp) \
void name##_SPLAY(struct name *, struct type *); \
void name##_SPLAY_MINMAX(struct name *, int); \
struct type *name##_SPLAY_INSERT(struct name *, struct type *); \
struct type *name##_SPLAY_REMOVE(struct name *, struct type *); \
\
/* Finds the node with the same key as elm */ \
static __inline struct type * \
name##_SPLAY_FIND(struct name *head, struct type *elm) \
{ \
if (SPLAY_EMPTY(head)) \
return(NULL); \
name##_SPLAY(head, elm); \
if ((cmp)(elm, (head)->sph_root) == 0) \
return (head->sph_root); \
return (NULL); \
} \
\
static __inline _sys_tree_h_unused struct type * \
name##_SPLAY_NEXT(struct name *head, struct type *elm) \
{ \

```

```

name##_SPLAY(head, elm); \
if (SPLAY_RIGHT(elm, field) != NULL) { \
    elm = SPLAY_RIGHT(elm, field); \
    while (SPLAY_LEFT(elm, field) != NULL) { \
        elm = SPLAY_LEFT(elm, field); \
    } \
} \
else \
    elm = NULL; \
return (elm); \
} \
\
static __sys_tree_h_unused __inline struct type * \
name##_SPLAY_MIN_MAX(struct name *head, int val) \
{ \
    name##_SPLAY_MINMAX(head, val); \
    return (SPLAY_ROOT(head)); \
}

/* Main splay operation.
 * Moves node close to the key of elm to top
 */
#define SPLAY_GENERATE(name, type, field, cmp) \
struct type * \
name##_SPLAY_INSERT(struct name *head, struct type *elm) \
{ \
    if (SPLAY_EMPTY(head)) { \
        SPLAY_LEFT(elm, field) = SPLAY_RIGHT(elm, field) = NULL; \
    } else { \
        int __comp; \
        name##_SPLAY(head, elm); \
        __comp = (cmp)(elm, (head)->sph_root); \
        if (__comp < 0) { \
            SPLAY_LEFT(elm, field) = SPLAY_LEFT((head)->sph_root, field); \
            SPLAY_RIGHT(elm, field) = (head)->sph_root; \
            SPLAY_LEFT((head)->sph_root, field) = NULL; \
        } else if (__comp > 0) { \
            SPLAY_RIGHT(elm, \
field) = SPLAY_RIGHT((head)->sph_root, field); \
            SPLAY_LEFT(elm, field) = (head)->sph_root; \
            SPLAY_RIGHT((head)->sph_root, field) = NULL; \
        } else \
            return ((head)->sph_root); \
    } \
    (head)->sph_root = (elm); \
    return (NULL); \
} \
\

```

```

struct type * \
name##_SPLAY_REMOVE(struct name *head, struct type *elm) \
{ \
    struct type *__tmp; \
    if (SPLAY_EMPTY(head)) \
        return (NULL); \
    name##_SPLAY(head, elm); \
    if ((cmp)(elm, (head)->sph_root) == 0) { \
        if (SPLAY_LEFT((head)->sph_root, field) == NULL) { \
            (head)->sph_root = SPLAY_RIGHT((head)->sph_root, field);\
        } else { \
            __tmp = SPLAY_RIGHT((head)->sph_root, field); \
            (head)->sph_root = SPLAY_LEFT((head)->sph_root, field);\
            name##_SPLAY(head, elm); \
            SPLAY_RIGHT((head)->sph_root, field) = __tmp; \
        } \
        return (elm); \
    } \
    return (NULL); \
} \
\
void \
name##_SPLAY(struct \
    name *head, struct type *elm) \
{ \
    struct type __node, *__left, *__right, *__tmp; \
    int __comp; \
    \
    SPLAY_LEFT(&__node, field) = SPLAY_RIGHT(&__node, field) = NULL;\
    __left = __right = &__node; \
    \
    while ((__comp = (cmp)(elm, (head)->sph_root)) != 0) { \
        if (__comp < 0) { \
            __tmp = SPLAY_LEFT((head)->sph_root, field); \
            if (__tmp == NULL) \
                break; \
            if ((cmp)(elm, __tmp) < 0){ \
                SPLAY_ROTATE_RIGHT(head, __tmp, field); \
                if (SPLAY_LEFT((head)->sph_root, field) == NULL)\
                    break; \
            } \
            SPLAY_LINKLEFT(head, __right, field); \
        } else if (__comp > 0) { \
            __tmp = SPLAY_RIGHT((head)->sph_root, field); \
            if (__tmp == NULL) \
                break; \
            if ((cmp)(elm, __tmp) > 0){ \
                SPLAY_ROTATE_LEFT(head, __tmp, field); \

```

```

    if (SPLAY_RIGHT((head)->sph_root, field) == NULL)\
        break; \
} \
SPLAY_LINKRIGHT(head, __left, field); \
} \
} \
SPLAY_ASSEMBLE(head,
&__node, __left, __right, field); \
} \
\
/* Splay with either the minimum or the maximum element \
* Used to find minimum or maximum element in tree. \
*/ \
void name##_SPLAY_MINMAX(struct name *head, int __comp) \
{ \
    struct type __node, *__left, *__right, *__tmp; \
\
    SPLAY_LEFT(&__node, field) = SPLAY_RIGHT(&__node, field) = NULL;\
    __left = __right = &__node; \
\
    while (1) { \
        if (__comp < 0) { \
            __tmp = SPLAY_LEFT((head)->sph_root, field); \
            if (__tmp == NULL) \
                break; \
            if (__comp < 0){ \
                SPLAY_ROTATE_RIGHT(head, __tmp, field); \
                if (SPLAY_LEFT((head)->sph_root, field) == NULL)\
                    break; \
            } \
            SPLAY_LINKLEFT(head, __right, field); \
        } else if (__comp > 0) { \
            __tmp = SPLAY_RIGHT((head)->sph_root, field); \
            if (__tmp == NULL) \
                break; \
            if (__comp > 0) { \
                SPLAY_ROTATE_LEFT(head, __tmp, field); \
                if (SPLAY_RIGHT((head)->sph_root,
field) == NULL)\
                    break; \
            } \
            SPLAY_LINKRIGHT(head, __left, field); \
        } \
    } \
    SPLAY_ASSEMBLE(head, &__node, __left, __right, field); \
}

#define SPLAY_NEGINF -1

```

```

#define SPLAY_INF 1

#define SPLAY_INSERT(name, x, y) name##_SPLAY_INSERT(x, y)
#define SPLAY_REMOVE(name, x, y) name##_SPLAY_REMOVE(x, y)
#define SPLAY_FIND(name, x, y) name##_SPLAY_FIND(x, y)
#define SPLAY_NEXT(name, x, y) name##_SPLAY_NEXT(x, y)
#define SPLAY_MIN(name, x) (SPLAY_EMPTY(x) ? NULL \
    : name##_SPLAY_MIN_MAX(x, SPLAY_NEGINF))
#define SPLAY_MAX(name, x) (SPLAY_EMPTY(x) ? NULL \
    : name##_SPLAY_MIN_MAX(x, SPLAY_INF))

#define SPLAY_FOREACH(x, name, head) \
    for ((x) = SPLAY_MIN(name, head); \
        (x) != NULL; \
        (x) = SPLAY_NEXT(name, head, x))

/* Macros that define a red-black tree */
#define RB_HEAD(name, type) \
    struct name { \
        struct type *rbh_root; /* root of the tree */ \
    }

#define RB_INITIALIZER(root) \
    { \
        NULL \
    }

#define RB_INIT(root) do { \
    (root)->rbh_root = NULL; \
} while (/*CONSTCOND*/ 0)

#define RB_BLACK 0
#define RB_RED 1
#define RB_ENTRY(type) \
    struct { \
        struct type *rbe_left; /* left element */ \
        struct type *rbe_right; /* right element */ \
        struct type *rbe_parent; /* parent element */ \
        int rbe_color; /* node color */ \
    }

#define RB_LEFT(elm, field) (elm)->field.rbe_left
#define RB_RIGHT(elm, field) (elm)->field.rbe_right
#define RB_PARENT(elm, field) (elm)->field.rbe_parent
#define RB_COLOR(elm, field) (elm)->field.rbe_color
#define RB_ROOT(head) (head)->rbh_root
#define RB_EMPTY(head) (RB_ROOT(head) == NULL)

#define RB_SET(elm, parent, field) do { \

```



```

RB_PARENT(elm, field) = parent; \
RB_LEFT(elm, field) = RB_RIGHT(elm, field) = NULL; \
RB_COLOR(elm, field) = RB_RED; \
} while (/*CONSTCOND*/ 0)

#define RB_SET_BLACKRED(black, red, field) do { \
    RB_COLOR(black, field) = RB_BLACK; \
    RB_COLOR(red, field) \
    = RB_RED; \
} while (/*CONSTCOND*/ 0)

#ifndef RB_AUGMENT
#define RB_AUGMENT(x) do {} while (/*CONSTCOND*/ 0)
#endif

#define RB_ROTATE_LEFT(head, elm, tmp, field) do { \
    (tmp) = RB_RIGHT(elm, field); \
    if ((RB_RIGHT(elm, field) = RB_LEFT(tmp, field)) != NULL) { \
        RB_PARENT(RB_LEFT(tmp, field), field) = (elm); \
    } \
    RB_AUGMENT(elm); \
    if ((RB_PARENT(tmp, field) = RB_PARENT(elm, field)) != NULL) { \
        if ((elm) == RB_LEFT(RB_PARENT(elm, field), field)) \
            RB_LEFT(RB_PARENT(elm, field), field) = (tmp); \
        else \
            RB_RIGHT(RB_PARENT(elm, field), field) = (tmp); \
    } else \
        (head)->rbh_root = (tmp); \
    RB_LEFT(tmp, field) = (elm); \
    RB_PARENT(elm, field) = (tmp); \
    RB_AUGMENT(tmp); \
    if ((RB_PARENT(tmp, field))) \
        RB_AUGMENT(RB_PARENT(tmp, field)); \
} while (/*CONSTCOND*/ 0)

#define RB_ROTATE_RIGHT(head, elm, tmp, field) do { \
    (tmp) = RB_LEFT(elm, field); \
    if ((RB_LEFT(elm, field) = RB_RIGHT(tmp, field)) \
    != NULL) { \
        RB_PARENT(RB_RIGHT(tmp, field), field) = (elm); \
    } \
    RB_AUGMENT(elm); \
    if ((RB_PARENT(tmp, field) = RB_PARENT(elm, field)) != NULL) { \
        if ((elm) == RB_LEFT(RB_PARENT(elm, field), field)) \
            RB_LEFT(RB_PARENT(elm, field), field) = (tmp); \
        else \
            RB_RIGHT(RB_PARENT(elm, field), field) = (tmp); \
    } else \

```

```

(head)->rbh_root = (tmp); \
RB_RIGHT(tmp, field) = (elm); \
RB_PARENT(elm, field) = (tmp); \
RB_AUGMENT(tmp); \
if ((RB_PARENT(tmp, field))) \
    RB_AUGMENT(RB_PARENT(tmp, field)); \
} while (/*CONSTCOND*/ 0)

/* Generates prototypes and inline functions */
#define RB_PROTOTYPE(name, type, field, cmp) \
    RB_PROTOTYPE_INTERNAL(name, type, field, cmp,)
#define RB_PROTOTYPE_STATIC(name, type, field, cmp) \
    RB_PROTOTYPE_INTERNAL(name, type, field, cmp, _sys_tree_h_unused static)
#define RB_PROTOTYPE_INTERNAL(name, type, field, cmp, attr) \
    attr void name##_RB_INSERT_COLOR(struct name *, struct \
        type *); \
    attr void name##_RB_REMOVE_COLOR(struct name *, struct type *, struct type *);\
    attr struct type *name##_RB_REMOVE(struct name *, struct type *); \
    attr struct type *name##_RB_INSERT(struct name *, struct type *); \
    attr struct type *name##_RB_FIND(struct name *, struct type *); \
    attr struct type *name##_RB_NFIND(struct name *, struct type *); \
    attr struct type *name##_RB_NEXT(struct type *); \
    attr struct type *name##_RB_PREV(struct type *); \
    attr struct type *name##_RB_MINMAX(struct name *, int); \
    \

/* Main rb operation.
 * Moves node close to the key of elm to top
 */
#define RB_GENERATE(name, type, field, cmp) \
    RB_GENERATE_INTERNAL(name, type, field, cmp,)
#define RB_GENERATE_STATIC(name, type, field, cmp) \
    RB_GENERATE_INTERNAL(name, type, field, cmp, _sys_tree_h_unused static)
#define RB_GENERATE_INTERNAL(name, type, field, cmp, attr) \
    attr void \
    name##_RB_INSERT_COLOR(struct name *head, struct type *elm) \
    { \
        struct type \
        *parent, *gparent, *tmp; \
        while ((parent = RB_PARENT(elm, field)) != NULL && \
            RB_COLOR(parent, field) == RB_RED) { \
            gparent = RB_PARENT(parent, field); \
            if (parent == RB_LEFT(gparent, field)) { \
                tmp = RB_RIGHT(gparent, field); \
                if (tmp && RB_COLOR(tmp, field) == RB_RED) { \
                    RB_COLOR(tmp, field) = RB_BLACK; \
                    RB_SET_BLACKRED(parent, gparent, field);\
                    elm = gparent; \

```

```

        continue; \
    } \
    if (RB_RIGHT(parent, field) == elm) { \
        RB_ROTATE_LEFT(head, parent, tmp, field);\
        tmp = parent; \
        parent = elm; \
        elm = tmp; \
    } \
    RB_SET_BLACKRED(parent, gparent, field); \
    RB_ROTATE_RIGHT(head, gparent, tmp, field); \
} else { \
    tmp = RB_LEFT(gparent, field); \
    if (tmp && RB_COLOR(tmp, field) == RB_RED) { \
        RB_COLOR(tmp, field) = RB_BLACK; \
        RB_SET_BLACKRED(parent, gparent, field);\
        elm = gparent; \
        continue; \
    } \
    if (RB_LEFT(parent, field) == elm)
{ \
    RB_ROTATE_RIGHT(head, parent, tmp, field);\
    tmp = parent; \
    parent = elm; \
    elm = tmp; \
} \
    RB_SET_BLACKRED(parent, gparent, field); \
    RB_ROTATE_LEFT(head, gparent, tmp, field); \
} \
} \
RB_COLOR(head->rbh_root, field) = RB_BLACK; \
} \
\
attr void \
name##_RB_REMOVE_COLOR(struct name *head, struct type *parent, struct type *elm) \
{ \
    struct type *tmp; \
    while ((elm == NULL || RB_COLOR(elm, field) == RB_BLACK) && \
        elm != RB_ROOT(head)) { \
        if (RB_LEFT(parent, field) == elm) { \
            tmp = RB_RIGHT(parent, field); \
            if (RB_COLOR(tmp, field) == RB_RED) { \
                RB_SET_BLACKRED(tmp, parent, field); \
                RB_ROTATE_LEFT(head, parent, tmp, field);\
                tmp = RB_RIGHT(parent, field); \
            } \
            if ((RB_LEFT(tmp, field) == NULL || \
                RB_COLOR(RB_LEFT(tmp, field), field) == RB_BLACK) && \
                (RB_RIGHT(tmp, field) == NULL || \

```

```

        RB_COLOR(RB_RIGHT(tmp,
field), field) == RB_BLACK)) {\
    RB_COLOR(tmp, field) = RB_RED; \
    elm = parent; \
    parent = RB_PARENT(elm, field); \
} else { \
    if (RB_RIGHT(tmp, field) == NULL || \
        RB_COLOR(RB_RIGHT(tmp, field), field) == RB_BLACK) {\
        struct type *oleft; \
        if ((oleft = RB_LEFT(tmp, field)) \
            != NULL) \
            RB_COLOR(oleft, field) = RB_BLACK;\
        RB_COLOR(tmp, field) = RB_RED; \
        RB_ROTATE_RIGHT(head, tmp, oleft, field);\
        tmp = RB_RIGHT(parent, field); \
    } \
    RB_COLOR(tmp, field) = RB_COLOR(parent, field);\
    RB_COLOR(parent, field) = RB_BLACK; \
    if (RB_RIGHT(tmp, field)) \
        RB_COLOR(RB_RIGHT(tmp, field), field) = RB_BLACK;\
    RB_ROTATE_LEFT(head, parent, tmp, field);\
    elm = RB_ROOT(head); \
    break; \
} \
} else { \
    tmp = RB_LEFT(parent, field); \
    if (RB_COLOR(tmp, field) == RB_RED) { \
        RB_SET_BLACKRED(tmp, parent, field); \
        RB_ROTATE_RIGHT(head, parent, tmp, field);\
        tmp
= RB_LEFT(parent, field); \
    } \
    if ((RB_LEFT(tmp, field) == NULL || \
        RB_COLOR(RB_LEFT(tmp, field), field) == RB_BLACK) &&\
        (RB_RIGHT(tmp, field) == NULL || \
        RB_COLOR(RB_RIGHT(tmp, field), field) == RB_BLACK)) {\
        RB_COLOR(tmp, field) = RB_RED; \
        elm = parent; \
        parent = RB_PARENT(elm, field); \
    } else { \
        if (RB_LEFT(tmp, field) == NULL || \
            RB_COLOR(RB_LEFT(tmp, field), field) == RB_BLACK) {\
            struct type *oright; \
            if ((oright = RB_RIGHT(tmp, field)) \
                != NULL) \
                RB_COLOR(oright, field) = RB_BLACK;\
            RB_COLOR(tmp, field) = RB_RED; \
            RB_ROTATE_LEFT(head, tmp, oright, field);\

```

```

    tmp = RB_LEFT(parent, field); \
} \
RB_COLOR(tmp, field) = RB_COLOR(parent, field);\
RB_COLOR(parent, field) = RB_BLACK; \
if (RB_LEFT(tmp, field)) \
    RB_COLOR(RB_LEFT(tmp, field), field) = RB_BLACK;\
RB_ROTATE_RIGHT(head, parent, tmp, field);\
elm = RB_ROOT(head); \
break; \
} \
} \
} \
if
(elm) \
    RB_COLOR(elm, field) = RB_BLACK; \
} \
\
attr struct type * \
name##_RB_REMOVE(struct name *head, struct type *elm) \
{ \
    struct type *child, *parent, *old = elm; \
    int color; \
    if (RB_LEFT(elm, field) == NULL) \
        child = RB_RIGHT(elm, field); \
    else if (RB_RIGHT(elm, field) == NULL) \
        child = RB_LEFT(elm, field); \
    else { \
        struct type *left; \
        elm = RB_RIGHT(elm, field); \
        while ((left = RB_LEFT(elm, field)) != NULL) \
            elm = left; \
        child = RB_RIGHT(elm, field); \
        parent = RB_PARENT(elm, field); \
        color = RB_COLOR(elm, field); \
        if (child) \
            RB_PARENT(child, field) = parent; \
        if (parent) { \
            if (RB_LEFT(parent, field) == elm) \
                RB_LEFT(parent, field) = child; \
            else \
                RB_RIGHT(parent, field) = child; \
            RB_AUGMENT(parent); \
        } else \
            RB_ROOT(head)
= child; \
    if (RB_PARENT(elm, field) == old) \
        parent = elm; \
    (elm)->field = (old)->field; \
}

```

```

if (RB_PARENT(old, field)) { \
    if (RB_LEFT(RB_PARENT(old, field), field) == old)\
        RB_LEFT(RB_PARENT(old, field), field) = elm;\
    else \
        RB_RIGHT(RB_PARENT(old, field), field) = elm;\
    RB_AUGMENT(RB_PARENT(old, field)); \
} else \
    RB_ROOT(head) = elm; \
RB_PARENT(RB_LEFT(old, field), field) = elm; \
if (RB_RIGHT(old, field)) \
    RB_PARENT(RB_RIGHT(old, field), field) = elm; \
if (parent) { \
    left = parent; \
    do { \
        RB_AUGMENT(left); \
    } while ((left = RB_PARENT(left, field)) != NULL); \
} \
goto color; \
} \
parent = RB_PARENT(elm, field); \
color = RB_COLOR(elm, field); \
if (child) \
    RB_PARENT(child, field) = parent; \
if (parent) { \
    if (RB_LEFT(parent, field) == elm) \
        RB_LEFT(parent, field) = child; \
    else \
        RB_RIGHT(parent, field) = child; \
    RB_AUGMENT(parent); \
} else \
    RB_ROOT(head) = child; \
color: \
if (color == RB_BLACK) \
    name##_RB_REMOVE_COLOR(head, parent, child); \
return (old); \
} \
\
/* Inserts a node into the RB tree */ \
attr struct type * \
name##_RB_INSERT(struct name *head, struct type *elm) \
{ \
    struct type *tmp; \
    struct type *parent = NULL; \
    int comp = 0; \
    tmp = RB_ROOT(head); \
    while (tmp) { \
        parent = tmp; \

```

```

    comp = (cmp)(elm, parent); \
    if (comp < 0) \
        tmp = RB_LEFT(tmp, field); \
    else if (comp > 0) \
        tmp = RB_RIGHT(tmp, field); \
    else \
        return (tmp); \
} \
RB_SET(elm, parent, field); \
if (parent != NULL) { \
    if (comp < 0) \
        RB_LEFT(parent, field) = elm; \
    else \
        RB_RIGHT(parent, field) = elm; \
    RB_AUGMENT(parent); \
} else \
    RB_ROOT(head) = elm; \
name##_RB_INSERT_COLOR(head, \
elm); \
return (NULL); \
} \
\
/* Finds the node with the same key as elm */ \
attr struct type * \
name##_RB_FIND(struct name *head, struct type *elm) \
{ \
    struct type *tmp = RB_ROOT(head); \
    int comp; \
    while (tmp) { \
        comp = cmp(elm, tmp); \
        if (comp < 0) \
            tmp = RB_LEFT(tmp, field); \
        else if (comp > 0) \
            tmp = RB_RIGHT(tmp, field); \
        else \
            return (tmp); \
    } \
    return (NULL); \
} \
\
/* Finds the first node greater than or equal to the search key */ \
attr struct type * \
name##_RB_NFIND(struct name *head, struct type *elm) \
{ \
    struct type *tmp = RB_ROOT(head); \
    struct type *res = NULL; \
    int comp; \
    while (tmp) { \

```

```

comp = cmp(elm, tmp); \
if (comp < 0) { \
    res = tmp; \
    tmp = RB_LEFT(tmp, field); \
} \
else if (comp > 0) \
    tmp =
RB_RIGHT(tmp, field); \
else \
    return (tmp); \
} \
return (res); \
} \
\
/* ARGSUSED */ \
attr struct type * \
name##_RB_NEXT(struct type *elm) \
{ \
    if (RB_RIGHT(elm, field)) { \
        elm = RB_RIGHT(elm, field); \
        while (RB_LEFT(elm, field)) \
            elm = RB_LEFT(elm, field); \
    } else { \
        if (RB_PARENT(elm, field) && \
            (elm == RB_LEFT(RB_PARENT(elm, field), field))) \
            elm = RB_PARENT(elm, field); \
        else { \
            while (RB_PARENT(elm, field) && \
                (elm == RB_RIGHT(RB_PARENT(elm, field), field))) \
                elm = RB_PARENT(elm, field); \
            elm = RB_PARENT(elm, field); \
        } \
    } \
    return (elm); \
} \
\
/* ARGSUSED */ \
attr struct type * \
name##_RB_PREV(struct type *elm) \
{ \
    if (RB_LEFT(elm, field)) { \
        elm = RB_LEFT(elm, field); \
        while (RB_RIGHT(elm, field)) \
            elm = RB_RIGHT(elm, field); \
    } \
    else { \
        if (RB_PARENT(elm, field) && \
            (elm == RB_RIGHT(RB_PARENT(elm, field), field))) \

```



```

    elm = RB_PARENT(elm, field); \
else { \
    while (RB_PARENT(elm, field) && \
        (elm == RB_LEFT(RB_PARENT(elm, field), field)))\
        elm = RB_PARENT(elm, field); \
    elm = RB_PARENT(elm, field); \
} \
} \
return (elm); \
} \
\
attr struct type * \
name##_RB_MINMAX(struct name *head, int val) \
{ \
    struct type *tmp = RB_ROOT(head); \
    struct type *parent = NULL; \
    while (tmp) { \
        parent = tmp; \
        if (val < 0) \
            tmp = RB_LEFT(tmp, field); \
        else \
            tmp = RB_RIGHT(tmp, field); \
    } \
    return (parent); \
}

#define RB_NEGINF -1
#define RB_INF 1

#define RB_INSERT(name, x, y) name##_RB_INSERT(x, y)
#define RB_REMOVE(name, x, y) name##_RB_REMOVE(x, y)
#define RB_FIND(name, x, y) name##_RB_FIND(x, y)
#define RB_NFIND(name, x, y) name##_RB_NFIND(x, y)
#define RB_NEXT(name, x, y) name##_RB_NEXT(y)
#define RB_PREV(name, x, y) name##_RB_PREV(y)
#define RB_MIN(name, x) name##_RB_MINMAX(x, RB_NEGINF)
#define RB_MAX(name, x) name##_RB_MINMAX(x, RB_INF)

#define RB_FOREACH(x, name, head) \
    for ((x) = RB_MIN(name, head); \
        (x) != NULL; \
        (x) = name##_RB_NEXT(x))

#define RB_FOREACH_FROM(x, name, y) \
    for ((x) = (y); \
        ((x) != NULL) && ((y) = name##_RB_NEXT(x), (x) != NULL); \
        (x) = (y))

```

```

#define RB_FOREACH_SAFE(x, name, head, y) \
for ((x) = RB_MIN(name, head); \
     ((x) != NULL) && ((y) = name##_RB_NEXT(x), (x) != NULL); \
     (x) = (y))

#define RB_FOREACH_REVERSE(x, name, head) \
for ((x) = RB_MAX(name, head); \
     (x) != NULL; \
     (x) = name##_RB_PREV(x))

#define RB_FOREACH_REVERSE_FROM(x, name, y) \
for ((x) = (y); \
     ((x) != NULL) && ((y) = name##_RB_PREV(x), (x) != NULL); \
     (x) = (y))

#define RB_FOREACH_REVERSE_SAFE(x, name, \
head, y) \
for ((x) = RB_MAX(name, head); \
     ((x) != NULL) && ((y) = name##_RB_PREV(x), (x) != NULL); \
     (x) = (y))

#endif /* _SYS_TREE_H_ */
# Contributor: Wen Heping <wenhepingalpine@sohu.com>
# Maintainer: Wen Heping <wenhepingalpine@sohu.com>
pkgname=perl-software-license
pkgver=0.104007
pkgrel=0
# _pkgreal is used by apkbuild-cpan to find modules at MetaCpan
_pkgreal=Software-License
pkgdesc="packages that provide templated software licenses"
url="https://metacpan.org/release/Software-License/"
arch="noarch"
license="GPL-1.0-or-later OR Artistic-1.0-Perl"
depends="perl perl-data-section perl-text-template"
checkdepends="perl-try-tiny"
subpackages="$pkgname-doc"
source="https://cpan.metacpan.org/authors/id/L/LE/LEONT/Software-License-$pkgver.tar.gz"
builddir="$srcdir/${_pkgreal}-${pkgver}"

build() {
export CFLAGS=$(perl -MConfig -E 'say $Config{ccflags}')
PERL_MM_USE_DEFAULT=1 perl -I. Makefile.PL \
INSTALLDIRS=vendor \
NO_PACKLIST=1 \
NO_PERLLOCAL=1
make
}

```

```
check() {
  export CFLAGS=$(perl -MConfig -E 'say $Config{ccflags}')
  make test
}
```

```
package() {
  make DESTDIR="$pkgdir" install
}
```

```
sha512sums="
12d75e9583b3013d9b4a282467f1ac80ab6b7f3251926d66591d01404489b528f22adc396dfd4528a0f0ca650f0eed6d
9c959e69eace2169c6ed1cffe5277e4
Software-License-0.104007.tar.gz
"
(The MIT License)
```

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Contributor: Dhruvin Gandhi <contact@dhruvin.me>

Maintainer: Patrycja Rosa <alpine@ptrcnull.me>

pkgname=py3-license-expression

_pkgname=license_expression

pkgver=30.4.4

pkgrel=0

pkgdesc="Library to parse, compare, simplify and normalize license expressions"

url="https://github.com/nexB/license-expression"

arch="noarch"

license="Apache-2.0"

```

depends="python3 py3-boolean.py"
makedepends="py3-setuptools py3-setuptools_scm py3-gpep517 py3-wheel"
checkdepends="py3-pytest py3-pytest-xdist"
subpackages="$pkgname-pyc"
source="https://files.pythonhosted.org/packages/source/l/${_pkgname}/${_pkgname}-${pkgver}.tar.gz"
builddir="$srcdir/${_pkgname}-${pkgver}"

build() {
    gpep517 build-wheel \
        --wheel-dir .dist \
        --output-fd 3 3>&1 >&2
}

check() {
    python3 -m venv --clear --without-pip --system-site-packages .testenv
    .testenv/bin/python3 -m installer .dist/*.whl
    .testenv/bin/python3 -m pytest
}

package() {
    python3 -m installer -d "$pkgdir" \
        .dist/*.whl
}

sha512sums="
f46dd4cf524b3962115fe26f5545bfdd6767275b482724af51e7ca07da79244969a3bfc5d2fd5b95bc0f19d1b95a26a8f3
ab36c676e56ec302178d7166588066
    license_expression-30.4.4.tar.gz
"

```

1.271 lumberjack 2.2.1

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1.272 grpc-go 1.56.3

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1.273 jaraco.context 5.3.0

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1.274 rcrowley-go-metrics 0.0.0-20250401214520-65e299d6c5c9

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1.275 jsonreference 0.19.6

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1.276 sirikothe-gotextfsm 1.1.0

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1.277 simpleclient-common 0.16.0

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Manifest-Version: 1.0

Bnd-LastModified: 1655327905690

Build-Jdk: 11.0.15

Built-By: fabian

Bundle-Description: Common code used by various modules of the Simpleclient.

Bundle-License: <http://www.apache.org/licenses/LICENSE-2.0.txt>

Bundle-ManifestVersion: 2

Bundle-Name: Prometheus Java Simpleclient Common

Bundle-SymbolicName: io.prometheus.simpleclient_common

Bundle-Version: 0.16.0

Created-By: Apache Maven Bundle Plugin

Export-Package: io.prometheus.client.exporter.common;uses="io.prometheus.client";version="0.16.0"

Import-Package: io.prometheus.client;version="[0.16,1)",io.prometheus.client.exemplars;version="[0.16,1)"

Tool: Bnd-2.1.0.20130426-122213

Found in path(s):

* /simpleclient-common-0-16-0-2-jar/META-INF/MANIFEST.MF

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Found in path(s):

* /simpleclient-common-0-16-0-2-jar/META-INF/maven/io.prometheus/simpleclient_common/pom.xml

1.278 skalibs-libs 2.14.4.0-r0

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1.279 bcel 6.7.0

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1.280 jakarta-servlet-api 6.0.0

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/jakarta-servlet-api-6-0-0-jar/jakarta/servlet/annotation/ServletSecurity\$TransportGuarantee.class: binary file matches

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- * /jakarta-servlet-api-6-0-0-jar/jakarta/servlet/resources/web-jsptaglibrary_1_2.dtd
- * /jakarta-servlet-api-6-0-0-jar/jakarta/servlet/resources/web-jsptaglibrary_1_1.dtd

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- * /jakarta-servlet-api-6-0-0-jar/jakarta/servlet/resources/web-app_3_1.xsd
- * /jakarta-servlet-api-6-0-0-jar/jakarta/servlet/resources/jsp_2_1.xsd
- *
- /jakarta-servlet-api-6-0-0-jar/jakarta/servlet/resources/javaee_web_services_client_1_3.xsd
- * /jakarta-servlet-api-6-0-0-jar/jakarta/servlet/resources/jsp_2_3.xsd
- * /jakarta-servlet-api-6-0-0-jar/jakarta/servlet/resources/web-fragment_4_0.xsd
- * /jakarta-servlet-api-6-0-0-jar/jakarta/servlet/resources/javaee_5.xsd
- * /jakarta-servlet-api-6-0-0-jar/jakarta/servlet/resources/javaee_web_services_client_1_4.xsd
- * /jakarta-servlet-api-6-0-0-jar/jakarta/servlet/resources/javaee_web_services_1_4.xsd
- * /jakarta-servlet-api-6-0-0-jar/jakarta/servlet/resources/web-jsptaglibrary_2_0.xsd
- * /jakarta-servlet-api-6-0-0-jar/jakarta/servlet/resources/javaee_web_services_client_1_2.xsd
- * /jakarta-servlet-api-6-0-0-jar/jakarta/servlet/resources/javaee_web_services_1_2.xsd
- * /jakarta-servlet-api-6-0-0-jar/jakarta/servlet/resources/web-app_2_5.xsd
- * /jakarta-servlet-api-6-0-0-jar/jakarta/servlet/resources/j2ee_1_4.xsd
- * /jakarta-servlet-api-6-0-0-jar/jakarta/servlet/resources/web-app_3_0.xsd
- *
- /jakarta-servlet-api-6-0-0-jar/jakarta/servlet/resources/web-jsptaglibrary_2_1.xsd
- * /jakarta-servlet-api-6-0-0-jar/jakarta/servlet/resources/javaee_8.xsd

- * /jakarta-servlet-api-6-0-0-jar/jakarta/servlet/resources/web-app_4_0.xsd
- * /jakarta-servlet-api-6-0-0-jar/jakarta/servlet/resources/javaee_7.xsd
- * /jakarta-servlet-api-6-0-0-jar/jakarta/servlet/resources/jsp_2_0.xsd
- * /jakarta-servlet-api-6-0-0-jar/jakarta/servlet/resources/j2ee_web_services_1_1.xsd
- * /jakarta-servlet-api-6-0-0-jar/jakarta/servlet/resources/javaee_web_services_1_3.xsd
- * /jakarta-servlet-api-6-0-0-jar/jakarta/servlet/resources/web-common_3_0.xsd
- * /jakarta-servlet-api-6-0-0-jar/jakarta/servlet/resources/web-app_2_4.xsd
- * /jakarta-servlet-api-6-0-0-jar/jakarta/servlet/resources/javaee_6.xsd
- * /jakarta-servlet-api-6-0-0-jar/jakarta/servlet/resources/web-common_4_0.xsd
- * /jakarta-servlet-api-6-0-0-jar/jakarta/servlet/resources/jsp_2_2.xsd
- * /jakarta-servlet-api-6-0-0-jar/jakarta/servlet/resources/j2ee_web_services_client_1_1.xsd
- *

/jakarta-servlet-api-6-0-0-jar/jakarta/servlet/resources/web-fragment_3_0.xsd
 * /jakarta-servlet-api-6-0-0-jar/jakarta/servlet/resources/web-common_3_1.xsd

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 <xsd:enumeration value="CONFIDENTIAL"/>

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* /jakarta-servlet-api-6-0-0-jar/jakarta/servlet/resources/web-app_6_0.xsd

* /jakarta-servlet-api-6-0-0-jar/jakarta/servlet/resources/jakartaee_10.xsd

* /jakarta-servlet-api-6-0-0-jar/jakarta/servlet/resources/jakartaee_web_services_client_2_0.xsd

* /jakarta-servlet-api-6-0-0-jar/jakarta/servlet/resources/jsp_3_1.xsd

* /jakarta-servlet-api-6-0-0-jar/jakarta/servlet/resources/jakartaee_web_services_2_0.xsd

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CONFIDENTIAL. NONE means that the application does not

changed in transit. CONFIDENTIAL means that the application

CONFIDENTIAL flag will indicate that the use of SSL is

<xsd:enumeration value="CONFIDENTIAL"/>

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* /jakarta-servlet-api-6-0-0-jar/jakarta/servlet/http/LocalStrings_fr.properties

* /jakarta-servlet-api-6-0-0-jar/jakarta/servlet/http/LocalStrings_ja.properties

* /jakarta-servlet-api-6-0-0-jar/jakarta/servlet/http/LocalStrings_es.properties

* /jakarta-servlet-api-6-0-0-jar/jakarta/servlet/LocalStrings_fr.properties

* /jakarta-servlet-api-6-0-0-jar/jakarta/servlet/http/LocalStrings.properties

* /jakarta-servlet-api-6-0-0-jar/jakarta/servlet/LocalStrings.properties

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* /jakarta-servlet-api-6-0-0-jar/jakarta/servlet/resources/jsp_3_0.xsd

* /jakarta-servlet-api-6-0-0-jar/jakarta/servlet/resources/web-fragment_5_0.xsd

* /jakarta-servlet-api-6-0-0-jar/jakarta/servlet/resources/web-app_5_0.xsd

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Manifest-Version: 1.0

Created-By: Apache Maven Bundle Plugin

Build-Jdk-Spec: 11

Bnd-LastModified: 1652339954197

Build-Jdk: 11.0.2

Built-By: jenkins

Bundle-Description: Jakarta Servlet 6.0

Bundle-DocURL: <https://www.eclipse.org>

Bundle-License: <http://www.eclipse.org/legal/epl-2.0>, <https://www.gnu.org/software/classpath/license.html>

Bundle-ManifestVersion: 2

Bundle-Name: Jakarta Servlet

Bundle-SymbolicName: jakarta.servlet-api

Bundle-Vendor: Eclipse Foundation

Bundle-Version: 6.0.0

Export-Package: jakarta.servlet;uses:="jakarta.servlet.annotation,jakarta.servlet.descriptor";version="6.0.0",jakarta.servlet.annotation;uses:="jakarta.servlet";version="6.0.0",jakarta.servlet.descriptor;version="6.0.0",jakarta.servlet.http;uses:="jakarta.servlet";version="6.0.0",jakarta.servlet.resources;version="6.0.0"

Extension-Name: jakarta.servlet
Implementation-Vendor: Eclipse Foundation
Implementation-Vendor-Id: org.eclipse
Implementation-Version:
6.0.0
Import-Package: jakarta.servlet,jakarta.servlet.annotation,jakarta.servl
et.descriptor
Require-Capability: osgi.ee;filter="(&(osgi.ee=JavaSE)(version=11))"
Specification-Vendor: Eclipse Foundation
Specification-Version: 6.0
Tool: Bnd-5.1.1.202006162103

Found in path(s):

* /jakarta-servlet-api-6-0-0-jar/META-INF/MANIFEST.MF

1.281 jinja 3.1.6

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1.282 distlib 0.3.9

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Python was created in the early 1990s by Guido van Rossum at Stichting Mathematisch Centrum (CWI, see <http://www.cwi.nl>) in the Netherlands as a successor of a language called ABC. Guido remains Python's principal author, although it includes many contributions from others.

In 1995, Guido continued his work on Python at the Corporation for National Research Initiatives (CNRI, see <http://www.cnri.reston.va.us>) in Reston, Virginia where he released several versions of the software.

In May 2000, Guido and the Python core development team moved to BeOpen.com to form the BeOpen PythonLabs team. In October of the same year, the PythonLabs team moved to Digital Creations (now Zope Corporation, see <http://www.zope.com>). In 2001, the Python Software Foundation (PSF, see <http://www.python.org/psf/>) was formed, a non-profit organization created specifically to own Python-related Intellectual Property. Zope Corporation is a sponsoring member of the PSF.

All Python releases are Open Source (see <http://www.opensource.org> for the Open Source Definition). Historically, most, but not all, Python releases have also been GPL-compatible; the table below summarizes the various releases.

Release	Derived from	Year	Owner	GPL-compatible? (1)
0.9.0 thru 1.2		1991-1995	CWI	yes
1.3 thru 1.5.2	1.2	1995-1999	CNRI	yes
1.6	1.5.2	2000	CNRI	no
2.0	1.6	2000	BeOpen.com	no
1.6.1	1.6	2001	CNRI	yes (2)
2.1	2.0+1.6.1	2001	PSF	no
2.0.1	2.0+1.6.1	2001	PSF	yes
2.1.1	2.1+2.0.1	2001	PSF	yes
2.2	2.1.1	2001	PSF	yes
2.1.2	2.1.1	2002	PSF	yes
2.1.3				

2.1.2	2002	PSF	yes	
2.2.1	2.2	2002	PSF	yes
2.2.2	2.2.1	2002	PSF	yes
2.2.3	2.2.2	2003	PSF	yes
2.3	2.2.2	2002-2003	PSF	yes
2.3.1	2.3	2002-2003	PSF	yes
2.3.2	2.3.1	2002-2003	PSF	yes
2.3.3	2.3.2	2002-2003	PSF	yes
2.3.4	2.3.3	2004	PSF	yes
2.3.5	2.3.4	2005	PSF	yes
2.4	2.3	2004	PSF	yes
2.4.1	2.4	2005	PSF	yes
2.4.2	2.4.1	2005	PSF	yes
2.4.3	2.4.2	2006	PSF	yes
2.4.4	2.4.3	2006	PSF	yes
2.5	2.4	2006	PSF	yes
2.5.1	2.5	2007	PSF	yes
2.5.2	2.5.1	2008	PSF	yes
2.5.3	2.5.2	2008	PSF	yes
2.6	2.5	2008	PSF	yes
2.6.1	2.6	2008	PSF	yes
2.6.2	2.6.1	2009	PSF	yes
2.6.3	2.6.2	2009	PSF	yes
2.6.4	2.6.3	2009	PSF	yes
2.6.5	2.6.4	2010	PSF	yes
3.0	2.6	2008	PSF	yes
3.0.1	3.0	2009	PSF	yes
3.1	3.0.1	2009	PSF	yes
3.1.1	3.1	2009	PSF	yes
3.1.2	3.1	2010	PSF	yes
3.2	3.1	2010	PSF	yes

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=====
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=====

The Distutils2 project was started by Tarek Ziad and is currently maintained by ric Araujo. Many people have contributed to the project.

distlib has started off using some of the code from distutil2.

If you're making a patch, please add your name below in alphabetical order, and welcome into the Fellowship of the Packaging!

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- Ali Afshar
- David Barnett
- Pior Bastida
- Anthony Baxter
- Erik Bray
- C. Titus Brown
- Francisco Martn Brugu
- Nicolas Cadou
- Godefroid Chapelle
- Julien Courteau
- Christophe Combelles
- Jason R. Coombs
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1.283 inflect 7.3.1

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1.285 msgpack 1.1.0

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1.286 guava 33.4.8-jre

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1.287 utmps 0.1.3.1-r0

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```
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```
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```

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<signature of Ty Coon>, 1 April 1989
Ty Coon, President of Vice
```

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# Automatically generated by apkbuidl-cpan, template 4
# Contributor: Valery Kartel <valery.kartel@gmail.com>
# Maintainer: Celeste <cielesti@protonmail.com>
maintainer="Celeste <cielesti@protonmail.com>"
pkgname=perl-bsd-resource
pkgver=1.2911
pkgrel=10
#_pkgreal is used by apkbuidl-cpan to find modules at MetaCpan
_pkgreal=BSD-Resource
pkgdesc="Perl extension implements the BSD process resource limit functions"
url="https://metacpan.org/release/BSD-Resource/"
arch="all"
license="Artistic-2.0 OR LGPL-2.0"
depends="perl"
makedepends="perl-dev"
```

```

subpackages="$pkgname-doc"
source="https://cpan.metacpan.org/authors/id/J/JH/JHI/BSD-Resource-$pkgver.tar.gz"
builddir="$srcdir/$_pkgreal-$pkgver"

build() {
    export CFLAGS=$(perl -MConfig -E 'say $Config{ccflags}')
    PERL_MM_USE_DEFAULT=1 perl -I. Makefile.PL \
        INSTALLDIRS=vendor \
        NO_PACKLIST=1 \
        NO_PERLLOCAL=1
    make
}

check() {
    export CFLAGS=$(perl -MConfig -E 'say $Config{ccflags}')
    make test
}

package() {
    make DESTDIR="$pkgdir" install
}

sha512sums="
d0032d41c7c0468ed1c6d8f57b885f6cb97a5039d754c8cb60b2067daedaf53bd15fb6561a3d0f828df16dfa5417f663b
8065ba65f4fea16dc9262728b3b6b85
    BSD-Resource-1.2911.tar.gz
"

# Contributor: Maxim Karasev <begs@disroot.org>
# Maintainer: mio <miyopan@e.email>
pkgname=bsd-games
pkgver=3.3
pkgrel=2
pkgdesc="traditional text mode games from BSD"
url="https://bsd-games.sourceforge.io/"
arch="all"
license="BSD-3-Clause"
install="$pkgname.post-install"
makedepends="ncurses-dev coreutils" # configure causes busybox expr error
subpackages="$pkgname-doc"
source="https://sourceforge.net/projects/bsd-games/files/bsd-games-$pkgver.tar.gz
0001-bsd-games-scores-dir.patch
"

options="!check" # no tests

build() {
    # some GNU autoconf options are ignored, but it works
    ./configure \
        --build=$CBUILD \

```

```

--host=$CHOST \
--prefix=/usr \
--sysconfdir=/etc \
--mandir=/usr/share/man \
--scoaredir=/usr/share/$pkgname
make
}

package() {
make DESTDIR="$pkgdir" install
install -Dm644 LICENSE "$pkgdir"/usr/share/licenses/bsd-games/LICENSE
}

sha512sums="
aaf36d09d4fe68514a5c279063d7e77a9a9a84c447037cba974b29faa07eb80c2aab2379d0699c196b5c27ffe1b2bb2c6
8d3390143e0e62d5e3d210ccfb61294
    bsd-games-3.3.tar.gz
e1def0d4835a877242c4173fae862e278a7858738e0bacacbb045a42bcabec2aa7c72d000bbd2421ce35fe66cdc1f52c0
577b7e278029ca5ed50f7aab22319f6 0001-bsd-games-scores-dir.patch
"

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Maintainer: Natanael Copa <ncopa@alpinelinux.org>

pkgname=libart-lgpl

pkgver=2.3.21

pkgrel=8

pkgdesc="A library for high-performance 2D graphics"

url="https://www.levien.com/libart/"

```

arch="all"
options="!check" # No test suite.
license="GPL-2.0-or-later"
subpackages="$pkgname-dev"
source="https://download.gnome.org/sources/libart_lgpl/2.3/libart_lgpl-$pkgver.tar.bz2"
"

builddir="$srcdir"/libart_lgpl-$pkgver

prepare() {
    update_config_sub
    default_prepare
}

build() {
    ./configure \
        --build=$CBUILD \
        --host=$CHOST \
        --prefix=/usr
    make
}

package() {
    make DESTDIR="$pkgdir" install
}

sha512sums="8a632a6a4da59e5e8c02ec2f5a57e36d182b325b46513765425e5f171ff9ae326af1b133725beba28f7e7
6654309e001aee9bace727b5b4c8589405256a3c020 libart_lgpl-2.3.21.tar.bz2"
mini_sendmail - accept email on behalf of real sendmail

```

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Contributor: Carlo Landmeter <clandmeter@alpinelinux.org>

Maintainer: Kevin Daudt <kdaudt@alpinelinux.org>

pkgname=spdx-licenses

pkgver=3.26.0

pkgrel=0

pkgdesc="Various data formats for the SPDX License List"

url="https://spdx.org/"

arch="noarch"

options="!check" # no test suite

license="CC-BY-3.0"

source="license-list-data-\$pkgver.tar.gz::https://github.com/spdx/license-list-data/archive/v\$pkgver.tar.gz"

builddir="\$srcdir/license-list-data-\$pkgver"

subpackages="\$pkgname-list"

_types="html json rdfa rdfnt rdfturtle rdfxml template text"

for type in \$_types; do

subpackages="\$subpackages \$pkgname-\$type:_subpkg"

done

package() {

mkdir -p "\$pkgdir"

}

_subpkg() {

local type=\${subpkgname/\$pkgname-/}

pkgdesc="\$pkgdesc (\$type)"

install_if="\$pkgname=\$pkgver-r\$pkgrel"

mkdir -p "\$subpkgdir"/usr/share/spdx

cp -r "\$builddir"/\$type "\$subpkgdir"/usr/share/spdx/

}

list() {

pkgdesc="\$pkgdesc (licence list)"

mkdir -p "\$subpkgdir"/usr/share/spdx

local i; for i in "\$builddir"/text/*.txt;

do

local license=\${i##*/}

echo \${license%.*} >> "\$subpkgdir"/usr/share/spdx/license.lst

done

}

```

sha512sums="
67e618d4642dfe4f366935d9514d6f7941d3711e77c49bc1b340ac572d36015981b8f10c72a9f80f1d83e132ae7e5093c
0155e0c0e786e4777ee16d1cb7b885a license-list-data-3.26.0.tar.gz
"

# Contributor: Patrycja Rosa <alpine@ptrcnull.me>
# Maintainer: Patrycja Rosa <alpine@ptrcnull.me>
pkgname=bsd-compat-headers
pkgver=0.7.2
pkgrel=6
pkgdesc="BSD compatibility headers (cdefs, queue, tree)"
url="https://gitlab.alpinelinux.org/alpine/aports"
arch="noarch"
license="BSD-2-Clause AND BSD-3-Clause"
source="
cdefs.h
queue.h
tree.h
"

builddir="$srcdir"
options="!check" # just headers

package() {
    mkdir -p "$pkgdir"
    install -Dm644 -t "$pkgdir"/usr/include/sys \
        cdefs.h queue.h tree.h
}

sha512sums="
37c8fc73c7aea7b490f7850927e2bb91d12137c9e59e22c084146d515696dbc7973b5de92f4c987ba080dd2502ba8312
7006442c3f019b6447a620cae73178 cdefs.h
2f0d5e6e4dc3350285cf17009265dddcbe12431c111868eea39bc8cb038ab7c1f2acacbb21735c4e9d4a1fd106a8fc0f86
11ea33987d4faba37dde5ce6da0750 queue.h
d9ac210d81feb8ad2655bc80fb065d3fe20ae4417b32b4a1711e6738a4870140005c13373b5d1846ef3ce5ae6da45f2da
cef2092881eded0a2e94f6a07752ef3 tree.h
"

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```

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The Kohonen neural network code for color optimization was written by Anthony Dekker.

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The X-Spline code was written Carole Blanc (blanc@labri.u-bordeaux.fr) and Christophe Schlick (schlick@labri.u-bordeaux.fr) starting from an initial implementation done by C. Feuille, S. Grosbois, L. Maziere and L. Minihot as a student practice (Universite Bordeaux, France). For additional information about X-splines, see:

"X-Splines: A Spline Model Designed for the End User" by C. Blanc and C. Schlick, Proceedings of SIGGRAPH'95

<http://dept-info.labri.u-bordeaux.fr/~schlick/DOC/sig1.html>

Contributor: Dhruvin Gandhi <contact@dhruvin>

Maintainer: Patrycja Rosa <alpine@ptrcnull.me>

pkgname=py3-license-expression

_pkgname=license_expression

pkgver=30.4.1

pkgrel=0

pkgdesc="Library to parse, compare, simplify and normalize license expressions"

url="https://github.com/nexB/license-expression"

arch="noarch"

license="Apache-2.0"

depends="python3 py3-boolean.py"

makedepends="py3-setuptools py3-setuptools_scm py3-gpep517 py3-wheel"

checkdepends="py3-pytest py3-pytest-xdist"

subpackages="\$pkgname-pyc"

source="https://files.pythonhosted.org/packages/source/l/_pkgname/_pkgname-\$pkgver.tar.gz"

builddir="\$srcdir/\$pkgname-\$pkgver"

```
build() {
    gpep517 build-wheel \
        --wheel-dir .dist \
        --output-fd 3 3>&1 >&2
}
```

```
check() {
    python3 -m venv --clear --without-pip --system-site-packages .testenv
    .testenv/bin/python3 -m installer .dist/*.whl
    .testenv/bin/python3 -m pytest
}
```

```
package() {
    python3 -m installer -d "$pkgdir" \
        .dist/*.whl
}
```



```

sha512sums="
114c630f098939757e49187e35b4e54883266a2ee9ca283724992420ef4c860f9606a8342da0ab74d93627c10805f312
fda3f699cbc7c4fbd47a71e220440fb0
license_expression-30.4.1.tar.gz
"
/* $NetBSD: queue.h,v 1.70 2015/11/02 15:21:23 christos Exp $ */

/*
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 *
 * @(#)queue.h 8.5 (Berkeley) 8/20/94
 */

#ifndef _SYS_QUEUE_H_
#define _SYS_QUEUE_H_

/*
 * This file defines five types of data structures: singly-linked lists,
 * lists, simple queues, tail queues, and circular queues.
 *
 * A singly-linked list is headed by a single forward pointer. The

```

- * elements are singly linked for minimum space and pointer manipulation
- * overhead at the expense of $O(n)$ removal for arbitrary elements. New
- * elements can be added to the list after an existing element or at the
- * head of the list. Elements being removed from the head of the list
- * should use the explicit macro for this purpose for optimum
- * efficiency. A singly-linked list may only be traversed in the forward
- * direction. Singly-linked lists are ideal for applications with large
- * datasets and few or no removals or for implementing a LIFO queue.
- *
- * A list is headed by a single forward pointer (or an array of forward
- * pointers for a hash table header). The elements are doubly linked
- * so that an arbitrary element can be removed without a need to
- * traverse the list. New elements can be added to the list before
- * or after an existing element or at the head of the list. A list
- * may only be traversed in the forward direction.
- *
- * A simple queue is headed by a pair of pointers, one the head of the
- * list and the
- other to the tail of the list. The elements are singly
- * linked to save space, so elements can only be removed from the
- * head of the list. New elements can be added to the list after
- * an existing element, at the head of the list, or at the end of the
- * list. A simple queue may only be traversed in the forward direction.
- *
- * A tail queue is headed by a pair of pointers, one to the head of the
- * list and the other to the tail of the list. The elements are doubly
- * linked so that an arbitrary element can be removed without a need to
- * traverse the list. New elements can be added to the list before or
- * after an existing element, at the head of the list, or at the end of
- * the list. A tail queue may be traversed in either direction.
- *
- * A circle queue is headed by a pair of pointers, one to the head of the
- * list and the other to the tail of the list. The elements are doubly
- * linked so that an arbitrary element can be removed without a need to
- * traverse the list. New elements
- can be added to the list before or after
- * an existing element, at the head of the list, or at the end of the list.
- * A circle queue may be traversed in either direction, but has a more
- * complex end of list detection.
- *
- * For details on the use of these macros, see the queue(3) manual page.
- */
- /*
- * Include the definition of NULL only on NetBSD because sys/null.h
- * is not available elsewhere. This conditional makes the header
- * portable and it can simply be dropped verbatim into any system.

```

* The caveat is that on other systems some other header
* must provide NULL before the macros can be used.
*/

#ifdef __NetBSD__
#include <sys/null.h>
#endif

#ifdef QUEUEDEBUG
# if defined(_KERNEL)
#  define QUEUEDEBUG_ABORT(...) panic(__VA_ARGS__)
# else
#  include <err.h>
#  define QUEUEDEBUG_ABORT(...) err(1, __VA_ARGS__)
# endif
#endif

/*
* Singly-linked List definitions.
*/

#define SLIST_HEAD(name, type) \
struct name { \
    struct type *slh_first; /* first \
    element */ \
}

#define SLIST_HEAD_INITIALIZER(head) \
{ NULL }

#define SLIST_ENTRY(type) \
struct { \
    struct type *sle_next; /* next element */ \
}

/*
* Singly-linked List access methods.
*/

#define SLIST_FIRST(head) ((head)->slh_first)
#define SLIST_END(head) NULL
#define SLIST_EMPTY(head) ((head)->slh_first == NULL)
#define SLIST_NEXT(elm, field) ((elm)->field.sle_next)

#define SLIST_FOREACH(var, head, field) \
for((var) = (head)->slh_first; \
    (var) != SLIST_END(head); \
    (var) = (var)->field.sle_next)

#define SLIST_FOREACH_SAFE(var, head, field, tvar) \
for ((var) = SLIST_FIRST((head)); \

```

```

    (var) != SLIST_END(head) && \
    ((tvar) = SLIST_NEXT((var), field), 1); \
    (var) = (tvar))

/*
 * Singly-linked List functions.
 */
#define SLIST_INIT(head) do { \
    (head)->slh_first = SLIST_END(head); \
} while (/*CONSTCOND*/0)

#define SLIST_INSERT_AFTER(slistelm, elm, field) do { \
    (elm)->field.sle_next = (slistelm)->field.sle_next; \
    (slistelm)->field.sle_next \
    = (elm); \
} while (/*CONSTCOND*/0)

#define SLIST_INSERT_HEAD(head, elm, field) do { \
    (elm)->field.sle_next = (head)->slh_first; \
    (head)->slh_first = (elm); \
} while (/*CONSTCOND*/0)

#define SLIST_REMOVE_AFTER(slistelm, field) do { \
    (slistelm)->field.sle_next = \
        SLIST_NEXT(SLIST_NEXT((slistelm), field), field); \
} while (/*CONSTCOND*/0)

#define SLIST_REMOVE_HEAD(head, field) do { \
    (head)->slh_first = (head)->slh_first->field.sle_next; \
} while (/*CONSTCOND*/0)

#define SLIST_REMOVE(head, elm, type, field) do { \
    if ((head)->slh_first == (elm)) { \
        SLIST_REMOVE_HEAD((head), field); \
    } \
    else { \
        struct type *curelm = (head)->slh_first; \
        while(curelm->field.sle_next != (elm)) \
            curelm = curelm->field.sle_next; \
        curelm->field.sle_next = \
            curelm->field.sle_next->field.sle_next; \
    } \
} while (/*CONSTCOND*/0)

/*
 * List definitions.

```

```

*/
#define LIST_HEAD(name, type) \
struct name { \
    struct type *lh_first; /* first element */ \
}

#define LIST_HEAD_INITIALIZER(head) \
{ NULL }

#define LIST_ENTRY(type) \
struct { \
    struct type *le_next; /* next element */ \
    struct type **le_prev; /* address of previous next element */ \
}

/*
 * List access methods.
 */
#define LIST_FIRST(head) ((head)->lh_first)
#define LIST_END(head) NULL
#define LIST_EMPTY(head) ((head)->lh_first == LIST_END(head))
#define LIST_NEXT(elm, field) ((elm)->field.le_next)

#define LIST_FOREACH(var, head, field) \
for ((var) = ((head)->lh_first); \
     (var) != LIST_END(head); \
     (var) = ((var)->field.le_next))

#define LIST_FOREACH_SAFE(var, head, field, tvar) \
for ((var) = LIST_FIRST((head)); \
     (var) != LIST_END(head) && \
     ((tvar) = LIST_NEXT((var), field), 1); \
     (var) = (tvar))

#define LIST_MOVE(head1, head2) do { \
    LIST_INIT((head2)); \
    if (!LIST_EMPTY((head1))) \
    { \
        (head2)->lh_first = (head1)->lh_first; \
        LIST_INIT((head1)); \
    } \
} while (/*CONSTCOND*/0)

/*
 * List functions.
 */
#ifdef QUEUEDEBUG
#define QUEUEDEBUG_LIST_INSERT_HEAD(head, elm, field) \

```

```

if ((head)->lh_first && \
    (head)->lh_first->field.le_prev != &(head)->lh_first) \
    QUEUEDEBUG_ABORT("LIST_INSERT_HEAD %p %s:%d", (head), \
        __FILE__, __LINE__);
#define QUEUEDEBUG_LIST_OP(elm, field) \
if ((elm)->field.le_next && \
    (elm)->field.le_next->field.le_prev != \
    &(elm)->field.le_next) \
    QUEUEDEBUG_ABORT("LIST_* forw %p %s:%d", (elm), \
        __FILE__, __LINE__); \
if (*(elm)->field.le_prev != (elm)) \
    QUEUEDEBUG_ABORT("LIST_* back %p %s:%d", (elm), \
        __FILE__, __LINE__);
#define QUEUEDEBUG_LIST_POSTREMOVE(elm, field) \
(elm)->field.le_next = (void *)1L; \
(elm)->field.le_prev = (void *)1L;
#else
#define QUEUEDEBUG_LIST_INSERT_HEAD(head, elm, field)
#define QUEUEDEBUG_LIST_OP(elm,
    field)
#define QUEUEDEBUG_LIST_POSTREMOVE(elm, field)
#endif

#define LIST_INIT(head) do { \
    (head)->lh_first = LIST_END(head); \
} while (/*CONSTCOND*/0)

#define LIST_INSERT_AFTER(listelm, elm, field) do { \
    QUEUEDEBUG_LIST_OP((listelm), field) \
    if (((elm)->field.le_next = (listelm)->field.le_next) != \
        LIST_END(head)) \
        (listelm)->field.le_next->field.le_prev = \
            &(elm)->field.le_next; \
    (listelm)->field.le_next = (elm); \
    (elm)->field.le_prev = &(listelm)->field.le_next; \
} while (/*CONSTCOND*/0)

#define LIST_INSERT_BEFORE(listelm, elm, field) do { \
    QUEUEDEBUG_LIST_OP((listelm), field) \
    (elm)->field.le_prev = (listelm)->field.le_prev; \
    (elm)->field.le_next = (listelm); \
    *(listelm)->field.le_prev = (elm); \
    (listelm)->field.le_prev = &(elm)->field.le_next; \
} while (/*CONSTCOND*/0)

#define LIST_INSERT_HEAD(head, elm, field) do { \
    QUEUEDEBUG_LIST_INSERT_HEAD((head), (elm), field) \
    if (((elm)->field.le_next

```

```

= (head)->lh_first) != LIST_END(head))\
(head)->lh_first->field.le_prev = &(elm)->field.le_next;\
(head)->lh_first = (elm); \
(elm)->field.le_prev = &(head)->lh_first; \
} while (/*CONSTCOND*/0)

#define LIST_REMOVE(elm, field) do { \
    QUEUEDEBUG_LIST_OP((elm), field) \
    if ((elm)->field.le_next != NULL) \
        (elm)->field.le_next->field.le_prev = \
            (elm)->field.le_prev; \
    *(elm)->field.le_prev = (elm)->field.le_next; \
    QUEUEDEBUG_LIST_POSTREMOVE((elm), field) \
} while (/*CONSTCOND*/0)

#define LIST_REPLACE(elm, elm2, field) do { \
    if (((elm2)->field.le_next = (elm)->field.le_next) != NULL) \
        (elm2)->field.le_next->field.le_prev = \
            &(elm2)->field.le_next; \
    (elm2)->field.le_prev = (elm)->field.le_prev; \
    *(elm2)->field.le_prev = (elm2); \
    QUEUEDEBUG_LIST_POSTREMOVE((elm), field) \
} while (/*CONSTCOND*/0)

/*
 * Simple queue definitions.
 */
#define SIMPLEQ_HEAD(name, type) \
struct name { \
    struct \
    type *sqh_first; /* first element */ \
    struct type **sqh_last; /* addr of last next element */ \
}

#define SIMPLEQ_HEAD_INITIALIZER(head) \
{ NULL, &(head).sqh_first }

#define SIMPLEQ_ENTRY(type) \
struct { \
    struct type *sqe_next; /* next element */ \
}

/*
 * Simple queue access methods.
 */
#define SIMPLEQ_FIRST(head) ((head)->sqh_first)
#define SIMPLEQ_END(head) NULL
#define SIMPLEQ_EMPTY(head) ((head)->sqh_first == SIMPLEQ_END(head))

```

```

#define SIMPLEQ_NEXT(elm, field) ((elm)->field.sqe_next)

#define SIMPLEQ_FOREACH(var, head, field) \
for ((var) = ((head)->sqh_first); \
    (var) != SIMPLEQ_END(head); \
    (var) = ((var)->field.sqe_next))

#define SIMPLEQ_FOREACH_SAFE(var, head, field, next) \
for ((var) = ((head)->sqh_first); \
    (var) != SIMPLEQ_END(head) && \
    ((next = ((var)->field.sqe_next)), 1); \
    (var) = (next))

/*
 * Simple queue functions.
 */
#define SIMPLEQ_INIT(head) do { \
    (head)->sqh_first = NULL; \
    (head)->sqh_last \
    = &(head)->sqh_first; \
} while (/*CONSTCOND*/0)

#define SIMPLEQ_INSERT_HEAD(head, elm, field) do { \
    if (((elm)->field.sqe_next = (head)->sqh_first) == NULL) \
    (head)->sqh_last = &(elm)->field.sqe_next; \
    (head)->sqh_first = (elm); \
} while (/*CONSTCOND*/0)

#define SIMPLEQ_INSERT_TAIL(head, elm, field) do { \
    (elm)->field.sqe_next = NULL; \
    *(head)->sqh_last = (elm); \
    (head)->sqh_last = &(elm)->field.sqe_next; \
} while (/*CONSTCOND*/0)

#define SIMPLEQ_INSERT_AFTER(head, listelm, elm, field) do { \
    if (((elm)->field.sqe_next = (listelm)->field.sqe_next) == NULL) \
    (head)->sqh_last = &(elm)->field.sqe_next; \
    (listelm)->field.sqe_next = (elm); \
} while (/*CONSTCOND*/0)

#define SIMPLEQ_REMOVE_HEAD(head, field) do { \
    if (((head)->sqh_first = (head)->sqh_first->field.sqe_next) == NULL) \
    (head)->sqh_last = &(head)->sqh_first; \
} while (/*CONSTCOND*/0)

#define SIMPLEQ_REMOVE_AFTER(head, elm, field) do { \
    if

```



```

(((elm)->field.sqe_next = (elm)->field.sqe_next->field.sqe_next) \
 == NULL) \
(head)->sqh_last = &(elm)->field.sqe_next; \
} while (/*CONSTCOND*/0)

#define SIMPLEQ_REMOVE(head, elm, type, field) do { \
if ((head)->sqh_first == (elm)) { \
SIMPLEQ_REMOVE_HEAD((head), field); \
} else { \
struct type *curelm = (head)->sqh_first; \
while (curelm->field.sqe_next != (elm)) \
curelm = curelm->field.sqe_next; \
if ((curelm->field.sqe_next = \
curelm->field.sqe_next->field.sqe_next) == NULL) \
(head)->sqh_last = &(curelm)->field.sqe_next; \
} \
} while (/*CONSTCOND*/0)

#define SIMPLEQ_CONCAT(head1, head2) do { \
if (!SIMPLEQ_EMPTY((head2))) { \
*(head1)->sqh_last = (head2)->sqh_first; \
(head1)->sqh_last = (head2)->sqh_last; \
SIMPLEQ_INIT((head2)); \
} \
} while (/*CONSTCOND*/0)

#define SIMPLEQ_LAST(head, type, field) \
(SIMPLEQ_EMPTY((head)) ? \
NULL : \
((struct type \
*)(void *) \
((char *)((head)->sqh_last) - offsetof(struct type, field))))

/*
 * Tail queue definitions.
 */
#define _TAILQ_HEAD(name, type, qual) \
struct name { \
qual type *tqh_first; /* first element */ \
qual type *qual *tqh_last; /* addr of last next element */ \
}
#define TAILQ_HEAD(name, type) _TAILQ_HEAD(name, struct type,)

#define TAILQ_HEAD_INITIALIZER(head) \
{ TAILQ_END(head), &(head).tqh_first }

#define _TAILQ_ENTRY(type, qual) \
struct { \

```

```

qual type *tqe_next; /* next element */ \
qual type *qual *tqe_prev; /* address of previous next element */\
}
#define TAILQ_ENTRY(type) _TAILQ_ENTRY(struct type,)

/*
 * Tail queue access methods.
 */
#define TAILQ_FIRST(head) ((head)->tqh_first)
#define TAILQ_END(head) (NULL)
#define TAILQ_NEXT(elm, field) ((elm)->field.tqe_next)
#define TAILQ_LAST(head, headname) \
    (((struct headname *) (void *) ((head)->tqh_last))->tqh_last)
#define TAILQ_PREV(elm, headname, field) \
    (((struct headname *) (void *) ((elm)->field.tqe_prev))->tqh_last)
#define TAILQ_EMPTY(head) (TAILQ_FIRST(head) == TAILQ_END(head))

#define TAILQ_FOREACH(var, head, field) \
    for ((var) = ((head)->tqh_first); \
        (var) != TAILQ_END(head); \
        (var) = ((var)->field.tqe_next))

#define TAILQ_FOREACH_SAFE(var, head, field, next) \
    for ((var) = ((head)->tqh_first); \
        (var) != TAILQ_END(head) && \
        ((next) = TAILQ_NEXT(var, field), 1); (var) = (next))

#define TAILQ_FOREACH_REVERSE(var, head, headname, field) \
    for ((var) = TAILQ_LAST((head), headname); \
        (var) != TAILQ_END(head); \
        (var) = TAILQ_PREV((var), headname, field))

#define TAILQ_FOREACH_REVERSE_SAFE(var, head, headname, field, prev) \
    for ((var) = TAILQ_LAST((head), headname); \
        (var) != TAILQ_END(head) && \
        ((prev) = TAILQ_PREV((var), headname, field), 1); (var) = (prev))

/*
 * Tail queue functions.
 */
#if defined(QUEUEDEBUG)
#define QUEUEDEBUG_TAILQ_INSERT_HEAD(head, \
    elm, field) \
    if ((head)->tqh_first && \
        (head)->tqh_first->field.tqe_prev != &(head)->tqh_first) \
        QUEUEDEBUG_ABORT("TAILQ_INSERT_HEAD %p %s:%d", (head), \

```

```

    __FILE__, __LINE__);
#define QUEUEDEBUG_TAILQ_INSERT_TAIL(head, elm, field) \
    if (*(head)->tqh_last != NULL) \
        QUEUEDEBUG_ABORT("TAILQ_INSERT_TAIL %p %s:%d", (head), \
            __FILE__, __LINE__);
#define QUEUEDEBUG_TAILQ_OP(elm, field) \
    if ((elm)->field.tqe_next && \
        (elm)->field.tqe_next->field.tqe_prev != \
            &(elm)->field.tqe_next) \
        QUEUEDEBUG_ABORT("TAILQ_* forw %p %s:%d", (elm), \
            __FILE__, __LINE__); \
    if (*(elm)->field.tqe_prev != (elm)) \
        QUEUEDEBUG_ABORT("TAILQ_* back %p %s:%d", (elm), \
            __FILE__, __LINE__);
#define QUEUEDEBUG_TAILQ_PREREMOVE(head, elm, field) \
    if ((elm)->field.tqe_next == NULL && \
        (head)->tqh_last != &(elm)->field.tqe_next) \
        QUEUEDEBUG_ABORT("TAILQ_PREREMOVE head %p elm %p %s:%d", \
            (head), (elm), __FILE__, \
            __LINE__);
#define QUEUEDEBUG_TAILQ_POSTREMOVE(elm, field) \
    (elm)->field.tqe_next = (void *)1L; \
    (elm)->field.tqe_prev = (void *)1L;
#else
#define QUEUEDEBUG_TAILQ_INSERT_HEAD(head, elm, field)
#define QUEUEDEBUG_TAILQ_INSERT_TAIL(head, elm, field)
#define QUEUEDEBUG_TAILQ_OP(elm, field)
#define QUEUEDEBUG_TAILQ_PREREMOVE(head, elm, field)
#define QUEUEDEBUG_TAILQ_POSTREMOVE(elm, field)
#endif

#define TAILQ_INIT(head) do { \
    (head)->tqh_first = TAILQ_END(head); \
    (head)->tqh_last = &(head)->tqh_first; \
} while (/*CONSTCOND*/0)

#define TAILQ_INSERT_HEAD(head, elm, field) do { \
    QUEUEDEBUG_TAILQ_INSERT_HEAD((head), (elm), field) \
    if (((elm)->field.tqe_next = (head)->tqh_first) != TAILQ_END(head)) \
        (head)->tqh_first->field.tqe_prev = \
            &(elm)->field.tqe_next; \
    else \
        (head)->tqh_last = &(elm)->field.tqe_next; \
    (head)->tqh_first = (elm); \
    (elm)->field.tqe_prev = &(head)->tqh_first; \
} while (/*CONSTCOND*/0)

#define TAILQ_INSERT_TAIL(head,

```

```

elm, field) do { \
QUEUEDEBUG_TAILQ_INSERT_TAIL((head), (elm), field) \
(elm)->field.tqe_next = TAILQ_END(head); \
(elm)->field.tqe_prev = (head)->tqh_last; \
*(head)->tqh_last = (elm); \
(head)->tqh_last = &(elm)->field.tqe_next; \
} while (/*CONSTCOND*/0)

```

```

#define TAILQ_INSERT_AFTER(head, listelm, elm, field) do { \
QUEUEDEBUG_TAILQ_OP((listelm), field) \
if (((elm)->field.tqe_next = (listelm)->field.tqe_next) != \
TAILQ_END(head)) \
(elm)->field.tqe_next->field.tqe_prev = \
&(elm)->field.tqe_next; \
else \
(head)->tqh_last = &(elm)->field.tqe_next; \
(listelm)->field.tqe_next = (elm); \
(elm)->field.tqe_prev = &(listelm)->field.tqe_next; \
} while (/*CONSTCOND*/0)

```

```

#define TAILQ_INSERT_BEFORE(listelm, elm, field) do { \
QUEUEDEBUG_TAILQ_OP((listelm), field) \
(elm)->field.tqe_prev = (listelm)->field.tqe_prev; \
(elm)->field.tqe_next = (listelm); \
*(listelm)->field.tqe_prev = (elm); \
(listelm)->field.tqe_prev \
= &(elm)->field.tqe_next; \
} while (/*CONSTCOND*/0)

```

```

#define TAILQ_REMOVE(head, elm, field) do { \
QUEUEDEBUG_TAILQ_PREREMOVE((head), (elm), field) \
QUEUEDEBUG_TAILQ_OP((elm), field) \
if (((elm)->field.tqe_next) != TAILQ_END(head)) \
(elm)->field.tqe_next->field.tqe_prev = \
(elm)->field.tqe_prev; \
else \
(head)->tqh_last = (elm)->field.tqe_prev; \
*(elm)->field.tqe_prev = (elm)->field.tqe_next; \
QUEUEDEBUG_TAILQ_POSTREMOVE((elm), field); \
} while (/*CONSTCOND*/0)

```

```

#define TAILQ_REPLACE(head, elm, elm2, field) do { \
if (((elm2)->field.tqe_next = (elm)->field.tqe_next) != \
TAILQ_END(head)) \
(elm2)->field.tqe_next->field.tqe_prev = \
&(elm2)->field.tqe_next; \
else \
(head)->tqh_last = &(elm2)->field.tqe_next; \
} while (/*CONSTCOND*/0)

```

```

        (elm2)->field.tqe_prev = (elm)->field.tqe_prev; \
        *(elm2)->field.tqe_prev = (elm2); \
    QUEUEDEBUG_TAILQ_POSTREMOVE((elm),
    field); \
} while (/*CONSTCOND*/0)

#define TAILQ_CONCAT(head1, head2, field) do { \
    if (!TAILQ_EMPTY(head2)) { \
        *(head1)->tqh_last = (head2)->tqh_first; \
        (head2)->tqh_first->field.tqe_prev = (head1)->tqh_last; \
        (head1)->tqh_last = (head2)->tqh_last; \
        TAILQ_INIT((head2)); \
    } \
} while (/*CONSTCOND*/0)

/*
 * Singly-linked Tail queue declarations.
 */
#define STAILQ_HEAD(name, type) \
struct name { \
    struct type *stqh_first; /* first element */ \
    struct type **stqh_last; /* addr of last next element */ \
}

#define STAILQ_HEAD_INITIALIZER(head) \
{ NULL, &(head).stqh_first }

#define STAILQ_ENTRY(type) \
struct { \
    struct type *stqe_next; /* next element */ \
}

/*
 * Singly-linked Tail queue access methods.
 */
#define STAILQ_FIRST(head) ((head)->stqh_first)
#define STAILQ_END(head) NULL
#define STAILQ_NEXT(elm, field) ((elm)->field.stqe_next)
#define STAILQ_EMPTY(head) (STAILQ_FIRST(head) \
    == STAILQ_END(head))

/*
 * Singly-linked Tail queue functions.
 */
#define STAILQ_INIT(head) do { \
    (head)->stqh_first = NULL; \
    (head)->stqh_last = &(head)->stqh_first; \
} while (/*CONSTCOND*/0)

```

```

#define STAILQ_INSERT_HEAD(head, elm, field) do { \
    if (((elm)->field.stqe_next = (head)->stqh_first) == NULL) \
        (head)->stqh_last = &(elm)->field.stqe_next; \
    (head)->stqh_first = (elm); \
} while (/*CONSTCOND*/0)

#define STAILQ_INSERT_TAIL(head, elm, field) do { \
    (elm)->field.stqe_next = NULL; \
    *(head)->stqh_last = (elm); \
    (head)->stqh_last = &(elm)->field.stqe_next; \
} while (/*CONSTCOND*/0)

#define STAILQ_INSERT_AFTER(head, listelm, elm, field) do { \
    if (((elm)->field.stqe_next = (listelm)->field.stqe_next) == NULL) \
        (head)->stqh_last = &(elm)->field.stqe_next; \
    (listelm)->field.stqe_next = (elm); \
} while (/*CONSTCOND*/0)

#define STAILQ_REMOVE_HEAD(head, field) do { \
    if (((head)->stqh_first = (head)->stqh_first->field.stqe_next) \
        == NULL) \
        (head)->stqh_last = &(head)->stqh_first; \
} while (/*CONSTCOND*/0)

#define STAILQ_REMOVE(head, elm, type, field) do { \
    if ((head)->stqh_first == (elm)) { \
        STAILQ_REMOVE_HEAD((head), field); \
    } else { \
        struct type *curelm = (head)->stqh_first; \
        while (curelm->field.stqe_next != (elm)) \
            curelm = curelm->field.stqe_next; \
        if ((curelm->field.stqe_next = \
            curelm->field.stqe_next->field.stqe_next) == NULL) \
            (head)->stqh_last = &(curelm)->field.stqe_next; \
    } \
} while (/*CONSTCOND*/0)

#define STAILQ_FOREACH(var, head, field) \
    for ((var) = ((head)->stqh_first); \
        (var); \
        (var) = ((var)->field.stqe_next))

#define STAILQ_FOREACH_SAFE(var, head, field, tvar) \
    for ((var) = STAILQ_FIRST((head)); \
        (var) && ((tvar) = STAILQ_NEXT((var), field), 1); \
        (var) = (tvar))

```

```

#define STAILQ_CONCAT(head1, head2) do { \
    if (!STAILQ_EMPTY((head2))) { \
        *(head1)->stqh_last \
        = (head2)->stqh_first; \
        (head1)->stqh_last = (head2)->stqh_last; \
        STAILQ_INIT((head2)); \
    } \
} while (/*CONSTCOND*/0)

#define STAILQ_LAST(head, type, field) \
(STAILQ_EMPTY((head)) ? \
    NULL : \
    ((struct type *) (void *) \
    ((char *) ((head)->stqh_last) - offsetof(struct type, field))))

#ifdef _KERNEL
/*
 * Circular queue definitions. Do not use. We still keep the macros
 * for compatibility but because of pointer aliasing issues their use
 * is discouraged!
 */

/*
 * __launder_type(): We use this ugly hack to work around the the compiler
 * noticing that two types may not alias each other and elide tests in code.
 * We hit this in the CIRCLEQ macros when comparing 'struct name *' and
 * 'struct type *' (see CIRCLEQ_HEAD()). Modern compilers (such as GCC
 * 4.8) declare these comparisons as always false, causing the code to
 * not run as designed.
 *
 * This hack is only to be used for comparisons and thus can be fully const.
 * Do not use for assignment.
 *
 * If we ever choose to change the ABI of the CIRCLEQ macros, we could fix
 * this by changing the head/tail sentinel values, but see the note above
 * this one.
 */
static __inline const void * __launder_type(const void *);
static __inline const void *
__launder_type(const void *__x)
{
    __asm __volatile("" : "+r" (__x));
    return __x;
}

#ifdef QUEUEDEBDEBUG
#define QUEUEDEBDEBUG_CIRCLEQ_HEAD(head, field) \

```

```

if ((head)->cqh_first != CIRCLEQ_ENDC(head) && \
    (head)->cqh_first->field.cqe_prev != CIRCLEQ_ENDC(head)) \
    QUEUEDEBBUG_ABORT("CIRCLEQ head forw %p %s:%d", (head), \
        __FILE__, __LINE__); \
if ((head)->cqh_last != CIRCLEQ_ENDC(head) && \
    (head)->cqh_last->field.cqe_next != CIRCLEQ_ENDC(head)) \
    QUEUEDEBBUG_ABORT("CIRCLEQ head back %p %s:%d", (head), \
        __FILE__, __LINE__);
#define QUEUEDEBBUG_CIRCLEQ_ELM(head, elm, field) \
if ((elm)->field.cqe_next == CIRCLEQ_ENDC(head)) { \
    if ((head)->cqh_last != (elm)) \
        QUEUEDEBBUG_ABORT("CIRCLEQ \
elm last %p %s:%d", \
            (elm), __FILE__, __LINE__); \
} else { \
    if ((elm)->field.cqe_next->field.cqe_prev != (elm)) \
        QUEUEDEBBUG_ABORT("CIRCLEQ elm forw %p %s:%d", \
            (elm), __FILE__, __LINE__); \
} \
if ((elm)->field.cqe_prev == CIRCLEQ_ENDC(head)) { \
    if ((head)->cqh_first != (elm)) \
        QUEUEDEBBUG_ABORT("CIRCLEQ elm first %p %s:%d", \
            (elm), __FILE__, __LINE__); \
} else { \
    if ((elm)->field.cqe_prev->field.cqe_next != (elm)) \
        QUEUEDEBBUG_ABORT("CIRCLEQ elm prev %p %s:%d", \
            (elm), __FILE__, __LINE__); \
}
#define QUEUEDEBBUG_CIRCLEQ_POSTREMOVE(elm, field) \
(elm)->field.cqe_next = (void *)1L; \
(elm)->field.cqe_prev = (void *)1L;
#else
#define QUEUEDEBBUG_CIRCLEQ_HEAD(head, field)
#define QUEUEDEBBUG_CIRCLEQ_ELM(head, elm, field)
#define QUEUEDEBBUG_CIRCLEQ_POSTREMOVE(elm, field)
#endif

#define CIRCLEQ_HEAD(name, type) \
struct name { \
    struct type *cqh_first; /* \
first element */ \
    struct type *cqh_last; /* last element */ \
}

#define CIRCLEQ_HEAD_INITIALIZER(head) \
{ CIRCLEQ_END(&head), CIRCLEQ_END(&head) }

#define CIRCLEQ_ENTRY(type) \

```



```

struct {
    \
    struct type *cqe_next; /* next element */ \
    struct type *cqe_prev; /* previous element */ \
}

/*
 * Circular queue functions.
 */

#define CIRCLEQ_INIT(head) do { \
    (head)->cqh_first = CIRCLEQ_END(head); \
    (head)->cqh_last = CIRCLEQ_END(head); \
} while (/*CONSTCOND*/0)

#define CIRCLEQ_INSERT_AFTER(head, listelm, elm, field) do { \
    QUEUEDEBDEBUG_CIRCLEQ_HEAD((head), field) \
    QUEUEDEBDEBUG_CIRCLEQ_ELM((head), (listelm), field) \
    (elm)->field.cqe_next = (listelm)->field.cqe_next; \
    (elm)->field.cqe_prev = (listelm); \
    if ((listelm)->field.cqe_next == CIRCLEQ_ENDC(head)) \
        (head)->cqh_last = (elm); \
    else \
        (listelm)->field.cqe_next->field.cqe_prev = (elm); \
    (listelm)->field.cqe_next = (elm); \
} while (/*CONSTCOND*/0)

#define CIRCLEQ_INSERT_BEFORE(head, \
listelm, elm, field) do { \
    QUEUEDEBDEBUG_CIRCLEQ_HEAD((head), field) \
    QUEUEDEBDEBUG_CIRCLEQ_ELM((head), (listelm), field) \
    (elm)->field.cqe_next = (listelm); \
    (elm)->field.cqe_prev = (listelm)->field.cqe_prev; \
    if ((listelm)->field.cqe_prev == CIRCLEQ_ENDC(head)) \
        (head)->cqh_first = (elm); \
    else \
        (listelm)->field.cqe_prev->field.cqe_next = (elm); \
    (listelm)->field.cqe_prev = (elm); \
} while (/*CONSTCOND*/0)

#define CIRCLEQ_INSERT_HEAD(head, elm, field) do { \
    QUEUEDEBDEBUG_CIRCLEQ_HEAD((head), field) \
    (elm)->field.cqe_next = (head)->cqh_first; \
    (elm)->field.cqe_prev = CIRCLEQ_END(head); \
    if ((head)->cqh_last == CIRCLEQ_ENDC(head)) \
        (head)->cqh_last = (elm); \
    else \
        (head)->cqh_first->field.cqe_prev = (elm); \
    (head)->cqh_first = (elm); \
} while (/*CONSTCOND*/0)

```

```

#define CIRCLEQ_INSERT_TAIL(head, elm, field) do { \
    QUEUEDEBUG_CIRCLEQ_HEAD((head), field) \
    (elm)->field.cqe_next \
    = CIRCLEQ_END(head); \
    (elm)->field.cqe_prev = (head)->cqh_last; \
    if ((head)->cqh_first == CIRCLEQ_ENDC(head)) \
        (head)->cqh_first = (elm); \
    else \
        (head)->cqh_last->field.cqe_next = (elm); \
    (head)->cqh_last = (elm); \
} while (/*CONSTCOND*/0)

#define CIRCLEQ_REMOVE(head, elm, field) do { \
    QUEUEDEBUG_CIRCLEQ_HEAD((head), field) \
    QUEUEDEBUG_CIRCLEQ_ELM((head), (elm), field) \
    if ((elm)->field.cqe_next == CIRCLEQ_ENDC(head)) \
        (head)->cqh_last = (elm)->field.cqe_prev; \
    else \
        (elm)->field.cqe_next->field.cqe_prev = \
            (elm)->field.cqe_prev; \
    if ((elm)->field.cqe_prev == CIRCLEQ_ENDC(head)) \
        (head)->cqh_first = (elm)->field.cqe_next; \
    else \
        (elm)->field.cqe_prev->field.cqe_next = \
            (elm)->field.cqe_next; \
    QUEUEDEBUG_CIRCLEQ_POSTREMOVE((elm), field) \
} while (/*CONSTCOND*/0)

#define CIRCLEQ_FOREACH(var, head, field) \
    for ((var) = ((head)->cqh_first); \
        (var) != CIRCLEQ_ENDC(head); \
        (var) \
        = ((var)->field.cqe_next))

#define CIRCLEQ_FOREACH_REVERSE(var, head, field) \
    for ((var) = ((head)->cqh_last); \
        (var) != CIRCLEQ_ENDC(head); \
        (var) = ((var)->field.cqe_prev))

/*
 * Circular queue access methods.
 */

#define CIRCLEQ_FIRST(head) ((head)->cqh_first)
#define CIRCLEQ_LAST(head) ((head)->cqh_last)
/* For comparisons */
#define CIRCLEQ_ENDC(head) (__launter_type(head))
/* For assignments */

```

```

#define CIRCLEQ_END(head) ((void *)(head))
#define CIRCLEQ_NEXT(elm, field) ((elm)->field.cqe_next)
#define CIRCLEQ_PREV(elm, field) ((elm)->field.cqe_prev)
#define CIRCLEQ_EMPTY(head) \
    (CIRCLEQ_FIRST(head) == CIRCLEQ_ENDC(head))

#define CIRCLEQ_LOOP_NEXT(head, elm, field) \
    (((elm)->field.cqe_next == CIRCLEQ_ENDC(head)) \
     ? ((head)->cqh_first) \
     : (elm->field.cqe_next))
#define CIRCLEQ_LOOP_PREV(head, elm, field) \
    (((elm)->field.cqe_prev == CIRCLEQ_ENDC(head)) \
     ? ((head)->cqh_last) \
     : \
     (elm->field.cqe_prev))
#endif /* !_KERNEL */

#endif /* !_SYS_QUEUE_H_ */
# Contributor: Fabian Affolter <fabian@affolter-engineering.ch>
# Maintainer: Fabian Affolter <fabian@affolter-engineering.ch>
pkgname=py3-flake8-copyright
_pkgname=flake8-copyright
pkgver=0.2.4
pkgrel=3
pkgdesc="Extension for flake8 which checks for copyrights"
options="!check" # No testsuite
url="https://github.com/savoirfairelinux/flake8-copyright"
arch="noarch"
license="MIT"
depends="py3-flake8 py3-setuptools"
makedepends="py3-gpep517 py3-wheel"
subpackages="$pkgname-pyc"
source="https://files.pythonhosted.org/packages/source/${_pkgname:0:1}/${_pkgname}/${_pkgname}-${pkgver}.tar.gz"
builddir="$srcdir"/$_pkgname-$pkgver

replaces="py-flake8-copyright" # Backwards compatibility
provides="py-flake8-copyright=${pkgver}-r${pkgrel}" # Backwards compatibility

build() {
    gpep517 build-wheel \
        --wheel-dir .dist \
        --output-fd 3 3>&1 >&2
}

package() {
    gpep517 install-wheel --destdir "$pkgdir" \
        .dist/*.whl
}

```

```

sha512sums="
a6ab47e1bb715618f075c51f398e18180404871b3b0faf1c2d30701d5203db6bc23771bf22ffb5bafcd8ee856b9b64237
b316bd503ae7dceed6ca284ccd5a74d
flake8-copyright-0.2.4.tar.gz
"

#ifndef _SYS_CDEFS_H_
#define _SYS_CDEFS_H_

#warning usage of non-standard #include <sys/cdefs.h> is deprecated

#undef __P
#undef __PMT

#define __P(args) args
#define __PMT(args) args

#define __CONCAT(x,y) x ## y
#define __STRING(x) #x

#ifdef __cplusplus
# define __BEGIN_DECLS extern "C" {
# define __END_DECLS }
#else
# define __BEGIN_DECLS
# define __END_DECLS
#endif

#if defined(__GNUC__) && !defined(__cplusplus)
# define __THROW __attribute__((__nothrow__))
# define __NTH(fct) __attribute__((__nothrow__)) fct
#else
# define __THROW
# define __NTH(fct) fct
#endif

#endif /* _SYS_CDEFS_H_ */

# Maintainer: fossdd <fossdd@pwned.life>
pkgname=cargo-license
pkgver=0.6.1
pkgrel=1
pkgdesc="Cargo subcommand to see license of dependencies"
url="https://github.com/onur/cargo-license"
arch="all"
license="MIT"
makedepends="cargo cargo-auditable"
source="$pkgname-$pkgver.tar.gz::https://crates.io/api/v1/crates/cargo-license/$pkgver/download"

```

```

prepare() {
    default_prepare

    cargo fetch --target="$CTARGET" --locked
}

build() {
    cargo auditable build --release --frozen
}

check() {
    cargo test --frozen
}

package() {
    install -Dm755 target/release/cargo-license -t "$pkgdir"/usr/bin
}

sha512sums="
36215145e79965be090ae2f5ce6f5eb208465eb67a94c26bed1fe70a131c46c6dc35695e30852759b7366883fbc3caf00
272d796ac634f0a5e1d49232b6b29d5 cargo-license-0.6.1.tar.gz
"

/* $NetBSD: tree.h,v 1.20 2013/09/14 13:20:45 joerg Exp $ */
/* $OpenBSD: tree.h,v 1.13 2011/07/09 00:19:45 pirofti Exp $ */
/* Modified by Void Linux. */
/*
* Copyright 2002 Niels Provos <provos@citi.umich.edu>
* All rights reserved.
*
* Redistribution and use in source and binary forms, with or without
* modification, are permitted provided that the following conditions
* are met:
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* notice, this list of conditions and the following disclaimer.
* 2. Redistributions in binary form must reproduce the above copyright
* notice, this list of conditions and the following disclaimer in the
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*
* THIS SOFTWARE IS PROVIDED BY THE AUTHOR ``AS IS" AND ANY EXPRESS OR
* IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES
* OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED.
* IN NO EVENT SHALL THE
* AUTHOR BE LIABLE FOR ANY DIRECT, INDIRECT,
* INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT
* NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE,
* DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY
* THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT
* (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF

```

* THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

*/

#ifndef _SYS_TREE_H_

#define _SYS_TREE_H_

#ifdef __GNUC__

#define __GNUC_PREREQ__(x, y) \\\n ((__GNUC__ == (x) && __GNUC_MINOR__ >= (y)) || \\\n (__GNUC__ > (x)))

#else

#define __GNUC_PREREQ__(x, y) 0

#endif

#if __GNUC_PREREQ__(2, 7) || defined(__lint__)

#define _sys_tree_h_unused __attribute__((__unused__))

#else

#define _sys_tree_h_unused /* delete */

#endif

/*

* This file defines data structures for different types of trees:

* splay trees and red-black trees.

*

* A splay tree is a self-organizing

data structure. Every operation

* on the tree causes a splay to happen. The splay moves the requested

* node to the root of the tree and partly rebalances it.

*

* This has the benefit that request locality causes faster lookups as

* the requested nodes move to the top of the tree. On the other hand,

* every lookup causes memory writes.

*

* The Balance Theorem bounds the total access time for m operations

* and n inserts on an initially empty tree as $O((m + n)\lg n)$. The

* amortized cost for a sequence of m accesses to a splay tree is $O(\lg n)$;

*

* A red-black tree is a binary search tree with the node color as an

* extra attribute. It fulfills a set of conditions:

* - every search path from the root to a leaf consists of the

* same number of black nodes,

* - each red node (except for the root) has a black parent,

* - each leaf node is black.

*

* Every operation on a red-black tree is bounded as $O(\lg n)$.

* The maximum height of a red-black tree is $2\lg(n+1)$.

*/

```

#define SPLAY_HEAD(name, type)  \
struct name {  \
    struct type *sph_root; /* root of the tree */  \
}

#define SPLAY_INITIALIZER(root)  \
{ NULL }

#define SPLAY_INIT(root) do {  \
    (root)->sph_root = NULL;  \
} while (/*CONSTCOND*/ 0)

#define SPLAY_ENTRY(type)  \
struct {  \
    struct type *spe_left; /* left element */  \
    struct type *spe_right; /* right element */  \
}

#define SPLAY_LEFT(elm, field) (elm)->field.spe_left
#define SPLAY_RIGHT(elm, field) (elm)->field.spe_right
#define SPLAY_ROOT(head) (head)->sph_root
#define SPLAY_EMPTY(head) (SPLAY_ROOT(head) == NULL)

/* SPLAY_ROTATE_{LEFT,RIGHT} expect that tmp hold SPLAY_{RIGHT,LEFT} */
#define SPLAY_ROTATE_RIGHT(head, tmp, field) do {  \
    SPLAY_LEFT((head)->sph_root, field) = SPLAY_RIGHT(tmp, field);  \
    SPLAY_RIGHT(tmp, field) = (head)->sph_root;  \
    (head)->sph_root = tmp;  \
} while (/*CONSTCOND*/ 0)

#define SPLAY_ROTATE_LEFT(head, tmp, field) do {  \
    SPLAY_RIGHT((head)->sph_root,  \
    field) = SPLAY_LEFT(tmp, field);  \
    SPLAY_LEFT(tmp, field) = (head)->sph_root;  \
    (head)->sph_root = tmp;  \
} while (/*CONSTCOND*/ 0)

#define SPLAY_LINKLEFT(head, tmp, field) do {  \
    SPLAY_LEFT(tmp, field) = (head)->sph_root;  \
    tmp = (head)->sph_root;  \
    (head)->sph_root = SPLAY_LEFT((head)->sph_root, field);  \
} while (/*CONSTCOND*/ 0)

#define SPLAY_LINKRIGHT(head, tmp, field) do {  \
    SPLAY_RIGHT(tmp, field) = (head)->sph_root;  \
    tmp = (head)->sph_root;  \
    (head)->sph_root = SPLAY_RIGHT((head)->sph_root, field);  \
} while (/*CONSTCOND*/ 0)

```

```
#define SPLAY_ASSEMBLE(head, node, left, right, field) do { \
    SPLAY_RIGHT(left, field) = SPLAY_LEFT((head)->sph_root, field); \
    SPLAY_LEFT(right, field) = SPLAY_RIGHT((head)->sph_root, field); \
    SPLAY_LEFT((head)->sph_root, field) = SPLAY_RIGHT(node, field); \
    SPLAY_RIGHT((head)->sph_root, field) = SPLAY_LEFT(node, field); \
} while (/*CONSTCOND*/ 0)
```

```
/* Generates prototypes and inline functions */
```

```
#define
    SPLAY_PROTOTYPE(name, type, field, cmp) \
void name##_SPLAY(struct name *, struct type *); \
void name##_SPLAY_MINMAX(struct name *, int); \
struct type *name##_SPLAY_INSERT(struct name *, struct type *); \
struct type *name##_SPLAY_REMOVE(struct name *, struct type *); \
    \
/* Finds the node with the same key as elm */ \
static __inline struct type * \
name##_SPLAY_FIND(struct name *head, struct type *elm) \
{ \
    if (SPLAY_EMPTY(head)) \
        return(NULL); \
    name##_SPLAY(head, elm); \
    if ((cmp)(elm, (head)->sph_root) == 0) \
        return (head->sph_root); \
    return (NULL); \
} \
    \
static __inline _sys_tree_h_unused struct type * \
name##_SPLAY_NEXT(struct name *head, struct type *elm) \
{ \
    name##_SPLAY(head, elm); \
    if (SPLAY_RIGHT(elm, field) != NULL) { \
        elm = SPLAY_RIGHT(elm, field); \
        while (SPLAY_LEFT(elm, field) != NULL) { \
            elm = SPLAY_LEFT(elm, field); \
        } \
    } \
    else \
        elm = NULL; \
    return (elm); \
} \
    \
static _sys_tree_h_unused __inline struct type * \
name##_SPLAY_MIN_MAX(struct name *head, int val) \
{ \
    name##_SPLAY_MINMAX(head, val); \
}
```



```

        return (SPLAY_ROOT(head)); \
    }

/* Main splay operation.
 * Moves node close to the key of elm to top
 */
#define SPLAY_GENERATE(name, type, field, cmp) \
struct type * \
name##_SPLAY_INSERT(struct name *head, struct type *elm) \
{ \
    if (SPLAY_EMPTY(head)) { \
        SPLAY_LEFT(elm, field) = SPLAY_RIGHT(elm, field) = NULL; \
    } else { \
        int __comp; \
        name##_SPLAY(head, elm); \
        __comp = (cmp)(elm, (head)->sph_root); \
        if (__comp < 0) { \
            SPLAY_LEFT(elm, field) = SPLAY_LEFT((head)->sph_root, field); \
            SPLAY_RIGHT(elm, field) = (head)->sph_root; \
            SPLAY_LEFT((head)->sph_root, field) = NULL; \
        } else if (__comp > 0) { \
            SPLAY_RIGHT(elm, \
field) = SPLAY_RIGHT((head)->sph_root, field); \
            SPLAY_LEFT(elm, field) = (head)->sph_root; \
            SPLAY_RIGHT((head)->sph_root, field) = NULL; \
        } else \
            return ((head)->sph_root); \
    } \
    (head)->sph_root = (elm); \
    return (NULL); \
} \
\
struct type * \
name##_SPLAY_REMOVE(struct name *head, struct type *elm) \
{ \
    struct type *__tmp; \
    if (SPLAY_EMPTY(head)) \
        return (NULL); \
    name##_SPLAY(head, elm); \
    if ((cmp)(elm, (head)->sph_root) == 0) { \
        if (SPLAY_LEFT((head)->sph_root, field) == NULL) { \
            (head)->sph_root = SPLAY_RIGHT((head)->sph_root, field); \
        } else { \
            __tmp = SPLAY_RIGHT((head)->sph_root, field); \
            (head)->sph_root = SPLAY_LEFT((head)->sph_root, field); \
            name##_SPLAY(head, elm); \
            SPLAY_RIGHT((head)->sph_root, field) = __tmp; \
        } \
    } \
} \

```

```

    return (elm);    \
}    \
return (NULL);    \
}    \
    \
void    \
name##_SPLAY(struct
name *head, struct type *elm) \
{    \
    struct type __node, *__left, *__right, *__tmp; \
    int __comp;    \
    \
    SPLAY_LEFT(&__node, field) = SPLAY_RIGHT(&__node, field) = NULL;\
    __left = __right = &__node;    \
    \
    while ((__comp = (cmp)(elm, (head)->sph_root)) != 0) { \
        if (__comp < 0) { \
            __tmp = SPLAY_LEFT((head)->sph_root, field); \
            if (__tmp == NULL) \
                break; \
            if ((cmp)(elm, __tmp) < 0){ \
                SPLAY_ROTATE_RIGHT(head, __tmp, field); \
                if (SPLAY_LEFT((head)->sph_root, field) == NULL)\
                    break; \
            } \
            SPLAY_LINKLEFT(head, __right, field); \
        } else if (__comp > 0) { \
            __tmp = SPLAY_RIGHT((head)->sph_root, field); \
            if (__tmp == NULL) \
                break; \
            if ((cmp)(elm, __tmp) > 0){ \
                SPLAY_ROTATE_LEFT(head, __tmp, field); \
                if (SPLAY_RIGHT((head)->sph_root, field) == NULL)\
                    break; \
            } \
            SPLAY_LINKRIGHT(head, __left, field); \
        } \
    } \
    SPLAY_ASSEMBLE(head,
    &__node, __left, __right, field); \
}    \
    \
/* Splay with either the minimum or the maximum element \
* Used to find minimum or maximum element in tree. \
*/    \
void name##_SPLAY_MINMAX(struct name *head, int __comp) \
{    \
    struct type __node, *__left, *__right, *__tmp; \

```

```

\
SPLAY_LEFT(&__node, field) = SPLAY_RIGHT(&__node, field) = NULL;\
__left = __right = &__node;  \
\
while (1) {  \
    if (__comp < 0) {  \
        __tmp = SPLAY_LEFT((head)->sph_root, field);\
        if (__tmp == NULL)  \
            break;  \
        if (__comp < 0){  \
            SPLAY_ROTATE_RIGHT(head, __tmp, field);\
            if (SPLAY_LEFT((head)->sph_root, field) == NULL)\
                break;  \
        }  \
        SPLAY_LINKLEFT(head, __right, field); \
    } else if (__comp > 0) {  \
        __tmp = SPLAY_RIGHT((head)->sph_root, field);\
        if (__tmp == NULL)  \
            break;  \
        if (__comp > 0) {  \
            SPLAY_ROTATE_LEFT(head, __tmp, field);\
            if (SPLAY_RIGHT((head)->sph_root,
field) == NULL)\
                break;  \
        }  \
        SPLAY_LINKRIGHT(head, __left, field); \
    }  \
}  \
SPLAY_ASSEMBLE(head, &__node, __left, __right, field); \
}

#define SPLAY_NEGINF -1
#define SPLAY_INF 1

#define SPLAY_INSERT(name, x, y) name##_SPLAY_INSERT(x, y)
#define SPLAY_REMOVE(name, x, y) name##_SPLAY_REMOVE(x, y)
#define SPLAY_FIND(name, x, y) name##_SPLAY_FIND(x, y)
#define SPLAY_NEXT(name, x, y) name##_SPLAY_NEXT(x, y)
#define SPLAY_MIN(name, x) (SPLAY_EMPTY(x) ? NULL \
    : name##_SPLAY_MIN_MAX(x, SPLAY_NEGINF))
#define SPLAY_MAX(name, x) (SPLAY_EMPTY(x) ? NULL \
    : name##_SPLAY_MIN_MAX(x, SPLAY_INF))

#define SPLAY_FOREACH(x, name, head)  \
    for ((x) = SPLAY_MIN(name, head);  \
        (x) != NULL;  \
        (x) = SPLAY_NEXT(name, head, x))

```

```

/* Macros that define a red-black tree */
#define RB_HEAD(name, type) \
struct name { \
    struct type *rbh_root; /* root of the tree */ \
}

#define RB_INITIALIZER(root) \
{ \
    NULL \
}

#define RB_INIT(root) do { \
    (root)->rbh_root = NULL; \
} while (/*CONSTCOND*/ 0)

#define RB_BLACK 0
#define RB_RED 1
#define RB_ENTRY(type) \
struct { \
    struct type *rbe_left; /* left element */ \
    struct type *rbe_right; /* right element */ \
    struct type *rbe_parent; /* parent element */ \
    int rbe_color; /* node color */ \
}

#define RB_LEFT(elm, field) (elm)->field.rbe_left
#define RB_RIGHT(elm, field) (elm)->field.rbe_right
#define RB_PARENT(elm, field) (elm)->field.rbe_parent
#define RB_COLOR(elm, field) (elm)->field.rbe_color
#define RB_ROOT(head) (head)->rbh_root
#define RB_EMPTY(head) (RB_ROOT(head) == NULL)

#define RB_SET(elm, parent, field) do { \
    RB_PARENT(elm, field) = parent; \
    RB_LEFT(elm, field) = RB_RIGHT(elm, field) = NULL; \
    RB_COLOR(elm, field) = RB_RED; \
} while (/*CONSTCOND*/ 0)

#define RB_SET_BLACKRED(black, red, field) do { \
    RB_COLOR(black, field) = RB_BLACK; \
    RB_COLOR(red, field) \
    = RB_RED; \
} while (/*CONSTCOND*/ 0)

#ifndef RB_AUGMENT
#define RB_AUGMENT(x) do {} while (/*CONSTCOND*/ 0)
#endif

#define RB_ROTATE_LEFT(head, elm, tmp, field) do { \

```

```

(tmp) = RB_RIGHT(elm, field); \
if ((RB_RIGHT(elm, field) = RB_LEFT(tmp, field)) != NULL) { \
    RB_PARENT(RB_LEFT(tmp, field), field) = (elm); \
} \
RB_AUGMENT(elm); \
if ((RB_PARENT(tmp, field) = RB_PARENT(elm, field)) != NULL) { \
    if ((elm) == RB_LEFT(RB_PARENT(elm, field), field)) \
        RB_LEFT(RB_PARENT(elm, field), field) = (tmp); \
    else \
        RB_RIGHT(RB_PARENT(elm, field), field) = (tmp); \
} else \
    (head)->rbh_root = (tmp); \
RB_LEFT(tmp, field) = (elm); \
RB_PARENT(elm, field) = (tmp); \
RB_AUGMENT(tmp); \
if ((RB_PARENT(tmp, field))) \
    RB_AUGMENT(RB_PARENT(tmp, field)); \
} while (/*CONSTCOND*/ 0)

#define RB_ROTATE_RIGHT(head, elm, tmp, field) do { \
    (tmp) = RB_LEFT(elm, field); \
    if ((RB_LEFT(elm, field) = RB_RIGHT(tmp, field)) \
        != NULL) { \
        RB_PARENT(RB_RIGHT(tmp, field), field) = (elm); \
    } \
    RB_AUGMENT(elm); \
    if ((RB_PARENT(tmp, field) = RB_PARENT(elm, field)) != NULL) { \
        if ((elm) == RB_LEFT(RB_PARENT(elm, field), field)) \
            RB_LEFT(RB_PARENT(elm, field), field) = (tmp); \
        else \
            RB_RIGHT(RB_PARENT(elm, field), field) = (tmp); \
    } else \
        (head)->rbh_root = (tmp); \
    RB_RIGHT(tmp, field) = (elm); \
    RB_PARENT(elm, field) = (tmp); \
    RB_AUGMENT(tmp); \
    if ((RB_PARENT(tmp, field))) \
        RB_AUGMENT(RB_PARENT(tmp, field)); \
} while (/*CONSTCOND*/ 0)

/* Generates prototypes and inline functions */
#define RB_PROTOTYPE(name, type, field, cmp) \
    RB_PROTOTYPE_INTERNAL(name, type, field, cmp,)
#define RB_PROTOTYPE_STATIC(name, type, field, cmp) \
    RB_PROTOTYPE_INTERNAL(name, type, field, cmp, _sys_tree_h_unused static)
#define RB_PROTOTYPE_INTERNAL(name, type, field, cmp, attr) \
    attr void name##_RB_INSERT_COLOR(struct name *, struct

```

```

type *); \
attr void name##_RB_REMOVE_COLOR(struct name *, struct type *, struct type *);\
attr struct type *name##_RB_REMOVE(struct name *, struct type *); \
attr struct type *name##_RB_INSERT(struct name *, struct type *); \
attr struct type *name##_RB_FIND(struct name *, struct type *); \
attr struct type *name##_RB_NFIND(struct name *, struct type *); \
attr struct type *name##_RB_NEXT(struct type *); \
attr struct type *name##_RB_PREV(struct type *); \
attr struct type *name##_RB_MINMAX(struct name *, int); \
\

/* Main rb operation.
* Moves node close to the key of elm to top
*/
#define RB_GENERATE(name, type, field, cmp) \
    RB_GENERATE_INTERNAL(name, type, field, cmp,)
#define RB_GENERATE_STATIC(name, type, field, cmp) \
    RB_GENERATE_INTERNAL(name, type, field, cmp, _sys_tree_h_unused static)
#define RB_GENERATE_INTERNAL(name, type, field, cmp, attr) \
attr void \
name##_RB_INSERT_COLOR(struct name *head, struct type *elm) \
{ \
    struct type \
    *parent, *gparent, *tmp; \
    while ((parent = RB_PARENT(elm, field)) != NULL && \
        RB_COLOR(parent, field) == RB_RED) { \
        gparent = RB_PARENT(parent, field); \
        if (parent == RB_LEFT(gparent, field)) { \
            tmp = RB_RIGHT(gparent, field); \
            if (tmp && RB_COLOR(tmp, field) == RB_RED) { \
                RB_COLOR(tmp, field) = RB_BLACK; \
                RB_SET_BLACKRED(parent, gparent, field);\
                elm = gparent; \
                continue; \
            } \
            if (RB_RIGHT(parent, field) == elm) { \
                RB_ROTATE_LEFT(head, parent, tmp, field);\
                tmp = parent; \
                parent = elm; \
                elm = tmp; \
            } \
            RB_SET_BLACKRED(parent, gparent, field); \
            RB_ROTATE_RIGHT(head, gparent, tmp, field); \
        } else { \
            tmp = RB_LEFT(gparent, field); \
            if (tmp && RB_COLOR(tmp, field) == RB_RED) { \
                RB_COLOR(tmp, field) = RB_BLACK; \
                RB_SET_BLACKRED(parent, gparent, field);\

```

```

    elm = gparent; \
    continue; \
} \
if (RB_LEFT(parent, field) == elm)
{ \
    RB_ROTATE_RIGHT(head, parent, tmp, field);\
    tmp = parent; \
    parent = elm; \
    elm = tmp; \
} \
RB_SET_BLACKRED(parent, gparent, field); \
RB_ROTATE_LEFT(head, gparent, tmp, field);\
} \
} \
RB_COLOR(head->rbh_root, field) = RB_BLACK; \
} \
\
attr void \
name##_RB_REMOVE_COLOR(struct name *head, struct type *parent, struct type *elm) \
{ \
    struct type *tmp; \
    while ((elm == NULL || RB_COLOR(elm, field) == RB_BLACK) && \
        elm != RB_ROOT(head)) { \
        if (RB_LEFT(parent, field) == elm) { \
            tmp = RB_RIGHT(parent, field); \
            if (RB_COLOR(tmp, field) == RB_RED) { \
                RB_SET_BLACKRED(tmp, parent, field); \
                RB_ROTATE_LEFT(head, parent, tmp, field);\
                tmp = RB_RIGHT(parent, field); \
            } \
            if ((RB_LEFT(tmp, field) == NULL || \
                RB_COLOR(RB_LEFT(tmp, field), field) == RB_BLACK) && \
                (RB_RIGHT(tmp, field) == NULL || \
                RB_COLOR(RB_RIGHT(tmp, field), field) == RB_BLACK)) {\
                RB_COLOR(tmp, field) = RB_RED; \
                elm = parent; \
                parent = RB_PARENT(elm, field); \
            } else { \
                if (RB_RIGHT(tmp, field) == NULL || \
                    RB_COLOR(RB_RIGHT(tmp, field), field) == RB_BLACK) {\
                    struct type *oleft; \
                    if ((oleft = RB_LEFT(tmp, field)) \
                        != NULL) \
                        RB_COLOR(oleft, field) = RB_BLACK;\
                    RB_COLOR(tmp, field) = RB_RED; \
                    RB_ROTATE_RIGHT(head, tmp, oleft, field);\
                    tmp = RB_RIGHT(parent, field); \

```

```

    } \
    RB_COLOR(tmp, field) = RB_COLOR(parent, field);\
    RB_COLOR(parent, field) = RB_BLACK; \
    if (RB_RIGHT(tmp, field)) \
        RB_COLOR(RB_RIGHT(tmp, field), field) = RB_BLACK;\
    RB_ROTATE_LEFT(head, parent, tmp, field);\
    elm = RB_ROOT(head); \
    break; \
} \
} else { \
    tmp = RB_LEFT(parent, field); \
    if (RB_COLOR(tmp, field) == RB_RED) { \
        RB_SET_BLACKRED(tmp, parent, field); \
        RB_ROTATE_RIGHT(head, parent, tmp, field);\
        tmp
= RB_LEFT(parent, field); \
    } \
    if ((RB_LEFT(tmp, field) == NULL || \
        RB_COLOR(RB_LEFT(tmp, field), field) == RB_BLACK) &&\
        (RB_RIGHT(tmp, field) == NULL || \
        RB_COLOR(RB_RIGHT(tmp, field), field) == RB_BLACK)) {\
        RB_COLOR(tmp, field) = RB_RED; \
        elm = parent; \
        parent = RB_PARENT(elm, field); \
    } else { \
        if (RB_LEFT(tmp, field) == NULL || \
            RB_COLOR(RB_LEFT(tmp, field), field) == RB_BLACK) {\
            struct type *oright; \
            if ((oright = RB_RIGHT(tmp, field)) \
                != NULL) \
                RB_COLOR(oright, field) = RB_BLACK;\
            RB_COLOR(tmp, field) = RB_RED; \
            RB_ROTATE_LEFT(head, tmp, oright, field);\
            tmp = RB_LEFT(parent, field); \
        } \
        RB_COLOR(tmp, field) = RB_COLOR(parent, field);\
        RB_COLOR(parent, field) = RB_BLACK; \
        if (RB_LEFT(tmp, field)) \
            RB_COLOR(RB_LEFT(tmp, field), field) = RB_BLACK;\
        RB_ROTATE_RIGHT(head, parent, tmp, field);\
        elm = RB_ROOT(head); \
        break; \
    } \
} \
} \
if
(elm) \
    RB_COLOR(elm, field) = RB_BLACK; \

```



```

}    \
    \
attr struct type *    \
name##_RB_REMOVE(struct name *head, struct type *elm) \
{    \
    struct type *child, *parent, *old = elm; \
    int color;    \
    if (RB_LEFT(elm, field) == NULL) \
        child = RB_RIGHT(elm, field); \
    else if (RB_RIGHT(elm, field) == NULL) \
        child = RB_LEFT(elm, field); \
    else {    \
        struct type *left; \
        elm = RB_RIGHT(elm, field); \
        while ((left = RB_LEFT(elm, field)) != NULL) \
            elm = left; \
        child = RB_RIGHT(elm, field); \
        parent = RB_PARENT(elm, field); \
        color = RB_COLOR(elm, field); \
        if (child) \
            RB_PARENT(child, field) = parent; \
        if (parent) {    \
            if (RB_LEFT(parent, field) == elm) \
                RB_LEFT(parent, field) = child; \
            else \
                RB_RIGHT(parent, field) = child; \
            RB_AUGMENT(parent); \
        } else \
            RB_ROOT(head)
    = child; \
    if (RB_PARENT(elm, field) == old) \
        parent = elm; \
    (elm)->field = (old)->field; \
    if (RB_PARENT(old, field)) { \
        if (RB_LEFT(RB_PARENT(old, field), field) == old)\
            RB_LEFT(RB_PARENT(old, field), field) = elm;\
        else \
            RB_RIGHT(RB_PARENT(old, field), field) = elm;\
        RB_AUGMENT(RB_PARENT(old, field)); \
    } else \
        RB_ROOT(head) = elm; \
    RB_PARENT(RB_LEFT(old, field), field) = elm; \
    if (RB_RIGHT(old, field)) \
        RB_PARENT(RB_RIGHT(old, field), field) = elm; \
    if (parent) {    \
        left = parent; \
        do {    \
            RB_AUGMENT(left); \

```

```

    } while ((left = RB_PARENT(left, field)) != NULL); \
} \
goto color; \
} \
parent = RB_PARENT(elm, field); \
color = RB_COLOR(elm, field); \
if (child) \
    RB_PARENT(child, field) = parent; \
if (parent) { \
    if (RB_LEFT(parent, field) == elm) \
        RB_LEFT(parent, field) = child; \
    else \
        RB_RIGHT(parent, \
field) = child; \
    RB_AUGMENT(parent); \
} else \
    RB_ROOT(head) = child; \
color: \
if (color == RB_BLACK) \
    name##_RB_REMOVE_COLOR(head, parent, child); \
return (old); \
} \
\
/* Inserts a node into the RB tree */ \
attr struct type * \
name##_RB_INSERT(struct name *head, struct type *elm) \
{ \
    struct type *tmp; \
    struct type *parent = NULL; \
    int comp = 0; \
    tmp = RB_ROOT(head); \
    while (tmp) { \
        parent = tmp; \
        comp = (cmp)(elm, parent); \
        if (comp < 0) \
            tmp = RB_LEFT(tmp, field); \
        else if (comp > 0) \
            tmp = RB_RIGHT(tmp, field); \
        else \
            return (tmp); \
    } \
    RB_SET(elm, parent, field); \
    if (parent != NULL) { \
        if (comp < 0) \
            RB_LEFT(parent, field) = elm; \
        else \
            RB_RIGHT(parent, field) = elm; \
        RB_AUGMENT(parent); \
    }

```

```

} else \
    RB_ROOT(head) = elm; \
name##_RB_INSERT_COLOR(head,
elm); \
return (NULL); \
} \
\
/* Finds the node with the same key as elm */ \
attr struct type * \
name##_RB_FIND(struct name *head, struct type *elm) \
{ \
    struct type *tmp = RB_ROOT(head); \
    int comp; \
    while (tmp) { \
        comp = cmp(elm, tmp); \
        if (comp < 0) \
            tmp = RB_LEFT(tmp, field); \
        else if (comp > 0) \
            tmp = RB_RIGHT(tmp, field); \
        else \
            return (tmp); \
    } \
    return (NULL); \
} \
\
/* Finds the first node greater than or equal to the search key */ \
attr struct type * \
name##_RB_NFIND(struct name *head, struct type *elm) \
{ \
    struct type *tmp = RB_ROOT(head); \
    struct type *res = NULL; \
    int comp; \
    while (tmp) { \
        comp = cmp(elm, tmp); \
        if (comp < 0) { \
            res = tmp; \
            tmp = RB_LEFT(tmp, field); \
        } \
        else if (comp > 0) \
            tmp = \
RB_RIGHT(tmp, field); \
        else \
            return (tmp); \
    } \
    return (res); \
} \
\
/* ARGSUSED */ \

```

```

attr struct type *    \
name##_RB_NEXT(struct type *elm)    \
{    \
if (RB_RIGHT(elm, field)) {    \
elm = RB_RIGHT(elm, field);    \
while (RB_LEFT(elm, field))    \
elm = RB_LEFT(elm, field);    \
} else {    \
if (RB_PARENT(elm, field) &&    \
(elm == RB_LEFT(RB_PARENT(elm, field), field))) \
elm = RB_PARENT(elm, field);    \
else {    \
while (RB_PARENT(elm, field) &&    \
(elm == RB_RIGHT(RB_PARENT(elm, field), field)))\
elm = RB_PARENT(elm, field);    \
elm = RB_PARENT(elm, field);    \
}    \
}    \
return (elm);    \
}    \
\
/* ARGSUSED */    \
attr struct type *    \
name##_RB_PREV(struct type *elm)    \
{    \
if (RB_LEFT(elm, field)) {    \
elm = RB_LEFT(elm, field);    \
while (RB_RIGHT(elm, field))    \
elm = RB_RIGHT(elm, field);    \
}    \
else {    \
if (RB_PARENT(elm, field) &&    \
(elm == RB_RIGHT(RB_PARENT(elm, field), field))) \
elm = RB_PARENT(elm, field);    \
else {    \
while (RB_PARENT(elm, field) &&    \
(elm == RB_LEFT(RB_PARENT(elm, field), field)))\
elm = RB_PARENT(elm, field);    \
elm = RB_PARENT(elm, field);    \
}    \
}    \
return (elm);    \
}    \
\
attr struct type *    \
name##_RB_MINMAX(struct name *head, int val)    \
{    \
struct type *tmp = RB_ROOT(head);    \

```

```

struct type *parent = NULL;  \
while (tmp) {  \
    parent = tmp;  \
    if (val < 0)  \
        tmp = RB_LEFT(tmp, field);  \
    else  \
        tmp = RB_RIGHT(tmp, field);  \
}  \
return (parent);  \
}

#define RB_NEGINF -1
#define RB_INF 1

#define RB_INSERT(name, x, y) name##_RB_INSERT(x, y)
#define RB_REMOVE(name, x, y) name##_RB_REMOVE(x, y)
#define RB_FIND(name, x, y) name##_RB_FIND(x, y)
#define RB_NFIND(name, x, y) name##_RB_NFIND(x,
y)
#define RB_NEXT(name, x, y) name##_RB_NEXT(y)
#define RB_PREV(name, x, y) name##_RB_PREV(y)
#define RB_MIN(name, x) name##_RB_MINMAX(x, RB_NEGINF)
#define RB_MAX(name, x) name##_RB_MINMAX(x, RB_INF)

#define RB_FOREACH(x, name, head)  \
for ((x) = RB_MIN(name, head);  \
    (x) != NULL;  \
    (x) = name##_RB_NEXT(x))

#define RB_FOREACH_FROM(x, name, y)  \
for ((x) = (y);  \
    ((x) != NULL) && ((y) = name##_RB_NEXT(x), (x) != NULL); \
    (x) = (y))

#define RB_FOREACH_SAFE(x, name, head, y)  \
for ((x) = RB_MIN(name, head);  \
    ((x) != NULL) && ((y) = name##_RB_NEXT(x), (x) != NULL); \
    (x) = (y))

#define RB_FOREACH_REVERSE(x, name, head)  \
for ((x) = RB_MAX(name, head);  \
    (x) != NULL;  \
    (x) = name##_RB_PREV(x))

#define RB_FOREACH_REVERSE_FROM(x, name, y)  \
for ((x) = (y);  \
    ((x) != NULL) && ((y) = name##_RB_PREV(x), (x) != NULL); \
    (x) = (y))

```

```
#define RB_FOREACH_REVERSE_SAFE(x, name,
head, y) \
for ((x) = RB_MAX(name, head); \
((x) != NULL) && ((y) = name##_RB_PREV(x), (x) != NULL); \
(x) = (y))

#endif /* _SYS_TREE_H_ */
pkgname=linux-headers
pkgver=6.14.2 # Follow the latest Linux stable
_kernver=${pkgver%.*}
pkgrel=0
pkgdesc="Linux system headers"
url="https://kernel.org/"
arch="all" # Headers are architecture specific
license="GPL-2.0-only"
makedepends="perl"
options="!check !dbg !strip !tracedeps !archcheck"
source="https://kernel.org/pub/linux/kernel/v6.x/linux-${_kernver}.tar.xz
revert-broken-uapi.patch
0003-remove-inclusion-of-sysinfo.h-in-kernel.h.patch
```

1.288 mpdecimal 4.0.1-r0

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1.289 defusedxml 0.7.1

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1.290 apache-servicemix-bundles-kafka-clients 3.9.1_1

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1.291 simpleclient_tracer_otel 0.16.0

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1.292 hikaricp 6.3.3

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/opt/cola/permits/2715573990_1762987533.8963053/0/hikaricp-6-3-3-sources-jar/com/zaxxer/hikari/HikariDataSource.java/*

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/opt/cola/permits/2715573990_1762987533.8963053/0/hikaricp-6-3-3-sources-jar/com/zaxxer/hikari/metrics/dropwizard/Dropwizard5MetricsTrackerFactory.java/*
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/opt/cola/permits/2715573990_1762987533.8963053/0/hikaricp-6-3-3-sources-jar/com/zaxxer/hikari/pool/PoolBase.java/*
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1.293 log4j-to-slf4j 2.24.3

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1.294 typing-extensions 4.12.2

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A. HISTORY OF THE SOFTWARE

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Python was created in the early 1990s by Guido van Rossum at Stichting Mathematisch Centrum (CWI, see <https://www.cwi.nl>) in the Netherlands as a successor of a language called ABC. Guido remains Python's principal author, although it includes many contributions from others.

In 1995, Guido continued his work on Python at the Corporation for National Research Initiatives (CNRI, see <https://www.cnri.reston.va.us>) in Reston, Virginia where he released several versions of the software.

In May 2000, Guido and the Python core development team moved to BeOpen.com to form the BeOpen PythonLabs team. In October of the same year, the PythonLabs team moved to Digital Creations, which became Zope Corporation. In 2001, the Python Software Foundation (PSF, see <https://www.python.org/psf/>) was formed, a non-profit organization created specifically to own Python-related Intellectual Property. Zope Corporation was a sponsoring member of the PSF.

All

Python releases are Open Source (see <https://opensource.org> for the Open Source Definition). Historically, most, but not all, Python releases have also been GPL-compatible; the table below summarizes the various releases.

Release	Derived from	Year	Owner	GPL-compatible? (1)
0.9.0 thru 1.2		1991-1995	CWI	yes

1.3 thru 1.5.2	1.2	1995-1999	CNRI	yes
1.6	1.5.2	2000	CNRI	no
2.0	1.6	2000	BeOpen.com	no
1.6.1	1.6	2001	CNRI	yes (2)
2.1	2.0+1.6.1	2001	PSF	no
2.0.1	2.0+1.6.1	2001	PSF	yes
2.1.1	2.1+2.0.1	2001	PSF	yes
2.1.2	2.1.1	2002	PSF	yes
2.1.3	2.1.2	2002	PSF	yes
2.2 and above	2.1.1	2001-now		
PSF				yes

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Thanks to the many outside volunteers who have worked under Guido's direction to make these releases possible.

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1.295 gorilla-mux 1.8.0

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1.298 truststore 0.10.1

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util/unlink.py

backport from python3 Lib/test/support.py
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1.300 go-yaml 2.4.0

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interest
in the program `Gnomovision'
(which makes passes at compilers) written
by James Hacker.

signature of Moe Ghoul, 1 April 1989

Moe Ghoul, President of Vice

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```
# Contributor: Carlo Landmeter <clandmeter@alpinelinux.org>
# Maintainer: Kevin Daudt <kdaudt@alpinelinux.org>
pkgname=spdx-licenses
pkgver=3.27.0
pkgrel=0
pkgdesc="Various data formats for the SPDX License List"
url="https://spdx.org/"
arch="noarch"
options="!check" # no test suite
license="CC-BY-3.0"
source="license-list-data-$pkgver.tar.gz::https://github.com/spdx/license-list-data/archive/v$pkgver.tar.gz"
builddir="$srcdir/license-list-data-$pkgver"
subpackages="$pkgname-list"
```

```
_types="html json rdfa rdfnt rdfturtle rdfxml template text"
```

```
for type in $_types; do
    subpackages="$subpackages $pkgname-$type:_subpkg"
done
```

```
package() {
    mkdir -p "$pkgdir"
}
```

```
_subpkg() {
    local type=${subpkgname/$pkgname-/}
    pkgdesc="$pkgdesc ($type)"
    install_if="$pkgname=$pkgver-r$pkgrel"
    mkdir -p "$subpkgdir"/usr/share/spdx
    cp -r "$builddir"/$type "$subpkgdir"/usr/share/spdx/
}
```

```
list() {
```

```

pkgdesc="$pkgdesc (licence list)"
mkdir -p "$subpkgdir"/usr/share/spdx
local i; for i in "$builddir"/text/*.txt;
do
    local license=${i##*/}
    echo ${license%.*} >> "$subpkgdir"/usr/share/spdx/license.lst
done
}

sha512sums="
16d59c81e331b54b52639826f83408d98144cdaa70eacc3e8ce35dc3b13992e4794cf7515eb9db200efd390a0c0e35ae9
d4706fbe0ca6a8d236189e88870720c  license-list-data-3.27.0.tar.gz
"

# Automatically generated by apkgbuild-cpan, template 4
# Contributor: Valery Kartel <valery.kartel@gmail.com>
# Maintainer: Celeste <cielesti@protonmail.com>
maintainer="Celeste <cielesti@protonmail.com>"
pkgname=perl-bsd-resource
pkgver=1.2911
pkgrel=11
#_pkgreal is used by apkgbuild-cpan to find modules at MetaCpan
_pkgreal=BSD-Resource
pkgdesc="Perl extension implements the BSD process resource limit functions"
url="https://metacpan.org/release/BSD-Resource/"
arch="all"
license="Artistic-2.0 OR LGPL-2.0"
depends="perl"
makedepends="perl-dev"
subpackages="$pkgname-doc"
source="https://cpan.metacpan.org/authors/id/J/JH/JHI/BSD-Resource-$pkgver.tar.gz"
builddir="$srcdir/${_pkgreal}-${pkgver}"

build() {
    export CFLAGS=$(perl -MConfig -E 'say $Config{ccflags}')
    PERL_MM_USE_DEFAULT=1 perl -I. Makefile.PL \
        INSTALLDIRS=vendor \
        NO_PACKLIST=1 \
        NO_PERLLOCAL=1
    make
}

check() {
    export CFLAGS=$(perl -MConfig -E 'say $Config{ccflags}')
    make test
}

package() {
    make DESTDIR="$pkgdir" install
}

```

```

}

sha512sums="
d0032d41c7c0468ed1c6d8f57b885f6cb97a5039d754c8cb60b2067daedaf53bd15fb6561a3d0f828df16dfa5417f663b
8065ba65f4fea16dc9262728b3b6b85
  BSD-Resource-1.2911.tar.gz
"

maintainer="Achill Gilgenast <achill@achill.org>"
pkgname=cargo-license
pkgver=0.7.0
pkgrel=1
pkgdesc="Cargo subcommand to see license of dependencies"
url="https://github.com/onur/cargo-license"
arch="all"
license="MIT"
makedepends="cargo cargo-auditable"
source="$pkgname-$pkgver.tar.gz::https://crates.io/api/v1/crates/cargo-license/$pkgver/download"

prepare() {
    default_prepare

    cargo fetch --target="$CTARGET" --locked
}

build() {
    cargo auditable build --release --frozen
}

check() {
    cargo test --frozen
}

package() {
    install -Dm755 target/release/cargo-license -t "$pkgdir"/usr/bin
}

sha512sums="
9b3f0ead35515e85ef4074ebdbdb5b9ec8bcaec244fabe414e2ed60f90366e8b1692d8bf7ffe4c07d778e60d94bab86bc
0c8be9823232e9c360a38bc65e9c5a  cargo-license-0.7.0.tar.gz
"

#!/sbin/openrc-run

command="/usr/libexec/xdg-permission-store"
supervisor=supervise-daemon
command_args="--replace $command_args"
error_logger="logger -t '${RC_SVCNAME}' -p daemon.error"

depend() {

```

```

need dbus
}
# Contributor: Maxim Karasev <begs@disroot.org>
# Maintainer: mio <miyopan@e.email>
pkgname=bsd-games
pkgver=3.3
pkgrel=2
pkgdesc="traditional text mode games from BSD"
url="https://bsd-games.sourceforge.io/"
arch="all"
license="BSD-3-Clause"
install="$pkgname.post-install"
makedepends="ncurses-dev coreutils" # configure causes busybox expr error
subpackages="$pkgname-doc"
source="https://sourceforge.net/projects/bsd-games/files/bsd-games-$pkgver.tar.gz
0001-bsd-games-scores-dir.patch
"
options="!check" # no tests

build() {
# some GNU autoconf options are ignored, but it works
./configure \
--build=$CBUILD \
--host=$CHOST \
--prefix=/usr \
--sysconfdir=/etc \
--mandir=/usr/share/man \
--scoredir=/usr/share/$pkgname
make
}

package() {
make DESTDIR="$pkgdir" install
install -Dm644 LICENSE "$pkgdir"/usr/share/licenses/bsd-games/LICENSE
}

sha512sums="
aaf36d09d4fe68514a5c279063d7e77a9a9a84c447037cba974b29faa07eb80c2aab2379d0699c196b5c27ffe1b2bb2c6
8d3390143e0e62d5e3d210ccfb61294
bsd-games-3.3.tar.gz
e1def0d4835a877242c4173fae862e278a7858738e0bacacbb045a42bcabec2aa7c72d000bbd2421ce35fe66cdc1f52c0
577b7e278029ca5ed50f7aab22319f6 0001-bsd-games-scores-dir.patch
"
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```

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mini_sendmail - accept email on behalf of real sendmail

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Maintainer: Natanael Copa <ncopa@alpinelinux.org>

pkgname=libart-lgpl

pkgver=2.3.21

pkgrel=8

pkgdesc="A library for high-performance 2D graphics"


```

url="https://www.levien.com/libart/"
arch="all"
options="!check" # No test suite.
license="LGPL-2.0-or-later"
subpackages="$pkgname-dev"
source="https://download.gnome.org/sources/libart_lgpl/2.3/libart_lgpl-$pkgver.tar.bz2"
"

builddir="$srcdir"/libart_lgpl-$pkgver

prepare() {
    update_config_sub
    default_prepare
}

build() {
    ./configure \
        --build=$CBUILD \
        --host=$CHOST \
        --prefix=/usr
    make
}

package() {
    make DESTDIR="$pkgdir" install
}

sha512sums="8a632a6a4da59e5e8c02ec2f5a57e36d182b325b46513765425e5f171ff9ae326af1b133725beba28f7e7
6654309e001aee9bace727b5b4c8589405256a3c020 libart_lgpl-2.3.21.tar.bz2"
# Contributor: Patrycja Rosa <alpine@ptrcnull.me>
# Maintainer: Patrycja Rosa <alpine@ptrcnull.me>
pkgname=bsd-compat-headers
pkgver=0.7.2
pkgrel=6
pkgdesc="BSD compatibility headers (cdefs, queue, tree)"
url="https://gitlab.alpinelinux.org/alpine/aports"
arch="noarch"
license="BSD-2-Clause AND BSD-3-Clause"
source="
    cdefs.h
    queue.h
    tree.h
"
builddir="$srcdir"
options="!check" # just headers

package() {
    mkdir -p "$pkgdir"

```

```

install -Dm644 -t "$pkgdir"/usr/include/sys \
cdefs.h queue.h tree.h
}
sha512sums="
37c8fc73c7aea7b490f7850927e2bb91d12137c9e59e22c084146d515696dbc7973b5de92f4c987ba080dd2502ba8312
7006442c3f019b6447a620c0cae73178 cdefs.h
2f0d5e6e4dc3350285cf17009265dddcbe12431c111868eea39bc8cb038ab7c1f2acacbb21735c4e9d4a1fd106a8fc0f86
11ea33987d4faba37dde5ce6da0750 queue.h
d9ac210d81feb8ad2655bc80fb065d3fe20ae4417b32b4a1711e6738a4870140005c13373b5d1846ef3ce5ae6da45f2da
cef2092881eded0a2e94f6a07752ef3 tree.h
"

```

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The X-Spline code was written Carole Blanc (blanc@labri.u-bordeaux.fr) and Christophe Schlick (schlick@labri.u-bordeaux.fr) starting from an initial implementation done by C. Feuille, S. Grosbois, L. Maziere and L. Minihot as a student practice (Universite Bordeaux, France). For additional information about X-splines, see:

"X-Splines: A Spline Model Designed for the End User" by C. Blanc and C. Schlick, Proceedings of SIGGRAPH'95

<http://dept-info.labri.u-bordeaux.fr/~schlick/DOC/sig1.html>

/* \$NetBSD: queue.h,v 1.70 2015/11/02 15:21:23 christos Exp \$ */

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* @(#)queue.h 8.5 (Berkeley) 8/20/94

*/

```
#ifndef _SYS_QUEUE_H_
#define _SYS_QUEUE_H_
```

```
/*
 * This file defines five types of data structures: singly-linked lists,
 * lists, simple queues, tail queues, and circular queues.
 *
 * A singly-linked list is headed by a single forward pointer. The
 * elements are singly linked for minimum space and
 * pointer manipulation
 * overhead at the expense of O(n) removal for arbitrary elements. New
 * elements can be added to the list after an existing element or at the
 * head of the list. Elements being removed from the head of the list
 * should use the explicit macro for this purpose for optimum
 * efficiency. A singly-linked list may only be traversed in the forward
 * direction. Singly-linked lists are ideal for applications with large
 * datasets and few or no removals or for implementing a LIFO queue.
 *
 * A list is headed by a single forward pointer (or an array of forward
 * pointers for a hash table header). The elements are doubly linked
 * so that an arbitrary element can be removed without a need to
 * traverse the list. New elements can be added to the list before
```

- * or after an existing element or at the head of the list. A list
- * may only be traversed in the forward direction.
- *
- * A simple queue is headed by a pair of pointers, one the head of the
- * list and the
- other to the tail of the list. The elements are singly
- * linked to save space, so elements can only be removed from the
- * head of the list. New elements can be added to the list after
- * an existing element, at the head of the list, or at the end of the
- * list. A simple queue may only be traversed in the forward direction.
- *
- * A tail queue is headed by a pair of pointers, one to the head of the
- * list and the other to the tail of the list. The elements are doubly
- * linked so that an arbitrary element can be removed without a need to
- * traverse the list. New elements can be added to the list before or
- * after an existing element, at the head of the list, or at the end of
- * the list. A tail queue may be traversed in either direction.
- *
- * A circle queue is headed by a pair of pointers, one to the head of the
- * list and the other to the tail of the list. The elements are doubly
- * linked so that an arbitrary element can be removed without a need to
- * traverse the list. New elements
- can be added to the list before or after
- * an existing element, at the head of the list, or at the end of the list.
- * A circle queue may be traversed in either direction, but has a more
- * complex end of list detection.
- *
- * For details on the use of these macros, see the queue(3) manual page.
- */

```
/*
 * Include the definition of NULL only on NetBSD because sys/null.h
 * is not available elsewhere. This conditional makes the header
 * portable and it can simply be dropped verbatim into any system.
 * The caveat is that on other systems some other header
 * must provide NULL before the macros can be used.
 */
```

```
#ifdef __NetBSD__
#include <sys/null.h>
#endif
```

```
#if defined(QUEUEDEBUG)
# if defined(_KERNEL)
# define QUEUEDEBUG_ABORT(...) panic(__VA_ARGS__)
# else
# include <err.h>
# define QUEUEDEBUG_ABORT(...) err(1, __VA_ARGS__)
# endif
```

```

#endif

/*
 * Singly-linked List definitions.
 */
#define SLIST_HEAD(name, type) \
struct name { \
    struct type *slh_first; /* first \
    element */ \
}

#define SLIST_HEAD_INITIALIZER(head) \
{ NULL }

#define SLIST_ENTRY(type) \
struct { \
    struct type *sle_next; /* next element */ \
}

/*
 * Singly-linked List access methods.
 */
#define SLIST_FIRST(head) ((head)->slh_first)
#define SLIST_END(head) NULL
#define SLIST_EMPTY(head) ((head)->slh_first == NULL)
#define SLIST_NEXT(elm, field) ((elm)->field.sle_next)

#define SLIST_FOREACH(var, head, field) \
for((var) = (head)->slh_first; \
    (var) != SLIST_END(head); \
    (var) = (var)->field.sle_next)

#define SLIST_FOREACH_SAFE(var, head, field, tvar) \
for ((var) = SLIST_FIRST((head)); \
    (var) != SLIST_END(head) && \
    ((tvar) = SLIST_NEXT((var), field), 1); \
    (var) = (tvar))

/*
 * Singly-linked List functions.
 */
#define SLIST_INIT(head) do { \
    (head)->slh_first = SLIST_END(head); \
} while (/*CONSTCOND*/0)

#define SLIST_INSERT_AFTER(slistelm, elm, field) do { \
    (elm)->field.sle_next = (slistelm)->field.sle_next; \
    (slistelm)->field.sle_next

```

```

= (elm); \
} while (/*CONSTCOND*/0)

#define SLIST_INSERT_HEAD(head, elm, field) do { \
    (elm)->field.sle_next = (head)->slh_first; \
    (head)->slh_first = (elm); \
} while (/*CONSTCOND*/0)

#define SLIST_REMOVE_AFTER(slistelm, field) do { \
    (slistelm)->field.sle_next = \
        SLIST_NEXT(SLIST_NEXT((slistelm), field), field); \
} while (/*CONSTCOND*/0)

#define SLIST_REMOVE_HEAD(head, field) do { \
    (head)->slh_first = (head)->slh_first->field.sle_next; \
} while (/*CONSTCOND*/0)

#define SLIST_REMOVE(head, elm, type, field) do { \
    if ((head)->slh_first == (elm)) { \
        SLIST_REMOVE_HEAD((head), field); \
    } \
    else { \
        struct type *curelm = (head)->slh_first; \
        while(curelm->field.sle_next != (elm)) \
            curelm = curelm->field.sle_next; \
        curelm->field.sle_next = \
            curelm->field.sle_next->field.sle_next; \
    } \
} while (/*CONSTCOND*/0)

/*
 * List definitions.
 */
#define LIST_HEAD(name, type) \
struct name { \
    struct type *lh_first; /* first element */ \
}

#define LIST_HEAD_INITIALIZER(head) \
{ NULL }

#define LIST_ENTRY(type) \
struct { \
    struct type *le_next; /* next element */ \
    struct type **le_prev; /* address of previous next element */ \
}

```

```

/*
 * List access methods.
 */

#define LIST_FIRST(head) ((head)->lh_first)
#define LIST_END(head) NULL
#define LIST_EMPTY(head) ((head)->lh_first == LIST_END(head))
#define LIST_NEXT(elm, field) ((elm)->field.le_next)

#define LIST_FOREACH(var, head, field) \
    for ((var) = ((head)->lh_first); \
         (var) != LIST_END(head); \
         (var) = ((var)->field.le_next))

#define LIST_FOREACH_SAFE(var, head, field, tvar) \
    for ((var) = LIST_FIRST((head)); \
         (var) != LIST_END(head) && \
         ((tvar) = LIST_NEXT((var), field), 1); \
         (var) = (tvar))

#define LIST_MOVE(head1, head2) do { \
    LIST_INIT((head2)); \
    if (!LIST_EMPTY((head1))) \
    { \
        (head2)->lh_first = (head1)->lh_first; \
        LIST_INIT((head1)); \
    } \
} while (/*CONSTCOND*/0)

/*
 * List functions.
 */

#if defined(QUEUEDEBUG)
#define QUEUEDEBUG_LIST_INSERT_HEAD(head, elm, field) \
    if ((head)->lh_first && \
        (head)->lh_first->field.le_prev != &(head)->lh_first) \
        QUEUEDEBUG_ABORT("LIST_INSERT_HEAD %p %s:%d", (head), \
            __FILE__, __LINE__);
#define QUEUEDEBUG_LIST_OP(elm, field) \
    if ((elm)->field.le_next && \
        (elm)->field.le_next->field.le_prev != \
        &(elm)->field.le_next) \
        QUEUEDEBUG_ABORT("LIST_* forw %p %s:%d", (elm), \
            __FILE__, __LINE__); \
    if (*(elm)->field.le_prev != (elm)) \
        QUEUEDEBUG_ABORT("LIST_* back %p %s:%d", (elm), \
            __FILE__, __LINE__);
#define QUEUEDEBUG_LIST_POSTREMOVE(elm, field) \
    (elm)->field.le_next = (void *)1L; \

```

```

(elm)->field.le_prev = (void *)1L;
#else
#define QUEUEDEBUG_LIST_INSERT_HEAD(head, elm, field)
#define QUEUEDEBUG_LIST_OP(elm,
    field)
#define QUEUEDEBUG_LIST_POSTREMOVE(elm, field)
#endif

#define LIST_INIT(head) do { \
    (head)->lh_first = LIST_END(head); \
} while (/*CONSTCOND*/0)

#define LIST_INSERT_AFTER(listelm, elm, field) do { \
    QUEUEDEBUG_LIST_OP((listelm), field) \
    if (((elm)->field.le_next = (listelm)->field.le_next) != \
        LIST_END(head)) \
        (listelm)->field.le_next->field.le_prev = \
            &(elm)->field.le_next; \
    (listelm)->field.le_next = (elm); \
    (elm)->field.le_prev = &(listelm)->field.le_next; \
} while (/*CONSTCOND*/0)

#define LIST_INSERT_BEFORE(listelm, elm, field) do { \
    QUEUEDEBUG_LIST_OP((listelm), field) \
    (elm)->field.le_prev = (listelm)->field.le_prev; \
    (elm)->field.le_next = (listelm); \
    *(listelm)->field.le_prev = (elm); \
    (listelm)->field.le_prev = &(elm)->field.le_next; \
} while (/*CONSTCOND*/0)

#define LIST_INSERT_HEAD(head, elm, field) do { \
    QUEUEDEBUG_LIST_INSERT_HEAD((head), (elm), field) \
    if (((elm)->field.le_next \
        = (head)->lh_first) != LIST_END(head)) \
        (head)->lh_first->field.le_prev = &(elm)->field.le_next; \
    (head)->lh_first = (elm); \
    (elm)->field.le_prev = &(head)->lh_first; \
} while (/*CONSTCOND*/0)

#define LIST_REMOVE(elm, field) do { \
    QUEUEDEBUG_LIST_OP((elm), field) \
    if ((elm)->field.le_next != NULL) \
        (elm)->field.le_next->field.le_prev = \
            (elm)->field.le_prev; \
    *(elm)->field.le_prev = (elm)->field.le_next; \
    QUEUEDEBUG_LIST_POSTREMOVE((elm), field) \
} while (/*CONSTCOND*/0)

```



```

#define LIST_REPLACE(elm, elm2, field) do { \
    if (((elm2)->field.le_next = (elm)->field.le_next) != NULL) \
        (elm2)->field.le_next->field.le_prev = \
            &(elm2)->field.le_next; \
    (elm2)->field.le_prev = (elm)->field.le_prev; \
    *(elm2)->field.le_prev = (elm2); \
    QUEUEDEBUG_LIST_POSTREMOVE((elm), field) \
} while (/*CONSTCOND*/0)

/*
 * Simple queue definitions.
 */
#define SIMPLEQ_HEAD(name, type) \
struct name { \
    struct \
    type *sqh_first; /* first element */ \
    struct type **sqh_last; /* addr of last next element */ \
}

#define SIMPLEQ_HEAD_INITIALIZER(head) \
{ NULL, &(head).sqh_first }

#define SIMPLEQ_ENTRY(type) \
struct { \
    struct type *sqe_next; /* next element */ \
}

/*
 * Simple queue access methods.
 */
#define SIMPLEQ_FIRST(head) ((head)->sqh_first)
#define SIMPLEQ_END(head) NULL
#define SIMPLEQ_EMPTY(head) ((head)->sqh_first == SIMPLEQ_END(head))
#define SIMPLEQ_NEXT(elm, field) ((elm)->field.sqe_next)

#define SIMPLEQ_FOREACH(var, head, field) \
for ((var) = ((head)->sqh_first); \
     (var) != SIMPLEQ_END(head); \
     (var) = ((var)->field.sqe_next))

#define SIMPLEQ_FOREACH_SAFE(var, head, field, next) \
for ((var) = ((head)->sqh_first); \
     (var) != SIMPLEQ_END(head) && \
     ((next = ((var)->field.sqe_next)), 1); \
     (var) = (next))

/*
 * Simple queue functions.

```

```

*/
#define SIMPLEQ_INIT(head) do { \
    (head)->sqh_first = NULL; \
    (head)->sqh_last \
    = &(head)->sqh_first; \
} while (/*CONSTCOND*/0)

#define SIMPLEQ_INSERT_HEAD(head, elm, field) do { \
    if (((elm)->field.sqe_next = (head)->sqh_first) == NULL) \
        (head)->sqh_last = &(elm)->field.sqe_next; \
    (head)->sqh_first = (elm); \
} while (/*CONSTCOND*/0)

#define SIMPLEQ_INSERT_TAIL(head, elm, field) do { \
    (elm)->field.sqe_next = NULL; \
    *(head)->sqh_last = (elm); \
    (head)->sqh_last = &(elm)->field.sqe_next; \
} while (/*CONSTCOND*/0)

#define SIMPLEQ_INSERT_AFTER(head, listelm, elm, field) do { \
    if (((elm)->field.sqe_next = (listelm)->field.sqe_next) == NULL) \
        (head)->sqh_last = &(elm)->field.sqe_next; \
    (listelm)->field.sqe_next = (elm); \
} while (/*CONSTCOND*/0)

#define SIMPLEQ_REMOVE_HEAD(head, field) do { \
    if (((head)->sqh_first = (head)->sqh_first->field.sqe_next) == NULL) \
        (head)->sqh_last = &(head)->sqh_first; \
} while (/*CONSTCOND*/0)

#define SIMPLEQ_REMOVE_AFTER(head, elm, field) do { \
    if \
        (((elm)->field.sqe_next = (elm)->field.sqe_next->field.sqe_next) \
         == NULL) \
        (head)->sqh_last = &(elm)->field.sqe_next; \
} while (/*CONSTCOND*/0)

#define SIMPLEQ_REMOVE(head, elm, type, field) do { \
    if ((head)->sqh_first == (elm)) { \
        SIMPLEQ_REMOVE_HEAD((head), field); \
    } else { \
        struct type *curelm = (head)->sqh_first; \
        while (curelm->field.sqe_next != (elm)) \
            curelm = curelm->field.sqe_next; \
        if ((curelm->field.sqe_next = \
            curelm->field.sqe_next->field.sqe_next) == NULL) \
            (head)->sqh_last = &(curelm)->field.sqe_next; \
    } \
} \

```

```

} while (/*CONSTCOND*/0)

#define SIMPLEQ_CONCAT(head1, head2) do { \
    if (!SIMPLEQ_EMPTY((head2))) { \
        *(head1)->sqh_last = (head2)->sqh_first; \
        (head1)->sqh_last = (head2)->sqh_last; \
        SIMPLEQ_INIT((head2)); \
    } \
} while (/*CONSTCOND*/0)

#define SIMPLEQ_LAST(head, type, field) \
    (SIMPLEQ_EMPTY((head)) ? \
     NULL : \
     ((struct type \
      *) (void *) \
      ((char *)((head)->sqh_last) - offsetof(struct type, field))))

/*
 * Tail queue definitions.
 */
#define _TAILQ_HEAD(name, type, qual) \
    struct name { \
        qual type *tqh_first; /* first element */ \
        qual type *qual *tqh_last; /* addr of last next element */ \
    }
#define TAILQ_HEAD(name, type) _TAILQ_HEAD(name, struct type,)

#define TAILQ_HEAD_INITIALIZER(head) \
    { TAILQ_END(head), &(head).tqh_first }

#define _TAILQ_ENTRY(type, qual) \
    struct { \
        qual type *tqe_next; /* next element */ \
        qual type *qual *tqe_prev; /* address of previous next element */ \
    }
#define TAILQ_ENTRY(type) _TAILQ_ENTRY(struct type,)

/*
 * Tail queue access methods.
 */
#define TAILQ_FIRST(head) ((head)->tqh_first)
#define TAILQ_END(head) (NULL)
#define TAILQ_NEXT(elm, field) ((elm)->field.tqe_next)
#define TAILQ_LAST(head, headname) \
    (((struct headname *) (void *) ((head)->tqh_last))->tqh_last)
#define TAILQ_PREV(elm, headname, field) \
    (((struct headname

```

```

*)(void *)((elm)->field.tqe_prev)->tqh_last))
#define TAILQ_EMPTY(head) (TAILQ_FIRST(head) == TAILQ_END(head))

#define TAILQ_FOREACH(var, head, field) \
for ((var) = ((head)->tqh_first); \
     (var) != TAILQ_END(head); \
     (var) = ((var)->field.tqe_next))

#define TAILQ_FOREACH_SAFE(var, head, field, next) \
for ((var) = ((head)->tqh_first); \
     (var) != TAILQ_END(head) && \
     ((next) = TAILQ_NEXT(var, field), 1); (var) = (next))

#define TAILQ_FOREACH_REVERSE(var, head, headname, field) \
for ((var) = TAILQ_LAST((head), headname); \
     (var) != TAILQ_END(head); \
     (var) = TAILQ_PREV((var), headname, field))

#define TAILQ_FOREACH_REVERSE_SAFE(var, head, headname, field, prev) \
for ((var) = TAILQ_LAST((head), headname); \
     (var) != TAILQ_END(head) && \
     ((prev) = TAILQ_PREV((var), headname, field), 1); (var) = (prev))

/*
 * Tail queue functions.
 */
#if defined(QUEUEDEBUG)
#define QUEUEDEBUG_TAILQ_INSERT_HEAD(head, \
elm, field) \
if ((head)->tqh_first && \
     (head)->tqh_first->field.tqe_prev != &(head)->tqh_first) \
    QUEUEDEBUG_ABORT("TAILQ_INSERT_HEAD %p %s:%d", (head), \
        __FILE__, __LINE__);
#define QUEUEDEBUG_TAILQ_INSERT_TAIL(head, elm, field) \
if (*(head)->tqh_last != NULL) \
    QUEUEDEBUG_ABORT("TAILQ_INSERT_TAIL %p %s:%d", (head), \
        __FILE__, __LINE__);
#define QUEUEDEBUG_TAILQ_OP(elm, field) \
if ((elm)->field.tqe_next && \
     (elm)->field.tqe_next->field.tqe_prev != \
     &(elm)->field.tqe_next) \
    QUEUEDEBUG_ABORT("TAILQ_* forw %p %s:%d", (elm), \
        __FILE__, __LINE__); \
if (*(elm)->field.tqe_prev != (elm)) \
    QUEUEDEBUG_ABORT("TAILQ_* back %p %s:%d", (elm), \
        __FILE__, __LINE__);
#define QUEUEDEBUG_TAILQ_PREREMOVE(head, elm, field) \

```

```

if ((elm)->field.tqe_next == NULL && \
    (head)->tqh_last != &(elm)->field.tqe_next) \
    QUEUEDEBUG_ABORT("TAILQ_PREREMOVE head %p elm %p %s:%d",\
        (head), (elm), __FILE__,
        __LINE__);
#define QUEUEDEBUG_TAILQ_POSTREMOVE(elm, field) \
    (elm)->field.tqe_next = (void *)1L; \
    (elm)->field.tqe_prev = (void *)1L;
#else
#define QUEUEDEBUG_TAILQ_INSERT_HEAD(head, elm, field)
#define QUEUEDEBUG_TAILQ_INSERT_TAIL(head, elm, field)
#define QUEUEDEBUG_TAILQ_OP(elm, field)
#define QUEUEDEBUG_TAILQ_PREREMOVE(head, elm, field)
#define QUEUEDEBUG_TAILQ_POSTREMOVE(elm, field)
#endif

#define TAILQ_INIT(head) do { \
    (head)->tqh_first = TAILQ_END(head); \
    (head)->tqh_last = &(head)->tqh_first; \
} while (/*CONSTCOND*/0)

#define TAILQ_INSERT_HEAD(head, elm, field) do { \
    QUEUEDEBUG_TAILQ_INSERT_HEAD((head), (elm), field) \
    if (((elm)->field.tqe_next = (head)->tqh_first) != TAILQ_END(head))\
        (head)->tqh_first->field.tqe_prev = \
            &(elm)->field.tqe_next; \
    else \
        (head)->tqh_last = &(elm)->field.tqe_next; \
    (head)->tqh_first = (elm); \
    (elm)->field.tqe_prev = &(head)->tqh_first; \
} while (/*CONSTCOND*/0)

#define TAILQ_INSERT_TAIL(head, \
    elm, field) do { \
    QUEUEDEBUG_TAILQ_INSERT_TAIL((head), (elm), field) \
    (elm)->field.tqe_next = TAILQ_END(head); \
    (elm)->field.tqe_prev = (head)->tqh_last; \
    *(head)->tqh_last = (elm); \
    (head)->tqh_last = &(elm)->field.tqe_next; \
} while (/*CONSTCOND*/0)

#define TAILQ_INSERT_AFTER(head, listelm, elm, field) do { \
    QUEUEDEBUG_TAILQ_OP((listelm), field) \
    if (((elm)->field.tqe_next = (listelm)->field.tqe_next) != \
        TAILQ_END(head)) \
        (elm)->field.tqe_next->field.tqe_prev = \
            &(elm)->field.tqe_next; \
    else \

```

```

(head)->tqh_last = &(elm)->field.tqe_next; \
(listelm)->field.tqe_next = (elm); \
(elm)->field.tqe_prev = &(listelm)->field.tqe_next; \
} while (/*CONSTCOND*/0)

#define TAILQ_INSERT_BEFORE(listelm, elm, field) do { \
    QUEUEDEBUG_TAILQ_OP((listelm), field) \
    (elm)->field.tqe_prev = (listelm)->field.tqe_prev; \
    (elm)->field.tqe_next = (listelm); \
    *(listelm)->field.tqe_prev = (elm); \
    (listelm)->field.tqe_prev \
    = &(elm)->field.tqe_next; \
} while (/*CONSTCOND*/0)

#define TAILQ_REMOVE(head, elm, field) do { \
    QUEUEDEBUG_TAILQ_PREREMOVE((head), (elm), field) \
    QUEUEDEBUG_TAILQ_OP((elm), field) \
    if (((elm)->field.tqe_next != TAILQ_END(head)) \
        (elm)->field.tqe_next->field.tqe_prev = \
            (elm)->field.tqe_prev; \
    else \
        (head)->tqh_last = (elm)->field.tqe_prev; \
    *(elm)->field.tqe_prev = (elm)->field.tqe_next; \
    QUEUEDEBUG_TAILQ_POSTREMOVE((elm), field); \
} while (/*CONSTCOND*/0)

#define TAILQ_REPLACE(head, elm, elm2, field) do { \
    if (((elm2)->field.tqe_next = (elm)->field.tqe_next) != \
        TAILQ_END(head)) \
        (elm2)->field.tqe_next->field.tqe_prev = \
            &(elm2)->field.tqe_next; \
    else \
        (head)->tqh_last = &(elm2)->field.tqe_next; \
    (elm2)->field.tqe_prev = (elm)->field.tqe_prev; \
    *(elm2)->field.tqe_prev = (elm2); \
    QUEUEDEBUG_TAILQ_POSTREMOVE((elm), \
        field); \
} while (/*CONSTCOND*/0)

#define TAILQ_CONCAT(head1, head2, field) do { \
    if (!TAILQ_EMPTY(head2)) { \
        *(head1)->tqh_last = (head2)->tqh_first; \
        (head2)->tqh_first->field.tqe_prev = (head1)->tqh_last; \
        (head1)->tqh_last = (head2)->tqh_last; \
        TAILQ_INIT((head2)); \
    } \
} while (/*CONSTCOND*/0)

```

```

/*
 * Singly-linked Tail queue declarations.
 */
#define STAILQ_HEAD(name, type)  \
struct name {                    \
    struct type *stqh_first; /* first element */ \
    struct type **stqh_last; /* addr of last next element */ \
}

#define STAILQ_HEAD_INITIALIZER(head)  \
{ NULL, &(head).stqh_first }

#define STAILQ_ENTRY(type)  \
struct {                    \
    struct type *stqe_next; /* next element */ \
}

/*
 * Singly-linked Tail queue access methods.
 */
#define STAILQ_FIRST(head) ((head)->stqh_first)
#define STAILQ_END(head) NULL
#define STAILQ_NEXT(elm, field) ((elm)->field.stqe_next)
#define STAILQ_EMPTY(head) (STAILQ_FIRST(head) \
    == STAILQ_END(head))

/*
 * Singly-linked Tail queue functions.
 */
#define STAILQ_INIT(head) do { \
    (head)->stqh_first = NULL; \
    (head)->stqh_last = &(head)->stqh_first; \
} while (/*CONSTCOND*/0)

#define STAILQ_INSERT_HEAD(head, elm, field) do { \
    if (((elm)->field.stqe_next = (head)->stqh_first) == NULL) \
        (head)->stqh_last = &(elm)->field.stqe_next; \
    (head)->stqh_first = (elm); \
} while (/*CONSTCOND*/0)

#define STAILQ_INSERT_TAIL(head, elm, field) do { \
    (elm)->field.stqe_next = NULL; \
    *(head)->stqh_last = (elm); \
    (head)->stqh_last = &(elm)->field.stqe_next; \
} while (/*CONSTCOND*/0)

#define STAILQ_INSERT_AFTER(head, listelm, elm, field) do { \
    if (((elm)->field.stqe_next = (listelm)->field.stqe_next) == NULL) \

```

```

(head)->stqh_last = &(elm)->field.stqe_next; \
(listelm)->field.stqe_next = (elm); \
} while (/*CONSTCOND*/0)

#define STAILQ_REMOVE_HEAD(head, field) do { \
if (((head)->stqh_first = (head)->stqh_first->field.stqe_next) \
== NULL) \
(head)->stqh_last = &(head)->stqh_first; \
} while (/*CONSTCOND*/0)

#define STAILQ_REMOVE(head, elm, type, field) do { \
if ((head)->stqh_first == (elm)) { \
STAILQ_REMOVE_HEAD((head), field); \
} else { \
struct type *curelm = (head)->stqh_first; \
while (curelm->field.stqe_next != (elm)) \
curelm = curelm->field.stqe_next; \
if ((curelm->field.stqe_next = \
curelm->field.stqe_next->field.stqe_next) == NULL) \
(head)->stqh_last = &(curelm)->field.stqe_next; \
} \
} while (/*CONSTCOND*/0)

#define STAILQ_FOREACH(var, head, field) \
for ((var) = ((head)->stqh_first); \
(var); \
(var) = ((var)->field.stqe_next))

#define STAILQ_FOREACH_SAFE(var, head, field, tvar) \
for ((var) = STAILQ_FIRST((head)); \
(var) && ((tvar) = STAILQ_NEXT((var), field), 1); \
(var) = (tvar))

#define STAILQ_CONCAT(head1, head2) do { \
if (!STAILQ_EMPTY((head2))) { \
*(head1)->stqh_last \
= (head2)->stqh_first; \
(head1)->stqh_last = (head2)->stqh_last; \
STAILQ_INIT((head2)); \
} \
} while (/*CONSTCOND*/0)

#define STAILQ_LAST(head, type, field) \
(STAILQ_EMPTY((head)) ? \
NULL : \
((struct type *) (void *) \
((char *)((head)->stqh_last) - offsetof(struct type, field))))

```



```

#ifndef _KERNEL
/*
 * Circular queue definitions. Do not use. We still keep the macros
 * for compatibility but because of pointer aliasing issues their use
 * is discouraged!
 */

/*
 * __launder_type(): We use this ugly hack to work around the the compiler
 * noticing that two types may not alias each other and elide tests in code.
 * We hit this in the CIRCLEQ macros when comparing 'struct name *' and
 * 'struct type *' (see CIRCLEQ_HEAD()). Modern compilers (such as GCC
 * 4.8) declare these comparisons as always false, causing the code to
 * not run as designed.
 *
 * This hack is only to be used for comparisons and thus can be fully const.
 * Do not use for assignment.
 *
 * If we ever choose to change the ABI of the CIRCLEQ macros, we could fix
 * this by changing the head/tail sentinel values, but see the note above
 * this one.
 */
static __inline const void * __launder_type(const void *);
static __inline const void *
__launder_type(const void *__x)
{
    __asm __volatile("" : "+r" (__x));
    return __x;
}

#if defined(QUEUEDEBUG)
#define QUEUEDEBUG_CIRCLEQ_HEAD(head, field) \
    if ((head)->cqh_first != CIRCLEQ_ENDC(head) && \
        (head)->cqh_first->field.cqe_prev != CIRCLEQ_ENDC(head)) \
        QUEUEDEBUG_ABORT("CIRCLEQ head forw %p %s:%d", (head), \
            __FILE__, __LINE__); \
    if ((head)->cqh_last != CIRCLEQ_ENDC(head) && \
        (head)->cqh_last->field.cqe_next != CIRCLEQ_ENDC(head)) \
        QUEUEDEBUG_ABORT("CIRCLEQ head back %p %s:%d", (head), \
            __FILE__, __LINE__);
#define QUEUEDEBUG_CIRCLEQ_ELM(head, elm, field) \
    if ((elm)->field.cqe_next == CIRCLEQ_ENDC(head)) { \
        if ((head)->cqh_last != (elm)) \
            QUEUEDEBUG_ABORT("CIRCLEQ \
elm last %p %s:%d", \
                (elm), __FILE__, __LINE__); \
    } else { \

```

```

if ((elm)->field.cqe_next->field.cqe_prev != (elm)) \
    QUEUEDEBUG_ABORT("CIRCLEQ elm forw %p %s:%d", \
        (elm), __FILE__, __LINE__); \
} \
if ((elm)->field.cqe_prev == CIRCLEQ_ENDC(head)) { \
    if ((head)->cqh_first != (elm)) \
        QUEUEDEBUG_ABORT("CIRCLEQ elm first %p %s:%d", \
            (elm), __FILE__, __LINE__); \
} else { \
    if ((elm)->field.cqe_prev->field.cqe_next != (elm)) \
        QUEUEDEBUG_ABORT("CIRCLEQ elm prev %p %s:%d", \
            (elm), __FILE__, __LINE__); \
}
#define QUEUEDEBUG_CIRCLEQ_POSTREMOVE(elm, field) \
    (elm)->field.cqe_next = (void *)1L; \
    (elm)->field.cqe_prev = (void *)1L;
#else
#define QUEUEDEBUG_CIRCLEQ_HEAD(head, field)
#define QUEUEDEBUG_CIRCLEQ_ELM(head, elm, field)
#define QUEUEDEBUG_CIRCLEQ_POSTREMOVE(elm, field)
#endif

#define CIRCLEQ_HEAD(name, type) \
    struct name { \
        struct type *cqh_first; /* \
        first element */ \
        struct type *cqh_last; /* last element */ \
    }

#define CIRCLEQ_HEAD_INITIALIZER(head) \
    { CIRCLEQ_END(&head), CIRCLEQ_END(&head) }

#define CIRCLEQ_ENTRY(type) \
    struct { \
        struct type *cqe_next; /* next element */ \
        struct type *cqe_prev; /* previous element */ \
    }

/*
 * Circular queue functions.
 */
#define CIRCLEQ_INIT(head) do { \
    (head)->cqh_first = CIRCLEQ_END(head); \
    (head)->cqh_last = CIRCLEQ_END(head); \
} while (/*CONSTCOND*/0)

#define CIRCLEQ_INSERT_AFTER(head, listelm, elm, field) do { \
    QUEUEDEBUG_CIRCLEQ_HEAD((head), field) \

```

```

QUEUEDEBUG_CIRCLEQ_ELM((head), (listelm), field) \
(elm)->field.cqe_next = (listelm)->field.cqe_next; \
(elm)->field.cqe_prev = (listelm); \
if ((listelm)->field.cqe_next == CIRCLEQ_ENDC(head)) \
(head)->cqh_last = (elm); \
else \
(listelm)->field.cqe_next->field.cqe_prev = (elm); \
(listelm)->field.cqe_next = (elm); \
} while (/*CONSTCOND*/0)

```

```

#define CIRCLEQ_INSERT_BEFORE(head,
listelm, elm, field) do { \
QUEUEDEBUG_CIRCLEQ_HEAD((head), field) \
QUEUEDEBUG_CIRCLEQ_ELM((head), (listelm), field) \
(elm)->field.cqe_next = (listelm); \
(elm)->field.cqe_prev = (listelm)->field.cqe_prev; \
if ((listelm)->field.cqe_prev == CIRCLEQ_ENDC(head)) \
(head)->cqh_first = (elm); \
else \
(listelm)->field.cqe_prev->field.cqe_next = (elm); \
(listelm)->field.cqe_prev = (elm); \
} while (/*CONSTCOND*/0)

```

```

#define CIRCLEQ_INSERT_HEAD(head, elm, field) do { \
QUEUEDEBUG_CIRCLEQ_HEAD((head), field) \
(elm)->field.cqe_next = (head)->cqh_first; \
(elm)->field.cqe_prev = CIRCLEQ_END(head); \
if ((head)->cqh_last == CIRCLEQ_ENDC(head)) \
(head)->cqh_last = (elm); \
else \
(head)->cqh_first->field.cqe_prev = (elm); \
(head)->cqh_first = (elm); \
} while (/*CONSTCOND*/0)

```

```

#define CIRCLEQ_INSERT_TAIL(head, elm, field) do { \
QUEUEDEBUG_CIRCLEQ_HEAD((head), field) \
(elm)->field.cqe_next
= CIRCLEQ_END(head); \
(elm)->field.cqe_prev = (head)->cqh_last; \
if ((head)->cqh_first == CIRCLEQ_ENDC(head)) \
(head)->cqh_first = (elm); \
else \
(head)->cqh_last->field.cqe_next = (elm); \
(head)->cqh_last = (elm); \
} while (/*CONSTCOND*/0)

```

```

#define CIRCLEQ_REMOVE(head, elm, field) do { \
QUEUEDEBUG_CIRCLEQ_HEAD((head), field) \

```

```

QUEUEDEBUG_CIRCLEQ_ELM((head), (elm), field) \
if ((elm)->field.cqe_next == CIRCLEQ_ENDC(head)) \
    (head)->cqh_last = (elm)->field.cqe_prev; \
else \
    (elm)->field.cqe_next->field.cqe_prev = \
        (elm)->field.cqe_prev; \
if ((elm)->field.cqe_prev == CIRCLEQ_ENDC(head)) \
    (head)->cqh_first = (elm)->field.cqe_next; \
else \
    (elm)->field.cqe_prev->field.cqe_next = \
        (elm)->field.cqe_next; \
QUEUEDEBUG_CIRCLEQ_POSTREMOVE((elm), field) \
} while (/*CONSTCOND*/0)

```

```

#define CIRCLEQ_FOREACH(var, head, field) \
for ((var) = ((head)->cqh_first); \
    (var) != CIRCLEQ_ENDC(head); \
    (var) \
    = ((var)->field.cqe_next))

```

```

#define CIRCLEQ_FOREACH_REVERSE(var, head, field) \
for ((var) = ((head)->cqh_last); \
    (var) != CIRCLEQ_ENDC(head); \
    (var) = ((var)->field.cqe_prev))

```

/*

* Circular queue access methods.

*/

```

#define CIRCLEQ_FIRST(head) ((head)->cqh_first)
#define CIRCLEQ_LAST(head) ((head)->cqh_last)
/* For comparisons */
#define CIRCLEQ_ENDC(head) (__laundry_type(head))
/* For assignments */
#define CIRCLEQ_END(head) ((void*)(head))
#define CIRCLEQ_NEXT(elm, field) ((elm)->field.cqe_next)
#define CIRCLEQ_PREV(elm, field) ((elm)->field.cqe_prev)
#define CIRCLEQ_EMPTY(head) \
    (CIRCLEQ_FIRST(head) == CIRCLEQ_ENDC(head))

```

```

#define CIRCLEQ_LOOP_NEXT(head, elm, field) \
(((elm)->field.cqe_next == CIRCLEQ_ENDC(head)) \
 ? ((head)->cqh_first) \
 : (elm)->field.cqe_next)
#define CIRCLEQ_LOOP_PREV(head, elm, field) \
(((elm)->field.cqe_prev == CIRCLEQ_ENDC(head)) \
 ? ((head)->cqh_last) \
 :

```

```

(elm->field.cqe_prev))
#endif /* !_KERNEL */

#endif /* !_SYS_QUEUE_H_ */
#ifndef _SYS_CDEFS_H_
#define _SYS_CDEFS_H_

#warning usage of non-standard #include <sys/cdefs.h> is deprecated

#undef __P
#undef __PMT

#define __P(args) args
#define __PMT(args) args

#define __CONCAT(x,y) x ## y
#define __STRING(x) #x

#ifdef __cplusplus
# define __BEGIN_DECLS extern "C" {
# define __END_DECLS }
#else
# define __BEGIN_DECLS
# define __END_DECLS
#endif

#if defined(__GNUC__) && !defined(__cplusplus)
# define __THROW __attribute__((__nothrow__))
# define __NTH(fct) __attribute__((__nothrow__)) fct
#else
# define __THROW
# define __NTH(fct) fct
#endif

#endif /* _SYS_CDEFS_H_ */
# Contributor: Fabian Affolter <fabian@affolter-engineering.ch>
# Maintainer: Fabian Affolter <fabian@affolter-engineering.ch>
pkgname=py3-flake8-copyright
_pkgname=flake8-copyright
pkgver=0.2.4
pkgrel=3
pkgdesc="Extension for flake8 which checks for copyrights"
options="!check" # No testsuite
url="https://github.com/savoirfairelinux/flake8-copyright"
arch="noarch"
license="MIT"
depends="py3-flake8 py3-setuptools"
makedepends="py3-gp517 py3-wheel"

```

```

subpackages="$pkgname-pyc"
source="https://files.pythonhosted.org/packages/source/${_pkgname:0:1}/${_pkgname}/${_pkgname}-${pkgver}.tar.gz"
builddir="$srcdir"/$_pkgname-$pkgver

replaces="py-flake8-copyright"          # Backwards compatibility
provides="py-flake8-copyright=$pkgver-r$pkgrel" # Backwards compatibility

build() {
    gpep517 build-wheel \
        --wheel-dir .dist \
        --output-fd 3 3>&1 >&2
}

package() {
    gpep517 install-wheel --destdir "$pkgdir" \
        .dist/*.whl
}

sha512sums="
a6ab47e1bb715618f075c51f398e18180404871b3b0faf1c2d30701d5203db6bc23771bf22ffb5bafcd8ee856b9b64237
b316bd503ae7dceed6ca284ccd5a74d
    flake8-copyright-0.2.4.tar.gz
"
(The MIT License)

```

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/* \$NetBSD: tree.h,v 1.20 2013/09/14 13:20:45 joerg Exp \$ */

/* \$OpenBSD: tree.h,v 1.13 2011/07/09 00:19:45 pirofti Exp \$ */

```

/* Modified by Void Linux. */
/*
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 * THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.
 */

#ifndef _SYS_TREE_H_
#define _SYS_TREE_H_

#ifdef __GNUC__
#define __GNUC_PREREQ__(x, y) \
    ((__GNUC__ == (x) && __GNUC_MINOR__ >= (y)) || \
     (__GNUC__ > (x)))
#else
#define __GNUC_PREREQ__(x, y) 0
#endif

#if __GNUC_PREREQ__(2, 7) || defined(__lint__)
#define _sys_tree_h_unused __attribute__((__unused__))
#else
#define _sys_tree_h_unused /* delete */
#endif

/*
 * This file defines data structures for different types of trees:
 * splay trees and red-black trees.
 */

```

- * A splay tree is a self-organizing data structure. Every operation
- * on the tree causes a splay to happen. The splay moves the requested
- * node to the root of the tree and partly rebalances it.
- *
- * This has the benefit that request locality causes faster lookups as
- * the requested nodes move to the top of the tree. On the other hand,
- * every lookup causes memory writes.
- *
- * The Balance Theorem bounds the total access time for m operations
- * and n inserts on an initially empty tree as $O((m + n)\lg n)$. The
- * amortized cost for a sequence of m accesses to a splay tree is $O(\lg n)$;
- *
- * A red-black tree is a binary search tree with the node color as an
- * extra attribute. It fulfills a set of conditions:
- * - every search path from the root to a leaf consists of the
- * same number of black nodes,
- * - each red node (except for the root) has a black parent,
- * - each leaf node is black.
- *
- * Every operation on a red-black tree is bounded as $O(\lg n)$.
- * The maximum height of a red-black tree is $2\lg(n+1)$.
- */

```
#define SPLAY_HEAD(name, type) \
struct name { \
    struct type *sph_root; /* root of the tree */ \
}
```

```
#define SPLAY_INITIALIZER(root) \
{ NULL }
```

```
#define SPLAY_INIT(root) do { \
    (root)->sph_root = NULL; \
} while (/*CONSTCOND*/ 0)
```

```
#define SPLAY_ENTRY(type) \
struct { \
    struct type *spe_left; /* left element */ \
    struct type *spe_right; /* right element */ \
}
```

```
#define SPLAY_LEFT(elm, field) (elm)->field.spe_left
#define SPLAY_RIGHT(elm, field) (elm)->field.spe_right
#define SPLAY_ROOT(head) (head)->sph_root
#define SPLAY_EMPTY(head) (SPLAY_ROOT(head) == NULL)
```

```
/* SPLAY_ROTATE_{LEFT,RIGHT} expect that tmp hold SPLAY_{RIGHT,LEFT} */
```



```
#define SPLAY_ROTATE_RIGHT(head, tmp, field) do { \
    SPLAY_LEFT((head)->sph_root, field) = SPLAY_RIGHT(tmp, field); \
    SPLAY_RIGHT(tmp, field) = (head)->sph_root; \
    (head)->sph_root = tmp; \
} while (/*CONSTCOND*/ 0)
```

```
#define SPLAY_ROTATE_LEFT(head, tmp, field) do { \
    SPLAY_RIGHT((head)->sph_root, \
    field) = SPLAY_LEFT(tmp, field); \
    SPLAY_LEFT(tmp, field) = (head)->sph_root; \
    (head)->sph_root = tmp; \
} while (/*CONSTCOND*/ 0)
```

```
#define SPLAY_LINKLEFT(head, tmp, field) do { \
    SPLAY_LEFT(tmp, field) = (head)->sph_root; \
    tmp = (head)->sph_root; \
    (head)->sph_root = SPLAY_LEFT((head)->sph_root, field); \
} while (/*CONSTCOND*/ 0)
```

```
#define SPLAY_LINKRIGHT(head, tmp, field) do { \
    SPLAY_RIGHT(tmp, field) = (head)->sph_root; \
    tmp = (head)->sph_root; \
    (head)->sph_root = SPLAY_RIGHT((head)->sph_root, field); \
} while (/*CONSTCOND*/ 0)
```

```
#define SPLAY_ASSEMBLE(head, node, left, right, field) do { \
    SPLAY_RIGHT(left, field) = SPLAY_LEFT((head)->sph_root, field); \
    SPLAY_LEFT(right, field) = SPLAY_RIGHT((head)->sph_root, field); \
    SPLAY_LEFT((head)->sph_root, field) = SPLAY_RIGHT(node, field); \
    SPLAY_RIGHT((head)->sph_root, field) = SPLAY_LEFT(node, field); \
} while (/*CONSTCOND*/ 0)
```

/* Generates prototypes and inline functions */

```
#define
    SPLAY_PROTOTYPE(name, type, field, cmp) \
    void name##_SPLAY(struct name *, struct type *); \
    void name##_SPLAY_MINMAX(struct name *, int); \
    struct type *name##_SPLAY_INSERT(struct name *, struct type *); \
    struct type *name##_SPLAY_REMOVE(struct name *, struct type *); \
    \
```

```
/* Finds the node with the same key as elm */ \
static __inline struct type * \
name##_SPLAY_FIND(struct name *head, struct type *elm) \
{ \
    if (SPLAY_EMPTY(head)) \
        return(NULL); \
    name##_SPLAY(head, elm); \
}
```

```

if ((cmp)(elm, (head)->sph_root) == 0) \
    return (head->sph_root); \
return (NULL); \
} \
\
static __inline __sys_tree_h_unused struct type * \
name##_SPLAY_NEXT(struct name *head, struct type *elm) \
{ \
    name##_SPLAY(head, elm); \
    if (SPLAY_RIGHT(elm, field) != NULL) { \
        elm = SPLAY_RIGHT(elm, field); \
        while (SPLAY_LEFT(elm, field) != NULL) { \
            elm = SPLAY_LEFT(elm, field); \
        } \
    } \
} \
else \
    elm = NULL; \
return (elm); \
} \
\
static __sys_tree_h_unused __inline struct type * \
name##_SPLAY_MIN_MAX(struct name *head, int val) \
{ \
    name##_SPLAY_MINMAX(head, val); \
    return (SPLAY_ROOT(head)); \
}

/* Main splay operation.
 * Moves node close to the key of elm to top
 */
#define SPLAY_GENERATE(name, type, field, cmp) \
struct type * \
name##_SPLAY_INSERT(struct name *head, struct type *elm) \
{ \
    if (SPLAY_EMPTY(head)) { \
        SPLAY_LEFT(elm, field) = SPLAY_RIGHT(elm, field) = NULL; \
    } else { \
        int __comp; \
        name##_SPLAY(head, elm); \
        __comp = (cmp)(elm, (head)->sph_root); \
        if (__comp < 0) { \
            SPLAY_LEFT(elm, field) = SPLAY_LEFT((head)->sph_root, field); \
            SPLAY_RIGHT(elm, field) = (head)->sph_root; \
            SPLAY_LEFT((head)->sph_root, field) = NULL; \
        } else if (__comp > 0) { \
            SPLAY_RIGHT(elm, \
field) = SPLAY_RIGHT((head)->sph_root, field); \
            SPLAY_LEFT(elm, field) = (head)->sph_root; \

```

```

        SPLAY_RIGHT((head)->sph_root, field) = NULL; \
    } else \
        return ((head)->sph_root); \
} \
(head)->sph_root = (elm); \
return (NULL); \
} \
\
struct type * \
name##_SPLAY_REMOVE(struct name *head, struct type *elm) \
{ \
    struct type *__tmp; \
    if (SPLAY_EMPTY(head)) \
        return (NULL); \
    name##_SPLAY(head, elm); \
    if ((cmp)(elm, (head)->sph_root) == 0) { \
        if (SPLAY_LEFT((head)->sph_root, field) == NULL) { \
            (head)->sph_root = SPLAY_RIGHT((head)->sph_root, field);\
        } else { \
            __tmp = SPLAY_RIGHT((head)->sph_root, field); \
            (head)->sph_root = SPLAY_LEFT((head)->sph_root, field);\
            name##_SPLAY(head, elm); \
            SPLAY_RIGHT((head)->sph_root, field) = __tmp; \
        } \
        return (elm); \
    } \
    return (NULL); \
} \
\
void \
name##_SPLAY(struct \
    name *head, struct type *elm) \
{ \
    struct type __node, *__left, *__right, *__tmp; \
    int __comp; \
    \
    SPLAY_LEFT(&__node, field) = SPLAY_RIGHT(&__node, field) = NULL;\
    __left = __right = &__node; \
    \
    while ((__comp = (cmp)(elm, (head)->sph_root)) != 0) { \
        if (__comp < 0) { \
            __tmp = SPLAY_LEFT((head)->sph_root, field); \
            if (__tmp == NULL) \
                break; \
            if ((cmp)(elm, __tmp) < 0){ \
                SPLAY_ROTATE_RIGHT(head, __tmp, field); \
                if (SPLAY_LEFT((head)->sph_root, field) == NULL)\
                    break; \
            }

```

```

    } \
    SPLAY_LINKLEFT(head, __right, field); \
} else if (__comp > 0) { \
    __tmp = SPLAY_RIGHT((head)->sph_root, field); \
    if (__tmp == NULL) \
        break; \
    if ((cmp)(elm, __tmp) > 0){ \
        SPLAY_ROTATE_LEFT(head, __tmp, field); \
        if (SPLAY_RIGHT((head)->sph_root, field) == NULL)\
            break; \
    } \
    SPLAY_LINKRIGHT(head, __left, field); \
} \
} \
SPLAY_ASSEMBLE(head,
&__node, __left, __right, field); \
} \
\
/* Splay with either the minimum or the maximum element \
* Used to find minimum or maximum element in tree. \
*/ \
void name##_SPLAY_MINMAX(struct name *head, int __comp) \
{ \
    struct type __node, *__left, *__right, *__tmp; \
    \
    SPLAY_LEFT(&__node, field) = SPLAY_RIGHT(&__node, field) = NULL; \
    __left = __right = &__node; \
    \
    while (1) { \
        if (__comp < 0) { \
            __tmp = SPLAY_LEFT((head)->sph_root, field); \
            if (__tmp == NULL) \
                break; \
            if (__comp < 0){ \
                SPLAY_ROTATE_RIGHT(head, __tmp, field); \
                if (SPLAY_LEFT((head)->sph_root, field) == NULL)\
                    break; \
            } \
            SPLAY_LINKLEFT(head, __right, field); \
        } else if (__comp > 0) { \
            __tmp = SPLAY_RIGHT((head)->sph_root, field); \
            if (__tmp == NULL) \
                break; \
            if (__comp > 0) { \
                SPLAY_ROTATE_LEFT(head, __tmp, field); \
                if (SPLAY_RIGHT((head)->sph_root,
field) == NULL)\
                    break; \
            }

```

```

    } \
    SPLAY_LINKRIGHT(head, __left, field); \
} \
} \
SPLAY_ASSEMBLE(head, &__node, __left, __right, field); \
}

#define SPLAY_NEGINF -1
#define SPLAY_INF 1

#define SPLAY_INSERT(name, x, y) name##_SPLAY_INSERT(x, y)
#define SPLAY_REMOVE(name, x, y) name##_SPLAY_REMOVE(x, y)
#define SPLAY_FIND(name, x, y) name##_SPLAY_FIND(x, y)
#define SPLAY_NEXT(name, x, y) name##_SPLAY_NEXT(x, y)
#define SPLAY_MIN(name, x) (SPLAY_EMPTY(x) ? NULL \
    : name##_SPLAY_MIN_MAX(x, SPLAY_NEGINF))
#define SPLAY_MAX(name, x) (SPLAY_EMPTY(x) ? NULL \
    : name##_SPLAY_MIN_MAX(x, SPLAY_INF))

#define SPLAY_FOREACH(x, name, head) \
    for ((x) = SPLAY_MIN(name, head); \
        (x) != NULL; \
        (x) = SPLAY_NEXT(name, head, x))

/* Macros that define a red-black tree */
#define RB_HEAD(name, type) \
    struct name { \
        struct type *rbh_root; /* root of the tree */ \
    }

#define RB_INITIALIZER(root) \
    { \
        NULL \
    }

#define RB_INIT(root) do { \
    (root)->rbh_root = NULL; \
} while (/*CONSTCOND*/ 0)

#define RB_BLACK 0
#define RB_RED 1
#define RB_ENTRY(type) \
    struct { \
        struct type *rbe_left; /* left element */ \
        struct type *rbe_right; /* right element */ \
        struct type *rbe_parent; /* parent element */ \
        int rbe_color; /* node color */ \
    }

```

```

#define RB_LEFT(elm, field) (elm)->field.rbe_left
#define RB_RIGHT(elm, field) (elm)->field.rbe_right
#define RB_PARENT(elm, field) (elm)->field.rbe_parent
#define RB_COLOR(elm, field) (elm)->field.rbe_color
#define RB_ROOT(head) (head)->rbh_root
#define RB_EMPTY(head) (RB_ROOT(head) == NULL)

#define RB_SET(elm, parent, field) do { \
    RB_PARENT(elm, field) = parent; \
    RB_LEFT(elm, field) = RB_RIGHT(elm, field) = NULL; \
    RB_COLOR(elm, field) = RB_RED; \
} while (/*CONSTCOND*/ 0)

#define RB_SET_BLACKRED(black, red, field) do { \
    RB_COLOR(black, field) = RB_BLACK; \
    RB_COLOR(red, field) \
    = RB_RED; \
} while (/*CONSTCOND*/ 0)

#ifndef RB_AUGMENT
#define RB_AUGMENT(x) do {} while (/*CONSTCOND*/ 0)
#endif

#define RB_ROTATE_LEFT(head, elm, tmp, field) do { \
    (tmp) = RB_RIGHT(elm, field); \
    if ((RB_RIGHT(elm, field) = RB_LEFT(tmp, field)) != NULL) { \
        RB_PARENT(RB_LEFT(tmp, field), field) = (elm); \
    } \
    RB_AUGMENT(elm); \
    if ((RB_PARENT(tmp, field) = RB_PARENT(elm, field)) != NULL) { \
        if ((elm) == RB_LEFT(RB_PARENT(elm, field), field)) \
            RB_LEFT(RB_PARENT(elm, field), field) = (tmp); \
        else \
            RB_RIGHT(RB_PARENT(elm, field), field) = (tmp); \
    } else \
        (head)->rbh_root = (tmp); \
    RB_LEFT(tmp, field) = (elm); \
    RB_PARENT(elm, field) = (tmp); \
    RB_AUGMENT(tmp); \
    if ((RB_PARENT(tmp, field))) \
        RB_AUGMENT(RB_PARENT(tmp, field)); \
} while (/*CONSTCOND*/ 0)

#define RB_ROTATE_RIGHT(head, elm, tmp, field) do { \
    (tmp) = RB_LEFT(elm, field); \
    if ((RB_LEFT(elm, field) = RB_RIGHT(tmp, field)) \
    != NULL) { \
        RB_PARENT(RB_RIGHT(tmp, field), field) = (elm); \
    }

```

```

} \
RB_AUGMENT(elm); \
if ((RB_PARENT(tmp, field) = RB_PARENT(elm, field)) != NULL) { \
    if ((elm) == RB_LEFT(RB_PARENT(elm, field), field)) \
        RB_LEFT(RB_PARENT(elm, field), field) = (tmp); \
    else \
        RB_RIGHT(RB_PARENT(elm, field), field) = (tmp); \
} else \
    (head)->rbh_root = (tmp); \
RB_RIGHT(tmp, field) = (elm); \
RB_PARENT(elm, field) = (tmp); \
RB_AUGMENT(tmp); \
if ((RB_PARENT(tmp, field))) \
    RB_AUGMENT(RB_PARENT(tmp, field)); \
} while (/*CONSTCOND*/ 0)

/* Generates prototypes and inline functions */
#define RB_PROTOTYPE(name, type, field, cmp) \
    RB_PROTOTYPE_INTERNAL(name, type, field, cmp,)
#define RB_PROTOTYPE_STATIC(name, type, field, cmp) \
    RB_PROTOTYPE_INTERNAL(name, type, field, cmp, _sys_tree_h_unused static)
#define RB_PROTOTYPE_INTERNAL(name, type, field, cmp, attr) \
    attr void name##_RB_INSERT_COLOR(struct name *, struct \
        type *); \
    attr void name##_RB_REMOVE_COLOR(struct name *, struct type *, struct type *); \
    attr struct type *name##_RB_REMOVE(struct name *, struct type *); \
    attr struct type *name##_RB_INSERT(struct name *, struct type *); \
    attr struct type *name##_RB_FIND(struct name *, struct type *); \
    attr struct type *name##_RB_NFIND(struct name *, struct type *); \
    attr struct type *name##_RB_NEXT(struct type *); \
    attr struct type *name##_RB_PREV(struct type *); \
    attr struct type *name##_RB_MINMAX(struct name *, int); \
    \

/* Main rb operation.
 * Moves node close to the key of elm to top
 */
#define RB_GENERATE(name, type, field, cmp) \
    RB_GENERATE_INTERNAL(name, type, field, cmp,)
#define RB_GENERATE_STATIC(name, type, field, cmp) \
    RB_GENERATE_INTERNAL(name, type, field, cmp, _sys_tree_h_unused static)
#define RB_GENERATE_INTERNAL(name, type, field, cmp, attr) \
    attr void \
    name##_RB_INSERT_COLOR(struct name *head, struct type *elm) \
    { \
        struct type \
        *parent, *gparent, *tmp; \
        while ((parent = RB_PARENT(elm, field)) != NULL && \

```

```

    RB_COLOR(parent, field) == RB_RED) { \
gparent = RB_PARENT(parent, field); \
if (parent == RB_LEFT(gparent, field)) { \
    tmp = RB_RIGHT(gparent, field); \
    if (tmp && RB_COLOR(tmp, field) == RB_RED) { \
        RB_COLOR(tmp, field) = RB_BLACK; \
        RB_SET_BLACKRED(parent, gparent, field);\
        elm = gparent; \
        continue; \
    } \
    if (RB_RIGHT(parent, field) == elm) { \
        RB_ROTATE_LEFT(head, parent, tmp, field);\
        tmp = parent; \
        parent = elm; \
        elm = tmp; \
    } \
    RB_SET_BLACKRED(parent, gparent, field); \
    RB_ROTATE_RIGHT(head, gparent, tmp, field); \
} else { \
    tmp = RB_LEFT(gparent, field); \
    if (tmp && RB_COLOR(tmp, field) == RB_RED) { \
        RB_COLOR(tmp, field) = RB_BLACK; \
        RB_SET_BLACKRED(parent, gparent, field);\
        elm = gparent; \
        continue; \
    } \
    if (RB_LEFT(parent, field) == elm)
{ \
    RB_ROTATE_RIGHT(head, parent, tmp, field);\
    tmp = parent; \
    parent = elm; \
    elm = tmp; \
} \
    RB_SET_BLACKRED(parent, gparent, field); \
    RB_ROTATE_LEFT(head, gparent, tmp, field); \
} \
} \
RB_COLOR(head->rbh_root, field) = RB_BLACK; \
} \
\
attr void \
name##_RB_REMOVE_COLOR(struct name *head, struct type *parent, struct type *elm) \
{ \
    struct type *tmp; \
    while ((elm == NULL || RB_COLOR(elm, field) == RB_BLACK) && \
        elm != RB_ROOT(head)) { \
        if (RB_LEFT(parent, field) == elm) { \
            tmp = RB_RIGHT(parent, field); \

```



```

if (RB_COLOR(tmp, field) == RB_RED) { \
    RB_SET_BLACKRED(tmp, parent, field); \
    RB_ROTATE_LEFT(head, parent, tmp, field);\
    tmp = RB_RIGHT(parent, field); \
} \
if ((RB_LEFT(tmp, field) == NULL || \
    RB_COLOR(RB_LEFT(tmp, field), field) == RB_BLACK) &&\
    (RB_RIGHT(tmp, field) == NULL || \
    RB_COLOR(RB_RIGHT(tmp,
field), field) == RB_BLACK)) {\
    RB_COLOR(tmp, field) = RB_RED; \
    elm = parent; \
    parent = RB_PARENT(elm, field); \
} else { \
    if (RB_RIGHT(tmp, field) == NULL || \
        RB_COLOR(RB_RIGHT(tmp, field), field) == RB_BLACK) {\
        struct type *oleft; \
        if ((oleft = RB_LEFT(tmp, field)) \
            != NULL) \
            RB_COLOR(oleft, field) = RB_BLACK;\
        RB_COLOR(tmp, field) = RB_RED; \
        RB_ROTATE_RIGHT(head, tmp, oleft, field);\
        tmp = RB_RIGHT(parent, field); \
    } \
    RB_COLOR(tmp, field) = RB_COLOR(parent, field);\
    RB_COLOR(parent, field) = RB_BLACK; \
    if (RB_RIGHT(tmp, field)) \
        RB_COLOR(RB_RIGHT(tmp, field), field) = RB_BLACK;\
    RB_ROTATE_LEFT(head, parent, tmp, field);\
    elm = RB_ROOT(head); \
    break; \
} \
} else { \
    tmp = RB_LEFT(parent, field); \
    if (RB_COLOR(tmp, field) == RB_RED) { \
        RB_SET_BLACKRED(tmp, parent, field); \
        RB_ROTATE_RIGHT(head, parent, tmp, field);\
        tmp
= RB_LEFT(parent, field); \
    } \
    if ((RB_LEFT(tmp, field) == NULL || \
        RB_COLOR(RB_LEFT(tmp, field), field) == RB_BLACK) &&\
        (RB_RIGHT(tmp, field) == NULL || \
        RB_COLOR(RB_RIGHT(tmp, field), field) == RB_BLACK)) {\
        RB_COLOR(tmp, field) = RB_RED; \
        elm = parent; \
        parent = RB_PARENT(elm, field); \
    } else { \

```

```

if (RB_LEFT(tmp, field) == NULL || \
    RB_COLOR(RB_LEFT(tmp, field), field) == RB_BLACK) {\
    struct type *oright; \
    if ((oright = RB_RIGHT(tmp, field)) \
        != NULL) \
        RB_COLOR(oright, field) = RB_BLACK;\
    RB_COLOR(tmp, field) = RB_RED; \
    RB_ROTATE_LEFT(head, tmp, oright, field);\
    tmp = RB_LEFT(parent, field); \
} \
RB_COLOR(tmp, field) = RB_COLOR(parent, field);\
RB_COLOR(parent, field) = RB_BLACK; \
if (RB_LEFT(tmp, field)) \
    RB_COLOR(RB_LEFT(tmp, field), field) = RB_BLACK;\
RB_ROTATE_RIGHT(head, parent, tmp, field);\
elm = RB_ROOT(head); \
break; \
} \
} \
} \
if
(elm) \
    RB_COLOR(elm, field) = RB_BLACK; \
} \
\
attr struct type * \
name##_RB_REMOVE(struct name *head, struct type *elm) \
{ \
    struct type *child, *parent, *old = elm; \
    int color; \
    if (RB_LEFT(elm, field) == NULL) \
        child = RB_RIGHT(elm, field); \
    else if (RB_RIGHT(elm, field) == NULL) \
        child = RB_LEFT(elm, field); \
    else { \
        struct type *left; \
        elm = RB_RIGHT(elm, field); \
        while ((left = RB_LEFT(elm, field)) != NULL) \
            elm = left; \
        child = RB_RIGHT(elm, field); \
        parent = RB_PARENT(elm, field); \
        color = RB_COLOR(elm, field); \
        if (child) \
            RB_PARENT(child, field) = parent; \
        if (parent) { \
            if (RB_LEFT(parent, field) == elm) \
                RB_LEFT(parent, field) = child; \
            else \

```

```

    RB_RIGHT(parent, field) = child; \
    RB_AUGMENT(parent); \
} else \
    RB_ROOT(head)
= child; \
if (RB_PARENT(elm, field) == old) \
    parent = elm; \
(elm)->field = (old)->field; \
if (RB_PARENT(old, field)) { \
    if (RB_LEFT(RB_PARENT(old, field), field) == old)\
        RB_LEFT(RB_PARENT(old, field), field) = elm;\
    else \
        RB_RIGHT(RB_PARENT(old, field), field) = elm;\
    RB_AUGMENT(RB_PARENT(old, field)); \
} else \
    RB_ROOT(head) = elm; \
RB_PARENT(RB_LEFT(old, field), field) = elm; \
if (RB_RIGHT(old, field)) \
    RB_PARENT(RB_RIGHT(old, field), field) = elm; \
if (parent) { \
    left = parent; \
    do { \
        RB_AUGMENT(left); \
    } while ((left = RB_PARENT(left, field)) != NULL); \
} \
goto color; \
} \
parent = RB_PARENT(elm, field); \
color = RB_COLOR(elm, field); \
if (child) \
    RB_PARENT(child, field) = parent; \
if (parent) { \
    if (RB_LEFT(parent, field) == elm) \
        RB_LEFT(parent, field) = child; \
    else \
        RB_RIGHT(parent,
field) = child; \
    RB_AUGMENT(parent); \
} else \
    RB_ROOT(head) = child; \
color: \
if (color == RB_BLACK) \
    name##_RB_REMOVE_COLOR(head, parent, child); \
return (old); \
} \
\
/* Inserts a node into the RB tree */ \
attr struct type * \

```

```

name##_RB_INSERT(struct name *head, struct type *elm) \
{ \
    struct type *tmp; \
    struct type *parent = NULL; \
    int comp = 0; \
    tmp = RB_ROOT(head); \
    while (tmp) { \
        parent = tmp; \
        comp = (cmp)(elm, parent); \
        if (comp < 0) \
            tmp = RB_LEFT(tmp, field); \
        else if (comp > 0) \
            tmp = RB_RIGHT(tmp, field); \
        else \
            return (tmp); \
    } \
    RB_SET(elm, parent, field); \
    if (parent != NULL) { \
        if (comp < 0) \
            RB_LEFT(parent, field) = elm; \
        else \
            RB_RIGHT(parent, field) = elm; \
        RB_AUGMENT(parent); \
    } else \
        RB_ROOT(head) = elm; \
    name##_RB_INSERT_COLOR(head, \
    elm); \
    return (NULL); \
} \
\
/* Finds the node with the same key as elm */ \
attr struct type * \
name##_RB_FIND(struct name *head, struct type *elm) \
{ \
    struct type *tmp = RB_ROOT(head); \
    int comp; \
    while (tmp) { \
        comp = cmp(elm, tmp); \
        if (comp < 0) \
            tmp = RB_LEFT(tmp, field); \
        else if (comp > 0) \
            tmp = RB_RIGHT(tmp, field); \
        else \
            return (tmp); \
    } \
    return (NULL); \
} \
\

```

```

/* Finds the first node greater than or equal to the search key */\
attr struct type * \
name##_RB_NFIND(struct name *head, struct type *elm) \
{ \
    struct type *tmp = RB_ROOT(head); \
    struct type *res = NULL; \
    int comp; \
    while (tmp) { \
        comp = cmp(elm, tmp); \
        if (comp < 0) { \
            res = tmp; \
            tmp = RB_LEFT(tmp, field); \
        } \
        else if (comp > 0) \
            tmp = \
RB_RIGHT(tmp, field); \
        else \
            return (tmp); \
    } \
    return (res); \
} \
\
/* ARGSUSED */ \
attr struct type * \
name##_RB_NEXT(struct type *elm) \
{ \
    if (RB_RIGHT(elm, field)) { \
        elm = RB_RIGHT(elm, field); \
        while (RB_LEFT(elm, field)) \
            elm = RB_LEFT(elm, field); \
    } else { \
        if (RB_PARENT(elm, field) && \
            (elm == RB_LEFT(RB_PARENT(elm, field), field))) \
            elm = RB_PARENT(elm, field); \
        else { \
            while (RB_PARENT(elm, field) && \
                (elm == RB_RIGHT(RB_PARENT(elm, field), field))) \
                elm = RB_PARENT(elm, field); \
            elm = RB_PARENT(elm, field); \
        } \
    } \
    return (elm); \
} \
\
/* ARGSUSED */ \
attr struct type * \
name##_RB_PREV(struct type *elm) \
{ \

```

```

if (RB_LEFT(elm, field)) { \
    elm = RB_LEFT(elm, field); \
    while (RB_RIGHT(elm, field)) \
        elm = RB_RIGHT(elm, field); \
}
else { \
    if (RB_PARENT(elm, field) && \
        (elm == RB_RIGHT(RB_PARENT(elm, field), field))) \
        elm = RB_PARENT(elm, field); \
    else { \
        while (RB_PARENT(elm, field) && \
            (elm == RB_LEFT(RB_PARENT(elm, field), field))) \
            elm = RB_PARENT(elm, field); \
        elm = RB_PARENT(elm, field); \
    } \
} \
return (elm); \
} \
\
attr struct type * \
name##_RB_MINMAX(struct name *head, int val) \
{ \
    struct type *tmp = RB_ROOT(head); \
    struct type *parent = NULL; \
    while (tmp) { \
        parent = tmp; \
        if (val < 0) \
            tmp = RB_LEFT(tmp, field); \
        else \
            tmp = RB_RIGHT(tmp, field); \
    } \
    return (parent); \
}

#define RB_NEGINF -1
#define RB_INF 1

#define RB_INSERT(name, x, y) name##_RB_INSERT(x, y)
#define RB_REMOVE(name, x, y) name##_RB_REMOVE(x, y)
#define RB_FIND(name, x, y) name##_RB_FIND(x, y)
#define RB_NFIND(name, x, y) name##_RB_NFIND(x, \
y)
#define RB_NEXT(name, x, y) name##_RB_NEXT(y)
#define RB_PREV(name, x, y) name##_RB_PREV(y)
#define RB_MIN(name, x) name##_RB_MINMAX(x, RB_NEGINF)
#define RB_MAX(name, x) name##_RB_MINMAX(x, RB_INF)

#define RB_FOREACH(x, name, head) \

```

```

for ((x) = RB_MIN(name, head); \
    (x) != NULL; \
    (x) = name##_RB_NEXT(x))

#define RB_FOREACH_FROM(x, name, y) \
for ((x) = (y); \
    ((x) != NULL) && ((y) = name##_RB_NEXT(x), (x) != NULL); \
    (x) = (y))

#define RB_FOREACH_SAFE(x, name, head, y) \
for ((x) = RB_MIN(name, head); \
    ((x) != NULL) && ((y) = name##_RB_NEXT(x), (x) != NULL); \
    (x) = (y))

#define RB_FOREACH_REVERSE(x, name, head) \
for ((x) = RB_MAX(name, head); \
    (x) != NULL; \
    (x) = name##_RB_PREV(x))

#define RB_FOREACH_REVERSE_FROM(x, name, y) \
for ((x) = (y); \
    ((x) != NULL) && ((y) = name##_RB_PREV(x), (x) != NULL); \
    (x) = (y))

#define RB_FOREACH_REVERSE_SAFE(x, name,
head, y) \
for ((x) = RB_MAX(name, head); \
    ((x) != NULL) && ((y) = name##_RB_PREV(x), (x) != NULL); \
    (x) = (y))

#endif /* _SYS_TREE_H_ */
# Contributor: Wen Heping <wenhepingalpine@sohu.com>
# Maintainer: Wen Heping <wenhepingalpine@sohu.com>
pkgname=perl-software-license
pkgver=0.104007
pkgrel=0
# _pkgreal is used by apkbuild-cpan to find modules at MetaCpan
_pkgreal=Software-License
pkgdesc="packages that provide templated software licenses"
url="https://metacpan.org/release/Software-License/"
arch="noarch"
license="GPL-1.0-or-later OR Artistic-1.0-Perl"
depends="perl perl-data-section perl-text-template"
checkdepends="perl-try-tiny"
subpackages="$pkgname-doc"
source="https://cpan.metacpan.org/authors/id/L/LE/LEONT/Software-License-$pkgver.tar.gz"
buildid="$srcdir/$_pkgreal-$pkgver"

```

```

build() {
    export CFLAGS=$(perl -MConfig -E 'say $Config{ccflags}')
    PERL_MM_USE_DEFAULT=1 perl -I. Makefile.PL \
        INSTALLDIRS=vendor \
        NO_PACKLIST=1 \
        NO_PERLLOCAL=1
    make
}

check() {
    export CFLAGS=$(perl -MConfig -E 'say $Config{ccflags}')
    make test
}

package() {
    make DESTDIR="$pkgdir" install
}

sha512sums="
12d75e9583b3013d9b4a282467f1ac80ab6b7f3251926d66591d01404489b528f22adc396dfd4528a0f0ca650f0eed6d
9c959e69eace2169c6ed1cffe5277e4
Software-License-0.104007.tar.gz
"
(The MIT License)

```

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Contributor: Dhruvin Gandhi <contact@dhruvin>

Maintainer: Patrycja Rosa <alpine@ptrcnull.me>


```

pkgname=py3-license-expression
_pkgname=license_expression
pkgver=30.4.4
pkgrel=0
pkgdesc="Library to parse, compare, simplify and normalize license expressions"
url="https://github.com/nexB/license-expression"
arch="noarch"
license="Apache-2.0"
depends="python3 py3-boolean.py"
makedepends="py3-setuptools py3-setuptools_scm py3-gpep517 py3-wheel"
checkdepends="py3-pytest py3-pytest-xdist"
subpackages="$pkgname-pyc"
source="https://files.pythonhosted.org/packages/source/l/${_pkgname}/${_pkgname}-${pkgver}.tar.gz"
builddir="$srcdir/${_pkgname}-${pkgver}"

build() {
    gpep517 build-wheel \
        --wheel-dir .dist \
        --output-fd 3 3>&1 >&2
}

check() {
    python3 -m venv --clear --without-pip --system-site-packages .testenv
    .testenv/bin/python3 -m installer .dist/*.whl
    .testenv/bin/python3 -m pytest
}

package() {
    python3 -m installer -d "$pkgdir" \
        .dist/*.whl
}

sha512sums="
f46dd4cf524b3962115fe26f5545bfdd6767275b482724af51e7ca07da79244969a3bfc5d2fd5b95bc0f19d1b95a26a8f3
ab36c676e56ec302178d7166588066
    license_expression-30.4.4.tar.gz
"

```

1.303 libintl 0.24.1-r1

1.303.1 Available under license :

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Version 2, June 1991

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in the program `Gnomovision'

(which makes passes at compilers) written

by James Hacker.

signature of Moe Ghoul, 1 April 1989

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```
# Contributor: Carlo Landmeter <clandmeter@alpinelinux.org>
# Maintainer: Kevin Daudt <kdaudt@alpinelinux.org>
pkgname=spdx-licenses
pkgver=3.27.0
pkgrel=0
pkgdesc="Various data formats for the SPDX License List"
url="https://spdx.org/"
arch="noarch"
options="!check" # no test suite
license="CC-BY-3.0"
source="license-list-data-$pkgver.tar.gz::https://github.com/spdx/license-list-data/archive/v$pkgver.tar.gz"
builddir="$srcdir/license-list-data-$pkgver"
subpackages="$pkgname-list"
```

```
_types="html json rdfa rdft rdfturtle rdfxml template text"
```

```
for type in $_types; do
    subpackages="$subpackages $pkgname-$type:_subpkg"
done
```

```
package() {
    mkdir -p "$pkgdir"
}
```

```
_subpkg() {
    local type=${subpkgname/$pkgname-/}
    pkgdesc="$pkgdesc ($type)"
    install_if="$pkgname=$pkgver-r$pkgrel"
    mkdir -p "$subpkgdir"/usr/share/spdx
    cp -r "$builddir"/$type "$subpkgdir"/usr/share/spdx/
}
```

```
list() {
    pkgdesc="$pkgdesc (licence list)"
    mkdir -p "$subpkgdir"/usr/share/spdx
    local i; for i in "$builddir"/text/*.txt;
    do
        local license=${i##*/}
        echo ${license%.*} >> "$subpkgdir"/usr/share/spdx/license.lst
    done
```

```

}

sha512sums="
16d59c81e331b54b52639826f83408d98144cdaa70eacc3e8ce35dc3b13992e4794cf7515eb9db200efd390a0c0e35ae9
d4706fbe0ca6a8d236189e88870720c license-list-data-3.27.0.tar.gz
"

# Automatically generated by apkbuidl-cpan, template 4
# Contributor: Valery Kartel <valery.kartel@gmail.com>
# Maintainer: Celeste <cielesti@protonmail.com>
maintainer="Celeste <cielesti@protonmail.com>"
pkgname=perl-bsd-resource
pkgver=1.2911
pkgrel=11
#_pkgreal is used by apkbuidl-cpan to find modules at MetaCpan
_pkgreal=BSD-Resource
pkgdesc="Perl extension implements the BSD process resource limit functions"
url="https://metacpan.org/release/BSD-Resource/"
arch="all"
license="Artistic-2.0 OR LGPL-2.0"
depends="perl"
makedepends="perl-dev"
subpackages="$pkgname-doc"
source="https://cpan.metacpan.org/authors/id/J/JH/JHI/BSD-Resource-$pkgver.tar.gz"
builddir="$srcdir/${_pkgreal}-${pkgver}"

build() {
    export CFLAGS=$(perl -MConfig -E 'say $Config{ccflags}')
    PERL_MM_USE_DEFAULT=1 perl -I. Makefile.PL \
        INSTALLDIRS=vendor \
        NO_PACKLIST=1 \
        NO_PERLLOCAL=1
    make
}

check() {
    export CFLAGS=$(perl -MConfig -E 'say $Config{ccflags}')
    make test
}

package() {
    make DESTDIR="$pkgdir" install
}

sha512sums="
d0032d41c7c0468ed1c6d8f57b885f6cb97a5039d754c8cb60b2067daedaf53bd15fb6561a3d0f828df16dfa5417f663b
8065ba65f4fea16dc9262728b3b6b85
    BSD-Resource-1.2911.tar.gz
"

```



```

maintainer="Achill Gilgenast <achill@achill.org>"
pkgname=cargo-license
pkgver=0.7.0
pkgrel=1
pkgdesc="Cargo subcommand to see license of dependencies"
url="https://github.com/onur/cargo-license"
arch="all"
license="MIT"
makedepends="cargo cargo-auditable"
source="$pkgname-$pkgver.tar.gz::https://crates.io/api/v1/crates/cargo-license/$pkgver/download"

prepare() {
    default_prepare

    cargo fetch --target="$CTARGET" --locked
}

build() {
    cargo auditable build --release --frozen
}

check() {
    cargo test --frozen
}

package() {
    install -Dm755 target/release/cargo-license -t "$pkgdir"/usr/bin
}

sha512sums="
9b3f0ead35515e85ef4074ebdbdbe5b9ec8bcaec244fabe414e2ed60f90366e8b1692d8bf7ffe4c07d778e60d94bab86bc
0c8be9823232e9c360a38bc65e9c5a  cargo-license-0.7.0.tar.gz
"

#!/sbin/openrc-run

command="/usr/libexec/xdg-permission-store"
supervisor=supervise-daemon
command_args="--replace $command_args"
error_logger="logger -t '${RC_SVCNAME}' -p daemon.error"

depend() {
    need dbus
}

# Contributor: Maxim Karasev <begs@disroot.org>
# Maintainer: mio <miyopan@e.email>
pkgname=bsd-games
pkgver=3.3
pkgrel=2

```

```

pkgdesc="traditional text mode games from BSD"
url="https://bsd-games.sourceforge.io/"
arch="all"
license="BSD-3-Clause"
install="$pkgname.post-install"
makedepends="ncurses-dev coreutils" # configure causes busybox expr error
subpackages="$pkgname-doc"
source="https://sourceforge.net/projects/bsd-games/files/bsd-games-$pkgver.tar.gz
0001-bsd-games-scores-dir.patch
"
options="!check" # no tests

build() {
    # some GNU autoconf options are ignored, but it works
    ./configure \
        --build=$CBUILD \
        --host=$CHOST \
        --prefix=/usr \
        --sysconfdir=/etc \
        --mandir=/usr/share/man \
        --scoredir=/usr/share/$pkgname
    make
}

package() {
    make DESTDIR="$pkgdir" install
    install -Dm644 LICENSE "$pkgdir"/usr/share/licenses/bsd-games/LICENSE
}

sha512sums="
aaf36d09d4fe68514a5c279063d7e77a9a9a84c447037cba974b29faa07eb80c2aab2379d0699c196b5c27ffe1b2bb2c6
8d3390143e0e62d5e3d210ccfb61294
    bsd-games-3.3.tar.gz
e1def0d4835a877242c4173fae862e278a7858738e0bacacbb045a42bcabec2aa7c72d000bbd2421ce35fe66cdc1f52c0
577b7e278029ca5ed50f7aab22319f6 0001-bsd-games-scores-dir.patch
"

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```

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Maintainer: Natanael Copa <ncopa@alpinelinux.org>

pkgname=libart-lgpl

pkgver=2.3.21

pkgrel=8

pkgdesc="A library for high-performance 2D graphics"

url="https://www.levien.com/libart/"

arch="all"

options="!check" # No test suite.

license="LGPL-2.0-or-later"

subpackages="\$pkgname-dev"

source="https://download.gnome.org/sources/libart-lgpl/2.3/libart-lgpl-\$pkgver.tar.bz2"

"

```
builddir="$srcdir"/libart_lgpl-$pkgver
```

```
prepare() {  
    update_config_sub  
    default_prepare  
}
```

```
build() {  
    ./configure \  
    --build=$CBUILD \  
    --host=$CHOST \  
    --prefix=/usr  
    make  
}
```

```
package() {  
    make DESTDIR="$pkgdir" install  
}
```

```
sha512sums="8a632a6a4da59e5e8c02ec2f5a57e36d182b325b46513765425e5f171ff9ae326af1b133725beba28f7e7  
6654309e001aee9bace727b5b4c8589405256a3c020 libart_lgpl-2.3.21.tar.bz2"
```

```
# Contributor: Patrycja Rosa <alpine@ptrcnull.me>
```

```
# Maintainer: Patrycja Rosa <alpine@ptrcnull.me>
```

```
pkgname=bsd-compat-headers
```

```
pkgver=0.7.2
```

```
pkgrel=6
```

```
pkgdesc="BSD compatibility headers (cdefs, queue, tree)"
```

```
url="https://gitlab.alpinelinux.org/alpine/aports"
```

```
arch="noarch"
```

```
license="BSD-2-Clause AND BSD-3-Clause"
```

```
source="
```

```
    cdefs.h
```

```
    queue.h
```

```
    tree.h
```

```
"
```

```
builddir="$srcdir"
```

```
options="!check" # just headers
```

```
package() {  
    mkdir -p "$pkgdir"  
    install -Dm644 -t "$pkgdir"/usr/include/sys \  
    cdefs.h queue.h tree.h  
}
```

```
sha512sums="
```

```
37c8fc73c7aea7b490f7850927e2bb91d12137c9e59e22c084146d515696dbc7973b5de92f4c987ba080dd2502ba8312
```

```
7006442c3f019b6447a620c0cae73178 cdefs.h
```

```
2f0d5e6e4dc3350285cf17009265dddcbe12431c111868eea39bc8cb038ab7c1f2acacbb21735c4e9d4a1fd106a8fc0f86
```

11ea33987d4faba37dde5ce6da0750 queue.h
d9ac210d81feb8ad2655bc80fb065d3fe20ae4417b32b4a1711e6738a4870140005c13373b5d1846ef3ce5ae6da45f2da
cef2092881eded0a2e94f6a07752ef3 tree.h
"

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The X-Spline code was written Carole Blanc (blanc@labri.u-bordeaux.fr) and Christophe Schlick (schlick@labri.u-bordeaux.fr) starting from an initial implementation done by C. Feuille, S. Grosbois, L. Maziere and L. Minihot as a student practice (Universite Bordeaux, France). For additional information about X-splines, see:

"X-Splines: A Spline Model Designed for the End User" by C. Blanc and C. Schlick, Proceedings of SIGGRAPH'95
<http://dept-info.labri.u-bordeaux.fr/~schlick/DOC/sig1.html>

/* \$NetBSD: queue.h,v 1.70 2015/11/02 15:21:23 christos Exp \$ */

/*

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- *
- * @(#)queue.h 8.5 (Berkeley) 8/20/94
- */

```
#ifndef _SYS_QUEUE_H_
#define _SYS_QUEUE_H_
```

```
/*
 * This file defines five types of data structures: singly-linked lists,
 * lists, simple queues, tail queues, and circular queues.
 *
 * A singly-linked list is headed by a single forward pointer. The
 * elements are singly linked for minimum space and
 * pointer manipulation
 * overhead at the expense of O(n) removal for arbitrary elements. New
 * elements can be added to the list after an existing element or at the
 * head of the list. Elements being removed from the head of the list
 * should use the explicit macro for this purpose for optimum
 * efficiency. A singly-linked list may only be traversed in the forward
 * direction. Singly-linked lists are ideal for applications with large
 * datasets and few or no removals or for implementing a LIFO queue.
 *
 * A list is headed by a single forward pointer (or an array of forward
 * pointers for a hash table header). The elements are doubly linked
 * so that an arbitrary element can be removed without a need to
 * traverse the list. New elements can be added to the list before
 * or after an existing element or at the head of the list. A list
 * may only be traversed in the forward direction.
 *
 * A simple queue is headed by a pair of pointers, one the head of the
 * list and the
 * other to the tail of the list. The elements are singly
 * linked to save space, so elements can only be removed from the
```

- * head of the list. New elements can be added to the list after
- * an existing element, at the head of the list, or at the end of the
- * list. A simple queue may only be traversed in the forward direction.
- *
- * A tail queue is headed by a pair of pointers, one to the head of the
- * list and the other to the tail of the list. The elements are doubly
- * linked so that an arbitrary element can be removed without a need to
- * traverse the list. New elements can be added to the list before or
- * after an existing element, at the head of the list, or at the end of
- * the list. A tail queue may be traversed in either direction.
- *
- * A circle queue is headed by a pair of pointers, one to the head of the
- * list and the other to the tail of the list. The elements are doubly
- * linked so that an arbitrary element can be removed without a need to
- * traverse the list. New elements
- can be added to the list before or after
- * an existing element, at the head of the list, or at the end of the list.
- * A circle queue may be traversed in either direction, but has a more
- * complex end of list detection.
- *
- * For details on the use of these macros, see the queue(3) manual page.
- */

/*

- * Include the definition of NULL only on NetBSD because sys/null.h
- * is not available elsewhere. This conditional makes the header
- * portable and it can simply be dropped verbatim into any system.
- * The caveat is that on other systems some other header
- * must provide NULL before the macros can be used.
- */

```
#ifdef __NetBSD__
#include <sys/null.h>
#endif
```

```
#if defined(QEUEDEBUG)
# if defined(_KERNEL)
# define QEUEDEBUG_ABORT(...) panic(__VA_ARGS__)
# else
# include <err.h>
# define QEUEDEBUG_ABORT(...) err(1, __VA_ARGS__)
# endif
#endif
```

/*

- * Singly-linked List definitions.

*/

```
#define SLIST_HEAD(name, type) \
struct name { \
```

```

struct type *slh_first; /* first
element */ \
}

#define SLIST_HEAD_INITIALIZER(head) \
{ NULL }

#define SLIST_ENTRY(type) \
struct { \
    struct type *sle_next; /* next element */ \
}

/*
 * Singly-linked List access methods.
 */

#define SLIST_FIRST(head) ((head)->slh_first)
#define SLIST_END(head) NULL
#define SLIST_EMPTY(head) ((head)->slh_first == NULL)
#define SLIST_NEXT(elm, field) ((elm)->field.sle_next)

#define SLIST_FOREACH(var, head, field) \
for((var) = (head)->slh_first; \
    (var) != SLIST_END(head); \
    (var) = (var)->field.sle_next)

#define SLIST_FOREACH_SAFE(var, head, field, tvar) \
for ((var) = SLIST_FIRST((head)); \
    (var) != SLIST_END(head) && \
    ((tvar) = SLIST_NEXT((var), field), 1); \
    (var) = (tvar))

/*
 * Singly-linked List functions.
 */

#define SLIST_INIT(head) do { \
    (head)->slh_first = SLIST_END(head); \
} while (/*CONSTCOND*/)

#define SLIST_INSERT_AFTER(slistelm, elm, field) do { \
    (elm)->field.sle_next = (slistelm)->field.sle_next; \
    (slistelm)->field.sle_next \
    = (elm); \
} while (/*CONSTCOND*/)

#define SLIST_INSERT_HEAD(head, elm, field) do { \
    (elm)->field.sle_next = (head)->slh_first; \
    (head)->slh_first = (elm); \
} while (/*CONSTCOND*/)

```



```

#define SLIST_REMOVE_AFTER(slistelm, field) do { \
    (slistelm)->field.sle_next = \
        SLIST_NEXT(SLIST_NEXT((slistelm), field), field); \
} while (/*CONSTCOND*/0)

#define SLIST_REMOVE_HEAD(head, field) do { \
    (head)->slh_first = (head)->slh_first->field.sle_next; \
} while (/*CONSTCOND*/0)

#define SLIST_REMOVE(head, elm, type, field) do { \
    if ((head)->slh_first == (elm)) { \
        SLIST_REMOVE_HEAD((head), field); \
    } \
    else { \
        struct type *curelm = (head)->slh_first; \
        while(curelm->field.sle_next != (elm)) \
            curelm = curelm->field.sle_next; \
        curelm->field.sle_next = \
            curelm->field.sle_next->field.sle_next; \
    } \
} while (/*CONSTCOND*/0)

/*
 * List definitions.
 */
#define LIST_HEAD(name, type) \
struct name { \
    struct type *lh_first; /* first element */ \
}

#define LIST_HEAD_INITIALIZER(head) \
{ NULL }

#define LIST_ENTRY(type) \
struct { \
    struct type *le_next; /* next element */ \
    struct type **le_prev; /* address of previous next element */ \
}

/*
 * List access methods.
 */
#define LIST_FIRST(head) ((head)->lh_first)
#define LIST_END(head) NULL
#define LIST_EMPTY(head) ((head)->lh_first == LIST_END(head))
#define LIST_NEXT(elm, field) ((elm)->field.le_next)

```

```

#define LIST_FOREACH(var, head, field) \
for ((var) = ((head)->lh_first); \
    (var) != LIST_END(head); \
    (var) = ((var)->field.le_next))

#define LIST_FOREACH_SAFE(var, head, field, tvar) \
for ((var) = LIST_FIRST((head)); \
    (var) != LIST_END(head) && \
    ((tvar) = LIST_NEXT((var), field), 1); \
    (var) = (tvar))

#define LIST_MOVE(head1, head2) do { \
    LIST_INIT((head2)); \
    if (!LIST_EMPTY((head1))) \
    { \
        (head2)->lh_first = (head1)->lh_first; \
        LIST_INIT((head1)); \
    } \
} while (/*CONSTCOND*/0)

/*
 * List functions.
 */

#if defined(QUEUEDEBUG)
#define QUEUEDEBUG_LIST_INSERT_HEAD(head, elm, field) \
if ((head)->lh_first && \
    (head)->lh_first->field.le_prev != &(head)->lh_first) \
    QUEUEDEBUG_ABORT("LIST_INSERT_HEAD %p %s:%d", (head), \
        __FILE__, __LINE__);
#define QUEUEDEBUG_LIST_OP(elm, field) \
if ((elm)->field.le_next && \
    (elm)->field.le_next->field.le_prev != \
    &(elm)->field.le_next) \
    QUEUEDEBUG_ABORT("LIST_* forw %p %s:%d", (elm), \
        __FILE__, __LINE__); \
if (*(elm)->field.le_prev != (elm)) \
    QUEUEDEBUG_ABORT("LIST_* back %p %s:%d", (elm), \
        __FILE__, __LINE__);
#define QUEUEDEBUG_LIST_POSTREMOVE(elm, field) \
(elm)->field.le_next = (void *)1L; \
(elm)->field.le_prev = (void *)1L;
#else
#define QUEUEDEBUG_LIST_INSERT_HEAD(head, elm, field)
#define QUEUEDEBUG_LIST_OP(elm, field)
#define QUEUEDEBUG_LIST_POSTREMOVE(elm, field)
#endif

```

```

#define LIST_INIT(head) do { \
    (head)->lh_first = LIST_END(head); \
} while (/*CONSTCOND*/0)

#define LIST_INSERT_AFTER(listelm, elm, field) do { \
    QUEUEDEBUG_LIST_OP((listelm), field) \
    if (((elm)->field.le_next = (listelm)->field.le_next) != \
        LIST_END(head)) \
        (listelm)->field.le_next->field.le_prev = \
            &(elm)->field.le_next; \
    (listelm)->field.le_next = (elm); \
    (elm)->field.le_prev = &(listelm)->field.le_next; \
} while (/*CONSTCOND*/0)

#define LIST_INSERT_BEFORE(listelm, elm, field) do { \
    QUEUEDEBUG_LIST_OP((listelm), field) \
    (elm)->field.le_prev = (listelm)->field.le_prev; \
    (elm)->field.le_next = (listelm); \
    *(listelm)->field.le_prev = (elm); \
    (listelm)->field.le_prev = &(elm)->field.le_next; \
} while (/*CONSTCOND*/0)

#define LIST_INSERT_HEAD(head, elm, field) do { \
    QUEUEDEBUG_LIST_INSERT_HEAD((head), (elm), field) \
    if (((elm)->field.le_next \
        = (head)->lh_first) != LIST_END(head)) \
        (head)->lh_first->field.le_prev = &(elm)->field.le_next; \
    (head)->lh_first = (elm); \
    (elm)->field.le_prev = &(head)->lh_first; \
} while (/*CONSTCOND*/0)

#define LIST_REMOVE(elm, field) do { \
    QUEUEDEBUG_LIST_OP((elm), field) \
    if ((elm)->field.le_next != NULL) \
        (elm)->field.le_next->field.le_prev = \
            (elm)->field.le_prev; \
    *(elm)->field.le_prev = (elm)->field.le_next; \
    QUEUEDEBUG_LIST_POSTREMOVE((elm), field) \
} while (/*CONSTCOND*/0)

#define LIST_REPLACE(elm, elm2, field) do { \
    if (((elm2)->field.le_next = (elm)->field.le_next) != NULL) \
        (elm2)->field.le_next->field.le_prev = \
            &(elm2)->field.le_next; \
    (elm2)->field.le_prev = (elm)->field.le_prev; \
    *(elm2)->field.le_prev = (elm2); \
    QUEUEDEBUG_LIST_POSTREMOVE((elm), field) \
} while (/*CONSTCOND*/0)

```

```

} while (/*CONSTCOND*/0)

/*
 * Simple queue definitions.
 */
#define SIMPLEQ_HEAD(name, type)  \
struct name {  \
    struct  \
    type *sqh_first; /* first element */  \
    struct type **sqh_last; /* addr of last next element */  \
}

#define SIMPLEQ_HEAD_INITIALIZER(head)  \
{ NULL, &(head).sqh_first }

#define SIMPLEQ_ENTRY(type)  \
struct {  \
    struct type *sqe_next; /* next element */  \
}

/*
 * Simple queue access methods.
 */
#define SIMPLEQ_FIRST(head) ((head)->sqh_first)
#define SIMPLEQ_END(head) NULL
#define SIMPLEQ_EMPTY(head) ((head)->sqh_first == SIMPLEQ_END(head))
#define SIMPLEQ_NEXT(elm, field) ((elm)->field.sqe_next)

#define SIMPLEQ_FOREACH(var, head, field)  \
for ((var) = ((head)->sqh_first);  \
     (var) != SIMPLEQ_END(head);  \
     (var) = ((var)->field.sqe_next))

#define SIMPLEQ_FOREACH_SAFE(var, head, field, next)  \
for ((var) = ((head)->sqh_first);  \
     (var) != SIMPLEQ_END(head) &&  \
     ((next = ((var)->field.sqe_next)), 1);  \
     (var) = (next))

/*
 * Simple queue functions.
 */
#define SIMPLEQ_INIT(head) do {  \
    (head)->sqh_first = NULL;  \
    (head)->sqh_last  \
    = &(head)->sqh_first;  \
} while (/*CONSTCOND*/0)

```

```

#define SIMPLEQ_INSERT_HEAD(head, elm, field) do { \
    if (((elm)->field.sqe_next = (head)->sqh_first) == NULL) \
        (head)->sqh_last = &(elm)->field.sqe_next; \
    (head)->sqh_first = (elm); \
} while (/*CONSTCOND*/0)

#define SIMPLEQ_INSERT_TAIL(head, elm, field) do { \
    (elm)->field.sqe_next = NULL; \
    *(head)->sqh_last = (elm); \
    (head)->sqh_last = &(elm)->field.sqe_next; \
} while (/*CONSTCOND*/0)

#define SIMPLEQ_INSERT_AFTER(head, listelm, elm, field) do { \
    if (((elm)->field.sqe_next = (listelm)->field.sqe_next) == NULL) \
        (head)->sqh_last = &(elm)->field.sqe_next; \
    (listelm)->field.sqe_next = (elm); \
} while (/*CONSTCOND*/0)

#define SIMPLEQ_REMOVE_HEAD(head, field) do { \
    if (((head)->sqh_first = (head)->sqh_first->field.sqe_next) == NULL) \
        (head)->sqh_last = &(head)->sqh_first; \
} while (/*CONSTCOND*/0)

#define SIMPLEQ_REMOVE_AFTER(head, elm, field) do { \
    if \
        (((elm)->field.sqe_next = (elm)->field.sqe_next->field.sqe_next) \
         == NULL) \
        (head)->sqh_last = &(elm)->field.sqe_next; \
} while (/*CONSTCOND*/0)

#define SIMPLEQ_REMOVE(head, elm, type, field) do { \
    if ((head)->sqh_first == (elm)) { \
        SIMPLEQ_REMOVE_HEAD((head), field); \
    } else { \
        struct type *curelm = (head)->sqh_first; \
        while (curelm->field.sqe_next != (elm)) \
            curelm = curelm->field.sqe_next; \
        if ((curelm->field.sqe_next = \
            curelm->field.sqe_next->field.sqe_next) == NULL) \
            (head)->sqh_last = &(curelm)->field.sqe_next; \
    } \
} while (/*CONSTCOND*/0)

#define SIMPLEQ_CONCAT(head1, head2) do { \
    if (!SIMPLEQ_EMPTY((head2))) { \
        *(head1)->sqh_last = (head2)->sqh_first; \
        (head1)->sqh_last = (head2)->sqh_last; \
        SIMPLEQ_INIT((head2)); \
    } \
} while (/*CONSTCOND*/0)

```

```

} \
} while (/*CONSTCOND*/0)

#define SIMPLEQ_LAST(head, type, field) \
(SIMPLEQ_EMPTY((head)) ? \
NULL : \
((struct type \
*)(void *) \
((char *)((head)->sqh_last) - offsetof(struct type, field))))

/*
 * Tail queue definitions.
 */
#define _TAILQ_HEAD(name, type, qual) \
struct name { \
    qual type *tqh_first; /* first element */ \
    qual type *qual *tqh_last; /* addr of last next element */ \
}
#define TAILQ_HEAD(name, type) _TAILQ_HEAD(name, struct type,)

#define TAILQ_HEAD_INITIALIZER(head) \
{ TAILQ_END(head), &(head).tqh_first }

#define _TAILQ_ENTRY(type, qual) \
struct { \
    qual type *tqe_next; /* next element */ \
    qual type *qual *tqe_prev; /* address of previous next element */ \
}
#define TAILQ_ENTRY(type) _TAILQ_ENTRY(struct type,)

/*
 * Tail queue access methods.
 */
#define TAILQ_FIRST(head) ((head)->tqh_first)
#define TAILQ_END(head) (NULL)
#define TAILQ_NEXT(elm, field) ((elm)->field.tqe_next)
#define TAILQ_LAST(head, headname) \
(((struct headname *) (void *)((head)->tqh_last))->tqh_last)
#define TAILQ_PREV(elm, headname, field) \
(((struct headname \
*)(void *)((elm)->field.tqe_prev))->tqh_last)
#define TAILQ_EMPTY(head) (TAILQ_FIRST(head) == TAILQ_END(head))

#define TAILQ_FOREACH(var, head, field) \
for ((var) = ((head)->tqh_first); \
    (var) != TAILQ_END(head); \
    (var) = ((var)->field.tqe_next))

```

```

#define TAILQ_FOREACH_SAFE(var, head, field, next) \
for ((var) = ((head)->tqh_first); \
     (var) != TAILQ_END(head) && \
     ((next) = TAILQ_NEXT(var, field), 1); (var) = (next))

#define TAILQ_FOREACH_REVERSE(var, head, headname, field) \
for ((var) = TAILQ_LAST((head), headname); \
     (var) != TAILQ_END(head); \
     (var) = TAILQ_PREV((var), headname, field))

#define TAILQ_FOREACH_REVERSE_SAFE(var, head, headname, field, prev) \
for ((var) = TAILQ_LAST((head), headname); \
     (var) != TAILQ_END(head) && \
     ((prev) = TAILQ_PREV((var), headname, field), 1); (var) = (prev))

/*
 * Tail queue functions.
 */
#if defined(QUEUEDEBUG)
#define QUEUEDEBUG_TAILQ_INSERT_HEAD(head, \
elm, field) \
if ((head)->tqh_first && \
     (head)->tqh_first->field.tqe_prev != &(head)->tqh_first) \
    QUEUEDEBUG_ABORT("TAILQ_INSERT_HEAD %p %s:%d", (head), \
        __FILE__, __LINE__);
#define QUEUEDEBUG_TAILQ_INSERT_TAIL(head, elm, field) \
if (*(head)->tqh_last != NULL) \
    QUEUEDEBUG_ABORT("TAILQ_INSERT_TAIL %p %s:%d", (head), \
        __FILE__, __LINE__);
#define QUEUEDEBUG_TAILQ_OP(elm, field) \
if ((elm)->field.tqe_next && \
     (elm)->field.tqe_next->field.tqe_prev != \
     &(elm)->field.tqe_next) \
    QUEUEDEBUG_ABORT("TAILQ_* forw %p %s:%d", (elm), \
        __FILE__, __LINE__); \
if (*(elm)->field.tqe_prev != (elm)) \
    QUEUEDEBUG_ABORT("TAILQ_* back %p %s:%d", (elm), \
        __FILE__, __LINE__);
#define QUEUEDEBUG_TAILQ_PREREMOVE(head, elm, field) \
if ((elm)->field.tqe_next == NULL && \
     (head)->tqh_last != &(elm)->field.tqe_next) \
    QUEUEDEBUG_ABORT("TAILQ_PREREMOVE head %p elm %p %s:%d", \
        (head), (elm), __FILE__, \
        __LINE__);
#define QUEUEDEBUG_TAILQ_POSTREMOVE(elm, field) \
(elm)->field.tqe_next = (void *)1L; \
(elm)->field.tqe_prev = (void *)1L;

```

```

#else
#define QUEUEDEBUG_TAILQ_INSERT_HEAD(head, elm, field)
#define QUEUEDEBUG_TAILQ_INSERT_TAIL(head, elm, field)
#define QUEUEDEBUG_TAILQ_OP(elm, field)
#define QUEUEDEBUG_TAILQ_PREREMOVE(head, elm, field)
#define QUEUEDEBUG_TAILQ_POSTREMOVE(elm, field)
#endif

#define TAILQ_INIT(head) do { \
    (head)->tqh_first = TAILQ_END(head); \
    (head)->tqh_last = &(head)->tqh_first; \
} while (/*CONSTCOND*/0)

#define TAILQ_INSERT_HEAD(head, elm, field) do { \
    QUEUEDEBUG_TAILQ_INSERT_HEAD((head), (elm), field) \
    if (((elm)->field.tqe_next = (head)->tqh_first) != TAILQ_END(head)) \
    (head)->tqh_first->field.tqe_prev = \
        &(elm)->field.tqe_next; \
    else \
    (head)->tqh_last = &(elm)->field.tqe_next; \
    (head)->tqh_first = (elm); \
    (elm)->field.tqe_prev = &(head)->tqh_first; \
} while (/*CONSTCOND*/0)

#define TAILQ_INSERT_TAIL(head, \
    elm, field) do { \
    QUEUEDEBUG_TAILQ_INSERT_TAIL((head), (elm), field) \
    (elm)->field.tqe_next = TAILQ_END(head); \
    (elm)->field.tqe_prev = (head)->tqh_last; \
    *(head)->tqh_last = (elm); \
    (head)->tqh_last = &(elm)->field.tqe_next; \
} while (/*CONSTCOND*/0)

#define TAILQ_INSERT_AFTER(head, listelm, elm, field) do { \
    QUEUEDEBUG_TAILQ_OP((listelm), field) \
    if (((elm)->field.tqe_next = (listelm)->field.tqe_next) != \
        TAILQ_END(head)) \
    (elm)->field.tqe_next->field.tqe_prev = \
        &(elm)->field.tqe_next; \
    else \
    (head)->tqh_last = &(elm)->field.tqe_next; \
    (listelm)->field.tqe_next = (elm); \
    (elm)->field.tqe_prev = &(listelm)->field.tqe_next; \
} while (/*CONSTCOND*/0)

#define TAILQ_INSERT_BEFORE(listelm, elm, field) do { \
    QUEUEDEBUG_TAILQ_OP((listelm), field) \
    (elm)->field.tqe_prev = (listelm)->field.tqe_prev; \

```



```

(elm)->field.tqe_next = (listelm); \
*(listelm)->field.tqe_prev = (elm); \
(listelm)->field.tqe_prev
= &(elm)->field.tqe_next; \
} while (/*CONSTCOND*/0)

#define TAILQ_REMOVE(head, elm, field) do { \
    QUEUEDEBUG_TAILQ_PREREMOVE((head), (elm), field) \
    QUEUEDEBUG_TAILQ_OP((elm), field) \
    if (((elm)->field.tqe_next) != TAILQ_END(head)) \
        (elm)->field.tqe_next->field.tqe_prev = \
            (elm)->field.tqe_prev; \
    else \
        (head)->tqh_last = (elm)->field.tqe_prev; \
    *(elm)->field.tqe_prev = (elm)->field.tqe_next; \
    QUEUEDEBUG_TAILQ_POSTREMOVE((elm), field); \
} while (/*CONSTCOND*/0)

#define TAILQ_REPLACE(head, elm, elm2, field) do { \
    if (((elm2)->field.tqe_next = (elm)->field.tqe_next) != \
        TAILQ_END(head)) \
        (elm2)->field.tqe_next->field.tqe_prev = \
            &(elm2)->field.tqe_next; \
    else \
        (head)->tqh_last = &(elm2)->field.tqe_next; \
    (elm2)->field.tqe_prev = (elm)->field.tqe_prev; \
    *(elm2)->field.tqe_prev = (elm2); \
    QUEUEDEBUG_TAILQ_POSTREMOVE((elm), \
        field); \
} while (/*CONSTCOND*/0)

#define TAILQ_CONCAT(head1, head2, field) do { \
    if (!TAILQ_EMPTY(head2)) { \
        *(head1)->tqh_last = (head2)->tqh_first; \
        (head2)->tqh_first->field.tqe_prev = (head1)->tqh_last; \
        (head1)->tqh_last = (head2)->tqh_last; \
        TAILQ_INIT((head2)); \
    } \
} while (/*CONSTCOND*/0)

/*
 * Singly-linked Tail queue declarations.
 */

#define STAILQ_HEAD(name, type) \
struct name { \
    struct type *stqh_first; /* first element */ \
    struct type **stqh_last; /* addr of last next element */ \
}

```

```

#define STAILQ_HEAD_INITIALIZER(head) \
{ NULL, &(head).stqh_first }

#define STAILQ_ENTRY(type) \
struct { \
    struct type *stqe_next; /* next element */ \
}

/*
 * Singly-linked Tail queue access methods.
 */
#define STAILQ_FIRST(head) ((head)->stqh_first)
#define STAILQ_END(head) NULL
#define STAILQ_NEXT(elm, field) ((elm)->field.stqe_next)
#define STAILQ_EMPTY(head) (STAILQ_FIRST(head) \
    == STAILQ_END(head))

/*
 * Singly-linked Tail queue functions.
 */
#define STAILQ_INIT(head) do { \
    (head)->stqh_first = NULL; \
    (head)->stqh_last = &(head)->stqh_first; \
} while (/*CONSTCOND*/)

#define STAILQ_INSERT_HEAD(head, elm, field) do { \
    if (((elm)->field.stqe_next = (head)->stqh_first) == NULL) \
        (head)->stqh_last = &(elm)->field.stqe_next; \
    (head)->stqh_first = (elm); \
} while (/*CONSTCOND*/)

#define STAILQ_INSERT_TAIL(head, elm, field) do { \
    (elm)->field.stqe_next = NULL; \
    *(head)->stqh_last = (elm); \
    (head)->stqh_last = &(elm)->field.stqe_next; \
} while (/*CONSTCOND*/)

#define STAILQ_INSERT_AFTER(head, listelm, elm, field) do { \
    if (((elm)->field.stqe_next = (listelm)->field.stqe_next) == NULL) \
        (head)->stqh_last = &(elm)->field.stqe_next; \
    (listelm)->field.stqe_next = (elm); \
} while (/*CONSTCOND*/)

#define STAILQ_REMOVE_HEAD(head, field) do { \
    if (((head)->stqh_first = (head)->stqh_first->field.stqe_next) \
        == NULL) \
        (head)->stqh_last = &(head)->stqh_first; \
}

```

```

} while (/*CONSTCOND*/0)

#define STAILQ_REMOVE(head, elm, type, field) do { \
    if ((head)->stqh_first == (elm)) { \
        STAILQ_REMOVE_HEAD((head), field); \
    } else { \
        struct type *curelm = (head)->stqh_first; \
        while (curelm->field.stqe_next != (elm)) \
            curelm = curelm->field.stqe_next; \
        if ((curelm->field.stqe_next = \
            curelm->field.stqe_next->field.stqe_next) == NULL) \
            (head)->stqh_last = &(curelm->field.stqe_next); \
    } \
} while (/*CONSTCOND*/0)

#define STAILQ_FOREACH(var, head, field) \
    for ((var) = ((head)->stqh_first); \
        (var); \
        (var) = ((var)->field.stqe_next))

#define STAILQ_FOREACH_SAFE(var, head, field, tvar) \
    for ((var) = STAILQ_FIRST((head)); \
        (var) && ((tvar) = STAILQ_NEXT((var), field), 1); \
        (var) = (tvar))

#define STAILQ_CONCAT(head1, head2) do { \
    if (!STAILQ_EMPTY((head2))) { \
        *(head1)->stqh_last \
        = (head2)->stqh_first; \
        (head1)->stqh_last = (head2)->stqh_last; \
        STAILQ_INIT((head2)); \
    } \
} while (/*CONSTCOND*/0)

#define STAILQ_LAST(head, type, field) \
    (STAILQ_EMPTY((head)) ? \
    NULL : \
    ((struct type *) (void *) \
    ((char *)((head)->stqh_last) - offsetof(struct type, field))))

#ifdef _KERNEL
/*
 * Circular queue definitions. Do not use. We still keep the macros
 * for compatibility but because of pointer aliasing issues their use
 * is discouraged!
 */

```

```

/*
 * __launder_type(): We use this ugly hack to work around the the compiler
 * noticing that two types may not alias each other and elide tests in code.
 * We hit this in the CIRCLEQ macros when comparing 'struct name *' and
 * 'struct type *' (see CIRCLEQ_HEAD()). Modern compilers (such as GCC
 * 4.8) declare these comparisons as always false, causing the code to
 * not run as designed.
 *
 * This hack is only to be used for comparisons and thus can be fully const.
 * Do not use for assignment.
 *
 * If we ever choose to change the ABI of the CIRCLEQ macros, we could fix
 * this by changing the head/tail sentinel values, but see the note above
 * this one.
 */
static __inline const void * __launder_type(const void *);
static __inline const void *
__launder_type(const void *__x)
{
    __asm __volatile("" : "+r" (__x));
    return __x;
}

#if defined(QUEUEDEBUG)
#define QUEUEDEBUG_CIRCLEQ_HEAD(head, field) \
    if ((head)->cqh_first != CIRCLEQ_ENDC(head) && \
        (head)->cqh_first->field.cqe_prev != CIRCLEQ_ENDC(head)) \
        QUEUEDEBUG_ABORT("CIRCLEQ head forw %p %s:%d", (head), \
            __FILE__, __LINE__); \
    if ((head)->cqh_last != CIRCLEQ_ENDC(head) && \
        (head)->cqh_last->field.cqe_next != CIRCLEQ_ENDC(head)) \
        QUEUEDEBUG_ABORT("CIRCLEQ head back %p %s:%d", (head), \
            __FILE__, __LINE__);
#define QUEUEDEBUG_CIRCLEQ_ELM(head, elm, field) \
    if ((elm)->field.cqe_next == CIRCLEQ_ENDC(head)) { \
        if ((head)->cqh_last != (elm)) \
            QUEUEDEBUG_ABORT("CIRCLEQ \
elm last %p %s:%d", \
                (elm), __FILE__, __LINE__); \
    } else { \
        if ((elm)->field.cqe_next->field.cqe_prev != (elm)) \
            QUEUEDEBUG_ABORT("CIRCLEQ elm forw %p %s:%d", \
                (elm), __FILE__, __LINE__); \
    } \
    if ((elm)->field.cqe_prev == CIRCLEQ_ENDC(head)) { \
        if ((head)->cqh_first != (elm)) \
            QUEUEDEBUG_ABORT("CIRCLEQ elm first %p %s:%d", \
                (elm), __FILE__, __LINE__); \
    }

```

```

} else { \
if ((elm)->field.cqe_prev->field.cqe_next != (elm)) \
    QUEUEDEBUG_ABORT("CIRCLEQ elm prev %p %s:%d", \
        (elm), __FILE__, __LINE__); \
}

#define QUEUEDEBUG_CIRCLEQ_POSTREMOVE(elm, field) \
    (elm)->field.cqe_next = (void *)1L; \
    (elm)->field.cqe_prev = (void *)1L;
#else
#define QUEUEDEBUG_CIRCLEQ_HEAD(head, field)
#define QUEUEDEBUG_CIRCLEQ_ELM(head, elm, field)
#define QUEUEDEBUG_CIRCLEQ_POSTREMOVE(elm, field)
#endif

#define CIRCLEQ_HEAD(name, type) \
struct name { \
    struct type *cqh_first; /* \
    first element */ \
    struct type *cqh_last; /* last element */ \
}

#define CIRCLEQ_HEAD_INITIALIZER(head) \
    { CIRCLEQ_END(&head), CIRCLEQ_END(&head) }

#define CIRCLEQ_ENTRY(type) \
struct { \
    struct type *cqe_next; /* next element */ \
    struct type *cqe_prev; /* previous element */ \
}

/*
 * Circular queue functions.
 */

#define CIRCLEQ_INIT(head) do { \
    (head)->cqh_first = CIRCLEQ_END(head); \
    (head)->cqh_last = CIRCLEQ_END(head); \
} while (/*CONSTCOND*/0)

#define CIRCLEQ_INSERT_AFTER(head, listelm, elm, field) do { \
    QUEUEDEBUG_CIRCLEQ_HEAD((head), field) \
    QUEUEDEBUG_CIRCLEQ_ELM((head), (listelm), field) \
    (elm)->field.cqe_next = (listelm)->field.cqe_next; \
    (elm)->field.cqe_prev = (listelm); \
    if ((listelm)->field.cqe_next == CIRCLEQ_ENDC(head)) \
        (head)->cqh_last = (elm); \
    else \
        (listelm)->field.cqe_next->field.cqe_prev = (elm); \
    (listelm)->field.cqe_next = (elm); \
} while (0)

```

```

} while (/*CONSTCOND*/0)

#define CIRCLEQ_INSERT_BEFORE(head,
listelm, elm, field) do { \
    QUEUEDEBDEBUG_CIRCLEQ_HEAD((head), field) \
    QUEUEDEBDEBUG_CIRCLEQ_ELM((head), (listelm), field) \
    (elm)->field.cqe_next = (listelm); \
    (elm)->field.cqe_prev = (listelm)->field.cqe_prev; \
    if ((listelm)->field.cqe_prev == CIRCLEQ_ENDC(head)) \
        (head)->cqh_first = (elm); \
    else \
        (listelm)->field.cqe_prev->field.cqe_next = (elm); \
    (listelm)->field.cqe_prev = (elm); \
} while (/*CONSTCOND*/0)

#define CIRCLEQ_INSERT_HEAD(head, elm, field) do { \
    QUEUEDEBDEBUG_CIRCLEQ_HEAD((head), field) \
    (elm)->field.cqe_next = (head)->cqh_first; \
    (elm)->field.cqe_prev = CIRCLEQ_END(head); \
    if ((head)->cqh_last == CIRCLEQ_ENDC(head)) \
        (head)->cqh_last = (elm); \
    else \
        (head)->cqh_first->field.cqe_prev = (elm); \
    (head)->cqh_first = (elm); \
} while (/*CONSTCOND*/0)

#define CIRCLEQ_INSERT_TAIL(head, elm, field) do { \
    QUEUEDEBDEBUG_CIRCLEQ_HEAD((head), field) \
    (elm)->field.cqe_next \
    = CIRCLEQ_END(head); \
    (elm)->field.cqe_prev = (head)->cqh_last; \
    if ((head)->cqh_first == CIRCLEQ_ENDC(head)) \
        (head)->cqh_first = (elm); \
    else \
        (head)->cqh_last->field.cqe_next = (elm); \
    (head)->cqh_last = (elm); \
} while (/*CONSTCOND*/0)

#define CIRCLEQ_REMOVE(head, elm, field) do { \
    QUEUEDEBDEBUG_CIRCLEQ_HEAD((head), field) \
    QUEUEDEBDEBUG_CIRCLEQ_ELM((head), (elm), field) \
    if ((elm)->field.cqe_next == CIRCLEQ_ENDC(head)) \
        (head)->cqh_last = (elm)->field.cqe_prev; \
    else \
        (elm)->field.cqe_next->field.cqe_prev = \
            (elm)->field.cqe_prev; \
    if ((elm)->field.cqe_prev == CIRCLEQ_ENDC(head)) \
        (head)->cqh_first = (elm)->field.cqe_next; \
} while (/*CONSTCOND*/0)

```

```

else \
    (elm)->field.cqe_prev->field.cqe_next = \
        (elm)->field.cqe_next; \
    QUEUEDEBUG_CIRCLEQ_POSTREMOVE((elm), field) \
} while (/*CONSTCOND*/0)

#define CIRCLEQ_FOREACH(var, head, field) \
    for ((var) = ((head)->cqh_first); \
        (var) != CIRCLEQ_ENDC(head); \
        (var) \
        = ((var)->field.cqe_next))

#define CIRCLEQ_FOREACH_REVERSE(var, head, field) \
    for ((var) = ((head)->cqh_last); \
        (var) != CIRCLEQ_ENDC(head); \
        (var) = ((var)->field.cqe_prev))

/*
 * Circular queue access methods.
 */
#define CIRCLEQ_FIRST(head) ((head)->cqh_first)
#define CIRCLEQ_LAST(head) ((head)->cqh_last)
/* For comparisons */
#define CIRCLEQ_ENDC(head) (__laundry_type(head))
/* For assignments */
#define CIRCLEQ_END(head) ((void *)(head))
#define CIRCLEQ_NEXT(elm, field) ((elm)->field.cqe_next)
#define CIRCLEQ_PREV(elm, field) ((elm)->field.cqe_prev)
#define CIRCLEQ_EMPTY(head) \
    (CIRCLEQ_FIRST(head) == CIRCLEQ_ENDC(head))

#define CIRCLEQ_LOOP_NEXT(head, elm, field) \
    (((elm)->field.cqe_next == CIRCLEQ_ENDC(head)) \
     ? ((head)->cqh_first) \
     : (elm->field.cqe_next))
#define CIRCLEQ_LOOP_PREV(head, elm, field) \
    (((elm)->field.cqe_prev == CIRCLEQ_ENDC(head)) \
     ? ((head)->cqh_last) \
     : \
     (elm->field.cqe_prev))
#endif /* !_KERNEL */

#endif /* !_SYS_QUEUE_H_ */
#ifdef _SYS_CDEFS_H_
#define _SYS_CDEFS_H_

#warning usage of non-standard #include <sys/cdefs.h> is deprecated

```

```

#undef __P
#undef __PMT

#define __P(args) args
#define __PMT(args) args

#define __CONCAT(x,y) x ## y
#define __STRING(x) #x

#ifdef __cplusplus
# define __BEGIN_DECLS extern "C" {
# define __END_DECLS }
#else
# define __BEGIN_DECLS
# define __END_DECLS
#endif

#if defined(__GNUC__) && !defined(__cplusplus)
# define __THROW __attribute__((__nothrow__))
# define __NTH(fct) __attribute__((__nothrow__)) fct
#else
# define __THROW
# define __NTH(fct) fct
#endif

#endif /* _SYS_CDEFS_H_ */
# Contributor: Fabian Affolter <fabian@affolter-engineering.ch>
# Maintainer: Fabian Affolter <fabian@affolter-engineering.ch>
pkgname=py3-flake8-copyright
_pkgname=flake8-copyright
pkgver=0.2.4
pkgrel=3
pkgdesc="Extension for flake8 which checks for copyrights"
options="!check" # No testsuite
url="https://github.com/savoirfairelinux/flake8-copyright"
arch="noarch"
license="MIT"
depends="py3-flake8 py3-setuptools"
makedepends="py3-gp517 py3-wheel"
subpackages="$pkgname-pyc"
source="https://files.pythonhosted.org/packages/source/${_pkgname:0:1}/${_pkgname}/${_pkgname}-${pkgver}.tar.gz"
builddir="$srcdir"/$_pkgname-$pkgver

replaces="py-flake8-copyright" # Backwards compatibility
provides="py-flake8-copyright=$pkgver-r$pkgrel" # Backwards compatibility

build() {
    gp517 build-wheel \

```



```

--wheel-dir .dist \
--output-fd 3 3>&1 >&2
}

package() {
gpep517 install-wheel --destdir "$pkgdir" \
.dist/*.whl
}

sha512sums="
a6ab47e1bb715618f075c51f398e18180404871b3b0faf1c2d30701d5203db6bc23771bf22ffb5bafcd8ee856b9b64237
b316bd503ae7dceed6ca284ccd5a74d
flake8-copyright-0.2.4.tar.gz
"
(The MIT License)

```

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/* \$NetBSD: tree.h,v 1.20 2013/09/14 13:20:45 joerg Exp \$ */

/* \$OpenBSD: tree.h,v 1.13 2011/07/09 00:19:45 pirofti Exp \$ */

/* Modified by Void Linux. */

/*

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*

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- */

```
#ifndef _SYS_TREE_H_
#define _SYS_TREE_H_
```

```
#ifdef __GNUC__
#define __GNUC_PREREQ__(x, y) \
((__GNUC__ == (x) && __GNUC_MINOR__ >= (y)) || \
 (__GNUC__ > (x)))
#else
#define __GNUC_PREREQ__(x, y) 0
#endif
```

```
#if __GNUC_PREREQ__(2, 7) || defined(__lint__)
#define _sys_tree_h_unused __attribute__((__unused__))
#else
#define _sys_tree_h_unused /* delete */
#endif
```

```
/*
```

- * This file defines data structures for different types of trees:
- * splay trees and red-black trees.
- *
- * A splay tree is a self-organizing
- data structure. Every operation
- * on the tree causes a splay to happen. The splay moves the requested
- * node to the root of the tree and partly rebalances it.
- *
- * This has the benefit that request locality causes faster lookups as
- * the requested nodes move to the top of the tree. On the other hand,
- * every lookup causes memory writes.
- *

- * The Balance Theorem bounds the total access time for m operations
- * and n inserts on an initially empty tree as $O((m + n)\lg n)$. The
- * amortized cost for a sequence of m accesses to a splay tree is $O(\lg n)$;
- *
- * A red-black tree is a binary search tree with the node color as an
- * extra attribute. It fulfills a set of conditions:
- * - every search path from the root to a leaf consists of the
- * same number of black nodes,
- * - each red node (except for the root) has a black parent,
- * - each leaf node is black.
- *
- * Every operation on a red-black tree is bounded as $O(\lg n)$.
- * The maximum height of a red-black tree is $2\lg(n+1)$.
- */

```
#define SPLAY_HEAD(name, type) \
struct name { \
    struct type *sph_root; /* root of the tree */ \
}
```

```
#define SPLAY_INITIALIZER(root) \
{ NULL }
```

```
#define SPLAY_INIT(root) do { \
    (root)->sph_root = NULL; \
} while (/*CONSTCOND*/ 0)
```

```
#define SPLAY_ENTRY(type) \
struct { \
    struct type *spe_left; /* left element */ \
    struct type *spe_right; /* right element */ \
}
```

```
#define SPLAY_LEFT(elm, field) (elm)->field.spe_left
#define SPLAY_RIGHT(elm, field) (elm)->field.spe_right
#define SPLAY_ROOT(head) (head)->sph_root
#define SPLAY_EMPTY(head) (SPLAY_ROOT(head) == NULL)
```

```
/* SPLAY_ROTATE_{LEFT,RIGHT} expect that tmp hold SPLAY_{RIGHT,LEFT} */
#define SPLAY_ROTATE_RIGHT(head, tmp, field) do { \
    SPLAY_LEFT((head)->sph_root, field) = SPLAY_RIGHT(tmp, field); \
    SPLAY_RIGHT(tmp, field) = (head)->sph_root; \
    (head)->sph_root = tmp; \
} while (/*CONSTCOND*/ 0)
```

```
#define SPLAY_ROTATE_LEFT(head, tmp, field) do { \
    SPLAY_RIGHT((head)->sph_root,
```

```

field) = SPLAY_LEFT(tmp, field); \
SPLAY_LEFT(tmp, field) = (head)->sph_root; \
(head)->sph_root = tmp; \
} while (/*CONSTCOND*/ 0)

#define SPLAY_LINKLEFT(head, tmp, field) do { \
    SPLAY_LEFT(tmp, field) = (head)->sph_root; \
    tmp = (head)->sph_root; \
    (head)->sph_root = SPLAY_LEFT((head)->sph_root, field); \
} while (/*CONSTCOND*/ 0)

#define SPLAY_LINKRIGHT(head, tmp, field) do { \
    SPLAY_RIGHT(tmp, field) = (head)->sph_root; \
    tmp = (head)->sph_root; \
    (head)->sph_root = SPLAY_RIGHT((head)->sph_root, field); \
} while (/*CONSTCOND*/ 0)

#define SPLAY_ASSEMBLE(head, node, left, right, field) do { \
    SPLAY_RIGHT(left, field) = SPLAY_LEFT((head)->sph_root, field); \
    SPLAY_LEFT(right, field) = SPLAY_RIGHT((head)->sph_root, field); \
    SPLAY_LEFT((head)->sph_root, field) = SPLAY_RIGHT(node, field); \
    SPLAY_RIGHT((head)->sph_root, field) = SPLAY_LEFT(node, field); \
} while (/*CONSTCOND*/ 0)

/* Generates prototypes and inline functions */

#define
    SPLAY_PROTOTYPE(name, type, field, cmp) \
void name##_SPLAY(struct name *, struct type *); \
void name##_SPLAY_MINMAX(struct name *, int); \
struct type *name##_SPLAY_INSERT(struct name *, struct type *); \
struct type *name##_SPLAY_REMOVE(struct name *, struct type *); \
\
/* Finds the node with the same key as elm */ \
static __inline struct type * \
name##_SPLAY_FIND(struct name *head, struct type *elm) \
{ \
    if (SPLAY_EMPTY(head)) \
        return(NULL); \
    name##_SPLAY(head, elm); \
    if ((cmp)(elm, (head)->sph_root) == 0) \
        return (head->sph_root); \
    return (NULL); \
} \
\
static __inline _sys_tree_h_unused struct type * \
name##_SPLAY_NEXT(struct name *head, struct type *elm) \
{ \

```

```

name##_SPLAY(head, elm); \
if (SPLAY_RIGHT(elm, field) != NULL) { \
    elm = SPLAY_RIGHT(elm, field); \
    while (SPLAY_LEFT(elm, field) != NULL) { \
        elm = SPLAY_LEFT(elm, field); \
    } \
} \
else \
    elm = NULL; \
return (elm); \
} \
\
static __sys_tree_h_unused __inline struct type * \
name##_SPLAY_MIN_MAX(struct name *head, int val) \
{ \
    name##_SPLAY_MINMAX(head, val); \
    return (SPLAY_ROOT(head)); \
}

/* Main splay operation.
 * Moves node close to the key of elm to top
 */
#define SPLAY_GENERATE(name, type, field, cmp) \
struct type * \
name##_SPLAY_INSERT(struct name *head, struct type *elm) \
{ \
    if (SPLAY_EMPTY(head)) { \
        SPLAY_LEFT(elm, field) = SPLAY_RIGHT(elm, field) = NULL; \
    } else { \
        int __comp; \
        name##_SPLAY(head, elm); \
        __comp = (cmp)(elm, (head)->sph_root); \
        if (__comp < 0) { \
            SPLAY_LEFT(elm, field) = SPLAY_LEFT((head)->sph_root, field); \
            SPLAY_RIGHT(elm, field) = (head)->sph_root; \
            SPLAY_LEFT((head)->sph_root, field) = NULL; \
        } else if (__comp > 0) { \
            SPLAY_RIGHT(elm, \
field) = SPLAY_RIGHT((head)->sph_root, field); \
            SPLAY_LEFT(elm, field) = (head)->sph_root; \
            SPLAY_RIGHT((head)->sph_root, field) = NULL; \
        } else \
            return ((head)->sph_root); \
    } \
    (head)->sph_root = (elm); \
    return (NULL); \
} \
\

```

```

struct type * \
name##_SPLAY_REMOVE(struct name *head, struct type *elm) \
{ \
    struct type *__tmp; \
    if (SPLAY_EMPTY(head)) \
        return (NULL); \
    name##_SPLAY(head, elm); \
    if ((cmp)(elm, (head)->sph_root) == 0) { \
        if (SPLAY_LEFT((head)->sph_root, field) == NULL) { \
            (head)->sph_root = SPLAY_RIGHT((head)->sph_root, field);\
        } else { \
            __tmp = SPLAY_RIGHT((head)->sph_root, field); \
            (head)->sph_root = SPLAY_LEFT((head)->sph_root, field);\
            name##_SPLAY(head, elm); \
            SPLAY_RIGHT((head)->sph_root, field) = __tmp; \
        } \
        return (elm); \
    } \
    return (NULL); \
} \
\
void \
name##_SPLAY(struct \
    name *head, struct type *elm) \
{ \
    struct type __node, *__left, *__right, *__tmp; \
    int __comp; \
    \
    SPLAY_LEFT(&__node, field) = SPLAY_RIGHT(&__node, field) = NULL;\
    __left = __right = &__node; \
    \
    while ((__comp = (cmp)(elm, (head)->sph_root)) != 0) { \
        if (__comp < 0) { \
            __tmp = SPLAY_LEFT((head)->sph_root, field); \
            if (__tmp == NULL) \
                break; \
            if ((cmp)(elm, __tmp) < 0){ \
                SPLAY_ROTATE_RIGHT(head, __tmp, field); \
                if (SPLAY_LEFT((head)->sph_root, field) == NULL)\
                    break; \
            } \
            SPLAY_LINKLEFT(head, __right, field); \
        } else if (__comp > 0) { \
            __tmp = SPLAY_RIGHT((head)->sph_root, field); \
            if (__tmp == NULL) \
                break; \
            if ((cmp)(elm, __tmp) > 0){ \
                SPLAY_ROTATE_LEFT(head, __tmp, field); \

```

```

    if (SPLAY_RIGHT((head)->sph_root, field) == NULL)\
        break; \
} \
SPLAY_LINKRIGHT(head, __left, field); \
} \
} \
SPLAY_ASSEMBLE(head,
&__node, __left, __right, field); \
} \
\
/* Splay with either the minimum or the maximum element \
* Used to find minimum or maximum element in tree. \
*/ \
void name##_SPLAY_MINMAX(struct name *head, int __comp) \
{ \
    struct type __node, *__left, *__right, *__tmp; \
\
    SPLAY_LEFT(&__node, field) = SPLAY_RIGHT(&__node, field) = NULL;\
    __left = __right = &__node; \
\
    while (1) { \
        if (__comp < 0) { \
            __tmp = SPLAY_LEFT((head)->sph_root, field); \
            if (__tmp == NULL) \
                break; \
            if (__comp < 0){ \
                SPLAY_ROTATE_RIGHT(head, __tmp, field); \
                if (SPLAY_LEFT((head)->sph_root, field) == NULL)\
                    break; \
            } \
            SPLAY_LINKLEFT(head, __right, field); \
        } else if (__comp > 0) { \
            __tmp = SPLAY_RIGHT((head)->sph_root, field); \
            if (__tmp == NULL) \
                break; \
            if (__comp > 0) { \
                SPLAY_ROTATE_LEFT(head, __tmp, field); \
                if (SPLAY_RIGHT((head)->sph_root,
field) == NULL)\
                    break; \
            } \
            SPLAY_LINKRIGHT(head, __left, field); \
        } \
    } \
    SPLAY_ASSEMBLE(head, &__node, __left, __right, field); \
}

#define SPLAY_NEGINF -1

```

```

#define SPLAY_INF 1

#define SPLAY_INSERT(name, x, y) name##_SPLAY_INSERT(x, y)
#define SPLAY_REMOVE(name, x, y) name##_SPLAY_REMOVE(x, y)
#define SPLAY_FIND(name, x, y) name##_SPLAY_FIND(x, y)
#define SPLAY_NEXT(name, x, y) name##_SPLAY_NEXT(x, y)
#define SPLAY_MIN(name, x) (SPLAY_EMPTY(x) ? NULL \
    : name##_SPLAY_MIN_MAX(x, SPLAY_NEGINF))
#define SPLAY_MAX(name, x) (SPLAY_EMPTY(x) ? NULL \
    : name##_SPLAY_MIN_MAX(x, SPLAY_INF))

#define SPLAY_FOREACH(x, name, head) \
    for ((x) = SPLAY_MIN(name, head); \
        (x) != NULL; \
        (x) = SPLAY_NEXT(name, head, x))

/* Macros that define a red-black tree */
#define RB_HEAD(name, type) \
    struct name { \
        struct type *rbh_root; /* root of the tree */ \
    }

#define RB_INITIALIZER(root) \
    { \
        NULL \
    }

#define RB_INIT(root) do { \
    (root)->rbh_root = NULL; \
} while (/*CONSTCOND*/ 0)

#define RB_BLACK 0
#define RB_RED 1
#define RB_ENTRY(type) \
    struct { \
        struct type *rbe_left; /* left element */ \
        struct type *rbe_right; /* right element */ \
        struct type *rbe_parent; /* parent element */ \
        int rbe_color; /* node color */ \
    }

#define RB_LEFT(elm, field) (elm)->field.rbe_left
#define RB_RIGHT(elm, field) (elm)->field.rbe_right
#define RB_PARENT(elm, field) (elm)->field.rbe_parent
#define RB_COLOR(elm, field) (elm)->field.rbe_color
#define RB_ROOT(head) (head)->rbh_root
#define RB_EMPTY(head) (RB_ROOT(head) == NULL)

#define RB_SET(elm, parent, field) do { \

```



```

RB_PARENT(elm, field) = parent;  \
RB_LEFT(elm, field) = RB_RIGHT(elm, field) = NULL; \
RB_COLOR(elm, field) = RB_RED;  \
} while (/*CONSTCOND*/ 0)

#define RB_SET_BLACKRED(black, red, field) do {  \
    RB_COLOR(black, field) = RB_BLACK;  \
    RB_COLOR(red, field) \
    = RB_RED;  \
} while (/*CONSTCOND*/ 0)

#ifndef RB_AUGMENT
#define RB_AUGMENT(x) do {} while (/*CONSTCOND*/ 0)
#endif

#define RB_ROTATE_LEFT(head, elm, tmp, field) do {  \
    (tmp) = RB_RIGHT(elm, field);  \
    if ((RB_RIGHT(elm, field) = RB_LEFT(tmp, field)) != NULL) { \
        RB_PARENT(RB_LEFT(tmp, field), field) = (elm); \
    }  \
    RB_AUGMENT(elm);  \
    if ((RB_PARENT(tmp, field) = RB_PARENT(elm, field)) != NULL) { \
        if ((elm) == RB_LEFT(RB_PARENT(elm, field), field)) \
            RB_LEFT(RB_PARENT(elm, field), field) = (tmp); \
        else  \
            RB_RIGHT(RB_PARENT(elm, field), field) = (tmp); \
    } else  \
        (head)->rbh_root = (tmp);  \
    RB_LEFT(tmp, field) = (elm);  \
    RB_PARENT(elm, field) = (tmp);  \
    RB_AUGMENT(tmp);  \
    if ((RB_PARENT(tmp, field)))  \
        RB_AUGMENT(RB_PARENT(tmp, field)); \
} while (/*CONSTCOND*/ 0)

#define RB_ROTATE_RIGHT(head, elm, tmp, field) do {  \
    (tmp) = RB_LEFT(elm, field);  \
    if ((RB_LEFT(elm, field) = RB_RIGHT(tmp, field)) \
    != NULL) { \
        RB_PARENT(RB_RIGHT(tmp, field), field) = (elm); \
    }  \
    RB_AUGMENT(elm);  \
    if ((RB_PARENT(tmp, field) = RB_PARENT(elm, field)) != NULL) { \
        if ((elm) == RB_LEFT(RB_PARENT(elm, field), field)) \
            RB_LEFT(RB_PARENT(elm, field), field) = (tmp); \
        else  \
            RB_RIGHT(RB_PARENT(elm, field), field) = (tmp); \
    } else  \

```

```

(head)->rbh_root = (tmp); \
RB_RIGHT(tmp, field) = (elm); \
RB_PARENT(elm, field) = (tmp); \
RB_AUGMENT(tmp); \
if ((RB_PARENT(tmp, field))) \
    RB_AUGMENT(RB_PARENT(tmp, field)); \
} while (/*CONSTCOND*/ 0)

/* Generates prototypes and inline functions */
#define RB_PROTOTYPE(name, type, field, cmp) \
    RB_PROTOTYPE_INTERNAL(name, type, field, cmp,)
#define RB_PROTOTYPE_STATIC(name, type, field, cmp) \
    RB_PROTOTYPE_INTERNAL(name, type, field, cmp, _sys_tree_h_unused static)
#define RB_PROTOTYPE_INTERNAL(name, type, field, cmp, attr) \
    attr void name##_RB_INSERT_COLOR(struct name *, struct \
        type *); \
    attr void name##_RB_REMOVE_COLOR(struct name *, struct type *, struct type *);\
    attr struct type *name##_RB_REMOVE(struct name *, struct type *); \
    attr struct type *name##_RB_INSERT(struct name *, struct type *); \
    attr struct type *name##_RB_FIND(struct name *, struct type *); \
    attr struct type *name##_RB_NFIND(struct name *, struct type *); \
    attr struct type *name##_RB_NEXT(struct type *); \
    attr struct type *name##_RB_PREV(struct type *); \
    attr struct type *name##_RB_MINMAX(struct name *, int); \
    \

/* Main rb operation.
 * Moves node close to the key of elm to top
 */
#define RB_GENERATE(name, type, field, cmp) \
    RB_GENERATE_INTERNAL(name, type, field, cmp,)
#define RB_GENERATE_STATIC(name, type, field, cmp) \
    RB_GENERATE_INTERNAL(name, type, field, cmp, _sys_tree_h_unused static)
#define RB_GENERATE_INTERNAL(name, type, field, cmp, attr) \
    attr void \
    name##_RB_INSERT_COLOR(struct name *head, struct type *elm) \
    { \
        struct type \
        *parent, *gparent, *tmp; \
        while ((parent = RB_PARENT(elm, field)) != NULL && \
            RB_COLOR(parent, field) == RB_RED) { \
            gparent = RB_PARENT(parent, field); \
            if (parent == RB_LEFT(gparent, field)) { \
                tmp = RB_RIGHT(gparent, field); \
                if (tmp && RB_COLOR(tmp, field) == RB_RED) { \
                    RB_COLOR(tmp, field) = RB_BLACK; \
                    RB_SET_BLACKRED(parent, gparent, field);\
                    elm = gparent; \

```

```

    continue; \
} \
if (RB_RIGHT(parent, field) == elm) { \
    RB_ROTATE_LEFT(head, parent, tmp, field);\
    tmp = parent; \
    parent = elm; \
    elm = tmp; \
} \
RB_SET_BLACKRED(parent, gparent, field); \
RB_ROTATE_RIGHT(head, gparent, tmp, field); \
} else { \
    tmp = RB_LEFT(gparent, field); \
    if (tmp && RB_COLOR(tmp, field) == RB_RED) { \
        RB_COLOR(tmp, field) = RB_BLACK; \
        RB_SET_BLACKRED(parent, gparent, field);\
        elm = gparent; \
        continue; \
    } \
    if (RB_LEFT(parent, field) == elm)
{ \
    RB_ROTATE_RIGHT(head, parent, tmp, field);\
    tmp = parent; \
    parent = elm; \
    elm = tmp; \
} \
    RB_SET_BLACKRED(parent, gparent, field); \
    RB_ROTATE_LEFT(head, gparent, tmp, field); \
} \
} \
RB_COLOR(head->rbh_root, field) = RB_BLACK; \
} \
\
attr void \
name##_RB_REMOVE_COLOR(struct name *head, struct type *parent, struct type *elm) \
{ \
    struct type *tmp; \
    while ((elm == NULL || RB_COLOR(elm, field) == RB_BLACK) && \
        elm != RB_ROOT(head)) { \
        if (RB_LEFT(parent, field) == elm) { \
            tmp = RB_RIGHT(parent, field); \
            if (RB_COLOR(tmp, field) == RB_RED) { \
                RB_SET_BLACKRED(tmp, parent, field); \
                RB_ROTATE_LEFT(head, parent, tmp, field);\
                tmp = RB_RIGHT(parent, field); \
            } \
            if ((RB_LEFT(tmp, field) == NULL || \
                RB_COLOR(RB_LEFT(tmp, field), field) == RB_BLACK) && \
                (RB_RIGHT(tmp, field) == NULL || \

```

```

    RB_COLOR(RB_RIGHT(tmp,
field), field) == RB_BLACK)) {\
    RB_COLOR(tmp, field) = RB_RED; \
    elm = parent; \
    parent = RB_PARENT(elm, field); \
} else { \
    if (RB_RIGHT(tmp, field) == NULL || \
        RB_COLOR(RB_RIGHT(tmp, field), field) == RB_BLACK) {\
        struct type *oleft; \
        if ((oleft = RB_LEFT(tmp, field)) \
            != NULL) \
            RB_COLOR(oleft, field) = RB_BLACK;\
        RB_COLOR(tmp, field) = RB_RED; \
        RB_ROTATE_RIGHT(head, tmp, oleft, field);\
        tmp = RB_RIGHT(parent, field); \
    } \
    RB_COLOR(tmp, field) = RB_COLOR(parent, field);\
    RB_COLOR(parent, field) = RB_BLACK; \
    if (RB_RIGHT(tmp, field)) \
        RB_COLOR(RB_RIGHT(tmp, field), field) = RB_BLACK;\
    RB_ROTATE_LEFT(head, parent, tmp, field);\
    elm = RB_ROOT(head); \
    break; \
} \
} else { \
    tmp = RB_LEFT(parent, field); \
    if (RB_COLOR(tmp, field) == RB_RED) { \
        RB_SET_BLACKRED(tmp, parent, field); \
        RB_ROTATE_RIGHT(head, parent, tmp, field);\
        tmp
= RB_LEFT(parent, field); \
    } \
    if ((RB_LEFT(tmp, field) == NULL || \
        RB_COLOR(RB_LEFT(tmp, field), field) == RB_BLACK) &&\
        (RB_RIGHT(tmp, field) == NULL || \
        RB_COLOR(RB_RIGHT(tmp, field), field) == RB_BLACK)) {\
        RB_COLOR(tmp, field) = RB_RED; \
        elm = parent; \
        parent = RB_PARENT(elm, field); \
    } else { \
        if (RB_LEFT(tmp, field) == NULL || \
            RB_COLOR(RB_LEFT(tmp, field), field) == RB_BLACK) {\
            struct type *oright; \
            if ((oright = RB_RIGHT(tmp, field)) \
                != NULL) \
                RB_COLOR(oright, field) = RB_BLACK;\
            RB_COLOR(tmp, field) = RB_RED; \
            RB_ROTATE_LEFT(head, tmp, oright, field);\

```

```

    tmp = RB_LEFT(parent, field); \
} \
RB_COLOR(tmp, field) = RB_COLOR(parent, field);\
RB_COLOR(parent, field) = RB_BLACK; \
if (RB_LEFT(tmp, field)) \
    RB_COLOR(RB_LEFT(tmp, field), field) = RB_BLACK;\
RB_ROTATE_RIGHT(head, parent, tmp, field);\
elm = RB_ROOT(head); \
break; \
} \
} \
} \
if
(elm) \
    RB_COLOR(elm, field) = RB_BLACK; \
} \
\
attr struct type * \
name##_RB_REMOVE(struct name *head, struct type *elm) \
{ \
    struct type *child, *parent, *old = elm; \
    int color; \
    if (RB_LEFT(elm, field) == NULL) \
        child = RB_RIGHT(elm, field); \
    else if (RB_RIGHT(elm, field) == NULL) \
        child = RB_LEFT(elm, field); \
    else { \
        struct type *left; \
        elm = RB_RIGHT(elm, field); \
        while ((left = RB_LEFT(elm, field)) != NULL) \
            elm = left; \
        child = RB_RIGHT(elm, field); \
        parent = RB_PARENT(elm, field); \
        color = RB_COLOR(elm, field); \
        if (child) \
            RB_PARENT(child, field) = parent; \
        if (parent) { \
            if (RB_LEFT(parent, field) == elm) \
                RB_LEFT(parent, field) = child; \
            else \
                RB_RIGHT(parent, field) = child; \
            RB_AUGMENT(parent); \
        } else \
            RB_ROOT(head)
= child; \
    if (RB_PARENT(elm, field) == old) \
        parent = elm; \
    (elm)->field = (old)->field; \
}

```

```

if (RB_PARENT(old, field)) { \
    if (RB_LEFT(RB_PARENT(old, field), field) == old)\
        RB_LEFT(RB_PARENT(old, field), field) = elm;\
    else \
        RB_RIGHT(RB_PARENT(old, field), field) = elm;\
    RB_AUGMENT(RB_PARENT(old, field)); \
} else \
    RB_ROOT(head) = elm; \
RB_PARENT(RB_LEFT(old, field), field) = elm; \
if (RB_RIGHT(old, field)) \
    RB_PARENT(RB_RIGHT(old, field), field) = elm; \
if (parent) { \
    left = parent; \
    do { \
        RB_AUGMENT(left); \
    } while ((left = RB_PARENT(left, field)) != NULL); \
} \
goto color; \
} \
parent = RB_PARENT(elm, field); \
color = RB_COLOR(elm, field); \
if (child) \
    RB_PARENT(child, field) = parent; \
if (parent) { \
    if (RB_LEFT(parent, field) == elm) \
        RB_LEFT(parent, field) = child; \
    else \
        RB_RIGHT(parent, field) = child; \
    RB_AUGMENT(parent); \
} else \
    RB_ROOT(head) = child; \
color: \
if (color == RB_BLACK) \
    name##_RB_REMOVE_COLOR(head, parent, child); \
return (old); \
} \
\
/* Inserts a node into the RB tree */ \
attr struct type * \
name##_RB_INSERT(struct name *head, struct type *elm) \
{ \
    struct type *tmp; \
    struct type *parent = NULL; \
    int comp = 0; \
    tmp = RB_ROOT(head); \
    while (tmp) { \
        parent = tmp; \

```

```

comp = (cmp)(elm, parent); \
if (comp < 0) \
    tmp = RB_LEFT(tmp, field); \
else if (comp > 0) \
    tmp = RB_RIGHT(tmp, field); \
else \
    return (tmp); \
} \
RB_SET(elm, parent, field); \
if (parent != NULL) { \
    if (comp < 0) \
        RB_LEFT(parent, field) = elm; \
    else \
        RB_RIGHT(parent, field) = elm; \
    RB_AUGMENT(parent); \
} else \
    RB_ROOT(head) = elm; \
name##_RB_INSERT_COLOR(head, \
elm); \
return (NULL); \
} \
\
/* Finds the node with the same key as elm */ \
attr struct type * \
name##_RB_FIND(struct name *head, struct type *elm) \
{ \
    struct type *tmp = RB_ROOT(head); \
    int comp; \
    while (tmp) { \
        comp = cmp(elm, tmp); \
        if (comp < 0) \
            tmp = RB_LEFT(tmp, field); \
        else if (comp > 0) \
            tmp = RB_RIGHT(tmp, field); \
        else \
            return (tmp); \
    } \
    return (NULL); \
} \
\
/* Finds the first node greater than or equal to the search key */ \
attr struct type * \
name##_RB_NFIND(struct name *head, struct type *elm) \
{ \
    struct type *tmp = RB_ROOT(head); \
    struct type *res = NULL; \
    int comp; \
    while (tmp) { \

```

```

comp = cmp(elm, tmp); \
if (comp < 0) { \
    res = tmp; \
    tmp = RB_LEFT(tmp, field); \
} \
else if (comp > 0) \
    tmp =
RB_RIGHT(tmp, field); \
else \
    return (tmp); \
} \
return (res); \
} \
\
/* ARGSUSED */ \
attr struct type * \
name##_RB_NEXT(struct type *elm) \
{ \
    if (RB_RIGHT(elm, field)) { \
        elm = RB_RIGHT(elm, field); \
        while (RB_LEFT(elm, field)) \
            elm = RB_LEFT(elm, field); \
    } else { \
        if (RB_PARENT(elm, field) && \
            (elm == RB_LEFT(RB_PARENT(elm, field), field))) \
            elm = RB_PARENT(elm, field); \
        else { \
            while (RB_PARENT(elm, field) && \
                (elm == RB_RIGHT(RB_PARENT(elm, field), field))) \
                elm = RB_PARENT(elm, field); \
            elm = RB_PARENT(elm, field); \
        } \
    } \
    return (elm); \
} \
\
/* ARGSUSED */ \
attr struct type * \
name##_RB_PREV(struct type *elm) \
{ \
    if (RB_LEFT(elm, field)) { \
        elm = RB_LEFT(elm, field); \
        while (RB_RIGHT(elm, field)) \
            elm = RB_RIGHT(elm, field); \
    } \
    else { \
        if (RB_PARENT(elm, field) && \
            (elm == RB_RIGHT(RB_PARENT(elm, field), field))) \

```



```

    elm = RB_PARENT(elm, field); \
else { \
    while (RB_PARENT(elm, field) && \
        (elm == RB_LEFT(RB_PARENT(elm, field), field)))\
        elm = RB_PARENT(elm, field); \
    elm = RB_PARENT(elm, field); \
} \
} \
return (elm); \
} \
\
attr struct type * \
name##_RB_MINMAX(struct name *head, int val) \
{ \
    struct type *tmp = RB_ROOT(head); \
    struct type *parent = NULL; \
    while (tmp) { \
        parent = tmp; \
        if (val < 0) \
            tmp = RB_LEFT(tmp, field); \
        else \
            tmp = RB_RIGHT(tmp, field); \
    } \
    return (parent); \
}

#define RB_NEGINF -1
#define RB_INF 1

#define RB_INSERT(name, x, y) name##_RB_INSERT(x, y)
#define RB_REMOVE(name, x, y) name##_RB_REMOVE(x, y)
#define RB_FIND(name, x, y) name##_RB_FIND(x, y)
#define RB_NFIND(name, x, y) name##_RB_NFIND(x, \
y)
#define RB_NEXT(name, x, y) name##_RB_NEXT(y)
#define RB_PREV(name, x, y) name##_RB_PREV(y)
#define RB_MIN(name, x) name##_RB_MINMAX(x, RB_NEGINF)
#define RB_MAX(name, x) name##_RB_MINMAX(x, RB_INF)

#define RB_FOREACH(x, name, head) \
for ((x) = RB_MIN(name, head); \
    (x) != NULL; \
    (x) = name##_RB_NEXT(x))

#define RB_FOREACH_FROM(x, name, y) \
for ((x) = (y); \
    ((x) != NULL) && ((y) = name##_RB_NEXT(x), (x) != NULL); \
    (x) = (y))

```

```

#define RB_FOREACH_SAFE(x, name, head, y) \
for ((x) = RB_MIN(name, head); \
    ((x) != NULL) && ((y) = name##_RB_NEXT(x), (x) != NULL); \
    (x) = (y))

#define RB_FOREACH_REVERSE(x, name, head) \
for ((x) = RB_MAX(name, head); \
    (x) != NULL; \
    (x) = name##_RB_PREV(x))

#define RB_FOREACH_REVERSE_FROM(x, name, y) \
for ((x) = (y); \
    ((x) != NULL) && ((y) = name##_RB_PREV(x), (x) != NULL); \
    (x) = (y))

#define RB_FOREACH_REVERSE_SAFE(x, name, \
head, y) \
for ((x) = RB_MAX(name, head); \
    ((x) != NULL) && ((y) = name##_RB_PREV(x), (x) != NULL); \
    (x) = (y))

#endif /* _SYS_TREE_H_ */
# Contributor: Wen Heping <wenhepingalpine@sohu.com>
# Maintainer: Wen Heping <wenhepingalpine@sohu.com>
pkgname=perl-software-license
pkgver=0.104007
pkgrel=0
# _pkgreal is used by apkbuild-cpan to find modules at MetaCpan
_pkgreal=Software-License
pkgdesc="packages that provide templated software licenses"
url="https://metacpan.org/release/Software-License/"
arch="noarch"
license="GPL-1.0-or-later OR Artistic-1.0-Perl"
depends="perl perl-data-section perl-text-template"
checkdepends="perl-try-tiny"
subpackages="$pkgname-doc"
source="https://cpan.metacpan.org/authors/id/L/LE/LEONT/Software-License-$pkgver.tar.gz"
buildid="$_srcdir/$_pkgreal-$pkgver"

build() {
    export CFLAGS=$(perl -MConfig -E 'say $Config{ccflags}')
    PERL_MM_USE_DEFAULT=1 perl -I. Makefile.PL \
        INSTALLDIRS=vendor \
        NO_PACKLIST=1 \
        NO_PERLLOCAL=1
    make
}

```

```

check() {
    export CFLAGS=$(perl -MConfig -E 'say $Config{ccflags}')
    make test
}

package() {
    make DESTDIR="$pkgdir" install
}

sha512sums="
12d75e9583b3013d9b4a282467f1ac80ab6b7f3251926d66591d01404489b528f22adc396dfd4528a0f0ca650f0eed6d
9c959e69eace2169c6ed1cffe5277e4
Software-License-0.104007.tar.gz
"
(The MIT License)

```

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Contributor: Dhruvin Gandhi <contact@dhruvin.me>

Maintainer: Patrycja Rosa <alpine@ptrcnull.me>

pkgname=py3-license-expression

_pkgname=license_expression

pkgver=30.4.4

pkgrel=0

pkgdesc="Library to parse, compare, simplify and normalize license expressions"

url="https://github.com/nexB/license-expression"

arch="noarch"

license="Apache-2.0"

```

depends="python3 py3-boolean.py"
makedepends="py3-setuptools py3-setuptools_scm py3-gpep517 py3-wheel"
checkdepends="py3-pytest py3-pytest-xdist"
subpackages="$pkgname-pyc"
source="https://files.pythonhosted.org/packages/source/l/${_pkgname}/${_pkgname}-${pkgver}.tar.gz"
builddir="$srcdir/${_pkgname}-${pkgver}"

build() {
    gpep517 build-wheel \
        --wheel-dir .dist \
        --output-fd 3 3>&1 >&2
}

check() {
    python3 -m venv --clear --without-pip --system-site-packages .testenv
    .testenv/bin/python3 -m installer .dist/*.whl
    .testenv/bin/python3 -m pytest
}

package() {
    python3 -m installer -d "$pkgdir" \
        .dist/*.whl
}

sha512sums="
f46dd4cf524b3962115fe26f5545bfdd6767275b482724af51e7ca07da79244969a3bfc5d2fd5b95bc0f19d1b95a26a8f3
ab36c676e56ec302178d7166588066
    license_expression-30.4.4.tar.gz
"

```

1.304 scanelf 1.3.8-r2

1.304.1 Available under license :

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Version 2, June 1991

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interest
in the program `Gnomovision'
(which makes passes at compilers) written
by James Hacker.

signature of Moe Ghoul, 1 April 1989
Moe Ghoul, President of Vice

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```

# Contributor: Carlo Landmeter <clandmeter@alpinelinux.org>
# Maintainer: Kevin Daudt <kdaudt@alpinelinux.org>
pkgname=spdx-licenses
pkgver=3.27.0
pkgrel=0
pkgdesc="Various data formats for the SPDX License List"
url="https://spdx.org/"
arch="noarch"
options="!check" # no test suite
license="CC-BY-3.0"
source="license-list-data-$pkgver.tar.gz::https://github.com/spdx/license-list-data/archive/v$pkgver.tar.gz"
builddir="$srcdir/license-list-data-$pkgver"
subpackages="$pkgname-list"

_types="html json rdfa rdfnt rdfturtle rdfxml template text"

for type in $_types; do
    subpackages="$subpackages $pkgname-$type:_subpkg"
done

package() {
    mkdir -p "$pkgdir"
}

_subpkg() {
    local type=${subpkgname/$pkgname-/}
    pkgdesc="$pkgdesc ($type)"
    install_if="$pkgname=$pkgver-r$pkgrel"
    mkdir -p "$subpkgdir"/usr/share/spdx
    cp -r "$builddir"/$type "$subpkgdir"/usr/share/spdx/
}

list() {
    pkgdesc="$pkgdesc (licence list)"
    mkdir -p "$subpkgdir"/usr/share/spdx
    local i; for i in "$builddir"/text/*.txt;
    do
        local license=${i##*/}
        echo ${license%.*} >> "$subpkgdir"/usr/share/spdx/license.lst
    done
}

sha512sums="
16d59c81e331b54b52639826f83408d98144cdaa70eacc3e8ce35dc3b13992e4794cf7515eb9db200efd390a0c0e35ae9
d4706fbe0ca6a8d236189e88870720c license-list-data-3.27.0.tar.gz
"

```

```

# Automatically generated by apkbuild-cpan, template 4
# Contributor: Valery Kartel <valery.kartel@gmail.com>
# Maintainer: Celeste <cielesti@protonmail.com>
maintainer="Celeste <cielesti@protonmail.com>"
pkgname=perl-bsd-resource
pkgver=1.2911
pkgrel=11
#_pkgreal is used by apkbuild-cpan to find modules at MetaCpan
_pkgreal=BSD-Resource
pkgdesc="Perl extension implements the BSD process resource limit functions"
url="https://metacpan.org/release/BSD-Resource/"
arch="all"
license="Artistic-2.0 OR LGPL-2.0"
depends="perl"
makedepends="perl-dev"
subpackages="$pkgname-doc"
source="https://cpan.metacpan.org/authors/id/J/JH/JHI/BSD-Resource-$pkgver.tar.gz"
builddir="$srcdir/${_pkgreal}-${pkgver}"

build() {
    export CFLAGS=$(perl -MConfig -E 'say $Config{ccflags}')
    PERL_MM_USE_DEFAULT=1 perl -I. Makefile.PL \
        INSTALLDIRS=vendor \
        NO_PACKLIST=1 \
        NO_PERLLOCAL=1
    make
}

check() {
    export CFLAGS=$(perl -MConfig -E 'say $Config{ccflags}')
    make test
}

package() {
    make DESTDIR="$pkgdir" install
}

sha512sums="
d0032d41c7c0468ed1c6d8f57b885f6cb97a5039d754c8cb60b2067daedaf53bd15fb6561a3d0f828df16dfa5417f663b
8065ba65f4fea16dc9262728b3b6b85
    BSD-Resource-1.2911.tar.gz
"

maintainer="Achill Gilgenast <achill@achill.org>"
pkgname=cargo-license
pkgver=0.7.0
pkgrel=1
pkgdesc="Cargo subcommand to see license of dependencies"
url="https://github.com/onur/cargo-license"

```

```

arch="all"
license="MIT"
makedepends="cargo cargo-auditable"
source="$pkgname-$pkgver.tar.gz::https://crates.io/api/v1/crates/cargo-license/$pkgver/download"

prepare() {
    default_prepare

    cargo fetch --target="$CTARGET" --locked
}

build() {
    cargo auditable build --release --frozen
}

check() {
    cargo test --frozen
}

package() {
    install -Dm755 target/release/cargo-license -t "$pkgdir"/usr/bin
}

sha512sums="
9b3f0ead35515e85ef4074ebdbdbe5b9ec8bcaec244fabe414e2ed60f90366e8b1692d8bf7ffe4c07d778e60d94bab86bc
0c8be9823232e9c360a38bc65e9c5a cargo-license-0.7.0.tar.gz
"

# Contributor: Maxim Karasev <begs@disroot.org>
# Maintainer: mio <miyopan@e.email>
pkgname=bsd-games
pkgver=3.3
pkgrel=2
pkgdesc="traditional text mode games from BSD"
url="https://bsd-games.sourceforge.io/"
arch="all"
license="BSD-3-Clause"
install="$pkgname.post-install"
makedepends="ncurses-dev coreutils" # configure causes busybox expr error
subpackages="$pkgname-doc"
source="https://sourceforge.net/projects/bsd-games/files/bsd-games-$pkgver.tar.gz
0001-bsd-games-scores-dir.patch
"

options="!check" # no tests

build() {
    # some GNU autoconf options are ignored, but it works
    ./configure \
    --build=$CBUILD \

```

```

--host=$CHOST \
--prefix=/usr \
--sysconfdir=/etc \
--mandir=/usr/share/man \
--scoaredir=/usr/share/$pkgname
make
}

package() {
make DESTDIR="$pkgdir" install
install -Dm644 LICENSE "$pkgdir"/usr/share/licenses/bsd-games/LICENSE
}

sha512sums="
aaf36d09d4fe68514a5c279063d7e77a9a9a84c447037cba974b29faa07eb80c2aab2379d0699c196b5c27ffe1b2bb2c6
8d3390143e0e62d5e3d210ccfb61294
    bsd-games-3.3.tar.gz
e1def0d4835a877242c4173fae862e278a7858738e0bacacbb045a42bcabec2aa7c72d000bbd2421ce35fe66cdc1f52c0
577b7e278029ca5ed50f7aab22319f6 0001-bsd-games-scores-dir.patch
"

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```

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mini_sendmail - accept email on behalf of real sendmail

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Maintainer: Natanael Copa <ncopa@alpinelinux.org>

pkgname=libart-lgpl

pkgver=2.3.21

pkgrel=8

pkgdesc="A library for high-performance 2D graphics"

url="https://www.levien.com/libart/"

arch="all"

options="!check" # No test suite.

license="LGPL-2.0-or-later"

subpackages="\$pkgname-dev"

source="https://download.gnome.org/sources/libart-lgpl/2.3/libart-lgpl-\$pkgver.tar.bz2"

"

builddir="\$srcdir"/libart-lgpl-\$pkgver

```
prepare() {  
    update_config_sub  
    default_prepare  
}
```

```
build() {  
    ./configure \  
        --build=$CBUILD \  
        --host=$CHOST \  
        --prefix=/usr  
    make  
}
```

```

package() {
    make DESTDIR="$pkgdir" install
}

sha512sums="8a632a6a4da59e5e8c02ec2f5a57e36d182b325b46513765425e5f171ff9ae326af1b133725beba28f7e7
6654309e001aee9bace727b5b4c8589405256a3c020 libart_lgpl-2.3.21.tar.bz2"
# Contributor: Patrycja Rosa <alpine@ptrcnull.me>
# Maintainer: Patrycja Rosa <alpine@ptrcnull.me>
pkgname=bsd-compat-headers
pkgver=0.7.2
pkgrel=6
pkgdesc="BSD compatibility headers (cdefs, queue, tree)"
url="https://gitlab.alpinelinux.org/alpine/aports"
arch="noarch"
license="BSD-2-Clause AND BSD-3-Clause"
source="
cdefs.h
queue.h
tree.h
"
buildddir="$srcdir"
options="!check" # just headers

package() {
    mkdir -p "$pkgdir"
    install -Dm644 -t "$pkgdir"/usr/include/sys \
        cdefs.h queue.h tree.h
}
sha512sums="
37c8fc73c7aea7b490f7850927e2bb91d12137c9e59e22c084146d515696dbc7973b5de92f4c987ba080dd2502ba8312
7006442c3f019b6447a620c0cae73178 cdefs.h
2f0d5e6e4dc3350285cf17009265dddcbe12431c111868eea39bc8cb038ab7c1f2acacbb21735c4e9d4a1fd106a8fc0f86
11ea33987d4faba37dde5ce6da0750 queue.h
d9ac210d81feb8ad2655bc80fb065d3fe20ae4417b32b4a1711e6738a4870140005c13373b5d1846ef3ce5ae6da45f2da
cef2092881eded0a2e94f6a07752ef3 tree.h
"

```

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The X-Spline code was written Carole Blanc (blanc@labri.u-bordeaux.fr) and Christophe Schlick (schlick@labri.u-bordeaux.fr) starting from an initial implementation done by C. Feuille, S. Grosbois, L. Maziere and L. Minihot as a student practice (Universite Bordeaux, France). For additional information about X-splines, see:

"X-Splines: A Spline Model Designed for the End User" by C. Blanc and C. Schlick, Proceedings of SIGGRAPH'95

<http://dept-info.labri.u-bordeaux.fr/~schlick/DOC/sig1.html>

/* \$NetBSD: queue.h,v 1.70 2015/11/02 15:21:23 christos Exp \$ */

/*

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*

* @(#)queue.h 8.5 (Berkeley) 8/20/94

*/

#ifndef _SYS_QUEUE_H_

#define _SYS_QUEUE_H_

/*

* This file defines five types of data structures: singly-linked lists,

* lists, simple queues, tail queues, and circular queues.

*

* A singly-linked list is headed by a single forward pointer. The

* elements are singly linked for minimum space and
pointer manipulation

* overhead at the expense of O(n) removal for arbitrary elements. New

* elements can be added to the list after an existing element or at the

* head of the list. Elements being removed from the head of the list

* should use the explicit macro for this purpose for optimum

* efficiency. A singly-linked list may only be traversed in the forward

* direction. Singly-linked lists are ideal for applications with large

* datasets and few or no removals or for implementing a LIFO queue.

*

* A list is headed by a single forward pointer (or an array of forward

* pointers for a hash table header). The elements are doubly linked

* so that an arbitrary element can be removed without a need to

* traverse the list. New elements can be added to the list before

* or after an existing element or at the head of the list. A list

* may only be traversed in the forward direction.

*

* A simple queue is headed by a pair of pointers, one the head of the

* list and the

other to the tail of the list. The elements are singly

* linked to save space, so elements can only be removed from the

* head of the list. New elements can be added to the list after

* an existing element, at the head of the list, or at the end of the

* list. A simple queue may only be traversed in the forward direction.

*

* A tail queue is headed by a pair of pointers, one to the head of the

* list and the other to the tail of the list. The elements are doubly

* linked so that an arbitrary element can be removed without a need to

* traverse the list. New elements can be added to the list before or

* after an existing element, at the head of the list, or at the end of

* the list. A tail queue may be traversed in either direction.

*

* A circle queue is headed by a pair of pointers, one to the head of the

* list and the other to the tail of the list. The elements are doubly

* linked so that an arbitrary element can be removed without a need to

* traverse the list. New elements

```

can be added to the list before or after
* an existing element, at the head of the list, or at the end of the list.
* A circle queue may be traversed in either direction, but has a more
* complex end of list detection.
*
* For details on the use of these macros, see the queue(3) manual page.
*/

```

```

/*
* Include the definition of NULL only on NetBSD because sys/null.h
* is not available elsewhere. This conditional makes the header
* portable and it can simply be dropped verbatim into any system.
* The caveat is that on other systems some other header
* must provide NULL before the macros can be used.
*/
#ifdef __NetBSD__
#include <sys/null.h>
#endif

```

```

#if defined(QEUEDEBUG)
# if defined(_KERNEL)
#  define QUEUEDEBUG_ABORT(...) panic(__VA_ARGS__)
# else
#  include <err.h>
#  define QUEUEDEBUG_ABORT(...) err(1, __VA_ARGS__)
# endif
#endif

```

```

/*
* Singly-linked List definitions.
*/
#define SLIST_HEAD(name, type) \
struct name { \
    struct type *slh_first; /* first \
    element */ \
}

#define SLIST_HEAD_INITIALIZER(head) \
{ NULL }

#define SLIST_ENTRY(type) \
struct { \
    struct type *sle_next; /* next element */ \
}

/*
* Singly-linked List access methods.
*/

```

```

#define SLIST_FIRST(head) ((head)->slh_first)
#define SLIST_END(head) NULL
#define SLIST_EMPTY(head) ((head)->slh_first == NULL)
#define SLIST_NEXT(elm, field) ((elm)->field.sle_next)

#define SLIST_FOREACH(var, head, field) \
for((var) = (head)->slh_first; \
    (var) != SLIST_END(head); \
    (var) = (var)->field.sle_next)

#define SLIST_FOREACH_SAFE(var, head, field, tvar) \
for ((var) = SLIST_FIRST((head)); \
    (var) != SLIST_END(head) && \
    ((tvar) = SLIST_NEXT((var), field), 1); \
    (var) = (tvar))

/*
 * Singly-linked List functions.
 */
#define SLIST_INIT(head) do { \
    (head)->slh_first = SLIST_END(head); \
} while (/*CONSTCOND*/0)

#define SLIST_INSERT_AFTER(slistelm, elm, field) do { \
    (elm)->field.sle_next = (slistelm)->field.sle_next; \
    (slistelm)->field.sle_next \
    = (elm); \
} while (/*CONSTCOND*/0)

#define SLIST_INSERT_HEAD(head, elm, field) do { \
    (elm)->field.sle_next = (head)->slh_first; \
    (head)->slh_first = (elm); \
} while (/*CONSTCOND*/0)

#define SLIST_REMOVE_AFTER(slistelm, field) do { \
    (slistelm)->field.sle_next = \
        SLIST_NEXT(SLIST_NEXT((slistelm), field), field); \
} while (/*CONSTCOND*/0)

#define SLIST_REMOVE_HEAD(head, field) do { \
    (head)->slh_first = (head)->slh_first->field.sle_next; \
} while (/*CONSTCOND*/0)

#define SLIST_REMOVE(head, elm, type, field) do { \
    if ((head)->slh_first == (elm)) { \
        SLIST_REMOVE_HEAD((head), field); \
    } \
    else { \

```

```

struct type *curelm = (head)->slh_first; \
while(curelm->field.sle_next != (elm)) \
    curelm = curelm->field.sle_next; \
curelm->field.sle_next = \
    curelm->field.sle_next->field.sle_next; \
} \
} while (/*CONSTCOND*/0)

/*
 * List definitions.
 */
#define LIST_HEAD(name, type) \
struct name { \
    struct type *lh_first; /* first element */ \
}

#define LIST_HEAD_INITIALIZER(head) \
{ NULL }

#define LIST_ENTRY(type) \
struct { \
    struct type *le_next; /* next element */ \
    struct type **le_prev; /* address of previous next element */ \
}

/*
 * List access methods.
 */
#define LIST_FIRST(head) ((head)->lh_first)
#define LIST_END(head) NULL
#define LIST_EMPTY(head) ((head)->lh_first == LIST_END(head))
#define LIST_NEXT(elm, field) ((elm)->field.le_next)

#define LIST_FOREACH(var, head, field) \
for ((var) = ((head)->lh_first); \
     (var) != LIST_END(head); \
     (var) = ((var)->field.le_next))

#define LIST_FOREACH_SAFE(var, head, field, tvar) \
for ((var) = LIST_FIRST((head)); \
     (var) != LIST_END(head) && \
     ((tvar) = LIST_NEXT((var), field), 1); \
     (var) = (tvar))

#define LIST_MOVE(head1, head2) do { \
    LIST_INIT((head2)); \
    if (!LIST_EMPTY((head1)))

```

```

{    \
(head2)->lh_first = (head1)->lh_first; \
LIST_INIT((head1)); \
}    \
} while (/*CONSTCOND*/0)

/*
 * List functions.
 */
#if defined(QUEUEDEBUG)
#define QUEUEDEBUG_LIST_INSERT_HEAD(head, elm, field) \
if ((head)->lh_first && \
    (head)->lh_first->field.le_prev != &(head)->lh_first) \
    QUEUEDEBUG_ABORT("LIST_INSERT_HEAD %p %s:%d", (head), \
        __FILE__, __LINE__);
#define QUEUEDEBUG_LIST_OP(elm, field) \
if ((elm)->field.le_next && \
    (elm)->field.le_next->field.le_prev != \
    &(elm)->field.le_next) \
    QUEUEDEBUG_ABORT("LIST_* forw %p %s:%d", (elm), \
        __FILE__, __LINE__); \
if (*(elm)->field.le_prev != (elm)) \
    QUEUEDEBUG_ABORT("LIST_* back %p %s:%d", (elm), \
        __FILE__, __LINE__);
#define QUEUEDEBUG_LIST_POSTREMOVE(elm, field) \
(elm)->field.le_next = (void *)1L; \
(elm)->field.le_prev = (void *)1L;
#else
#define QUEUEDEBUG_LIST_INSERT_HEAD(head, elm, field)
#define QUEUEDEBUG_LIST_OP(elm,
    field)
#define QUEUEDEBUG_LIST_POSTREMOVE(elm, field)
#endif

#define LIST_INIT(head) do { \
    (head)->lh_first = LIST_END(head); \
} while (/*CONSTCOND*/0)

#define LIST_INSERT_AFTER(listelm, elm, field) do { \
    QUEUEDEBUG_LIST_OP((listelm), field) \
    if (((elm)->field.le_next = (listelm)->field.le_next) != \
        LIST_END(head)) \
        (listelm)->field.le_next->field.le_prev = \
            &(elm)->field.le_next; \
    (listelm)->field.le_next = (elm); \
    (elm)->field.le_prev = &(listelm)->field.le_next; \
} while (/*CONSTCOND*/0)

```

```

#define LIST_INSERT_BEFORE(listelm, elm, field) do { \
    QUEUEDEBUG_LIST_OP((listelm), field) \
    (elm)->field.le_prev = (listelm)->field.le_prev; \
    (elm)->field.le_next = (listelm); \
    *(listelm)->field.le_prev = (elm); \
    (listelm)->field.le_prev = &(elm)->field.le_next; \
} while (/*CONSTCOND*/0)

#define LIST_INSERT_HEAD(head, elm, field) do { \
    QUEUEDEBUG_LIST_INSERT_HEAD((head), (elm), field) \
    if (((elm)->field.le_next \
    = (head)->lh_first) != LIST_END(head)) \
    (head)->lh_first->field.le_prev = &(elm)->field.le_next; \
    (head)->lh_first = (elm); \
    (elm)->field.le_prev = &(head)->lh_first; \
} while (/*CONSTCOND*/0)

#define LIST_REMOVE(elm, field) do { \
    QUEUEDEBUG_LIST_OP((elm), field) \
    if ((elm)->field.le_next != NULL) \
    (elm)->field.le_next->field.le_prev = \
    (elm)->field.le_prev; \
    *(elm)->field.le_prev = (elm)->field.le_next; \
    QUEUEDEBUG_LIST_POSTREMOVE((elm), field) \
} while (/*CONSTCOND*/0)

#define LIST_REPLACE(elm, elm2, field) do { \
    if (((elm2)->field.le_next = (elm)->field.le_next) != NULL) \
    (elm2)->field.le_next->field.le_prev = \
    &(elm2)->field.le_next; \
    (elm2)->field.le_prev = (elm)->field.le_prev; \
    *(elm2)->field.le_prev = (elm2); \
    QUEUEDEBUG_LIST_POSTREMOVE((elm), field) \
} while (/*CONSTCOND*/0)

/*
 * Simple queue definitions.
 */
#define SIMPLEQ_HEAD(name, type) \
struct name { \
    struct \
    type *sqh_first; /* first element */ \
    struct type **sqh_last; /* addr of last next element */ \
}

#define SIMPLEQ_HEAD_INITIALIZER(head) \
{ NULL, &(head).sqh_first }

```

```

#define SIMPLEQ_ENTRY(type)  \
struct {  \
    struct type *sqe_next; /* next element */  \
}

/*
 * Simple queue access methods.
 */

#define SIMPLEQ_FIRST(head) ((head)->sqh_first)
#define SIMPLEQ_END(head) NULL
#define SIMPLEQ_EMPTY(head) ((head)->sqh_first == SIMPLEQ_END(head))
#define SIMPLEQ_NEXT(elm, field) ((elm)->field.sqe_next)

#define SIMPLEQ_FOREACH(var, head, field)  \
for ((var) = ((head)->sqh_first);  \
     (var) != SIMPLEQ_END(head);  \
     (var) = ((var)->field.sqe_next))

#define SIMPLEQ_FOREACH_SAFE(var, head, field, next)  \
for ((var) = ((head)->sqh_first);  \
     (var) != SIMPLEQ_END(head) &&  \
     ((next = ((var)->field.sqe_next)), 1);  \
     (var) = (next))

/*
 * Simple queue functions.
 */

#define SIMPLEQ_INIT(head) do {  \
    (head)->sqh_first = NULL;  \
    (head)->sqh_last  \
    = &(head)->sqh_first;  \
} while (/*CONSTCOND*/0)

#define SIMPLEQ_INSERT_HEAD(head, elm, field) do {  \
    if (((elm)->field.sqe_next = (head)->sqh_first) == NULL)  \
        (head)->sqh_last = &(elm)->field.sqe_next;  \
    (head)->sqh_first = (elm);  \
} while (/*CONSTCOND*/0)

#define SIMPLEQ_INSERT_TAIL(head, elm, field) do {  \
    (elm)->field.sqe_next = NULL;  \
    *(head)->sqh_last = (elm);  \
    (head)->sqh_last = &(elm)->field.sqe_next;  \
} while (/*CONSTCOND*/0)

#define SIMPLEQ_INSERT_AFTER(head, listelm, elm, field) do {  \
    if (((elm)->field.sqe_next = (listelm)->field.sqe_next) == NULL)  \
        (head)->sqh_last = &(elm)->field.sqe_next;  \
} while (/*CONSTCOND*/0)

```

```

(listelm)->field.sqe_next = (elm); \
} while (/*CONSTCOND*/0)

#define SIMPLEQ_REMOVE_HEAD(head, field) do { \
if (((head)->sqh_first = (head)->sqh_first->field.sqe_next) == NULL) \
(head)->sqh_last = &(head)->sqh_first; \
} while (/*CONSTCOND*/0)

#define SIMPLEQ_REMOVE_AFTER(head, elm, field) do { \
if \
(((elm)->field.sqe_next = (elm)->field.sqe_next->field.sqe_next) \
== NULL) \
(head)->sqh_last = &(elm)->field.sqe_next; \
} while (/*CONSTCOND*/0)

#define SIMPLEQ_REMOVE(head, elm, type, field) do { \
if ((head)->sqh_first == (elm)) { \
SIMPLEQ_REMOVE_HEAD((head), field); \
} else { \
struct type *curelm = (head)->sqh_first; \
while (curelm->field.sqe_next != (elm)) \
curelm = curelm->field.sqe_next; \
if ((curelm->field.sqe_next = \
curelm->field.sqe_next->field.sqe_next) == NULL) \
(head)->sqh_last = &(curelm)->field.sqe_next; \
} \
} while (/*CONSTCOND*/0)

#define SIMPLEQ_CONCAT(head1, head2) do { \
if (!SIMPLEQ_EMPTY((head2))) { \
*(head1)->sqh_last = (head2)->sqh_first; \
(head1)->sqh_last = (head2)->sqh_last; \
SIMPLEQ_INIT((head2)); \
} \
} while (/*CONSTCOND*/0)

#define SIMPLEQ_LAST(head, type, field) \
(SIMPLEQ_EMPTY((head)) ? \
NULL : \
((struct type \
*)(void *) \
((char *)((head)->sqh_last) - offsetof(struct type, field))))

/*
 * Tail queue definitions.
 */

#define _TAILQ_HEAD(name, type, qual) \
struct name { \

```



```

qual type *tqh_first; /* first element */ \
qual type *qual *tqh_last; /* addr of last next element */ \
}
#define TAILQ_HEAD(name, type) _TAILQ_HEAD(name, struct type,)

#define TAILQ_HEAD_INITIALIZER(head) \
{ TAILQ_END(head), &(head).tqh_first }

#define _TAILQ_ENTRY(type, qual) \
struct { \
    qual type *tqe_next; /* next element */ \
    qual type *qual *tqe_prev; /* address of previous next element */ \
}
#define TAILQ_ENTRY(type) _TAILQ_ENTRY(struct type,)

/*
 * Tail queue access methods.
 */
#define TAILQ_FIRST(head) ((head)->tqh_first)
#define TAILQ_END(head) (NULL)
#define TAILQ_NEXT(elm, field) ((elm)->field.tqe_next)
#define TAILQ_LAST(head, headname) \
    (*((struct headname *) (void *) ((head)->tqh_last))->tqh_last)
#define TAILQ_PREV(elm, headname, field) \
    (*((struct headname *) (void *) ((elm)->field.tqe_prev))->tqh_last)
#define TAILQ_EMPTY(head) (TAILQ_FIRST(head) == TAILQ_END(head))

#define TAILQ_FOREACH(var, head, field) \
for ((var) = ((head)->tqh_first); \
     (var) != TAILQ_END(head); \
     (var) = ((var)->field.tqe_next))

#define TAILQ_FOREACH_SAFE(var, head, field, next) \
for ((var) = ((head)->tqh_first); \
     (var) != TAILQ_END(head) && \
     ((next) = TAILQ_NEXT(var, field), 1); (var) = (next))

#define TAILQ_FOREACH_REVERSE(var, head, headname, field) \
for ((var) = TAILQ_LAST((head), headname); \
     (var) != TAILQ_END(head); \
     (var) = TAILQ_PREV((var), headname, field))

#define TAILQ_FOREACH_REVERSE_SAFE(var, head, headname, field, prev) \
for ((var) = TAILQ_LAST((head), headname); \
     (var) != TAILQ_END(head) && \
     ((prev) = TAILQ_PREV((var), headname, field), 1); (var) = (prev))

```

```

/*
 * Tail queue functions.
 */
#if defined(QEUEDEBBUG)
#define QEUEDEBBUG_TAILQ_INSERT_HEAD(head,
elm, field) \
if ((head)->tqh_first && \
    (head)->tqh_first->field.tqe_prev != &(head)->tqh_first) \
    QEUEDEBBUG_ABORT("TAILQ_INSERT_HEAD %p %s:%d", (head), \
        __FILE__, __LINE__);
#define QEUEDEBBUG_TAILQ_INSERT_TAIL(head, elm, field) \
if (*(head)->tqh_last != NULL) \
    QEUEDEBBUG_ABORT("TAILQ_INSERT_TAIL %p %s:%d", (head), \
        __FILE__, __LINE__);
#define QEUEDEBBUG_TAILQ_OP(elm, field) \
if ((elm)->field.tqe_next && \
    (elm)->field.tqe_next->field.tqe_prev != \
    &(elm)->field.tqe_next) \
    QEUEDEBBUG_ABORT("TAILQ_* forw %p %s:%d", (elm), \
        __FILE__, __LINE__); \
if (*(elm)->field.tqe_prev != (elm)) \
    QEUEDEBBUG_ABORT("TAILQ_* back %p %s:%d", (elm), \
        __FILE__, __LINE__);
#define QEUEDEBBUG_TAILQ_PREREMOVE(head, elm, field) \
if ((elm)->field.tqe_next == NULL && \
    (head)->tqh_last != &(elm)->field.tqe_next) \
    QEUEDEBBUG_ABORT("TAILQ_PREREMOVE head %p elm %p %s:%d", \
        (head), (elm), __FILE__, \
        __LINE__);
#define QEUEDEBBUG_TAILQ_POSTREMOVE(elm, field) \
(elm)->field.tqe_next = (void *)1L; \
(elm)->field.tqe_prev = (void *)1L;
#else
#define QEUEDEBBUG_TAILQ_INSERT_HEAD(head, elm, field)
#define QEUEDEBBUG_TAILQ_INSERT_TAIL(head, elm, field)
#define QEUEDEBBUG_TAILQ_OP(elm, field)
#define QEUEDEBBUG_TAILQ_PREREMOVE(head, elm, field)
#define QEUEDEBBUG_TAILQ_POSTREMOVE(elm, field)
#endif

#define TAILQ_INIT(head) do { \
    (head)->tqh_first = TAILQ_END(head); \
    (head)->tqh_last = &(head)->tqh_first; \
} while (/*CONSTCOND*/0)

#define TAILQ_INSERT_HEAD(head, elm, field) do { \
    QEUEDEBBUG_TAILQ_INSERT_HEAD((head), (elm), field) \

```

```

if (((elm)->field.tqe_next = (head)->tqh_first) != TAILQ_END(head))\
    (head)->tqh_first->field.tqe_prev = \
        &(elm)->field.tqe_next; \
else \
    (head)->tqh_last = &(elm)->field.tqe_next; \
    (head)->tqh_first = (elm); \
    (elm)->field.tqe_prev = &(head)->tqh_first; \
} while (/*CONSTCOND*/0)

```

```

#define TAILQ_INSERT_TAIL(head,
elm, field) do { \
    QUEUEDEBDEBUG_TAILQ_INSERT_TAIL((head), (elm), field) \
    (elm)->field.tqe_next = TAILQ_END(head); \
    (elm)->field.tqe_prev = (head)->tqh_last; \
    *(head)->tqh_last = (elm); \
    (head)->tqh_last = &(elm)->field.tqe_next; \
} while (/*CONSTCOND*/0)

```

```

#define TAILQ_INSERT_AFTER(head, listelm, elm, field) do { \
    QUEUEDEBDEBUG_TAILQ_OP((listelm), field) \
    if (((elm)->field.tqe_next = (listelm)->field.tqe_next) != \
        TAILQ_END(head)) \
        (elm)->field.tqe_next->field.tqe_prev = \
            &(elm)->field.tqe_next; \
    else \
        (head)->tqh_last = &(elm)->field.tqe_next; \
        (listelm)->field.tqe_next = (elm); \
        (elm)->field.tqe_prev = &(listelm)->field.tqe_next; \
} while (/*CONSTCOND*/0)

```

```

#define TAILQ_INSERT_BEFORE(listelm, elm, field) do { \
    QUEUEDEBDEBUG_TAILQ_OP((listelm), field) \
    (elm)->field.tqe_prev = (listelm)->field.tqe_prev; \
    (elm)->field.tqe_next = (listelm); \
    *(listelm)->field.tqe_prev = (elm); \
    (listelm)->field.tqe_prev \
        = &(elm)->field.tqe_next; \
} while (/*CONSTCOND*/0)

```

```

#define TAILQ_REMOVE(head, elm, field) do { \
    QUEUEDEBDEBUG_TAILQ_PREREMOVE((head), (elm), field) \
    QUEUEDEBDEBUG_TAILQ_OP((elm), field) \
    if (((elm)->field.tqe_next) != TAILQ_END(head)) \
        (elm)->field.tqe_next->field.tqe_prev = \
            (elm)->field.tqe_prev; \
    else \
        (head)->tqh_last = (elm)->field.tqe_prev; \
    *(elm)->field.tqe_prev = (elm)->field.tqe_next; \
} while (/*CONSTCOND*/0)

```

```

QUEUEDEBUG_TAILQ_POSTREMOVE((elm), field); \
} while (/*CONSTCOND*/0)

```

```

#define TAILQ_REPLACE(head, elm, elm2, field) do { \
    if (((elm2)->field.tqe_next = (elm)->field.tqe_next) != \
        TAILQ_END(head)) \
        (elm2)->field.tqe_next->field.tqe_prev = \
            &(elm2)->field.tqe_next; \
    else \
        (head)->tqh_last = &(elm2)->field.tqe_next; \
        (elm2)->field.tqe_prev = (elm)->field.tqe_prev; \
        *(elm2)->field.tqe_prev = (elm2); \
    QUEUEDEBUG_TAILQ_POSTREMOVE((elm), \
        field); \
} while (/*CONSTCOND*/0)

```

```

#define TAILQ_CONCAT(head1, head2, field) do { \
    if (!TAILQ_EMPTY(head2)) { \
        *(head1)->tqh_last = (head2)->tqh_first; \
        (head2)->tqh_first->field.tqe_prev = (head1)->tqh_last; \
        (head1)->tqh_last = (head2)->tqh_last; \
        TAILQ_INIT((head2)); \
    } \
} while (/*CONSTCOND*/0)

```

/*

* Singly-linked Tail queue declarations.

*/

```

#define STAILQ_HEAD(name, type) \
struct name { \
    struct type *stqh_first; /* first element */ \
    struct type **stqh_last; /* addr of last next element */ \
}

```

```

#define STAILQ_HEAD_INITIALIZER(head) \
{ NULL, &(head).stqh_first }

```

```

#define STAILQ_ENTRY(type) \
struct { \
    struct type *stqe_next; /* next element */ \
}

```

/*

* Singly-linked Tail queue access methods.

*/

```

#define STAILQ_FIRST(head) ((head)->stqh_first)
#define STAILQ_END(head) NULL
#define STAILQ_NEXT(elm, field) ((elm)->field.stqe_next)

```

```

#define STAILQ_EMPTY(head) (STAILQ_FIRST(head)
== STAILQ_END(head))

/*
 * Singly-linked Tail queue functions.
 */
#define STAILQ_INIT(head) do { \
    (head)->stqh_first = NULL; \
    (head)->stqh_last = &(head)->stqh_first; \
} while (/*CONSTCOND*/0)

#define STAILQ_INSERT_HEAD(head, elm, field) do { \
    if (((elm)->field.stqe_next = (head)->stqh_first) == NULL) \
        (head)->stqh_last = &(elm)->field.stqe_next; \
    (head)->stqh_first = (elm); \
} while (/*CONSTCOND*/0)

#define STAILQ_INSERT_TAIL(head, elm, field) do { \
    (elm)->field.stqe_next = NULL; \
    *(head)->stqh_last = (elm); \
    (head)->stqh_last = &(elm)->field.stqe_next; \
} while (/*CONSTCOND*/0)

#define STAILQ_INSERT_AFTER(head, listelm, elm, field) do { \
    if (((elm)->field.stqe_next = (listelm)->field.stqe_next) == NULL) \
        (head)->stqh_last = &(elm)->field.stqe_next; \
    (listelm)->field.stqe_next = (elm); \
} while (/*CONSTCOND*/0)

#define STAILQ_REMOVE_HEAD(head, field) do { \
    if (((head)->stqh_first = (head)->stqh_first->field.stqe_next) \
        == NULL) \
        (head)->stqh_last = &(head)->stqh_first; \
} while (/*CONSTCOND*/0)

#define STAILQ_REMOVE(head, elm, type, field) do { \
    if ((head)->stqh_first == (elm)) { \
        STAILQ_REMOVE_HEAD((head), field); \
    } else { \
        struct type *curelm = (head)->stqh_first; \
        while (curelm->field.stqe_next != (elm)) \
            curelm = curelm->field.stqe_next; \
        if ((curelm->field.stqe_next = \
            curelm->field.stqe_next->field.stqe_next) == NULL) \
            (head)->stqh_last = &(curelm)->field.stqe_next; \
    } \
} while (/*CONSTCOND*/0)

```

```

#define STAILQ_FOREACH(var, head, field) \
for ((var) = ((head)->stqh_first); \
     (var); \
     (var) = ((var)->field.stqe_next))

#define STAILQ_FOREACH_SAFE(var, head, field, tvar) \
for ((var) = STAILQ_FIRST((head)); \
     (var) && ((tvar) = STAILQ_NEXT((var), field), 1); \
     (var) = (tvar))

#define STAILQ_CONCAT(head1, head2) do { \
if (!STAILQ_EMPTY((head2))) { \
    *(head1)->stqh_last \
    = (head2)->stqh_first; \
    (head1)->stqh_last = (head2)->stqh_last; \
    STAILQ_INIT((head2)); \
} \
} while (/*CONSTCOND*/0)

#define STAILQ_LAST(head, type, field) \
(STAILQ_EMPTY((head)) ? \
NULL : \
((struct type *)((void *) \
((char *)((head)->stqh_last) - offsetof(struct type, field)))))

#ifdef _KERNEL
/*
 * Circular queue definitions. Do not use. We still keep the macros
 * for compatibility but because of pointer aliasing issues their use
 * is discouraged!
 */

/*
 * __launder_type(): We use this ugly hack to work around the the compiler
 * noticing that two types may not alias each other and elide tests in code.
 * We hit this in the CIRCLEQ macros when comparing 'struct name *' and
 * 'struct type *' (see CIRCLEQ_HEAD()). Modern compilers (such as GCC
 * 4.8) declare these comparisons as always false, causing the code to
 * not run as designed.
 *
 * This hack is only to be used for comparisons and thus can be fully const.
 * Do not use for assignment.
 *
 * If we ever choose to change the ABI of the CIRCLEQ macros, we could fix
 * this by changing the head/tail sentinel values, but see the note above
 * this one.
 */

```

```

static __inline const void * __launder_type(const void *);
static __inline const void *
__launder_type(const void *__x)
{
    __asm __volatile("" : "+r" (__x));
    return __x;
}

#if defined(QEUEDEDEBUG)
#define QEUEDEDEBUG_CIRCLEQ_HEAD(head, field) \
    if ((head)->cqh_first != CIRCLEQ_ENDC(head) && \
        (head)->cqh_first->field.cqe_prev != CIRCLEQ_ENDC(head)) \
        QEUEDEDEBUG_ABORT("CIRCLEQ head forw %p %s:%d", (head), \
            __FILE__, __LINE__); \
    if ((head)->cqh_last != CIRCLEQ_ENDC(head) && \
        (head)->cqh_last->field.cqe_next != CIRCLEQ_ENDC(head)) \
        QEUEDEDEBUG_ABORT("CIRCLEQ head back %p %s:%d", (head), \
            __FILE__, __LINE__);
#define QEUEDEDEBUG_CIRCLEQ_ELM(head, elm, field) \
    if ((elm)->field.cqe_next == CIRCLEQ_ENDC(head)) { \
        if ((head)->cqh_last != (elm)) \
            QEUEDEDEBUG_ABORT("CIRCLEQ \
elm last %p %s:%d", \
                (elm), __FILE__, __LINE__); \
    } else { \
        if ((elm)->field.cqe_next->field.cqe_prev != (elm)) \
            QEUEDEDEBUG_ABORT("CIRCLEQ elm forw %p %s:%d", \
                (elm), __FILE__, __LINE__); \
    } \
    if ((elm)->field.cqe_prev == CIRCLEQ_ENDC(head)) { \
        if ((head)->cqh_first != (elm)) \
            QEUEDEDEBUG_ABORT("CIRCLEQ elm first %p %s:%d", \
                (elm), __FILE__, __LINE__); \
    } else { \
        if ((elm)->field.cqe_prev->field.cqe_next != (elm)) \
            QEUEDEDEBUG_ABORT("CIRCLEQ elm prev %p %s:%d", \
                (elm), __FILE__, __LINE__); \
    }
#define QEUEDEDEBUG_CIRCLEQ_POSTREMOVE(elm, field) \
    (elm)->field.cqe_next = (void *)1L; \
    (elm)->field.cqe_prev = (void *)1L;
#else
#define QEUEDEDEBUG_CIRCLEQ_HEAD(head, field)
#define QEUEDEDEBUG_CIRCLEQ_ELM(head, elm, field)
#define QEUEDEDEBUG_CIRCLEQ_POSTREMOVE(elm, field)
#endif

#define CIRCLEQ_HEAD(name, type) \

```

```

struct name {
    struct type *cqh_first; /*
    first element */
    struct type *cqh_last; /* last element */
}

#define CIRCLEQ_HEAD_INITIALIZER(head)
{ CIRCLEQ_END(&head), CIRCLEQ_END(&head) }

#define CIRCLEQ_ENTRY(type)
struct {
    struct type *cqe_next; /* next element */
    struct type *cqe_prev; /* previous element */
}

/*
 * Circular queue functions.
 */
#define CIRCLEQ_INIT(head) do {
    (head)->cqh_first = CIRCLEQ_END(head);
    (head)->cqh_last = CIRCLEQ_END(head);
} while (/*CONSTCOND*/0)

#define CIRCLEQ_INSERT_AFTER(head, listelm, elm, field) do {
    QUEUEDEBUG_CIRCLEQ_HEAD((head), field)
    QUEUEDEBUG_CIRCLEQ_ELM((head), (listelm), field)
    (elm)->field.cqe_next = (listelm)->field.cqe_next;
    (elm)->field.cqe_prev = (listelm);
    if ((listelm)->field.cqe_next == CIRCLEQ_ENDC(head))
        (head)->cqh_last = (elm);
    else
        (listelm)->field.cqe_next->field.cqe_prev = (elm);
    (listelm)->field.cqe_next = (elm);
} while (/*CONSTCOND*/0)

#define CIRCLEQ_INSERT_BEFORE(head,
listelm, elm, field) do {
    QUEUEDEBUG_CIRCLEQ_HEAD((head), field)
    QUEUEDEBUG_CIRCLEQ_ELM((head), (listelm), field)
    (elm)->field.cqe_next = (listelm);
    (elm)->field.cqe_prev = (listelm)->field.cqe_prev;
    if ((listelm)->field.cqe_prev == CIRCLEQ_ENDC(head))
        (head)->cqh_first = (elm);
    else
        (listelm)->field.cqe_prev->field.cqe_next = (elm);
    (listelm)->field.cqe_prev = (elm);
} while (/*CONSTCOND*/0)

```



```

#define CIRCLEQ_INSERT_HEAD(head, elm, field) do { \
    QUEUEDEBDEBUG_CIRCLEQ_HEAD((head), field) \
    (elm)->field.cqe_next = (head)->cqh_first; \
    (elm)->field.cqe_prev = CIRCLEQ_END(head); \
    if ((head)->cqh_last == CIRCLEQ_ENDC(head)) \
        (head)->cqh_last = (elm); \
    else \
        (head)->cqh_first->field.cqe_prev = (elm); \
    (head)->cqh_first = (elm); \
} while (/*CONSTCOND*/0)

```

```

#define CIRCLEQ_INSERT_TAIL(head, elm, field) do { \
    QUEUEDEBDEBUG_CIRCLEQ_HEAD((head), field) \
    (elm)->field.cqe_next \
    = CIRCLEQ_END(head); \
    (elm)->field.cqe_prev = (head)->cqh_last; \
    if ((head)->cqh_first == CIRCLEQ_ENDC(head)) \
        (head)->cqh_first = (elm); \
    else \
        (head)->cqh_last->field.cqe_next = (elm); \
    (head)->cqh_last = (elm); \
} while (/*CONSTCOND*/0)

```

```

#define CIRCLEQ_REMOVE(head, elm, field) do { \
    QUEUEDEBDEBUG_CIRCLEQ_HEAD((head), field) \
    QUEUEDEBDEBUG_CIRCLEQ_ELM((head), (elm), field) \
    if ((elm)->field.cqe_next == CIRCLEQ_ENDC(head)) \
        (head)->cqh_last = (elm)->field.cqe_prev; \
    else \
        (elm)->field.cqe_next->field.cqe_prev = \
            (elm)->field.cqe_prev; \
    if ((elm)->field.cqe_prev == CIRCLEQ_ENDC(head)) \
        (head)->cqh_first = (elm)->field.cqe_next; \
    else \
        (elm)->field.cqe_prev->field.cqe_next = \
            (elm)->field.cqe_next; \
    QUEUEDEBDEBUG_CIRCLEQ_POSTREMOVE((elm), field) \
} while (/*CONSTCOND*/0)

```

```

#define CIRCLEQ_FOREACH(var, head, field) \
    for ((var) = ((head)->cqh_first); \
        (var) != CIRCLEQ_ENDC(head); \
        (var) \
        = ((var)->field.cqe_next))

```

```

#define CIRCLEQ_FOREACH_REVERSE(var, head, field) \
    for ((var) = ((head)->cqh_last); \
        (var) != CIRCLEQ_ENDC(head); \

```

```

(var) = ((var)->field.cqe_prev))

/*
 * Circular queue access methods.
 */
#define CIRCLEQ_FIRST(head) ((head)->cqh_first)
#define CIRCLEQ_LAST(head) ((head)->cqh_last)
/* For comparisons */
#define CIRCLEQ_ENDC(head) (__launter_type(head))
/* For assignments */
#define CIRCLEQ_END(head) ((void *)(head))
#define CIRCLEQ_NEXT(elm, field) ((elm)->field.cqe_next)
#define CIRCLEQ_PREV(elm, field) ((elm)->field.cqe_prev)
#define CIRCLEQ_EMPTY(head) \
    (CIRCLEQ_FIRST(head) == CIRCLEQ_ENDC(head))

#define CIRCLEQ_LOOP_NEXT(head, elm, field) \
    (((elm)->field.cqe_next == CIRCLEQ_ENDC(head)) \
     ? ((head)->cqh_first) \
     : (elm->field.cqe_next))
#define CIRCLEQ_LOOP_PREV(head, elm, field) \
    (((elm)->field.cqe_prev == CIRCLEQ_ENDC(head)) \
     ? ((head)->cqh_last) \
     : \
     (elm->field.cqe_prev))
#endif /* !_KERNEL */

#endif /* !_SYS_QUEUE_H_ */
# Contributor: Fabian Affolter <fabian@affolter-engineering.ch>
# Maintainer: Fabian Affolter <fabian@affolter-engineering.ch>
pkgname=py3-flake8-copyright
_pkgname=flake8-copyright
pkgver=0.2.4
pkgrel=3
pkgdesc="Extension for flake8 which checks for copyrights"
options="!check" # No testsuite
url="https://github.com/savoirfairelinux/flake8-copyright"
arch="noarch"
license="MIT"
depends="py3-flake8 py3-setuptools"
makedepends="py3-gpep517 py3-wheel"
subpackages="$pkgname-pyc"
source="https://files.pythonhosted.org/packages/source/${_pkgname:0:1}/${_pkgname}/${_pkgname}-${pkgver}.tar.gz"
builddir="$srcdir"/$_pkgname-$pkgver

replaces="py-flake8-copyright" # Backwards compatibility
provides="py-flake8-copyright=$pkgver-r$pkgrel" # Backwards compatibility

```

```

build() {
  gpep517 build-wheel \
    --wheel-dir .dist \
    --output-fd 3 3>&1 >&2
}

package() {
  gpep517 install-wheel --destdir "$pkgdir" \
    .dist/*.whl
}

sha512sums="
a6ab47e1bb715618f075c51f398e18180404871b3b0faf1c2d30701d5203db6bc23771bf22ffb5bafcd8ee856b9b64237
b316bd503ae7dceed6ca284ccd5a74d
flake8-copyright-0.2.4.tar.gz
"
(The MIT License)

```

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/* \$NetBSD: tree.h,v 1.20 2013/09/14 13:20:45 joerg Exp \$ */

/* \$OpenBSD: tree.h,v 1.13 2011/07/09 00:19:45 pirofti Exp \$ */

/* Modified by Void Linux. */

/*

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*

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- */

```
#ifndef _SYS_TREE_H_
#define _SYS_TREE_H_
```

```
#ifdef __GNUC__
#define __GNUC_PREREQ__(x, y) \
    ((__GNUC__ == (x) && __GNUC_MINOR__ >= (y)) || \
     (__GNUC__ > (x)))
#else
#define __GNUC_PREREQ__(x, y) 0
#endif
```

```
#if __GNUC_PREREQ__(2, 7) || defined(__lint__)
#define _sys_tree_h_unused __attribute__((__unused__))
#else
#define _sys_tree_h_unused /* delete */
#endif
```

```
/*
```

* This file defines data structures for different types of trees:

- * splay trees and red-black trees.
- *
- * A splay tree is a self-organizing data structure. Every operation on the tree causes a splay to happen. The splay moves the requested node to the root of the tree and partly rebalances it.
- *
- * This has the benefit that request locality causes faster lookups as the requested nodes move to the top of the tree. On the other hand,

- * every lookup causes memory writes.
- *
- * The Balance Theorem bounds the total access time for m operations
- * and n inserts on an initially empty tree as $O((m + n)\lg n)$. The
- * amortized cost for a sequence of m accesses to a splay tree is $O(\lg n)$;
- *
- * A red-black tree is a binary search tree with the node color as an
- * extra attribute. It fulfills a set of conditions:
- * - every search path from the root to a leaf consists of the
- * same number of black nodes,
- * - each red node (except for the root) has a black parent,
- * - each leaf node is black.
- *
- * Every operation on a red-black tree is bounded as $O(\lg n)$.
- * The maximum height of a red-black tree is $2\lg(n+1)$.
- */

```
#define SPLAY_HEAD(name, type) \
struct name { \
    struct type *sph_root; /* root of the tree */ \
}
```

```
#define SPLAY_INITIALIZER(root) \
{ NULL }
```

```
#define SPLAY_INIT(root) do { \
    (root)->sph_root = NULL; \
} while (/*CONSTCOND*/ 0)
```

```
#define SPLAY_ENTRY(type) \
struct { \
    struct type *spe_left; /* left element */ \
    struct type *spe_right; /* right element */ \
}
```

```
#define SPLAY_LEFT(elm, field) (elm)->field.spe_left
#define SPLAY_RIGHT(elm, field) (elm)->field.spe_right
#define SPLAY_ROOT(head) (head)->sph_root
#define SPLAY_EMPTY(head) (SPLAY_ROOT(head) == NULL)
```

```
/* SPLAY_ROTATE_{LEFT,RIGHT} expect that tmp hold SPLAY_{RIGHT,LEFT} */
#define SPLAY_ROTATE_RIGHT(head, tmp, field) do { \
    SPLAY_LEFT((head)->sph_root, field) = SPLAY_RIGHT(tmp, field); \
    SPLAY_RIGHT(tmp, field) = (head)->sph_root; \
    (head)->sph_root = tmp; \
} while (/*CONSTCOND*/ 0)
```

```
#define SPLAY_ROTATE_LEFT(head, tmp, field) do { \
```

```

    SPLAY_RIGHT((head)->sph_root,
    field) = SPLAY_LEFT(tmp, field); \
    SPLAY_LEFT(tmp, field) = (head)->sph_root; \
    (head)->sph_root = tmp; \
} while (/*CONSTCOND*/ 0)

#define SPLAY_LINKLEFT(head, tmp, field) do { \
    SPLAY_LEFT(tmp, field) = (head)->sph_root; \
    tmp = (head)->sph_root; \
    (head)->sph_root = SPLAY_LEFT((head)->sph_root, field); \
} while (/*CONSTCOND*/ 0)

#define SPLAY_LINKRIGHT(head, tmp, field) do { \
    SPLAY_RIGHT(tmp, field) = (head)->sph_root; \
    tmp = (head)->sph_root; \
    (head)->sph_root = SPLAY_RIGHT((head)->sph_root, field); \
} while (/*CONSTCOND*/ 0)

#define SPLAY_ASSEMBLE(head, node, left, right, field) do { \
    SPLAY_RIGHT(left, field) = SPLAY_LEFT((head)->sph_root, field); \
    SPLAY_LEFT(right, field) = SPLAY_RIGHT((head)->sph_root, field); \
    SPLAY_LEFT((head)->sph_root, field) = SPLAY_RIGHT(node, field); \
    SPLAY_RIGHT((head)->sph_root, field) = SPLAY_LEFT(node, field); \
} while (/*CONSTCOND*/ 0)

/* Generates prototypes and inline functions */

#define
    SPLAY_PROTOTYPE(name, type, field, cmp) \
    void name##_SPLAY(struct name *, struct type *); \
    void name##_SPLAY_MINMAX(struct name *, int); \
    struct type *name##_SPLAY_INSERT(struct name *, struct type *); \
    struct type *name##_SPLAY_REMOVE(struct name *, struct type *); \
    \
    /* Finds the node with the same key as elm */ \
    static __inline struct type * \
    name##_SPLAY_FIND(struct name *head, struct type *elm) \
    { \
        if (SPLAY_EMPTY(head)) \
            return(NULL); \
        name##_SPLAY(head, elm); \
        if ((cmp)(elm, (head)->sph_root) == 0) \
            return (head->sph_root); \
        return (NULL); \
    } \
    \
    static __inline _sys_tree_h_unused struct type * \
    name##_SPLAY_NEXT(struct name *head, struct type *elm) \

```

```

{
    \
    name##_SPLAY(head, elm); \
    if (SPLAY_RIGHT(elm, field) != NULL) { \
        elm = SPLAY_RIGHT(elm, field); \
        while (SPLAY_LEFT(elm, field) != NULL) { \
            elm = SPLAY_LEFT(elm, field); \
        } \
    }
}
else \
    elm = NULL; \
return (elm); \
} \
\

static __sys_tree_h_unused __inline struct type * \
name##_SPLAY_MIN_MAX(struct name *head, int val) \
{
    \
    name##_SPLAY_MINMAX(head, val); \
    return (SPLAY_ROOT(head)); \
}

/* Main splay operation.
 * Moves node close to the key of elm to top
 */
#define SPLAY_GENERATE(name, type, field, cmp) \
struct type * \
name##_SPLAY_INSERT(struct name *head, struct type *elm) \
{
    \
    if (SPLAY_EMPTY(head)) { \
        SPLAY_LEFT(elm, field) = SPLAY_RIGHT(elm, field) = NULL; \
    } else { \
        int __comp; \
        name##_SPLAY(head, elm); \
        __comp = (cmp)(elm, (head)->sph_root); \
        if (__comp < 0) { \
            SPLAY_LEFT(elm, field) = SPLAY_LEFT((head)->sph_root, field); \
            SPLAY_RIGHT(elm, field) = (head)->sph_root; \
            SPLAY_LEFT((head)->sph_root, field) = NULL; \
        } else if (__comp > 0) { \
            SPLAY_RIGHT(elm,
field) = SPLAY_RIGHT((head)->sph_root, field); \
            SPLAY_LEFT(elm, field) = (head)->sph_root; \
            SPLAY_RIGHT((head)->sph_root, field) = NULL; \
        } else \
            return ((head)->sph_root); \
    } \
    (head)->sph_root = (elm); \
    return (NULL); \
} \

```

```

    \
struct type *    \
name##_SPLAY_REMOVE(struct name *head, struct type *elm) \
{    \
    struct type *__tmp;    \
    if (SPLAY_EMPTY(head))    \
        return (NULL);    \
    name##_SPLAY(head, elm);    \
    if ((cmp)(elm, (head)->sph_root) == 0) {    \
        if (SPLAY_LEFT((head)->sph_root, field) == NULL) {    \
            (head)->sph_root = SPLAY_RIGHT((head)->sph_root, field);\
        } else {    \
            __tmp = SPLAY_RIGHT((head)->sph_root, field);\
            (head)->sph_root = SPLAY_LEFT((head)->sph_root, field);\
            name##_SPLAY(head, elm);    \
            SPLAY_RIGHT((head)->sph_root, field) = __tmp;\
        }    \
        return (elm);    \
    }    \
    return (NULL);    \
}    \
    \
void    \
name##_SPLAY(struct
name *head, struct type *elm) \
{    \
    struct type __node, *__left, *__right, *__tmp; \
    int __comp;    \
    \
    SPLAY_LEFT(&__node, field) = SPLAY_RIGHT(&__node, field) = NULL;\
    __left = __right = &__node;    \
    \
    while ((__comp = (cmp)(elm, (head)->sph_root)) != 0) {    \
        if (__comp < 0) {    \
            __tmp = SPLAY_LEFT((head)->sph_root, field);\
            if (__tmp == NULL)    \
                break;    \
            if ((cmp)(elm, __tmp) < 0){    \
                SPLAY_ROTATE_RIGHT(head, __tmp, field);\
                if (SPLAY_LEFT((head)->sph_root, field) == NULL)\
                    break;    \
            }    \
            SPLAY_LINKLEFT(head, __right, field); \
        } else if (__comp > 0) {    \
            __tmp = SPLAY_RIGHT((head)->sph_root, field);\
            if (__tmp == NULL)    \
                break;    \
            if ((cmp)(elm, __tmp) > 0){    \

```



```

    SPLAY_ROTATE_LEFT(head, __tmp, field); \
    if (SPLAY_RIGHT((head)->sph_root, field) == NULL)\
        break; \
} \
SPLAY_LINKRIGHT(head, __left, field); \
} \
} \
SPLAY_ASSEMBLE(head,
&__node, __left, __right, field); \
} \
\
/* Splay with either the minimum or the maximum element \
* Used to find minimum or maximum element in tree. \
*/ \
void name##_SPLAY_MINMAX(struct name *head, int __comp) \
{ \
    struct type __node, *__left, *__right, *__tmp; \
    \
    SPLAY_LEFT(&__node, field) = SPLAY_RIGHT(&__node, field) = NULL;\
    __left = __right = &__node; \
    \
    while (1) { \
        if (__comp < 0) { \
            __tmp = SPLAY_LEFT((head)->sph_root, field); \
            if (__tmp == NULL) \
                break; \
            if (__comp < 0){ \
                SPLAY_ROTATE_RIGHT(head, __tmp, field); \
                if (SPLAY_LEFT((head)->sph_root, field) == NULL)\
                    break; \
            } \
            SPLAY_LINKLEFT(head, __right, field); \
        } else if (__comp > 0) { \
            __tmp = SPLAY_RIGHT((head)->sph_root, field); \
            if (__tmp == NULL) \
                break; \
            if (__comp > 0) { \
                SPLAY_ROTATE_LEFT(head, __tmp, field); \
                if (SPLAY_RIGHT((head)->sph_root,
field) == NULL)\
                    break; \
            } \
            SPLAY_LINKRIGHT(head, __left, field); \
        } \
    } \
    SPLAY_ASSEMBLE(head, &__node, __left, __right, field); \
}

```

```

#define SPLAY_NEGINF -1
#define SPLAY_INF 1

#define SPLAY_INSERT(name, x, y) name##_SPLAY_INSERT(x, y)
#define SPLAY_REMOVE(name, x, y) name##_SPLAY_REMOVE(x, y)
#define SPLAY_FIND(name, x, y) name##_SPLAY_FIND(x, y)
#define SPLAY_NEXT(name, x, y) name##_SPLAY_NEXT(x, y)
#define SPLAY_MIN(name, x) (SPLAY_EMPTY(x) ? NULL \
    : name##_SPLAY_MIN_MAX(x, SPLAY_NEGINF))
#define SPLAY_MAX(name, x) (SPLAY_EMPTY(x) ? NULL \
    : name##_SPLAY_MIN_MAX(x, SPLAY_INF))

#define SPLAY_FOREACH(x, name, head) \
    for ((x) = SPLAY_MIN(name, head); \
        (x) != NULL; \
        (x) = SPLAY_NEXT(name, head, x))

/* Macros that define a red-black tree */
#define RB_HEAD(name, type) \
    struct name { \
        struct type *rbh_root; /* root of the tree */ \
    }

#define RB_INITIALIZER(root) \
    { \
        NULL \
    }

#define RB_INIT(root) do { \
    (root)->rbh_root = NULL; \
} while (/*CONSTCOND*/ 0)

#define RB_BLACK 0
#define RB_RED 1
#define RB_ENTRY(type) \
    struct { \
        struct type *rbe_left; /* left element */ \
        struct type *rbe_right; /* right element */ \
        struct type *rbe_parent; /* parent element */ \
        int rbe_color; /* node color */ \
    }

#define RB_LEFT(elm, field) (elm)->field.rbe_left
#define RB_RIGHT(elm, field) (elm)->field.rbe_right
#define RB_PARENT(elm, field) (elm)->field.rbe_parent
#define RB_COLOR(elm, field) (elm)->field.rbe_color
#define RB_ROOT(head) (head)->rbh_root
#define RB_EMPTY(head) (RB_ROOT(head) == NULL)

```

```

#define RB_SET(elm, parent, field) do { \
    RB_PARENT(elm, field) = parent; \
    RB_LEFT(elm, field) = RB_RIGHT(elm, field) = NULL; \
    RB_COLOR(elm, field) = RB_RED; \
} while (/*CONSTCOND*/ 0)

#define RB_SET_BLACKRED(black, red, field) do { \
    RB_COLOR(black, field) = RB_BLACK; \
    RB_COLOR(red, field) \
    = RB_RED; \
} while (/*CONSTCOND*/ 0)

#ifndef RB_AUGMENT
#define RB_AUGMENT(x) do {} while (/*CONSTCOND*/ 0)
#endif

#define RB_ROTATE_LEFT(head, elm, tmp, field) do { \
    (tmp) = RB_RIGHT(elm, field); \
    if ((RB_RIGHT(elm, field) = RB_LEFT(tmp, field)) != NULL) { \
        RB_PARENT(RB_LEFT(tmp, field), field) = (elm); \
    } \
    RB_AUGMENT(elm); \
    if ((RB_PARENT(tmp, field) = RB_PARENT(elm, field)) != NULL) { \
        if ((elm) == RB_LEFT(RB_PARENT(elm, field), field)) \
            RB_LEFT(RB_PARENT(elm, field), field) = (tmp); \
        else \
            RB_RIGHT(RB_PARENT(elm, field), field) = (tmp); \
    } else \
        (head)->rbh_root = (tmp); \
    RB_LEFT(tmp, field) = (elm); \
    RB_PARENT(elm, field) = (tmp); \
    RB_AUGMENT(tmp); \
    if ((RB_PARENT(tmp, field))) \
        RB_AUGMENT(RB_PARENT(tmp, field)); \
} while (/*CONSTCOND*/ 0)

#define RB_ROTATE_RIGHT(head, elm, tmp, field) do { \
    (tmp) = RB_LEFT(elm, field); \
    if ((RB_LEFT(elm, field) = RB_RIGHT(tmp, field)) \
    != NULL) { \
        RB_PARENT(RB_RIGHT(tmp, field), field) = (elm); \
    } \
    RB_AUGMENT(elm); \
    if ((RB_PARENT(tmp, field) = RB_PARENT(elm, field)) != NULL) { \
        if ((elm) == RB_LEFT(RB_PARENT(elm, field), field)) \
            RB_LEFT(RB_PARENT(elm, field), field) = (tmp); \
        else \
            RB_RIGHT(RB_PARENT(elm, field), field) = (tmp); \
    } \
} while (/*CONSTCOND*/ 0)

```

```

} else \
    (head)->rbh_root = (tmp); \
RB_RIGHT(tmp, field) = (elm); \
RB_PARENT(elm, field) = (tmp); \
RB_AUGMENT(tmp); \
if ((RB_PARENT(tmp, field))) \
    RB_AUGMENT(RB_PARENT(tmp, field)); \
} while (/*CONSTCOND*/ 0)

/* Generates prototypes and inline functions */
#define RB_PROTOTYPE(name, type, field, cmp) \
    RB_PROTOTYPE_INTERNAL(name, type, field, cmp,)
#define RB_PROTOTYPE_STATIC(name, type, field, cmp) \
    RB_PROTOTYPE_INTERNAL(name, type, field, cmp, _sys_tree_h_unused static)
#define RB_PROTOTYPE_INTERNAL(name, type, field, cmp, attr) \
    attr void name##_RB_INSERT_COLOR(struct name *, struct \
        type *); \
    attr void name##_RB_REMOVE_COLOR(struct name *, struct type *, struct type *); \
    attr struct type *name##_RB_REMOVE(struct name *, struct type *); \
    attr struct type *name##_RB_INSERT(struct name *, struct type *); \
    attr struct type *name##_RB_FIND(struct name *, struct type *); \
    attr struct type *name##_RB_NFIND(struct name *, struct type *); \
    attr struct type *name##_RB_NEXT(struct type *); \
    attr struct type *name##_RB_PREV(struct type *); \
    attr struct type *name##_RB_MINMAX(struct name *, int); \
    \

/* Main rb operation.
 * Moves node close to the key of elm to top
 */
#define RB_GENERATE(name, type, field, cmp) \
    RB_GENERATE_INTERNAL(name, type, field, cmp,)
#define RB_GENERATE_STATIC(name, type, field, cmp) \
    RB_GENERATE_INTERNAL(name, type, field, cmp, _sys_tree_h_unused static)
#define RB_GENERATE_INTERNAL(name, type, field, cmp, attr) \
    attr void \
    name##_RB_INSERT_COLOR(struct name *head, struct type *elm) \
    { \
        \
        struct type \
        *parent, *gparent, *tmp; \
        while ((parent = RB_PARENT(elm, field)) != NULL && \
            RB_COLOR(parent, field) == RB_RED) { \
            gparent = RB_PARENT(parent, field); \
            if (parent == RB_LEFT(gparent, field)) { \
                tmp = RB_RIGHT(gparent, field); \
                if (tmp && RB_COLOR(tmp, field) == RB_RED) { \
                    RB_COLOR(tmp, field) = RB_BLACK; \
                    RB_SET_BLACKRED(parent, gparent, field); \
                } \
            } \
        } \
        RB_INSERT_COLOR(head, elm, field); \
    } \

```

```

    elm = gparent; \
    continue; \
} \
if (RB_RIGHT(parent, field) == elm) { \
    RB_ROTATE_LEFT(head, parent, tmp, field);\
    tmp = parent; \
    parent = elm; \
    elm = tmp; \
} \
RB_SET_BLACKRED(parent, gparent, field);\
RB_ROTATE_RIGHT(head, gparent, tmp, field);\
} else { \
    tmp = RB_LEFT(gparent, field); \
    if (tmp && RB_COLOR(tmp, field) == RB_RED) { \
        RB_COLOR(tmp, field) = RB_BLACK; \
        RB_SET_BLACKRED(parent, gparent, field);\
        elm = gparent; \
        continue; \
    } \
    if (RB_LEFT(parent, field) == elm)
{ \
    RB_ROTATE_RIGHT(head, parent, tmp, field);\
    tmp = parent; \
    parent = elm; \
    elm = tmp; \
} \
    RB_SET_BLACKRED(parent, gparent, field);\
    RB_ROTATE_LEFT(head, gparent, tmp, field);\
} \
} \
RB_COLOR(head->rbh_root, field) = RB_BLACK; \
} \
\
attr void \
name##_RB_REMOVE_COLOR(struct name *head, struct type *parent, struct type *elm) \
{ \
    struct type *tmp; \
    while ((elm == NULL || RB_COLOR(elm, field) == RB_BLACK) && \
        elm != RB_ROOT(head)) { \
        if (RB_LEFT(parent, field) == elm) { \
            tmp = RB_RIGHT(parent, field); \
            if (RB_COLOR(tmp, field) == RB_RED) { \
                RB_SET_BLACKRED(tmp, parent, field); \
                RB_ROTATE_LEFT(head, parent, tmp, field);\
                tmp = RB_RIGHT(parent, field); \
            } \
            if ((RB_LEFT(tmp, field) == NULL || \
                RB_COLOR(RB_LEFT(tmp, field), field) == RB_BLACK) && \

```

```

        (RB_RIGHT(tmp, field) == NULL || \
        RB_COLOR(RB_RIGHT(tmp,
field), field) == RB_BLACK)) {\
        RB_COLOR(tmp, field) = RB_RED; \
        elm = parent; \
        parent = RB_PARENT(elm, field); \
    } else { \
        if (RB_RIGHT(tmp, field) == NULL || \
            RB_COLOR(RB_RIGHT(tmp, field), field) == RB_BLACK) {\
            struct type *oleft; \
            if ((oleft = RB_LEFT(tmp, field)) \
                != NULL) \
                RB_COLOR(oleft, field) = RB_BLACK;\
            RB_COLOR(tmp, field) = RB_RED; \
            RB_ROTATE_RIGHT(head, tmp, oleft, field);\
            tmp = RB_RIGHT(parent, field); \
        } \
        RB_COLOR(tmp, field) = RB_COLOR(parent, field);\
        RB_COLOR(parent, field) = RB_BLACK; \
        if (RB_RIGHT(tmp, field)) \
            RB_COLOR(RB_RIGHT(tmp, field), field) = RB_BLACK;\
        RB_ROTATE_LEFT(head, parent, tmp, field);\
        elm = RB_ROOT(head); \
        break; \
    } \
} else { \
    tmp = RB_LEFT(parent, field); \
    if (RB_COLOR(tmp, field) == RB_RED) { \
        RB_SET_BLACKRED(tmp, parent, field); \
        RB_ROTATE_RIGHT(head, parent, tmp, field);\
        tmp
= RB_LEFT(parent, field); \
    } \
    if ((RB_LEFT(tmp, field) == NULL || \
        RB_COLOR(RB_LEFT(tmp, field), field) == RB_BLACK) &&\
        (RB_RIGHT(tmp, field) == NULL || \
        RB_COLOR(RB_RIGHT(tmp, field), field) == RB_BLACK)) {\
        RB_COLOR(tmp, field) = RB_RED; \
        elm = parent; \
        parent = RB_PARENT(elm, field); \
    } else { \
        if (RB_LEFT(tmp, field) == NULL || \
            RB_COLOR(RB_LEFT(tmp, field), field) == RB_BLACK) {\
            struct type *oright; \
            if ((oright = RB_RIGHT(tmp, field)) \
                != NULL) \
                RB_COLOR(oright, field) = RB_BLACK;\
            RB_COLOR(tmp, field) = RB_RED; \

```

```

    RB_ROTATE_LEFT(head, tmp, oright, field);\
    tmp = RB_LEFT(parent, field);\
} \
RB_COLOR(tmp, field) = RB_COLOR(parent, field);\
RB_COLOR(parent, field) = RB_BLACK;\
if (RB_LEFT(tmp, field)) \
    RB_COLOR(RB_LEFT(tmp, field), field) = RB_BLACK;\
RB_ROTATE_RIGHT(head, parent, tmp, field);\
elm = RB_ROOT(head); \
break; \
} \
} \
} \
if
(elm) \
    RB_COLOR(elm, field) = RB_BLACK; \
} \
\
attr struct type * \
name##_RB_REMOVE(struct name *head, struct type *elm) \
{ \
    struct type *child, *parent, *old = elm; \
    int color; \
    if (RB_LEFT(elm, field) == NULL) \
        child = RB_RIGHT(elm, field); \
    else if (RB_RIGHT(elm, field) == NULL) \
        child = RB_LEFT(elm, field); \
    else { \
        struct type *left; \
        elm = RB_RIGHT(elm, field); \
        while ((left = RB_LEFT(elm, field)) != NULL) \
            elm = left; \
        child = RB_RIGHT(elm, field); \
        parent = RB_PARENT(elm, field); \
        color = RB_COLOR(elm, field); \
        if (child) \
            RB_PARENT(child, field) = parent; \
        if (parent) { \
            if (RB_LEFT(parent, field) == elm) \
                RB_LEFT(parent, field) = child; \
            else \
                RB_RIGHT(parent, field) = child; \
            RB_AUGMENT(parent); \
        } else \
            RB_ROOT(head)
    = child; \
    if (RB_PARENT(elm, field) == old) \
        parent = elm; \

```

```

(elm)->field = (old)->field; \
if (RB_PARENT(old, field)) { \
    if (RB_LEFT(RB_PARENT(old, field), field) == old)\
        RB_LEFT(RB_PARENT(old, field), field) = elm;\
    else \
        RB_RIGHT(RB_PARENT(old, field), field) = elm;\
    RB_AUGMENT(RB_PARENT(old, field)); \
} else \
    RB_ROOT(head) = elm; \
RB_PARENT(RB_LEFT(old, field), field) = elm; \
if (RB_RIGHT(old, field)) \
    RB_PARENT(RB_RIGHT(old, field), field) = elm; \
if (parent) { \
    left = parent; \
    do { \
        RB_AUGMENT(left); \
    } while ((left = RB_PARENT(left, field)) != NULL); \
} \
goto color; \
} \
parent = RB_PARENT(elm, field); \
color = RB_COLOR(elm, field); \
if (child) \
    RB_PARENT(child, field) = parent; \
if (parent) { \
    if (RB_LEFT(parent, field) == elm) \
        RB_LEFT(parent, field) = child; \
    else \
        RB_RIGHT(parent, field) = child; \
    RB_AUGMENT(parent); \
} else \
    RB_ROOT(head) = child; \
color: \
if (color == RB_BLACK) \
    name##_RB_REMOVE_COLOR(head, parent, child); \
return (old); \
} \
\
/* Inserts a node into the RB tree */ \
attr struct type * \
name##_RB_INSERT(struct name *head, struct type *elm) \
{ \
    struct type *tmp; \
    struct type *parent = NULL; \
    int comp = 0; \
    tmp = RB_ROOT(head); \
    while (tmp) { \

```



```

parent = tmp;    \
comp = (cmp)(elm, parent); \
if (comp < 0)    \
    tmp = RB_LEFT(tmp, field); \
else if (comp > 0) \
    tmp = RB_RIGHT(tmp, field); \
else            \
    return (tmp); \
}              \
RB_SET(elm, parent, field); \
if (parent != NULL) { \
    if (comp < 0) \
        RB_LEFT(parent, field) = elm; \
    else \
        RB_RIGHT(parent, field) = elm; \
    RB_AUGMENT(parent); \
} else \
    RB_ROOT(head) = elm; \
name##_RB_INSERT_COLOR(head,
elm); \
return (NULL); \
} \
\
/* Finds the node with the same key as elm */ \
attr struct type * \
name##_RB_FIND(struct name *head, struct type *elm) \
{ \
    struct type *tmp = RB_ROOT(head); \
    int comp; \
    while (tmp) { \
        comp = cmp(elm, tmp); \
        if (comp < 0) \
            tmp = RB_LEFT(tmp, field); \
        else if (comp > 0) \
            tmp = RB_RIGHT(tmp, field); \
        else \
            return (tmp); \
    } \
    return (NULL); \
} \
\
/* Finds the first node greater than or equal to the search key */ \
attr struct type * \
name##_RB_NFOUND(struct name *head, struct type *elm) \
{ \
    struct type *tmp = RB_ROOT(head); \
    struct type *res = NULL; \
    int comp; \

```

```

while (tmp) {
    comp = cmp(elm, tmp);
    if (comp < 0) {
        res = tmp;
        tmp = RB_LEFT(tmp, field);
    }
    else if (comp > 0)
        tmp =
RB_RIGHT(tmp, field);
    else
        return (tmp);
}
return (res);
}

/* ARGSUSED */
attr struct type *
name##_RB_NEXT(struct type *elm)
{
    if (RB_RIGHT(elm, field)) {
        elm = RB_RIGHT(elm, field);
        while (RB_LEFT(elm, field))
            elm = RB_LEFT(elm, field);
    } else {
        if (RB_PARENT(elm, field) &&
            (elm == RB_LEFT(RB_PARENT(elm, field), field)))
            elm = RB_PARENT(elm, field);
        else {
            while (RB_PARENT(elm, field) &&
                (elm == RB_RIGHT(RB_PARENT(elm, field), field)))
                elm = RB_PARENT(elm, field);
            elm = RB_PARENT(elm, field);
        }
    }
    return (elm);
}

/* ARGSUSED */
attr struct type *
name##_RB_PREV(struct type *elm)
{
    if (RB_LEFT(elm, field)) {
        elm = RB_LEFT(elm, field);
        while (RB_RIGHT(elm, field))
            elm = RB_RIGHT(elm, field);
    }
    else {
        if (RB_PARENT(elm, field) &&

```

```

        (elm == RB_RIGHT(RB_PARENT(elm, field), field))) \
    elm = RB_PARENT(elm, field); \
else { \
    while (RB_PARENT(elm, field) && \
        (elm == RB_LEFT(RB_PARENT(elm, field), field))) \
        elm = RB_PARENT(elm, field); \
    elm = RB_PARENT(elm, field); \
} \
} \
return (elm); \
} \
\
attr struct type * \
name##_RB_MINMAX(struct name *head, int val) \
{ \
    struct type *tmp = RB_ROOT(head); \
    struct type *parent = NULL; \
    while (tmp) { \
        parent = tmp; \
        if (val < 0) \
            tmp = RB_LEFT(tmp, field); \
        else \
            tmp = RB_RIGHT(tmp, field); \
    } \
    return (parent); \
}

#define RB_NEGINF -1
#define RB_INF 1

#define RB_INSERT(name, x, y) name##_RB_INSERT(x, y)
#define RB_REMOVE(name, x, y) name##_RB_REMOVE(x, y)
#define RB_FIND(name, x, y) name##_RB_FIND(x, y)
#define RB_NFIND(name, x, y) name##_RB_NFIND(x, \
y)
#define RB_NEXT(name, x, y) name##_RB_NEXT(y)
#define RB_PREV(name, x, y) name##_RB_PREV(y)
#define RB_MIN(name, x) name##_RB_MINMAX(x, RB_NEGINF)
#define RB_MAX(name, x) name##_RB_MINMAX(x, RB_INF)

#define RB_FOREACH(x, name, head) \
for ((x) = RB_MIN(name, head); \
    (x) != NULL; \
    (x) = name##_RB_NEXT(x))

#define RB_FOREACH_FROM(x, name, y) \
for ((x) = (y); \
    ((x) != NULL) && ((y) = name##_RB_NEXT(x), (x) != NULL); \

```

```

(x) = (y))

#define RB_FOREACH_SAFE(x, name, head, y) \
for ((x) = RB_MIN(name, head); \
     ((x) != NULL) && ((y) = name##_RB_NEXT(x), (x) != NULL); \
     (x) = (y))

#define RB_FOREACH_REVERSE(x, name, head) \
for ((x) = RB_MAX(name, head); \
     (x) != NULL; \
     (x) = name##_RB_PREV(x))

#define RB_FOREACH_REVERSE_FROM(x, name, y) \
for ((x) = (y); \
     ((x) != NULL) && ((y) = name##_RB_PREV(x), (x) != NULL); \
     (x) = (y))

#define RB_FOREACH_REVERSE_SAFE(x, name, \
head, y) \
for ((x) = RB_MAX(name, head); \
     ((x) != NULL) && ((y) = name##_RB_PREV(x), (x) != NULL); \
     (x) = (y))

#endif /* _SYS_TREE_H_ */
# Contributor: Wen Heping <wenhepingalpine@sohu.com>
# Maintainer: Wen Heping <wenhepingalpine@sohu.com>
pkgname=perl-software-license
pkgver=0.104007
pkgrel=0
# _pkgreal is used by apkbuild-cpan to find modules at MetaCpan
_pkgreal=Software-License
pkgdesc="packages that provide templated software licenses"
url="https://metacpan.org/release/Software-License/"
arch="noarch"
license="GPL-1.0-or-later OR Artistic-1.0-Perl"
depends="perl perl-data-section perl-text-template"
checkdepends="perl-try-tiny"
subpackages="$pkgname-doc"
source="https://cpan.metacpan.org/authors/id/L/LE/LEONT/Software-License-$pkgver.tar.gz"
builddir="$srcdir/${_pkgreal}-${pkgver}"

build() {
export CFLAGS=$(perl -MConfig -E 'say $Config{ccflags}')
PERL_MM_USE_DEFAULT=1 perl -I. Makefile.PL \
INSTALLDIRS=vendor \
NO_PACKLIST=1 \
NO_PERLLOCAL=1
make

```

```

}

check() {
    export CFLAGS=$(perl -MConfig -E 'say $Config{ccflags}')
    make test
}

package() {
    make DESTDIR="$pkgdir" install
}

sha512sums="
12d75e9583b3013d9b4a282467f1ac80ab6b7f3251926d66591d01404489b528f22adc396dfd4528a0f0ca650f0eed6d
9c959e69eace2169c6ed1cffe5277e4
    Software-License-0.104007.tar.gz
"
(The MIT License)

```

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```

# Contributor: Sören Tempel <soeren+alpine@soeren-tempel.net>
# Maintainer: Natanael Copa <ncopa@alpinelinux.org>
pkgname=alpine-baselayout
pkgver=3.6.8
pkgrel=1
pkgdesc="Alpine base dir structure and init scripts"
url="https://git.alpinelinux.org/cgit/aports/tree/main/alpine-baselayout"
arch="noarch"
license="GPL-2.0-only"

```

```

# Contributor: Dhruvin Gandhi <contact@dhruvin>
# Maintainer: Patrycja Rosa <alpine@ptrcnull.me>
pkgname=py3-license-expression
_pkgname=license_expression
pkgver=30.4.4
pkgrel=0
pkgdesc="Library to parse, compare, simplify and normalize license expressions"
url="https://github.com/nexB/license-expression"
arch="noarch"
license="Apache-2.0"
depends="python3 py3-boolean.py"
makedepends="py3-setuptools py3-setuptools_scm py3-gp517 py3-wheel"
checkdepends="py3-pytest py3-pytest-xdist"
subpackages="$pkgname-pyc"
source="https://files.pythonhosted.org/packages/source/l/_pkgname/_pkgname-$pkgver.tar.gz"
buildid="$srcdir/_pkgname-$pkgver"

build() {
    gp517 build-wheel \
        --wheel-dir .dist \
        --output-fd 3 3>&1 >&2
}

check() {
    python3 -m venv --clear --without-pip --system-site-packages .testenv
    .testenv/bin/python3 -m installer .dist/*.whl
    .testenv/bin/python3 -m pytest
}

package() {
    python3 -m installer -d "$pkgdir" \
        .dist/*.whl
}

sha512sums="
f46dd4cf524b3962115fe26f5545bfdd6767275b482724af51e7ca07da79244969a3bfc5d2fd5b95bc0f19d1b95a26a8f3
ab36c676e56ec302178d7166588066
    license_expression-30.4.4.tar.gz
"

```

1.305 musl-utils 1.2.5-r21

1.305.1 Available under license :

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Version 2, June 1991

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in the program `Gnomovision'
(which makes passes at compilers) written
by James Hacker.

signature of Moe Ghoul, 1 April 1989

Moe Ghoul, President of Vice

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```
# Contributor: Carlo Landmeter <clandmeter@alpinelinux.org>
# Maintainer: Kevin Daudt <kdaudt@alpinelinux.org>
pkgname=spdx-licenses
pkgver=3.27.0
pkgrel=0
pkgdesc="Various data formats for the SPDX License List"
url="https://spdx.org/"
arch="noarch"
options="!check" # no test suite
license="CC-BY-3.0"
source="license-list-data-$pkgver.tar.gz::https://github.com/spdx/license-list-data/archive/v$pkgver.tar.gz"
builddir="$srcdir/license-list-data-$pkgver"
subpackages="$pkgname-list"
```

```
_types="html json rdfa rdfnt rdfturtle rdfxml template text"
```

```
for type in $_types; do
    subpackages="$subpackages $pkgname-$type:_subpkg"
done
```

```
package() {
    mkdir -p "$pkgdir"
}
```

```
_subpkg() {
    local type=${subpkgname/$pkgname-/}
    pkgdesc="$pkgdesc ($type)"
    install_if="$pkgname=$pkgver-r$pkgrel"
    mkdir -p "$subpkgdir"/usr/share/spdx
    cp -r "$builddir"/$type "$subpkgdir"/usr/share/spdx/
}
```

```
list() {
    pkgdesc="$pkgdesc (licence list)"
    mkdir -p "$subpkgdir"/usr/share/spdx
    local i; for i in "$builddir"/text/*.txt;
    do
        local license=${i##*/}
```

```

echo ${license%.*} >> "$subpkgdir"/usr/share/spdx/license.lst
done
}

sha512sums="
16d59c81e331b54b52639826f83408d98144cdaa70eacc3e8ce35dc3b13992e4794cf7515eb9db200efd390a0c0e35ae9
d4706fbe0ca6a8d236189e88870720c license-list-data-3.27.0.tar.gz
"

# Automatically generated by apkgbuild-cpan, template 4
# Contributor: Valery Kartel <valery.kartel@gmail.com>
# Maintainer: Celeste <cielesti@protonmail.com>
maintainer="Celeste <cielesti@protonmail.com>"
pkgname=perl-bsd-resource
pkgver=1.2911
pkgrel=11
#_pkgreal is used by apkgbuild-cpan to find modules at MetaCpan
_pkgreal=BSD-Resource
pkgdesc="Perl extension implements the BSD process resource limit functions"
url="https://metacpan.org/release/BSD-Resource/"
arch="all"
license="Artistic-2.0 OR LGPL-2.0"
depends="perl"
makedepends="perl-dev"
subpackages="$pkgname-doc"
source="https://cpan.metacpan.org/authors/id/J/JH/JHI/BSD-Resource-$pkgver.tar.gz"
builddir="$srcdir/${_pkgreal}-${pkgver}"

build() {
export CFLAGS=$(perl -MConfig -E 'say $Config{ccflags}')
PERL_MM_USE_DEFAULT=1 perl -I. Makefile.PL \
INSTALLDIRS=vendor \
NO_PACKLIST=1 \
NO_PERLLOCAL=1
make
}

check() {
export CFLAGS=$(perl -MConfig -E 'say $Config{ccflags}')
make test
}

package() {
make DESTDIR="$pkgdir" install
}

sha512sums="
d0032d41c7c0468ed1c6d8f57b885f6cb97a5039d754c8cb60b2067daedaf53bd15fb6561a3d0f828df16dfa5417f663b
8065ba65f4fea16dc9262728b3b6b85

```

```

BSD-Resource-1.2911.tar.gz
"
maintainer="Achill Gilgenast <achill@achill.org>"
pkgname=cargo-license
pkgver=0.7.0
pkgrel=1
pkgdesc="Cargo subcommand to see license of dependencies"
url="https://github.com/onur/cargo-license"
arch="all"
license="MIT"
makedepends="cargo cargo-auditable"
source="$pkgname-$pkgver.tar.gz::https://crates.io/api/v1/crates/cargo-license/$pkgver/download"

prepare() {
    default_prepare

    cargo fetch --target="$CTARGET" --locked
}

build() {
    cargo auditable build --release --frozen
}

check() {
    cargo test --frozen
}

package() {
    install -Dm755 target/release/cargo-license -t "$pkgdir"/usr/bin
}

sha512sums="
9b3f0ead35515e85ef4074ebdbdbe5b9ec8bcaec244fabe414e2ed60f90366e8b1692d8bf7ffe4c07d778e60d94bab86bc
0c8be9823232e9c360a38bc65e9c5a cargo-license-0.7.0.tar.gz
"

#!/sbin/openrc-run

command="/usr/libexec/xdg-permission-store"
supervisor=supervise-daemon
command_args="--replace $command_args"
error_logger="logger -t '${RC_SVCNAME}' -p daemon.error"

depend() {
    need dbus
}

# Contributor: Maxim Karasev <begs@disroot.org>
# Maintainer: mio <miyopan@e.email>
pkgname=bsd-games

```

```

pkgver=3.3
pkgrel=2
pkgdesc="traditional text mode games from BSD"
url="https://bsd-games.sourceforge.io/"
arch="all"
license="BSD-3-Clause"
install="$pkgname.post-install"
makedepends="ncurses-dev coreutils" # configure causes busybox expr error
subpackages="$pkgname-doc"
source="https://sourceforge.net/projects/bsd-games/files/bsd-games-$pkgver.tar.gz
0001-bsd-games-scores-dir.patch
"

options="!check" # no tests

build() {
    # some GNU autoconf options are ignored, but it works
    ./configure \
        --build=$CBUILD \
        --host=$CHOST \
        --prefix=/usr \
        --sysconfdir=/etc \
        --mandir=/usr/share/man \
        --scoredir=/usr/share/$pkgname
    make
}

package() {
    make DESTDIR="$pkgdir" install
    install -Dm644 LICENSE "$pkgdir"/usr/share/licenses/bsd-games/LICENSE
}

sha512sums="
aaf36d09d4fe68514a5c279063d7e77a9a9a84c447037cba974b29faa07eb80c2aab2379d0699c196b5c27ffe1b2bb2c6
8d3390143e0e62d5e3d210ccfb61294
    bsd-games-3.3.tar.gz
e1def0d4835a877242c4173fae862e278a7858738e0bacacbb045a42bcabec2aa7c72d000bbd2421ce35fe66cdc1f52c0
577b7e278029ca5ed50f7aab22319f6 0001-bsd-games-scores-dir.patch
"

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```

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mini_sendmail - accept email on behalf of real sendmail

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Maintainer: Natanael Copa <ncopa@alpinelinux.org>

pkgname=libart-lgpl

pkgver=2.3.21

pkgrel=8

pkgdesc="A library for high-performance 2D graphics"

url="https://www.levien.com/libart/"

arch="all"

options="!check" # No test suite.

license="LGPL-2.0-or-later"

subpackages="\$pkgname-dev"


```

source="https://download.gnome.org/sources/libart_lgpl/2.3/libart_lgpl-$pkgver.tar.bz2
"

builddir="$srcdir"/libart_lgpl-$pkgver

prepare() {
    update_config_sub
    default_prepare
}

build() {
    ./configure \
        --build=$CBUILD \
        --host=$CHOST \
        --prefix=/usr
    make
}

package() {
    make DESTDIR="$pkgdir" install
}

sha512sums="8a632a6a4da59e5e8c02ec2f5a57e36d182b325b46513765425e5f171ff9ae326af1b133725beba28f7e7
6654309e001aee9bace727b5b4c8589405256a3c020 libart_lgpl-2.3.21.tar.bz2"
# Contributor: Patrycja Rosa <alpine@ptrcnull.me>
# Maintainer: Patrycja Rosa <alpine@ptrcnull.me>
pkgname=bsd-compat-headers
pkgver=0.7.2
pkgrel=6
pkgdesc="BSD compatibility headers (cdefs, queue, tree)"
url="https://gitlab.alpinelinux.org/alpine/aports"
arch="noarch"
license="BSD-2-Clause AND BSD-3-Clause"
source="
cdefs.h
queue.h
tree.h
"
builddir="$srcdir"
options="!check" # just headers

package() {
    mkdir -p "$pkgdir"
    install -Dm644 -t "$pkgdir"/usr/include/sys \
        cdefs.h queue.h tree.h
}
sha512sums="
37c8fc73c7aea7b490f7850927e2bb91d12137c9e59e22c084146d515696dbc7973b5de92f4c987ba080dd2502ba8312

```

7006442c3f019b6447a620c0cae73178 cdefs.h
2f0d5e6e4dc3350285cf17009265dddcbe12431c111868eea39bc8cb038ab7c1f2acacbb21735c4e9d4a1fd106a8fc0f86
11ea33987d4faba37dde5ce6da0750 queue.h
d9ac210d81feb8ad2655bc80fb065d3fe20ae4417b32b4a1711e6738a4870140005c13373b5d1846ef3ce5ae6da45f2da
cef2092881eded0a2e94f6a07752ef3 tree.h
"

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The X-Spline code was written Carole Blanc (blanc@labri.u-bordeaux.fr) and Christophe Schlick (schlick@labri.u-bordeaux.fr) starting from an initial implementation done by C. Feuille, S. Grosbois, L. Maziere and L. Minihot as a student practice (Universite Bordeaux, France). For additional information about X-splines, see:

"X-Splines: A Spline Model Designed for the End User" by C. Blanc and C. Schlick, Proceedings of SIGGRAPH'95
<http://dept-info.labri.u-bordeaux.fr/~schlick/DOC/sig1.html>

/* \$NetBSD: queue.h,v 1.70 2015/11/02 15:21:23 christos Exp \$ */

/*

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- *
- * @(#)queue.h 8.5 (Berkeley) 8/20/94
- */

```
#ifndef _SYS_QUEUE_H_
#define _SYS_QUEUE_H_
```

```
/*
 * This file defines five types of data structures: singly-linked lists,
 * lists, simple queues, tail queues, and circular queues.
 *
 * A singly-linked list is headed by a single forward pointer. The
 * elements are singly linked for minimum space and
 * pointer manipulation
 * overhead at the expense of O(n) removal for arbitrary elements. New
 * elements can be added to the list after an existing element or at the
 * head of the list. Elements being removed from the head of the list
 * should use the explicit macro for this purpose for optimum
 * efficiency. A singly-linked list may only be traversed in the forward
 * direction. Singly-linked lists are ideal for applications with large
 * datasets and few or no removals or for implementing a LIFO queue.
 *
 * A list is headed by a single forward pointer (or an array of forward
 * pointers for a hash table header). The elements are doubly linked
 * so that an arbitrary element can be removed without a need to
 * traverse the list. New elements can be added to the list before
 * or after an existing element or at the head of the list. A list
 * may only be traversed in the forward direction.
 *
 * A simple queue is headed by a pair of pointers, one the head of the
 * list and the
```

```

other to the tail of the list. The elements are singly
* linked to save space, so elements can only be removed from the
* head of the list. New elements can be added to the list after
* an existing element, at the head of the list, or at the end of the
* list. A simple queue may only be traversed in the forward direction.
*
* A tail queue is headed by a pair of pointers, one to the head of the
* list and the other to the tail of the list. The elements are doubly
* linked so that an arbitrary element can be removed without a need to
* traverse the list. New elements can be added to the list before or
* after an existing element, at the head of the list, or at the end of
* the list. A tail queue may be traversed in either direction.
*
* A circle queue is headed by a pair of pointers, one to the head of the
* list and the other to the tail of the list. The elements are doubly
* linked so that an arbitrary element can be removed without a need to
* traverse the list. New elements
can be added to the list before or after
* an existing element, at the head of the list, or at the end of the list.
* A circle queue may be traversed in either direction, but has a more
* complex end of list detection.
*
* For details on the use of these macros, see the queue(3) manual page.
*/

/*
* Include the definition of NULL only on NetBSD because sys/null.h
* is not available elsewhere. This conditional makes the header
* portable and it can simply be dropped verbatim into any system.
* The caveat is that on other systems some other header
* must provide NULL before the macros can be used.
*/
#ifdef __NetBSD__
#include <sys/null.h>
#endif

#ifdef QUEUEDEBUG
# if defined(_KERNEL)
#  define QUEUEDEBUG_ABORT(...) panic(__VA_ARGS__)
# else
#  include <err.h>
#  define QUEUEDEBUG_ABORT(...) err(1, __VA_ARGS__)
# endif
#endif

/*
* Singly-linked List definitions.
*/

```

```

#define SLIST_HEAD(name, type)  \
struct name {  \
    struct type *slh_first; /* first \
    element */  \
}

#define SLIST_HEAD_INITIALIZER(head)  \
{ NULL }

#define SLIST_ENTRY(type)  \
struct {  \
    struct type *sle_next; /* next element */  \
}

/*
 * Singly-linked List access methods.
 */
#define SLIST_FIRST(head) ((head)->slh_first)
#define SLIST_END(head) NULL
#define SLIST_EMPTY(head) ((head)->slh_first == NULL)
#define SLIST_NEXT(elm, field) ((elm)->field.sle_next)

#define SLIST_FOREACH(var, head, field)  \
for((var) = (head)->slh_first;  \
    (var) != SLIST_END(head);  \
    (var) = (var)->field.sle_next)

#define SLIST_FOREACH_SAFE(var, head, field, tvar)  \
for ((var) = SLIST_FIRST((head));  \
    (var) != SLIST_END(head) &&  \
    ((tvar) = SLIST_NEXT((var), field), 1);  \
    (var) = (tvar))

/*
 * Singly-linked List functions.
 */
#define SLIST_INIT(head) do {  \
    (head)->slh_first = SLIST_END(head);  \
} while (/*CONSTCOND*/0)

#define SLIST_INSERT_AFTER(slistelm, elm, field) do {  \
    (elm)->field.sle_next = (slistelm)->field.sle_next;  \
    (slistelm)->field.sle_next  \
    = (elm);  \
} while (/*CONSTCOND*/0)

#define SLIST_INSERT_HEAD(head, elm, field) do {  \
    (elm)->field.sle_next = (head)->slh_first;  \

```

```

(head)->slh_first = (elm); \
} while (/*CONSTCOND*/0)

#define SLIST_REMOVE_AFTER(slistelm, field) do { \
(slistelm)->field.sle_next = \
    SLIST_NEXT(SLIST_NEXT((slistelm), field), field); \
} while (/*CONSTCOND*/0)

#define SLIST_REMOVE_HEAD(head, field) do { \
(head)->slh_first = (head)->slh_first->field.sle_next; \
} while (/*CONSTCOND*/0)

#define SLIST_REMOVE(head, elm, type, field) do { \
if ((head)->slh_first == (elm)) { \
    SLIST_REMOVE_HEAD((head), field); \
} \
else { \
    struct type *curelm = (head)->slh_first; \
    while(curelm->field.sle_next != (elm)) \
        curelm = curelm->field.sle_next; \
    curelm->field.sle_next = \
        curelm->field.sle_next->field.sle_next; \
} \
} while (/*CONSTCOND*/0)

/*
 * List definitions.
 */
#define LIST_HEAD(name, type) \
struct name { \
    struct type *lh_first; /* first element */ \
}

#define LIST_HEAD_INITIALIZER(head) \
{ NULL }

#define LIST_ENTRY(type) \
struct { \
    struct type *le_next; /* next element */ \
    struct type **le_prev; /* address of previous next element */ \
}

/*
 * List access methods.
 */
#define LIST_FIRST(head) ((head)->lh_first)
#define LIST_END(head) NULL

```

```

#define LIST_EMPTY(head) ((head)->lh_first == LIST_END(head))
#define LIST_NEXT(elm, field) ((elm)->field.le_next)

#define LIST_FOREACH(var, head, field) \
for ((var) = ((head)->lh_first); \
     (var) != LIST_END(head); \
     (var) = ((var)->field.le_next))

#define LIST_FOREACH_SAFE(var, head, field, tvar) \
for ((var) = LIST_FIRST((head)); \
     (var) != LIST_END(head) && \
     ((tvar) = LIST_NEXT((var), field), 1); \
     (var) = (tvar))

#define LIST_MOVE(head1, head2) do { \
LIST_INIT((head2)); \
if (!LIST_EMPTY((head1))) \
{ \
(head2)->lh_first = (head1)->lh_first; \
LIST_INIT((head1)); \
} \
} while (/*CONSTCOND*/0)

/*
 * List functions.
 */
#if defined(QUEUEDEBUG)
#define QUEUEDEBUG_LIST_INSERT_HEAD(head, elm, field) \
if ((head)->lh_first && \
     (head)->lh_first->field.le_prev != &(head)->lh_first) \
QUEUEDEBUG_ABORT("LIST_INSERT_HEAD %p %s:%d", (head), \
    __FILE__, __LINE__);
#define QUEUEDEBUG_LIST_OP(elm, field) \
if ((elm)->field.le_next && \
     (elm)->field.le_next->field.le_prev != \
     &(elm)->field.le_next) \
QUEUEDEBUG_ABORT("LIST_* forw %p %s:%d", (elm), \
    __FILE__, __LINE__); \
if (*(elm)->field.le_prev != (elm)) \
QUEUEDEBUG_ABORT("LIST_* back %p %s:%d", (elm), \
    __FILE__, __LINE__);
#define QUEUEDEBUG_LIST_POSTREMOVE(elm, field) \
(elm)->field.le_next = (void *)1L; \
(elm)->field.le_prev = (void *)1L;
#else
#define QUEUEDEBUG_LIST_INSERT_HEAD(head, elm, field)
#define QUEUEDEBUG_LIST_OP(elm,

```

```

field)
#define QUEUEDEBUG_LIST_POSTREMOVE(elm, field)
#endif

#define LIST_INIT(head) do { \
    (head)->lh_first = LIST_END(head); \
} while (/*CONSTCOND*/0)

#define LIST_INSERT_AFTER(listelm, elm, field) do { \
    QUEUEDEBUG_LIST_OP((listelm), field) \
    if (((elm)->field.le_next = (listelm)->field.le_next) != \
        LIST_END(head)) \
        (listelm)->field.le_next->field.le_prev = \
            &(elm)->field.le_next; \
    (listelm)->field.le_next = (elm); \
    (elm)->field.le_prev = &(listelm)->field.le_next; \
} while (/*CONSTCOND*/0)

#define LIST_INSERT_BEFORE(listelm, elm, field) do { \
    QUEUEDEBUG_LIST_OP((listelm), field) \
    (elm)->field.le_prev = (listelm)->field.le_prev; \
    (elm)->field.le_next = (listelm); \
    *(listelm)->field.le_prev = (elm); \
    (listelm)->field.le_prev = &(elm)->field.le_next; \
} while (/*CONSTCOND*/0)

#define LIST_INSERT_HEAD(head, elm, field) do { \
    QUEUEDEBUG_LIST_INSERT_HEAD((head), (elm), field) \
    if (((elm)->field.le_next \
        = (head)->lh_first) != LIST_END(head)) \
        (head)->lh_first->field.le_prev = &(elm)->field.le_next; \
    (head)->lh_first = (elm); \
    (elm)->field.le_prev = &(head)->lh_first; \
} while (/*CONSTCOND*/0)

#define LIST_REMOVE(elm, field) do { \
    QUEUEDEBUG_LIST_OP((elm), field) \
    if ((elm)->field.le_next != NULL) \
        (elm)->field.le_next->field.le_prev = \
            (elm)->field.le_prev; \
    *(elm)->field.le_prev = (elm)->field.le_next; \
    QUEUEDEBUG_LIST_POSTREMOVE((elm), field) \
} while (/*CONSTCOND*/0)

#define LIST_REPLACE(elm, elm2, field) do { \
    if (((elm2)->field.le_next = (elm)->field.le_next) != NULL) \
        (elm2)->field.le_next->field.le_prev = \
            &(elm2)->field.le_next; \

```



```

(elm2)->field.le_prev = (elm)->field.le_prev; \
*(elm2)->field.le_prev = (elm2); \
QUEUEDEBUG_LIST_POSTREMOVE((elm), field) \
} while (/*CONSTCOND*/0)

/*
 * Simple queue definitions.
 */
#define SIMPLEQ_HEAD(name, type) \
struct name { \
    struct \
    type *sqh_first; /* first element */ \
    struct type **sqh_last; /* addr of last next element */ \
}

#define SIMPLEQ_HEAD_INITIALIZER(head) \
{ NULL, &(head).sqh_first }

#define SIMPLEQ_ENTRY(type) \
struct { \
    struct type *sqe_next; /* next element */ \
}

/*
 * Simple queue access methods.
 */
#define SIMPLEQ_FIRST(head) ((head)->sqh_first)
#define SIMPLEQ_END(head) NULL
#define SIMPLEQ_EMPTY(head) ((head)->sqh_first == SIMPLEQ_END(head))
#define SIMPLEQ_NEXT(elm, field) ((elm)->field.sqe_next)

#define SIMPLEQ_FOREACH(var, head, field) \
for ((var) = ((head)->sqh_first); \
     (var) != SIMPLEQ_END(head); \
     (var) = ((var)->field.sqe_next))

#define SIMPLEQ_FOREACH_SAFE(var, head, field, next) \
for ((var) = ((head)->sqh_first); \
     (var) != SIMPLEQ_END(head) && \
     ((next = ((var)->field.sqe_next)), 1); \
     (var) = (next))

/*
 * Simple queue functions.
 */
#define SIMPLEQ_INIT(head) do { \
    (head)->sqh_first = NULL; \
    (head)->sqh_last

```

```

= &(head)->sqh_first; \
} while (/*CONSTCOND*/0)

#define SIMPLEQ_INSERT_HEAD(head, elm, field) do { \
if (((elm)->field.sqe_next = (head)->sqh_first) == NULL) \
(head)->sqh_last = &(elm)->field.sqe_next; \
(head)->sqh_first = (elm); \
} while (/*CONSTCOND*/0)

#define SIMPLEQ_INSERT_TAIL(head, elm, field) do { \
(elm)->field.sqe_next = NULL; \
*(head)->sqh_last = (elm); \
(head)->sqh_last = &(elm)->field.sqe_next; \
} while (/*CONSTCOND*/0)

#define SIMPLEQ_INSERT_AFTER(head, listelm, elm, field) do { \
if (((elm)->field.sqe_next = (listelm)->field.sqe_next) == NULL) \
(head)->sqh_last = &(elm)->field.sqe_next; \
(listelm)->field.sqe_next = (elm); \
} while (/*CONSTCOND*/0)

#define SIMPLEQ_REMOVE_HEAD(head, field) do { \
if (((head)->sqh_first = (head)->sqh_first->field.sqe_next) == NULL) \
(head)->sqh_last = &(head)->sqh_first; \
} while (/*CONSTCOND*/0)

#define SIMPLEQ_REMOVE_AFTER(head, elm, field) do { \
if \
(((elm)->field.sqe_next = (elm)->field.sqe_next->field.sqe_next) \
== NULL) \
(head)->sqh_last = &(elm)->field.sqe_next; \
} while (/*CONSTCOND*/0)

#define SIMPLEQ_REMOVE(head, elm, type, field) do { \
if ((head)->sqh_first == (elm)) { \
SIMPLEQ_REMOVE_HEAD((head), field); \
} else { \
struct type *curelm = (head)->sqh_first; \
while (curelm->field.sqe_next != (elm)) \
curelm = curelm->field.sqe_next; \
if ((curelm->field.sqe_next = \
curelm->field.sqe_next->field.sqe_next) == NULL) \
(head)->sqh_last = &(curelm)->field.sqe_next; \
} \
} while (/*CONSTCOND*/0)

#define SIMPLEQ_CONCAT(head1, head2) do { \
if (!SIMPLEQ_EMPTY((head2))) { \

```

```

*(head1)->sqh_last = (head2)->sqh_first; \
(head1)->sqh_last = (head2)->sqh_last; \
SIMPLEQ_INIT((head2)); \
} \
} while (/*CONSTCOND*/0)

#define SIMPLEQ_LAST(head, type, field) \
(SIMPLEQ_EMPTY((head)) ? \
NULL : \
((struct type \
*)(void *) \
((char *)((head)->sqh_last) - offsetof(struct type, field))))

/*
 * Tail queue definitions.
 */
#define _TAILQ_HEAD(name, type, qual) \
struct name { \
    qual type *tqh_first; /* first element */ \
    qual type *qual *tqh_last; /* addr of last next element */ \
}
#define TAILQ_HEAD(name, type) _TAILQ_HEAD(name, struct type,)

#define TAILQ_HEAD_INITIALIZER(head) \
{ TAILQ_END(head), &(head).tqh_first }

#define _TAILQ_ENTRY(type, qual) \
struct { \
    qual type *tqe_next; /* next element */ \
    qual type *qual *tqe_prev; /* address of previous next element */ \
}
#define TAILQ_ENTRY(type) _TAILQ_ENTRY(struct type,)

/*
 * Tail queue access methods.
 */
#define TAILQ_FIRST(head) ((head)->tqh_first)
#define TAILQ_END(head) (NULL)
#define TAILQ_NEXT(elm, field) ((elm)->field.tqe_next)
#define TAILQ_LAST(head, headname) \
(*(((struct headname *) (void *)((head)->tqh_last))->tqh_last))
#define TAILQ_PREV(elm, headname, field) \
(*(((struct headname \
*)(void *)((elm)->field.tqe_prev))->tqh_last))
#define TAILQ_EMPTY(head) (TAILQ_FIRST(head) == TAILQ_END(head))

#define TAILQ_FOREACH(var, head, field) \

```

```

for ((var) = ((head)->tqh_first); \
    (var) != TAILQ_END(head); \
    (var) = ((var)->field.tqe_next))

#define TAILQ_FOREACH_SAFE(var, head, field, next) \
for ((var) = ((head)->tqh_first); \
    (var) != TAILQ_END(head) && \
    ((next) = TAILQ_NEXT(var, field), 1); (var) = (next))

#define TAILQ_FOREACH_REVERSE(var, head, headname, field) \
for ((var) = TAILQ_LAST((head), headname); \
    (var) != TAILQ_END(head); \
    (var) = TAILQ_PREV((var), headname, field))

#define TAILQ_FOREACH_REVERSE_SAFE(var, head, headname, field, prev) \
for ((var) = TAILQ_LAST((head), headname); \
    (var) != TAILQ_END(head) && \
    ((prev) = TAILQ_PREV((var), headname, field), 1); (var) = (prev))

/*
 * Tail queue functions.
 */
#if defined(QUEUEDEBUG)
#define QUEUEDEBUG_TAILQ_INSERT_HEAD(head, \
    elm, field) \
    if ((head)->tqh_first && \
        (head)->tqh_first->field.tqe_prev != &(head)->tqh_first) \
        QUEUEDEBUG_ABORT("TAILQ_INSERT_HEAD %p %s:%d", (head), \
            __FILE__, __LINE__);
#define QUEUEDEBUG_TAILQ_INSERT_TAIL(head, elm, field) \
    if (*(head)->tqh_last != NULL) \
        QUEUEDEBUG_ABORT("TAILQ_INSERT_TAIL %p %s:%d", (head), \
            __FILE__, __LINE__);
#define QUEUEDEBUG_TAILQ_OP(elm, field) \
    if ((elm)->field.tqe_next && \
        (elm)->field.tqe_next->field.tqe_prev != \
        &(elm)->field.tqe_next) \
        QUEUEDEBUG_ABORT("TAILQ_* forw %p %s:%d", (elm), \
            __FILE__, __LINE__); \
    if (*(elm)->field.tqe_prev != (elm)) \
        QUEUEDEBUG_ABORT("TAILQ_* back %p %s:%d", (elm), \
            __FILE__, __LINE__);
#define QUEUEDEBUG_TAILQ_PREREMOVE(head, elm, field) \
    if ((elm)->field.tqe_next == NULL && \
        (head)->tqh_last != &(elm)->field.tqe_next) \
        QUEUEDEBUG_ABORT("TAILQ_PREREMOVE head %p elm %p %s:%d", \
            (head), (elm), __FILE__,

```

```

__LINE__);
#define QUEUEDEBUG_TAILQ_POSTREMOVE(elm, field) \
    (elm)->field.tqe_next = (void *)1L; \
    (elm)->field.tqe_prev = (void *)1L;
#else
#define QUEUEDEBUG_TAILQ_INSERT_HEAD(head, elm, field)
#define QUEUEDEBUG_TAILQ_INSERT_TAIL(head, elm, field)
#define QUEUEDEBUG_TAILQ_OP(elm, field)
#define QUEUEDEBUG_TAILQ_PREREMOVE(head, elm, field)
#define QUEUEDEBUG_TAILQ_POSTREMOVE(elm, field)
#endif

#define TAILQ_INIT(head) do { \
    (head)->tqh_first = TAILQ_END(head); \
    (head)->tqh_last = &(head)->tqh_first; \
} while (/*CONSTCOND*/0)

#define TAILQ_INSERT_HEAD(head, elm, field) do { \
    QUEUEDEBUG_TAILQ_INSERT_HEAD((head), (elm), field) \
    if (((elm)->field.tqe_next = (head)->tqh_first) != TAILQ_END(head)) \
        (head)->tqh_first->field.tqe_prev = \
            &(elm)->field.tqe_next; \
    else \
        (head)->tqh_last = &(elm)->field.tqe_next; \
    (head)->tqh_first = (elm); \
    (elm)->field.tqe_prev = &(head)->tqh_first; \
} while (/*CONSTCOND*/0)

#define TAILQ_INSERT_TAIL(head, \
    elm, field) do { \
    QUEUEDEBUG_TAILQ_INSERT_TAIL((head), (elm), field) \
    (elm)->field.tqe_next = TAILQ_END(head); \
    (elm)->field.tqe_prev = (head)->tqh_last; \
    *(head)->tqh_last = (elm); \
    (head)->tqh_last = &(elm)->field.tqe_next; \
} while (/*CONSTCOND*/0)

#define TAILQ_INSERT_AFTER(head, listelm, elm, field) do { \
    QUEUEDEBUG_TAILQ_OP((listelm), field) \
    if (((elm)->field.tqe_next = (listelm)->field.tqe_next) != \
        TAILQ_END(head)) \
        (elm)->field.tqe_next->field.tqe_prev = \
            &(elm)->field.tqe_next; \
    else \
        (head)->tqh_last = &(elm)->field.tqe_next; \
    (listelm)->field.tqe_next = (elm); \
    (elm)->field.tqe_prev = &(listelm)->field.tqe_next; \
} while (/*CONSTCOND*/0)

```

```
#define TAILQ_INSERT_BEFORE(listelm, elm, field) do { \
    QUEUEDEBUG_TAILQ_OP((listelm), field) \
    (elm)->field.tqe_prev = (listelm)->field.tqe_prev; \
    (elm)->field.tqe_next = (listelm); \
    *(listelm)->field.tqe_prev = (elm); \
    (listelm)->field.tqe_prev \
    = &(elm)->field.tqe_next; \
} while (/*CONSTCOND*/0)
```

```
#define TAILQ_REMOVE(head, elm, field) do { \
    QUEUEDEBUG_TAILQ_PREREMOVE((head), (elm), field) \
    QUEUEDEBUG_TAILQ_OP((elm), field) \
    if (((elm)->field.tqe_next != TAILQ_END(head)) \
        (elm)->field.tqe_next->field.tqe_prev = \
            (elm)->field.tqe_prev; \
    else \
        (head)->tqh_last = (elm)->field.tqe_prev; \
    *(elm)->field.tqe_prev = (elm)->field.tqe_next; \
    QUEUEDEBUG_TAILQ_POSTREMOVE((elm), field); \
} while (/*CONSTCOND*/0)
```

```
#define TAILQ_REPLACE(head, elm, elm2, field) do { \
    if (((elm2)->field.tqe_next = (elm)->field.tqe_next) != \
        TAILQ_END(head)) \
        (elm2)->field.tqe_next->field.tqe_prev = \
            &(elm2)->field.tqe_next; \
    else \
        (head)->tqh_last = &(elm2)->field.tqe_next; \
    (elm2)->field.tqe_prev = (elm)->field.tqe_prev; \
    *(elm2)->field.tqe_prev = (elm2); \
    QUEUEDEBUG_TAILQ_POSTREMOVE((elm), \
        field); \
} while (/*CONSTCOND*/0)
```

```
#define TAILQ_CONCAT(head1, head2, field) do { \
    if (!TAILQ_EMPTY(head2)) { \
        *(head1)->tqh_last = (head2)->tqh_first; \
        (head2)->tqh_first->field.tqe_prev = (head1)->tqh_last; \
        (head1)->tqh_last = (head2)->tqh_last; \
        TAILQ_INIT((head2)); \
    } \
} while (/*CONSTCOND*/0)
```

```
/*
```

```
* Singly-linked Tail queue declarations.
```

```
*/
```

```
#define STAILQ_HEAD(name, type) \
```

```

struct name {      \
    struct type *stqh_first; /* first element */ \
    struct type **stqh_last; /* addr of last next element */ \
}

#define STAILQ_HEAD_INITIALIZER(head)      \
    { NULL, &(head).stqh_first }

#define STAILQ_ENTRY(type)      \
    struct {      \
        struct type *stqe_next; /* next element */ \
    }

/*
 * Singly-linked Tail queue access methods.
 */
#define STAILQ_FIRST(head) ((head)->stqh_first)
#define STAILQ_END(head) NULL
#define STAILQ_NEXT(elm, field) ((elm)->field.stqe_next)
#define STAILQ_EMPTY(head) (STAILQ_FIRST(head) == STAILQ_END(head))

/*
 * Singly-linked Tail queue functions.
 */
#define STAILQ_INIT(head) do {      \
    (head)->stqh_first = NULL;      \
    (head)->stqh_last = &(head)->stqh_first; \
} while (/*CONSTCOND*/0)

#define STAILQ_INSERT_HEAD(head, elm, field) do {      \
    if (((elm)->field.stqe_next = (head)->stqh_first) == NULL) \
        (head)->stqh_last = &(elm)->field.stqe_next; \
    (head)->stqh_first = (elm);      \
} while (/*CONSTCOND*/0)

#define STAILQ_INSERT_TAIL(head, elm, field) do {      \
    (elm)->field.stqe_next = NULL;      \
    *(head)->stqh_last = (elm);      \
    (head)->stqh_last = &(elm)->field.stqe_next; \
} while (/*CONSTCOND*/0)

#define STAILQ_INSERT_AFTER(head, listelm, elm, field) do {      \
    if (((elm)->field.stqe_next = (listelm)->field.stqe_next) == NULL) \
        (head)->stqh_last = &(elm)->field.stqe_next; \
    (listelm)->field.stqe_next = (elm);      \
} while (/*CONSTCOND*/0)

```

```

#define STAILQ_REMOVE_HEAD(head, field) do { \
    if (((head)->stqh_first = (head)->stqh_first->field.stqe_next) \
        == NULL) \
        (head)->stqh_last = &(head)->stqh_first; \
} while (/*CONSTCOND*/0)

#define STAILQ_REMOVE(head, elm, type, field) do { \
    if ((head)->stqh_first == (elm)) { \
        STAILQ_REMOVE_HEAD((head), field); \
    } else { \
        struct type *curelm = (head)->stqh_first; \
        while (curelm->field.stqe_next != (elm)) \
            curelm = curelm->field.stqe_next; \
        if ((curelm->field.stqe_next = \
            curelm->field.stqe_next->field.stqe_next) == NULL) \
            (head)->stqh_last = &(curelm)->field.stqe_next; \
    } \
} while (/*CONSTCOND*/0)

#define STAILQ_FOREACH(var, head, field) \
    for ((var) = ((head)->stqh_first); \
        (var); \
        (var) = ((var)->field.stqe_next))

#define STAILQ_FOREACH_SAFE(var, head, field, tvar) \
    for ((var) = STAILQ_FIRST((head)); \
        (var) && ((tvar) = STAILQ_NEXT((var), field), 1); \
        (var) = (tvar))

#define STAILQ_CONCAT(head1, head2) do { \
    if (!STAILQ_EMPTY((head2))) { \
        *(head1)->stqh_last \
        = (head2)->stqh_first; \
        (head1)->stqh_last = (head2)->stqh_last; \
        STAILQ_INIT((head2)); \
    } \
} while (/*CONSTCOND*/0)

#define STAILQ_LAST(head, type, field) \
    (STAILQ_EMPTY((head)) ? \
    NULL : \
    ((struct type *) (void *) \
    ((char *)((head)->stqh_last) - offsetof(struct type, field))))

#ifdef _KERNEL
/*
 * Circular queue definitions. Do not use. We still keep the macros

```



```

* for compatibility but because of pointer aliasing issues their use
* is discouraged!
*/

/*
* __launder_type(): We use this ugly hack to work around the the compiler
* noticing that two types may not alias each other and elide tests in code.
* We hit this in the CIRCLEQ macros when comparing 'struct name *' and
* 'struct type *' (see CIRCLEQ_HEAD()). Modern compilers (such as GCC
* 4.8) declare these comparisons as always false, causing the code to
* not run as designed.
*
* This hack is only to be used for comparisons and thus can be fully const.
* Do not use for assignment.
*
* If we ever choose to change the ABI of the CIRCLEQ macros, we could fix
* this by changing the head/tail sentinel values, but see the note above
* this one.
*/
static __inline const void * __launder_type(const void *);
static __inline const void *
__launder_type(const void *__x)
{
    __asm __volatile("" : "+r" (__x));
    return __x;
}

#if defined(QUEUEDEBUG)
#define QUEUEDEBUG_CIRCLEQ_HEAD(head, field) \
    if ((head)->cqh_first != CIRCLEQ_ENDC(head) && \
        (head)->cqh_first->field.cqe_prev != CIRCLEQ_ENDC(head)) \
        QUEUEDEBUG_ABORT("CIRCLEQ head forw %p %s:%d", (head), \
            __FILE__, __LINE__); \
    if ((head)->cqh_last != CIRCLEQ_ENDC(head) && \
        (head)->cqh_last->field.cqe_next != CIRCLEQ_ENDC(head)) \
        QUEUEDEBUG_ABORT("CIRCLEQ head back %p %s:%d", (head), \
            __FILE__, __LINE__);
#define QUEUEDEBUG_CIRCLEQ_ELM(head, elm, field) \
    if ((elm)->field.cqe_next == CIRCLEQ_ENDC(head)) { \
        if ((head)->cqh_last != (elm)) \
            QUEUEDEBUG_ABORT("CIRCLEQ \
elm last %p %s:%d", \
                (elm), __FILE__, __LINE__); \
    } else { \
        if ((elm)->field.cqe_next->field.cqe_prev != (elm)) \
            QUEUEDEBUG_ABORT("CIRCLEQ elm forw %p %s:%d", \
                (elm), __FILE__, __LINE__); \
    } \

```

```

if ((elm)->field.cqe_prev == CIRCLEQ_ENDC(head)) { \
    if ((head)->cqh_first != (elm)) \
        QUEUEDEBUG_ABORT("CIRCLEQ elm first %p %s:%d", \
            (elm), __FILE__, __LINE__); \
} else { \
    if ((elm)->field.cqe_prev->field.cqe_next != (elm)) \
        QUEUEDEBUG_ABORT("CIRCLEQ elm prev %p %s:%d", \
            (elm), __FILE__, __LINE__); \
}
#define QUEUEDEBUG_CIRCLEQ_POSTREMOVE(elm, field) \
    (elm)->field.cqe_next = (void *)1L; \
    (elm)->field.cqe_prev = (void *)1L;
#else
#define QUEUEDEBUG_CIRCLEQ_HEAD(head, field)
#define QUEUEDEBUG_CIRCLEQ_ELM(head, elm, field)
#define QUEUEDEBUG_CIRCLEQ_POSTREMOVE(elm, field)
#endif

#define CIRCLEQ_HEAD(name, type) \
    struct name { \
        struct type *cqh_first; /* \
        first element */ \
        struct type *cqh_last; /* last element */ \
    }

#define CIRCLEQ_HEAD_INITIALIZER(head) \
    { CIRCLEQ_END(&head), CIRCLEQ_END(&head) }

#define CIRCLEQ_ENTRY(type) \
    struct { \
        struct type *cqe_next; /* next element */ \
        struct type *cqe_prev; /* previous element */ \
    }

/*
 * Circular queue functions.
 */
#define CIRCLEQ_INIT(head) do { \
    (head)->cqh_first = CIRCLEQ_END(head); \
    (head)->cqh_last = CIRCLEQ_END(head); \
} while (/*CONSTCOND*/0)

#define CIRCLEQ_INSERT_AFTER(head, listelm, elm, field) do { \
    QUEUEDEBUG_CIRCLEQ_HEAD((head), field) \
    QUEUEDEBUG_CIRCLEQ_ELM((head), (listelm), field) \
    (elm)->field.cqe_next = (listelm)->field.cqe_next; \
    (elm)->field.cqe_prev = (listelm); \
    if ((listelm)->field.cqe_next == CIRCLEQ_ENDC(head)) \

```

```

(head)->cqh_last = (elm); \
else \
(listelm)->field.cqe_next->field.cqe_prev = (elm); \
(listelm)->field.cqe_next = (elm); \
} while (/*CONSTCOND*/0)

#define CIRCLEQ_INSERT_BEFORE(head,
listelm, elm, field) do { \
QUEUEDEBDEBUG_CIRCLEQ_HEAD((head), field) \
QUEUEDEBDEBUG_CIRCLEQ_ELM((head), (listelm), field) \
(elm)->field.cqe_next = (listelm); \
(elm)->field.cqe_prev = (listelm)->field.cqe_prev; \
if ((listelm)->field.cqe_prev == CIRCLEQ_ENDC(head)) \
(head)->cqh_first = (elm); \
else \
(listelm)->field.cqe_prev->field.cqe_next = (elm); \
(listelm)->field.cqe_prev = (elm); \
} while (/*CONSTCOND*/0)

#define CIRCLEQ_INSERT_HEAD(head, elm, field) do { \
QUEUEDEBDEBUG_CIRCLEQ_HEAD((head), field) \
(elm)->field.cqe_next = (head)->cqh_first; \
(elm)->field.cqe_prev = CIRCLEQ_END(head); \
if ((head)->cqh_last == CIRCLEQ_ENDC(head)) \
(head)->cqh_last = (elm); \
else \
(head)->cqh_first->field.cqe_prev = (elm); \
(head)->cqh_first = (elm); \
} while (/*CONSTCOND*/0)

#define CIRCLEQ_INSERT_TAIL(head, elm, field) do { \
QUEUEDEBDEBUG_CIRCLEQ_HEAD((head), field) \
(elm)->field.cqe_next
= CIRCLEQ_END(head); \
(elm)->field.cqe_prev = (head)->cqh_last; \
if ((head)->cqh_first == CIRCLEQ_ENDC(head)) \
(head)->cqh_first = (elm); \
else \
(head)->cqh_last->field.cqe_next = (elm); \
(head)->cqh_last = (elm); \
} while (/*CONSTCOND*/0)

#define CIRCLEQ_REMOVE(head, elm, field) do { \
QUEUEDEBDEBUG_CIRCLEQ_HEAD((head), field) \
QUEUEDEBDEBUG_CIRCLEQ_ELM((head), (elm), field) \
if ((elm)->field.cqe_next == CIRCLEQ_ENDC(head)) \
(head)->cqh_last = (elm)->field.cqe_prev; \
else \

```

```

(elm)->field.cqe_next->field.cqe_prev = \
    (elm)->field.cqe_prev; \
if ((elm)->field.cqe_prev == CIRCLEQ_ENDC(head)) \
    (head)->cqh_first = (elm)->field.cqe_next; \
else \
    (elm)->field.cqe_prev->field.cqe_next = \
        (elm)->field.cqe_next; \
QUEUEDEBUG_CIRCLEQ_POSTREMOVE((elm), field) \
} while (/*CONSTCOND*/0)

#define CIRCLEQ_FOREACH(var, head, field) \
for ((var) = ((head)->cqh_first); \
    (var) != CIRCLEQ_ENDC(head); \
    (var) \
    = ((var)->field.cqe_next))

#define CIRCLEQ_FOREACH_REVERSE(var, head, field) \
for ((var) = ((head)->cqh_last); \
    (var) != CIRCLEQ_ENDC(head); \
    (var) = ((var)->field.cqe_prev))

/*
 * Circular queue access methods.
 */
#define CIRCLEQ_FIRST(head) ((head)->cqh_first)
#define CIRCLEQ_LAST(head) ((head)->cqh_last)
/* For comparisons */
#define CIRCLEQ_ENDC(head) (__launter_type(head))
/* For assignments */
#define CIRCLEQ_END(head) ((void *)(head))
#define CIRCLEQ_NEXT(elm, field) ((elm)->field.cqe_next)
#define CIRCLEQ_PREV(elm, field) ((elm)->field.cqe_prev)
#define CIRCLEQ_EMPTY(head) \
    (CIRCLEQ_FIRST(head) == CIRCLEQ_ENDC(head))

#define CIRCLEQ_LOOP_NEXT(head, elm, field) \
    (((elm)->field.cqe_next == CIRCLEQ_ENDC(head)) \
    ? ((head)->cqh_first) \
    : (elm)->field.cqe_next)
#define CIRCLEQ_LOOP_PREV(head, elm, field) \
    (((elm)->field.cqe_prev == CIRCLEQ_ENDC(head)) \
    ? ((head)->cqh_last) \
    : \
    (elm)->field.cqe_prev)
#endif /* !_KERNEL */

#endif /* !_SYS_QUEUE_H_ */

```

```

#ifndef _SYS_CDEFS_H_
#define _SYS_CDEFS_H_

#warning usage of non-standard #include <sys/cdefs.h> is deprecated

#undef __P
#undef __PMT

#define __P(args) args
#define __PMT(args) args

#define __CONCAT(x,y) x ## y
#define __STRING(x) #x

#ifdef __cplusplus
# define __BEGIN_DECLS extern "C" {
# define __END_DECLS }
#else
# define __BEGIN_DECLS
# define __END_DECLS
#endif

#if defined(__GNUC__) && !defined(__cplusplus)
# define __THROW __attribute__((__nothrow__))
# define __NTH(fct) __attribute__((__nothrow__)) fct
#else
# define __THROW
# define __NTH(fct) fct
#endif

#endif /* _SYS_CDEFS_H_ */

# Contributor: Fabian Affolter <fabian@affolter-engineering.ch>
# Maintainer: Fabian Affolter <fabian@affolter-engineering.ch>
pkgname=py3-flake8-copyright
_pkgname=flake8-copyright
pkgver=0.2.4
pkgrel=3
pkgdesc="Extension for flake8 which checks for copyrights"
options="!check" # No testsuite
url="https://github.com/savoirfairelinux/flake8-copyright"
arch="noarch"
license="MIT"
depends="py3-flake8 py3-setuptools"
makedepends="py3-gpep517 py3-wheel"
subpackages="$pkgname-pyc"
source="https://files.pythonhosted.org/packages/source/${_pkgname:0:1}/${_pkgname}/${_pkgname}-${pkgver}.tar.gz"
builddir="$srcdir"/$_pkgname-$pkgver

```

```

replaces="py-flake8-copyright"          # Backwards compatibility
provides="py-flake8-copyright=$pkgver-r$pkgrel" # Backwards compatibility

build() {
    gpep517 build-wheel \
        --wheel-dir .dist \
        --output-fd 3 3>&1 >&2
}

package() {
    gpep517 install-wheel --destdir "$pkgdir" \
        .dist/*.whl
}

sha512sums="
a6ab47e1bb715618f075c51f398e18180404871b3b0faf1c2d30701d5203db6bc23771bf22ffb5bafcd8ee856b9b64237
b316bd503ae7dceed6ca284ccd5a74d
    flake8-copyright-0.2.4.tar.gz
"
(The MIT License)

```

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/* \$NetBSD: tree.h,v 1.20 2013/09/14 13:20:45 joerg Exp \$ */

/* \$OpenBSD: tree.h,v 1.13 2011/07/09 00:19:45 pirofti Exp \$ */

/* Modified by Void Linux. */

/*

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 */

```
#ifndef _SYS_TREE_H_
#define _SYS_TREE_H_
```

```
#ifdef __GNUC__
#define __GNUC_PREREQ__(x, y) \
  ((__GNUC__ == (x) && __GNUC_MINOR__ >= (y)) || \
   (__GNUC__ > (x)))
#else
#define __GNUC_PREREQ__(x, y) 0
#endif
```

```
#if __GNUC_PREREQ__(2, 7) || defined(__lint__)
#define _sys_tree_h_unused __attribute__((__unused__))
#else
#define _sys_tree_h_unused /* delete */
#endif
```

```
/*
 * This file defines data structures for different types of trees:
 * splay trees and red-black trees.
 *
 * A splay tree is a self-organizing
 * data structure. Every operation
 * on the tree causes a splay to happen. The splay moves the requested
 * node to the root of the tree and partly rebalances it.
```

- *
 - * This has the benefit that request locality causes faster lookups as
 - * the requested nodes move to the top of the tree. On the other hand,
 - * every lookup causes memory writes.
- *
 - * The Balance Theorem bounds the total access time for m operations
 - * and n inserts on an initially empty tree as $O((m + n)\lg n)$. The
 - * amortized cost for a sequence of m accesses to a splay tree is $O(\lg n)$;
- *
 - * A red-black tree is a binary search tree with the node color as an
 - * extra attribute. It fulfills a set of conditions:
 - * - every search path from the root to a leaf consists of the
 - * same number of black nodes,
 - * - each red node (except for the root) has a black parent,
 - * - each leaf node is black.
- *
 - * Every operation on a red-black tree is bounded as $O(\lg n)$.
 - * The maximum height of a red-black tree is $2\lg(n+1)$.

```
#define SPLAY_HEAD(name, type) \
struct name { \
    struct type *sph_root; /* root of the tree */ \
}
```

```
#define SPLAY_INITIALIZER(root) \
{ NULL }
```

```
#define SPLAY_INIT(root) do { \
    (root)->sph_root = NULL; \
} while (/*CONSTCOND*/ 0)
```

```
#define SPLAY_ENTRY(type) \
struct { \
    struct type *spe_left; /* left element */ \
    struct type *spe_right; /* right element */ \
}
```

```
#define SPLAY_LEFT(elm, field) (elm)->field.spe_left
#define SPLAY_RIGHT(elm, field) (elm)->field.spe_right
#define SPLAY_ROOT(head) (head)->sph_root
#define SPLAY_EMPTY(head) (SPLAY_ROOT(head) == NULL)
```

```
/* SPLAY_ROTATE_{LEFT,RIGHT} expect that tmp hold SPLAY_{RIGHT,LEFT} */
#define SPLAY_ROTATE_RIGHT(head, tmp, field) do { \
    SPLAY_LEFT((head)->sph_root, field) = SPLAY_RIGHT(tmp, field); \
    SPLAY_RIGHT(tmp, field) = (head)->sph_root; \
    (head)->sph_root = tmp; \
}
```



```

} while (/*CONSTCOND*/ 0)

#define SPLAY_ROTATE_LEFT(head, tmp, field) do { \
    SPLAY_RIGHT((head)->sph_root, \
    field) = SPLAY_LEFT(tmp, field); \
    SPLAY_LEFT(tmp, field) = (head)->sph_root; \
    (head)->sph_root = tmp; \
} while (/*CONSTCOND*/ 0)

#define SPLAY_LINKLEFT(head, tmp, field) do { \
    SPLAY_LEFT(tmp, field) = (head)->sph_root; \
    tmp = (head)->sph_root; \
    (head)->sph_root = SPLAY_LEFT((head)->sph_root, field); \
} while (/*CONSTCOND*/ 0)

#define SPLAY_LINKRIGHT(head, tmp, field) do { \
    SPLAY_RIGHT(tmp, field) = (head)->sph_root; \
    tmp = (head)->sph_root; \
    (head)->sph_root = SPLAY_RIGHT((head)->sph_root, field); \
} while (/*CONSTCOND*/ 0)

#define SPLAY_ASSEMBLE(head, node, left, right, field) do { \
    SPLAY_RIGHT(left, field) = SPLAY_LEFT((head)->sph_root, field); \
    SPLAY_LEFT(right, field) = SPLAY_RIGHT((head)->sph_root, field); \
    SPLAY_LEFT((head)->sph_root, field) = SPLAY_RIGHT(node, field); \
    SPLAY_RIGHT((head)->sph_root, field) = SPLAY_LEFT(node, field); \
} while (/*CONSTCOND*/ 0)

/* Generates prototypes and inline functions */

#define
    SPLAY_PROTOTYPE(name, type, field, cmp) \
void name##_SPLAY(struct name *, struct type *); \
void name##_SPLAY_MINMAX(struct name *, int); \
struct type *name##_SPLAY_INSERT(struct name *, struct type *); \
struct type *name##_SPLAY_REMOVE(struct name *, struct type *); \
\
/* Finds the node with the same key as elm */ \
static __inline struct type * \
name##_SPLAY_FIND(struct name *head, struct type *elm) \
{ \
    if (SPLAY_EMPTY(head)) \
        return(NULL); \
    name##_SPLAY(head, elm); \
    if ((cmp)(elm, (head)->sph_root) == 0) \
        return (head->sph_root); \
    return (NULL); \
} \

```

```

    \
static __inline __sys_tree_h_unused struct type * \
name##_SPLAY_NEXT(struct name *head, struct type *elm) \
{
    \
    name##_SPLAY(head, elm); \
    if (SPLAY_RIGHT(elm, field) != NULL) { \
        elm = SPLAY_RIGHT(elm, field); \
        while (SPLAY_LEFT(elm, field) != NULL) { \
            elm = SPLAY_LEFT(elm, field); \
        } \
    }
}
else \
    elm = NULL; \
return (elm); \
} \
\

static __sys_tree_h_unused __inline struct type * \
name##_SPLAY_MIN_MAX(struct name *head, int val) \
{
    \
    name##_SPLAY_MINMAX(head, val); \
    return (SPLAY_ROOT(head)); \
}

/* Main splay operation.
 * Moves node close to the key of elm to top
 */
#define SPLAY_GENERATE(name, type, field, cmp) \
struct type * \
name##_SPLAY_INSERT(struct name *head, struct type *elm) \
{
    \
    if (SPLAY_EMPTY(head)) { \
        SPLAY_LEFT(elm, field) = SPLAY_RIGHT(elm, field) = NULL; \
    } else { \
        int __comp; \
        name##_SPLAY(head, elm); \
        __comp = (cmp)(elm, (head)->sph_root); \
        if (__comp < 0) { \
            SPLAY_LEFT(elm, field) = SPLAY_LEFT((head)->sph_root, field); \
            SPLAY_RIGHT(elm, field) = (head)->sph_root; \
            SPLAY_LEFT((head)->sph_root, field) = NULL; \
        } else if (__comp > 0) { \
            SPLAY_RIGHT(elm,
field) = SPLAY_RIGHT((head)->sph_root, field); \
            SPLAY_LEFT(elm, field) = (head)->sph_root; \
            SPLAY_RIGHT((head)->sph_root, field) = NULL; \
        } else \
            return ((head)->sph_root); \
    } \
}

```

```

(head)->sph_root = (elm); \
return (NULL); \
} \
\
struct type * \
name##_SPLAY_REMOVE(struct name *head, struct type *elm) \
{ \
    struct type *__tmp; \
    if (SPLAY_EMPTY(head)) \
        return (NULL); \
    name##_SPLAY(head, elm); \
    if ((cmp)(elm, (head)->sph_root) == 0) { \
        if (SPLAY_LEFT((head)->sph_root, field) == NULL) { \
            (head)->sph_root = SPLAY_RIGHT((head)->sph_root, field);\
        } else { \
            __tmp = SPLAY_RIGHT((head)->sph_root, field);\
            (head)->sph_root = SPLAY_LEFT((head)->sph_root, field);\
            name##_SPLAY(head, elm); \
            SPLAY_RIGHT((head)->sph_root, field) = __tmp; \
        } \
        return (elm); \
    } \
    return (NULL); \
} \
\
void \
name##_SPLAY(struct \
    name *head, struct type *elm) \
{ \
    struct type __node, *__left, *__right, *__tmp; \
    int __comp; \
    \
    SPLAY_LEFT(&__node, field) = SPLAY_RIGHT(&__node, field) = NULL;\
    __left = __right = &__node; \
    \
    while ((__comp = (cmp)(elm, (head)->sph_root)) != 0) { \
        if (__comp < 0) { \
            __tmp = SPLAY_LEFT((head)->sph_root, field);\
            if (__tmp == NULL) \
                break; \
            if ((cmp)(elm, __tmp) < 0){ \
                SPLAY_ROTATE_RIGHT(head, __tmp, field);\
                if (SPLAY_LEFT((head)->sph_root, field) == NULL)\
                    break; \
            } \
            SPLAY_LINKLEFT(head, __right, field); \
        } else if (__comp > 0) { \
            __tmp = SPLAY_RIGHT((head)->sph_root, field);\

```

```

if (__tmp == NULL) \
    break; \
if ((cmp)(elm, __tmp) > 0){ \
    SPLAY_ROTATE_LEFT(head, __tmp, field); \
    if (SPLAY_RIGHT((head)->sph_root, field) == NULL)\
        break; \
} \
SPLAY_LINKRIGHT(head, __left, field); \
} \
} \
SPLAY_ASSEMBLE(head,
&__node, __left, __right, field); \
} \
\
/* Splay with either the minimum or the maximum element \
* Used to find minimum or maximum element in tree. \
*/ \
void name##_SPLAY_MINMAX(struct name *head, int __comp) \
{ \
    struct type __node, *__left, *__right, *__tmp; \
    \
    SPLAY_LEFT(&__node, field) = SPLAY_RIGHT(&__node, field) = NULL;\
    __left = __right = &__node; \
    \
    while (1) { \
        if (__comp < 0) { \
            __tmp = SPLAY_LEFT((head)->sph_root, field); \
            if (__tmp == NULL) \
                break; \
            if (__comp < 0){ \
                SPLAY_ROTATE_RIGHT(head, __tmp, field); \
                if (SPLAY_LEFT((head)->sph_root, field) == NULL)\
                    break; \
            } \
            SPLAY_LINKLEFT(head, __right, field); \
        } else if (__comp > 0) { \
            __tmp = SPLAY_RIGHT((head)->sph_root, field); \
            if (__tmp == NULL) \
                break; \
            if (__comp > 0) { \
                SPLAY_ROTATE_LEFT(head, __tmp, field); \
                if (SPLAY_RIGHT((head)->sph_root,
field) == NULL)\
                    break; \
            } \
            SPLAY_LINKRIGHT(head, __left, field); \
        } \
    } \
} \

```

```

    SPLAY_ASSEMBLE(head, &__node, __left, __right, field); \
}

#define SPLAY_NEGINF -1
#define SPLAY_INF 1

#define SPLAY_INSERT(name, x, y) name##_SPLAY_INSERT(x, y)
#define SPLAY_REMOVE(name, x, y) name##_SPLAY_REMOVE(x, y)
#define SPLAY_FIND(name, x, y) name##_SPLAY_FIND(x, y)
#define SPLAY_NEXT(name, x, y) name##_SPLAY_NEXT(x, y)
#define SPLAY_MIN(name, x) (SPLAY_EMPTY(x) ? NULL \
    : name##_SPLAY_MIN_MAX(x, SPLAY_NEGINF))
#define SPLAY_MAX(name, x) (SPLAY_EMPTY(x) ? NULL \
    : name##_SPLAY_MIN_MAX(x, SPLAY_INF))

#define SPLAY_FOREACH(x, name, head) \
    for ((x) = SPLAY_MIN(name, head); \
        (x) != NULL; \
        (x) = SPLAY_NEXT(name, head, x))

/* Macros that define a red-black tree */
#define RB_HEAD(name, type) \
    struct name { \
        struct type *rbh_root; /* root of the tree */ \
    }

#define RB_INITIALIZER(root) \
    { \
        NULL \
    }

#define RB_INIT(root) do { \
    (root)->rbh_root = NULL; \
} while (/*CONSTCOND*/ 0)

#define RB_BLACK 0
#define RB_RED 1
#define RB_ENTRY(type) \
    struct { \
        struct type *rbe_left; /* left element */ \
        struct type *rbe_right; /* right element */ \
        struct type *rbe_parent; /* parent element */ \
        int rbe_color; /* node color */ \
    }

#define RB_LEFT(elm, field) (elm)->field.rbe_left
#define RB_RIGHT(elm, field) (elm)->field.rbe_right
#define RB_PARENT(elm, field) (elm)->field.rbe_parent
#define RB_COLOR(elm, field) (elm)->field.rbe_color

```

```

#define RB_ROOT(head) (head)->rbh_root
#define RB_EMPTY(head) (RB_ROOT(head) == NULL)

#define RB_SET(elm, parent, field) do { \
    RB_PARENT(elm, field) = parent; \
    RB_LEFT(elm, field) = RB_RIGHT(elm, field) = NULL; \
    RB_COLOR(elm, field) = RB_RED; \
} while (/*CONSTCOND*/ 0)

#define RB_SET_BLACKRED(black, red, field) do { \
    RB_COLOR(black, field) = RB_BLACK; \
    RB_COLOR(red, field) \
    = RB_RED; \
} while (/*CONSTCOND*/ 0)

#ifndef RB_AUGMENT
#define RB_AUGMENT(x) do {} while (/*CONSTCOND*/ 0)
#endif

#define RB_ROTATE_LEFT(head, elm, tmp, field) do { \
    (tmp) = RB_RIGHT(elm, field); \
    if ((RB_RIGHT(elm, field) = RB_LEFT(tmp, field)) != NULL) { \
        RB_PARENT(RB_LEFT(tmp, field), field) = (elm); \
    } \
    RB_AUGMENT(elm); \
    if ((RB_PARENT(tmp, field) = RB_PARENT(elm, field)) != NULL) { \
        if ((elm) == RB_LEFT(RB_PARENT(elm, field), field)) \
            RB_LEFT(RB_PARENT(elm, field), field) = (tmp); \
        else \
            RB_RIGHT(RB_PARENT(elm, field), field) = (tmp); \
    } else \
        (head)->rbh_root = (tmp); \
    RB_LEFT(tmp, field) = (elm); \
    RB_PARENT(elm, field) = (tmp); \
    RB_AUGMENT(tmp); \
    if ((RB_PARENT(tmp, field))) \
        RB_AUGMENT(RB_PARENT(tmp, field)); \
} while (/*CONSTCOND*/ 0)

#define RB_ROTATE_RIGHT(head, elm, tmp, field) do { \
    (tmp) = RB_LEFT(elm, field); \
    if ((RB_LEFT(elm, field) = RB_RIGHT(tmp, field)) \
    != NULL) { \
        RB_PARENT(RB_RIGHT(tmp, field), field) = (elm); \
    } \
    RB_AUGMENT(elm); \
    if ((RB_PARENT(tmp, field) = RB_PARENT(elm, field)) != NULL) { \
        if ((elm) == RB_LEFT(RB_PARENT(elm, field), field)) \

```

```

    RB_LEFT(RB_PARENT(elm, field), field) = (tmp); \
else \
    RB_RIGHT(RB_PARENT(elm, field), field) = (tmp); \
} else \
(head)->rbh_root = (tmp); \
RB_RIGHT(tmp, field) = (elm); \
RB_PARENT(elm, field) = (tmp); \
RB_AUGMENT(tmp); \
if ((RB_PARENT(tmp, field))) \
    RB_AUGMENT(RB_PARENT(tmp, field)); \
} while (/*CONSTCOND*/ 0)

/* Generates prototypes and inline functions */
#define RB_PROTOTYPE(name, type, field, cmp) \
    RB_PROTOTYPE_INTERNAL(name, type, field, cmp,)
#define RB_PROTOTYPE_STATIC(name, type, field, cmp) \
    RB_PROTOTYPE_INTERNAL(name, type, field, cmp, _sys_tree_h_unused static)
#define RB_PROTOTYPE_INTERNAL(name, type, field, cmp, attr) \
attr void name##_RB_INSERT_COLOR(struct name *, struct
type *); \
attr void name##_RB_REMOVE_COLOR(struct name *, struct type *, struct type *);\
attr struct type *name##_RB_REMOVE(struct name *, struct type *); \
attr struct type *name##_RB_INSERT(struct name *, struct type *); \
attr struct type *name##_RB_FIND(struct name *, struct type *); \
attr struct type *name##_RB_NFIND(struct name *, struct type *); \
attr struct type *name##_RB_NEXT(struct type *); \
attr struct type *name##_RB_PREV(struct type *); \
attr struct type *name##_RB_MINMAX(struct name *, int); \
\

/* Main rb operation.
* Moves node close to the key of elm to top
*/
#define RB_GENERATE(name, type, field, cmp) \
    RB_GENERATE_INTERNAL(name, type, field, cmp,)
#define RB_GENERATE_STATIC(name, type, field, cmp) \
    RB_GENERATE_INTERNAL(name, type, field, cmp, _sys_tree_h_unused static)
#define RB_GENERATE_INTERNAL(name, type, field, cmp, attr) \
attr void \
name##_RB_INSERT_COLOR(struct name *head, struct type *elm) \
{ \
    struct type \
    *parent, *gparent, *tmp; \
    while ((parent = RB_PARENT(elm, field)) != NULL && \
        RB_COLOR(parent, field) == RB_RED) { \
        gparent = RB_PARENT(parent, field); \
        if (parent == RB_LEFT(gparent, field)) { \
            tmp = RB_RIGHT(gparent, field); \

```

```

if (tmp && RB_COLOR(tmp, field) == RB_RED) { \
    RB_COLOR(tmp, field) = RB_BLACK; \
    RB_SET_BLACKRED(parent, gparent, field);\
    elm = gparent; \
    continue; \
} \
if (RB_RIGHT(parent, field) == elm) { \
    RB_ROTATE_LEFT(head, parent, tmp, field);\
    tmp = parent; \
    parent = elm; \
    elm = tmp; \
} \
RB_SET_BLACKRED(parent, gparent, field); \
RB_ROTATE_RIGHT(head, gparent, tmp, field); \
} else { \
    tmp = RB_LEFT(gparent, field); \
    if (tmp && RB_COLOR(tmp, field) == RB_RED) { \
        RB_COLOR(tmp, field) = RB_BLACK; \
        RB_SET_BLACKRED(parent, gparent, field);\
        elm = gparent; \
        continue; \
    } \
    if (RB_LEFT(parent, field) == elm)
{ \
    RB_ROTATE_RIGHT(head, parent, tmp, field);\
    tmp = parent; \
    parent = elm; \
    elm = tmp; \
} \
    RB_SET_BLACKRED(parent, gparent, field); \
    RB_ROTATE_LEFT(head, gparent, tmp, field); \
} \
} \
RB_COLOR(head->rbh_root, field) = RB_BLACK; \
} \
\
attr void \
name##_RB_REMOVE_COLOR(struct name *head, struct type *parent, struct type *elm) \
{ \
    struct type *tmp; \
    while ((elm == NULL || RB_COLOR(elm, field) == RB_BLACK) && \
        elm != RB_ROOT(head)) { \
        if (RB_LEFT(parent, field) == elm) { \
            tmp = RB_RIGHT(parent, field); \
            if (RB_COLOR(tmp, field) == RB_RED) { \
                RB_SET_BLACKRED(tmp, parent, field); \
                RB_ROTATE_LEFT(head, parent, tmp, field);\
                tmp = RB_RIGHT(parent, field); \

```



```

} \
if ((RB_LEFT(tmp, field) == NULL || \
    RB_COLOR(RB_LEFT(tmp, field), field) == RB_BLACK) &&\
    (RB_RIGHT(tmp, field) == NULL || \
    RB_COLOR(RB_RIGHT(tmp,
field), field) == RB_BLACK)) {\
    RB_COLOR(tmp, field) = RB_RED; \
    elm = parent; \
    parent = RB_PARENT(elm, field); \
} else { \
    if (RB_RIGHT(tmp, field) == NULL || \
        RB_COLOR(RB_RIGHT(tmp, field), field) == RB_BLACK) {\
        struct type *oleft; \
        if ((oleft = RB_LEFT(tmp, field)) \
            != NULL) \
            RB_COLOR(oleft, field) = RB_BLACK;\
        RB_COLOR(tmp, field) = RB_RED; \
        RB_ROTATE_RIGHT(head, tmp, oleft, field);\
        tmp = RB_RIGHT(parent, field); \
    } \
    RB_COLOR(tmp, field) = RB_COLOR(parent, field);\
    RB_COLOR(parent, field) = RB_BLACK; \
    if (RB_RIGHT(tmp, field)) \
        RB_COLOR(RB_RIGHT(tmp, field), field) = RB_BLACK;\
    RB_ROTATE_LEFT(head, parent, tmp, field);\
    elm = RB_ROOT(head); \
    break; \
} \
} else { \
    tmp = RB_LEFT(parent, field); \
    if (RB_COLOR(tmp, field) == RB_RED) { \
        RB_SET_BLACKRED(tmp, parent, field); \
        RB_ROTATE_RIGHT(head, parent, tmp, field);\
        tmp
= RB_LEFT(parent, field); \
    } \
    if ((RB_LEFT(tmp, field) == NULL || \
        RB_COLOR(RB_LEFT(tmp, field), field) == RB_BLACK) &&\
        (RB_RIGHT(tmp, field) == NULL || \
        RB_COLOR(RB_RIGHT(tmp, field), field) == RB_BLACK)) {\
        RB_COLOR(tmp, field) = RB_RED; \
        elm = parent; \
        parent = RB_PARENT(elm, field); \
    } else { \
        if (RB_LEFT(tmp, field) == NULL || \
            RB_COLOR(RB_LEFT(tmp, field), field) == RB_BLACK) {\
            struct type *oright; \
            if ((oright = RB_RIGHT(tmp, field)) \

```

```

    != NULL) \
    RB_COLOR(orient, field) = RB_BLACK;\
    RB_COLOR(tmp, field) = RB_RED;\
    RB_ROTATE_LEFT(head, tmp, orient, field);\
    tmp = RB_LEFT(parent, field);\
} \
RB_COLOR(tmp, field) = RB_COLOR(parent, field);\
RB_COLOR(parent, field) = RB_BLACK;\
if (RB_LEFT(tmp, field)) \
    RB_COLOR(RB_LEFT(tmp, field), field) = RB_BLACK;\
RB_ROTATE_RIGHT(head, parent, tmp, field);\
elm = RB_ROOT(head); \
break; \
} \
} \
} \
if
(elm) \
    RB_COLOR(elm, field) = RB_BLACK; \
} \
\
attr struct type * \
name##_RB_REMOVE(struct name *head, struct type *elm) \
{ \
    struct type *child, *parent, *old = elm; \
    int color; \
    if (RB_LEFT(elm, field) == NULL) \
        child = RB_RIGHT(elm, field); \
    else if (RB_RIGHT(elm, field) == NULL) \
        child = RB_LEFT(elm, field); \
    else { \
        struct type *left; \
        elm = RB_RIGHT(elm, field); \
        while ((left = RB_LEFT(elm, field)) != NULL) \
            elm = left; \
        child = RB_RIGHT(elm, field); \
        parent = RB_PARENT(elm, field); \
        color = RB_COLOR(elm, field); \
        if (child) \
            RB_PARENT(child, field) = parent; \
        if (parent) { \
            if (RB_LEFT(parent, field) == elm) \
                RB_LEFT(parent, field) = child; \
            else \
                RB_RIGHT(parent, field) = child; \
            RB_AUGMENT(parent); \
        } else \
            RB_ROOT(head)

```

```

= child; \
if (RB_PARENT(elm, field) == old) \
    parent = elm; \
(elm)->field = (old)->field; \
if (RB_PARENT(old, field)) { \
    if (RB_LEFT(RB_PARENT(old, field), field) == old)\
        RB_LEFT(RB_PARENT(old, field), field) = elm;\
    else \
        RB_RIGHT(RB_PARENT(old, field), field) = elm;\
    RB_AUGMENT(RB_PARENT(old, field)); \
} else \
    RB_ROOT(head) = elm; \
RB_PARENT(RB_LEFT(old, field), field) = elm; \
if (RB_RIGHT(old, field)) \
    RB_PARENT(RB_RIGHT(old, field), field) = elm; \
if (parent) { \
    left = parent; \
    do { \
        RB_AUGMENT(left); \
    } while ((left = RB_PARENT(left, field)) != NULL); \
} \
goto color; \
} \
parent = RB_PARENT(elm, field); \
color = RB_COLOR(elm, field); \
if (child) \
    RB_PARENT(child, field) = parent; \
if (parent) { \
    if (RB_LEFT(parent, field) == elm) \
        RB_LEFT(parent, field) = child; \
    else \
        RB_RIGHT(parent,
field) = child; \
    RB_AUGMENT(parent); \
} else \
    RB_ROOT(head) = child; \
color: \
if (color == RB_BLACK) \
    name##_RB_REMOVE_COLOR(head, parent, child); \
return (old); \
} \
\
/* Inserts a node into the RB tree */ \
attr struct type * \
name##_RB_INSERT(struct name *head, struct type *elm) \
{ \
    struct type *tmp; \
    struct type *parent = NULL; \

```

```

int comp = 0;    \
tmp = RB_ROOT(head);    \
while (tmp) {    \
    parent = tmp;    \
    comp = (cmp)(elm, parent);    \
    if (comp < 0)    \
        tmp = RB_LEFT(tmp, field);    \
    else if (comp > 0)    \
        tmp = RB_RIGHT(tmp, field);    \
    else    \
        return (tmp);    \
}    \
RB_SET(elm, parent, field);    \
if (parent != NULL) {    \
    if (comp < 0)    \
        RB_LEFT(parent, field) = elm;    \
    else    \
        RB_RIGHT(parent, field) = elm;    \
    RB_AUGMENT(parent);    \
} else    \
    RB_ROOT(head) = elm;    \
name##_RB_INSERT_COLOR(head,
elm);    \
return (NULL);    \
}    \
\

/* Finds the node with the same key as elm */    \
attr struct type *    \
name##_RB_FIND(struct name *head, struct type *elm)    \
{    \
    struct type *tmp = RB_ROOT(head);    \
    int comp;    \
    while (tmp) {    \
        comp = cmp(elm, tmp);    \
        if (comp < 0)    \
            tmp = RB_LEFT(tmp, field);    \
        else if (comp > 0)    \
            tmp = RB_RIGHT(tmp, field);    \
        else    \
            return (tmp);    \
    }    \
    return (NULL);    \
}    \
\

/* Finds the first node greater than or equal to the search key */    \
attr struct type *    \
name##_RB_NFIND(struct name *head, struct type *elm)    \
{    \

```

```

struct type *tmp = RB_ROOT(head); \
struct type *res = NULL; \
int comp; \
while (tmp) { \
    comp = cmp(elm, tmp); \
    if (comp < 0) { \
        res = tmp; \
        tmp = RB_LEFT(tmp, field); \
    } \
    else if (comp > 0) \
        tmp = \
RB_RIGHT(tmp, field); \
    else \
        return (tmp); \
} \
return (res); \
} \
\
/* ARGSUSED */ \
attr struct type * \
name##_RB_NEXT(struct type *elm) \
{ \
    if (RB_RIGHT(elm, field)) { \
        elm = RB_RIGHT(elm, field); \
        while (RB_LEFT(elm, field)) \
            elm = RB_LEFT(elm, field); \
    } else { \
        if (RB_PARENT(elm, field) && \
            (elm == RB_LEFT(RB_PARENT(elm, field), field))) \
            elm = RB_PARENT(elm, field); \
        else { \
            while (RB_PARENT(elm, field) && \
                (elm == RB_RIGHT(RB_PARENT(elm, field), field))) \
                elm = RB_PARENT(elm, field); \
            elm = RB_PARENT(elm, field); \
        } \
    } \
    return (elm); \
} \
\
/* ARGSUSED */ \
attr struct type * \
name##_RB_PREV(struct type *elm) \
{ \
    if (RB_LEFT(elm, field)) { \
        elm = RB_LEFT(elm, field); \
        while (RB_RIGHT(elm, field)) \
            elm = RB_RIGHT(elm, field); \
    } \
}

```

```

}
else {
    if (RB_PARENT(elm, field) &&
        (elm == RB_RIGHT(RB_PARENT(elm, field), field))) \
        elm = RB_PARENT(elm, field);
    else {
        while (RB_PARENT(elm, field) &&
            (elm == RB_LEFT(RB_PARENT(elm, field), field))) \
            elm = RB_PARENT(elm, field);
        elm = RB_PARENT(elm, field);
    }
}
return (elm);
}

attr struct type *
name##_RB_MINMAX(struct name *head, int val) \
{
    struct type *tmp = RB_ROOT(head);
    struct type *parent = NULL;
    while (tmp) {
        parent = tmp;
        if (val < 0)
            tmp = RB_LEFT(tmp, field);
        else
            tmp = RB_RIGHT(tmp, field);
    }
    return (parent);
}

#define RB_NEGINF -1
#define RB_INF 1

#define RB_INSERT(name, x, y) name##_RB_INSERT(x, y)
#define RB_REMOVE(name, x, y) name##_RB_REMOVE(x, y)
#define RB_FIND(name, x, y) name##_RB_FIND(x, y)
#define RB_NFIND(name, x, y) name##_RB_NFIND(x,
y)
#define RB_NEXT(name, x, y) name##_RB_NEXT(y)
#define RB_PREV(name, x, y) name##_RB_PREV(y)
#define RB_MIN(name, x) name##_RB_MINMAX(x, RB_NEGINF)
#define RB_MAX(name, x) name##_RB_MINMAX(x, RB_INF)

#define RB_FOREACH(x, name, head) \
for ((x) = RB_MIN(name, head); \
    (x) != NULL; \
    (x) = name##_RB_NEXT(x))

```

```

#define RB_FOREACH_FROM(x, name, y) \
for ((x) = (y); \
    ((x) != NULL) && ((y) = name##_RB_NEXT(x), (x) != NULL); \
    (x) = (y))

#define RB_FOREACH_SAFE(x, name, head, y) \
for ((x) = RB_MIN(name, head); \
    ((x) != NULL) && ((y) = name##_RB_NEXT(x), (x) != NULL); \
    (x) = (y))

#define RB_FOREACH_REVERSE(x, name, head) \
for ((x) = RB_MAX(name, head); \
    (x) != NULL; \
    (x) = name##_RB_PREV(x))

#define RB_FOREACH_REVERSE_FROM(x, name, y) \
for ((x) = (y); \
    ((x) != NULL) && ((y) = name##_RB_PREV(x), (x) != NULL); \
    (x) = (y))

#define RB_FOREACH_REVERSE_SAFE(x, name, \
head, y) \
for ((x) = RB_MAX(name, head); \
    ((x) != NULL) && ((y) = name##_RB_PREV(x), (x) != NULL); \
    (x) = (y))

#endif /* _SYS_TREE_H */
# Contributor: Wen Heping <wenhepingalpine@sohu.com>
# Maintainer: Wen Heping <wenhepingalpine@sohu.com>
pkgname=perl-software-license
pkgver=0.104007
pkgrel=0
# _pkgreal is used by apkbuild-cpan to find modules at MetaCpan
_pkgreal=Software-License
pkgdesc="packages that provide templated software licenses"
url="https://metacpan.org/release/Software-License/"
arch="noarch"
license="GPL-1.0-or-later OR Artistic-1.0-Perl"
depends="perl perl-data-section perl-text-template"
checkdepends="perl-try-tiny"
subpackages="$pkgname-doc"
source="https://cpan.metacpan.org/authors/id/L/LE/LEONT/Software-License-$pkgver.tar.gz"
builddir="$srcdir/${_pkgreal}-${pkgver}"

build() {
    export CFLAGS=$(perl -MConfig -E 'say $Config{ccflags}')
    PERL_MM_USE_DEFAULT=1 perl -I. Makefile.PL \
    INSTALLDIRS=vendor \

```

```

NO_PACKLIST=1 \
NO_PERLLOCAL=1
make
}

check() {
export CFLAGS=$(perl -MConfig -E 'say $Config{ccflags}')
make test
}

package() {
make DESTDIR="$pkgdir" install
}

sha512sums="
12d75e9583b3013d9b4a282467f1ac80ab6b7f3251926d66591d01404489b528f22adc396dfd4528a0f0ca650f0eed6d
9c959e69eace2169c6ed1cffe5277e4
Software-License-0.104007.tar.gz
"
(The MIT License)

```

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Contributor: Dhruvin Gandhi <contact@dhruvin>

Maintainer: Patrycja Rosa <alpine@ptrcnull.me>

pkgname=py3-license-expression

_pkgname=license_expression

pkgver=30.4.4

pkgrel=0


```

pkgdesc="Library to parse, compare, simplify and normalize license expressions"
url="https://github.com/nexB/license-expression"
arch="noarch"
license="Apache-2.0"
depends="python3 py3-boolean.py"
makedepends="py3-setuptools py3-setuptools_scm py3-gpep517 py3-wheel"
checkdepends="py3-pytest py3-pytest-xdist"
subpackages="$pkgname-pyc"
source="https://files.pythonhosted.org/packages/source/l/${_pkgname}/${_pkgname}-${pkgver}.tar.gz"
builddir="$srcdir/${_pkgname}-${pkgver}"

build() {
    gpep517 build-wheel \
        --wheel-dir .dist \
        --output-fd 3 3>&1 >&2
}

check() {
    python3 -m venv --clear --without-pip --system-site-packages .testenv
    .testenv/bin/python3 -m installer .dist/*.whl
    .testenv/bin/python3 -m pytest
}

package() {
    python3 -m installer -d "$pkgdir" \
        .dist/*.whl
}

sha512sums="
f46dd4cf524b3962115fe26f5545bfdd6767275b482724af51e7ca07da79244969a3bfc5d2fd5b95bc0f19d1b95a26a8f3
ab36c676e56ec302178d7166588066
    license_expression-30.4.4.tar.gz
"

```

1.306 cpp 15.2.0-r2

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/* Use the Sequent Symmetry assembler syntax. */

/* Define the syntax of pseudo-ops, labels and comments. */

/* Prefix for internally generated assembler
labels. If we aren't using
underscores, we are using prefix `.'s to identify labels that should
be ignored, as in `i386/gas.h' --karl@cs.umb.edu */

#define LPREFIX "L"

/* Assembler pseudos to introduce constants of various size. */

#define ASM_BYTE "\t.byte\t"
#define ASM_SHORT "\t.word\t"
#define ASM_LONG "\t.long\t"
#define ASM_QUAD "\t.quad\t" /* Should not be used for 32bit compilation. */

/* This was suggested, but it shouldn't be right for debugger output. -- RMS
#define ASM_OUTPUT_SOURCE_FILENAME(FILE, NAME) */

/* Define the syntax of labels and symbol definitions/declarations. */

/* This is how to output an assembler line
that says to advance the location counter by SIZE bytes. */

#define ASM_OUTPUT_SKIP(FILE,SIZE) \
fprintf (FILE, "\t.space " HOST_WIDE_INT_PRINT_UNSIGNED"\n", (SIZE))

/* Define the syntax of labels and symbol definitions/declarations. */

/* This says how to output an assembler line
to define a global common symbol. */

#define
ASM_OUTPUT_COMMON(FILE, NAME, SIZE, ROUNDED) \
(fputs (".comm ", (FILE)), \
assemble_name ((FILE), (NAME)), \


```

fprintf ((FILE), ",%u\n", (int)(ROUNDED)))

/* This says how to output an assembler line
   to define a local common symbol. */

#define ASM_OUTPUT_LOCAL(FILE, NAME, SIZE, ROUNDED) \
( fputs (".lcomm ", (FILE)), \
  assemble_name ((FILE), (NAME)), \
  fprintf ((FILE), ",%u\n", (int)(ROUNDED)))

#ifdef HAVE_GAS_LCOMM_WITH_ALIGNMENT
#define ASM_OUTPUT_ALIGNED_LOCAL(FILE, NAME, SIZE, ALIGNMENT) \
( fputs (".lcomm ", (FILE)), \
  assemble_name ((FILE), (NAME)), \
  fprintf ((FILE), ",%u,%u\n", (int)(SIZE), (int)(ALIGNMENT) / BITS_PER_UNIT))
#endif

/* This is how to output an assembler line
   that says to advance the location counter
   to a multiple of 2**LOG bytes. */

#define ASM_OUTPUT_ALIGN(FILE,LOG) \
if ((LOG)!=0) fprintf ((FILE), "\t.align %d\n", (LOG))

/* This is how to store into the string BUF
   the symbol_ref name of an internal numbered
   label where
   PREFIX is the class of label and NUM is the number within the class.
   This is suitable for output with `assemble_name'. */

#define ASM_GENERATE_INTERNAL_LABEL(BUF,PREFIX,NUMBER) \
  sprintf ((BUF), "%s%d", (PREFIX), (long)(NUMBER))

/* The prefix to add to user-visible assembler symbols. */

#define USER_LABEL_PREFIX "_"

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```
#ifndef __VTV_H__
#define __VTV_H__
```

```
/* We could have used an enumeration here but it just makes it more
   difficult for the compiler to generate a call to this. These are
   used as arguments to the function __VLTChangePermission, declared
   below. */
```

```
#define __VLTP_READ_ONLY 0
#define __VLTP_READ_WRITE 1
```

```
#ifdef __cplusplus
extern "C" void __VLTChangePermission (int);
#else
extern void __VLTChangePermission (int);
#endif
```

```
#ifdef BIG_PAGE_SIZE
/* TODO - Replace '4096' below with correct big page size. */
#define VTV_PAGE_SIZE 4096
```



```

#else
#if defined(__sun__) && defined(__svr4__) && defined(__sparc__)
#define VTV_PAGE_SIZE 8192
#elif defined(__loongarch_lp64)
/* The page size is configurable by the kernel to be 4,
16 or 64 KiB.
For now, only the default page size of 16KiB is supported. */
#define VTV_PAGE_SIZE 16384
#else
#define VTV_PAGE_SIZE 4096
#endif
#endif

```

```
#endif /* __VTV_H__ */
```

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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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1.318 jaxb-runtime 4.0.6

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1.323 gogo-protobuf 1.3.2

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1.324 prometheus-client-model 0.6.2

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1.327 prometheus-client 1.23.2

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1.328 xxhash 2.3.0

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*/

#ifndef UTIL_LINUX_PT_BSD_H

#define UTIL_LINUX_PT_BSD_H

#define BSD_MAXPARTITIONS 16

#define BSD_FS_UNUSED 0

#ifndef BSD_DISKMAGIC

define BSD_DISKMAGIC ((uint32_t) 0x82564557)

#endif

#define BSD_LINUX_BOOTDIR "/usr/ucb/mdec"

#if defined (__alpha__) || defined (__powerpc__) || \

defined (__ia64__) || defined (__hppa__)

define BSD_LABELSECTOR 0

define BSD_LABELOFFSET 64

#else

define BSD_LABELSECTOR 1

define BSD_LABELOFFSET 0

#endif

#define BSD_BBSIZE 8192 /* size of boot area, with label */

#define BSD_SBSIZE 8192 /* max size of fs superblock */

struct bsd_disklabel {

uint32_t d_magic; /* the magic number */

```

int16_t d_type; /* drive type */
int16_t d_subtype; /* controller/d_type specific */
char d_typename[16]; /* type name, e.g. "eagle" */
char d_packname[16]; /* pack identifier */

/* disk geometry: */
uint32_t d_sectsize; /*
# of bytes per sector */
uint32_t d_nsectors; /* # of data sectors per track */
uint32_t d_ntracks; /* # of tracks per cylinder */
uint32_t d_ncylinders; /* # of data cylinders per unit */
uint32_t d_secp cyl; /* # of data sectors per cylinder */
uint32_t d_secp unit; /* # of data sectors per unit */

/*
* Spares (bad sector replacements) below
* are not counted in d_nsectors or d_secp cyl.
* Spare sectors are assumed to be physical sectors
* which occupy space at the end of each track and/or cylinder.
*/
uint16_t d_sparesp track; /* # of spare sectors per track */
uint16_t d_sparesp cyl; /* # of spare sectors per cylinder */

/*
* Alternate cylinders include maintenance, replacement,
* configuration description areas, etc.
*/
uint32_t d_acylinders; /* # of alt. cylinders per unit */

/* hardware characteristics: */
/*
* d_interleave, d_trackskew and d_cylskew describe perturbations
* in the media format used to compensate for a slow
controller.
* Interleave is physical sector interleave, set up by the formatter
* or controller when formatting. When interleaving is in use,
* logically adjacent sectors are not physically contiguous,
* but instead are separated by some number of sectors.
* It is specified as the ratio of physical sectors traversed
* per logical sector. Thus an interleave of 1:1 implies contiguous
* layout, while 2:1 implies that logical sector 0 is separated
* by one sector from logical sector 1.
* d_trackskew is the offset of sector 0 on track N
* relative to sector 0 on track N-1 on the same cylinder.
* Finally, d_cylskew is the offset of sector 0 on cylinder N
* relative to sector 0 on cylinder N-1.
*/
uint16_t d_rpm; /* rotational speed */

```

```

uint16_t d_interleave; /* hardware sector interleave */
uint16_t d_trackskew; /* sector 0 skew, per track */
uint16_t d_cylskew; /* sector 0 skew, per cylinder */
uint32_t d_headswitch; /* head switch time, usec */
uint32_t d_trkseek; /*
track-to-track seek, usec */
uint32_t d_flags; /* generic flags */
uint32_t d_drivedata[5]; /* drive-type specific information */
uint32_t d_spare[5]; /* reserved for future use */
uint32_t d_magic2; /* the magic number (again) */
uint16_t d_checksum; /* xor of data incl. partitions */

/* filesystem and partition information: */
uint16_t d_npartitions; /* number of partitions in following */
uint32_t d_bbsize; /* size of boot area at sn0, bytes */
uint32_t d_sbsize; /* max size of fs superblock, bytes */

struct bsd_partition { /* the partition table */
    uint32_t p_size; /* number of sectors in partition */
    uint32_t p_offset; /* starting sector */
    uint32_t p_fsize; /* filesystem basic fragment size */
    uint8_t p_fstype; /* filesystem type, see below */
    uint8_t p_frag; /* filesystem fragments per block */
    uint16_t p_cpgrp; /* filesystem cylinders per group */
} __attribute__((packed))
d_partitions[BSD_MAXPARTITIONS]; /* actually may be more */
} __attribute__((packed));

/* d_type values: */
#define BSD_DTYPE_SMD 1 /* SMD, XSMD; VAX hp/up */
#define BSD_DTYPE_MSCP 2 /* MSCP */
#define BSD_DTYPE_DEC 3 /* other DEC (rk, rl) */
#define BSD_DTYPE SCSI 4 /* SCSI */
#define BSD_DTYPE_ESDI 5 /* ESDI interface */
#define BSD_DTYPE_ST506 6 /* ST506 etc. */
#define BSD_DTYPE_HPIB 7 /* CS/80 on HP-IB */
#define BSD_DTYPE_HPFL 8 /* HP Fiber-link */
#define BSD_DTYPE_FLOPPY 10 /* floppy */

/* d_subtype values: */
#define BSD_DSTYPE_INDOSPART 0x8 /* is inside dos partition */
#define BSD_DSTYPE_DOSPART(s) ((s) & 3) /* dos partition number */
#define BSD_DSTYPE_GEOMETRY 0x10 /* drive params in label */

/*
* Filesystem type and version.
* Used to interpret other filesystem-specific

```

```

* per-partition information.
*/

#define BSD_FS_UNUSED 0 /* unused */
#define BSD_FS_SWAP 1 /* swap */
#define BSD_FS_V6 2 /* Sixth Edition */
#define BSD_FS_V7
    3 /* Seventh Edition */
#define BSD_FS_SYSV 4 /* System V */
#define BSD_FS_V71K 5 /* V7 with 1K blocks (4.1, 2.9) */
#define BSD_FS_V8 6 /* Eighth Edition, 4K blocks */
#define BSD_FS_BSDFFS 7 /* 4.2BSD fast file system */
#define BSD_FS_BSDLFS 9 /* 4.4BSD log-structured file system */
#define BSD_FS_OTHER 10 /* in use, but unknown/unsupported */
#define BSD_FS_HPFS 11 /* OS/2 high-performance file system */
#define BSD_FS_ISO9660 12 /* ISO-9660 filesystem (cdrom) */
#define BSD_FS_ISOFS BSD_FS_ISO9660
#define BSD_FS_BOOT 13 /* partition contains bootstrap */
#define BSD_FS_ADOS 14 /* AmigaDOS fast file system */
#define BSD_FS_HFS 15 /* Macintosh HFS */
#define BSD_FS_ADVFS 16 /* Digital Unix AdvFS */

/* this is annoying, but it's also the way it is :( */
#ifdef __alpha__
#define BSD_FS_EXT2 8 /* ext2 file system */
#else
#define BSD_FS_MSDFS 8 /* MS-DOS file system */
#endif

/*
 * flags shared by various drives:
 */
#define BSD_D_REMOVABLE 0x01 /*
    removable media */
#define BSD_D_ECC 0x02 /* supports ECC */
#define BSD_D_BADSECT 0x04 /* supports bad sector forw. */
#define BSD_D_RAMDISK 0x08 /* disk emulator */
#define BSD_D_CHAIN 0x10 /* can do back-back transfers */
#define BSD_D_DOSPART 0x20 /* within MSDOS partition */

#endif /* UTIL_LINUX_PT_BSD_H */

```

1.331 golang 1.25.4

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```

```
package copyright
```

```
import (  
    "bytes"  
    "internal/testenv"  
    "io"  
    "io/fs"  
    "os"  
    "path/filepath"  
    "testing"  
)
```

```
var copyright = []byte("Copyright")
```

```
var permitted = [][]byte{  
    []byte("// Code generated by "),  
    []byte("// Code generated from "),  
    []byte("// Created by cgo -cdefs"),  
    []byte("// DO NOT EDIT\n// generated by:"),  
    []byte("// Empty assembly file"),  
    []byte("// Generated using cgo"),  
    []byte("// Original source:\n\nhttp://www.zorinaq.com/papers/md5-amd64.html"), // public domain crypto/md5  
    []byte("// created by cgo -cdefs"),  
    []byte("// go run mkasm.go"),  
    []byte("// mkerrors"),  
    []byte("// mksys"),  
    []byte("// run\n\n// Code generated by"), // cmd/compile/internal/test/constFold_test.go  
}
```

```
func TestCopyright(t *testing.T) {  
    buf := make([]byte, 2048)  
    filepath.WalkDir(filepath.Join(testenv.GOROOT(t), "src"), func(path string,  
        d fs.DirEntry, err error) error {  
        if d.IsDir() && (d.Name() == "testdata" || d.Name() == "vendor") {  
            return filepath.SkipDir  
        }  
        switch filepath.Ext(d.Name()) {  
        default:  
            return nil  
        case ".s", ".go":  
            // check  
        }  
    })  
}
```

```
f, err := os.Open(path)  
if err != nil {  
    t.Error(err)  
    return nil  
}
```

```

}
defer f.Close()
n, err := f.Read(buf)
if err != nil && err != io.EOF {
    t.Error(err)
    return nil
}
b := buf[:n]
if bytes.Contains(b, copyright) {
    return nil
}
for _, ok := range permitted {
    if bytes.HasPrefix(b, ok) {
        return nil
    }
}
t.Errorf("%s: missing copyright notice", path)
return nil
})
}

```

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Julian Seward, jseward@bzip.org
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Version 2.1, February 1999

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Any

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Version 3.1, 31 March 2009

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```
/* Definitions for BSD assembler syntax for Intel 386
   (actually AT&T syntax for insns and operands,
   adapted to BSD conventions for symbol names and debugging.)
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```

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/* Use the Sequent Symmetry assembler syntax. */

/* Define the syntax of pseudo-ops, labels and comments. */

/* Prefix for internally generated assembler labels. If we aren't using underscores, we are using prefix `.'s to identify labels that should be ignored, as in `i386/gas.h' --karl@cs.umb.edu */

#define LPREFIX "L"

/* Assembler pseudos to introduce constants of various size. */

#define ASM_BYTE "\t.byte\t"

#define ASM_SHORT "\t.word\t"

#define ASM_LONG "\t.long\t"

#define ASM_QUAD "\t.quad\t" /* Should not be used for 32bit compilation. */

/* This was suggested, but it shouldn't be right for debugger output. -- RMS

#define ASM_OUTPUT_SOURCE_FILENAME(FILE, NAME) */

/* Define the syntax of labels and symbol definitions/declarations. */

/* This is how to output an assembler line that says to advance the location counter by SIZE bytes. */

#define ASM_OUTPUT_SKIP(FILE,SIZE) \
fprintf (FILE, "\t.space " HOST_WIDE_INT_PRINT_UNSIGNED"\n", (SIZE))

/* Define the syntax of labels and symbol definitions/declarations. */

/* This says how to output an assembler line to define a global common symbol. */

#define
ASM_OUTPUT_COMMON(FILE, NAME, SIZE, ROUNDED) \
(fputs (".comm ", (FILE)), \
assemble_name ((FILE), (NAME)), \
fprintf ((FILE), "%u\n", (int)(ROUNDED)))

/* This says how to output an assembler line

to define a local common symbol. */

```
#define ASM_OUTPUT_LOCAL(FILE, NAME, SIZE, ROUNDED) \
( fputs (".lcomm ", (FILE)), \
  assemble_name ((FILE), (NAME)), \
  fprintf ((FILE), "%u\n", (int)(ROUNDED)))

#ifdef HAVE_GAS_LCOMM_WITH_ALIGNMENT
#define ASM_OUTPUT_ALIGNED_LOCAL(FILE, NAME, SIZE, ALIGNMENT) \
( fputs (".lcomm ", (FILE)), \
  assemble_name ((FILE), (NAME)), \
  fprintf ((FILE), "%u,%u\n", (int)(SIZE), (int)(ALIGNMENT) / BITS_PER_UNIT))
#endif
```

/* This is how to output an assembler line
that says to advance the location counter
to a multiple of 2**LOG bytes. */

```
#define ASM_OUTPUT_ALIGN(FILE,LOG) \
if ((LOG)!=0) fprintf ((FILE), "\t.align %d\n", (LOG))
```

/* This is how to store into the string BUF
the symbol_ref name of an internal numbered
label where
PREFIX is the class of label and NUM is the number within the class.
This is suitable for output with `assemble_name'. */

```
#define ASM_GENERATE_INTERNAL_LABEL(BUF,PREFIX,NUMBER) \
  sprintf ((BUF), "%s%d", (PREFIX), (long)(NUMBER))
```

/* The prefix to add to user-visible assembler symbols. */

```
#define USER_LABEL_PREFIX "_"
```

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Foundation, Inc., 51 Franklin Street - Fifth Floor, Boston, MA
02110-1301, USA. */

```
#ifndef __VTV_H__
#define __VTV_H__

/* We could have used an enumeration here but it just makes it more
   difficult for the compiler to generate a call to this. These are
   used as arguments to the function __VLTChangePermission, declared
   below. */
#define __VLTP_READ_ONLY 0
#define __VLTP_READ_WRITE 1

#ifdef __cplusplus
extern "C" void __VLTChangePermission (int);
#else
extern void __VLTChangePermission (int);
#endif

#ifdef BIG_PAGE_SIZE
/* TODO - Replace '4096' below with correct big page size. */
#define VTV_PAGE_SIZE 4096
#else
#ifdef defined(__sun__) && defined(__svr4__) && defined(__sparc__)
#define VTV_PAGE_SIZE 8192
#elif defined(__loongarch_lp64)
/* The page size is configurable by the kernel to
   be 4, 16 or 64 KiB.
   For now, only the default page size of 16KiB is supported. */
#define VTV_PAGE_SIZE 16384
#else
#define VTV_PAGE_SIZE 4096
#endif
#endif
#endif
```



```
#endif /* __VTV_H__ */
```

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Version 3, 29 June 2007

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1.334 reactor-core 3.7.13

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1.335 reactor-netty-http 1.2.12

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1.337 logback-core 1.5.21

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Manifest-Version: 1.0

Created-By: Apache Maven Bundle Plugin 5.1.9

Build-Jdk-Spec: 21

Specification-Title: Logback Core Module

Specification-Version: 1.5

Specification-Vendor: QOS.ch

Implementation-Title: Logback Core Module

Implementation-Version: 1.5.21

Implementation-Vendor: QOS.ch

Bundle-Description: logback-core module

Bundle-DocURL: <http://www.qos.ch>

Bundle-License: <http://www.eclipse.org/legal/epl-v10.html>, <http://www.gnu.org/licenses/old-licenses/lgpl-2.1.html>

Bundle-ManifestVersion: 2

Bundle-Name: Logback Core Module

Bundle-SymbolicName: ch.qos.logback.core

Bundle-Vendor: QOS.ch

Bundle-Version: 1.5.21

Export-Package: ch.qos.logback.core;version="1.5.21";uses="ch.qos.logback.core.encoder,ch.qos.logback.core.filter,ch.qos.logback.core.helpers,ch.qos.logback.core.joran.spi,ch.qos.logback.core.spi,ch.qos.logback.core.status,ch.qos.logback.core.util",ch.qos.logback.core.boolex;version="1.5.21";uses="ch.qos.logback.core.joran.conditional,ch.qos.logback.core.spi",ch.qos.logback.core.encoder;version="1.5.21";uses="ch.qos.logback.core,ch.qos.logback.core.spi",ch.qos.logback.core.filter;version="1.5.21";uses="ch.qos.logback.core.boolex,ch.qos.logback.core.spi",ch.qos.logback.core.helpers;version="1.5.21";uses="ch.qos.logback.core",ch.qos.logback.core.hook;version="1.5.21";uses="ch.qos.logback.core.spi,ch.qos.logback.core.util",ch.qos.logback.core.html;version="1.5.21";uses="ch.qos.logback.core,ch.qos.logback.core.pattern",ch.qos.logback.core.joran;version="1.5.21";uses="ch.qos.logback.core,ch.qos.logback.core.joran.event,ch.qos.logback.core.joran.sanity,ch.qos.logback.core.joran.spi,ch.qos.logback.core.joran.util.beans,ch.qos.logback.core.model,ch.qos.logback.core.model.processor,ch.qos.logback.core.spi,org.xml.sax",ch

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Import-Package: ch.qos.logback.core;version="[1.5,2)",ch.qos.logback.core.boolex;version="[1.5,2)",ch.qos.logback.core.encoder;version="[1.5,2)",ch.qos.logback.core.filter;version="[1.5,2)",ch.qos.logback.core.helpers;version="[1.5,2)",ch.qos.logback.core.hook;version="[1.5,2)",ch.qos.logback.core.joran;version="[1.5,2)",ch.qos.logback.core.joran.action;version="[1.5,2)",ch.qos.logback.core.joran.conditional;version="[1.5,2)",ch.qos.logback.core.joran.event;version="[1.5,2)",ch.qos.logback.core.joran.sanity;version="[1.5,2)",ch.qos.logback.core.joran.spi;version="[1.5,2)",ch.qos.logback.core.joran.util;version="[1.5,2)",ch.qos.logback.core.joran.util.beans;version="[1.5,2)",ch.qos.logback.core.model;version="[1.5,2)",ch.qos.logback.core.model.conditional;version="[1.5,2)",ch.qos.logback.core.model.processor;version="[1.5,2)",ch.qos.logback.core.model.processor.conditional;version="[1.5,2)",ch.qos.logback.core.model.util;version="[1.5,2)",ch.qos.logback.core.net;version="[1.5,2)",ch.qos.logback.core.net.ssl;version="[1.5,2)",ch.qos.logback.core.pattern;version="[1.5,2)",ch.qos.logback.core.pattern.color;version="[1.5,2)",ch.qos.logback.core.pattern.parser;version="[1.5,2)",ch.qos.logback.core.pattern.util;version="[1.5,2)",ch.qos.logback.core.read;version="[1.5,2)",ch.qos.logback.core.recovery;version="[1.5,2)",ch.qos.logback.core.rolling;version="[1.5,2)",ch.qos.logback.core.rolling.helper;version="[1.5,2)",ch.qos.logback.core.sift;version="[1.5,2)",ch.qos.logback.core.spi;version="[1.5,2)",ch.qos.logback.core.status;version="[1.5,2)",ch.qos.logback.core.subst;version="[1.5,2)",ch.qos.logback.core.util;version="[1.5,2)",jakarta.mail;resolution:=optional;version="[2.1,3)",jakarta.mail.internet;resolution:=optional;version="[2.1,3)",jakarta.servlet;resolution:=optional;version="[5.0,6)",jakarta.servlet.http;resolution

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optional;version="[2.4,3)"

Multi-Release: true

Originally-Created-By: Apache Maven Bundle Plugin 5.1.9

Require-Capability: osgi.ee;filter="(&(osgi.ee=JavaSE)(version=11))"

Tool: Bnd-6.3.1.202206071316

Found in path(s):

* /logback-core-1-5-21-jar/META-INF/MANIFEST.MF

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/opt/cola/permits/2764117884_1768818444.9739974/0/logback-core-1-5-21-

jar/ch/qos/logback/core/rolling/FixedWindowRollingPolicy.class afterLastSlash

/opt/cola/permits/2764117884_1768818444.9739974/0/logback-core-1-5-21-

jar/ch/qos/logback/core/rolling/SizeAndTimeBasedFileNameAndTriggeringPolicy.class afterLastSlash

/opt/cola/permits/2764117884_1768818444.9739974/0/logback-core-1-5-21-

jar/ch/qos/logback/core/rolling/TimeBasedRollingPolicy.class afterLastSlash

Found in path(s):

* clientsLock

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

/opt/cola/permits/2764117884_1768818444.9739974/0/logback-core-1-5-21-

jar/ch/qos/logback/core/net/server/ConcurrentServerRunner.class

/opt/cola/permits/2764117884_1768818444.9739974/0/logback-core-1-5-21-

jar/ch/qos/logback/core/rolling/helper/FileFilterUtil.class afterLastSlash

/opt/cola/permits/2764117884_1768818444.9739974/0/logback-core-1-5-21-

jar/ch/qos/logback/core/rolling/helper/SizeAndTimeBasedArchiveRemover.class afterLastSlash

Found in path(s):

*

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1.339 Icms 2.17

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Version 3, 29 June 2007

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1.340 curl 8.17.0-r1

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1.342 ca-certificates 20251003-r0

1.342.1 Available under license :

```
# Contributor: Carlo Landmeter <clandmeter@alpinelinux.org>
# Maintainer: Kevin Daudt <kdaudt@alpinelinux.org>
pkgname=spdx-licenses
pkgver=3.27.0
pkgrel=0
pkgdesc="Various data formats for the SPDX License List"
url="https://spdx.org/"
arch="noarch"
options="!check" # no test suite
license="CC-BY-3.0"
source="license-list-data-$pkgver.tar.gz::https://github.com/spdx/license-list-data/archive/v$pkgver.tar.gz"
builddir="$srcdir/license-list-data-$pkgver"
subpackages="$pkgname-list"

_types="html json rdfa rdft rdfturtle rdfxml template text"

for type in $_types; do
    subpackages="$subpackages $pkgname-$type:_subpkg"
done

package() {
    mkdir -p "$pkgdir"
}

_subpkg() {
    local type=${subpkgname/$pkgname-/}
    pkgdesc="$pkgdesc ($type)"
    install_if="$pkgname=$pkgver-r$pkgrel"
    mkdir -p "$subpkgdir"/usr/share/spdx
    cp -r "$builddir"/$type "$subpkgdir"/usr/share/spdx/
}

list() {
    pkgdesc="$pkgdesc (licence list)"
    mkdir -p "$subpkgdir"/usr/share/spdx
    local i; for i in "$builddir"/text/*.txt;
    do
        local license=${i##*/}
        echo ${license%.*} >> "$subpkgdir"/usr/share/spdx/license.lst
    done
}

sha512sums="
16d59c81e331b54b52639826f83408d98144cdaa70eacc3e8ce35dc3b13992e4794cf7515eb9db200efd390a0c0e35ae9
d4706fbe0ca6a8d236189e88870720c  license-list-data-3.27.0.tar.gz
"
```



```

# Automatically generated by apkbuild-cpan, template 4
# Contributor: Valery Kartel <valery.kartel@gmail.com>
# Maintainer: Celeste <cielesti@protonmail.com>
maintainer="Celeste <cielesti@protonmail.com>"
pkgname=perl-bsd-resource
pkgver=1.2911
pkgrel=11
#_pkgreal is used by apkbuild-cpan to find modules at MetaCpan
_pkgreal=BSD-Resource
pkgdesc="Perl extension implements the BSD process resource limit functions"
url="https://metacpan.org/release/BSD-Resource/"
arch="all"
license="Artistic-2.0 OR LGPL-2.0"
depends="perl"
makedepends="perl-dev"
subpackages="$pkgname-doc"
source="https://cpan.metacpan.org/authors/id/J/JH/JHI/BSD-Resource-$pkgver.tar.gz"
builddir="$srcdir/${_pkgreal}-${pkgver}"

build() {
    export CFLAGS=$(perl -MConfig -E 'say $Config{ccflags}')
    PERL_MM_USE_DEFAULT=1 perl -I. Makefile.PL \
        INSTALLDIRS=vendor \
        NO_PACKLIST=1 \
        NO_PERLLOCAL=1
    make
}

check() {
    export CFLAGS=$(perl -MConfig -E 'say $Config{ccflags}')
    make test
}

package() {
    make DESTDIR="$pkgdir" install
}

sha512sums="
d0032d41c7c0468ed1c6d8f57b885f6cb97a5039d754c8cb60b2067daedaf53bd15fb6561a3d0f828df16dfa5417f663b
8065ba65f4fea16dc9262728b3b6b85
    BSD-Resource-1.2911.tar.gz
"

maintainer="Achill Gilgenast <achill@achill.org>"
pkgname=cargo-license
pkgver=0.7.0
pkgrel=1
pkgdesc="Cargo subcommand to see license of dependencies"
url="https://github.com/onur/cargo-license"

```

```

arch="all"
license="MIT"
makedepends="cargo cargo-auditable"
source="$pkgname-$pkgver.tar.gz::https://crates.io/api/v1/crates/cargo-license/$pkgver/download"

prepare() {
    default_prepare

    cargo fetch --target="$CTARGET" --locked
}

build() {
    cargo auditable build --release --frozen
}

check() {
    cargo test --frozen
}

package() {
    install -Dm755 target/release/cargo-license -t "$pkgdir"/usr/bin
}

sha512sums="
9b3f0ead35515e85ef4074ebdbdbe5b9ec8bcaec244fabe414e2ed60f90366e8b1692d8bf7ffe4c07d778e60d94bab86bc
0c8be9823232e9c360a38bc65e9c5a cargo-license-0.7.0.tar.gz
"

#!/sbin/openrc-run

command="/usr/libexec/xdg-permission-store"
supervisor=supervise-daemon
command_args="--replace $command_args"
error_logger="logger -t '${RC_SVCNAME}' -p daemon.error"

depend() {
    need dbus
}

# Contributor: Maxim Karasev <begs@disroot.org>
# Maintainer: mio <miyopan@e.email>
pkgname=bsd-games
pkgver=3.3
pkgrel=2
pkgdesc="traditional text mode games from BSD"
url="https://bsd-games.sourceforge.io/"
arch="all"
license="BSD-3-Clause"
install="$pkgname.post-install"
makedepends="ncurses-dev coreutils" # configure causes busybox expr error

```

```

subpackages="$pkgname-doc"
source="https://sourceforge.net/projects/bsd-games/files/bsd-games-$pkgver.tar.gz
0001-bsd-games-scores-dir.patch
"

options="!check" # no tests

build() {
# some GNU autoconf options are ignored, but it works
./configure \
--build=$CBUILD \
--host=$CHOST \
--prefix=/usr \
--sysconfdir=/etc \
--mandir=/usr/share/man \
--scoredir=/usr/share/$pkgname
make
}

package() {
make DESTDIR="$pkgdir" install
install -Dm644 LICENSE "$pkgdir"/usr/share/licenses/bsd-games/LICENSE
}

sha512sums="
aaf36d09d4fe68514a5c279063d7e77a9a9a84c447037cba974b29faa07eb80c2aab2379d0699c196b5c27ffe1b2bb2c6
8d3390143e0e62d5e3d210ccfb61294
bsd-games-3.3.tar.gz
e1def0d4835a877242c4173fae862e278a7858738e0bacacbb045a42bcabec2aa7c72d000bbd2421ce35fe66cdc1f52c0
577b7e278029ca5ed50f7aab22319f6 0001-bsd-games-scores-dir.patch
"

```

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SOFTWARE.

Maintainer: Natanael Copa <ncopa@alpinelinux.org>

pkgname=libart-lgpl

pkgver=2.3.21

pkgrel=8

pkgdesc="A library for high-performance 2D graphics"

url="https://www.levien.com/libart/"

arch="all"

options="!check" # No test suite.

license="LGPL-2.0-or-later"

subpackages="\$pkgname-dev"

source="https://download.gnome.org/sources/libart-lgpl/2.3/libart-lgpl-\$pkgver.tar.bz2"

"

builddir="\$srcdir"/libart-lgpl-\$pkgver

```
prepare() {  
    update_config_sub  
    default_prepare  
}
```

```
build() {  
    ./configure \  
        --build=$CBUILD \  
        --host=$CHOST \  
        --prefix=/usr  
    make  
}
```

```
package() {  
    make DESTDIR="$pkgdir" install  
}
```

sha512sums="8a632a6a4da59e5e8c02ec2f5a57e36d182b325b46513765425e5f171ff9ae326af1b133725beba28f7e7
6654309e001aee9bace727b5b4c8589405256a3c020 libart-lgpl-2.3.21.tar.bz2"

mini_sendmail - accept email on behalf of real sendmail

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Contributor: Patrycja Rosa <alpine@ptrcnull.me>

Maintainer: Patrycja Rosa <alpine@ptrcnull.me>

pkgname=bsd-compat-headers

pkgver=0.7.2

pkgrel=6

pkgdesc="BSD compatibility headers (cdefs, queue, tree)"

url="https://gitlab.alpinelinux.org/alpine/aports"

arch="noarch"

license="BSD-2-Clause AND BSD-3-Clause"

source="

cdefs.h

queue.h

tree.h

"

builddir="\$srcdir"

options="!check" # just headers

package() {

mkdir -p "\$pkgdir"

install -Dm644 -t "\$pkgdir"/usr/include/sys \

cdefs.h queue.h tree.h

}

sha512sums="

37c8fc73c7aea7b490f7850927e2bb91d12137c9e59e22c084146d515696dbc7973b5de92f4c987ba080dd2502ba8312
7006442c3f019b6447a620c0cae73178 cdefs.h

2f0d5e6e4dc3350285cf17009265dddcbe12431c111868eea39bc8cb038ab7c1f2acacbb21735c4e9d4a1fd106a8fc0f86
11ea33987d4faba37dde5ce6da0750 queue.h

d9ac210d81feb8ad2655bc80fb065d3fe20ae4417b32b4a1711e6738a4870140005c13373b5d1846ef3ce5ae6da45f2da
cef2092881eded0a2e94f6a07752ef3 tree.h

"

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The Kohonen neural network code for color optimization was written by Anthony Dekker.

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The X-Spline code was written Carole Blanc (blanc@labri.u-bordeaux.fr) and Christophe Schlick (schlick@labri.u-bordeaux.fr) starting from an initial implementation done by C. Feuille, S. Grosbois, L. Maziere and L. Minihot as a student practice (Universite Bordeaux, France). For additional information about X-splines, see:
"X-Splines: A Spline Model Designed for the End User" by C. Blanc and C. Schlick, Proceedings of SIGGRAPH'95
<http://dept-info.labri.u-bordeaux.fr/~schlick/DOC/sig1.html>
/* \$NetBSD: queue.h,v 1.70 2015/11/02 15:21:23 christos Exp \$ */

```
/*  
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*

* @(#)queue.h 8.5 (Berkeley) 8/20/94

*/

#ifndef _SYS_QUEUE_H_

#define _SYS_QUEUE_H_

/*

* This file defines five types of data structures: singly-linked lists,
* lists, simple queues, tail queues, and circular queues.

*

* A singly-linked list is headed by a single forward pointer. The
* elements are singly linked for minimum space and
* pointer manipulation
* overhead at the expense of O(n) removal for arbitrary elements. New
* elements can be added to the list after an existing element or at the
* head of the list. Elements being removed from the head of the list
* should use the explicit macro for this purpose for optimum
* efficiency. A singly-linked list may only be traversed in the forward
* direction. Singly-linked lists are ideal for applications with large
* datasets and few or no removals or for implementing a LIFO queue.

*

* A list is headed by a single forward pointer (or an array of forward
* pointers for a hash table header). The elements are doubly linked
* so that an arbitrary element can be removed without a need to
* traverse the list. New elements can be added to the list before
* or after an existing element or at the head of the list. A list
* may only be traversed in the forward direction.

*

* A simple queue is headed by a pair of pointers, one the head of the
* list and the

other to the tail of the list. The elements are singly

* linked to save space, so elements can only be removed from the
* head of the list. New elements can be added to the list after
* an existing element, at the head of the list, or at the end of the
* list. A simple queue may only be traversed in the forward direction.

*

* A tail queue is headed by a pair of pointers, one to the head of the

- * list and the other to the tail of the list. The elements are doubly
- * linked so that an arbitrary element can be removed without a need to
- * traverse the list. New elements can be added to the list before or
- * after an existing element, at the head of the list, or at the end of
- * the list. A tail queue may be traversed in either direction.
- *
- * A circle queue is headed by a pair of pointers, one to the head of the
- * list and the other to the tail of the list. The elements are doubly
- * linked so that an arbitrary element can be removed without a need to
- * traverse the list. New elements
- can be added to the list before or after
- * an existing element, at the head of the list, or at the end of the list.
- * A circle queue may be traversed in either direction, but has a more
- * complex end of list detection.
- *
- * For details on the use of these macros, see the queue(3) manual page.
- */

```
/*
 * Include the definition of NULL only on NetBSD because sys/null.h
 * is not available elsewhere. This conditional makes the header
 * portable and it can simply be dropped verbatim into any system.
 * The caveat is that on other systems some other header
 * must provide NULL before the macros can be used.
 */
```

```
#ifdef __NetBSD__
#include <sys/null.h>
#endif

#if defined(QEUEDEDEBUG)
# if defined(_KERNEL)
# define QEUEDEDEBUG_ABORT(...) panic(__VA_ARGS__)
# else
# include <err.h>
# define QEUEDEDEBUG_ABORT(...) err(1, __VA_ARGS__)
# endif
#endif
```

```
/*
 * Singly-linked List definitions.
 */

#define SLIST_HEAD(name, type) \
struct name { \
    struct type *slh_first; /* first \
    element */ \
}

#define SLIST_HEAD_INITIALIZER(head) \
```



```

{ NULL }

#define SLIST_ENTRY(type)  \
struct {  \
    struct type *sle_next; /* next element */  \
}

/*
 * Singly-linked List access methods.
 */
#define SLIST_FIRST(head) ((head)->slh_first)
#define SLIST_END(head) NULL
#define SLIST_EMPTY(head) ((head)->slh_first == NULL)
#define SLIST_NEXT(elm, field) ((elm)->field.sle_next)

#define SLIST_FOREACH(var, head, field)  \
for((var) = (head)->slh_first;  \
    (var) != SLIST_END(head);  \
    (var) = (var)->field.sle_next)

#define SLIST_FOREACH_SAFE(var, head, field, tvar)  \
for ((var) = SLIST_FIRST((head));  \
    (var) != SLIST_END(head) &&  \
    ((tvar) = SLIST_NEXT((var), field), 1);  \
    (var) = (tvar))

/*
 * Singly-linked List functions.
 */
#define SLIST_INIT(head) do {  \
    (head)->slh_first = SLIST_END(head);  \
} while (/*CONSTCOND*/0)

#define SLIST_INSERT_AFTER(slistelm, elm, field) do {  \
    (elm)->field.sle_next = (slistelm)->field.sle_next;  \
    (slistelm)->field.sle_next  \
    = (elm);  \
} while (/*CONSTCOND*/0)

#define SLIST_INSERT_HEAD(head, elm, field) do {  \
    (elm)->field.sle_next = (head)->slh_first;  \
    (head)->slh_first = (elm);  \
} while (/*CONSTCOND*/0)

#define SLIST_REMOVE_AFTER(slistelm, field) do {  \
    (slistelm)->field.sle_next =  \
        SLIST_NEXT(SLIST_NEXT((slistelm), field), field);  \
} while (/*CONSTCOND*/0)

```

```

#define SLIST_REMOVE_HEAD(head, field) do { \
    (head)->slh_first = (head)->slh_first->field.sle_next; \
} while (/*CONSTCOND*/0)

#define SLIST_REMOVE(head, elm, type, field) do { \
    if ((head)->slh_first == (elm)) { \
        SLIST_REMOVE_HEAD((head), field); \
    } \
    else { \
        struct type *curelm = (head)->slh_first; \
        while(curelm->field.sle_next != (elm)) \
            curelm = curelm->field.sle_next; \
        curelm->field.sle_next = \
            curelm->field.sle_next->field.sle_next; \
    } \
} while (/*CONSTCOND*/0)

/*
 * List definitions.
 */
#define LIST_HEAD(name, type) \
struct name { \
    struct type *lh_first; /* first element */ \
}

#define LIST_HEAD_INITIALIZER(head) \
{ NULL }

#define LIST_ENTRY(type) \
struct { \
    struct type *le_next; /* next element */ \
    struct type **le_prev; /* address of previous next element */ \
}

/*
 * List access methods.
 */
#define LIST_FIRST(head) ((head)->lh_first)
#define LIST_END(head) NULL
#define LIST_EMPTY(head) ((head)->lh_first == LIST_END(head))
#define LIST_NEXT(elm, field) ((elm)->field.le_next)

#define LIST_FOREACH(var, head, field) \
for ((var) = ((head)->lh_first); \
     (var) != LIST_END(head); \
     (var) = ((var)->field.le_next))

```

```

#define LIST_FOREACH_SAFE(var, head, field, tvar) \
for ((var) = LIST_FIRST((head)); \
    (var) != LIST_END(head) && \
    ((tvar) = LIST_NEXT((var), field), 1); \
    (var) = (tvar))

#define LIST_MOVE(head1, head2) do { \
LIST_INIT((head2)); \
if (!LIST_EMPTY((head1))) \
{ \
(head2)->lh_first = (head1)->lh_first; \
LIST_INIT((head1)); \
} \
} while (/*CONSTCOND*/0)

/*
 * List functions.
 */

#if defined(QUEUEDEBUG)
#define QUEUEDEBUG_LIST_INSERT_HEAD(head, elm, field) \
if ((head)->lh_first && \
    (head)->lh_first->field.le_prev != &(head)->lh_first) \
QUEUEDEBUG_ABORT("LIST_INSERT_HEAD %p %s:%d", (head), \
    __FILE__, __LINE__);
#define QUEUEDEBUG_LIST_OP(elm, field) \
if ((elm)->field.le_next && \
    (elm)->field.le_next->field.le_prev != \
    &(elm)->field.le_next) \
QUEUEDEBUG_ABORT("LIST_* forw %p %s:%d", (elm), \
    __FILE__, __LINE__); \
if (*(elm)->field.le_prev != (elm)) \
QUEUEDEBUG_ABORT("LIST_* back %p %s:%d", (elm), \
    __FILE__, __LINE__);
#define QUEUEDEBUG_LIST_POSTREMOVE(elm, field) \
(elm)->field.le_next = (void *)1L; \
(elm)->field.le_prev = (void *)1L;
#else
#define QUEUEDEBUG_LIST_INSERT_HEAD(head, elm, field)
#define QUEUEDEBUG_LIST_OP(elm, field)
#define QUEUEDEBUG_LIST_POSTREMOVE(elm, field)
#endif

#define LIST_INIT(head) do { \
(head)->lh_first = LIST_END(head); \
} while (/*CONSTCOND*/0)

```

```

#define LIST_INSERT_AFTER(listelm, elm, field) do { \
    QUEUEDEBUG_LIST_OP((listelm), field) \
    if (((elm)->field.le_next = (listelm)->field.le_next) != \
        LIST_END(head)) \
        (listelm)->field.le_next->field.le_prev = \
            &(elm)->field.le_next; \
    (listelm)->field.le_next = (elm); \
    (elm)->field.le_prev = &(listelm)->field.le_next; \
} while (/*CONSTCOND*/0)

#define LIST_INSERT_BEFORE(listelm, elm, field) do { \
    QUEUEDEBUG_LIST_OP((listelm), field) \
    (elm)->field.le_prev = (listelm)->field.le_prev; \
    (elm)->field.le_next = (listelm); \
    *(listelm)->field.le_prev = (elm); \
    (listelm)->field.le_prev = &(elm)->field.le_next; \
} while (/*CONSTCOND*/0)

#define LIST_INSERT_HEAD(head, elm, field) do { \
    QUEUEDEBUG_LIST_INSERT_HEAD((head), (elm), field) \
    if (((elm)->field.le_next \
        = (head)->lh_first) != LIST_END(head)) \
        (head)->lh_first->field.le_prev = &(elm)->field.le_next; \
    (head)->lh_first = (elm); \
    (elm)->field.le_prev = &(head)->lh_first; \
} while (/*CONSTCOND*/0)

#define LIST_REMOVE(elm, field) do { \
    QUEUEDEBUG_LIST_OP((elm), field) \
    if ((elm)->field.le_next != NULL) \
        (elm)->field.le_next->field.le_prev = \
            (elm)->field.le_prev; \
    *(elm)->field.le_prev = (elm)->field.le_next; \
    QUEUEDEBUG_LIST_POSTREMOVE((elm), field) \
} while (/*CONSTCOND*/0)

#define LIST_REPLACE(elm, elm2, field) do { \
    if (((elm2)->field.le_next = (elm)->field.le_next) != NULL) \
        (elm2)->field.le_next->field.le_prev = \
            &(elm2)->field.le_next; \
    (elm2)->field.le_prev = (elm)->field.le_prev; \
    *(elm2)->field.le_prev = (elm2); \
    QUEUEDEBUG_LIST_POSTREMOVE((elm), field) \
} while (/*CONSTCOND*/0)

/*
 * Simple queue definitions.
 */

```

```

#define SIMPLEQ_HEAD(name, type)  \
struct name {                    \
    struct                        \
    type *sqh_first; /* first element */ \
    struct type **sqh_last; /* addr of last next element */ \
}

#define SIMPLEQ_HEAD_INITIALIZER(head)  \
{ NULL, &(head).sqh_first }

#define SIMPLEQ_ENTRY(type)  \
struct {                      \
    struct type *sqe_next; /* next element */ \
}

/*
 * Simple queue access methods.
 */
#define SIMPLEQ_FIRST(head) ((head)->sqh_first)
#define SIMPLEQ_END(head) NULL
#define SIMPLEQ_EMPTY(head) ((head)->sqh_first == SIMPLEQ_END(head))
#define SIMPLEQ_NEXT(elm, field) ((elm)->field.sqe_next)

#define SIMPLEQ_FOREACH(var, head, field)  \
for ((var) = ((head)->sqh_first);  \
     (var) != SIMPLEQ_END(head);  \
     (var) = ((var)->field.sqe_next))

#define SIMPLEQ_FOREACH_SAFE(var, head, field, next)  \
for ((var) = ((head)->sqh_first);  \
     (var) != SIMPLEQ_END(head) &&  \
     ((next = ((var)->field.sqe_next)), 1);  \
     (var) = (next))

/*
 * Simple queue functions.
 */
#define SIMPLEQ_INIT(head) do {  \
    (head)->sqh_first = NULL;  \
    (head)->sqh_last  \
    = &(head)->sqh_first;  \
} while (/*CONSTCOND*/0)

#define SIMPLEQ_INSERT_HEAD(head, elm, field) do {  \
    if (((elm)->field.sqe_next = (head)->sqh_first) == NULL) \
        (head)->sqh_last = &(elm)->field.sqe_next;  \
    (head)->sqh_first = (elm);  \
} while (/*CONSTCOND*/0)

```

```

#define SIMPLEQ_INSERT_TAIL(head, elm, field) do { \
    (elm)->field.sqe_next = NULL; \
    *(head)->sqh_last = (elm); \
    (head)->sqh_last = &(elm)->field.sqe_next; \
} while (/*CONSTCOND*/0)

#define SIMPLEQ_INSERT_AFTER(head, listelm, elm, field) do { \
    if (((elm)->field.sqe_next = (listelm)->field.sqe_next) == NULL) \
        (head)->sqh_last = &(elm)->field.sqe_next; \
    (listelm)->field.sqe_next = (elm); \
} while (/*CONSTCOND*/0)

#define SIMPLEQ_REMOVE_HEAD(head, field) do { \
    if (((head)->sqh_first = (head)->sqh_first->field.sqe_next) == NULL) \
        (head)->sqh_last = &(head)->sqh_first; \
} while (/*CONSTCOND*/0)

#define SIMPLEQ_REMOVE_AFTER(head, elm, field) do { \
    if \
        (((elm)->field.sqe_next = (elm)->field.sqe_next->field.sqe_next) \
         == NULL) \
        (head)->sqh_last = &(elm)->field.sqe_next; \
} while (/*CONSTCOND*/0)

#define SIMPLEQ_REMOVE(head, elm, type, field) do { \
    if ((head)->sqh_first == (elm)) { \
        SIMPLEQ_REMOVE_HEAD((head), field); \
    } else { \
        struct type *curelm = (head)->sqh_first; \
        while (curelm->field.sqe_next != (elm)) \
            curelm = curelm->field.sqe_next; \
        if ((curelm->field.sqe_next = \
            curelm->field.sqe_next->field.sqe_next) == NULL) \
            (head)->sqh_last = &(curelm)->field.sqe_next; \
    } \
} while (/*CONSTCOND*/0)

#define SIMPLEQ_CONCAT(head1, head2) do { \
    if (!SIMPLEQ_EMPTY((head2))) { \
        *(head1)->sqh_last = (head2)->sqh_first; \
        (head1)->sqh_last = (head2)->sqh_last; \
        SIMPLEQ_INIT((head2)); \
    } \
} while (/*CONSTCOND*/0)

#define SIMPLEQ_LAST(head, type, field) \
    (SIMPLEQ_EMPTY((head)) ? \

```

```

NULL :    \
        ((struct type
*)(void *) \
        ((char *)((head)->sqh_last) - offsetof(struct type, field))))

/*
 * Tail queue definitions.
 */
#define _TAILQ_HEAD(name, type, qual)    \
struct name {                            \
    qual type *tqh_first; /* first element */ \
    qual type *qual *tqh_last; /* addr of last next element */ \
}
#define TAILQ_HEAD(name, type) _TAILQ_HEAD(name, struct type,)

#define TAILQ_HEAD_INITIALIZER(head)    \
{ TAILQ_END(head), &(head).tqh_first }

#define _TAILQ_ENTRY(type, qual)    \
struct {                             \
    qual type *tqe_next; /* next element */ \
    qual type *qual *tqe_prev; /* address of previous next element */ \
}
#define TAILQ_ENTRY(type) _TAILQ_ENTRY(struct type,)

/*
 * Tail queue access methods.
 */
#define TAILQ_FIRST(head) ((head)->tqh_first)
#define TAILQ_END(head) (NULL)
#define TAILQ_NEXT(elm, field) ((elm)->field.tqe_next)
#define TAILQ_LAST(head, headname) \
    (((struct headname *) (void *)((head)->tqh_last))->tqh_last)
#define TAILQ_PREV(elm, headname, field) \
    (((struct headname *) (void *)((elm)->field.tqe_prev))->tqh_last)
#define TAILQ_EMPTY(head) (TAILQ_FIRST(head) == TAILQ_END(head))

#define TAILQ_FOREACH(var, head, field)    \
for ((var) = (head)->tqh_first;    \
     (var) != TAILQ_END(head);    \
     (var) = ((var)->field.tqe_next))

#define TAILQ_FOREACH_SAFE(var, head, field, next)    \
for ((var) = (head)->tqh_first;    \
     (var) != TAILQ_END(head) &&    \
     ((next) = TAILQ_NEXT(var, field), 1); (var) = (next))

```

```

#define TAILQ_FOREACH_REVERSE(var, head, headname, field) \
for ((var) = TAILQ_LAST((head), headname); \
    (var) != TAILQ_END(head); \
    (var) = TAILQ_PREV((var), headname, field))

#define TAILQ_FOREACH_REVERSE_SAFE(var, head, headname, field, prev) \
for ((var) = TAILQ_LAST((head), headname); \
    (var) != TAILQ_END(head) && \
    ((prev) = TAILQ_PREV((var), headname, field), 1); (var) = (prev))

/*
 * Tail queue functions.
 */
#if defined(QUEUEDEBUG)
#define QUEUEDEBUG_TAILQ_INSERT_HEAD(head, \
    elm, field) \
if ((head)->tqh_first && \
    (head)->tqh_first->field.tqe_prev != &(head)->tqh_first) \
    QUEUEDEBUG_ABORT("TAILQ_INSERT_HEAD %p %s:%d", (head), \
        __FILE__, __LINE__);
#define QUEUEDEBUG_TAILQ_INSERT_TAIL(head, elm, field) \
if (*(head)->tqh_last != NULL) \
    QUEUEDEBUG_ABORT("TAILQ_INSERT_TAIL %p %s:%d", (head), \
        __FILE__, __LINE__);
#define QUEUEDEBUG_TAILQ_OP(elm, field) \
if ((elm)->field.tqe_next && \
    (elm)->field.tqe_next->field.tqe_prev != \
    &(elm)->field.tqe_next) \
    QUEUEDEBUG_ABORT("TAILQ_* forw %p %s:%d", (elm), \
        __FILE__, __LINE__); \
if (*(elm)->field.tqe_prev != (elm)) \
    QUEUEDEBUG_ABORT("TAILQ_* back %p %s:%d", (elm), \
        __FILE__, __LINE__);
#define QUEUEDEBUG_TAILQ_PREREMOVE(head, elm, field) \
if ((elm)->field.tqe_next == NULL && \
    (head)->tqh_last != &(elm)->field.tqe_next) \
    QUEUEDEBUG_ABORT("TAILQ_PREREMOVE head %p elm %p %s:%d", \
        (head), (elm), __FILE__, \
        __LINE__);
#define QUEUEDEBUG_TAILQ_POSTREMOVE(elm, field) \
(elm)->field.tqe_next = (void *)1L; \
(elm)->field.tqe_prev = (void *)1L;
#else
#define QUEUEDEBUG_TAILQ_INSERT_HEAD(head, elm, field)
#define QUEUEDEBUG_TAILQ_INSERT_TAIL(head, elm, field)
#define QUEUEDEBUG_TAILQ_OP(elm, field)
#define QUEUEDEBUG_TAILQ_PREREMOVE(head, elm, field)

```



```

#define QUEUEDEBUG_TAILQ_POSTREMOVE(elm, field)
#endif

#define TAILQ_INIT(head) do { \
    (head)->tqh_first = TAILQ_END(head); \
    (head)->tqh_last = &(head)->tqh_first; \
} while (/*CONSTCOND*/0)

#define TAILQ_INSERT_HEAD(head, elm, field) do { \
    QUEUEDEBUG_TAILQ_INSERT_HEAD((head), (elm), field) \
    if (((elm)->field.tqe_next = (head)->tqh_first) != TAILQ_END(head)) \
        (head)->tqh_first->field.tqe_prev = \
            &(elm)->field.tqe_next; \
    else \
        (head)->tqh_last = &(elm)->field.tqe_next; \
    (head)->tqh_first = (elm); \
    (elm)->field.tqe_prev = &(head)->tqh_first; \
} while (/*CONSTCOND*/0)

#define TAILQ_INSERT_TAIL(head, \
    elm, field) do { \
    QUEUEDEBUG_TAILQ_INSERT_TAIL((head), (elm), field) \
    (elm)->field.tqe_next = TAILQ_END(head); \
    (elm)->field.tqe_prev = (head)->tqh_last; \
    *(head)->tqh_last = (elm); \
    (head)->tqh_last = &(elm)->field.tqe_next; \
} while (/*CONSTCOND*/0)

#define TAILQ_INSERT_AFTER(head, listelm, elm, field) do { \
    QUEUEDEBUG_TAILQ_OP((listelm), field) \
    if (((elm)->field.tqe_next = (listelm)->field.tqe_next) != \
        TAILQ_END(head)) \
        (elm)->field.tqe_next->field.tqe_prev = \
            &(elm)->field.tqe_next; \
    else \
        (head)->tqh_last = &(elm)->field.tqe_next; \
    (listelm)->field.tqe_next = (elm); \
    (elm)->field.tqe_prev = &(listelm)->field.tqe_next; \
} while (/*CONSTCOND*/0)

#define TAILQ_INSERT_BEFORE(listelm, elm, field) do { \
    QUEUEDEBUG_TAILQ_OP((listelm), field) \
    (elm)->field.tqe_prev = (listelm)->field.tqe_prev; \
    (elm)->field.tqe_next = (listelm); \
    *(listelm)->field.tqe_prev = (elm); \
    (listelm)->field.tqe_prev \
        = &(elm)->field.tqe_next; \
} while (/*CONSTCOND*/0)

```

```
#define TAILQ_REMOVE(head, elm, field) do { \
    QUEUEDEBUG_TAILQ_PREREMOVE((head), (elm), field) \
    QUEUEDEBUG_TAILQ_OP((elm), field) \
    if (((elm)->field.tqe_next) != TAILQ_END(head)) \
        (elm)->field.tqe_next->field.tqe_prev = \
            (elm)->field.tqe_prev; \
    else \
        (head)->tqh_last = (elm)->field.tqe_prev; \
        *(elm)->field.tqe_prev = (elm)->field.tqe_next; \
    QUEUEDEBUG_TAILQ_POSTREMOVE((elm), field); \
} while (/*CONSTCOND*/0)
```

```
#define TAILQ_REPLACE(head, elm, elm2, field) do { \
    if (((elm2)->field.tqe_next = (elm)->field.tqe_next) != \
        TAILQ_END(head)) \
        (elm2)->field.tqe_next->field.tqe_prev = \
            &(elm2)->field.tqe_next; \
    else \
        (head)->tqh_last = &(elm2)->field.tqe_next; \
        (elm2)->field.tqe_prev = (elm)->field.tqe_prev; \
        *(elm2)->field.tqe_prev = (elm2); \
    QUEUEDEBUG_TAILQ_POSTREMOVE((elm), \
        field); \
} while (/*CONSTCOND*/0)
```

```
#define TAILQ_CONCAT(head1, head2, field) do { \
    if (!TAILQ_EMPTY(head2)) { \
        *(head1)->tqh_last = (head2)->tqh_first; \
        (head2)->tqh_first->field.tqe_prev = (head1)->tqh_last; \
        (head1)->tqh_last = (head2)->tqh_last; \
        TAILQ_INIT((head2)); \
    } \
} while (/*CONSTCOND*/0)
```

/*

* Singly-linked Tail queue declarations.

*/

```
#define STAILQ_HEAD(name, type) \
struct name { \
    struct type *stqh_first; /* first element */ \
    struct type **stqh_last; /* addr of last next element */ \
}
```

```
#define STAILQ_HEAD_INITIALIZER(head) \
{ NULL, &(head).stqh_first }
```

```
#define STAILQ_ENTRY(type) \
struct type {
```

```

struct {
    \
    struct type *stqe_next; /* next element */ \
}

/*
 * Singly-linked Tail queue access methods.
 */
#define STAILQ_FIRST(head) ((head)->stqh_first)
#define STAILQ_END(head) NULL
#define STAILQ_NEXT(elm, field) ((elm)->field.stqe_next)
#define STAILQ_EMPTY(head) (STAILQ_FIRST(head)
    == STAILQ_END(head))

/*
 * Singly-linked Tail queue functions.
 */
#define STAILQ_INIT(head) do { \
    (head)->stqh_first = NULL; \
    (head)->stqh_last = &(head)->stqh_first; \
} while (/*CONSTCOND*/0)

#define STAILQ_INSERT_HEAD(head, elm, field) do { \
    if (((elm)->field.stqe_next = (head)->stqh_first) == NULL) \
        (head)->stqh_last = &(elm)->field.stqe_next; \
    (head)->stqh_first = (elm); \
} while (/*CONSTCOND*/0)

#define STAILQ_INSERT_TAIL(head, elm, field) do { \
    (elm)->field.stqe_next = NULL; \
    *(head)->stqh_last = (elm); \
    (head)->stqh_last = &(elm)->field.stqe_next; \
} while (/*CONSTCOND*/0)

#define STAILQ_INSERT_AFTER(head, listelm, elm, field) do { \
    if (((elm)->field.stqe_next = (listelm)->field.stqe_next) == NULL) \
        (head)->stqh_last = &(elm)->field.stqe_next; \
    (listelm)->field.stqe_next = (elm); \
} while (/*CONSTCOND*/0)

#define STAILQ_REMOVE_HEAD(head, field) do { \
    if (((head)->stqh_first = (head)->stqh_first->field.stqe_next) \
        == NULL) \
        (head)->stqh_last = &(head)->stqh_first; \
} while (/*CONSTCOND*/0)

#define STAILQ_REMOVE(head, elm, type, field) do { \
    if ((head)->stqh_first == (elm)) { \
        STAILQ_REMOVE_HEAD((head), field); \
    }

```

```

} else { \
    struct type *curelm = (head)->stqh_first; \
    while (curelm->field.stqe_next != (elm)) \
        curelm = curelm->field.stqe_next; \
    if ((curelm->field.stqe_next = \
        curelm->field.stqe_next->field.stqe_next) == NULL) \
        (head)->stqh_last = &(curelm)->field.stqe_next; \
} \
} while (/*CONSTCOND*/0)

#define STAILQ_FOREACH(var, head, field) \
    for ((var) = ((head)->stqh_first); \
        (var); \
        (var) = ((var)->field.stqe_next))

#define STAILQ_FOREACH_SAFE(var, head, field, tvar) \
    for ((var) = STAILQ_FIRST((head)); \
        (var) && ((tvar) = STAILQ_NEXT((var), field), 1); \
        (var) = (tvar))

#define STAILQ_CONCAT(head1, head2) do { \
    if (!STAILQ_EMPTY((head2))) { \
        *(head1)->stqh_last \
        = (head2)->stqh_first; \
        (head1)->stqh_last = (head2)->stqh_last; \
        STAILQ_INIT((head2)); \
    } \
} while (/*CONSTCOND*/0)

#define STAILQ_LAST(head, type, field) \
    (STAILQ_EMPTY((head)) ? \
    NULL : \
    ((struct type *) (void *) \
    ((char *)((head)->stqh_last) - offsetof(struct type, field))))

#ifdef _KERNEL
/*
 * Circular queue definitions. Do not use. We still keep the macros
 * for compatibility but because of pointer aliasing issues their use
 * is discouraged!
 */

/*
 * __launder_type(): We use this ugly hack to work around the the compiler
 * noticing that two types may not alias each other and elide tests in code.
 * We hit this in the CIRCLEQ macros when comparing 'struct name *' and
 * 'struct type *' (see CIRCLEQ_HEAD()). Modern compilers (such as GCC

```

```

* 4.8) declare these comparisons as always false, causing the code to
* not run as designed.
*
* This hack is only to be used for comparisons and thus can be fully const.
* Do not use for assignment.
*
* If we ever choose to change the ABI of the CIRCLEQ macros, we could fix
* this by changing the head/tail sentinel values, but see the note above
* this one.
*/

static __inline const void * __launder_type(const void *);
static __inline const void *
__launder_type(const void *__x)
{
    __asm __volatile("" : "+r" (__x));
    return __x;
}

#if defined(QUEUEDEBUG)
#define QUEUEDEBUG_CIRCLEQ_HEAD(head, field) \
    if ((head)->cqh_first != CIRCLEQ_ENDC(head) && \
        (head)->cqh_first->field.cqe_prev != CIRCLEQ_ENDC(head)) \
        QUEUEDEBUG_ABORT("CIRCLEQ head forw %p %s:%d", (head), \
            __FILE__, __LINE__); \
    if ((head)->cqh_last != CIRCLEQ_ENDC(head) && \
        (head)->cqh_last->field.cqe_next != CIRCLEQ_ENDC(head)) \
        QUEUEDEBUG_ABORT("CIRCLEQ head back %p %s:%d", (head), \
            __FILE__, __LINE__);
#define QUEUEDEBUG_CIRCLEQ_ELM(head, elm, field) \
    if ((elm)->field.cqe_next == CIRCLEQ_ENDC(head)) { \
        if ((head)->cqh_last != (elm)) \
            QUEUEDEBUG_ABORT("CIRCLEQ \
elm last %p %s:%d", \
                (elm), __FILE__, __LINE__); \
    } else { \
        if ((elm)->field.cqe_next->field.cqe_prev != (elm)) \
            QUEUEDEBUG_ABORT("CIRCLEQ elm forw %p %s:%d", \
                (elm), __FILE__, __LINE__); \
    } \
    if ((elm)->field.cqe_prev == CIRCLEQ_ENDC(head)) { \
        if ((head)->cqh_first != (elm)) \
            QUEUEDEBUG_ABORT("CIRCLEQ elm first %p %s:%d", \
                (elm), __FILE__, __LINE__); \
    } else { \
        if ((elm)->field.cqe_prev->field.cqe_next != (elm)) \
            QUEUEDEBUG_ABORT("CIRCLEQ elm prev %p %s:%d", \
                (elm), __FILE__, __LINE__); \
    }

```

```

#define QUEUEDEBUG_CIRCLEQ_POSTREMOVE(elm, field) \
    (elm)->field.cqe_next = (void *)1L; \
    (elm)->field.cqe_prev = (void *)1L;
#else
#define QUEUEDEBUG_CIRCLEQ_HEAD(head, field)
#define QUEUEDEBUG_CIRCLEQ_ELM(head, elm, field)
#define QUEUEDEBUG_CIRCLEQ_POSTREMOVE(elm, field)
#endif

#define CIRCLEQ_HEAD(name, type) \
    struct name { \
        struct type *cqh_first; /* \
        first element */ \
        struct type *cqh_last; /* last element */ \
    }

#define CIRCLEQ_HEAD_INITIALIZER(head) \
    { CIRCLEQ_END(&head), CIRCLEQ_END(&head) }

#define CIRCLEQ_ENTRY(type) \
    struct { \
        struct type *cqe_next; /* next element */ \
        struct type *cqe_prev; /* previous element */ \
    }

/*
 * Circular queue functions.
 */
#define CIRCLEQ_INIT(head) do { \
    (head)->cqh_first = CIRCLEQ_END(head); \
    (head)->cqh_last = CIRCLEQ_END(head); \
} while (/*CONSTCOND*/0)

#define CIRCLEQ_INSERT_AFTER(head, listelm, elm, field) do { \
    QUEUEDEBUG_CIRCLEQ_HEAD((head), field) \
    QUEUEDEBUG_CIRCLEQ_ELM((head), (listelm), field) \
    (elm)->field.cqe_next = (listelm)->field.cqe_next; \
    (elm)->field.cqe_prev = (listelm); \
    if ((listelm)->field.cqe_next == CIRCLEQ_ENDC(head)) \
        (head)->cqh_last = (elm); \
    else \
        (listelm)->field.cqe_next->field.cqe_prev = (elm); \
    (listelm)->field.cqe_next = (elm); \
} while (/*CONSTCOND*/0)

#define CIRCLEQ_INSERT_BEFORE(head, \
    listelm, elm, field) do { \
    QUEUEDEBUG_CIRCLEQ_HEAD((head), field) \

```

```

QUEUEDEBUG_CIRCLEQ_ELM((head), (listelm), field) \
(elm)->field.cqe_next = (listelm); \
(elm)->field.cqe_prev = (listelm)->field.cqe_prev; \
if ((listelm)->field.cqe_prev == CIRCLEQ_ENDC(head)) \
(head)->cqh_first = (elm); \
else \
(listelm)->field.cqe_prev->field.cqe_next = (elm); \
(listelm)->field.cqe_prev = (elm); \
} while (/*CONSTCOND*/0)

```

```

#define CIRCLEQ_INSERT_HEAD(head, elm, field) do { \
QUEUEDEBUG_CIRCLEQ_HEAD((head), field) \
(elm)->field.cqe_next = (head)->cqh_first; \
(elm)->field.cqe_prev = CIRCLEQ_END(head); \
if ((head)->cqh_last == CIRCLEQ_ENDC(head)) \
(head)->cqh_last = (elm); \
else \
(head)->cqh_first->field.cqe_prev = (elm); \
(head)->cqh_first = (elm); \
} while (/*CONSTCOND*/0)

```

```

#define CIRCLEQ_INSERT_TAIL(head, elm, field) do { \
QUEUEDEBUG_CIRCLEQ_HEAD((head), field) \
(elm)->field.cqe_next \
= CIRCLEQ_END(head); \
(elm)->field.cqe_prev = (head)->cqh_last; \
if ((head)->cqh_first == CIRCLEQ_ENDC(head)) \
(head)->cqh_first = (elm); \
else \
(head)->cqh_last->field.cqe_next = (elm); \
(head)->cqh_last = (elm); \
} while (/*CONSTCOND*/0)

```

```

#define CIRCLEQ_REMOVE(head, elm, field) do { \
QUEUEDEBUG_CIRCLEQ_HEAD((head), field) \
QUEUEDEBUG_CIRCLEQ_ELM((head), (elm), field) \
if ((elm)->field.cqe_next == CIRCLEQ_ENDC(head)) \
(head)->cqh_last = (elm)->field.cqe_prev; \
else \
(elm)->field.cqe_next->field.cqe_prev = \
(elm)->field.cqe_prev; \
if ((elm)->field.cqe_prev == CIRCLEQ_ENDC(head)) \
(head)->cqh_first = (elm)->field.cqe_next; \
else \
(elm)->field.cqe_prev->field.cqe_next = \
(elm)->field.cqe_next; \
QUEUEDEBUG_CIRCLEQ_POSTREMOVE((elm), field) \
} while (/*CONSTCOND*/0)

```

```

#define CIRCLEQ_FOREACH(var, head, field) \
for ((var) = ((head)->cqh_first); \
(var) != CIRCLEQ_ENDC(head); \
(var) \
= ((var)->field.cqe_next))

#define CIRCLEQ_FOREACH_REVERSE(var, head, field) \
for ((var) = ((head)->cqh_last); \
(var) != CIRCLEQ_ENDC(head); \
(var) = ((var)->field.cqe_prev))

/*
 * Circular queue access methods.
 */
#define CIRCLEQ_FIRST(head) ((head)->cqh_first)
#define CIRCLEQ_LAST(head) ((head)->cqh_last)
/* For comparisons */
#define CIRCLEQ_ENDC(head) (__launter_type(head))
/* For assignments */
#define CIRCLEQ_END(head) ((void *)(head))
#define CIRCLEQ_NEXT(elm, field) ((elm)->field.cqe_next)
#define CIRCLEQ_PREV(elm, field) ((elm)->field.cqe_prev)
#define CIRCLEQ_EMPTY(head) \
(CIRCLEQ_FIRST(head) == CIRCLEQ_ENDC(head))

#define CIRCLEQ_LOOP_NEXT(head, elm, field) \
(((elm)->field.cqe_next == CIRCLEQ_ENDC(head)) \
? ((head)->cqh_first) \
: (elm->field.cqe_next))
#define CIRCLEQ_LOOP_PREV(head, elm, field) \
(((elm)->field.cqe_prev == CIRCLEQ_ENDC(head)) \
? ((head)->cqh_last) \
: \
(elm->field.cqe_prev))
#endif /* !_KERNEL */

#endif /* !_SYS_QUEUE_H_ */
#ifndef _SYS_CDEFS_H_
#define _SYS_CDEFS_H_

#warning usage of non-standard #include <sys/cdefs.h> is deprecated

#undef __P
#undef __PMT

#define __P(args) args
#define __PMT(args) args

```



```

#define __CONCAT(x,y) x ## y
#define __STRING(x) #x

#ifdef __cplusplus
# define __BEGIN_DECLS extern "C" {
# define __END_DECLS }
#else
# define __BEGIN_DECLS
# define __END_DECLS
#endif

#if defined(__GNUC__) && !defined(__cplusplus)
# define __THROW __attribute__((__nothrow__))
# define __NTH(fct) __attribute__((__nothrow__)) fct
#else
# define __THROW
# define __NTH(fct) fct
#endif

#endif /* _SYS_CDEFS_H_ */
# Contributor: Fabian Affolter <fabian@affolter-engineering.ch>
# Maintainer: Fabian Affolter <fabian@affolter-engineering.ch>
pkgname=py3-flake8-copyright
_pkgname=flake8-copyright
pkgver=0.2.4
pkgrel=3
pkgdesc="Extension for flake8 which checks for copyrights"
options="!check" # No testsuite
url="https://github.com/savoirfairelinux/flake8-copyright"
arch="noarch"
license="MIT"
depends="py3-flake8 py3-setuptools"
makedepends="py3-gpep517 py3-wheel"
subpackages="$pkgname-pyc"
source="https://files.pythonhosted.org/packages/source/${_pkgname:0:1}/${_pkgname}/${_pkgname}-${pkgver}.tar.gz"
buildid="$srcdir"/$_pkgname-$pkgver

replaces="py-flake8-copyright" # Backwards compatibility
provides="py-flake8-copyright=${pkgver}-r${pkgrel}" # Backwards compatibility

build() {
    gpep517 build-wheel \
        --wheel-dir .dist \
        --output-fd 3 3>&1 >&2
}

package() {

```

```

gpep517 install-wheel --destdir "$pkgdir" \
.dist/*.whl
}

sha512sums="
a6ab47e1bb715618f075c51f398e18180404871b3b0faf1c2d30701d5203db6bc23771bf22ffb5bafcd8ee856b9b64237
b316bd503ae7dceed6ca284ccd5a74d
flake8-copyright-0.2.4.tar.gz
"
(The MIT License)

```

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/* \$NetBSD: tree.h,v 1.20 2013/09/14 13:20:45 joerg Exp \$ */

/* \$OpenBSD: tree.h,v 1.13 2011/07/09 00:19:45 pirofti Exp \$ */

/* Modified by Void Linux. */

/*

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*

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 */

```
#ifndef _SYS_TREE_H_
#define _SYS_TREE_H_
```

```
#ifdef __GNUC__
#define __GNUC_PREREQ__(x, y) \
  ((__GNUC__ == (x) && __GNUC_MINOR__ >= (y)) || \
   (__GNUC__ > (x)))
#else
#define __GNUC_PREREQ__(x, y) 0
#endif
```

```
#if __GNUC_PREREQ__(2, 7) || defined(__lint__)
#define _sys_tree_h_unused __attribute__((__unused__))
#else
#define _sys_tree_h_unused /* delete */
#endif
```

```
/*
```

* This file defines data structures for different types of trees:
 * splay trees and red-black trees.
 *
 * A splay tree is a self-organizing
 data structure. Every operation
 * on the tree causes a splay to happen. The splay moves the requested
 * node to the root of the tree and partly rebalances it.
 *
 * This has the benefit that request locality causes faster lookups as
 * the requested nodes move to the top of the tree. On the other hand,
 * every lookup causes memory writes.
 *
 * The Balance Theorem bounds the total access time for m operations
 * and n inserts on an initially empty tree as $O((m + n)\lg n)$. The
 * amortized cost for a sequence of m accesses to a splay tree is $O(\lg n)$;
 *
 * A red-black tree is a binary search tree with the node color as an

- * extra attribute. It fulfills a set of conditions:
- * - every search path from the root to a leaf consists of the
- * same number of black nodes,
- * - each red node (except for the root) has a black parent,
- * - each leaf node is black.
- *
- * Every operation on a red-black tree is bounded as $O(\lg n)$.
- * The maximum height of a red-black tree is $2\lg(n+1)$.
- */

```
#define SPLAY_HEAD(name, type) \
struct name { \
    struct type *sph_root; /* root of the tree */ \
}
```

```
#define SPLAY_INITIALIZER(root) \
{ NULL }
```

```
#define SPLAY_INIT(root) do { \
    (root)->sph_root = NULL; \
} while (/*CONSTCOND*/ 0)
```

```
#define SPLAY_ENTRY(type) \
struct { \
    struct type *spe_left; /* left element */ \
    struct type *spe_right; /* right element */ \
}
```

```
#define SPLAY_LEFT(elm, field) (elm)->field.spe_left
#define SPLAY_RIGHT(elm, field) (elm)->field.spe_right
#define SPLAY_ROOT(head) (head)->sph_root
#define SPLAY_EMPTY(head) (SPLAY_ROOT(head) == NULL)
```

```
/* SPLAY_ROTATE_{LEFT,RIGHT} expect that tmp hold SPLAY_{RIGHT,LEFT} */
#define SPLAY_ROTATE_RIGHT(head, tmp, field) do { \
    SPLAY_LEFT((head)->sph_root, field) = SPLAY_RIGHT(tmp, field); \
    SPLAY_RIGHT(tmp, field) = (head)->sph_root; \
    (head)->sph_root = tmp; \
} while (/*CONSTCOND*/ 0)
```

```
#define SPLAY_ROTATE_LEFT(head, tmp, field) do { \
    SPLAY_RIGHT((head)->sph_root, \
    field) = SPLAY_LEFT(tmp, field); \
    SPLAY_LEFT(tmp, field) = (head)->sph_root; \
    (head)->sph_root = tmp; \
} while (/*CONSTCOND*/ 0)
```

```
#define SPLAY_LINKLEFT(head, tmp, field) do { \
```

```

    SPLAY_LEFT(tmp, field) = (head)->sph_root; \
    tmp = (head)->sph_root; \
    (head)->sph_root = SPLAY_LEFT((head)->sph_root, field); \
} while (/*CONSTCOND*/ 0)

#define SPLAY_LINKRIGHT(head, tmp, field) do { \
    SPLAY_RIGHT(tmp, field) = (head)->sph_root; \
    tmp = (head)->sph_root; \
    (head)->sph_root = SPLAY_RIGHT((head)->sph_root, field); \
} while (/*CONSTCOND*/ 0)

#define SPLAY_ASSEMBLE(head, node, left, right, field) do { \
    SPLAY_RIGHT(left, field) = SPLAY_LEFT((head)->sph_root, field); \
    SPLAY_LEFT(right, field) = SPLAY_RIGHT((head)->sph_root, field); \
    SPLAY_LEFT((head)->sph_root, field) = SPLAY_RIGHT(node, field); \
    SPLAY_RIGHT((head)->sph_root, field) = SPLAY_LEFT(node, field); \
} while (/*CONSTCOND*/ 0)

/* Generates prototypes and inline functions */

#define
    SPLAY_PROTOTYPE(name, type, field, cmp) \
    void name##_SPLAY(struct name *, struct type *); \
    void name##_SPLAY_MINMAX(struct name *, int); \
    struct type *name##_SPLAY_INSERT(struct name *, struct type *); \
    struct type *name##_SPLAY_REMOVE(struct name *, struct type *); \
    \
/* Finds the node with the same key as elm */ \
static __inline struct type * \
name##_SPLAY_FIND(struct name *head, struct type *elm) \
{ \
    \
    if (SPLAY_EMPTY(head)) \
        return(NULL); \
    name##_SPLAY(head, elm); \
    if ((cmp)(elm, (head)->sph_root) == 0) \
        return (head->sph_root); \
    return (NULL); \
} \
\
static __inline _sys_tree_h_unused struct type * \
name##_SPLAY_NEXT(struct name *head, struct type *elm) \
{ \
    \
    name##_SPLAY(head, elm); \
    if (SPLAY_RIGHT(elm, field) != NULL) { \
        elm = SPLAY_RIGHT(elm, field); \
        while (SPLAY_LEFT(elm, field) != NULL) { \
            elm = SPLAY_LEFT(elm, field); \
        } \
    } \
} \

```

```

}
else \
    elm = NULL; \
return (elm); \
} \
\
static _sys_tree_h_unused __inline struct type * \
name##_SPLAY_MIN_MAX(struct name *head, int val) \
{ \
    name##_SPLAY_MINMAX(head, val); \
    return (SPLAY_ROOT(head)); \
}

/* Main splay operation.
 * Moves node close to the key of elm to top
 */
#define SPLAY_GENERATE(name, type, field, cmp) \
struct type * \
name##_SPLAY_INSERT(struct name *head, struct type *elm) \
{ \
    if (SPLAY_EMPTY(head)) { \
        SPLAY_LEFT(elm, field) = SPLAY_RIGHT(elm, field) = NULL; \
    } else { \
        int __comp; \
        name##_SPLAY(head, elm); \
        __comp = (cmp)(elm, (head)->sph_root); \
        if (__comp < 0) { \
            SPLAY_LEFT(elm, field) = SPLAY_LEFT((head)->sph_root, field); \
            SPLAY_RIGHT(elm, field) = (head)->sph_root; \
            SPLAY_LEFT((head)->sph_root, field) = NULL; \
        } else if (__comp > 0) { \
            SPLAY_RIGHT(elm, \
field) = SPLAY_RIGHT((head)->sph_root, field); \
            SPLAY_LEFT(elm, field) = (head)->sph_root; \
            SPLAY_RIGHT((head)->sph_root, field) = NULL; \
        } else \
            return ((head)->sph_root); \
    } \
    (head)->sph_root = (elm); \
    return (NULL); \
} \
\
struct type * \
name##_SPLAY_REMOVE(struct name *head, struct type *elm) \
{ \
    struct type *__tmp; \
    if (SPLAY_EMPTY(head)) \
        return (NULL); \

```

```

name##_SPLAY(head, elm); \
if ((cmp)(elm, (head)->sph_root) == 0) { \
    if (SPLAY_LEFT((head)->sph_root, field) == NULL) { \
        (head)->sph_root = SPLAY_RIGHT((head)->sph_root, field);\
    } else { \
        __tmp = SPLAY_RIGHT((head)->sph_root, field); \
        (head)->sph_root = SPLAY_LEFT((head)->sph_root, field);\
        name##_SPLAY(head, elm); \
        SPLAY_RIGHT((head)->sph_root, field) = __tmp; \
    } \
    return (elm); \
} \
return (NULL); \
} \
\
void \
name##_SPLAY(struct
name *head, struct type *elm) \
{ \
    struct type __node, *__left, *__right, *__tmp; \
    int __comp; \
    \
    SPLAY_LEFT(&__node, field) = SPLAY_RIGHT(&__node, field) = NULL;\
    __left = __right = &__node; \
    \
    while ((__comp = (cmp)(elm, (head)->sph_root)) != 0) { \
        if (__comp < 0) { \
            __tmp = SPLAY_LEFT((head)->sph_root, field); \
            if (__tmp == NULL) \
                break; \
            if ((cmp)(elm, __tmp) < 0){ \
                SPLAY_ROTATE_RIGHT(head, __tmp, field); \
                if (SPLAY_LEFT((head)->sph_root, field) == NULL)\
                    break; \
            } \
            SPLAY_LINKLEFT(head, __right, field); \
        } else if (__comp > 0) { \
            __tmp = SPLAY_RIGHT((head)->sph_root, field); \
            if (__tmp == NULL) \
                break; \
            if ((cmp)(elm, __tmp) > 0){ \
                SPLAY_ROTATE_LEFT(head, __tmp, field); \
                if (SPLAY_RIGHT((head)->sph_root, field) == NULL)\
                    break; \
            } \
            SPLAY_LINKRIGHT(head, __left, field); \
        } \
    } \
} \

```

```

    SPLAY_ASSEMBLE(head,
    &__node, __left, __right, field); \
} \
\
/* Splay with either the minimum or the maximum element \
* Used to find minimum or maximum element in tree. \
*/ \
void name##_SPLAY_MINMAX(struct name *head, int __comp) \
{ \
    struct type __node, *__left, *__right, *__tmp; \
    \
    SPLAY_LEFT(&__node, field) = SPLAY_RIGHT(&__node, field) = NULL;\
    __left = __right = &__node; \
    \
    while (1) { \
        if (__comp < 0) { \
            __tmp = SPLAY_LEFT((head)->sph_root, field);\
            if (__tmp == NULL) \
                break; \
            if (__comp < 0){ \
                SPLAY_ROTATE_RIGHT(head, __tmp, field);\
                if (SPLAY_LEFT((head)->sph_root, field) == NULL)\
                    break; \
            } \
            SPLAY_LINKLEFT(head, __right, field); \
        } else if (__comp > 0) { \
            __tmp = SPLAY_RIGHT((head)->sph_root, field);\
            if (__tmp == NULL) \
                break; \
            if (__comp > 0) { \
                SPLAY_ROTATE_LEFT(head, __tmp, field);\
                if (SPLAY_RIGHT((head)->sph_root,
field) == NULL)\
                    break; \
            } \
            SPLAY_LINKRIGHT(head, __left, field); \
        } \
    } \
    SPLAY_ASSEMBLE(head, &__node, __left, __right, field); \
}

#define SPLAY_NEGINF -1
#define SPLAY_INF 1

#define SPLAY_INSERT(name, x, y) name##_SPLAY_INSERT(x, y)
#define SPLAY_REMOVE(name, x, y) name##_SPLAY_REMOVE(x, y)
#define SPLAY_FIND(name, x, y) name##_SPLAY_FIND(x, y)
#define SPLAY_NEXT(name, x, y) name##_SPLAY_NEXT(x, y)

```



```

#define SPLAY_MIN(name, x) (SPLAY_EMPTY(x) ? NULL \
    : name##_SPLAY_MIN_MAX(x, SPLAY_NEGINF))
#define SPLAY_MAX(name, x) (SPLAY_EMPTY(x) ? NULL \
    : name##_SPLAY_MIN_MAX(x, SPLAY_INF))

#define SPLAY_FOREACH(x, name, head) \
    for ((x) = SPLAY_MIN(name, head); \
        (x) != NULL; \
        (x) = SPLAY_NEXT(name, head, x))

/* Macros that define a red-black tree */
#define RB_HEAD(name, type) \
    struct name { \
        struct type *rbh_root; /* root of the tree */ \
    }

#define RB_INITIALIZER(root) \
    { \
        NULL \
    }

#define RB_INIT(root) do { \
    (root)->rbh_root = NULL; \
} while (/*CONSTCOND*/ 0)

#define RB_BLACK 0
#define RB_RED 1
#define RB_ENTRY(type) \
    struct { \
        struct type *rbe_left; /* left element */ \
        struct type *rbe_right; /* right element */ \
        struct type *rbe_parent; /* parent element */ \
        int rbe_color; /* node color */ \
    }

#define RB_LEFT(elm, field) (elm)->field.rbe_left
#define RB_RIGHT(elm, field) (elm)->field.rbe_right
#define RB_PARENT(elm, field) (elm)->field.rbe_parent
#define RB_COLOR(elm, field) (elm)->field.rbe_color
#define RB_ROOT(head) (head)->rbh_root
#define RB_EMPTY(head) (RB_ROOT(head) == NULL)

#define RB_SET(elm, parent, field) do { \
    RB_PARENT(elm, field) = parent; \
    RB_LEFT(elm, field) = RB_RIGHT(elm, field) = NULL; \
    RB_COLOR(elm, field) = RB_RED; \
} while (/*CONSTCOND*/ 0)

#define RB_SET_BLACKRED(black, red, field) do { \

```

```

RB_COLOR(black, field) = RB_BLACK; \
RB_COLOR(red, field)
= RB_RED; \
} while (/*CONSTCOND*/ 0)

#ifndef RB_AUGMENT
#define RB_AUGMENT(x) do {} while (/*CONSTCOND*/ 0)
#endif

#define RB_ROTATE_LEFT(head, elm, tmp, field) do { \
    (tmp) = RB_RIGHT(elm, field); \
    if ((RB_RIGHT(elm, field) = RB_LEFT(tmp, field)) != NULL) { \
        RB_PARENT(RB_LEFT(tmp, field), field) = (elm); \
    } \
    RB_AUGMENT(elm); \
    if ((RB_PARENT(tmp, field) = RB_PARENT(elm, field)) != NULL) { \
        if ((elm) == RB_LEFT(RB_PARENT(elm, field), field)) \
            RB_LEFT(RB_PARENT(elm, field), field) = (tmp); \
        else \
            RB_RIGHT(RB_PARENT(elm, field), field) = (tmp); \
    } else \
        (head)->rbh_root = (tmp); \
    RB_LEFT(tmp, field) = (elm); \
    RB_PARENT(elm, field) = (tmp); \
    RB_AUGMENT(tmp); \
    if ((RB_PARENT(tmp, field))) \
        RB_AUGMENT(RB_PARENT(tmp, field)); \
} while (/*CONSTCOND*/ 0)

#define RB_ROTATE_RIGHT(head, elm, tmp, field) do { \
    (tmp) = RB_LEFT(elm, field); \
    if ((RB_LEFT(elm, field) = RB_RIGHT(tmp, field)) \
        != NULL) { \
        RB_PARENT(RB_RIGHT(tmp, field), field) = (elm); \
    } \
    RB_AUGMENT(elm); \
    if ((RB_PARENT(tmp, field) = RB_PARENT(elm, field)) != NULL) { \
        if ((elm) == RB_LEFT(RB_PARENT(elm, field), field)) \
            RB_LEFT(RB_PARENT(elm, field), field) = (tmp); \
        else \
            RB_RIGHT(RB_PARENT(elm, field), field) = (tmp); \
    } else \
        (head)->rbh_root = (tmp); \
    RB_RIGHT(tmp, field) = (elm); \
    RB_PARENT(elm, field) = (tmp); \
    RB_AUGMENT(tmp); \
    if ((RB_PARENT(tmp, field))) \
        RB_AUGMENT(RB_PARENT(tmp, field)); \
} while (/*CONSTCOND*/ 0)

```

```

} while (/*CONSTCOND*/ 0)

/* Generates prototypes and inline functions */
#define RB_PROTOTYPE(name, type, field, cmp) \
    RB_PROTOTYPE_INTERNAL(name, type, field, cmp,)
#define RB_PROTOTYPE_STATIC(name, type, field, cmp) \
    RB_PROTOTYPE_INTERNAL(name, type, field, cmp, _sys_tree_h_unused static)
#define RB_PROTOTYPE_INTERNAL(name, type, field, cmp, attr) \
    attr void name##_RB_INSERT_COLOR(struct name *, struct \
        type *); \
    attr void name##_RB_REMOVE_COLOR(struct name *, struct type *, struct type *);\
    attr struct type *name##_RB_REMOVE(struct name *, struct type *); \
    attr struct type *name##_RB_INSERT(struct name *, struct type *); \
    attr struct type *name##_RB_FIND(struct name *, struct type *); \
    attr struct type *name##_RB_NFIND(struct name *, struct type *); \
    attr struct type *name##_RB_NEXT(struct type *); \
    attr struct type *name##_RB_PREV(struct type *); \
    attr struct type *name##_RB_MINMAX(struct name *, int); \
    \

/* Main rb operation.
 * Moves node close to the key of elm to top
 */
#define RB_GENERATE(name, type, field, cmp) \
    RB_GENERATE_INTERNAL(name, type, field, cmp,)
#define RB_GENERATE_STATIC(name, type, field, cmp) \
    RB_GENERATE_INTERNAL(name, type, field, cmp, _sys_tree_h_unused static)
#define RB_GENERATE_INTERNAL(name, type, field, cmp, attr) \
    attr void \
    name##_RB_INSERT_COLOR(struct name *head, struct type *elm) \
    { \
        \
        struct type \
        *parent, *gparent, *tmp; \
        while ((parent = RB_PARENT(elm, field)) != NULL && \
            RB_COLOR(parent, field) == RB_RED) { \
            \
            gparent = RB_PARENT(parent, field); \
            if (parent == RB_LEFT(gparent, field)) { \
                tmp = RB_RIGHT(gparent, field); \
                if (tmp && RB_COLOR(tmp, field) == RB_RED) { \
                    RB_COLOR(tmp, field) = RB_BLACK; \
                    RB_SET_BLACKRED(parent, gparent, field);\
                    elm = gparent; \
                    continue; \
                } \
            } \
            if (RB_RIGHT(parent, field) == elm) { \
                RB_ROTATE_LEFT(head, parent, tmp, field);\
                tmp = parent; \
                parent = elm; \
            } \
        } \
    } \

```

```

    elm = tmp; \
} \
RB_SET_BLACKRED(parent, gparent, field); \
RB_ROTATE_RIGHT(head, gparent, tmp, field); \
} else { \
    tmp = RB_LEFT(gparent, field); \
    if (tmp && RB_COLOR(tmp, field) == RB_RED) { \
        RB_COLOR(tmp, field) = RB_BLACK; \
        RB_SET_BLACKRED(parent, gparent, field); \
        elm = gparent; \
        continue; \
    } \
    if (RB_LEFT(parent, field) == elm)
{ \
    RB_ROTATE_RIGHT(head, parent, tmp, field); \
    tmp = parent; \
    parent = elm; \
    elm = tmp; \
} \
    RB_SET_BLACKRED(parent, gparent, field); \
    RB_ROTATE_LEFT(head, gparent, tmp, field); \
} \
} \
RB_COLOR(head->rbh_root, field) = RB_BLACK; \
} \
\
attr void \
name##_RB_REMOVE_COLOR(struct name *head, struct type *parent, struct type *elm) \
{ \
    struct type *tmp; \
    while ((elm == NULL || RB_COLOR(elm, field) == RB_BLACK) && \
        elm != RB_ROOT(head)) { \
        if (RB_LEFT(parent, field) == elm) { \
            tmp = RB_RIGHT(parent, field); \
            if (RB_COLOR(tmp, field) == RB_RED) { \
                RB_SET_BLACKRED(tmp, parent, field); \
                RB_ROTATE_LEFT(head, parent, tmp, field); \
                tmp = RB_RIGHT(parent, field); \
            } \
            if ((RB_LEFT(tmp, field) == NULL || \
                RB_COLOR(RB_LEFT(tmp, field), field) == RB_BLACK) && \
                (RB_RIGHT(tmp, field) == NULL || \
                RB_COLOR(RB_RIGHT(tmp, field), field) == RB_BLACK)) { \
                RB_COLOR(tmp, field) = RB_RED; \
                elm = parent; \
                parent = RB_PARENT(elm, field); \
            } else { \

```

```

if (RB_RIGHT(tmp, field) == NULL || \
    RB_COLOR(RB_RIGHT(tmp, field), field) == RB_BLACK) {\
    struct type *oleft; \
    if ((oleft = RB_LEFT(tmp, field)) \
        != NULL) \
        RB_COLOR(oleft, field) = RB_BLACK;\
    RB_COLOR(tmp, field) = RB_RED; \
    RB_ROTATE_RIGHT(head, tmp, oleft, field);\
    tmp = RB_RIGHT(parent, field); \
} \
RB_COLOR(tmp, field) = RB_COLOR(parent, field);\
RB_COLOR(parent, field) = RB_BLACK; \
if (RB_RIGHT(tmp, field)) \
    RB_COLOR(RB_RIGHT(tmp, field), field) = RB_BLACK;\
RB_ROTATE_LEFT(head, parent, tmp, field);\
elm = RB_ROOT(head); \
break; \
} \
} else { \
    tmp = RB_LEFT(parent, field); \
    if (RB_COLOR(tmp, field) == RB_RED) { \
        RB_SET_BLACKRED(tmp, parent, field); \
        RB_ROTATE_RIGHT(head, parent, tmp, field);\
        tmp \
= RB_LEFT(parent, field); \
    } \
    if ((RB_LEFT(tmp, field) == NULL || \
        RB_COLOR(RB_LEFT(tmp, field), field) == RB_BLACK) &&\
        (RB_RIGHT(tmp, field) == NULL || \
        RB_COLOR(RB_RIGHT(tmp, field), field) == RB_BLACK)) {\
        RB_COLOR(tmp, field) = RB_RED; \
        elm = parent; \
        parent = RB_PARENT(elm, field); \
    } else { \
        if (RB_LEFT(tmp, field) == NULL || \
            RB_COLOR(RB_LEFT(tmp, field), field) == RB_BLACK) {\
            struct type *oright; \
            if ((oright = RB_RIGHT(tmp, field)) \
                != NULL) \
                RB_COLOR(oright, field) = RB_BLACK;\
            RB_COLOR(tmp, field) = RB_RED; \
            RB_ROTATE_LEFT(head, tmp, oright, field);\
            tmp = RB_LEFT(parent, field); \
        } \
        RB_COLOR(tmp, field) = RB_COLOR(parent, field);\
        RB_COLOR(parent, field) = RB_BLACK; \
        if (RB_LEFT(tmp, field)) \
            RB_COLOR(RB_LEFT(tmp, field), field) = RB_BLACK;\

```

```

    RB_ROTATE_RIGHT(head, parent, tmp, field);\
    elm = RB_ROOT(head); \
    break; \
} \
} \
} \
if
(elm) \
    RB_COLOR(elm, field) = RB_BLACK; \
} \
\
attr struct type * \
name##_RB_REMOVE(struct name *head, struct type *elm) \
{ \
    struct type *child, *parent, *old = elm; \
    int color; \
    if (RB_LEFT(elm, field) == NULL) \
        child = RB_RIGHT(elm, field); \
    else if (RB_RIGHT(elm, field) == NULL) \
        child = RB_LEFT(elm, field); \
    else { \
        struct type *left; \
        elm = RB_RIGHT(elm, field); \
        while ((left = RB_LEFT(elm, field)) != NULL) \
            elm = left; \
        child = RB_RIGHT(elm, field); \
        parent = RB_PARENT(elm, field); \
        color = RB_COLOR(elm, field); \
        if (child) \
            RB_PARENT(child, field) = parent; \
        if (parent) { \
            if (RB_LEFT(parent, field) == elm) \
                RB_LEFT(parent, field) = child; \
            else \
                RB_RIGHT(parent, field) = child; \
            RB_AUGMENT(parent); \
        } else \
            RB_ROOT(head)
    = child; \
    if (RB_PARENT(elm, field) == old) \
        parent = elm; \
    (elm)->field = (old)->field; \
    if (RB_PARENT(old, field)) { \
        if (RB_LEFT(RB_PARENT(old, field), field) == old)\
            RB_LEFT(RB_PARENT(old, field), field) = elm;\
        else \
            RB_RIGHT(RB_PARENT(old, field), field) = elm;\
        RB_AUGMENT(RB_PARENT(old, field)); \
    }

```

```

    } else    \
        RB_ROOT(head) = elm;    \
    RB_PARENT(RB_LEFT(old, field), field) = elm;    \
    if (RB_RIGHT(old, field))    \
        RB_PARENT(RB_RIGHT(old, field), field) = elm;    \
    if (parent) {    \
        left = parent;    \
        do {    \
            RB_AUGMENT(left);    \
        } while ((left = RB_PARENT(left, field)) != NULL);    \
    }    \
    goto color;    \
}    \
parent = RB_PARENT(elm, field);    \
color = RB_COLOR(elm, field);    \
if (child)    \
    RB_PARENT(child, field) = parent;    \
if (parent) {    \
    if (RB_LEFT(parent, field) == elm)    \
        RB_LEFT(parent, field) = child;    \
    else    \
        RB_RIGHT(parent,
field) = child;    \
    RB_AUGMENT(parent);    \
} else    \
    RB_ROOT(head) = child;    \
color:    \
if (color == RB_BLACK)    \
    name##_RB_REMOVE_COLOR(head, parent, child);    \
return (old);    \
}    \
\
/* Inserts a node into the RB tree */    \
attr struct type *    \
name##_RB_INSERT(struct name *head, struct type *elm)    \
{    \
    struct type *tmp;    \
    struct type *parent = NULL;    \
    int comp = 0;    \
    tmp = RB_ROOT(head);    \
    while (tmp) {    \
        parent = tmp;    \
        comp = (cmp)(elm, parent);    \
        if (comp < 0)    \
            tmp = RB_LEFT(tmp, field);    \
        else if (comp > 0)    \
            tmp = RB_RIGHT(tmp, field);    \
        else    \

```

```

    return (tmp); \
} \
RB_SET(elm, parent, field); \
if (parent != NULL) { \
    if (comp < 0) \
        RB_LEFT(parent, field) = elm; \
    else \
        RB_RIGHT(parent, field) = elm; \
    RB_AUGMENT(parent); \
} else \
    RB_ROOT(head) = elm; \
name##_RB_INSERT_COLOR(head,
elm); \
return (NULL); \
} \
\
/* Finds the node with the same key as elm */ \
attr struct type * \
name##_RB_FIND(struct name *head, struct type *elm) \
{ \
    struct type *tmp = RB_ROOT(head); \
    int comp; \
    while (tmp) { \
        comp = cmp(elm, tmp); \
        if (comp < 0) \
            tmp = RB_LEFT(tmp, field); \
        else if (comp > 0) \
            tmp = RB_RIGHT(tmp, field); \
        else \
            return (tmp); \
    } \
    return (NULL); \
} \
\
/* Finds the first node greater than or equal to the search key */ \
attr struct type * \
name##_RB_NFIND(struct name *head, struct type *elm) \
{ \
    struct type *tmp = RB_ROOT(head); \
    struct type *res = NULL; \
    int comp; \
    while (tmp) { \
        comp = cmp(elm, tmp); \
        if (comp < 0) { \
            res = tmp; \
            tmp = RB_LEFT(tmp, field); \
        } \
        else if (comp > 0) \

```



```

    tmp =
    RB_RIGHT(tmp, field); \
    else \
    return (tmp); \
} \
return (res); \
} \
\
/* ARGSUSED */ \
attr struct type * \
name##_RB_NEXT(struct type *elm) \
{ \
    if (RB_RIGHT(elm, field)) { \
        elm = RB_RIGHT(elm, field); \
        while (RB_LEFT(elm, field)) \
            elm = RB_LEFT(elm, field); \
    } else { \
        if (RB_PARENT(elm, field) && \
            (elm == RB_LEFT(RB_PARENT(elm, field), field))) \
            elm = RB_PARENT(elm, field); \
        else { \
            while (RB_PARENT(elm, field) && \
                (elm == RB_RIGHT(RB_PARENT(elm, field), field))) \
                elm = RB_PARENT(elm, field); \
            elm = RB_PARENT(elm, field); \
        } \
    } \
    return (elm); \
} \
\
/* ARGSUSED */ \
attr struct type * \
name##_RB_PREV(struct type *elm) \
{ \
    if (RB_LEFT(elm, field)) { \
        elm = RB_LEFT(elm, field); \
        while (RB_RIGHT(elm, field)) \
            elm = RB_RIGHT(elm, field); \
    } \
    else { \
        if (RB_PARENT(elm, field) && \
            (elm == RB_RIGHT(RB_PARENT(elm, field), field))) \
            elm = RB_PARENT(elm, field); \
        else { \
            while (RB_PARENT(elm, field) && \
                (elm == RB_LEFT(RB_PARENT(elm, field), field))) \
                elm = RB_PARENT(elm, field); \
            elm = RB_PARENT(elm, field); \
        } \
    } \
}

```

```

    }    \
}    \
return (elm);    \
}    \
    \
attr struct type *    \
name##_RB_MINMAX(struct name *head, int val)    \
{    \
    struct type *tmp = RB_ROOT(head);    \
    struct type *parent = NULL;    \
    while (tmp) {    \
        parent = tmp;    \
        if (val < 0)    \
            tmp = RB_LEFT(tmp, field);    \
        else    \
            tmp = RB_RIGHT(tmp, field);    \
    }    \
    return (parent);    \
}

#define RB_NEGINF -1
#define RB_INF 1

#define RB_INSERT(name, x, y) name##_RB_INSERT(x, y)
#define RB_REMOVE(name, x, y) name##_RB_REMOVE(x, y)
#define RB_FIND(name, x, y) name##_RB_FIND(x, y)
#define RB_NFIND(name, x, y) name##_RB_NFIND(x,
y)
#define RB_NEXT(name, x, y) name##_RB_NEXT(y)
#define RB_PREV(name, x, y) name##_RB_PREV(y)
#define RB_MIN(name, x) name##_RB_MINMAX(x, RB_NEGINF)
#define RB_MAX(name, x) name##_RB_MINMAX(x, RB_INF)

#define RB_FOREACH(x, name, head)    \
for ((x) = RB_MIN(name, head);    \
     (x) != NULL;    \
     (x) = name##_RB_NEXT(x))

#define RB_FOREACH_FROM(x, name, y)    \
for ((x) = (y);    \
     ((x) != NULL) && ((y) = name##_RB_NEXT(x), (x) != NULL); \
     (x) = (y))

#define RB_FOREACH_SAFE(x, name, head, y)    \
for ((x) = RB_MIN(name, head);    \
     ((x) != NULL) && ((y) = name##_RB_NEXT(x), (x) != NULL); \
     (x) = (y))

```

```

#define RB_FOREACH_REVERSE(x, name, head) \
for ((x) = RB_MAX(name, head); \
    (x) != NULL; \
    (x) = name##_RB_PREV(x))

#define RB_FOREACH_REVERSE_FROM(x, name, y) \
for ((x) = (y); \
    ((x) != NULL) && ((y) = name##_RB_PREV(x), (x) != NULL); \
    (x) = (y))

#define RB_FOREACH_REVERSE_SAFE(x, name, \
head, y) \
for ((x) = RB_MAX(name, head); \
    ((x) != NULL) && ((y) = name##_RB_PREV(x), (x) != NULL); \
    (x) = (y))

#endif /* _SYS_TREE_H_ */
# Contributor: Wen Heping <wenhepingalpine@sohu.com>
# Maintainer: Wen Heping <wenhepingalpine@sohu.com>
pkgname=perl-software-license
pkgver=0.104007
pkgrel=0
# _pkgreal is used by apkbuild-cpan to find modules at MetaCpan
_pkgreal=Software-License
pkgdesc="packages that provide templated software licenses"
url="https://metacpan.org/release/Software-License/"
arch="noarch"
license="GPL-1.0-or-later OR Artistic-1.0-Perl"
depends="perl perl-data-section perl-text-template"
checkdepends="perl-try-tiny"
subpackages="$pkgname-doc"
source="https://cpan.metacpan.org/authors/id/L/LE/LEONT/Software-License-$pkgver.tar.gz"
buildid="$srcdir/${_pkgreal}-${pkgver}"

build() {
    export CFLAGS=$(perl -MConfig -E 'say $Config{ccflags}')
    PERL_MM_USE_DEFAULT=1 perl -I. Makefile.PL \
        INSTALLDIRS=vendor \
        NO_PACKLIST=1 \
        NO_PERLLOCAL=1
    make
}

check() {
    export CFLAGS=$(perl -MConfig -E 'say $Config{ccflags}')
    make test
}

```

```

package() {
    make DESTDIR="$pkgdir" install
}

sha512sums="
12d75e9583b3013d9b4a282467f1ac80ab6b7f3251926d66591d01404489b528f22adc396dfd4528a0f0ca650f0eed6d
9c959e69eace2169c6ed1cffe5277e4
    Software-License-0.104007.tar.gz
"
(The MIT License)

```

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```

# Contributor: Dhruvin Gandhi <contact@dhruvin>
# Maintainer: Patrycja Rosa <alpine@ptrcnull.me>
pkgname=py3-license-expression
_pkgname=license_expression
pkgver=30.4.4
pkgrel=0
pkgdesc="Library to parse, compare, simplify and normalize license expressions"
url="https://github.com/nexB/license-expression"
arch="noarch"
license="Apache-2.0"
depends="python3 py3-boolean.py"
makedepends="py3-setuptools py3-setuptools_scm py3-gp517 py3-wheel"
checkdepends="py3-pytest py3-pytest-xdist"
subpackages="$pkgname-pyc"
source="https://files.pythonhosted.org/packages/source/l/_pkgname/_pkgname-$pkgver.tar.gz"
buildid="$srcdir/_pkgname-$pkgver"

```

```

build() {
    gpep517 build-wheel \
        --wheel-dir .dist \
        --output-fd 3 3>&1 >&2
}

check() {
    python3 -m venv --clear --without-pip --system-site-packages .testenv
    .testenv/bin/python3 -m installer .dist/*.whl
    .testenv/bin/python3 -m pytest
}

package() {
    python3 -m installer -d "$pkgdir" \
        .dist/*.whl
}

sha512sums="
f46dd4cf524b3962115fe26f5545bfdd6767275b482724af51e7ca07da79244969a3bfc5d2fd5b95bc0f19d1b95a26a8f3
ab36c676e56ec302178d7166588066
    license_expression-30.4.4.tar.gz
"

```

1.343 click 8.3.1

1.343.1 Available under license :

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```
```{literalinclude} ../LICENSE.txt

language: text

```
```

1.344 x-tools 0.39.0

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// Package copyright checks that files have the correct copyright notices.

package copyright

import (

"go/ast"

"go/parser"

"go/token"

"io/fs"

"os"

"path/filepath"

"regexp"

"strings"

)

// (used only by tests)

func checkCopyright(dir string) ([]string, error) {

var files []string

err := filepath.WalkDir(dir, func(path string, d fs.DirEntry, err error) error {

if err != nil {

return err

}

if d.IsDir() {

// Skip directories like ".git".

if strings.HasPrefix(d.Name(), ".") && d.Name() != "." && d.Name() != ".." {

return filepath.SkipDir

}

// Skip any directory that starts with an underscore, as the go

// command would.

if strings.HasPrefix(d.Name(), "_") {

return filepath.SkipDir

}

return nil

}

needsCopyright, err := checkFile(dir, path)

if err != nil {

return err

}

if

needsCopyright {

files = append(files, path)

}

return nil

})

```

return files, err
}

var copyrightRe = regexp.MustCompile(`Copyright \d{4} The Go Authors. All rights reserved.
Use of this source code is governed by a BSD-style
license that can be found in the LICENSE file.`)

func checkFile(toolsDir, filename string) (bool, error) {
    // Only check Go files.
    if !strings.HasSuffix(filename, ".go") {
        return false, nil
    }
    // Don't check testdata files.
    normalized := strings.TrimPrefix(filepath.ToSlash(filename), filepath.ToSlash(toolsDir))
    if strings.Contains(normalized, "/testdata/") {
        return false, nil
    }
    // goyacc is the only file with a different copyright header.
    if strings.HasSuffix(normalized, "cmd/goyacc/yacc.go") {
        return false, nil
    }
    content, err := os.ReadFile(filename)
    if err != nil {
        return false, err
    }
    fset := token.NewFileSet()
    parsed, err := parser.ParseFile(fset, filename, content, parser.ParseComments)
    if err != nil {
        return false, err
    }
    //
    // Don't require headers on generated files.
    if ast.IsGenerated(parsed) {
        return false, nil
    }
    shouldAddCopyright := true
    for _, c := range parsed.Comments {
        // The copyright should appear before the package declaration.
        if c.Pos() > parsed.Package {
            break
        }
        if copyrightRe.MatchString(c.Text()) {
            shouldAddCopyright = false
            break
        }
    }
    return shouldAddCopyright, nil
}

```


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// license that can be found in the LICENSE file.

package licenses_test

```
import (  
    "bytes"  
    "os"  
    "os/exec"  
    "runtime"  
    "testing"  
)
```

```
func TestLicenses(t *testing.T) {  
    if runtime.GOOS != "linux" && runtime.GOOS != "darwin" {  
        t.Skip("generating licenses only works on Unixes")  
    }  
    tmp, err := os.CreateTemp("", "")  
    if err != nil {  
        t.Fatal(err)  
    }  
    tmp.Close() // ignore error
```

```
    if out, err := exec.Command("./gen-licenses.sh", tmp.Name()).CombinedOutput(); err != nil {  
        t.Fatalf("generating licenses failed: %q, %v", out, err)  
    }
```

```
    got, err := os.ReadFile(tmp.Name())  
    if err != nil {  
        t.Fatal(err)  
    }
```

```
    want, err := os.ReadFile("licenses.go")  
    if err != nil {  
        t.Fatal(err)  
    }
```

```
    if !bytes.Equal(got, want) {  
        t.Error("combined license text needs updating. Run: `go generate ./internal/licenses` from the gopls module.")  
    }  
}
```

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package copyright

```
import (  
    "strings"
```

```

"testing"
)

func TestToolsCopyright(t *testing.T) {
    files, err := checkCopyright("..")
    if err != nil {
        t.Fatal(err)
    }
    if len(files) > 0 {
        t.Errorf("The following files are missing copyright notices:\n%s", strings.Join(files, "\n"))
    }
}

# This list is used to help generate the GitHub handles in the
# contributor shout-out of each gopls release note.
#
# Use a command such as this to convert a range of git commits:
#
# $ join -o 2.2 <(git log --format="format: %aE" gopls/v0.18.1..gopls/v0.19.0-pre.3 | sort -u) \
#      <(grep '^[^#]' ~/w/xtools/gopls/contributors.txt | sort)
#
# Use -v 1 instead of -o 2.2 to detect any missing entries.

acehinnnqru@gmail.com acehinnnqru
adonovan@google.com adonovan
albertofanjul@gmail.com albfan
alessandro.arzilli@gmail.com aarzilli
ashurbekovz23@gmail.com ashurbekovz
cuong.manhle.vn@gmail.com cuonglm
dmitshur@golang.org dmitshur
dneil@google.com neild
egonelbre@gmail.com egonelbre
email@ssnk.in shashank-priyadarshi
ethan.reesor@gmail.com firelizzard18
gobot@golang.org gopherbot
hxjiang@golang.org h9jiang
imcusg@gmail.com cuishuang
jacob.b.bailey@gmail.com jakebailey
jba@google.com jba
mkalil@google.com madelinekalil
mrnk3078@gmail.com karamaru-alpha
nguyenbao1917@gmail.com danztran
nick.ripley@datadoghq.com
nsrip-dd
pjw@google.com pjweinb
rfindley@google.com findleyr
samthanawalla@google.com samthanawalla
sean@liao.dev seankhliao
tklauser@distanz.ch tklauser

```

veblomqvist@gmail.com vikblom
weingartner@google.com kwjw
xieyuschen@gmail.com xieyuschen

GitHub ID unknown:
- shibinfo@gmail.com
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//go:generate ./gen-licenses.sh licenses.go
package licenses

const Text = `
-- github.com/BurntSushi/toml COPYING --

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1.347 jennifer 1.5.0

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Spring Boot 3.5.6

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1.349 spring-aop 6.2.14

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* org.springframework.web.server.adapter.WebHttpHandlerBuilder\$SpringWebBlockHoundIntegration

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* /spring-web-6-2-14-sources-jar/META-INF/services/reactor.blockhound.integration.BlockHoundIntegration

1.351 springdoc-openapi-starter-webmvc-api

2.8.14

1.351.1 Available under license :

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/opt/cola/permits/2771735671_1765255233.5612097/0/springdoc-openapi-starter-webmvc-api-2-8-14-sources-jar/org/springdoc/webmvc/core/service/RequestService.java/*
```

Found

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*
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*/

```

Found in path(s):

* /springdoc-openapi-starter-webmvc-api-2-8-14-sources-
jar/org/springdoc/webmvc/api/MultipleOpenApiActuatorResource.java

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1.354 jackson-dataformat-toml 2.19.4

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1.355 spring-beans 6.2.14

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1.362 spring-context 6.2.14

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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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<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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- * org.ow2.asm:asm-commons
- * org.ow2.asm:asm

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

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

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- * org.ow2.asm:asm

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

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

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

Oracle

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- * javax.servlet:javax.servlet-api

- * javax.annotation:javax.annotation-api

- * javax.transaction:javax.transaction-api

- * javax.websocket:javax.websocket-api

Oracle OpenJDK

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

- * java.sun.security.ssl

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

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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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1.365 spring-web-mvc 6.2.14

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1.366 spring-boot-autoconfigure 3.5.8

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```
>>> JLine (jline:jline)
>>> JOpt Simple (net.sf.jopt-simple:jopt-simple)
>>> ASM 4.0 (org.ow2.asm:asm)
```

SECTION 2: Apache License, V2.0

```
>>> JSON library from Android SDK (com.vaadin.external.google:android-json)
>>> Apache Commons Codec (commons-codec:commons-codec)
>>> Apache HttpClient (org.apache.httpcomponents:httpClient)
>>> Apache HttpCore (org.apache.httpcomponents:httpcore)
>>> Plexus Cipher: encryption/decryption Component (org.sonatype.plexus:plexus-cipher)
>>> Plexus Security Dispatcher Component (org.sonatype.plexus:plexus-sec-dispatcher)
>>> Apache Commons Logging (commons-logging:commons-logging)
>>> Apache Groovy (org.apache.groovy:groovy)
>>> Maven Aether Provider (org.apache.maven:maven-aether-provider)
>>> Maven Model (org.apache.maven:maven-model)
>>> Maven Model Builder (org.apache.maven:maven-model-builder)
>>> Maven
Repository Metadata Model (org.apache.maven:maven-repository-metadata)
>>> Maven Settings (org.apache.maven:maven-settings)
>>> Maven Settings Builder (org.apache.maven:maven-settings-builder)
>>> Plexus :: Component Annotations (org.codehaus.plexus:plexus-component-annotations)
>>> Plexus Common Utilities (org.codehaus.plexus:plexus-utils)
>>> Plexus Component API (org.codehaus.plexus:plexus-component-api)
>>> Plexus Interpolation API (org.codehaus.plexus:plexus-interpolation)
```

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```
>>> Aether API (org.eclipse.aether:aether-api)
>>> Aether Connector Basic (org.eclipse.aether:aether-connector-basic)
>>> Aether Implementation (org.eclipse.aether:aether-impl)
>>> Aether SPI (org.eclipse.aether:aether-spi)
>>> Aether Transport File (org.eclipse.aether:aether-transport-file)
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>>> org.apache.httpcomponents:httpcore
>>> org.sonatype.plexus:plexus-cipher
>>> org.sonatype.plexus:plexus-sec-dispatcher
>>> commons-logging:commons-logging
>>> org.apache.groovy:groovy
>>> org.apache.maven:maven-aether-provider
>>> org.apache.maven:maven-model
>>> org.apache.maven:maven-model-builder
>>> org.apache.maven:maven-repository-metadata
>>> org.apache.maven:maven-settings
>>> org.apache.maven:maven-settings-builder
>>> org.codehaus.plexus:plexus-component-annotations
>>>
>>> org.codehaus.plexus:plexus-utils
>>> org.codehaus.plexus:plexus-component-api
>>> org.codehaus.plexus:plexus-interpolation
```

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>>> CGLIB 3.0 (cglib:cglib:3.0):
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1.369 spring-aspects 6.2.14

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/opt/cola/permits/2771735804_1765254692.9097352/0/spring-aspects-6-2-14-sources-jar/org/springframework/transaction/aspectj/JtaAnnotationTransactionAspect.aj/*

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/opt/cola/permits/2771735632_1765255305.4227571/0/spring-orm-6-2-14-sources-jar/org/springframework/orm/hibernate5/ConfigurableJtaPlatform.java/*
/opt/cola/permits/2771735632_1765255305.4227571/0/spring-orm-6-2-14-sources-jar/org/springframework/orm/hibernate5/HibernateCallback.java/*
/opt/cola/permits/2771735632_1765255305.4227571/0/spring-orm-6-2-14-sources-jar/org/springframework/orm/hibernate5/HibernateExceptionTranslator.java/*
/opt/cola/permits/2771735632_1765255305.4227571/0/spring-orm-6-2-14-sources-jar/org/springframework/orm/hibernate5/HibernateJdbcException.java/*
/opt/cola/permits/2771735632_1765255305.4227571/0/spring-orm-6-2-14-sources-jar/org/springframework/orm/hibernate5/HibernateObjectRetrievalFailureException.java/*
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1.371 spring-jdbc 6.2.14

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/opt/cola/permits/2771735716_1765193511.8625987/0/spring-jdbc-6-2-14-sources-jar/org/springframework/jdbc/support/lob/PassThroughBlob.java/*
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/opt/cola/permits/2771735716_1765193511.8625987/0/spring-jdbc-6-2-14-sources-jar/org/springframework/jdbc/support/lob/TemporaryLobCreator.java/*
/opt/cola/permits/2771735716_1765193511.8625987/0/spring-jdbc-6-2-14-sources-jar/org/springframework/jdbc/support/rowset/ResultSetWrappingSqlRowSet.java/*
/opt/cola/permits/2771735716_1765193511.8625987/0/spring-jdbc-6-2-14-sources-jar/org/springframework/jdbc/support/rowset/ResultSetWrappingSqlRowSetMetaData.java/*
/opt/cola/permits/2771735716_1765193511.8625987/0/spring-jdbc-6-2-14-sources-jar/org/springframework/jdbc/support/rowset/SqlRowSet.java/*
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/opt/cola/permits/2771735716_1765193511.8625987/0/spring-jdbc-6-2-14-sources-jar/org/springframework/jdbc/support/xml/Jdbc4SqlXmlHandler.java/*
/opt/cola/permits/2771735716_1765193511.8625987/0/spring-jdbc-6-2-14-sources-jar/org/springframework/jdbc/support/xml/SqlXmlFeatureNotImplementedException.java/*
/opt/cola/permits/2771735716_1765193511.8625987/0/spring-jdbc-6-2-14-sources-jar/org/springframework/jdbc/support/xml/SqlXmlHandler.java/*
/opt/cola/permits/2771735716_1765193511.8625987/0/spring-jdbc-6-2-14-sources-jar/org/springframework/jdbc/support/xml/SqlXmlValue.java/*
/opt/cola/permits/2771735716_1765193511.8625987/0/spring-jdbc-6-2-14-sources-jar/org/springframework/jdbc/support/xml/XmlBinaryStreamProvider.java/*
/opt/cola/permits/2771735716_1765193511.8625987/0/spring-jdbc-6-2-14-sources-jar/org/springframework/jdbc/support/xml/XmlCharacterStreamProvider.java/*
/opt/cola/permits/2771735716_1765193511.8625987/0/spring-jdbc-6-2-14-sources-jar/org/springframework/jdbc/support/xml/XmlResultProvider.java/*

Found

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- * /spring-jdbc-6-2-14-sources-jar/org/springframework/jdbc/BadSqlGrammarException.java

1.372 jetty-ee10-servlet 12.0.30

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- * /jetty-ee10-servlets-12-0-30-sources-jar/module-info.java

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/opt/cola/permits/2771735811_1765195035.5141394/0/jetty-ee10-servlets-12-0-30-sources-jar/org/eclipse/jetty/ee10/servlets/CloseableDoSFilter.java//

/opt/cola/permits/2771735811_1765195035.5141394/0/jetty-ee10-servlets-12-0-30-sources-jar/org/eclipse/jetty/ee10/servlets/CrossOriginFilter.java//

/opt/cola/permits/2771735811_1765195035.5141394/0/jetty-ee10-servlets-12-0-30-sources-jar/org/eclipse/jetty/ee10/servlets/DoSFilter.java//

/opt/cola/permits/2771735811_1765195035.5141394/0/jetty-ee10-servlets-12-0-30-sources-jar/org/eclipse/jetty/ee10/servlets/EventSource.java//

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/opt/cola/permits/2771735811_1765195035.5141394/0/jetty-ee10-servlets-12-0-30-sources-jar/org/eclipse/jetty/ee10/servlets/HeaderFilter.java//

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/opt/cola/permits/2771735811_1765195035.5141394/0/jetty-ee10-servlets-12-0-30-sources-jar/org/eclipse/jetty/ee10/servlets/QoSFilter.java//

/opt/cola/permits/2771735811_1765195035.5141394/0/jetty-ee10-servlets-12-0-30-sources-jar/org/eclipse/jetty/ee10/servlets/package-info.java//

Found
in path(s):
*

1.373 hibernate 6.6.36.Final

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```
/*  
 * Hibernate, Relational Persistence for Idiomatic Java  
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 */
```

Found in path(s):

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* /hibernate-core-6-6-36-final-sources-jar/org/hibernate/boot/model/source/spi/MetadataSourceProcessor.java  
* /hibernate-core-6-6-36-final-sources-jar/org/hibernate/dialect/pagination/DerbyLimitHandler.java  
* /hibernate-core-6-6-36-final-sources-jar/org/hibernate/stat/spi/StatisticsFactory.java  
* /hibernate-core-6-6-36-final-sources-jar/org/hibernate/TypeMismatchException.java  
* /hibernate-core-6-6-36-final-sources-jar/org/hibernate/event/internal/PostInsertEventListenerStandardImpl.java  
* /hibernate-core-6-6-36-final-sources-jar/org/hibernate/dialect/pagination/OffsetFetchLimitHandler.java  
* /hibernate-core-6-6-36-final-sources-jar/org/hibernate/ObjectDeletedException.java  
*  
/hibernate-core-6-6-36-final-sources-  
jar/org/hibernate/exception/spi/AbstractSQLExceptionConversionDelegate.java  
* /hibernate-core-6-6-36-final-sources-jar/org/hibernate/boot/jaxb/hbm/spi/PluralAttributeInfo.java  
* /hibernate-core-6-6-36-final-sources-jar/org/hibernate/dialect/sequence/NextvalSequenceSupport.java  
* /hibernate-core-6-6-36-final-sources-  
jar/org/hibernate/property/access/internal/PropertyAccessStrategyBasicImpl.java  
* /hibernate-core-6-6-36-final-sources-  
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* /hibernate-core-6-6-36-final-sources-jar/org/hibernate/boot/model/relational/QualifiedNameImpl.java  
* /hibernate-core-6-6-36-final-sources-jar/org/hibernate/engine/package-info.java  
* /hibernate-core-6-6-36-final-sources-jar/org/hibernate/boot/archive/spi/ArchiveEntryHandler.java  
* /hibernate-core-6-6-36-final-sources-jar/org/hibernate/event/spi/PreCollectionUpdateEvent.java  
* /hibernate-core-6-6-36-final-sources-jar/org/hibernate/tool/schema/internal/exec/AbstractScriptTargetOutput.java  
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/hibernate-core-6-6-36-final-sources-jar/org/hibernate/boot/model/TruthValue.java  
* /hibernate-core-6-6-36-final-sources-jar/org/hibernate/persister/entity/EntityNameUse.java  
* /hibernate-core-6-6-36-final-sources-jar/org/hibernate/metadata/ClassMetadata.java  
* /hibernate-core-6-6-36-final-sources-  
jar/org/hibernate/property/access/spi/PropertyAccessSerializationException.java  
* /hibernate-core-6-6-36-final-sources-jar/org/hibernate/boot/spi/MetadataImplementor.java  
* /hibernate-core-6-6-36-final-sources-jar/org/hibernate/internal/NonContextualJdbcConnectionAccess.java  
* /hibernate-core-6-6-36-final-sources-
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jar/org/hibernate/engine/query/internal/NativeQueryInterpreterStandardImpl.java
 * /hibernate-core-6-6-36-final-sources-jar/org/hibernate/internal/util/PropertiesHelper.java
 * /hibernate-core-6-6-36-final-sources-
 jar/org/hibernate/resource/transaction/backend/jdbc/spi/JdbcResourceTransactionAccess.java
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 /hibernate-core-6-6-36-final-sources-jar/org/hibernate/dialect/DerbyDialect.java
 * /hibernate-core-6-6-36-final-sources-jar/org/hibernate/grammars/ordering/OrderingLexer.java
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 * /hibernate-core-6-6-36-final-sources-jar/org/hibernate/jpa/boot/spi/EntityManagerFactoryBuilder.java
 * /hibernate-core-6-6-36-final-sources-jar/org/hibernate/cfg/AgroalSettings.java
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 * /hibernate-core-6-6-36-final-sources-jar/org/hibernate/boot/jaxb/hbm/spi/AttributeMapping.java
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 * /hibernate-core-6-6-36-final-sources-jar/org/hibernate/tool/schema/internal/ExceptionHandlerCollectingImpl.java
 * /hibernate-core-6-6-36-final-sources-jar/org/hibernate/annotations/TenantId.java
 * /hibernate-core-6-6-36-final-sources-jar/org/hibernate/MultiIdentifierLoadAccess.java
 * /hibernate-core-6-6-36-final-sources-jar/org/hibernate/boot/jaxb/hbm/spi/TableInformationContainer.java
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 * /hibernate-core-6-6-36-final-sources-jar/org/hibernate/engine/internal/EntityEntryContext.java
 * /hibernate-core-6-6-36-final-sources-jar/org/hibernate/event/spi/DirtyCheckEvent.java
 * /hibernate-core-6-6-36-final-sources-jar/org/hibernate/grammars/graph/GraphLanguageParserListener.java
 * /hibernate-core-6-6-36-final-sources-jar/org/hibernate/engine/jndi/internal/JndiServiceInitiator.java
 * /hibernate-core-6-6-36-final-sources-jar/org/hibernate/id/UUIDGenerator.java
 * /hibernate-core-6-6-36-final-sources-jar/org/hibernate/engine/spi/AbstractDelegatingSessionBuilder.java
 * /hibernate-core-6-6-36-final-sources-jar/org/hibernate/event/spi/AutoFlushEvent.java
 * /hibernate-core-6-6-36-final-sources-jar/org/hibernate/query/criteria/JpaConflictClause.java
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- * /hibernate-core-6-6-36-final-sources-jar/org/hibernate/engine/jdbc/internal/BinaryStreamImpl.java
- * /hibernate-core-6-6-36-final-sources-jar/org/hibernate/dialect/PostgreSQL.OrdinalEnumJdbcType.java
- * /hibernate-core-6-6-36-final-sources-jar/org/hibernate/boot/jaxb/hbm/spi/NativeQueryNonScalarRootReturn.java
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- /hibernate-core-6-6-36-final-sources-jar/org/hibernate/boot/MappingNotFoundException.java
- * /hibernate-core-6-6-36-final-sources-jar/org/hibernate/boot/registry/BootstrapServiceRegistry.java
- * /hibernate-core-6-6-36-final-sources-jar/org/hibernate/event/spi/ReplicateEventListener.java
- * /hibernate-core-6-6-36-final-sources-jar/org/hibernate/property/access/spi/Getter.java
- * /hibernate-core-6-6-36-final-sources-jar/org/hibernate/dialect/DB2zDialect.java
- * /hibernate-core-6-6-36-final-sources-jar/org/hibernate/event/service/package-info.java
- * /hibernate-core-6-6-36-final-sources-jar/org/hibernate/metamodel/internal/MetadataContext.java
- * /hibernate-core-6-6-36-final-sources-jar/org/hibernate/tuple/ValueGenerator.java
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- * /hibernate-core-6-6-36-final-sources-jar/org/hibernate/grammars/importsql/SqlScriptParserBaseVisitor.java
- * /hibernate-core-6-6-36-final-sources-jar/org/hibernate/mapping/UserDefinedType.java
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- * /hibernate-core-6-6-36-final-sources-jar/org/hibernate/jpa/spi/NativeQueryConstructorTransformer.java
- * /hibernate-core-6-6-36-final-sources-jar/org/hibernate/annotations/SQLInsert.java
- * /hibernate-core-6-6-36-final-sources-jar/org/hibernate/engine/jdbc/spi/ConnectionObserverAdapter.java
- * /hibernate-core-6-6-36-final-sources-
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- * /hibernate-core-6-6-36-final-sources-jar/org/hibernate/boot/model/source/spi/AttributeSource.java
- * /hibernate-core-6-6-36-final-sources-jar/org/hibernate/StatelessSessionBuilder.java
- * /hibernate-core-6-6-36-final-sources-jar/org/hibernate/dialect/CockroachDialectQueryHints.java
- * /hibernate-core-6-6-36-final-sources-jar/org/hibernate/SimpleNaturalIdLoadAccess.java
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- * /hibernate-core-6-6-36-final-sources-jar/org/hibernate/tuple/PojoInstantiator.java
- * /hibernate-core-6-6-36-final-sources-jar/org/hibernate/AnnotationException.java
- * /hibernate-core-6-6-36-final-sources-jar/org/hibernate/result/internal/OutputsImpl.java
- * /hibernate-core-6-6-36-final-sources-jar/org/hibernate/tool/schema/internal/exec/GenerationTarget.java
- * /hibernate-core-6-6-36-final-sources-jar/org/hibernate/query/internal/QueryParameterBindingImpl.java
- * /hibernate-core-6-6-36-final-sources-jar/org/hibernate/id/PersistentIdentifierGenerator.java
- * /hibernate-core-6-6-36-final-sources-jar/org/hibernate/tool/schema/extract/internal/TableInformationImpl.java
- * /hibernate-core-6-6-36-final-sources-jar/org/hibernate/id/enhanced/Optimizer.java
- * /hibernate-core-6-6-36-final-sources-jar/org/hibernate/cache/NoCacheRegionFactoryAvailableException.java
- * /hibernate-core-6-6-36-final-sources-jar/org/hibernate/result/ResultSetOutput.java
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- /hibernate-core-6-6-36-final-sources-jar/org/hibernate/internal/FilterAliasGenerator.java
- * /hibernate-core-6-6-36-final-sources-jar/org/hibernate/annotations/CascadeType.java
- * /hibernate-core-6-6-36-final-sources-
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- * /hibernate-core-6-6-36-final-sources-jar/org/hibernate/event/internal/AbstractVisitor.java
- * /hibernate-core-6-6-36-final-sources-jar/org/hibernate/id/SequenceMismatchStrategy.java
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- * /hibernate-core-6-6-36-final-sources-jar/org/hibernate/boot/archive/scan/spi/ScanOptions.java
- * /hibernate-core-6-6-36-final-sources-jar/org/hibernate/bytecode/enhance/internal/bytebuddy/EnhancerClassLocator.java
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- /hibernate-core-6-6-36-final-sources-jar/org/hibernate/UnknownFilterException.java
- * /hibernate-core-6-6-36-final-sources-jar/org/hibernate/engine/spi/UnsavedValueStrategy.java
- * /hibernate-core-6-6-36-final-sources-jar/org/hibernate/exception/spi/TemplatedViolatedConstraintNameExtractor.java
- * /hibernate-core-6-6-36-final-sources-jar/org/hibernate/engine/jdbc/spi/ResultSetReturn.java
- * /hibernate-core-6-6-36-final-sources-jar/org/hibernate/id/insert/Binder.java
- * /hibernate-core-6-6-36-final-sources-jar/org/hibernate/internal/util/collections/JoinedList.java
- * /hibernate-core-6-6-36-final-sources-jar/org/hibernate/tool/schema/extract/internal/SequenceInformationExtractorHANADatabaseImpl.java
- * /hibernate-core-6-6-36-final-sources-jar/org/hibernate/tool/schema/internal/exec/ScriptTargetOutputToUrl.java
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- * /hibernate-core-6-6-36-final-sources-jar/org/hibernate/collection/internal/package-info.java
- * /hibernate-core-6-6-36-final-sources-jar/org/hibernate/engine/spi/EntityEntryExtraState.java
- * /hibernate-core-6-6-36-final-sources-jar/org/hibernate/type/AssociationType.java
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- /hibernate-core-6-6-36-final-sources-jar/org/hibernate/tool/schema/spi/Exporter.java
- * /hibernate-core-6-6-36-final-sources-jar/org/hibernate/relational/SchemaManager.java
- * /hibernate-core-6-6-36-final-sources-jar/org/hibernate/engine/jdbc/batch/package-info.java
- * /hibernate-core-6-6-36-final-sources-jar/org/hibernate/procedure/internal/ProcedureOutputsImpl.java
- * /hibernate-core-6-6-36-final-sources-jar/org/hibernate/ConnectionAcquisitionMode.java
- * /hibernate-core-6-6-36-final-sources-jar/org/hibernate/engine/jdbc/SerializableNClobProxy.java
- * /hibernate-core-6-6-36-final-sources-jar/org/hibernate/resource/transaction/backend/jta/internal/JtaTransactionAdapterTransactionManagerImpl.java
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 * /hibernate-core-6-6-36-final-sources-jar/org/hibernate/boot/model/source/internal/hbm/PluralAttributeElementSourceBasicImpl.java
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 * /hibernate-core-6-6-36-final-sources-jar/org/hibernate/cache/CacheException.java
 * /hibernate-core-6-6-36-final-sources-jar/org/hibernate/mapping/Map.java
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 * /hibernate-core-6-6-36-final-sources-jar/org/hibernate/boot/model/source/spi/EmbeddableSourceContributor.java
 * /hibernate-core-6-6-36-final-sources-jar/org/hibernate/boot/jaxb/internal/stax/BufferedXMLStreamReader.java
 * /hibernate-core-6-6-36-final-sources-jar/org/hibernate/boot/internal/SessionFactoryObserverForRegistration.java
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 * /hibernate-core-6-6-36-final-sources-jar/org/hibernate/binder/internal/DiscriminatorOptionsBinder.java
 * /hibernate-core-6-6-36-final-sources-jar/org/hibernate/annotations/Target.java
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 * /hibernate-core-6-6-36-final-sources-jar/org/hibernate/cfg/Configuration.java
 * /hibernate-core-6-6-36-final-sources-jar/org/hibernate/loader/MultipleBagFetchException.java
 * /hibernate-core-6-6-36-final-sources-jar/org/hibernate/generator/AnnotationBasedGenerator.java
 * /hibernate-core-6-6-36-final-sources-jar/org/hibernate/LockMode.java
 * /hibernate-core-6-6-36-final-sources-jar/org/hibernate/dialect/OracleDialect.java
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* /hibernate-core-6-6-36-final-sources-jar/org/hibernate/engine/jdbc/SerializableBlobProxy.java
* /hibernate-core-6-6-36-final-sources-
jar/org/hibernate/resource/transaction/backend/jdbc/internal/JdbcResourceLocalTransactionCoordinatorBuilderImpl.
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*
    /hibernate-core-6-6-36-final-sources-jar/org/hibernate/stat/internal/CollectionStatisticsImpl.java
* /hibernate-core-6-6-36-final-sources-jar/org/hibernate/action/internal/AbstractEntityInsertAction.java
* /hibernate-core-6-6-36-final-sources-jar/org/hibernate/boot/model/source/spi/NaturalIdMutability.java
* /hibernate-core-6-6-36-final-sources-jar/org/hibernate/dialect/PostgreSQLEnumJdbcType.java
* /hibernate-core-6-6-36-final-sources-jar/org/hibernate/id/IdentityGenerator.java
* /hibernate-core-6-6-36-final-sources-jar/org/hibernate/resource/transaction/internal/package-info.java
* /hibernate-core-6-6-36-final-sources-jar/org/hibernate/engine/spi/ExecutableList.java
* /hibernate-core-6-6-36-final-sources-jar/org/hibernate/mapping/Column.java
* /hibernate-core-6-6-36-final-sources-jar/org/hibernate/internal/AbstractScrollableResults.java
* /hibernate-core-6-6-36-final-sources-jar/org/hibernate/jpa/boot/spi/Bootstrap.java
*
    /hibernate-core-6-6-36-final-sources-
jar/org/hibernate/boot/model/source/internal/hbm/PluralAttributeElementSourceManyToAnyImpl.java
* /hibernate-core-6-6-36-final-sources-jar/org/hibernate/jpa/boot/spi/JpaSettings.java
* /hibernate-core-6-6-36-final-sources-
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* /hibernate-core-6-6-36-final-sources-
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* /hibernate-core-6-6-36-final-sources-jar/org/hibernate/tool/schema/internal/DefaultSchemaFilter.java
* /hibernate-core-6-6-36-final-sources-jar/org/hibernate/jpa/boot/spi/StrategyRegistrationProviderList.java
* /hibernate-core-6-6-36-final-sources-jar/org/hibernate/annotations/CollectionId.java
* /hibernate-core-6-6-36-final-sources-jar/org/hibernate/engine/jdbc/spi/SqlStatementLogger.java
* /hibernate-core-6-6-36-final-sources-jar/org/hibernate/dialect/sequence/LegacyDB2SequenceSupport.java
* /hibernate-core-6-6-36-final-sources-jar/org/hibernate/boot/model/process/spi/ManagedResources.java
*
    /hibernate-core-6-6-36-final-sources-jar/org/hibernate/Hibernate.java
* /hibernate-core-6-6-36-final-sources-jar/org/hibernate/boot/UnsupportedOrmXsdVersionException.java
* /hibernate-core-6-6-36-final-sources-jar/org/hibernate/dialect/LobMergeStrategy.java
* /hibernate-core-6-6-36-final-sources-jar/org/hibernate/boot/model/naming/PhysicalNamingStrategy.java
* /hibernate-core-6-6-36-final-sources-jar/org/hibernate/service/spi/Startable.java
* /hibernate-core-6-6-36-final-sources-jar/org/hibernate/boot/model/naming/ImplicitJoinColumnNameSource.java
* /hibernate-core-6-6-36-final-sources-jar/org/hibernate/exception/package-info.java
* /hibernate-core-6-6-36-final-sources-jar/org/hibernate/engine/config/spi/ConfigurationService.java
* /hibernate-core-6-6-36-final-sources-jar/org/hibernate/action/internal/DelayedPostInsertIdentifier.java
* /hibernate-core-6-6-36-final-sources-jar/org/hibernate/sql/results/graph/FetchOptionsImpl.java
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```

```

*/
/**
 * JTA platform implementation intended for use with WebSphere Application Server (WAS).
 * <p>
 * WAS, unlike every other app server on the planet, does not allow direct access to the JTS TransactionManager.
 * Instead, for common transaction-related tasks users must utilize a proprietary API known as
 * ExtendedJTATransaction.
 * <p>
 * Even more unfortunate, the exact TransactionManagerLookup to use inside of WAS is highly dependent upon<ul>
 *   <li>WAS version</li>
 *   <li>the WAS container in which Hibernate will be utilized</li>
 * </ul>
 * <p>
 * This class is reported to work on WAS version 6 in any of the standard J2EE/Java EE component containers.
 *
 * @author Gavin
 * King
 * @author Jesper Udby
 * @author Steve Ebersole
 */

```

Found in path(s):

```

* /hibernate-core-6-6-36-final-sources-
jar/org/hibernate/engine/transaction/jta/platform/internal/WebSphereExtendedJtaPlatform.java
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```

```

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```

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```

* /hibernate-core-6-6-36-final-sources-jar/org/hibernate/jpa/persistence_2_2.xsd
* /hibernate-core-6-6-36-final-sources-jar/org/hibernate/jpa/orm_2_2.xsd
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```

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 */
// public DomainResult createDomainResult(

```

Found in path(s):

```

* /hibernate-core-6-6-36-final-sources-jar/org/hibernate/query/sqm/tree/expression/SqmLiteralEntityType.java

```

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 */
/**
 * Read/write access to the shared second-level cache using
 * soft locks.
 *
 * <p>
 * Indicates a non-vanishing likelihood that two concurrent
 * transactions attempt to update the same item of data
 * simultaneously. This strategy uses "soft" locks to prevent
 * concurrent transactions from retrieving or storing a stale
 * item from or in the cache during the transaction completion
 * process. A soft lock is simply a marker entry placed in the
 * cache while the updating transaction completes.
 *
 * <ul>
 * <li>A second transaction may not read the item from the
 * cache while the soft lock is present, and instead
 * simply proceeds to read the item directly from
the
 * database, exactly as if a regular cache miss had
 * occurred.
 * <li>Similarly, the soft lock also prevents this second
 * transaction from storing a stale item to the cache
 * when it returns from its round trip to the database
 * with something that might not quite be the latest
 * version.
 * </ul>
 *
 * <p>
 * This concurrency strategy is not compatible with
 * serializable transaction isolation.
 *
 * @see AccessType#READ_WRITE
 */
```

Found in path(s):

* /hibernate-core-6-6-36-final-sources-jar/org/hibernate/annotations/CacheConcurrencyStrategy.java

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```
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```

*/

Found in path(s):

- * /hibernate-core-6-6-36-final-sources-jar/org/hibernate/cfg/JpaComplianceSettings.java
- * /hibernate-core-6-6-36-final-sources-jar/org/hibernate/sql/model/ast/MutatingTableReference.java
- * /hibernate-core-6-6-36-final-sources-jar/org/hibernate/boot/model/internal/JoinedSubclassFkSecondPass.java
- * /hibernate-core-6-6-36-final-sources-jar/org/hibernate/sql/model/ast/builder/TableMergeBuilder.java
- * /hibernate-core-6-6-36-final-sources-jar/org/hibernate/boot/jaxb/mapping/marshall/EnumTypeMarshalling.java
- * /hibernate-core-6-6-36-final-sources-jar/org/hibernate/boot/beanvalidation/IntegrationException.java
- * /hibernate-core-6-6-36-final-sources-jar/org/hibernate/loader/ast/internal/StandardBatchLoaderFactory.java
- *
- /hibernate-core-6-6-36-final-sources-jar/org/hibernate/boot/model/internal/EmbeddableBinder.java
- * /hibernate-core-6-6-36-final-sources-jar/org/hibernate/sql/ast/tree/predicate/InArrayPredicate.java
- * /hibernate-core-6-6-36-final-sources-jar/org/hibernate/sql/exec/internal/AbstractJdbcOperationQueryInsert.java
- * /hibernate-core-6-6-36-final-sources-jar/org/hibernate/boot/jaxb/mapping/marshall/FetchTypeMarshalling.java
- * /hibernate-core-6-6-36-final-sources-jar/org/hibernate/dialect/SqlAstTranslatorWithMerge.java
- * /hibernate-core-6-6-36-final-sources-jar/org/hibernate/boot/jaxb/mapping/DiscriminatorMapping.java
- * /hibernate-core-6-6-36-final-sources-jar/org/hibernate/metamodel/mapping/SoftDeletableModelPart.java
- * /hibernate-core-6-6-36-final-sources-jar/org/hibernate/loader/ast/internal/CollectionBatchLoaderArrayParam.java
- * /hibernate-core-6-6-36-final-sources-jar/org/hibernate/boot/model/internal/QuerySecondPass.java
- * /hibernate-core-6-6-36-final-sources-
- jar/org/hibernate/boot/model/source/internal/annotations/AnnotationMetadataSourceProcessorImpl.java
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- /hibernate-core-6-6-36-final-sources-
- jar/org/hibernate/sql/results/jdbc/internal/JdbcValuesMappingProducerProviderStandard.java
- * /hibernate-core-6-6-36-final-sources-jar/org/hibernate/sql/model/ast/builder/AbstractTableUpdateBuilder.java
- * /hibernate-core-6-6-36-final-sources-jar/org/hibernate/sql/model/jdbc/package-info.java
- * /hibernate-core-6-6-36-final-sources-jar/org/hibernate/boot/model/internal/PropertyPreloadedData.java
- * /hibernate-core-6-6-36-final-sources-jar/org/hibernate/metamodel/model/domain/DiscriminatorSqmPath.java
- * /hibernate-core-6-6-36-final-sources-jar/org/hibernate/sql/model/ast/AbstractTableUpdate.java
- * /hibernate-core-6-6-36-final-sources-jar/org/hibernate/boot/query/package-info.java
- * /hibernate-core-6-6-36-final-sources-jar/org/hibernate/boot/jaxb/mapping/SchemaAware.java
- * /hibernate-core-6-6-36-final-sources-jar/org/hibernate/sql/model/ast/AbstractRestrictedTableMutation.java
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- /hibernate-core-6-6-36-final-sources-jar/org/hibernate/boot/jaxb/hbm/transform/HbmXmlTransformer.java
- * /hibernate-core-6-6-36-final-sources-jar/org/hibernate/internal/BaselineSessionEventsListenerBuilder.java
- * /hibernate-core-6-6-36-final-sources-jar/org/hibernate/persister/collection/mutation/CollectionMutationTarget.java
- * /hibernate-core-6-6-36-final-sources-
- jar/org/hibernate/persister/collection/mutation/DeleteRowsCoordinatorNoOp.java
- * /hibernate-core-6-6-36-final-sources-
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- * /hibernate-core-6-6-36-final-sources-
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- * /hibernate-core-6-6-36-final-sources-jar/org/hibernate/sql/model/ast/AbstractTableMutation.java
- * /hibernate-core-6-6-36-final-sources-
- jar/org/hibernate/boot/model/internal/NullableDiscriminatorColumnSecondPass.java
- * /hibernate-core-6-6-36-final-sources-jar/org/hibernate/boot/model/NamedEntityGraphDefinition.java
- *

/hibernate-core-6-6-36-final-sources-jar/org/hibernate/boot/model/internal/AnyBinder.java
 * /hibernate-core-6-6-36-final-sources-jar/org/hibernate/persister/entity/mutation/InsertCoordinatorStandard.java
 * /hibernate-core-6-6-36-final-sources-jar/org/hibernate/metamodel/mapping/internal/SoftDeleteMappingImpl.java
 * /hibernate-core-6-6-36-final-sources-jar/org/hibernate/sql/model/ast/builder/TableDeleteBuilder.java
 * /hibernate-core-6-6-36-final-sources-jar/org/hibernate/boot/beanvalidation/ValidationMode.java
 * /hibernate-core-6-6-36-final-sources-jar/org/hibernate/boot/cfgxml/spi/package-info.java
 * /hibernate-core-6-6-36-final-sources-jar/org/hibernate/persister/collection/mutation/UpdateRowsCoordinatorTablePerSubclass.java
 * /hibernate-core-6-6-36-final-sources-jar/org/hibernate/loader/ast/spi/MultiKeyLoadSizingStrategy.java
 * /hibernate-core-6-6-36-final-sources-jar/org/hibernate/sql/Restriction.java
 * /hibernate-core-6-6-36-final-sources-jar/org/hibernate/sql/ast/internal/TableGroupJoinHelper.java
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 * /hibernate-core-6-6-36-final-sources-jar/org/hibernate/boot/jaxb/mapping/NaturalId.java
 * /hibernate-core-6-6-36-final-sources-jar/org/hibernate/engine/jdbc/mutation/internal/ModelMutationHelper.java
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 * /hibernate-core-6-6-36-final-sources-jar/org/hibernate/boot/jaxb/mapping/ToOneAttribute.java
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 * /hibernate-core-6-6-36-final-sources-jar/org/hibernate/loader/ast/internal/CacheEntityLoaderHelper.java
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 * /hibernate-core-6-6-36-final-sources-jar/org/hibernate/boot/model/internal/CopyIdentifierComponentSecondPass.java
 * /hibernate-core-6-6-36-final-sources-jar/org/hibernate/persister/entity/mutation/UpdateCoordinatorStandard.java
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 * /hibernate-core-6-6-36-final-sources-jar/org/hibernate/sql/RestrictionRenderingContext.java
 * /hibernate-core-6-6-36-final-sources-jar/org/hibernate/boot/model/internal/MapKeyJoinColumnDelegator.java
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 * /hibernate-core-6-6-36-final-sources-jar/org/hibernate/query/sqm/tree/expression/SqmHqlNumericLiteral.java
 * /hibernate-core-6-6-36-final-sources-jar/org/hibernate/boot/jaxb/mapping/LifecycleCallbackContainer.java
 * /hibernate-core-6-6-36-final-sources-jar/org/hibernate/persister/collection/mutation/UpdateRowsCoordinatorNoOp.java
 * /hibernate-core-6-6-36-final-sources-jar/org/hibernate/service/JavaServiceLoadable.java
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 * /hibernate-core-6-6-36-final-sources-jar/org/hibernate/engine/jdbc/env/internal/LobTypes.java
 * /hibernate-core-6-6-36-final-sources-jar/org/hibernate/engine/jdbc/mutation/internal/MutationExecutorSingleNonBatched.java
 * /hibernate-core-6-6-36-final-sources-jar/org/hibernate/boot/archive/scan/package-info.java
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 /hibernate-core-6-6-36-final-sources-jar/org/hibernate/persister/collection/mutation/package-info.java
 * /hibernate-core-6-6-36-final-sources-jar/org/hibernate/sql/model/ast/builder/TableInsertBuilderStandard.java
 * /hibernate-core-6-6-36-final-sources-jar/org/hibernate/boot/model/internal/PkDrivenByDefaultMapsIdSecondPass.java
 * /hibernate-core-6-6-36-final-sources-jar/org/hibernate/sql/ast/tree/expression/UnparsedNumericLiteral.java
 * /hibernate-core-6-6-36-final-sources-jar/org/hibernate/boot/jaxb/mapping/marshall/DiscriminatorTypeMarshalling.java
 * /hibernate-core-6-6-36-final-sources-jar/org/hibernate/sql/model/internal/TableUpdateCustomSql.java
 * /hibernate-core-6-6-36-final-sources-jar/org/hibernate/engine/jdbc/mutation/group/PreparedStatementDetails.java
 * /hibernate-core-6-6-36-final-sources-jar/org/hibernate/boot/model/internal/JPAXMLOverriddenAnnotationReader.java
 * /hibernate-core-6-6-36-final-sources-jar/org/hibernate/property/access/spi/EnhancedSetterMethodImpl.java
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 /hibernate-core-6-6-36-final-sources-jar/org/hibernate/metamodel/mapping/AttributeMappingsMap.java
 * /hibernate-core-6-6-36-final-sources-jar/org/hibernate/boot/model/internal/CollectionBinder.java
 * /hibernate-core-6-6-36-final-sources-jar/org/hibernate/boot/model/internal/MapKeyColumnDelegator.java
 * /hibernate-core-6-6-36-final-sources-jar/org/hibernate/engine/jdbc/batch/spi/BatchBuilder.java
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 * /hibernate-core-6-6-36-final-sources-jar/org/hibernate/boot/jaxb/hbm/transform/TargetColumnAdapter.java
 * /hibernate-core-6-6-36-final-sources-jar/org/hibernate/metamodel/mapping/AggregatedIdentifierMapping.java
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* /hibernate-core-6-6-36-final-sources-jar/org/hibernate/sql/model/ast/builder/TableDeleteBuilderSkipped.java
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 /hibernate-core-6-6-36-final-sources-jar/org/hibernate/property/access/internal/AbstractSetterMethodSerialForm.java
 * /hibernate-core-6-6-36-final-sources-jar/org/hibernate/boot/model/internal/PersistentAttributeFilter.java
 * /hibernate-core-6-6-36-final-sources-jar/org/hibernate/loader/ast/spi/SqlInPredicateMultiKeyLoader.java
 * /hibernate-core-6-6-36-final-sources-jar/org/hibernate/sql/model/jdbc/DeleteOrUpsertOperation.java
 * /hibernate-core-6-6-36-final-sources-jar/org/hibernate/sql/model/MutationOperationGroup.java
 * /hibernate-core-6-6-36-final-sources-jar/org/hibernate/boot/model/internal/IndexColumn.java
 * /hibernate-core-6-6-36-final-sources-jar/org/hibernate/query/sqm/mutation/internal/cte/CteSoftDeleteHandler.java
 * /hibernate-core-6-6-36-final-sources-jar/org/hibernate/boot/model/internal/OneToOneSecondPass.java
 * /hibernate-core-6-6-36-final-sources-jar/org/hibernate/sql/model/ast/RestrictedTableMutation.java
 * /hibernate-core-6-6-36-final-sources-jar/org/hibernate/query/sqm/mutation/internal/SqmMultiTableMutationStrategyProviderInitiator.java
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 * /hibernate-core-6-6-36-final-sources-jar/org/hibernate/boot/jaxb/hbm/transform/TargetColumnAdapterJaxbColumn.java
 * /hibernate-core-6-6-36-final-sources-jar/org/hibernate/boot/jaxb/hbm/transform/ColumnDefaults.java
 * /hibernate-core-6-6-36-final-sources-jar/org/hibernate/boot/model/internal/ListBinder.java
 * /hibernate-core-6-6-36-final-sources-jar/org/hibernate/engine/jdbc/mutation/internal/AbstractSingleMutationExecutor.java
 * /hibernate-core-6-6-36-final-sources-jar/org/hibernate/internal/util/IndexedBiConsumer.java
 * /hibernate-core-6-6-36-final-sources-jar/org/hibernate/boot/model/internal/ForeignKeyType.java
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 * /hibernate-core-6-6-36-final-sources-jar/org/hibernate/boot/model/internal/QueryHintDefinition.java
 * /hibernate-core-6-6-36-final-sources-jar/org/hibernate/metamodel/mapping/internal/ManyToManyCollectionPart.java
 * /hibernate-core-6-6-36-final-sources-jar/org/hibernate/boot/model/internal/AnnotatedColumn.java
 * /hibernate-core-6-6-36-final-sources-jar/org/hibernate/boot/model/internal/SimpleToOneFkSecondPass.java
 * /hibernate-core-6-6-36-final-sources-jar/org/hibernate/sql/model/ast/builder/ColumnValueBindingBuilder.java
 * /hibernate-core-6-6-36-final-sources-jar/org/hibernate/boot/beanvalidation/HibernateTraversableResolver.java
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 * /hibernate-core-6-6-36-final-sources-jar/org/hibernate/boot/jaxb/mapping/LifecycleCallback.java
 * /hibernate-core-6-6-36-final-sources-jar/org/hibernate/boot/spi/AdditionalMappingContributions.java
 * /hibernate-core-6-6-36-final-sources-jar/org/hibernate/metamodel/mapping/internal/ImmutableAttributeMappingsMap.java
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- * /hibernate-core-6-6-36-final-sources-jar/org/hibernate/loader/ast/spi/EntityBatchLoader.java
- * /hibernate-core-6-6-36-final-sources-jar/org/hibernate/loader/internal/SimpleNaturalIdLoadAccessImpl.java
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 * /hibernate-core-6-6-36-final-sources-jar/org/hibernate/sql/model/MutationTarget.java
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- /hibernate-core-6-6-36-final-sources-jar/org/hibernate/cfg/QuerySettings.java
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- * /hibernate-core-6-6-36-final-sources-jar/org/hibernate/persister/collection/DeprecatedCollectionStuff.java
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- * /hibernate-core-6-6-36-final-sources-jar/org/hibernate/boot/model/internal/FetchOverrideSecondPass.java
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- /hibernate-core-6-6-36-final-sources-jar/org/hibernate/procedure/ParameterTypeException.java
- * /hibernate-core-6-6-36-final-sources-jar/org/hibernate/persister/entity/mutation/UpdateCoordinatorNoOp.java
- * /hibernate-core-6-6-36-final-sources-jar/org/hibernate/persister/collection/mutation/CollectionTableMapping.java
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- * /hibernate-core-6-6-36-final-sources-jar/org/hibernate/id/insert/GetGeneratedKeysDelegate.java
- * /hibernate-core-6-6-36-final-sources-jar/org/hibernate/sql/model/internal/TableDeleteCustomSql.java
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- * /hibernate-core-6-6-36-final-sources-jar/org/hibernate/sql/CompleteRestriction.java
- * /hibernate-core-6-6-36-final-sources-jar/org/hibernate/cache/spi/access/AccessType.java
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- * /hibernate-core-6-6-36-final-sources-jar/org/hibernate/boot/model/internal/ToOneFkSecondPass.java
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* /hibernate-core-6-6-36-final-sources-jar/org/hibernate/boot/model/internal/WrappedInferredData.java
* /hibernate-core-6-6-36-final-sources-jar/org/hibernate/boot/jaxb/mapping/marshall/AccessTypeMarshalling.java

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* /hibernate-core-6-6-36-final-sources-jar/org/hibernate/sql/model/jdbc/JdbcValueDescriptor.java
* /hibernate-core-6-6-36-final-sources-jar/org/hibernate/engine/jdbc/mutation/JdbcValueBindings.java
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* /hibernate-core-6-6-36-final-sources-jar/org/hibernate/boot/beanvalidation/GroupsPerOperation.java
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* /hibernate-core-6-6-36-final-sources-jar/org/hibernate/engine/jdbc/mutation/internal/NoBatchKeyAccess.java
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* /hibernate-core-6-6-36-final-sources-jar/org/hibernate/boot/model/internal/ComponentPropertyHolder.java
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```

```

/*
* Hibernate, Relational Persistence for Idiomatic Java
*
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* See the lgpl.txt file in the root directory or <http://www.gnu.org/licenses/lgpl-2.1.html>.
*/
/**
* In {@link jakarta.persistence.InheritanceType#SINGLE_TABLE single table}
* inheritance, subclasses share a table with the root class by definition. But
* for {@link jakarta.persistence.InheritanceType#JOINED joined} or
* {@link jakarta.persistence.InheritanceType#TABLE_PER_CLASS union} mappings,
* the subclasses are assumed to occupy distinct tables, and it's an error to map
* two subclasses to the same table.
*
* <p>
* As a special exception to this, if a joined inheritance hierarchy defines an
* explicit {@link jakarta.persistence.DiscriminatorColumn}, we tolerate table
* duplication among the subclasses, but we must "force" the discriminator to
*
* account for this. (See issue HHH-14526.)
*/

```

Found in path(s):

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* /hibernate-core-6-6-36-final-sources-jar/org/hibernate/mapping/RootClass.java
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-->

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* /hibernate-core-6-6-36-final-sources-jar/org/hibernate/jpa/orm_3_1.xsd

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*/

// It supports a proprietary operator

Found in path(s):

* /hibernate-core-6-6-36-final-sources-jar/org/hibernate/dialect/MariaDBSqlAstTranslator.java

* /hibernate-core-6-6-36-final-sources-jar/org/hibernate/dialect/MySQLSqlAstTranslator.java

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*/

/**

* Use the proprietary WITH ROLLUP or WITH CUBE clause.

*/

Found in path(s):

* /hibernate-core-6-6-36-final-sources-jar/org/hibernate/dialect/GroupBySummarizationRenderingStrategy.java

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/opt/cola/permits/2771735642_1765252933.7572887/0/hibernate-core-6-6-36-final-sources-jar/org/hibernate/type/descriptor/jdbc/VarbinaryJdbcType.java/*
/opt/cola/permits/2771735642_1765252933.7572887/0/hibernate-core-6-6-36-final-sources-jar/org/hibernate/type/descriptor/jdbc/VarcharJdbcType.java/*
/opt/cola/permits/2771735642_1765252933.7572887/0/hibernate-core-6-6-36-final-sources-jar/org/hibernate/type/descriptor/jdbc/XmlAsStringJdbcType.java/*
/opt/cola/permits/2771735642_1765252933.7572887/0/hibernate-core-6-6-36-final-sources-jar/org/hibernate/type/descriptor/jdbc/XmlJdbcType.java/*
/opt/cola/permits/2771735642_1765252933.7572887/0/hibernate-core-6-6-36-final-sources-jar/org/hibernate/type/descriptor/jdbc/ZonedDateTimeJdbcType.java/*
/opt/cola/permits/2771735642_1765252933.7572887/0/hibernate-core-6-6-36-final-sources-jar/org/hibernate/type/descriptor/jdbc/internal/AbstractJavaTimeJdbcType.java/*
/opt/cola/permits/2771735642_1765252933.7572887/0/hibernate-core-6-6-36-final-sources-jar/org/hibernate/type/descriptor/jdbc/internal/DelayedStructJdbcType.java/*

/opt/cola/permits/2771735642_1765252933.7572887/0/hibernate-core-6-6-36-final-sources-jar/org/hibernate/type/descriptor/jdbc/internal/GetObjectExtractor.java/*

/opt/cola/permits/2771735642_1765252933.7572887/0/hibernate-core-6-6-36-final-sources-jar/org/hibernate/type/descriptor/jdbc/internal/JdbcLiteralFormatterArray.java/*

/opt/cola/permits/2771735642_1765252933.7572887/0/hibernate-core-6-6-36-final-sources-jar/org/hibernate/type/descriptor/jdbc/internal/JdbcLiteralFormatterBinary.java/*

/opt/cola/permits/2771735642_1765252933.7572887/0/hibernate-core-6-6-36-final-sources-jar/org/hibernate/type/descriptor/jdbc/internal/JdbcLiteralFormatterBoolean.java/*

/opt/cola/permits/2771735642_1765252933.7572887/0/hibernate-core-6-6-36-final-sources-jar/org/hibernate/type/descriptor/jdbc/internal/JdbcLiteralFormatterCharacterData.java/*

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/opt/cola/permits/2771735642_1765252933.7572887/0/hibernate-core-6-6-36-final-sources-jar/org/hibernate/type/descriptor/jdbc/internal/JdbcLiteralFormatterTemporal.java/*

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/opt/cola/permits/2771735642_1765252933.7572887/0/hibernate-core-6-6-36-final-sources-jar/org/hibernate/type/descriptor/jdbc/package-info.java/*

/opt/cola/permits/2771735642_1765252933.7572887/0/hibernate-core-6-6-36-final-sources-jar/org/hibernate/type/descriptor/jdbc/spi/AbstractJdbcLiteralFormatter.java/*

/opt/cola/permits/2771735642_1765252933.7572887/0/hibernate-core-6-6-36-final-sources-jar/org/hibernate/type/descriptor/jdbc/spi/BasicJdbcLiteralFormatter.java/*

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/opt/cola/permits/2771735642_1765252933.7572887/0/hibernate-core-6-6-36-final-sources-jar/org/hibernate/type/descriptor/sql/internal/BinaryFloatDdlType.java/*

/opt/cola/permits/2771735642_1765252933.7572887/0/hibernate-core-6-6-36-final-sources-jar/org/hibernate/type/descriptor/sql/internal/CapacityDependentDdlType.java/*

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/opt/cola/permits/2771735642_1765252933.7572887/0/hibernate-core-6-6-36-final-sources-jar/org/hibernate/type/descriptor/sql/internal/NamedNativeEnumDdlTypeImpl.java/*

/opt/cola/permits/2771735642_1765252933.7572887/0/hibernate-core-6-6-36-final-sources-jar/org/hibernate/type/descriptor/sql/internal/NamedNativeOrdinalEnumDdlTypeImpl.java/*

/opt/cola/permits/2771735642_1765252933.7572887/0/hibernate-core-6-6-36-final-sources-jar/org/hibernate/type/descriptor/sql/internal/NativeEnumDdlTypeImpl.java/*

/opt/cola/permits/2771735642_1765252933.7572887/0/hibernate-core-6-6-36-final-sources-jar/org/hibernate/type/descriptor/sql/internal/NativeOrdinalEnumDdlTypeImpl.java/*

/opt/cola/permits/2771735642_1765252933.7572887/0/hibernate-core-6-6-36-final-sources-jar/org/hibernate/type/descriptor/sql/internal/Scale6IntervalSecondDdlType.java/*
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/opt/cola/permits/2771735642_1765252933.7572887/0/hibernate-core-6-6-36-final-sources-jar/org/hibernate/type/descriptor/sql/spi/DdlTypeRegistry.java/*
/opt/cola/permits/2771735642_1765252933.7572887/0/hibernate-core-6-6-36-final-sources-jar/org/hibernate/type/descriptor/sql/spi/package-info.java/*
/opt/cola/permits/2771735642_1765252933.7572887/0/hibernate-core-6-6-36-final-sources-jar/org/hibernate/type/format/AbstractJsonFormatMapper.java/*
/opt/cola/permits/2771735642_1765252933.7572887/0/hibernate-core-6-6-36-final-sources-jar/org/hibernate/type/format/FormatMapper.java/*
/opt/cola/permits/2771735642_1765252933.7572887/0/hibernate-core-6-6-36-final-sources-jar/org/hibernate/type/format/FormatMapperCreationContext.java/*
/opt/cola/permits/2771735642_1765252933.7572887/0/hibernate-core-6-6-36-final-sources-jar/org/hibernate/type/format/jackson/JacksonIntegration.java/*
/opt/cola/permits/2771735642_1765252933.7572887/0/hibernate-core-6-6-36-final-sources-jar/org/hibernate/type/format/jackson/JacksonJsonFormatMapper.java/*
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/opt/cola/permits/2771735642_1765252933.7572887/0/hibernate-core-6-6-36-final-sources-jar/org/hibernate/type/format/jackson/package-info.java/*
/opt/cola/permits/2771735642_1765252933.7572887/0/hibernate-core-6-6-36-final-sources-jar/org/hibernate/type/format/jakartajson/JakartaJsonIntegration.java/*
/opt/cola/permits/2771735642_1765252933.7572887/0/hibernate-core-6-6-36-final-sources-jar/org/hibernate/type/format/jakartajson/JsonBJsonFormatMapper.java/*
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/opt/cola/permits/2771735642_1765252933.7572887/0/hibernate-core-6-6-36-final-sources-jar/org/hibernate/type/format/jaxb/JaxbXmlFormatMapper.java/*
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/opt/cola/permits/2771735642_1765252933.7572887/0/hibernate-core-6-6-36-final-sources-jar/org/hibernate/type/format/package-info.java/*
/opt/cola/permits/2771735642_1765252933.7572887/0/hibernate-core-6-6-36-final-sources-jar/org/hibernate/type/internal/BasicTypeImpl.java/*
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/opt/cola/permits/2771735642_1765252933.7572887/0/hibernate-core-6-6-36-final-sources-jar/org/hibernate/type/internal/CustomMutabilityConvertedPrimitiveBasicTypeImpl.java/*
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/opt/cola/permits/2771735642_1765252933.7572887/0/hibernate-core-6-6-36-final-sources-jar/org/hibernate/type/internal/UserTypeSqlTypeAdapter.java/*
/opt/cola/permits/2771735642_1765252933.7572887/0/hibernate-core-6-6-36-final-sources-jar/org/hibernate/type/internal/UserTypeVersionJavaTypeWrapper.java/*
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/opt/cola/permits/2771735642_1765252933.7572887/0/hibernate-core-6-6-36-final-sources-jar/org/hibernate/type/spi/package-info.java/*
/opt/cola/permits/2771735642_1765252933.7572887/0/hibernate-core-6-6-36-final-sources-jar/org/hibernate/usertype/BaseUserTypeSupport.java/*
/opt/cola/permits/2771735642_1765252933.7572887/0/hibernate-core-6-6-36-final-sources-jar/org/hibernate/usertype/CompositeUserType.java/*
/opt/cola/permits/2771735642_1765252933.7572887/0/hibernate-core-6-6-36-final-sources-jar/org/hibernate/usertype/DynamicParameterizedType.java/*
/opt/cola/permits/2771735642_1765252933.7572887/0/hibernate-core-6-6-36-final-sources-jar/org/hibernate/usertype/EnhancedUserType.java/*
/opt/cola/permits/2771735642_1765252933.7572887/0/hibernate-core-6-6-36-final-sources-jar/org/hibernate/usertype/LoggableUserType.java/*
/opt/cola/permits/2771735642_1765252933.7572887/0/hibernate-core-6-6-36-final-sources-jar/org/hibernate/usertype/ParameterizedType.java/*
/opt/cola/permits/2771735642_1765252933.7572887/0/hibernate-core-6-6-36-final-sources-jar/org/hibernate/usertype/StaticUserTypeSupport.java/*
/opt/cola/permits/2771735642_1765252933.7572887/0/hibernate-core-6-6-36-final-sources-jar/org/hibernate/usertype/UserCollectionType.java/*
/opt/cola/permits/2771735642_1765252933.7572887/0/hibernate-core-6-6-36-final-sources-jar/org/hibernate/usertype/UserType.java/*
/opt/cola/permits/2771735642_1765252933.7572887/0/hibernate-core-6-6-36-final-sources-jar/org/hibernate/usertype/UserTypeLegacyBridge.java/*
/opt/cola/permits/2771735642_1765252933.7572887/0/hibernate-core-6-6-36-final-sources-jar/org/hibernate/usertype/UserTypeSupport.java/*
/opt/cola/permits/2771735642_1765252933.7572887/0/hibernate-core-6-6-36-final-sources-jar/org/hibernate/usertype/UserVersionType.java/*
/opt/cola/permits/2771735642_1765252933.7572887/0/hibernate-core-6-6-36-final-sources-jar/org/hibernate/usertype/internal/AbstractTimeZoneStorageCompositeUserType.java/*

```

/opt/cola/permits/2771735642_1765252933.7572887/0/hibernate-core-6-6-36-final-sources-
jar/org/hibernate/usertype/internal/OffsetDateTimeCompositeUserType.java/*
/opt/cola/permits/2771735642_1765252933.7572887/0/hibernate-core-6-6-36-final-sources-
jar/org/hibernate/usertype/internal/OffsetTimeCompositeUserType.java/*
/opt/cola/permits/2771735642_1765252933.7572887/0/hibernate-core-6-6-36-final-sources-
jar/org/hibernate/usertype/internal/ZonedDateTimeCompositeUserType.java/*
/opt/cola/permits/2771735642_1765252933.7572887/0/hibernate-core-6-6-36-final-sources-
jar/org/hibernate/usertype/package-info.java/*
/opt/cola/permits/2771735642_1765252933.7572887/0/hibernate-core-6-6-36-final-sources-
jar/org/hibernate/xsd/cfg/legacy-configuration-4.0.xsd<?xml
    version="1.0" encoding="UTF-8"?>
/opt/cola/permits/2771735642_1765252933.7572887/0/hibernate-core-6-6-36-final-sources-
jar/org/hibernate/xsd/mapping/legacy-mapping-4.0.xsd<?xml version="1.0" encoding="UTF-8"?>
/opt/cola/permits/2771735642_1765252933.7572887/0/hibernate-core-6-6-36-final-sources-
jar/org/hibernate/xsd/mapping/mapping-3.1.0.xsd<?xml version="1.0" encoding="UTF-8"?>

```

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/**

* Subclass used to simply instantiation of singular attributes representing an entity's

* version.

*/

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* /hibernate-core-6-6-36-final-sources-

jar/org/hibernate/metamodel/model/domain/internal/SingularAttributeImpl.java

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*/

/**

* Used to pass a CDI {@link jakarta.enterprise.inject.spi.BeanManager} to

* Hibernate.

* <p>

* According to the JPA specification, the {@code BeanManager} should be

- * passed at boot time and be ready for immediate use at that time. But
- * not all environments can do this (WildFly, for example). To accommodate
- * such environments, Hibernate provides two options:
- * A proprietary CDI extension SPI (which has been proposed to the CDI
- * spec group as a standard option) which can be used to provide delayed
- * {@code BeanManager} access: to use this solution, the reference passed
- * as the {@code BeanManager} during bootstrap should

be typed as

- * {@link org.hibernate.resource.beans.container.spi.ExtendedBeanManager}.
- * Delayed access to the {@code BeanManager} reference: here, Hibernate
- * will not access the reference passed as the {@code BeanManager} during
- * bootstrap until it is first needed. Note, however, that this has the
- * effect of delaying the detection of any deployment problems until after
- * bootstrapping.

- *
- *
- * This setting is used to configure access to the {@code BeanManager},
- * either directly, or via
- * {@link org.hibernate.resource.beans.container.spi.ExtendedBeanManager}.
- *
- * @see org.hibernate.boot.SessionFactoryBuilder#applyBeanManager(Object)
- */

Found in path(s):

- * /hibernate-core-6-6-36-final-sources-jar/org/hibernate/cfg/ManagedBeanSettings.java

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-->
```

Found in path(s):

- * /hibernate-core-6-6-36-final-sources-jar/org/hibernate/hibernate-configuration-4.0.xsd
- * /hibernate-core-6-6-36-final-sources-jar/org/hibernate/jpa/orm_2_0.xsd
- * /hibernate-core-6-6-36-final-sources-jar/org/hibernate/jpa/persistence_2_0.xsd
- * /hibernate-core-6-6-36-final-sources-jar/org/hibernate/jpa/orm_1_0.xsd
- * /hibernate-core-6-6-36-final-sources-jar/org/hibernate/jpa/persistence_1_0.xsd
- * /hibernate-core-6-6-36-final-sources-jar/org/hibernate/jpa/persistence_2_1.xsd
- * /hibernate-core-6-6-36-final-sources-jar/org/hibernate/hibernate-mapping-4.0.xsd
- * /hibernate-core-6-6-36-final-sources-jar/org/hibernate/jpa/orm_2_1.xsd

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- * /hibernate-core-6-6-36-final-sources-jar/org/hibernate/jpa/orm_3_0.xsd
- * /hibernate-core-6-6-36-final-sources-jar/org/hibernate/jpa/persistence_3_1.xsd
- * /hibernate-core-6-6-36-final-sources-jar/org/hibernate/jpa/persistence_3_0.xsd

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 */
// "proprietary" methods is better (this class is "proprietary" too).
```

Found in path(s):

- * /hibernate-core-6-6-36-final-sources-jar/org/hibernate/graph/EntityGraphs.java

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 */
/**
 * Specifies a duration in milliseconds defining the minimum query execution time that
 * characterizes a "slow" query. Any SQL query which takes longer than this amount of
 * time to execute will be logged.
 * <p>
 * A value of {@code 0}, the default, disables logging of "slow" queries.
 *
 * @see org.hibernate.stat.Statistics#getSlowQueries()
 */
```

Found in path(s):

- * /hibernate-core-6-6-36-final-sources-jar/org/hibernate/cfg/JdbcSettings.java

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 */

```

Found in path(s):

* /hibernate-core-6-6-36-final-sources-jar/org/hibernate/internal/util/NullnessUtil.java

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```

Found in path(s):

* /hibernate-core-6-6-36-final-sources-jar/org/hibernate/metamodel/spi/MetamodelImplementor.java

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 */
/**

```

```

* Does this dialect support the SQL {@code lateral} keyword or a
* proprietary alternative?
*
* @return {@code true} if the underlying database supports lateral,
* {@code false} otherwise. The default is {@code false}.
*/

```

Found in path(s):

* /hibernate-core-6-6-36-final-sources-jar/org/hibernate/dialect/Dialect.java

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*/
/*
* Written by Doug Lea with assistance from members of JCP JSR-166
* Expert Group and released to the public domain, as explained at
* http://creativecommons.org/licenses/publicdomain
*/

```

Found in path(s):

* /hibernate-core-6-6-36-final-sources-jar/org/hibernate/internal/util/collections/ConcurrentReferenceHashMap.java

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```

/*
* Hibernate, Relational Persistence for Idiomatic Java
*
* License: GNU Lesser General Public License (LGPL), version 2.1 or later.
* See the lgpl.txt file in the root directory or <http://www.gnu.org/licenses/lgpl-2.1.html>.
*/
/*
* Written by Doug Lea with assistance from members of JCP JSR-166
* Expert Group and released to the public domain, as explained at
* http://creativecommons.org/licenses/publicdomain
*
* Modified for https://jira.jboss.org/jira/browse/ISPN-299
* Includes ideas described in http://portal.acm.org/citation.cfm?id=1547428
*
*/
/**
* A hash table supporting full concurrency of retrievals and
* adjustable expected concurrency for updates. This class obeys the
* same functional specification as {@link java.util.Hashtable}, and
* includes versions of methods corresponding to each method of
* {@code Hashtable}. However, even though all operations are

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- * thread-safe, retrieval operations
- do `<em>not</em>` entail locking,
- * and there is `<em>not</em>` any support for locking the entire table
- * in a way that prevents all access. This class is fully
- * interoperable with `{@code Hashtable}` in programs that rely on its
- * thread safety but not on its synchronization details.
- * `<p>`
- * `<p>` Retrieval operations (including `{@code get}`) generally do not
- * block, so may overlap with update operations (including
- * `{@code put}` and `{@code remove}`). Retrievals reflect the results
- * of the most recently `<em>completed</em>` update operations holding
- * upon their onset. For aggregate operations such as `{@code putAll}`
- * and `{@code clear}`, concurrent retrievals may reflect insertion or
- * removal of only some entries. Similarly, Iterators and
- * Enumerations return elements reflecting the state of the hash table
- * at some point at or since the creation of the iterator/enumeration.
- * They do `<em>not</em>` throw `{@link java.util.ConcurrentModificationException}`.
- * However,
- iterators are designed to be used by only one thread at a time.
- * `<p>`
- * `<p>` The allowed concurrency among update operations is guided by
- * the optional `{@code concurrencyLevel}` constructor argument
- * (default `{@code 16}`), which is used as a hint for internal sizing. The
- * table is internally partitioned to try to permit the indicated
- * number of concurrent updates without contention. Because placement
- * in hash tables is essentially random, the actual concurrency will
- * vary. Ideally, you should choose a value to accommodate as many
- * threads as will ever concurrently modify the table. Using a
- * significantly higher value than you need can waste space and time,
- * and a significantly lower value can lead to thread contention. But
- * overestimates and underestimates within an order of magnitude do
- * not usually have much noticeable impact. A value of one is
- * appropriate when it is known that only one thread will modify and
- * all others will only read. Also, resizing this
- or any other kind of
- * hash table is a relatively slow operation, so, when possible, it is
- * a good idea to provide estimates of expected table sizes in
- * constructors.
- * `<p>`
- * `<p>`This class and its views and iterators implement all of the
- * `<em>optional</em>` methods of the `{@link Map}` and `{@link Iterator}`
- * interfaces.
- * `<p>`
- * `<p>`This class is copied from Infinispan, and was originally written
- * by Doug Lea with assistance from members of JCP JSR-166 Expert Group and
- * released to the public domain, as explained at
- * `http://creativecommons.org/licenses/publicdomain</p>`
- * `<p>`

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* <p>
* <p> Like {@link java.util.Hashtable} but unlike {@link HashMap}, this class
* does <em>not</em> allow {@code null} to be used as a key or value.
*
* @param <K> the type of keys maintained by this map
* @param <V> the type of mapped values
*
* @author Doug Lea
*/

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Found in path(s):

```

* /hibernate-core-6-6-36-final-sources-jar/org/hibernate/internal/util/collections/BoundedConcurrentHashMap.java
No license file was found, but licenses were detected in source scan.

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~

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Found in path(s):

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* /hibernate-core-6-6-36-final-sources-jar/org/hibernate/hibernate-configuration-3.0.dtd
* /hibernate-core-6-6-36-final-sources-jar/org/hibernate/hibernate-mapping-3.0.dtd
No license file was found, but licenses were detected in source scan.

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Found in path(s):

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* /hibernate-core-6-6-36-final-sources-jar/org/hibernate/query/sqm/internal/SimpleDeleteQueryPlan.java
* /hibernate-core-6-6-36-final-sources-jar/org/hibernate/query/sqm/mutation/spi/SqmMultiTableInsertStrategy.java
* /hibernate-core-6-6-36-final-sources-jar/org/hibernate/persister/spi/package-info.java
* /hibernate-core-6-6-36-final-sources-
jar/org/hibernate/query/sqm/mutation/internal/inline/MatchingIdRestrictionProducer.java
* /hibernate-core-6-6-36-final-sources-jar/org/hibernate/procedure/internal/ProcedureParameterImpl.java
* /hibernate-core-6-6-36-final-sources-jar/org/hibernate/cache/cfg/internal/EntityDataCachingConfigImpl.java
* /hibernate-core-6-6-36-final-sources-jar/org/hibernate/query/criteria/JpaCteCriteria.java
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* /hibernate-core-6-6-36-final-sources-
jar/org/hibernate/sql/results/graph/collection/internal/AbstractNonJoinCollectionInitializer.java
* /hibernate-core-6-6-36-final-sources-jar/org/hibernate/query/spi/ParameterMetadataImplementor.java
* /hibernate-core-6-6-36-final-sources-jar/org/hibernate/query/sqm/FrameMode.java
* /hibernate-core-6-6-36-final-sources-jar/org/hibernate/metamodel/spi/Instantiator.java
* /hibernate-core-6-6-36-final-sources-
jar/org/hibernate/sql/results/graph/entity/internal/BatchEntitySelectFetchInitializer.java

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* /hibernate-core-6-6-36-final-sources-jar/org/hibernate/dialect/identity/MariaDBIdentityColumnSupport.java
 * /hibernate-core-6-6-36-final-sources-jar/org/hibernate/query/sqm/tree/domain/SqmPluralValuedSimplePath.java
 * /hibernate-core-6-6-36-final-sources-jar/org/hibernate/sql/ast/tree/expression/JdbcLiteral.java
 * /hibernate-core-6-6-36-final-sources-jar/org/hibernate/query/sqm/mutation/internal/temptable/UpdateExecutionDelegate.java
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 /hibernate-core-6-6-36-final-sources-jar/org/hibernate/sql/exec/spi/JdbcParametersList.java
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 * /hibernate-core-6-6-36-final-sources-jar/org/hibernate/sql/ast/SqlTreeCreationLogger.java
 * /hibernate-core-6-6-36-final-sources-jar/org/hibernate/metamodel/model/domain/internal/EntityDiscriminatorSqmPathSource.java
 * /hibernate-core-6-6-36-final-sources-jar/org/hibernate/jpa/boot/package-info.java
 * /hibernate-core-6-6-36-final-sources-jar/org/hibernate/dialect/function/array/ArrayIncludesOperatorFunction.java
 * /hibernate-core-6-6-36-final-sources-jar/org/hibernate/boot/model/convert/spi/JpaAttributeConverterCreationContext.java
 * /hibernate-core-6-6-36-final-sources-jar/org/hibernate/collection/spi/AbstractSetSemantics.java
 * /hibernate-core-6-6-36-final-sources-jar/org/hibernate/metamodel/mapping/MappingModelHelper.java
 * /hibernate-core-6-6-36-final-sources-jar/org/hibernate/query/internal/ImplicitAttributeFetchMemento.java
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 * /hibernate-core-6-6-36-final-sources-jar/org/hibernate/boot/model/convert/spi/AutoApplicableConverterDescriptor.java
 * /hibernate-core-6-6-36-final-sources-jar/org/hibernate/sql/results/graph/instantiation/internal/DynamicInstantiationAssemblerMapImpl.java
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 * /hibernate-core-6-6-36-final-sources-jar/org/hibernate/dialect/function/array/H2ArrayPositionsFunction.java
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 * /hibernate-core-6-6-36-final-sources-jar/org/hibernate/cache/spi/CacheImplementor.java
 * /hibernate-core-6-6-36-final-sources-jar/org/hibernate/metamodel/spi/ManagedTypeRepresentationResolver.java
 * /hibernate-core-6-6-36-final-sources-jar/org/hibernate/sql/ast/tree/predicate/NegatedPredicate.java
 * /hibernate-core-6-6-36-final-sources-jar/org/hibernate/sql/results/internal/RowTransformerTupleTransformerAdapter.java
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 * /hibernate-core-6-6-36-final-sources-jar/org/hibernate/sql/ast/tree/cte/SelfRenderingCteObject.java
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 * /hibernate-core-6-6-36-final-sources-jar/org/hibernate/query/spi/SqlOmittingQueryOptions.java
 * /hibernate-core-6-6-36-final-sources-jar/org/hibernate/query/sqm/UnknownEntityException.java

- * /hibernate-core-6-6-36-final-sources-jar/org/hibernate/dialect/function/array/H2ArrayIntersectsFunction.java
- * /hibernate-core-6-6-36-final-sources-jar/org/hibernate/query/sql/NativeQueryLogging.java
- * /hibernate-core-6-6-36-final-sources-jar/org/hibernate/cache/spi/support/SimpleTimestampper.java
- * /hibernate-core-6-6-36-final-sources-jar/org/hibernate/sql/results/graph/instantiation/internal/DynamicInstantiationAssemblerListImpl.java
- * /hibernate-core-6-6-36-final-sources-jar/org/hibernate/sql/ast/tree/from/TableGroupJoin.java
- * /hibernate-core-6-6-36-final-sources-jar/org/hibernate/query/sqm/internal/SqmPathVisitor.java
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- /hibernate-core-6-6-36-final-sources-jar/org/hibernate/query/sqm/tree/expression/SqmExpressionHelper.java
- * /hibernate-core-6-6-36-final-sources-jar/org/hibernate/collection/spi/AbstractPersistentCollection.java
- * /hibernate-core-6-6-36-final-sources-jar/org/hibernate/annotations/JdbcType.java
- * /hibernate-core-6-6-36-final-sources-jar/org/hibernate/sql/results/graph/instantiation/internal/BeanInjection.java
- * /hibernate-core-6-6-36-final-sources-jar/org/hibernate/collection/spi/PersistentArrayHolder.java
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- * /hibernate-core-6-6-36-final-sources-jar/org/hibernate/query/sqm/SqmTreeCreationLogger.java
- * /hibernate-core-6-6-36-final-sources-jar/org/hibernate/sql/results/graph/collection/internal/SetInitializerProducer.java
- * /hibernate-core-6-6-36-final-sources-jar/org/hibernate/query/sqm/tree/predicate/SqmEmptinessPredicate.java
- * /hibernate-core-6-6-36-final-sources-jar/org/hibernate/query/results/complete/package-info.java
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- /hibernate-core-6-6-36-final-sources-jar/org/hibernate/query/sqm/ComparisonOperator.java
- * /hibernate-core-6-6-36-final-sources-jar/org/hibernate/sql/ast/tree/from/FunctionTableReference.java
- * /hibernate-core-6-6-36-final-sources-jar/org/hibernate/query/criteria/JpaSetJoin.java
- * /hibernate-core-6-6-36-final-sources-jar/org/hibernate/query/results/complete/CompleteResultBuilderCollectionStandard.java
- * /hibernate-core-6-6-36-final-sources-jar/org/hibernate/persister/walking/package-info.java
- * /hibernate-core-6-6-36-final-sources-jar/org/hibernate/sql/results/graph/collection/internal/CollectionAssembler.java
- * /hibernate-core-6-6-36-final-sources-jar/org/hibernate/sql/results/graph/basic/BasicResultAssembler.java
- * /hibernate-core-6-6-36-final-sources-jar/org/hibernate/query/results/ResultBuilderInstantiationValued.java
- * /hibernate-core-6-6-36-final-sources-jar/org/hibernate/cache/spi/access/CachedDomainDataAccess.java
- * /hibernate-core-6-6-36-final-sources-jar/org/hibernate/cache/spi/support/RegionFactoryTemplate.java
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- * /hibernate-core-6-6-36-final-sources-jar/org/hibernate/loader/ast/internal/CollectionLoaderSingleKey.java
- * /hibernate-core-6-6-36-final-sources-jar/org/hibernate/dialect/OracleSqlAstTranslator.java
- * /hibernate-core-6-6-36-final-sources-jar/org/hibernate/sql/exec/spi/JdbcParameterBindings.java
- * /hibernate-core-6-6-36-final-sources-jar/org/hibernate/sql/ast/tree/cte/CteMaterialization.java
- * /hibernate-core-6-6-36-final-sources-jar/org/hibernate/collection/package-info.java
- * /hibernate-core-6-6-36-final-sources-jar/org/hibernate/query/sqm/mutation/internal/temptable/InsertExecutionDelegate.java
- * /hibernate-core-6-6-36-final-sources-jar/org/hibernate/boot/query/NamedProcedureCallDefinition.java
- * /hibernate-core-6-6-36-final-sources-jar/org/hibernate/metamodel/model/domain/internal/AnyMappingDomainTypeImpl.java
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- /hibernate-core-6-6-36-final-sources-jar/org/hibernate/query/criteria/JpaSimpleCase.java
- * /hibernate-core-6-6-36-final-sources-


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jar/org/hibernate/metamodel/mapping/internal/EntityVersionMappingImpl.java
* /hibernate-core-6-6-36-final-sources-jar/org/hibernate/sql/ast/tree/from/PluralTableGroup.java
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* /hibernate-core-6-6-36-final-sources-jar/org/hibernate/query/sqm/tree/insert/SqmConflictClause.java
* /hibernate-core-6-6-36-final-sources-jar/org/hibernate/query/criteria/JpaPluralJoin.java
* /hibernate-core-6-6-36-final-sources-jar/org/hibernate/procedure/internal/ScalarDomainResultBuilder.java
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* /hibernate-core-6-6-36-final-sources-
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* /hibernate-core-6-6-36-final-sources-jar/org/hibernate/sql/ast/tree/from/NamedTableReference.java
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* /hibernate-core-6-6-36-final-sources-jar/org/hibernate/sql/ast/tree/from/OneToManyTableGroup.java
* /hibernate-core-6-6-36-final-sources-jar/org/hibernate/dialect/StructAttributeValues.java
* /hibernate-core-6-6-36-final-sources-jar/org/hibernate/collection/internal/StandardSortedMapSemantics.java
* /hibernate-core-6-6-36-final-sources-jar/org/hibernate/metamodel/mapping/AttributeMapping.java
* /hibernate-core-6-6-36-final-sources-jar/org/hibernate/query/sqm/tree/cte/SqmCteContainer.java
* /hibernate-core-6-6-36-final-sources-jar/org/hibernate/query/sqm/tree/select/SqmQueryPart.java
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* /hibernate-core-6-6-36-final-sources-
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* /hibernate-core-6-6-36-final-sources-jar/org/hibernate/query/criteria/ValueHandlingMode.java
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* /hibernate-core-6-6-36-final-sources-jar/org/hibernate/query/sqm/internal/ConcreteSqmSelectQueryPlan.java
* /hibernate-core-6-6-36-final-sources-
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* /hibernate-core-6-6-36-final-sources-jar/org/hibernate/query/hql/spi/SemanticPathPart.java
* /hibernate-core-6-6-36-final-sources-jar/org/hibernate/internal/log/IncubationLogger.java
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/hibernate-core-6-6-36-final-sources-jar/org/hibernate/dialect/DmlTargetColumnQualifierSupport.java
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 * /hibernate-core-6-6-36-final-sources-jar/org/hibernate/sql/ast/tree/expression/WindowFunctionExpression.java
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 * /hibernate-core-6-6-36-final-sources-jar/org/hibernate/query/criteria/JpaCriteriaQuery.java
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- * /hibernate-core-6-6-36-final-sources-jar/org/hibernate/cache/cfg/internal/NaturalIdDataCachingConfigImpl.java
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- * /hibernate-core-6-6-36-final-sources-jar/org/hibernate/query/criteria/JpaManipulationCriteria.java
- * /hibernate-core-6-6-36-final-sources-jar/org/hibernate/sql/exec/spi/JdbcOperationQueryMutationNative.java
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 * /hibernate-core-6-6-36-final-sources-jar/org/hibernate/loader/ast/internal/MultiKeyLoadLogging.java
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* /hibernate-core-6-6-36-final-sources-jar/org/hibernate/metamodel/model/domain/internal/MappedSuperclassSqmPathSource.java
No license file was found, but licenses were detected in source scan.

```
/*
 * Hibernate, Relational Persistence for Idiomatic Java
 *
 * License: GNU Lesser General Public License (LGPL), version 2.1 or later.
 * See the lgpl.txt file in the root directory or http://www.gnu.org/licenses/lgpl-2.1.html.
 */
// "5.3 in upgrading. It will be removed in a later version."
```

Found in path(s):

* /hibernate-core-6-6-36-final-sources-jar/org/hibernate/internal/log/DeprecationLogger.java
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```
#
# Hibernate, Relational Persistence for Idiomatic Java
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# License: GNU Lesser General Public License (LGPL), version 2.1 or later.
# See the lgpl.txt file in the root directory or <http://www.gnu.org/licenses/lgpl-2.1.html>.
#
```

Found in path(s):

* /hibernate-core-6-6-36-final-sources-jar/META-INF/services/jakarta.persistence.spi.PersistenceProvider
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```
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 * Hibernate, Relational Persistence for Idiomatic Java
 *
 * License: GNU Lesser General Public License (LGPL), version 2.1 or later.
 * See the lgpl.txt file in the root directory or <http://www.gnu.org/licenses/lgpl-2.1.html>.
 */
/**
 * Must do the following:
 * <ol>
 *   <li>
 *     obtain a {@link ResultSet} containing a row for any existing
 *     catalog/schema/table/column combination as specified by the
 *     {@code catalog}, {@code schemaPattern}, {@code tableNamePattern},
 *     and {@code columnNamePattern} parameters described below.
 *     The {@link ResultSet} must contain the following, consistent with the
 *     corresponding columns returned by {@link DatabaseMetaData#getColumns}
 *     <ul>
 *       <li>column label {@link #getResultSetTableNameLabel} for table name</li>
 *       <li>column label {@link #getResultSetColumnNameLabel} for column
name</li>
 *       <li>column label {@link #getResultSetSqlTypeCodeLabel} SQL type code from java.sql.Types</li>

```

```

*      <li>column label {@link #getResultSetTypeNameLabel} for database column type name</li>
*      <li>column label {@link #getResultSetColumnNameLabel} for column size</li>
*      <li>column label {@link #getResultSetDecimalDigitsLabel} for number of fractional digits</li>
*      <li>column label {@link #getResultSetIsNullableLabel} for nullability</li>
*    </ul>
*    Rows must be ordered by catalog, schema, table name, and column position.
*  </li>
*  <li>execute {@code processor.process( resultSet )};</li>
*  <li>
*    release resources whether {@code processor.process( resultSet )}
*    executes successfully or not.
*  </li>
* </ol>
* <p>
* The {@code catalog}, {@code schemaPattern}, {@code tableNamePattern},
* and {@code columnNamePattern} parameters are as
* specified
* by {@link DatabaseMetaData#getColumns(String, String, String, String)},
* and are copied here:
* <p>
* @param catalog – a catalog name; must match the catalog name as it is
*     stored in the database; "" retrieves those without
*     a catalog; null means that the catalog name should
*     not be used to narrow the search
* @param schemaPattern – a schema name pattern; must match the schema
*     name as it is stored in the database; ""
*     retrieves those without a schema; null means
*     that the schema name should not be used to
*     narrow the search
* @param tableNamePattern – a table name pattern; must match the table
*     name as it is stored in the database
* @param columnNamePattern – a column name pattern; must match the
*     column name as it is stored in the database
*
* @param processor - the provided ResultSetProcessor.
* @param <T> - defined by {@code processor}
* @return - defined by {@code processor}
* @throws SQLException - if a database error occurs
*/

```

Found in path(s):

* /hibernate-core-6-6-36-final-sources-

jar/org/hibernate/tool/schema/extract/internal/AbstractInformationExtractorImpl.java

1.374 springdoc-openapi-starter-common

2.8.14

1.374.1 Available under license :

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/opt/cola/permits/2771735692_1765255194.6076646/0/springdoc-openapi-starter-common-2-8-14-sources-jar/org/springdoc/api/ErrorMessage.java/*
/opt/cola/permits/2771735692_1765255194.6076646/0/springdoc-openapi-starter-common-2-8-14-sources-jar/org/springdoc/api/OpenApiResourceNotFoundException.java/*
/opt/cola/permits/2771735692_1765255194.6076646/0/springdoc-openapi-starter-common-2-8-14-sources-jar/org/springdoc/core/annotations/ParameterObject.java/*
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/opt/cola/permits/2771735692_1765255194.6076646/0/springdoc-openapi-starter-common-2-8-14-sources-
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/opt/cola/permits/2771735692_1765255194.6076646/0/springdoc-openapi-starter-common-2-8-14-sources-
jar/org/springdoc/core/models/MethodAttributes.java/*
/opt/cola/permits/2771735692_1765255194.6076646/0/springdoc-openapi-starter-common-2-8-14-sources-
jar/org/springdoc/core/properties/SpringDocConfigProperties.java/*
/opt/cola/permits/2771735692_1765255194.6076646/0/springdoc-openapi-starter-common-2-8-14-sources-
jar/org/springdoc/core/properties/SwaggerUiConfigProperties.java/*
/opt/cola/permits/2771735692_1765255194.6076646/0/springdoc-openapi-starter-common-2-8-14-sources-
jar/org/springdoc/core/properties/SwaggerUiOAuthProperties.java/*
/opt/cola/permits/2771735692_1765255194.6076646/0/springdoc-openapi-starter-common-2-8-14-sources-
jar/org/springdoc/core/providers/ActuatorProvider.java/*
/opt/cola/permits/2771735692_1765255194.6076646/0/springdoc-openapi-starter-common-2-8-14-sources-
jar/org/springdoc/core/providers/SpringWebProvider.java/*
/opt/cola/permits/2771735692_1765255194.6076646/0/springdoc-openapi-starter-common-2-8-14-sources-
jar/org/springdoc/core/utils/Constants.java/*
/opt/cola/permits/2771735692_1765255194.6076646/0/springdoc-openapi-starter-common-2-8-14-sources-
jar/org/springdoc/ui/AbstractSwaggerIndexTransformer.java/*
/opt/cola/permits/2771735692_1765255194.6076646/0/springdoc-openapi-starter-common-2-8-14-sources-
jar/org/springdoc/ui/SpringDocUIException.java/*

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Found

in path(s):

```
* }
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 *
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*/

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* /springdoc-openapi-starter-common-2-8-14-sources-jar/org/springdoc/api/AbstractOpenApiResource.java

1.375 jetty-security 12.0.30

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/opt/cola/permits/2771735878_1765195056.6561768/0/jetty-security-12-0-30-sources-
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/opt/cola/permits/2771735878_1765195056.6561768/0/jetty-security-12-0-30-sources-
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/opt/cola/permits/2771735878_1765195056.6561768/0/jetty-security-12-0-30-sources-
jar/org/eclipse/jetty/security/jaas/spi/JDBCLoginModule.java//
/opt/cola/permits/2771735878_1765195056.6561768/0/jetty-security-12-0-30-sources-
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/opt/cola/permits/2771735878_1765195056.6561768/0/jetty-security-12-0-30-sources-
jar/org/eclipse/jetty/security/jaas/spi/PropertyFileLoginModule.java//
/opt/cola/permits/2771735878_1765195056.6561768/0/jetty-security-12-0-30-sources-
jar/org/eclipse/jetty/security/jaas/spi/package-info.java//
/opt/cola/permits/2771735878_1765195056.6561768/0/jetty-security-12-0-30-sources-
jar/org/eclipse/jetty/security/package-info.java//

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in path(s):

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Found in path(s):

* /jetty-security-12-0-30-sources-jar/module-info.java

1.376 spring-data-commons 3.5.6

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1.377 jetty-util 12.0.30

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/opt/cola/permits/2771735840_1765195517.4837654/0/jetty-util-12-0-30-sources-jar/org/eclipse/jetty/util/thread/TimerScheduler.java//
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/opt/cola/permits/2771735840_1765195517.4837654/0/jetty-util-12-0-30-sources-jar/org/eclipse/jetty/util/thread/strategy/EatWhatYouKill.java//
/opt/cola/permits/2771735840_1765195517.4837654/0/jetty-util-12-0-30-sources-jar/org/eclipse/jetty/util/thread/strategy/ExecuteProduceConsume.java//
/opt/cola/permits/2771735840_1765195517.4837654/0/jetty-util-12-0-30-sources-jar/org/eclipse/jetty/util/thread/strategy/ProduceConsume.java//

/opt/cola/permits/2771735840_1765195517.4837654/0/jetty-util-12-0-30-sources-jar/org/eclipse/jetty/util/thread/strategy/ProduceExecuteConsume.java//

Found

in path(s):

*

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

//

Found in path(s):

* /jetty-util-12-0-30-sources-jar/module-info.java

1.378 zap-exp 1.27.1

1.378.1 Available under license :

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1.379 zap 1.27.1

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1.380 sqlite-jdbc 3.51.0.0

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Version 2.1, February 1999

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If such an object file uses only numerical parameters, data structure layouts and accessors, and small macros and small inline functions (ten lines or less in length), then the use of the object file is unrestricted, regardless of whether it is legally a derivative work. (Executables containing this object code plus portions of the Library will still fall under Section 6.)

Otherwise, if the work is a derivative of the Library, you may distribute the object code for the work under the terms of Section 6. Any executables containing that work also fall under Section 6, whether or not they are linked directly with the Library itself.

6. As an exception to the Sections above, you may also combine or link a "work that uses the Library" with the Library to produce a work containing portions of the Library, and distribute that work under terms of your choice, provided that the terms permit modification of the work for the customer's own use and reverse engineering for debugging such modifications.

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- b) Use a suitable shared library mechanism for linking with the Library. A suitable mechanism is one that (1) uses at run time a copy of the library already present on the user's computer system, rather than copying library functions into the executable, and (2) will operate properly with a modified version of the library, if the user installs one, as long as the modified version is interface-compatible with the version that the work was made with.
- c) Accompany the work with a written offer, valid for at least three years, to give the same user the materials specified in Subsection 6a, above, for a charge no more than the cost of performing this distribution.
- d) If distribution of the work is made by offering access to copy from a designated place, offer equivalent access to copy the above specified materials from the same place.
- e) Verify that the user has already received a copy of these materials or that you have already sent this user a copy.

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1.381 sqlite 2025-11-04

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1.382 gzip 1.14-r2

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```
#ifndef _BASENAME_LGPL_H
#define _BASENAME_LGPL_H

/* This file uses _GL_ATTRIBUTE_PURE. */
#if !_GL_CONFIG_H_INCLUDED
#error "Please include config.h first."
#endif

#include <stddef.h>

#ifndef
DOUBLE_SLASH_IS_DISTINCT_ROOT
# define DOUBLE_SLASH_IS_DISTINCT_ROOT 0
#endif

#ifdef __cplusplus
extern "C" {
#endif

/* Return the address of the last file name component of FILENAME.
   If FILENAME has some trailing slash(es), they are considered to be
   part of the last component.
   If FILENAME has no relative file name components because it is a file
   system root, return the empty string.
   Examples:
      FILENAME    RESULT
      "foo.c"     "foo.c"
      "foo/bar.c" "bar.c"
      "/foo/bar.c" "bar.c"
      "foo/bar/"  "bar/"
      "foo/bar/"  "bar/"
      "/"         ""
      "/"         ""
```

```

    ""
    ""

The return value is a tail of the given FILENAME; do NOT free() it! */

/* This function was traditionally called 'basename', but we avoid this
function name because
* Various platforms have different functions in their libc.
In particular, the glibc basename(),
defined in <string.h>, does
not consider trailing slashes to be part of the component:
    FILENAME    RESULT
    "foo/bar/"   ""
    "foo/bar//"  ""
* The 'basename' command eliminates trailing slashes and for a root
produces a non-empty result:
    FILENAME    RESULT
    "foo/bar/"   "bar"
    "foo/bar//"  "bar"
    "/"          "/"
    "/"          "/"
*/

extern char *last_component (char const *filename) _GL_ATTRIBUTE_PURE;

/* Return the length of the basename FILENAME.
Typically FILENAME is the value returned by base_name or last_component.
Act like strlen (FILENAME), except omit all trailing slashes. */
extern size_t base_len (char const *filename) _GL_ATTRIBUTE_PURE;

```

```

#ifdef __cplusplus
} /* extern "C" */
#endif

```

```

#endif /* _BASENAME_LGPL_H */

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Version 3, 29 June 2007

```

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<<http://www.gnu.org/licenses/>>. */

```
/* Use the Sequent Symmetry assembler syntax. */
```

```
/* Define the syntax of pseudo-ops, labels and comments. */
```

```
/* Prefix for internally generated assembler
   labels. If we aren't using
   underscores, we are using prefix `.'s to identify labels that should
   be ignored, as in `i386/gas.h' --karl@cs.umb.edu */
```

```
#define LPREFIX "L"
```

```
/* Assembler pseudos to introduce constants of various size. */
```

```
#define ASM_BYTE "\t.byte\t"
#define ASM_SHORT "\t.word\t"
#define ASM_LONG "\t.long\t"
#define ASM_QUAD "\t.quad\t" /* Should not be used for 32bit compilation. */
```

```

/* This was suggested, but it shouldn't be right for debugger output. -- RMS
#define ASM_OUTPUT_SOURCE_FILENAME(FILE, NAME) */

/* Define the syntax of labels and symbol definitions/declarations. */

/* This is how to output an assembler line
that says to advance the location counter by SIZE bytes. */

#define ASM_OUTPUT_SKIP(FILE,SIZE) \
printf (FILE, "\t.space " HOST_WIDE_INT_PRINT_UNSIGNED"\n", (SIZE))

/* Define the syntax of labels and symbol definitions/declarations. */

/* This says how to output an assembler line
to define a global common symbol. */

#define
ASM_OUTPUT_COMMON(FILE, NAME, SIZE, ROUNDED) \
( fputs (".comm ", (FILE)), \
assemble_name ((FILE), (NAME)), \
printf ((FILE), "%u\n", (int)(ROUNDED)))

/* This says how to output an assembler line
to define a local common symbol. */

#define ASM_OUTPUT_LOCAL(FILE, NAME, SIZE, ROUNDED) \
( fputs (".lcomm ", (FILE)), \
assemble_name ((FILE), (NAME)), \
printf ((FILE), "%u\n", (int)(ROUNDED)))

#ifdef HAVE_GAS_LCOMM_WITH_ALIGNMENT
#define ASM_OUTPUT_ALIGNED_LOCAL(FILE, NAME, SIZE, ALIGNMENT) \
( fputs (".lcomm ", (FILE)), \
assemble_name ((FILE), (NAME)), \
printf ((FILE), "%u,%u\n", (int)(SIZE), (int)(ALIGNMENT) / BITS_PER_UNIT))
#endif

/* This is how to output an assembler line
that says to advance the location counter
to a multiple of 2**LOG bytes. */

#define ASM_OUTPUT_ALIGN(FILE,LOG) \
if ((LOG)!=0) printf ((FILE), "\t.align %d\n", (LOG))

/* This is how to store into the string BUF
the symbol_ref name of an internal numbered

```


label where

PREFIX is the class of label and NUM is the number within the class.

This is suitable for output with `assemble_name'. */

```
#define ASM_GENERATE_INTERNAL_LABEL(BUF,PREFIX,NUMBER) \  
    sprintf ((BUF), "%s%d", (PREFIX), (long)(NUMBER))
```

/* The prefix to add to user-visible assembler symbols. */

```
#define USER_LABEL_PREFIX "_"
```

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Version 3.1, 31 March 2009

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02110-1301, USA. */

```
#ifndef __VTV_H__
#define __VTV_H__

/* We could have used an enumeration here but it just makes it more
   difficult for the compiler to generate a call to this. These are
   used as arguments to the function __VLTChangePermission, declared
   below. */
#define __VLTP_READ_ONLY 0
#define __VLTP_READ_WRITE 1

#ifdef __cplusplus
extern "C" void __VLTChangePermission (int);
#else
extern void __VLTChangePermission (int);
#endif

#ifdef BIG_PAGE_SIZE
/* TODO - Replace '4096' below with correct big page size. */
#define VTV_PAGE_SIZE 4096
#else
#ifdef defined(__sun__) && defined(__svr4__) && defined(__sparc__)
#define VTV_PAGE_SIZE 8192
#elif defined(__loongarch_lp64)
/* The page size is configurable by the kernel to be 4,
   16 or 64 KiB.
   For now, only the default page size of 16KiB is supported. */
#define VTV_PAGE_SIZE 16384
#else
#define VTV_PAGE_SIZE 4096
#endif
#endif

#endif /* __VTV_H__ */
```

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1.387 quic-go 0.57.1

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1.388 nkeys 0.4.12

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1.389 busybox 1.37.0-r29

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```
# Contributor: Carlo Landmeter <clandmeter@alpinelinux.org>
# Maintainer: Kevin Daudt <kdaudt@alpinelinux.org>
pkgname=spdx-licenses
pkgver=3.27.0
pkgrel=0
pkgdesc="Various data formats for the SPDX License List"
url="https://spdx.org/"
arch="noarch"
options="!check" # no test suite
license="CC-BY-3.0"
source="license-list-data-$pkgver.tar.gz::https://github.com/spdx/license-list-data/archive/v$pkgver.tar.gz"
buildid="srcdir/license-list-data-$pkgver"
subpackages="$pkgname-list"

_types="html json rdfa rdft rdfturtle rdfxml template text"

for type in $_types; do
    subpackages="$subpackages $pkgname-$type:_subpkg"
done

package() {
```

```

mkdir -p "$pkgdir"
}

_subpkg() {
local type=${subpkgname/$pkgname-/}
pkgdesc="$pkgdesc ($type)"
install_if="$pkgname=$pkgver-r$pkgrel"
mkdir -p "$subpkgdir"/usr/share/spdx
cp -r "$builddir"/$type "$subpkgdir"/usr/share/spdx/
}

list() {
pkgdesc="$pkgdesc (licence list)"
mkdir -p "$subpkgdir"/usr/share/spdx
local i; for i in "$builddir"/text/*.txt;
do
local license=${i##*/}
echo ${license%.*} >> "$subpkgdir"/usr/share/spdx/license.lst
done
}

sha512sums="
16d59c81e331b54b52639826f83408d98144cdaa70eacc3e8ce35dc3b13992e4794cf7515eb9db200efd390a0c0e35ae9
d4706fbe0ca6a8d236189e88870720c  license-list-data-3.27.0.tar.gz
"

# Automatically generated by apkgbuild-cpan, template 4
# Contributor: Valery Kartel <valery.kartel@gmail.com>
# Maintainer: Celeste <cielesti@protonmail.com>
maintainer="Celeste <cielesti@protonmail.com>"
pkgname=perl-bsd-resource
pkgver=1.2911
pkgrel=11
#_pkgreal is used by apkgbuild-cpan to find modules at MetaCpan
_pkgreal=BSD-Resource
pkgdesc="Perl extension implements the BSD process resource limit functions"
url="https://metacpan.org/release/BSD-Resource/"
arch="all"
license="Artistic-2.0 OR LGPL-2.0"
depends="perl"
makedepends="perl-dev"
subpackages="$pkgname-doc"
source="https://cpan.metacpan.org/authors/id/J/JH/JHI/BSD-Resource-$pkgver.tar.gz"
builddir="$srcdir/${_pkgreal}-${pkgver}"

build() {
export CFLAGS=$(perl -MConfig -E 'say $Config{ccflags}')
PERL_MM_USE_DEFAULT=1 perl -I. Makefile.PL \
INSTALLDIRS=vendor \

```

```

NO_PACKLIST=1 \
NO_PERLLOCAL=1
make
}

check() {
export CFLAGS=$(perl -MConfig -E 'say $Config{ccflags}')
make test
}

package() {
make DESTDIR="$pkgdir" install
}

sha512sums="
d0032d41c7c0468ed1c6d8f57b885f6cb97a5039d754c8cb60b2067daedaf53bd15fb6561a3d0f828df16dfa5417f663b
8065ba65f4fea16dc9262728b3b6b85
  BSD-Resource-1.2911.tar.gz
"

maintainer="Achill Gilgenast <achill@achill.org>"
pkgname=cargo-license
pkgver=0.7.0
pkgrel=1
pkgdesc="Cargo subcommand to see license of dependencies"
url="https://github.com/onur/cargo-license"
arch="all"
license="MIT"
makedepends="cargo cargo-auditable"
source="$pkgname-$pkgver.tar.gz::https://crates.io/api/v1/crates/cargo-license/$pkgver/download"

prepare() {
default_prepare

cargo fetch --target="$CTARGET" --locked
}

build() {
cargo auditable build --release --frozen
}

check() {
cargo test --frozen
}

package() {
install -Dm755 target/release/cargo-license -t "$pkgdir"/usr/bin
}

```

```

sha512sums="
9b3f0ead35515e85ef4074ebdbdbe5b9ec8bcaec244fabe414e2ed60f90366e8b1692d8bf7ffe4c07d778e60d94bab86bc
0c8be9823232e9c360a38bc65e9c5a cargo-license-0.7.0.tar.gz
"

#!/sbin/openrc-run

command="/usr/libexec/xdg-permission-store"
supervisor=supervise-daemon
command_args="--replace $command_args"
error_logger="logger -t '${RC_SVCNAME}' -p daemon.error"

depend() {
    need dbus
}
# Contributor: Maxim Karasev <begs@disroot.org>
# Maintainer: mio <miyopan@e.email>
pkgname=bsd-games
pkgver=3.3
pkgrel=2
pkgdesc="traditional text mode games from BSD"
url="https://bsd-games.sourceforge.io/"
arch="all"
license="BSD-3-Clause"
install="$pkgname.post-install"
makedepends="ncurses-dev coreutils" # configure causes busybox expr error
subpackages="$pkgname-doc"
source="https://sourceforge.net/projects/bsd-games/files/bsd-games-$pkgver.tar.gz
0001-bsd-games-scores-dir.patch
"

options="!check" # no tests

build() {
    # some GNU autoconf options are ignored, but it works
    ./configure \
        --build=$CBUILD \
        --host=$CHOST \
        --prefix=/usr \
        --sysconfdir=/etc \
        --mandir=/usr/share/man \
        --scoredir=/usr/share/$pkgname
    make
}

package() {
    make DESTDIR="$pkgdir" install
    install -Dm644 LICENSE "$pkgdir"/usr/share/licenses/bsd-games/LICENSE
}

```

```
sha512sums="
aaf36d09d4fe68514a5c279063d7e77a9a9a84c447037cba974b29faa07eb80c2aab2379d0699c196b5c27ffe1b2bb2c6
8d3390143e0e62d5e3d210ccfb61294
  bsd-games-3.3.tar.gz
e1def0d4835a877242c4173fae862e278a7858738e0bacacbb045a42bcabec2aa7c72d000bbd2421ce35fe66cdc1f52c0
577b7e278029ca5ed50f7aab22319f6 0001-bsd-games-scores-dir.patch
"
```

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mini_sendmail - accept email on behalf of real sendmail

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Maintainer: Natanael Copa <ncopa@alpinelinux.org>

pkgname=libart-lgpl

pkgver=2.3.21

pkgrel=8

pkgdesc="A library for high-performance 2D graphics"

url="https://www.levien.com/libart/"

arch="all"

options="!check" # No test suite.

license="LGPL-2.0-or-later"

subpackages="\$pkgname-dev"

source="https://download.gnome.org/sources/libart_lgpl/2.3/libart_lgpl-\$pkgver.tar.bz2"

"

builddir="\$srcdir"/libart_lgpl-\$pkgver

```
prepare() {  
    update_config_sub  
    default_prepare  
}
```

```
build() {  
    ./configure \  
    --build=$CBUILD \  
    --host=$CHOST \  
    --prefix=/usr  
    make  
}
```

```
package() {  
    make DESTDIR="$pkgdir" install  
}
```

sha512sums="8a632a6a4da59e5e8c02ec2f5a57e36d182b325b46513765425e5f171ff9ae326af1b133725beba28f7e7
6654309e001aee9bace727b5b4c8589405256a3c020 libart_lgpl-2.3.21.tar.bz2"

Contributor: Patrycja Rosa <alpine@ptrcnull.me>

Maintainer: Patrycja Rosa <alpine@ptrcnull.me>

pkgname=bsd-compat-headers

pkgver=0.7.2

pkgrel=6

pkgdesc="BSD compatibility headers (cdefs, queue, tree)"

url="https://gitlab.alpinelinux.org/alpine/aports"


```

arch="noarch"
license="BSD-2-Clause AND BSD-3-Clause"
source="
cdefs.h
queue.h
tree.h
"
builddir="$srcdir"
options="!check" # just headers

package() {
    mkdir -p "$pkgdir"
    install -Dm644 -t "$pkgdir"/usr/include/sys \
        cdefs.h queue.h tree.h
}
sha512sums="
37c8fc73c7aea7b490f7850927e2bb91d12137c9e59e22c084146d515696dbc7973b5de92f4c987ba080dd2502ba8312
7006442c3f019b6447a620c0cae73178 cdefs.h
2f0d5e6e4dc3350285cf17009265dddcbe12431c111868eea39bc8cb038ab7c1f2acacbb21735c4e9d4a1fd106a8fc0f86
11ea33987d4faba37dde5ce6da0750 queue.h
d9ac210d81feb8ad2655bc80fb065d3fe20ae4417b32b4a1711e6738a4870140005c13373b5d1846ef3ce5ae6da45f2da
cef2092881eded0a2e94f6a07752ef3 tree.h
"

```

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The X-Spline code was written Carole Blanc (blanc@labri.u-bordeaux.fr) and Christophe Schlick (schlick@labri.u-

bordeaux.fr) starting from an initial implementation done by C. Feuille, S. Grosbois, L. Maziere and L. Minihot as a student practice (Universite Bordeaux, France). For additional information about X-splines, see:
 "X-Splines: A Spline Model Designed for the End User" by C. Blanc and C. Schlick, Proceedings of SIGGRAPH'95
<http://dept-info.labri.u-bordeaux.fr/~schlick/DOC/sig1.html>

```

/* $NetBSD: queue.h,v 1.70 2015/11/02 15:21:23 christos Exp $ */

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 * SUCH DAMAGE.
 *
 * @(#)queue.h 8.5 (Berkeley) 8/20/94
 */

#ifndef _SYS_QUEUE_H_
#define _SYS_QUEUE_H_

/*
 * This file defines five types of data structures: singly-linked lists,
 * lists, simple queues, tail queues, and circular queues.
 *
 * A singly-linked list is headed by a single forward pointer. The
 * elements are singly linked for minimum space and

```

pointer manipulation

- * overhead at the expense of $O(n)$ removal for arbitrary elements. New
- * elements can be added to the list after an existing element or at the
- * head of the list. Elements being removed from the head of the list
- * should use the explicit macro for this purpose for optimum
- * efficiency. A singly-linked list may only be traversed in the forward
- * direction. Singly-linked lists are ideal for applications with large
- * datasets and few or no removals or for implementing a LIFO queue.

*

- * A list is headed by a single forward pointer (or an array of forward
- * pointers for a hash table header). The elements are doubly linked
- * so that an arbitrary element can be removed without a need to
- * traverse the list. New elements can be added to the list before
- * or after an existing element or at the head of the list. A list
- * may only be traversed in the forward direction.

*

- * A simple queue is headed by a pair of pointers, one the head of the
- * list and the

other to the tail of the list. The elements are singly

- * linked to save space, so elements can only be removed from the
- * head of the list. New elements can be added to the list after
- * an existing element, at the head of the list, or at the end of the
- * list. A simple queue may only be traversed in the forward direction.

*

- * A tail queue is headed by a pair of pointers, one to the head of the
- * list and the other to the tail of the list. The elements are doubly
- * linked so that an arbitrary element can be removed without a need to
- * traverse the list. New elements can be added to the list before or
- * after an existing element, at the head of the list, or at the end of
- * the list. A tail queue may be traversed in either direction.

*

- * A circle queue is headed by a pair of pointers, one to the head of the
- * list and the other to the tail of the list. The elements are doubly
- * linked so that an arbitrary element can be removed without a need to
- * traverse the list. New elements

can be added to the list before or after

- * an existing element, at the head of the list, or at the end of the list.
- * A circle queue may be traversed in either direction, but has a more
- * complex end of list detection.

*

- * For details on the use of these macros, see the queue(3) manual page.

*/

/*

- * Include the definition of NULL only on NetBSD because sys/null.h
- * is not available elsewhere. This conditional makes the header
- * portable and it can simply be dropped verbatim into any system.
- * The caveat is that on other systems some other header

```

* must provide NULL before the macros can be used.
*/
#ifdef __NetBSD__
#include <sys/null.h>
#endif

#if defined(QUEUEDEBUG)
# if defined(_KERNEL)
#  define QUEUEDEBUG_ABORT(...) panic(__VA_ARGS__)
# else
#  include <err.h>
#  define QUEUEDEBUG_ABORT(...) err(1, __VA_ARGS__)
# endif
#endif

/*
* Singly-linked List definitions.
*/
#define SLIST_HEAD(name, type) \
struct name { \
    struct type *slh_first; /* first \
    element */ \
}

#define SLIST_HEAD_INITIALIZER(head) \
{ NULL }

#define SLIST_ENTRY(type) \
struct { \
    struct type *sle_next; /* next element */ \
}

/*
* Singly-linked List access methods.
*/
#define SLIST_FIRST(head) ((head)->slh_first)
#define SLIST_END(head) NULL
#define SLIST_EMPTY(head) ((head)->slh_first == NULL)
#define SLIST_NEXT(elm, field) ((elm)->field.sle_next)

#define SLIST_FOREACH(var, head, field) \
for((var) = (head)->slh_first; \
    (var) != SLIST_END(head); \
    (var) = (var)->field.sle_next)

#define SLIST_FOREACH_SAFE(var, head, field, tvar) \
for ((var) = SLIST_FIRST((head)); \
    (var) != SLIST_END(head) && \

```

```

        ((tvar) = SLIST_NEXT((var), field), 1); \
        (var) = (tvar))

/*
 * Singly-linked List functions.
 */
#define SLIST_INIT(head) do { \
    (head)->slh_first = SLIST_END(head); \
} while (/*CONSTCOND*/0)

#define SLIST_INSERT_AFTER(slistelm, elm, field) do { \
    (elm)->field.sle_next = (slistelm)->field.sle_next; \
    (slistelm)->field.sle_next \
    = (elm); \
} while (/*CONSTCOND*/0)

#define SLIST_INSERT_HEAD(head, elm, field) do { \
    (elm)->field.sle_next = (head)->slh_first; \
    (head)->slh_first = (elm); \
} while (/*CONSTCOND*/0)

#define SLIST_REMOVE_AFTER(slistelm, field) do { \
    (slistelm)->field.sle_next = \
        SLIST_NEXT(SLIST_NEXT((slistelm), field), field); \
} while (/*CONSTCOND*/0)

#define SLIST_REMOVE_HEAD(head, field) do { \
    (head)->slh_first = (head)->slh_first->field.sle_next; \
} while (/*CONSTCOND*/0)

#define SLIST_REMOVE(head, elm, type, field) do { \
    if ((head)->slh_first == (elm)) { \
        SLIST_REMOVE_HEAD((head), field); \
    } \
    else { \
        struct type *curelm = (head)->slh_first; \
        while(curelm->field.sle_next != (elm)) \
            curelm = curelm->field.sle_next; \
        curelm->field.sle_next = \
            curelm->field.sle_next->field.sle_next; \
    } \
} while (/*CONSTCOND*/0)

/*
 * List definitions.
 */
#define LIST_HEAD(name, type) \

```

```

struct name {      \
    struct type *lh_first; /* first element */ \
}

#define LIST_HEAD_INITIALIZER(head) \
    { NULL }

#define LIST_ENTRY(type) \
struct {      \
    struct type *le_next; /* next element */ \
    struct type **le_prev; /* address of previous next element */ \
}

/*
 * List access methods.
 */
#define LIST_FIRST(head) ((head)->lh_first)
#define LIST_END(head) NULL
#define LIST_EMPTY(head) ((head)->lh_first == LIST_END(head))
#define LIST_NEXT(elm, field) ((elm)->field.le_next)

#define LIST_FOREACH(var, head, field) \
    for ((var) = ((head)->lh_first); \
         (var) != LIST_END(head); \
         (var) = ((var)->field.le_next))

#define LIST_FOREACH_SAFE(var, head, field, tvar) \
    for ((var) = LIST_FIRST((head)); \
         (var) != LIST_END(head) && \
         ((tvar) = LIST_NEXT((var), field), 1); \
         (var) = (tvar))

#define LIST_MOVE(head1, head2) do { \
    LIST_INIT((head2)); \
    if (!LIST_EMPTY((head1))) \
    { \
        (head2)->lh_first = (head1)->lh_first; \
        LIST_INIT((head1)); \
    } \
} while (/*CONSTCOND*/0)

/*
 * List functions.
 */
#ifdef QUEUEDEBDEBUG
#define QUEUEDEBDEBUG_LIST_INSERT_HEAD(head, elm, field) \
    if ((head)->lh_first && \
        (head)->lh_first->field.le_prev != &(head)->lh_first) \

```

```

    QUEUEDEBUG_ABORT("LIST_INSERT_HEAD %p %s:%d", (head), \
        __FILE__, __LINE__);
#define QUEUEDEBUG_LIST_OP(elm, field) \
    if ((elm)->field.le_next && \
        (elm)->field.le_next->field.le_prev != \
        &(elm)->field.le_next) \
        QUEUEDEBUG_ABORT("LIST_* forw %p %s:%d", (elm), \
            __FILE__, __LINE__); \
    if (*(elm)->field.le_prev != (elm)) \
        QUEUEDEBUG_ABORT("LIST_* back %p %s:%d", (elm), \
            __FILE__, __LINE__);
#define QUEUEDEBUG_LIST_POSTREMOVE(elm, field) \
    (elm)->field.le_next = (void *)1L; \
    (elm)->field.le_prev = (void *)1L;
#else
#define QUEUEDEBUG_LIST_INSERT_HEAD(head, elm, field)
#define QUEUEDEBUG_LIST_OP(elm,
    field)
#define QUEUEDEBUG_LIST_POSTREMOVE(elm, field)
#endif

#define LIST_INIT(head) do { \
    (head)->lh_first = LIST_END(head); \
} while (/*CONSTCOND*/0)

#define LIST_INSERT_AFTER(listelm, elm, field) do { \
    QUEUEDEBUG_LIST_OP((listelm), field) \
    if (((elm)->field.le_next = (listelm)->field.le_next) != \
        LIST_END(head)) \
        (listelm)->field.le_next->field.le_prev = \
            &(elm)->field.le_next; \
    (listelm)->field.le_next = (elm); \
    (elm)->field.le_prev = &(listelm)->field.le_next; \
} while (/*CONSTCOND*/0)

#define LIST_INSERT_BEFORE(listelm, elm, field) do { \
    QUEUEDEBUG_LIST_OP((listelm), field) \
    (elm)->field.le_prev = (listelm)->field.le_prev; \
    (elm)->field.le_next = (listelm); \
    *(listelm)->field.le_prev = (elm); \
    (listelm)->field.le_prev = &(elm)->field.le_next; \
} while (/*CONSTCOND*/0)

#define LIST_INSERT_HEAD(head, elm, field) do { \
    QUEUEDEBUG_LIST_INSERT_HEAD((head), (elm), field) \
    if (((elm)->field.le_next \
        = (head)->lh_first) != LIST_END(head)) \
        (head)->lh_first->field.le_prev = &(elm)->field.le_next; \
} while (/*CONSTCOND*/0)

```

```

(head)->lh_first = (elm); \
(elm)->field.le_prev = &(head)->lh_first; \
} while (/*CONSTCOND*/0)

#define LIST_REMOVE(elm, field) do { \
    QUEUEDEBUG_LIST_OP((elm), field) \
    if ((elm)->field.le_next != NULL) \
        (elm)->field.le_next->field.le_prev = \
            (elm)->field.le_prev; \
    *(elm)->field.le_prev = (elm)->field.le_next; \
    QUEUEDEBUG_LIST_POSTREMOVE((elm), field) \
} while (/*CONSTCOND*/0)

#define LIST_REPLACE(elm, elm2, field) do { \
    if (((elm2)->field.le_next = (elm)->field.le_next) != NULL) \
        (elm2)->field.le_next->field.le_prev = \
            &(elm2)->field.le_next; \
    (elm2)->field.le_prev = (elm)->field.le_prev; \
    *(elm2)->field.le_prev = (elm2); \
    QUEUEDEBUG_LIST_POSTREMOVE((elm), field) \
} while (/*CONSTCOND*/0)

/*
 * Simple queue definitions.
 */
#define SIMPLEQ_HEAD(name, type) \
struct name { \
    struct \
    type *sqh_first; /* first element */ \
    struct type **sqh_last; /* addr of last next element */ \
}

#define SIMPLEQ_HEAD_INITIALIZER(head) \
{ NULL, &(head).sqh_first }

#define SIMPLEQ_ENTRY(type) \
struct { \
    struct type *sqe_next; /* next element */ \
}

/*
 * Simple queue access methods.
 */
#define SIMPLEQ_FIRST(head) ((head)->sqh_first)
#define SIMPLEQ_END(head) NULL
#define SIMPLEQ_EMPTY(head) ((head)->sqh_first == SIMPLEQ_END(head))
#define SIMPLEQ_NEXT(elm, field) ((elm)->field.sqe_next)

```



```

#define SIMPLEQ_FOREACH(var, head, field) \
for ((var) = ((head)->sqh_first); \
     (var) != SIMPLEQ_END(head); \
     (var) = ((var)->field.sqe_next))

#define SIMPLEQ_FOREACH_SAFE(var, head, field, next) \
for ((var) = ((head)->sqh_first); \
     (var) != SIMPLEQ_END(head) && \
     ((next = ((var)->field.sqe_next)), 1); \
     (var) = (next))

/*
 * Simple queue functions.
 */
#define SIMPLEQ_INIT(head) do { \
(head)->sqh_first = NULL; \
(head)->sqh_last \
= &(head)->sqh_first; \
} while (/*CONSTCOND*/0)

#define SIMPLEQ_INSERT_HEAD(head, elm, field) do { \
if (((elm)->field.sqe_next = (head)->sqh_first) == NULL) \
(head)->sqh_last = &(elm)->field.sqe_next; \
(head)->sqh_first = (elm); \
} while (/*CONSTCOND*/0)

#define SIMPLEQ_INSERT_TAIL(head, elm, field) do { \
(elm)->field.sqe_next = NULL; \
*(head)->sqh_last = (elm); \
(head)->sqh_last = &(elm)->field.sqe_next; \
} while (/*CONSTCOND*/0)

#define SIMPLEQ_INSERT_AFTER(head, listelm, elm, field) do { \
if (((elm)->field.sqe_next = (listelm)->field.sqe_next) == NULL) \
(head)->sqh_last = &(elm)->field.sqe_next; \
(listelm)->field.sqe_next = (elm); \
} while (/*CONSTCOND*/0)

#define SIMPLEQ_REMOVE_HEAD(head, field) do { \
if (((head)->sqh_first = (head)->sqh_first->field.sqe_next) == NULL) \
(head)->sqh_last = &(head)->sqh_first; \
} while (/*CONSTCOND*/0)

#define SIMPLEQ_REMOVE_AFTER(head, elm, field) do { \
if \
(((elm)->field.sqe_next = (elm)->field.sqe_next->field.sqe_next) \
== NULL) \
(head)->sqh_last = &(elm)->field.sqe_next; \
} while (/*CONSTCOND*/0)

```

```

} while (/*CONSTCOND*/0)

#define SIMPLEQ_REMOVE(head, elm, type, field) do { \
    if ((head)->sqh_first == (elm)) { \
        SIMPLEQ_REMOVE_HEAD((head), field); \
    } else { \
        struct type *curelm = (head)->sqh_first; \
        while (curelm->field.sqe_next != (elm)) \
            curelm = curelm->field.sqe_next; \
        if ((curelm->field.sqe_next = \
            curelm->field.sqe_next->field.sqe_next) == NULL) \
            (head)->sqh_last = &(curelm->field.sqe_next); \
    } \
} while (/*CONSTCOND*/0)

#define SIMPLEQ_CONCAT(head1, head2) do { \
    if (!SIMPLEQ_EMPTY((head2))) { \
        *(head1)->sqh_last = (head2)->sqh_first; \
        (head1)->sqh_last = (head2)->sqh_last; \
        SIMPLEQ_INIT((head2)); \
    } \
} while (/*CONSTCOND*/0)

#define SIMPLEQ_LAST(head, type, field) \
    (SIMPLEQ_EMPTY((head)) ? \
    NULL : \
    ((struct type \
    *) (void *) \
    ((char *)((head)->sqh_last) - offsetof(struct type, field))))

/*
 * Tail queue definitions.
 */

#define _TAILQ_HEAD(name, type, qual) \
    struct name { \
        qual type *tqh_first; /* first element */ \
        qual type *qual *tqh_last; /* addr of last next element */ \
    }

#define TAILQ_HEAD(name, type) _TAILQ_HEAD(name, struct type,)

#define TAILQ_HEAD_INITIALIZER(head) \
    { TAILQ_END(head), &(head).tqh_first }

#define _TAILQ_ENTRY(type, qual) \
    struct { \
        qual type *tqe_next; /* next element */ \
        qual type *qual *tqe_prev; /* address of previous next element */ \
    }

```

```

#define TAILQ_ENTRY(type) _TAILQ_ENTRY(struct type,)

/*
 * Tail queue access methods.
 */

#define TAILQ_FIRST(head) ((head)->tqh_first)
#define TAILQ_END(head) (NULL)
#define TAILQ_NEXT(elm, field) ((elm)->field.tqe_next)
#define TAILQ_LAST(head, headname) \
    (((struct headname *) (void *) ((head)->tqh_last))->tqh_last)
#define TAILQ_PREV(elm, headname, field) \
    (((struct headname *) (void *) ((elm)->field.tqe_prev))->tqh_last)
#define TAILQ_EMPTY(head) (TAILQ_FIRST(head) == TAILQ_END(head))

#define TAILQ_FOREACH(var, head, field) \
    for ((var) = ((head)->tqh_first); \
         (var) != TAILQ_END(head); \
         (var) = ((var)->field.tqe_next))

#define TAILQ_FOREACH_SAFE(var, head, field, next) \
    for ((var) = ((head)->tqh_first); \
         (var) != TAILQ_END(head) && \
         ((next) = TAILQ_NEXT(var, field), 1); (var) = (next))

#define TAILQ_FOREACH_REVERSE(var, head, headname, field) \
    for ((var) = TAILQ_LAST((head), headname); \
         (var) != TAILQ_END(head); \
         (var) = TAILQ_PREV((var), headname, field))

#define TAILQ_FOREACH_REVERSE_SAFE(var, head, headname, field, prev) \
    for ((var) = TAILQ_LAST((head), headname); \
         (var) != TAILQ_END(head) && \
         ((prev) = TAILQ_PREV((var), headname, field), 1); (var) = (prev))

/*
 * Tail queue functions.
 */

#if defined(QUEUEDEBUG)
#define QUEUEDEBUG_TAILQ_INSERT_HEAD(head, \
    elm, field) \
    if ((head)->tqh_first && \
        (head)->tqh_first->field.tqe_prev != &(head)->tqh_first) \
        QUEUEDEBUG_ABORT("TAILQ_INSERT_HEAD %p %s:%d", (head), \
            __FILE__, __LINE__);
#define QUEUEDEBUG_TAILQ_INSERT_TAIL(head, elm, field) \
    if (*(head)->tqh_last != NULL) \

```

```

QUEUEDEBUG_ABORT("TAILQ_INSERT_TAIL %p %s:%d", (head), \
    __FILE__, __LINE__);
#define QUEUEDEBUG_TAILQ_OP(elm, field) \
if ((elm)->field.tqe_next && \
    (elm)->field.tqe_next->field.tqe_prev != \
    &(elm)->field.tqe_next) \
    QUEUEDEBUG_ABORT("TAILQ_* forw %p %s:%d", (elm), \
        __FILE__, __LINE__); \
if (*(elm)->field.tqe_prev != (elm)) \
    QUEUEDEBUG_ABORT("TAILQ_* back %p %s:%d", (elm), \
        __FILE__, __LINE__);
#define QUEUEDEBUG_TAILQ_PREREMOVE(head, elm, field) \
if ((elm)->field.tqe_next == NULL && \
    (head)->tqh_last != &(elm)->field.tqe_next) \
    QUEUEDEBUG_ABORT("TAILQ_PREREMOVE head %p elm %p %s:%d", \
        (head), (elm), __FILE__, \
        __LINE__);
#define QUEUEDEBUG_TAILQ_POSTREMOVE(elm, field) \
(elm)->field.tqe_next = (void *)1L; \
(elm)->field.tqe_prev = (void *)1L;
#else
#define QUEUEDEBUG_TAILQ_INSERT_HEAD(head, elm, field)
#define QUEUEDEBUG_TAILQ_INSERT_TAIL(head, elm, field)
#define QUEUEDEBUG_TAILQ_OP(elm, field)
#define QUEUEDEBUG_TAILQ_PREREMOVE(head, elm, field)
#define QUEUEDEBUG_TAILQ_POSTREMOVE(elm, field)
#endif

#define TAILQ_INIT(head) do { \
    (head)->tqh_first = TAILQ_END(head); \
    (head)->tqh_last = &(head)->tqh_first; \
} while (/*CONSTCOND*/0)

#define TAILQ_INSERT_HEAD(head, elm, field) do { \
    QUEUEDEBUG_TAILQ_INSERT_HEAD((head), (elm), field) \
    if (((elm)->field.tqe_next = (head)->tqh_first) != TAILQ_END(head)) \
        (head)->tqh_first->field.tqe_prev = \
            &(elm)->field.tqe_next; \
    else \
        (head)->tqh_last = &(elm)->field.tqe_next; \
    (head)->tqh_first = (elm); \
    (elm)->field.tqe_prev = &(head)->tqh_first; \
} while (/*CONSTCOND*/0)

#define TAILQ_INSERT_TAIL(head, \
    elm, field) do { \
    QUEUEDEBUG_TAILQ_INSERT_TAIL((head), (elm), field) \
    (elm)->field.tqe_next = TAILQ_END(head); \

```

```

(elm)->field.tqe_prev = (head)->tqh_last; \
*(head)->tqh_last = (elm); \
(head)->tqh_last = &(elm)->field.tqe_next; \
} while (/*CONSTCOND*/0)

#define TAILQ_INSERT_AFTER(head, listelm, elm, field) do { \
    QUEUEDEBUG_TAILQ_OP((listelm), field) \
    if (((elm)->field.tqe_next = (listelm)->field.tqe_next) != \
        TAILQ_END(head)) \
        (elm)->field.tqe_next->field.tqe_prev = \
            &(elm)->field.tqe_next; \
    else \
        (head)->tqh_last = &(elm)->field.tqe_next; \
        (listelm)->field.tqe_next = (elm); \
        (elm)->field.tqe_prev = &(listelm)->field.tqe_next; \
    } while (/*CONSTCOND*/0)

#define TAILQ_INSERT_BEFORE(listelm, elm, field) do { \
    QUEUEDEBUG_TAILQ_OP((listelm), field) \
    (elm)->field.tqe_prev = (listelm)->field.tqe_prev; \
    (elm)->field.tqe_next = (listelm); \
    *(listelm)->field.tqe_prev = (elm); \
    (listelm)->field.tqe_prev \
    = &(elm)->field.tqe_next; \
    } while (/*CONSTCOND*/0)

#define TAILQ_REMOVE(head, elm, field) do { \
    QUEUEDEBUG_TAILQ_PREREMOVE((head), (elm), field) \
    QUEUEDEBUG_TAILQ_OP((elm), field) \
    if (((elm)->field.tqe_next != TAILQ_END(head)) \
        (elm)->field.tqe_next->field.tqe_prev = \
            (elm)->field.tqe_prev; \
    else \
        (head)->tqh_last = (elm)->field.tqe_prev; \
        *(elm)->field.tqe_prev = (elm)->field.tqe_next; \
        QUEUEDEBUG_TAILQ_POSTREMOVE((elm), field); \
    } while (/*CONSTCOND*/0)

#define TAILQ_REPLACE(head, elm, elm2, field) do { \
    if (((elm2)->field.tqe_next = (elm)->field.tqe_next) != \
        TAILQ_END(head)) \
        (elm2)->field.tqe_next->field.tqe_prev = \
            &(elm2)->field.tqe_next; \
    else \
        (head)->tqh_last = &(elm2)->field.tqe_next; \
        (elm2)->field.tqe_prev = (elm)->field.tqe_prev; \
        *(elm2)->field.tqe_prev = (elm2); \
    QUEUEDEBUG_TAILQ_POSTREMOVE((elm),

```

```

field); \
} while (/*CONSTCOND*/0)

#define TAILQ_CONCAT(head1, head2, field) do { \
    if (!TAILQ_EMPTY(head2)) { \
        *(head1)->tqh_last = (head2)->tqh_first; \
        (head2)->tqh_first->field.tqe_prev = (head1)->tqh_last; \
        (head1)->tqh_last = (head2)->tqh_last; \
        TAILQ_INIT((head2)); \
    } \
} while (/*CONSTCOND*/0)

/*
 * Singly-linked Tail queue declarations.
 */
#define STAILQ_HEAD(name, type) \
struct name { \
    struct type *stqh_first; /* first element */ \
    struct type **stqh_last; /* addr of last next element */ \
}

#define STAILQ_HEAD_INITIALIZER(head) \
{ NULL, &(head).stqh_first }

#define STAILQ_ENTRY(type) \
struct { \
    struct type *stqe_next; /* next element */ \
}

/*
 * Singly-linked Tail queue access methods.
 */
#define STAILQ_FIRST(head) ((head)->stqh_first)
#define STAILQ_END(head) NULL
#define STAILQ_NEXT(elm, field) ((elm)->field.stqe_next)
#define STAILQ_EMPTY(head) (STAILQ_FIRST(head) \
    == STAILQ_END(head))

/*
 * Singly-linked Tail queue functions.
 */
#define STAILQ_INIT(head) do { \
    (head)->stqh_first = NULL; \
    (head)->stqh_last = &(head)->stqh_first; \
} while (/*CONSTCOND*/0)

#define STAILQ_INSERT_HEAD(head, elm, field) do { \
    if (((elm)->field.stqe_next = (head)->stqh_first) == NULL) \

```

```

(head)->stqh_last = &(elm)->field.stqe_next; \
(head)->stqh_first = (elm); \
} while (/*CONSTCOND*/0)

#define STAILQ_INSERT_TAIL(head, elm, field) do { \
    (elm)->field.stqe_next = NULL; \
    *(head)->stqh_last = (elm); \
    (head)->stqh_last = &(elm)->field.stqe_next; \
} while (/*CONSTCOND*/0)

#define STAILQ_INSERT_AFTER(head, listelm, elm, field) do { \
    if (((elm)->field.stqe_next = (listelm)->field.stqe_next) == NULL)\
        (head)->stqh_last = &(elm)->field.stqe_next; \
    (listelm)->field.stqe_next = (elm); \
} while (/*CONSTCOND*/0)

#define STAILQ_REMOVE_HEAD(head, field) do { \
    if (((head)->stqh_first = (head)->stqh_first->field.stqe_next) \
        == NULL) \
        (head)->stqh_last = &(head)->stqh_first; \
} while (/*CONSTCOND*/0)

#define STAILQ_REMOVE(head, elm, type, field) do { \
    if ((head)->stqh_first == (elm)) { \
        STAILQ_REMOVE_HEAD((head), field); \
    } else { \
        struct type *curelm = (head)->stqh_first; \
        while (curelm->field.stqe_next != (elm)) \
            curelm = curelm->field.stqe_next; \
        if ((curelm->field.stqe_next = \
            curelm->field.stqe_next->field.stqe_next) == NULL) \
            (head)->stqh_last = &(curelm)->field.stqe_next; \
    } \
} while (/*CONSTCOND*/0)

#define STAILQ_FOREACH(var, head, field) \
    for ((var) = ((head)->stqh_first); \
        (var); \
        (var) = ((var)->field.stqe_next))

#define STAILQ_FOREACH_SAFE(var, head, field, tvar) \
    for ((var) = STAILQ_FIRST((head)); \
        (var) && ((tvar) = STAILQ_NEXT((var), field), 1); \
        (var) = (tvar))

#define STAILQ_CONCAT(head1, head2) do { \
    if (!STAILQ_EMPTY((head2))) { \
        *(head1)->stqh_last

```

```

= (head2)->stqh_first; \
(head1)->stqh_last = (head2)->stqh_last; \
STAILQ_INIT((head2)); \
} \
} while (/*CONSTCOND*/0)

#define STAILQ_LAST(head, type, field) \
(STAILQ_EMPTY((head)) ? \
NULL : \
((struct type *) (void *) \
((char *)((head)->stqh_last) - offsetof(struct type, field))))

#ifndef _KERNEL
/*
 * Circular queue definitions. Do not use. We still keep the macros
 * for compatibility but because of pointer aliasing issues their use
 * is discouraged!
 */

/*
 * __launder_type(): We use this ugly hack to work around the the compiler
 * noticing that two types may not alias each other and elide tests in code.
 * We hit this in the CIRCLEQ macros when comparing 'struct name *' and
 * 'struct type *' (see CIRCLEQ_HEAD()). Modern compilers (such as GCC
 * 4.8) declare these comparisons as always false, causing the code to
 * not run as designed.
 *
 * This hack is only to be used for comparisons and thus can be fully const.
 * Do not use for assignment.
 *
 * If we ever choose to change the ABI of the CIRCLEQ macros, we could fix
 * this by changing the head/tail sentinel values, but see the note above
 * this one.
 */
static __inline const void * __launder_type(const void *);
static __inline const void *
__launder_type(const void *__x)
{
    __asm __volatile("" : "+r" (__x));
    return __x;
}

#ifdef QUEUEDEBUG
#define QUEUEDEBUG_CIRCLEQ_HEAD(head, field) \
if ((head)->cqh_first != CIRCLEQ_ENDC(head) && \
(head)->cqh_first->field.cqe_prev != CIRCLEQ_ENDC(head)) \
QUEUEDEBUG_ABORT("CIRCLEQ head forw %p %s:%d", (head), \

```



```

    __FILE__, __LINE__); \
if ((head)->cqh_last != CIRCLEQ_ENDC(head) && \
    (head)->cqh_last->field.cqe_next != CIRCLEQ_ENDC(head)) \
    QUEUEDEBDEBUG_ABORT("CIRCLEQ head back %p %s:%d", (head), \
        __FILE__, __LINE__);
#define QUEUEDEBDEBUG_CIRCLEQ_ELM(head, elm, field) \
if ((elm)->field.cqe_next == CIRCLEQ_ENDC(head)) { \
    if ((head)->cqh_last != (elm)) \
        QUEUEDEBDEBUG_ABORT("CIRCLEQ \
elm last %p %s:%d", \
            (elm), __FILE__, __LINE__); \
} else { \
    if ((elm)->field.cqe_next->field.cqe_prev != (elm)) \
        QUEUEDEBDEBUG_ABORT("CIRCLEQ elm forw %p %s:%d", \
            (elm), __FILE__, __LINE__); \
} \
if ((elm)->field.cqe_prev == CIRCLEQ_ENDC(head)) { \
    if ((head)->cqh_first != (elm)) \
        QUEUEDEBDEBUG_ABORT("CIRCLEQ elm first %p %s:%d", \
            (elm), __FILE__, __LINE__); \
} else { \
    if ((elm)->field.cqe_prev->field.cqe_next != (elm)) \
        QUEUEDEBDEBUG_ABORT("CIRCLEQ elm prev %p %s:%d", \
            (elm), __FILE__, __LINE__); \
}
#define QUEUEDEBDEBUG_CIRCLEQ_POSTREMOVE(elm, field) \
(elm)->field.cqe_next = (void *)1L; \
(elm)->field.cqe_prev = (void *)1L;
#else
#define QUEUEDEBDEBUG_CIRCLEQ_HEAD(head, field)
#define QUEUEDEBDEBUG_CIRCLEQ_ELM(head, elm, field)
#define QUEUEDEBDEBUG_CIRCLEQ_POSTREMOVE(elm, field)
#endif

#define CIRCLEQ_HEAD(name, type) \
struct name { \
    struct type *cqh_first; /* \
first element */ \
    struct type *cqh_last; /* last element */ \
}

#define CIRCLEQ_HEAD_INITIALIZER(head) \
{ CIRCLEQ_END(&head), CIRCLEQ_END(&head) }

#define CIRCLEQ_ENTRY(type) \
struct { \
    struct type *cqe_next; /* next element */ \
    struct type *cqe_prev; /* previous element */ \
}

```

```

}

/*
 * Circular queue functions.
 */

#define CIRCLEQ_INIT(head) do { \
    (head)->cqh_first = CIRCLEQ_END(head); \
    (head)->cqh_last = CIRCLEQ_END(head); \
} while (/*CONSTCOND*/0)

#define CIRCLEQ_INSERT_AFTER(head, listelm, elm, field) do { \
    QUEUEDEBDEBUG_CIRCLEQ_HEAD((head), field) \
    QUEUEDEBDEBUG_CIRCLEQ_ELM((head), (listelm), field) \
    (elm)->field.cqe_next = (listelm)->field.cqe_next; \
    (elm)->field.cqe_prev = (listelm); \
    if ((listelm)->field.cqe_next == CIRCLEQ_ENDC(head)) \
        (head)->cqh_last = (elm); \
    else \
        (listelm)->field.cqe_next->field.cqe_prev = (elm); \
    (listelm)->field.cqe_next = (elm); \
} while (/*CONSTCOND*/0)

#define CIRCLEQ_INSERT_BEFORE(head, \
    listelm, elm, field) do { \
    QUEUEDEBDEBUG_CIRCLEQ_HEAD((head), field) \
    QUEUEDEBDEBUG_CIRCLEQ_ELM((head), (listelm), field) \
    (elm)->field.cqe_next = (listelm); \
    (elm)->field.cqe_prev = (listelm)->field.cqe_prev; \
    if ((listelm)->field.cqe_prev == CIRCLEQ_ENDC(head)) \
        (head)->cqh_first = (elm); \
    else \
        (listelm)->field.cqe_prev->field.cqe_next = (elm); \
    (listelm)->field.cqe_prev = (elm); \
} while (/*CONSTCOND*/0)

#define CIRCLEQ_INSERT_HEAD(head, elm, field) do { \
    QUEUEDEBDEBUG_CIRCLEQ_HEAD((head), field) \
    (elm)->field.cqe_next = (head)->cqh_first; \
    (elm)->field.cqe_prev = CIRCLEQ_END(head); \
    if ((head)->cqh_last == CIRCLEQ_ENDC(head)) \
        (head)->cqh_last = (elm); \
    else \
        (head)->cqh_first->field.cqe_prev = (elm); \
    (head)->cqh_first = (elm); \
} while (/*CONSTCOND*/0)

#define CIRCLEQ_INSERT_TAIL(head, elm, field) do { \
    QUEUEDEBDEBUG_CIRCLEQ_HEAD((head), field) \

```

```

(elm)->field.cqe_next
= CIRCLEQ_END(head); \
(elm)->field.cqe_prev = (head)->cqh_last; \
if ((head)->cqh_first == CIRCLEQ_ENDC(head)) \
    (head)->cqh_first = (elm); \
else \
    (head)->cqh_last->field.cqe_next = (elm); \
    (head)->cqh_last = (elm); \
} while (/*CONSTCOND*/0)

#define CIRCLEQ_REMOVE(head, elm, field) do { \
    QUEUEDEBUG_CIRCLEQ_HEAD((head), field) \
    QUEUEDEBUG_CIRCLEQ_ELM((head), (elm), field) \
    if ((elm)->field.cqe_next == CIRCLEQ_ENDC(head)) \
        (head)->cqh_last = (elm)->field.cqe_prev; \
    else \
        (elm)->field.cqe_next->field.cqe_prev = \
            (elm)->field.cqe_prev; \
    if ((elm)->field.cqe_prev == CIRCLEQ_ENDC(head)) \
        (head)->cqh_first = (elm)->field.cqe_next; \
    else \
        (elm)->field.cqe_prev->field.cqe_next = \
            (elm)->field.cqe_next; \
    QUEUEDEBUG_CIRCLEQ_POSTREMOVE((elm), field) \
} while (/*CONSTCOND*/0)

#define CIRCLEQ_FOREACH(var, head, field) \
    for ((var) = ((head)->cqh_first); \
        (var) != CIRCLEQ_ENDC(head); \
        (var) \
        = ((var)->field.cqe_next))

#define CIRCLEQ_FOREACH_REVERSE(var, head, field) \
    for ((var) = ((head)->cqh_last); \
        (var) != CIRCLEQ_ENDC(head); \
        (var) = ((var)->field.cqe_prev))

/*
 * Circular queue access methods.
 */

#define CIRCLEQ_FIRST(head) ((head)->cqh_first)
#define CIRCLEQ_LAST(head) ((head)->cqh_last)
/* For comparisons */
#define CIRCLEQ_ENDC(head) (__laundry_type(head))
/* For assignments */
#define CIRCLEQ_END(head) ((void *)(head))
#define CIRCLEQ_NEXT(elm, field) ((elm)->field.cqe_next)
#define CIRCLEQ_PREV(elm, field) ((elm)->field.cqe_prev)

```

```

#define CIRCLEQ_EMPTY(head) \
    (CIRCLEQ_FIRST(head) == CIRCLEQ_ENDC(head))

#define CIRCLEQ_LOOP_NEXT(head, elm, field) \
    (((elm)->field.cqe_next == CIRCLEQ_ENDC(head)) \
     ? ((head)->cqh_first) \
     : (elm->field.cqe_next))
#define CIRCLEQ_LOOP_PREV(head, elm, field) \
    (((elm)->field.cqe_prev == CIRCLEQ_ENDC(head)) \
     ? ((head)->cqh_last) \
     : \
     (elm->field.cqe_prev))
#endif /* !_KERNEL */

#endif /* !_SYS_QUEUE_H_ */
#ifndef _SYS_CDEFS_H_
#define _SYS_CDEFS_H_

#warning usage of non-standard #include <sys/cdefs.h> is deprecated

#undef __P
#undef __PMT

#define __P(args) args
#define __PMT(args) args

#define __CONCAT(x,y) x ## y
#define __STRING(x) #x

#ifdef __cplusplus
# define __BEGIN_DECLS extern "C" {
# define __END_DECLS }
#else
# define __BEGIN_DECLS
# define __END_DECLS
#endif

#if defined(__GNUC__) && !defined(__cplusplus)
# define __THROW __attribute__((__nothrow__))
# define __NTH(fct) __attribute__((__nothrow__)) fct
#else
# define __THROW
# define __NTH(fct) fct
#endif

#endif /* _SYS_CDEFS_H_ */
# Contributor: Fabian Affolter <fabian@affolter-engineering.ch>
# Maintainer: Fabian Affolter <fabian@affolter-engineering.ch>

```

```

pkgname=py3-flake8-copyright
_pkgname=flake8-copyright
pkgver=0.2.4
pkgrel=3
pkgdesc="Extension for flake8 which checks for copyrights"
options="!check" # No testsuite
url="https://github.com/savoirfairelinux/flake8-copyright"
arch="noarch"
license="MIT"
depends="py3-flake8 py3-setuptools"
makedepends="py3-gpep517 py3-wheel"
subpackages="$pkgname-pyc"
source="https://files.pythonhosted.org/packages/source/${_pkgname:0:1}/${_pkgname}/${_pkgname}-${pkgver}.tar.gz"
builddir="$srcdir"/$_pkgname-$pkgver

replaces="py-flake8-copyright"          # Backwards compatibility
provides="py-flake8-copyright=$pkgver-r$pkgrel" # Backwards compatibility

build() {
    gpep517 build-wheel \
        --wheel-dir .dist \
        --output-fd 3 3>&1 >&2
}

package() {
    gpep517 install-wheel --destdir "$pkgdir" \
        .dist/*.whl
}

sha512sums="
a6ab47e1bb715618f075c51f398e18180404871b3b0faf1c2d30701d5203db6bc23771bf22ffb5bafcd8ee856b9b64237
b316bd503ae7dceed6ca284ccd5a74d
    flake8-copyright-0.2.4.tar.gz
"
(The MIT License)

```

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TORT OR OTHERWISE, ARISING FROM, OUT OF OR
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SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

/* \$NetBSD: tree.h,v 1.20 2013/09/14 13:20:45 joerg Exp \$ */

/* \$OpenBSD: tree.h,v 1.13 2011/07/09 00:19:45 pirofti Exp \$ */

/* Modified by Void Linux. */

/*

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*

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*/

#ifndef _SYS_TREE_H_

#define _SYS_TREE_H_

#ifdef __GNUC__

#define __GNUC_PREREQ__(x, y) \

((__GNUC__ == (x) && __GNUC_MINOR__ >= (y)) || \

(__GNUC__ > (x)))

#else

#define __GNUC_PREREQ__(x, y) 0

#endif

```

#if __GNUC_PREREQ__(2, 7) || defined(__lint__)
#define _sys_tree_h_unused __attribute__((__unused__))
#else
#define _sys_tree_h_unused /* delete */
#endif

/*
 * This file defines data structures for different types of trees:
 * splay trees and red-black trees.
 *
 * A splay tree is a self-organizing
 * data structure. Every operation
 * on the tree causes a splay to happen. The splay moves the requested
 * node to the root of the tree and partly rebalances it.
 *
 * This has the benefit that request locality causes faster lookups as
 * the requested nodes move to the top of the tree. On the other hand,
 * every lookup causes memory writes.
 *
 * The Balance Theorem bounds the total access time for m operations
 * and n inserts on an initially empty tree as  $O((m + n)\lg n)$ . The
 * amortized cost for a sequence of m accesses to a splay tree is  $O(\lg n)$ ;
 *
 * A red-black tree is a binary search tree with the node color as an
 * extra attribute. It fulfills a set of conditions:
 * - every search path from the root to a leaf consists of the
 *   same number of black nodes,
 * - each red node (except for the root) has a black parent,
 * - each leaf node is black.
 *
 * Every operation on a red-black tree is bounded as  $O(\lg n)$ .
 * The maximum height of a red-black tree is  $2\lg(n+1)$ .
 */

#define SPLAY_HEAD(name, type) \
struct name { \
    struct type *sph_root; /* root of the tree */ \
}

#define SPLAY_INITIALIZER(root) \
{ NULL }

#define SPLAY_INIT(root) do { \
    (root)->sph_root = NULL; \
} while (/*CONSTCOND*/ 0)

#define SPLAY_ENTRY(type) \

```

```

struct {
    \
    struct type *spe_left; /* left element */ \
    struct type *spe_right; /* right element */ \
}

#define SPLAY_LEFT(elm, field) (elm)->field.spe_left
#define SPLAY_RIGHT(elm, field) (elm)->field.spe_right
#define SPLAY_ROOT(head) (head)->sph_root
#define SPLAY_EMPTY(head) (SPLAY_ROOT(head) == NULL)

/* SPLAY_ROTATE_{LEFT,RIGHT} expect that tmp hold SPLAY_{RIGHT,LEFT} */
#define SPLAY_ROTATE_RIGHT(head, tmp, field) do { \
    SPLAY_LEFT((head)->sph_root, field) = SPLAY_RIGHT(tmp, field); \
    SPLAY_RIGHT(tmp, field) = (head)->sph_root; \
    (head)->sph_root = tmp; \
} while (/*CONSTCOND*/ 0)

#define SPLAY_ROTATE_LEFT(head, tmp, field) do { \
    SPLAY_RIGHT((head)->sph_root, \
    field) = SPLAY_LEFT(tmp, field); \
    SPLAY_LEFT(tmp, field) = (head)->sph_root; \
    (head)->sph_root = tmp; \
} while (/*CONSTCOND*/ 0)

#define SPLAY_LINKLEFT(head, tmp, field) do { \
    SPLAY_LEFT(tmp, field) = (head)->sph_root; \
    tmp = (head)->sph_root; \
    (head)->sph_root = SPLAY_LEFT((head)->sph_root, field); \
} while (/*CONSTCOND*/ 0)

#define SPLAY_LINKRIGHT(head, tmp, field) do { \
    SPLAY_RIGHT(tmp, field) = (head)->sph_root; \
    tmp = (head)->sph_root; \
    (head)->sph_root = SPLAY_RIGHT((head)->sph_root, field); \
} while (/*CONSTCOND*/ 0)

#define SPLAY_ASSEMBLE(head, node, left, right, field) do { \
    SPLAY_RIGHT(left, field) = SPLAY_LEFT((head)->sph_root, field); \
    SPLAY_LEFT(right, field) = SPLAY_RIGHT((head)->sph_root, field); \
    SPLAY_LEFT((head)->sph_root, field) = SPLAY_RIGHT(node, field); \
    SPLAY_RIGHT((head)->sph_root, field) = SPLAY_LEFT(node, field); \
} while (/*CONSTCOND*/ 0)

/* Generates prototypes and inline functions */

#define
SPLAY_PROTOTYPE(name, type, field, cmp) \
void name##_SPLAY(struct name *, struct type *); \

```



```

void name##_SPLAY_MINMAX(struct name *, int); \
struct type *name##_SPLAY_INSERT(struct name *, struct type *); \
struct type *name##_SPLAY_REMOVE(struct name *, struct type *); \
\
/* Finds the node with the same key as elm */ \
static __inline struct type * \
name##_SPLAY_FIND(struct name *head, struct type *elm) \
{ \
    if (SPLAY_EMPTY(head)) \
        return(NULL); \
    name##_SPLAY(head, elm); \
    if ((cmp)(elm, (head)->sph_root) == 0) \
        return (head->sph_root); \
    return (NULL); \
} \
\
static __inline _sys_tree_h_unused struct type * \
name##_SPLAY_NEXT(struct name *head, struct type *elm) \
{ \
    name##_SPLAY(head, elm); \
    if (SPLAY_RIGHT(elm, field) != NULL) { \
        elm = SPLAY_RIGHT(elm, field); \
        while (SPLAY_LEFT(elm, field) != NULL) { \
            elm = SPLAY_LEFT(elm, field); \
        } \
    } \
    else \
        elm = NULL; \
    return (elm); \
} \
\
static _sys_tree_h_unused __inline struct type * \
name##_SPLAY_MIN_MAX(struct name *head, int val) \
{ \
    name##_SPLAY_MINMAX(head, val); \
    return (SPLAY_ROOT(head)); \
}

/* Main splay operation.
 * Moves node close to the key of elm to top
 */
#define SPLAY_GENERATE(name, type, field, cmp) \
struct type * \
name##_SPLAY_INSERT(struct name *head, struct type *elm) \
{ \
    if (SPLAY_EMPTY(head)) { \
        SPLAY_LEFT(elm, field) = SPLAY_RIGHT(elm, field) = NULL; \
    } else { \

```

```

int __comp;    \
name##_SPLAY(head, elm);    \
__comp = (cmp)(elm, (head)->sph_root);    \
if(__comp < 0) {    \
    SPLAY_LEFT(elm, field) = SPLAY_LEFT((head)->sph_root, field);\
    SPLAY_RIGHT(elm, field) = (head)->sph_root;    \
    SPLAY_LEFT((head)->sph_root, field) = NULL;    \
} else if (__comp > 0) {    \
    SPLAY_RIGHT(elm,
field) = SPLAY_RIGHT((head)->sph_root, field);\
    SPLAY_LEFT(elm, field) = (head)->sph_root;    \
    SPLAY_RIGHT((head)->sph_root, field) = NULL;    \
} else    \
    return ((head)->sph_root);    \
}    \
(head)->sph_root = (elm);    \
return (NULL);    \
}    \
\
struct type *    \
name##_SPLAY_REMOVE(struct name *head, struct type *elm)    \
{    \
    struct type *__tmp;    \
    if (SPLAY_EMPTY(head))    \
        return (NULL);    \
    name##_SPLAY(head, elm);    \
    if ((cmp)(elm, (head)->sph_root) == 0) {    \
        if (SPLAY_LEFT((head)->sph_root, field) == NULL) {    \
            (head)->sph_root = SPLAY_RIGHT((head)->sph_root, field);\
        } else {    \
            __tmp = SPLAY_RIGHT((head)->sph_root, field);\
            (head)->sph_root = SPLAY_LEFT((head)->sph_root, field);\
            name##_SPLAY(head, elm);    \
            SPLAY_RIGHT((head)->sph_root, field) = __tmp;    \
        }    \
        return (elm);    \
    }    \
    return (NULL);    \
}    \
\
void    \
name##_SPLAY(struct
name *head, struct type *elm)    \
{    \
    struct type __node, *__left, *__right, *__tmp;    \
    int __comp;    \
    \
    SPLAY_LEFT(&__node, field) = SPLAY_RIGHT(&__node, field) = NULL;\

```

```

__left = __right = &__node; \
\
while ((__comp = (cmp)(elm, (head)->sph_root)) != 0) { \
    if (__comp < 0) { \
        __tmp = SPLAY_LEFT((head)->sph_root, field); \
        if (__tmp == NULL) \
            break; \
        if ((cmp)(elm, __tmp) < 0){ \
            SPLAY_ROTATE_RIGHT(head, __tmp, field); \
            if (SPLAY_LEFT((head)->sph_root, field) == NULL)\
                break; \
        } \
        SPLAY_LINKLEFT(head, __right, field); \
    } else if (__comp > 0) { \
        __tmp = SPLAY_RIGHT((head)->sph_root, field); \
        if (__tmp == NULL) \
            break; \
        if ((cmp)(elm, __tmp) > 0){ \
            SPLAY_ROTATE_LEFT(head, __tmp, field); \
            if (SPLAY_RIGHT((head)->sph_root, field) == NULL)\
                break; \
        } \
        SPLAY_LINKRIGHT(head, __left, field); \
    } \
} \
SPLAY_ASSEMBLE(head,
&__node, __left, __right, field); \
} \
\
/* Splay with either the minimum or the maximum element \
* Used to find minimum or maximum element in tree. \
*/ \
void name##_SPLAY_MINMAX(struct name *head, int __comp) \
{ \
    struct type __node, *__left, *__right, *__tmp; \
    \
    SPLAY_LEFT(&__node, field) = SPLAY_RIGHT(&__node, field) = NULL;\
    __left = __right = &__node; \
    \
    while (1) { \
        if (__comp < 0) { \
            __tmp = SPLAY_LEFT((head)->sph_root, field); \
            if (__tmp == NULL) \
                break; \
            if (__comp < 0){ \
                SPLAY_ROTATE_RIGHT(head, __tmp, field); \
                if (SPLAY_LEFT((head)->sph_root, field) == NULL)\
                    break; \
            }

```

```

    } \
    SPLAY_LINKLEFT(head, __right, field); \
} else if (__comp > 0) { \
    __tmp = SPLAY_RIGHT((head)->sph_root, field); \
    if (__tmp == NULL) \
        break; \
    if (__comp > 0) { \
        SPLAY_ROTATE_LEFT(head, __tmp, field); \
        if (SPLAY_RIGHT((head)->sph_root,
field) == NULL)\
            break; \
    } \
    SPLAY_LINKRIGHT(head, __left, field); \
} \
} \
SPLAY_ASSEMBLE(head, &__node, __left, __right, field); \
}

#define SPLAY_NEGINF -1
#define SPLAY_INF 1

#define SPLAY_INSERT(name, x, y) name##_SPLAY_INSERT(x, y)
#define SPLAY_REMOVE(name, x, y) name##_SPLAY_REMOVE(x, y)
#define SPLAY_FIND(name, x, y) name##_SPLAY_FIND(x, y)
#define SPLAY_NEXT(name, x, y) name##_SPLAY_NEXT(x, y)
#define SPLAY_MIN(name, x) (SPLAY_EMPTY(x) ? NULL \
    : name##_SPLAY_MIN_MAX(x, SPLAY_NEGINF))
#define SPLAY_MAX(name, x) (SPLAY_EMPTY(x) ? NULL \
    : name##_SPLAY_MIN_MAX(x, SPLAY_INF))

#define SPLAY_FOREACH(x, name, head) \
    for ((x) = SPLAY_MIN(name, head); \
        (x) != NULL; \
        (x) = SPLAY_NEXT(name, head, x))

/* Macros that define a red-black tree */
#define RB_HEAD(name, type) \
    struct name { \
        struct type *rbh_root; /* root of the tree */ \
    }

#define RB_INITIALIZER(root) \
    { \
        NULL \
    }

#define RB_INIT(root) do { \
    (root)->rbh_root = NULL; \
} while (/*CONSTCOND*/ 0)

```

```

#define RB_BLACK 0
#define RB_RED 1
#define RB_ENTRY(type) \
struct { \
    struct type *rbe_left; /* left element */ \
    struct type *rbe_right; /* right element */ \
    struct type *rbe_parent; /* parent element */ \
    int rbe_color; /* node color */ \
}

#define RB_LEFT(elm, field) (elm)->field.rbe_left
#define RB_RIGHT(elm, field) (elm)->field.rbe_right
#define RB_PARENT(elm, field) (elm)->field.rbe_parent
#define RB_COLOR(elm, field) (elm)->field.rbe_color
#define RB_ROOT(head) (head)->rbh_root
#define RB_EMPTY(head) (RB_ROOT(head) == NULL)

#define RB_SET(elm, parent, field) do { \
    RB_PARENT(elm, field) = parent; \
    RB_LEFT(elm, field) = RB_RIGHT(elm, field) = NULL; \
    RB_COLOR(elm, field) = RB_RED; \
} while (/*CONSTCOND*/ 0)

#define RB_SET_BLACKRED(black, red, field) do { \
    RB_COLOR(black, field) = RB_BLACK; \
    RB_COLOR(red, field) \
    = RB_RED; \
} while (/*CONSTCOND*/ 0)

#ifndef RB_AUGMENT
#define RB_AUGMENT(x) do {} while (/*CONSTCOND*/ 0)
#endif

#define RB_ROTATE_LEFT(head, elm, tmp, field) do { \
    (tmp) = RB_RIGHT(elm, field); \
    if ((RB_RIGHT(elm, field) = RB_LEFT(tmp, field)) != NULL) { \
        RB_PARENT(RB_LEFT(tmp, field), field) = (elm); \
    } \
    RB_AUGMENT(elm); \
    if ((RB_PARENT(tmp, field) = RB_PARENT(elm, field)) != NULL) { \
        if ((elm) == RB_LEFT(RB_PARENT(elm, field), field)) \
            RB_LEFT(RB_PARENT(elm, field), field) = (tmp); \
        else \
            RB_RIGHT(RB_PARENT(elm, field), field) = (tmp); \
    } else \
        (head)->rbh_root = (tmp); \
    RB_LEFT(tmp, field) = (elm); \
}

```

```

RB_PARENT(elm, field) = (tmp); \
RB_AUGMENT(tmp); \
if ((RB_PARENT(tmp, field))) \
    RB_AUGMENT(RB_PARENT(tmp, field)); \
} while (/*CONSTCOND*/ 0)

#define RB_ROTATE_RIGHT(head, elm, tmp, field) do { \
    (tmp) = RB_LEFT(elm, field); \
    if ((RB_LEFT(elm, field) = RB_RIGHT(tmp, field)) \
        != NULL) { \
        RB_PARENT(RB_RIGHT(tmp, field), field) = (elm); \
    } \
    RB_AUGMENT(elm); \
    if ((RB_PARENT(tmp, field) = RB_PARENT(elm, field)) != NULL) { \
        if ((elm) == RB_LEFT(RB_PARENT(elm, field), field)) \
            RB_LEFT(RB_PARENT(elm, field), field) = (tmp); \
        else \
            RB_RIGHT(RB_PARENT(elm, field), field) = (tmp); \
    } else \
        (head)->rbh_root = (tmp); \
    RB_RIGHT(tmp, field) = (elm); \
    RB_PARENT(elm, field) = (tmp); \
    RB_AUGMENT(tmp); \
    if ((RB_PARENT(tmp, field))) \
        RB_AUGMENT(RB_PARENT(tmp, field)); \
} while (/*CONSTCOND*/ 0)

/* Generates prototypes and inline functions */
#define RB_PROTOTYPE(name, type, field, cmp) \
    RB_PROTOTYPE_INTERNAL(name, type, field, cmp,)
#define RB_PROTOTYPE_STATIC(name, type, field, cmp) \
    RB_PROTOTYPE_INTERNAL(name, type, field, cmp, _sys_tree_h_unused static)
#define RB_PROTOTYPE_INTERNAL(name, type, field, cmp, attr) \
    attr void name##_RB_INSERT_COLOR(struct name *, struct \
        type *); \
    attr void name##_RB_REMOVE_COLOR(struct name *, struct type *, struct type *); \
    attr struct type *name##_RB_REMOVE(struct name *, struct type *); \
    attr struct type *name##_RB_INSERT(struct name *, struct type *); \
    attr struct type *name##_RB_FIND(struct name *, struct type *); \
    attr struct type *name##_RB_NFIND(struct name *, struct type *); \
    attr struct type *name##_RB_NEXT(struct type *); \
    attr struct type *name##_RB_PREV(struct type *); \
    attr struct type *name##_RB_MINMAX(struct name *, int); \
    \

/* Main rb operation.
 * Moves node close to the key of elm to top
 */

```

```

#define RB_GENERATE(name, type, field, cmp) \
    RB_GENERATE_INTERNAL(name, type, field, cmp,)
#define RB_GENERATE_STATIC(name, type, field, cmp) \
    RB_GENERATE_INTERNAL(name, type, field, cmp, _sys_tree_h_unused static)
#define RB_GENERATE_INTERNAL(name, type, field, cmp, attr) \
    attr void \
    name##_RB_INSERT_COLOR(struct name *head, struct type *elm) \
    { \
        struct type \
        *parent, *gparent, *tmp; \
        while ((parent = RB_PARENT(elm, field)) != NULL && \
            RB_COLOR(parent, field) == RB_RED) { \
            gparent = RB_PARENT(parent, field); \
            if (parent == RB_LEFT(gparent, field)) { \
                tmp = RB_RIGHT(gparent, field); \
                if (tmp && RB_COLOR(tmp, field) == RB_RED) { \
                    RB_COLOR(tmp, field) = RB_BLACK; \
                    RB_SET_BLACKRED(parent, gparent, field); \
                    elm = gparent; \
                    continue; \
                } \
                if (RB_RIGHT(parent, field) == elm) { \
                    RB_ROTATE_LEFT(head, parent, tmp, field); \
                    tmp = parent; \
                    parent = elm; \
                    elm = tmp; \
                } \
                RB_SET_BLACKRED(parent, gparent, field); \
                RB_ROTATE_RIGHT(head, gparent, tmp, field); \
            } else { \
                tmp = RB_LEFT(gparent, field); \
                if (tmp && RB_COLOR(tmp, field) == RB_RED) { \
                    RB_COLOR(tmp, field) = RB_BLACK; \
                    RB_SET_BLACKRED(parent, gparent, field); \
                    elm = gparent; \
                    continue; \
                } \
                if (RB_LEFT(parent, field) == elm) \
            { \
                RB_ROTATE_RIGHT(head, parent, tmp, field); \
                tmp = parent; \
                parent = elm; \
                elm = tmp; \
            } \
            RB_SET_BLACKRED(parent, gparent, field); \
            RB_ROTATE_LEFT(head, gparent, tmp, field); \
        } \
    } \

```

```

RB_COLOR(head->rbh_root, field) = RB_BLACK; \
} \
\
attr void \
name##_RB_REMOVE_COLOR(struct name *head, struct type *parent, struct type *elm) \
{ \
    struct type *tmp; \
    while ((elm == NULL || RB_COLOR(elm, field) == RB_BLACK) && \
        elm != RB_ROOT(head)) { \
        if (RB_LEFT(parent, field) == elm) { \
            tmp = RB_RIGHT(parent, field); \
            if (RB_COLOR(tmp, field) == RB_RED) { \
                RB_SET_BLACKRED(tmp, parent, field); \
                RB_ROTATE_LEFT(head, parent, tmp, field); \
                tmp = RB_RIGHT(parent, field); \
            } \
            if ((RB_LEFT(tmp, field) == NULL || \
                RB_COLOR(RB_LEFT(tmp, field), field) == RB_BLACK) && \
                (RB_RIGHT(tmp, field) == NULL || \
                RB_COLOR(RB_RIGHT(tmp, \
field), field) == RB_BLACK)) {\
                RB_COLOR(tmp, field) = RB_RED; \
                elm = parent; \
                parent = RB_PARENT(elm, field); \
            } else { \
                if (RB_RIGHT(tmp, field) == NULL || \
                    RB_COLOR(RB_RIGHT(tmp, field), field) == RB_BLACK) {\
                    struct type *oleft; \
                    if ((oleft = RB_LEFT(tmp, field)) \
                        != NULL) \
                        RB_COLOR(oleft, field) = RB_BLACK; \
                    RB_COLOR(tmp, field) = RB_RED; \
                    RB_ROTATE_RIGHT(head, tmp, oleft, field); \
                    tmp = RB_RIGHT(parent, field); \
                } \
                RB_COLOR(tmp, field) = RB_COLOR(parent, field); \
                RB_COLOR(parent, field) = RB_BLACK; \
                if (RB_RIGHT(tmp, field)) \
                    RB_COLOR(RB_RIGHT(tmp, field), field) = RB_BLACK; \
                RB_ROTATE_LEFT(head, parent, tmp, field); \
                elm = RB_ROOT(head); \
                break; \
            } \
        } else { \
            tmp = RB_LEFT(parent, field); \
            if (RB_COLOR(tmp, field) == RB_RED) { \
                RB_SET_BLACKRED(tmp, parent, field); \
                RB_ROTATE_RIGHT(head, parent, tmp, field); \

```



```

    tmp
= RB_LEFT(parent, field); \
} \
if ((RB_LEFT(tmp, field) == NULL || \
    RB_COLOR(RB_LEFT(tmp, field), field) == RB_BLACK) &&\
    (RB_RIGHT(tmp, field) == NULL || \
    RB_COLOR(RB_RIGHT(tmp, field), field) == RB_BLACK)) {\
    RB_COLOR(tmp, field) = RB_RED; \
    elm = parent; \
    parent = RB_PARENT(elm, field); \
} else { \
    if (RB_LEFT(tmp, field) == NULL || \
        RB_COLOR(RB_LEFT(tmp, field), field) == RB_BLACK) {\
        struct type *oright; \
        if ((oright = RB_RIGHT(tmp, field)) \
            != NULL) \
            RB_COLOR(oright, field) = RB_BLACK;\
        RB_COLOR(tmp, field) = RB_RED; \
        RB_ROTATE_LEFT(head, tmp, oright, field);\
        tmp = RB_LEFT(parent, field); \
    } \
    RB_COLOR(tmp, field) = RB_COLOR(parent, field);\
    RB_COLOR(parent, field) = RB_BLACK; \
    if (RB_LEFT(tmp, field)) \
        RB_COLOR(RB_LEFT(tmp, field), field) = RB_BLACK;\
    RB_ROTATE_RIGHT(head, parent, tmp, field);\
    elm = RB_ROOT(head); \
    break; \
} \
} \
} \
if
(elm) \
    RB_COLOR(elm, field) = RB_BLACK; \
} \
\
attr struct type * \
name##_RB_REMOVE(struct name *head, struct type *elm) \
{ \
    struct type *child, *parent, *old = elm; \
    int color; \
    if (RB_LEFT(elm, field) == NULL) \
        child = RB_RIGHT(elm, field); \
    else if (RB_RIGHT(elm, field) == NULL) \
        child = RB_LEFT(elm, field); \
    else { \
        struct type *left; \
        elm = RB_RIGHT(elm, field); \

```

```

while ((left = RB_LEFT(elm, field)) != NULL) \
    elm = left; \
child = RB_RIGHT(elm, field); \
parent = RB_PARENT(elm, field); \
color = RB_COLOR(elm, field); \
if (child) \
    RB_PARENT(child, field) = parent; \
if (parent) { \
    if (RB_LEFT(parent, field) == elm) \
        RB_LEFT(parent, field) = child; \
    else \
        RB_RIGHT(parent, field) = child; \
    RB_AUGMENT(parent); \
} else \
    RB_ROOT(head)
= child; \
if (RB_PARENT(elm, field) == old) \
    parent = elm; \
(elm)->field = (old)->field; \
if (RB_PARENT(old, field)) { \
    if (RB_LEFT(RB_PARENT(old, field), field) == old)\
        RB_LEFT(RB_PARENT(old, field), field) = elm;\
    else \
        RB_RIGHT(RB_PARENT(old, field), field) = elm;\
    RB_AUGMENT(RB_PARENT(old, field)); \
} else \
    RB_ROOT(head) = elm; \
RB_PARENT(RB_LEFT(old, field), field) = elm; \
if (RB_RIGHT(old, field)) \
    RB_PARENT(RB_RIGHT(old, field), field) = elm; \
if (parent) { \
    left = parent; \
    do { \
        RB_AUGMENT(left); \
    } while ((left = RB_PARENT(left, field)) != NULL); \
} \
goto color; \
} \
parent = RB_PARENT(elm, field); \
color = RB_COLOR(elm, field); \
if (child) \
    RB_PARENT(child, field) = parent; \
if (parent) { \
    if (RB_LEFT(parent, field) == elm) \
        RB_LEFT(parent, field) = child; \
    else \
        RB_RIGHT(parent,

```

```

field) = child; \
    RB_AUGMENT(parent); \
} else \
    RB_ROOT(head) = child; \
color: \
if (color == RB_BLACK) \
    name##_RB_REMOVE_COLOR(head, parent, child); \
return (old); \
} \
\

/* Inserts a node into the RB tree */ \
attr struct type * \
name##_RB_INSERT(struct name *head, struct type *elm) \
{ \
    struct type *tmp; \
    struct type *parent = NULL; \
    int comp = 0; \
    tmp = RB_ROOT(head); \
    while (tmp) { \
        parent = tmp; \
        comp = (cmp)(elm, parent); \
        if (comp < 0) \
            tmp = RB_LEFT(tmp, field); \
        else if (comp > 0) \
            tmp = RB_RIGHT(tmp, field); \
        else \
            return (tmp); \
    } \
    RB_SET(elm, parent, field); \
    if (parent != NULL) { \
        if (comp < 0) \
            RB_LEFT(parent, field) = elm; \
        else \
            RB_RIGHT(parent, field) = elm; \
        RB_AUGMENT(parent); \
    } else \
        RB_ROOT(head) = elm; \
    name##_RB_INSERT_COLOR(head, \
        elm); \
    return (NULL); \
} \
\

/* Finds the node with the same key as elm */ \
attr struct type * \
name##_RB_FIND(struct name *head, struct type *elm) \
{ \
    struct type *tmp = RB_ROOT(head); \
    int comp; \

```

```

while (tmp) {
    comp = cmp(elm, tmp);
    if (comp < 0)
        tmp = RB_LEFT(tmp, field);
    else if (comp > 0)
        tmp = RB_RIGHT(tmp, field);
    else
        return (tmp);
}
return (NULL);
}

/* Finds the first node greater than or equal to the search key */
attr struct type *
name##_RB_NFIND(struct name *head, struct type *elm)
{
    struct type *tmp = RB_ROOT(head);
    struct type *res = NULL;
    int comp;
    while (tmp) {
        comp = cmp(elm, tmp);
        if (comp < 0) {
            res = tmp;
            tmp = RB_LEFT(tmp, field);
        }
        else if (comp > 0)
            tmp =
RB_RIGHT(tmp, field);
        else
            return (tmp);
    }
    return (res);
}

/* ARGSUSED */
attr struct type *
name##_RB_NEXT(struct type *elm)
{
    if (RB_RIGHT(elm, field)) {
        elm = RB_RIGHT(elm, field);
        while (RB_LEFT(elm, field))
            elm = RB_LEFT(elm, field);
    } else {
        if (RB_PARENT(elm, field) &&
            (elm == RB_LEFT(RB_PARENT(elm, field), field)))
            elm = RB_PARENT(elm, field);
        else {
            while (RB_PARENT(elm, field) &&

```

```

        (elm == RB_RIGHT(RB_PARENT(elm, field), field)))\
    elm = RB_PARENT(elm, field); \
    elm = RB_PARENT(elm, field); \
} \
} \
return (elm); \
} \
\
/* ARGSUSED */ \
attr struct type * \
name##_RB_PREV(struct type *elm) \
{ \
    if (RB_LEFT(elm, field)) { \
        elm = RB_LEFT(elm, field); \
        while (RB_RIGHT(elm, field)) \
            elm = RB_RIGHT(elm, field); \
    }
    else { \
        if (RB_PARENT(elm, field) && \
            (elm == RB_RIGHT(RB_PARENT(elm, field), field))) \
            elm = RB_PARENT(elm, field); \
        else { \
            while (RB_PARENT(elm, field) && \
                (elm == RB_LEFT(RB_PARENT(elm, field), field)))\
                elm = RB_PARENT(elm, field); \
            elm = RB_PARENT(elm, field); \
        } \
    } \
    return (elm); \
} \
\
attr struct type * \
name##_RB_MINMAX(struct name *head, int val) \
{ \
    struct type *tmp = RB_ROOT(head); \
    struct type *parent = NULL; \
    while (tmp) { \
        parent = tmp; \
        if (val < 0) \
            tmp = RB_LEFT(tmp, field); \
        else \
            tmp = RB_RIGHT(tmp, field); \
    } \
    return (parent); \
}

#define RB_NEGINF -1
#define RB_INF 1

```

```

#define RB_INSERT(name, x, y) name##_RB_INSERT(x, y)
#define RB_REMOVE(name, x, y) name##_RB_REMOVE(x, y)
#define RB_FIND(name, x, y) name##_RB_FIND(x, y)
#define RB_NFIND(name, x, y) name##_RB_NFIND(x,
y)
#define RB_NEXT(name, x, y) name##_RB_NEXT(y)
#define RB_PREV(name, x, y) name##_RB_PREV(y)
#define RB_MIN(name, x) name##_RB_MINMAX(x, RB_NEGINF)
#define RB_MAX(name, x) name##_RB_MINMAX(x, RB_INF)

#define RB_FOREACH(x, name, head) \
for ((x) = RB_MIN(name, head); \
(x) != NULL; \
(x) = name##_RB_NEXT(x))

#define RB_FOREACH_FROM(x, name, y) \
for ((x) = (y); \
((x) != NULL) && ((y) = name##_RB_NEXT(x), (x) != NULL); \
(x) = (y))

#define RB_FOREACH_SAFE(x, name, head, y) \
for ((x) = RB_MIN(name, head); \
((x) != NULL) && ((y) = name##_RB_NEXT(x), (x) != NULL); \
(x) = (y))

#define RB_FOREACH_REVERSE(x, name, head) \
for ((x) = RB_MAX(name, head); \
(x) != NULL; \
(x) = name##_RB_PREV(x))

#define RB_FOREACH_REVERSE_FROM(x, name, y) \
for ((x) = (y); \
((x) != NULL) && ((y) = name##_RB_PREV(x), (x) != NULL); \
(x) = (y))

#define RB_FOREACH_REVERSE_SAFE(x, name,
head, y) \
for ((x) = RB_MAX(name, head); \
((x) != NULL) && ((y) = name##_RB_PREV(x), (x) != NULL); \
(x) = (y))

#endif /* _SYS_TREE_H_ */
# Contributor: Wen Heping <wenhepingalpine@sohu.com>
# Maintainer: Wen Heping <wenhepingalpine@sohu.com>
pkgname=perl-software-license
pkgver=0.104007
pkgrel=0

```

```

# _pkgreal is used by apkbuild-cpan to find modules at MetaCpan
_pkgreal=Software-License
pkgdesc="packages that provide templated software licenses"
url="https://metacpan.org/release/Software-License/"
arch="noarch"
license="GPL-1.0-or-later OR Artistic-1.0-Perl"
depends="perl perl-data-section perl-text-template"
checkdepends="perl-try-tiny"
subpackages="$pkgname-doc"
source="https://cpan.metacpan.org/authors/id/L/LE/LEONT/Software-License-$pkgver.tar.gz"
builddir="$srcdir/${_pkgreal}-${pkgver}"

build() {
    export CFLAGS=$(perl -MConfig -E 'say $Config{ccflags}')
    PERL_MM_USE_DEFAULT=1 perl -I. Makefile.PL \
        INSTALLDIRS=vendor \
        NO_PACKLIST=1 \
        NO_PERLLOCAL=1
    make
}

check() {
    export CFLAGS=$(perl -MConfig -E 'say $Config{ccflags}')
    make test
}

package() {
    make DESTDIR="$pkgdir" install
}

sha512sums="
12d75e9583b3013d9b4a282467f1ac80ab6b7f3251926d66591d01404489b528f22adc396dfd4528a0f0ca650f0eed6d
9c959e69eace2169c6ed1cffe5277e4
Software-License-0.104007.tar.gz
"
(The MIT License)

```

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Contributor: Dhruvin Gandhi <contact@dhruvin>

Maintainer: Patrycja Rosa <alpine@ptrcnull.me>

pkgname=py3-license-expression

_pkgname=license_expression

pkgver=30.4.4

pkgrel=0

pkgdesc="Library to parse, compare, simplify and normalize license expressions"

url="https://github.com/nexB/license-expression"

arch="noarch"

license="Apache-2.0"

depends="python3 py3-boolean.py"

makedepends="py3-setuptools py3-setuptools_scm py3-gpep517 py3-wheel"

checkdepends="py3-pytest py3-pytest-xdist"

subpackages="\$pkgname-pyc"

source="https://files.pythonhosted.org/packages/source/l/\${_pkgname}/\${_pkgname}-\${pkgver}.tar.gz"

builddir="\$srcdir/\${_pkgname}-\${pkgver}"

```
build() {  
    gpep517 build-wheel \  
        --wheel-dir .dist \  
        --output-fd 3 3>&1 >&2  
}
```

```
check() {  
    python3 -m venv --clear --without-pip --system-site-packages .testenv  
    .testenv/bin/python3 -m installer .dist/*.whl  
    .testenv/bin/python3 -m pytest  
}
```

```
package() {  
    python3 -m installer -d "$pkgdir" \  
        .dist/*.whl  
}
```

sha512sums="

f46dd4cf524b3962115fe26f5545bfdd6767275b482724af51e7ca07da79244969a3bfc5d2fd5b95bc0f19d1b95a26a8f3
ab36c676e56ec302178d7166588066

license_expression-30.4.4.tar.gz

"

1.390 nghttp3 1.13.1-r0

1.390.1 Available under license :

The MIT License

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1.391 alpine-baselayout 3.7.1-r8

1.391.1 Available under license :

```
# Automatically generated by apkbuild-cpan, template 1
# Contributor: Francesco Colista <francesco.colista@gmail.com>
# Maintainer: Francesco Colista <francesco.colista@gmail.com>
pkgname=perl-software-license
_pkgreal=Software-License
pkgver=0.103004
pkgrel=0
pkgdesc="packages that provide templated software licenses"
url="http://search.cpan.org/dist/Software-License/"
arch="noarch"
license="GPL PerlArtistic"
cpandepends="perl-text-template perl-data-section perl-sub-install"
cpanmakedepends=" "
```

```

depends="$scpandepends"
makedepends="perl-dev $cpanmakedepends"
subpackages="$pkgname-doc"
source="http://search.cpan.org/CPAN/authors/id/R/RJ/RJBS/${_pkgreal}-${pkgver}.tar.gz"

```

```
_builddir="$srcdir/${_pkgreal}-${pkgver}"
```

```

prepare() {
    cd "$_builddir"
    export CFLAGS=`perl -MConfig -E 'say $Config{ccflags}`
    PERL_MM_USE_DEFAULT=1 perl Makefile.PL INSTALLDIRS=vendor
}

```

```

build() {
    cd "$_builddir"
    export CFLAGS=`perl -MConfig -E 'say $Config{ccflags}`
    make && make test
}

```

```

package() {
    cd "$_builddir"
    make
    DESTDIR="$pkgdir" install || return 1
    find "$pkgdir" \( -name perllocal.pod -o -name .packlist \) -delete
}

```

```

md5sums="0c5fd53d93818566234578b27d667b35 Software-License-0.103004.tar.gz"
# Maintainer: Natanael Copa <ncopa@alpinelinux.org>
pkgname=libart-lgpl
pkgver=2.3.21
pkgrel=5
pkgdesc="A library for high-performance 2D graphics"
url="http://www.levien.com/libart/"
arch="all"
license="LGPL"
depends=
makedepends=
subpackages="$pkgname-dev"
source="https://download.gnome.org/sources/libart-lgpl/2.3/libart-lgpl-${pkgver}.tar.bz2"
"

```

```
_builddir="$srcdir"/libart-lgpl-${pkgver}
```

```

prepare() {
    cd "$_builddir"
    update_config_sub || return 1
}
build() {

```

```

cd "$_builddir"
./configure \
--build=$CBUILD \
--host=$CHOST \
--prefix=/usr \
|| return 1
make || return 1
}

```

```

package() {
cd "$_builddir"
make DESTDIR="$pkgdir" install || return 1
}

```

```

sha512sums="8a632a6a4da59e5e8c02ec2f5a57e36d182b325b46513765425e5f171ff9ae326af1b133725beba28f7e7
6654309e001aee9bace727b5b4c8589405256a3c020 libart_lgpl-2.3.21.tar.bz2"

```

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```
# Automatically generated by apkbuild-cpan, template 1
# Contributor: Valery Kartel <valery.kartel@gmail.com>
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pkgname=perl-bsd-resource
_pkgreal=BSD-Resource
pkgver=1.2909
pkgrel=2
```



```

pkgdesc="Perl extension implements the BSD process resource limit functions"
url="http://search.cpan.org/dist/BSD-Resource/"
arch="all"
license="GPL PerlArtistic"
cpandepends=""
cpanmakedepends=" "
depends="$cpandepends"
makedepends="perl-dev $cpanmakedepends"
subpackages="$pkgname-doc"
source="http://search.cpan.org/CPAN/authors/id/J/JH/JHI/${_pkgreal}-${pkgver}.tar.gz"

_buildddir="${srcdir}/${_pkgreal}-${pkgver}"

prepare() {
    cd "$_buildddir"
    export CFLAGS=`perl -MConfig -E 'say $Config{ccflags}`
    PERL_MM_USE_DEFAULT=1 perl Makefile.PL INSTALLDIRS=vendor
}

build() {
    cd "$_buildddir"
    export CFLAGS=`perl -MConfig -E 'say $Config{ccflags}`
    make && make test || return 1
}

package() {
    cd "$_buildddir"
    make DESTDIR="$pkgdir" install || return 1
    find "$pkgdir"
    \(-name perllocal.pod -o -name .packlist\) -delete
}

md5sums="3c6dd2fa953088aa87e263f40818d012 BSD-Resource-1.2909.tar.gz"
sha256sums="c47d460e2bd00d8d049f6ff4a0f1f61957e289e8de45af5fc79e851e2e855e06 BSD-Resource-1.2909.tar.gz"
sha512sums="5f489eaac5089e82081b7cf51d62638750e443751b49415407354da96b17771819b5e6e85529faa41ddd85743363750157943c7f7700276cce2bd40a429fa430 BSD-Resource-1.2909.tar.gz"
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pkgname=py-flake8-copyright

_pkgname=flake8-copyright

pkgver=0.2.0

pkgrel=1

pkgdesc="Extension for flake8 which checks for copyrights"

url="https://github.com/savoirfairelinux/flake8-copyright"

arch="noarch"

license="MIT"

depends="flake8"

makedepends="python3-dev"

source="https://files.pythonhosted.org/packages/source/\${_pkgname:0:1}/\${_pkgname}/\${_pkgname}-\${pkgver}.tar.gz"

builddir="\$srcdir"/\$_pkgname-\$pkgver

build() {

```

cd "$builddir"
python3 setup.py build || return 1
}

package() {
cd "$builddir"
python3 setup.py install --prefix=/usr --root="$pkgdir" || return 1
}

md5sums="c6348990c6d74933bf5d5f6a55a14bdf flake8-copyright-0.2.0.tar.gz"
sha256sums="aeef26eb4d5223c9cd5b101e68175fcef6d2b353bf36da688fdde62fccfe2b73 flake8-copyright-0.2.0.tar.gz"
sha512sums="bab1bfaeed3a525ac3c7da12b1f2ec338c204cc69b72d05cd39560e528faff5d586c3b1be9570f4a977a7e2417b586e543bfba12abce256b2023c8c4993eeb90flake8-copyright-0.2.0.tar.gz"
mini_sendmail - accept email on behalf of real sendmail

```

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1.392 ncurses 6.5_p20251123-r0

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Upstream-Name: ncurses

Upstream-Contact: Thomas E. Dickey <dickey@invisible-island.net>

Source: <https://invisible-island.net/ncurses/ncurses.html>

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Files: misc/ncu2openbsd
ncurses/wcwidth.h

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Files: install-sh

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Files: ncurses/tinfo/read_termcap.c
progs/tset.c

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Upstream-Name: AdaCurses

Upstream-Contact: Thomas E. Dickey <dickey@invisible-island.net>

Source: <https://invisible-island.net/ncurses/Ada95.html>

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-- vile:txtmode fc=72
-- \$Id: COPYING,v 1.14 2025/01/04 10:53:46 tom Exp \$
Format: <http://www.debian.org/doc/packaging-manuals/copyright-format/1.0/>
Upstream-Name: ncurses-examples
Upstream-Contact: Thomas E. Dickey <dickey@invisible-island.net>
Source: <https://invisible-island.net/ncurses/ncurses-examples.html>

Files: *

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Comment:

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Files: aclocal.m4 package

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Files: install-sh

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Files: terminal.xbm

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Comment: vile: txtmode file-encoding=utf-8

1.393 libunistring 1.4.1-r0

1.393.1 Available under license :

/* Extract the last component (base name) of a file name.

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along with this program. If not, see <<https://www.gnu.org/licenses/>>. */

```
#ifndef _BASENAME_LGPL_H
#define _BASENAME_LGPL_H

/* This file uses _GL_ATTRIBUTE_PURE. */
#if !_GL_CONFIG_H_INCLUDED
#error "Please include config.h first."
#endif

#include <stddef.h>

#ifndef
DOUBLE_SLASH_IS_DISTINCT_ROOT
# define DOUBLE_SLASH_IS_DISTINCT_ROOT 0
#endif

#ifdef __cplusplus
extern "C" {
#endif

/* Return the address of the last file name component of FILENAME.
   If FILENAME has some trailing slash(es), they are considered to be
   part of the last component.
   If FILENAME has no relative file name components because it is a file
   system root, return the empty string.
   Examples:
       FILENAME    RESULT
       "foo.c"     "foo.c"
       "foo/bar.c" "bar.c"
       "/foo/bar.c" "bar.c"
       "foo/bar/"  "bar/"
       "foo/bar/"  "bar/"
       "/"         ""
       "/"         ""
       ""          ""

   The return value is a tail of the given FILENAME; do NOT free() it! */

/* This function was traditionally called 'basename', but we avoid this
   function name because
   * Various platforms have different functions in their libc.
```

In particular, the glibc `basename()`,
defined in `<string.h>`, does
not consider trailing slashes to be part of the component:

FILENAME	RESULT
"foo/bar/"	""
"foo/bar//"	""

* The 'basename' command eliminates trailing slashes and for a root
produces a non-empty result:

FILENAME	RESULT
"foo/bar/"	"bar"
"foo/bar//"	"bar"
"/"	"/"
"//"	"/"

*/

extern char *last_component (char const *filename) _GL_ATTRIBUTE_PURE;

/* Return the length of the basename FILENAME.

Typically FILENAME is the value returned by `base_name` or `last_component`.

Act like `strlen (FILENAME)`, except omit all trailing slashes. */

extern size_t base_len (char const *filename) _GL_ATTRIBUTE_PURE;

#ifdef __cplusplus

} /* extern "C" */

#endif

#endif /* _BASENAME_LGPL_H */

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Version 3, 29 June 2007

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1.394 golang-lru 0.5.1

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1.395 pam 1.7.1-r1

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1.396 sqlite 3.51.1-r0

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```
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```

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```
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```

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1.397 golang 1.25.5

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```

```
package copyright
```

```
import (  
    "bytes"  
    "internal/testenv"  
    "io"  
    "io/fs"  
    "os"  
    "path/filepath"  
    "testing"  
)
```

```

var copyright = []byte("Copyright")

var permitted = [][]byte{
    []byte("// Code generated by "),
    []byte("// Code generated from "),
    []byte("// Created by cgo -cdefs"),
    []byte("// DO NOT EDIT\n// generated by:"),
    []byte("// Empty assembly file"),
    []byte("// Generated using cgo"),
    []byte("// Original source:\n/\thttp://www.zorinaq.com/papers/md5-amd64.html"), // public domain crypto/md5
    []byte("// created by cgo -cdefs"),
    []byte("// go run mkasm.go"),
    []byte("// mkerrors"),
    []byte("// mksys"),
    []byte("// run\n// Code generated by"), // cmd/compile/internal/test/constFold_test.go
}

func TestCopyright(t *testing.T) {
    buf := make([]byte, 2048)
    filepath.WalkDir(filepath.Join(testenv.GOROOT(t), "src"), func(path string,
    d fs.DirEntry, err error) error {
        if d.IsDir() && (d.Name() == "testdata" || d.Name() == "vendor") {
            return filepath.SkipDir
        }
        switch filepath.Ext(d.Name()) {
        default:
            return nil
        case ".s", ".go":
            // check
        }

        f, err := os.Open(path)
        if err != nil {
            t.Error(err)
            return nil
        }
        defer f.Close()
        n, err := f.Read(buf)
        if err != nil && err != io.EOF {
            t.Error(err)
            return nil
        }
        b := buf[:n]
        if bytes.Contains(b, copyright) {
            return nil
        }
        for _, ok := range permitted {

```

```

    if bytes.HasPrefix(b, ok) {
        return nil
    }
}
t.Errorf("%s: missing copyright notice", path)
return nil
}))
}

```

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1.398 apk-tools 3.0.1-r1

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# Contributor: Carlo Landmeter <clandmeter@alpinelinux.org>
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pkgname=spdx-licenses
pkgver=3.27.0
pkgrel=0
pkgdesc="Various data formats for the SPDX License List"
url="https://spdx.org/"
arch="noarch"
options="!check" # no test suite
license="CC-BY-3.0"
source="license-list-data-$pkgver.tar.gz::https://github.com/spdx/license-list-data/archive/v$pkgver.tar.gz"
builddir="$srcdir/license-list-data-$pkgver"
subpackages="$pkgname-list"

_types="html json rdfa rdft rdfturtle rdfxml template text"

for type in $_types; do
    subpackages="$subpackages $pkgname-$type:_subpkg"
done

package() {
    mkdir -p "$pkgdir"
}

_subpkg() {
    local type=${subpkgname/$pkgname-/}
    pkgdesc="$pkgdesc ($type)"
    install_if="$pkgname=$pkgver-r$pkgrel"
```

```

mkdir -p "$subpkgdir"/usr/share/spdx
cp -r "$builddir"/$type "$subpkgdir"/usr/share/spdx/
}

list() {
    pkgdesc="$pkgdesc (licence list)"
    mkdir -p "$subpkgdir"/usr/share/spdx
    local i; for i in "$builddir"/text/*.txt;
    do
        local license=${i##*/}
        echo ${license%.*} >> "$subpkgdir"/usr/share/spdx/license.lst
    done
}

sha512sums="
16d59c81e331b54b52639826f83408d98144cdaa70eacc3e8ce35dc3b13992e4794cf7515eb9db200efd390a0c0e35ae9
d4706fbe0ca6a8d236189e88870720c  license-list-data-3.27.0.tar.gz
"

# Automatically generated by apkgbuild-cpan, template 4
# Contributor: Valery Kartel <valery.kartel@gmail.com>
# Maintainer: Celeste <cielesti@protonmail.com>
maintainer="Celeste <cielesti@protonmail.com>"
pkgname=perl-bsd-resource
pkgver=1.2911
pkgrel=11
#_pkgreal is used by apkgbuild-cpan to find modules at MetaCpan
_pkgreal=BSD-Resource
pkgdesc="Perl extension implements the BSD process resource limit functions"
url="https://metacpan.org/release/BSD-Resource/"
arch="all"
license="Artistic-2.0 OR LGPL-2.0"
depends="perl"
makedepends="perl-dev"
subpackages="$pkgname-doc"
source="https://cpan.metacpan.org/authors/id/J/JH/JHI/BSD-Resource-$pkgver.tar.gz"
builddir="$srcdir/${_pkgreal}-${pkgver}"

build() {
    export CFLAGS=$(perl -MConfig -E 'say $Config{ccflags}')
    PERL_MM_USE_DEFAULT=1 perl -I. Makefile.PL \
        INSTALLDIRS=vendor \
        NO_PACKLIST=1 \
        NO_PERLLOCAL=1
    make
}

check() {
    export CFLAGS=$(perl -MConfig -E 'say $Config{ccflags}')

```

```

make test
}

package() {
make DESTDIR="$pkgdir" install
}

sha512sums="
d0032d41c7c0468ed1c6d8f57b885f6cb97a5039d754c8cb60b2067daedaf53bd15fb6561a3d0f828df16dfa5417f663b
8065ba65f4fea16dc9262728b3b6b85
  BSD-Resource-1.2911.tar.gz
"

maintainer="Achill Gilgenast <achill@achill.org>"
pkgname=cargo-license
pkgver=0.7.0
pkgrel=1
pkgdesc="Cargo subcommand to see license of dependencies"
url="https://github.com/onur/cargo-license"
arch="all"
license="MIT"
makedepends="cargo cargo-auditable"
source="$pkgname-$pkgver.tar.gz::https://crates.io/api/v1/crates/cargo-license/$pkgver/download"

prepare() {
default_prepare

cargo fetch --target="$CTARGET" --locked
}

build() {
cargo auditable build --release --frozen
}

check() {
cargo test --frozen
}

package() {
install -Dm755 target/release/cargo-license -t "$pkgdir"/usr/bin
}

sha512sums="
9b3f0ead35515e85ef4074ebdbdbe5b9ec8bcaec244fabe414e2ed60f90366e8b1692d8bf7ffe4c07d778e60d94bab86bc
0c8be9823232e9c360a38bc65e9c5a cargo-license-0.7.0.tar.gz
"

#!/sbin/openrc-run

command="/usr/libexec/xdg-permission-store"

```

```

supervisor=supervise-daemon
command_args="--replace $command_args"
error_logger="logger -t '${RC_SVCNAME}' -p daemon.error"

depend() {
    need dbus
}
# Contributor: Maxim Karasev <begs@disroot.org>
# Maintainer: mio <miyopan@e.email>
pkgname=bsd-games
pkgver=3.3
pkgrel=2
pkgdesc="traditional text mode games from BSD"
url="https://bsd-games.sourceforge.io/"
arch="all"
license="BSD-3-Clause"
install="$pkgname.post-install"
makedepends="ncurses-dev coreutils" # configure causes busybox expr error
subpackages="$pkgname-doc"
source="https://sourceforge.net/projects/bsd-games/files/bsd-games-$pkgver.tar.gz
0001-bsd-games-scores-dir.patch
"
options="!check" # no tests

build() {
    # some GNU autoconf options are ignored, but it works
    ./configure \
        --build=$CBUILD \
        --host=$CHOST \
        --prefix=/usr \
        --sysconfdir=/etc \
        --mandir=/usr/share/man \
        --sourcedir=/usr/share/$pkgname
    make
}

package() {
    make DESTDIR="$pkgdir" install
    install -Dm644 LICENSE "$pkgdir"/usr/share/licenses/bsd-games/LICENSE
}

sha512sums="
aaf36d09d4fe68514a5c279063d7e77a9a9a84c447037cba974b29faa07eb80c2aab2379d0699c196b5c27ffe1b2bb2c6
8d3390143e0e62d5e3d210ccfb61294
    bsd-games-3.3.tar.gz
e1def0d4835a877242c4173fae862e278a7858738e0bacacbb045a42bcabec2aa7c72d000bbd2421ce35fe66cdc1f52c0
577b7e278029ca5ed50f7aab22319f6 0001-bsd-games-scores-dir.patch
"

```

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mini_sendmail - accept email on behalf of real sendmail

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```

# Maintainer: Natanael Copa <ncopa@alpinelinux.org>
pkgname=libart-lgpl
pkgver=2.3.21
pkgrel=8
pkgdesc="A library for high-performance 2D graphics"
url="https://www.levien.com/libart/"
arch="all"
options="!check" # No test suite.
license="LGPL-2.0-or-later"
subpackages="$pkgname-dev"
source="https://download.gnome.org/sources/libart-lgpl/2.3/libart-lgpl-$pkgver.tar.bz2"
"

builddir="$srcdir"/libart-lgpl-$pkgver

prepare() {
    update_config_sub
    default_prepare
}

build() {
    ./configure \
        --build=$CBUILD \
        --host=$CHOST \
        --prefix=/usr
    make
}

package() {
    make DESTDIR="$pkgdir" install
}

sha512sums="8a632a6a4da59e5e8c02ec2f5a57e36d182b325b46513765425e5f171ff9ae326af1b133725beba28f7e7
6654309e001aee9bace727b5b4c8589405256a3c020 libart-lgpl-2.3.21.tar.bz2"
# Contributor: Patrycja Rosa <alpine@ptrcnull.me>
# Maintainer: Patrycja Rosa <alpine@ptrcnull.me>
pkgname=bsd-compat-headers
pkgver=0.7.2
pkgrel=6
pkgdesc="BSD compatibility headers (cdefs, queue, tree)"
url="https://gitlab.alpinelinux.org/alpine/aports"
arch="noarch"
license="BSD-2-Clause AND BSD-3-Clause"
source="
cdefs.h
queue.h
tree.h
"

```

```

builddir="$srcdir"
options="!check" # just headers

package() {
    mkdir -p "$pkgdir"
    install -Dm644 -t "$pkgdir"/usr/include/sys \
        cdefs.h queue.h tree.h
}
sha512sums="
37c8fc73c7aea7b490f7850927e2bb91d12137c9e59e22c084146d515696dbc7973b5de92f4c987ba080dd2502ba8312
7006442c3f019b6447a620c0cae73178 cdefs.h
2f0d5e6e4dc3350285cf17009265dddcbe12431c111868eea39bc8cb038ab7c1f2acacbb21735c4e9d4a1fd106a8fc0f86
11ea33987d4faba37dde5ce6da0750 queue.h
d9ac210d81feb8ad2655bc80fb065d3fe20ae4417b32b4a1711e6738a4870140005c13373b5d1846ef3ce5ae6da45f2da
cef2092881eded0a2e94f6a07752ef3 tree.h
"

```

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 The X-Spline code was written Carole Blanc (blanc@labri.u-bordeaux.fr) and Christophe Schlick (schlick@labri.u-bordeaux.fr) starting from an initial implementation done by C. Feuille, S. Grosbois, L. Maziere and L. Minihot as a student practice (Universite Bordeaux, France). For additional information about X-splines, see:
 "X-Splines: A Spline Model Designed for the End User" by C. Blanc and C. Schlick, Proceedings of SIGGRAPH'95
<http://dept-info.labri.u-bordeaux.fr/~schlick/DOC/sig1.html>
 /* \$NetBSD: queue.h,v 1.70 2015/11/02 15:21:23 christos Exp \$ */

/*

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*

* @(#)queue.h 8.5 (Berkeley) 8/20/94

*/

```
#ifndef _SYS_QUEUE_H_
#define _SYS_QUEUE_H_
```

```
/*
 * This file defines five types of data structures: singly-linked lists,
 * lists, simple queues, tail queues, and circular queues.
 *
 * A singly-linked list is headed by a single forward pointer. The
 * elements are singly linked for minimum space and
 * pointer manipulation
 * overhead at the expense of O(n) removal for arbitrary elements. New
 * elements can be added to the list after an existing element or at the
 * head of the list. Elements being removed from the head of the list
 * should use the explicit macro for this purpose for optimum
 * efficiency. A singly-linked list may only be traversed in the forward
 * direction. Singly-linked lists are ideal for applications with large
 * datasets and few or no removals or for implementing a LIFO queue.

```



```

*
* A list is headed by a single forward pointer (or an array of forward
* pointers for a hash table header). The elements are doubly linked
* so that an arbitrary element can be removed without a need to
* traverse the list. New elements can be added to the list before
* or after an existing element or at the head of the list. A list
* may only be traversed in the forward direction.
*
* A simple queue is headed by a pair of pointers, one the head of the
* list and the
other to the tail of the list. The elements are singly
* linked to save space, so elements can only be removed from the
* head of the list. New elements can be added to the list after
* an existing element, at the head of the list, or at the end of the
* list. A simple queue may only be traversed in the forward direction.
*
* A tail queue is headed by a pair of pointers, one to the head of the
* list and the other to the tail of the list. The elements are doubly
* linked so that an arbitrary element can be removed without a need to
* traverse the list. New elements can be added to the list before or
* after an existing element, at the head of the list, or at the end of
* the list. A tail queue may be traversed in either direction.
*
* A circle queue is headed by a pair of pointers, one to the head of the
* list and the other to the tail of the list. The elements are doubly
* linked so that an arbitrary element can be removed without a need to
* traverse the list. New elements
can be added to the list before or after
* an existing element, at the head of the list, or at the end of the list.
* A circle queue may be traversed in either direction, but has a more
* complex end of list detection.
*
* For details on the use of these macros, see the queue(3) manual page.
*/

/*
* Include the definition of NULL only on NetBSD because sys/null.h
* is not available elsewhere. This conditional makes the header
* portable and it can simply be dropped verbatim into any system.
* The caveat is that on other systems some other header
* must provide NULL before the macros can be used.
*/
#ifdef __NetBSD__
#include <sys/null.h>
#endif

#if defined(QEUEDEBUG)
# if defined(_KERNEL)

```

```

# define QUEUEDEBUG_ABORT(...) panic(__VA_ARGS__)
# else
# include <err.h>
# define QUEUEDEBUG_ABORT(...) err(1, __VA_ARGS__)
# endif
#endif

/*
 * Singly-linked List definitions.
 */
#define SLIST_HEAD(name, type) \
struct name { \
    struct type *slh_first; /* first \
    element */ \
}

#define SLIST_HEAD_INITIALIZER(head) \
{ NULL }

#define SLIST_ENTRY(type) \
struct { \
    struct type *sle_next; /* next element */ \
}

/*
 * Singly-linked List access methods.
 */
#define SLIST_FIRST(head) ((head)->slh_first)
#define SLIST_END(head) NULL
#define SLIST_EMPTY(head) ((head)->slh_first == NULL)
#define SLIST_NEXT(elm, field) ((elm)->field.sle_next)

#define SLIST_FOREACH(var, head, field) \
for((var) = (head)->slh_first; \
    (var) != SLIST_END(head); \
    (var) = (var)->field.sle_next)

#define SLIST_FOREACH_SAFE(var, head, field, tvar) \
for ((var) = SLIST_FIRST((head)); \
    (var) != SLIST_END(head) && \
    ((tvar) = SLIST_NEXT((var), field), 1); \
    (var) = (tvar))

/*
 * Singly-linked List functions.
 */
#define SLIST_INIT(head) do { \
    (head)->slh_first = SLIST_END(head); \

```

```

} while (/*CONSTCOND*/0)

#define SLIST_INSERT_AFTER(slistelm, elm, field) do { \
    (elm)->field.sle_next = (slistelm)->field.sle_next; \
    (slistelm)->field.sle_next \
    = (elm); \
} while (/*CONSTCOND*/0)

#define SLIST_INSERT_HEAD(head, elm, field) do { \
    (elm)->field.sle_next = (head)->slh_first; \
    (head)->slh_first = (elm); \
} while (/*CONSTCOND*/0)

#define SLIST_REMOVE_AFTER(slistelm, field) do { \
    (slistelm)->field.sle_next = \
        SLIST_NEXT(SLIST_NEXT((slistelm), field), field); \
} while (/*CONSTCOND*/0)

#define SLIST_REMOVE_HEAD(head, field) do { \
    (head)->slh_first = (head)->slh_first->field.sle_next; \
} while (/*CONSTCOND*/0)

#define SLIST_REMOVE(head, elm, type, field) do { \
    if ((head)->slh_first == (elm)) { \
        SLIST_REMOVE_HEAD((head), field); \
    } \
    else { \
        struct type *curelm = (head)->slh_first; \
        while(curelm->field.sle_next != (elm)) \
            curelm = curelm->field.sle_next; \
        curelm->field.sle_next = \
            curelm->field.sle_next->field.sle_next; \
    } \
} while (/*CONSTCOND*/0)

/*
 * List definitions.
 */

#define LIST_HEAD(name, type) \
struct name { \
    struct type *lh_first; /* first element */ \
}

#define LIST_HEAD_INITIALIZER(head) \
{ NULL }

#define LIST_ENTRY(type) \

```

```

struct {
    \
    struct type *le_next; /* next element */ \
    struct type **le_prev; /* address of previous next element */ \
}

/*
 * List access methods.
 */

#define LIST_FIRST(head) ((head)->lh_first)
#define LIST_END(head) NULL
#define LIST_EMPTY(head) ((head)->lh_first == LIST_END(head))
#define LIST_NEXT(elm, field) ((elm)->field.le_next)

#define LIST_FOREACH(var, head, field) \
    for ((var) = ((head)->lh_first); \
         (var) != LIST_END(head); \
         (var) = ((var)->field.le_next))

#define LIST_FOREACH_SAFE(var, head, field, tvar) \
    for ((var) = LIST_FIRST((head)); \
         (var) != LIST_END(head) && \
         ((tvar) = LIST_NEXT((var), field), 1); \
         (var) = (tvar))

#define LIST_MOVE(head1, head2) do { \
    LIST_INIT((head2)); \
    if (!LIST_EMPTY((head1))) \
    { \
        (head2)->lh_first = (head1)->lh_first; \
        LIST_INIT((head1)); \
    } \
} while (/*CONSTCOND*/0)

/*
 * List functions.
 */

#ifdef QUEUEDEBDEBUG
#define QUEUEDEBDEBUG_LIST_INSERT_HEAD(head, elm, field) \
    if ((head)->lh_first && \
        (head)->lh_first->field.le_prev != &(head)->lh_first) \
        QUEUEDEBDEBUG_ABORT("LIST_INSERT_HEAD %p %s:%d", (head), \
            __FILE__, __LINE__);
#define QUEUEDEBDEBUG_LIST_OP(elm, field) \
    if ((elm)->field.le_next && \
        (elm)->field.le_next->field.le_prev != \
        &(elm)->field.le_next) \
        QUEUEDEBDEBUG_ABORT("LIST_* forw %p %s:%d", (elm), \
            __FILE__, __LINE__); \

```

```

if (*(elm)->field.le_prev != (elm)) \
    QUEUEDEBUG_ABORT("LIST_* back %p %s:%d", (elm), \
        __FILE__, __LINE__);
#define QUEUEDEBUG_LIST_POSTREMOVE(elm, field) \
    (elm)->field.le_next = (void *)1L; \
    (elm)->field.le_prev = (void *)1L;
#else
#define QUEUEDEBUG_LIST_INSERT_HEAD(head, elm, field)
#define QUEUEDEBUG_LIST_OP(elm,
    field)
#define QUEUEDEBUG_LIST_POSTREMOVE(elm, field)
#endif

#define LIST_INIT(head) do { \
    (head)->lh_first = LIST_END(head); \
} while (/*CONSTCOND*/0)

#define LIST_INSERT_AFTER(listelm, elm, field) do { \
    QUEUEDEBUG_LIST_OP((listelm), field) \
    if (((elm)->field.le_next = (listelm)->field.le_next) != \
        LIST_END(head)) \
        (listelm)->field.le_next->field.le_prev = \
            &(elm)->field.le_next; \
    (listelm)->field.le_next = (elm); \
    (elm)->field.le_prev = &(listelm)->field.le_next; \
} while (/*CONSTCOND*/0)

#define LIST_INSERT_BEFORE(listelm, elm, field) do { \
    QUEUEDEBUG_LIST_OP((listelm), field) \
    (elm)->field.le_prev = (listelm)->field.le_prev; \
    (elm)->field.le_next = (listelm); \
    *(listelm)->field.le_prev = (elm); \
    (listelm)->field.le_prev = &(elm)->field.le_next; \
} while (/*CONSTCOND*/0)

#define LIST_INSERT_HEAD(head, elm, field) do { \
    QUEUEDEBUG_LIST_INSERT_HEAD((head), (elm), field) \
    if (((elm)->field.le_next \
        = (head)->lh_first) != LIST_END(head)) \
        (head)->lh_first->field.le_prev = &(elm)->field.le_next; \
    (head)->lh_first = (elm); \
    (elm)->field.le_prev = &(head)->lh_first; \
} while (/*CONSTCOND*/0)

#define LIST_REMOVE(elm, field) do { \
    QUEUEDEBUG_LIST_OP((elm), field) \
    if ((elm)->field.le_next != NULL) \
        (elm)->field.le_next->field.le_prev = \

```

```

    (elm)->field.le_prev; \
*(elm)->field.le_prev = (elm)->field.le_next; \
QUEUEDEBUG_LIST_POSTREMOVE((elm), field) \
} while (/*CONSTCOND*/0)

#define LIST_REPLACE(elm, elm2, field) do { \
if (((elm2)->field.le_next = (elm)->field.le_next) != NULL) \
    (elm2)->field.le_next->field.le_prev = \
        &(elm2)->field.le_next; \
    (elm2)->field.le_prev = (elm)->field.le_prev; \
    *(elm2)->field.le_prev = (elm2); \
    QUEUEDEBUG_LIST_POSTREMOVE((elm), field) \
} while (/*CONSTCOND*/0)

/*
 * Simple queue definitions.
 */
#define SIMPLEQ_HEAD(name, type) \
struct name { \
    struct \
    type *sqh_first; /* first element */ \
    struct type **sqh_last; /* addr of last next element */ \
}

#define SIMPLEQ_HEAD_INITIALIZER(head) \
{ NULL, &(head).sqh_first }

#define SIMPLEQ_ENTRY(type) \
struct { \
    struct type *sqe_next; /* next element */ \
}

/*
 * Simple queue access methods.
 */
#define SIMPLEQ_FIRST(head) ((head)->sqh_first)
#define SIMPLEQ_END(head) NULL
#define SIMPLEQ_EMPTY(head) ((head)->sqh_first == SIMPLEQ_END(head))
#define SIMPLEQ_NEXT(elm, field) ((elm)->field.sqe_next)

#define SIMPLEQ_FOREACH(var, head, field) \
for ((var) = ((head)->sqh_first); \
    (var) != SIMPLEQ_END(head); \
    (var) = ((var)->field.sqe_next))

#define SIMPLEQ_FOREACH_SAFE(var, head, field, next) \
for ((var) = ((head)->sqh_first); \
    (var) != SIMPLEQ_END(head) && \

```

```

        ((next = ((var)->field.sqe_next)), 1); \
        (var) = (next))

/*
 * Simple queue functions.
 */
#define SIMPLEQ_INIT(head) do { \
    (head)->sqh_first = NULL; \
    (head)->sqh_last \
    = &(head)->sqh_first; \
} while (/*CONSTCOND*/0)

#define SIMPLEQ_INSERT_HEAD(head, elm, field) do { \
    if (((elm)->field.sqe_next = (head)->sqh_first) == NULL) \
        (head)->sqh_last = &(elm)->field.sqe_next; \
    (head)->sqh_first = (elm); \
} while (/*CONSTCOND*/0)

#define SIMPLEQ_INSERT_TAIL(head, elm, field) do { \
    (elm)->field.sqe_next = NULL; \
    *(head)->sqh_last = (elm); \
    (head)->sqh_last = &(elm)->field.sqe_next; \
} while (/*CONSTCOND*/0)

#define SIMPLEQ_INSERT_AFTER(head, listelm, elm, field) do { \
    if (((elm)->field.sqe_next = (listelm)->field.sqe_next) == NULL) \
        (head)->sqh_last = &(elm)->field.sqe_next; \
    (listelm)->field.sqe_next = (elm); \
} while (/*CONSTCOND*/0)

#define SIMPLEQ_REMOVE_HEAD(head, field) do { \
    if (((head)->sqh_first = (head)->sqh_first->field.sqe_next) == NULL) \
        (head)->sqh_last = &(head)->sqh_first; \
} while (/*CONSTCOND*/0)

#define SIMPLEQ_REMOVE_AFTER(head, elm, field) do { \
    if \
        (((elm)->field.sqe_next = (elm)->field.sqe_next->field.sqe_next) \
         == NULL) \
        (head)->sqh_last = &(elm)->field.sqe_next; \
} while (/*CONSTCOND*/0)

#define SIMPLEQ_REMOVE(head, elm, type, field) do { \
    if ((head)->sqh_first == (elm)) { \
        SIMPLEQ_REMOVE_HEAD((head), field); \
    } else { \
        struct type *curelm = (head)->sqh_first; \
        while (curelm->field.sqe_next != (elm)) \

```

```

    curelm = curelm->field.sqe_next; \
    if ((curelm->field.sqe_next = \
        curelm->field.sqe_next->field.sqe_next) == NULL) \
        (head)->sqh_last = &(curelm->field.sqe_next; \
    } \
} while (/*CONSTCOND*/0)

#define SIMPLEQ_CONCAT(head1, head2) do { \
    if (!SIMPLEQ_EMPTY((head2))) { \
        *(head1)->sqh_last = (head2)->sqh_first; \
        (head1)->sqh_last = (head2)->sqh_last; \
        SIMPLEQ_INIT((head2)); \
    } \
} while (/*CONSTCOND*/0)

#define SIMPLEQ_LAST(head, type, field) \
    (SIMPLEQ_EMPTY((head)) ? \
        NULL : \
        ((struct type \
            *) (void *) \
            ((char *)((head)->sqh_last) - offsetof(struct type, field))))

/*
 * Tail queue definitions.
 */
#define _TAILQ_HEAD(name, type, qual) \
    struct name { \
        qual type *tqh_first; /* first element */ \
        qual type *qual *tqh_last; /* addr of last next element */ \
    }
#define TAILQ_HEAD(name, type) _TAILQ_HEAD(name, struct type,)

#define TAILQ_HEAD_INITIALIZER(head) \
    { TAILQ_END(head), &(head).tqh_first }

#define _TAILQ_ENTRY(type, qual) \
    struct { \
        qual type *tqe_next; /* next element */ \
        qual type *qual *tqe_prev; /* address of previous next element */ \
    }
#define TAILQ_ENTRY(type) _TAILQ_ENTRY(struct type,)

/*
 * Tail queue access methods.
 */
#define TAILQ_FIRST(head) ((head)->tqh_first)
#define TAILQ_END(head) (NULL)
#define TAILQ_NEXT(elm, field) ((elm)->field.tqe_next)

```



```

#define TAILQ_LAST(head, headname) \
    (((struct headname *) (void *) ((head)->tqh_last))->tqh_last)
#define TAILQ_PREV(elm, headname, field) \
    (((struct headname *) (void *) ((elm)->field.tqe_prev))->tqh_last)
#define TAILQ_EMPTY(head) (TAILQ_FIRST(head) == TAILQ_END(head))

#define TAILQ_FOREACH(var, head, field) \
    for ((var) = ((head)->tqh_first); \
         (var) != TAILQ_END(head); \
         (var) = ((var)->field.tqe_next))

#define TAILQ_FOREACH_SAFE(var, head, field, next) \
    for ((var) = ((head)->tqh_first); \
         (var) != TAILQ_END(head) && \
         ((next) = TAILQ_NEXT(var, field), 1); (var) = (next))

#define TAILQ_FOREACH_REVERSE(var, head, headname, field) \
    for ((var) = TAILQ_LAST((head), headname); \
         (var) != TAILQ_END(head); \
         (var) = TAILQ_PREV((var), headname, field))

#define TAILQ_FOREACH_REVERSE_SAFE(var, head, headname, field, prev) \
    for ((var) = TAILQ_LAST((head), headname); \
         (var) != TAILQ_END(head) && \
         ((prev) = TAILQ_PREV((var), headname, field), 1); (var) = (prev))

/*
 * Tail queue functions.
 */
#if defined(QUEUEDEBUG)
#define QUEUEDEBUG_TAILQ_INSERT_HEAD(head, \
    elm, field) \
    if ((head)->tqh_first && \
        (head)->tqh_first->field.tqe_prev != &(head)->tqh_first) \
        QUEUEDEBUG_ABORT("TAILQ_INSERT_HEAD %p %s:%d", (head), \
            __FILE__, __LINE__);
#define QUEUEDEBUG_TAILQ_INSERT_TAIL(head, elm, field) \
    if (*(head)->tqh_last != NULL) \
        QUEUEDEBUG_ABORT("TAILQ_INSERT_TAIL %p %s:%d", (head), \
            __FILE__, __LINE__);
#define QUEUEDEBUG_TAILQ_OP(elm, field) \
    if ((elm)->field.tqe_next && \
        (elm)->field.tqe_next->field.tqe_prev != \
        &(elm)->field.tqe_next) \
        QUEUEDEBUG_ABORT("TAILQ_* forw %p %s:%d", (elm), \
            __FILE__, __LINE__); \

```

```

if (*(elm)->field.tqe_prev != (elm)) \
    QUEUEDEBUG_ABORT("TAILQ_* back %p %s:%d", (elm), \
        __FILE__, __LINE__);
#define QUEUEDEBUG_TAILQ_PREREMOVE(head, elm, field) \
if ((elm)->field.tqe_next == NULL && \
    (head)->tqh_last != &(elm)->field.tqe_next) \
    QUEUEDEBUG_ABORT("TAILQ_PREREMOVE head %p elm %p %s:%d", \
        (head), (elm), __FILE__, \
        __LINE__);
#define QUEUEDEBUG_TAILQ_POSTREMOVE(elm, field) \
    (elm)->field.tqe_next = (void *)1L; \
    (elm)->field.tqe_prev = (void *)1L;
#else
#define QUEUEDEBUG_TAILQ_INSERT_HEAD(head, elm, field)
#define QUEUEDEBUG_TAILQ_INSERT_TAIL(head, elm, field)
#define QUEUEDEBUG_TAILQ_OP(elm, field)
#define QUEUEDEBUG_TAILQ_PREREMOVE(head, elm, field)
#define QUEUEDEBUG_TAILQ_POSTREMOVE(elm, field)
#endif

#define TAILQ_INIT(head) do { \
    (head)->tqh_first = TAILQ_END(head); \
    (head)->tqh_last = &(head)->tqh_first; \
} while (!/*CONSTCOND*/0)

#define TAILQ_INSERT_HEAD(head, elm, field) do { \
    QUEUEDEBUG_TAILQ_INSERT_HEAD((head), (elm), field) \
    if (((elm)->field.tqe_next = (head)->tqh_first) != TAILQ_END(head)) \
        (head)->tqh_first->field.tqe_prev = \
            &(elm)->field.tqe_next; \
    else \
        (head)->tqh_last = &(elm)->field.tqe_next; \
    (head)->tqh_first = (elm); \
    (elm)->field.tqe_prev = &(head)->tqh_first; \
} while (!/*CONSTCOND*/0)

#define TAILQ_INSERT_TAIL(head, \
    elm, field) do { \
    QUEUEDEBUG_TAILQ_INSERT_TAIL((head), (elm), field) \
    (elm)->field.tqe_next = TAILQ_END(head); \
    (elm)->field.tqe_prev = (head)->tqh_last; \
    *(head)->tqh_last = (elm); \
    (head)->tqh_last = &(elm)->field.tqe_next; \
} while (!/*CONSTCOND*/0)

#define TAILQ_INSERT_AFTER(head, listelm, elm, field) do { \
    QUEUEDEBUG_TAILQ_OP((listelm), field) \
    if (((elm)->field.tqe_next = (listelm)->field.tqe_next) != \

```

```

    TAILQ_END(head))    \
    (elm)->field.tqe_next->field.tqe_prev = \
        &(elm)->field.tqe_next;    \
else    \
    (head)->tqh_last = &(elm)->field.tqe_next; \
    (listelm)->field.tqe_next = (elm);    \
    (elm)->field.tqe_prev = &(listelm)->field.tqe_next; \
} while (/*CONSTCOND*/0)

#define TAILQ_INSERT_BEFORE(listelm, elm, field) do { \
    QUEUEDEBUG_TAILQ_OP((listelm), field) \
    (elm)->field.tqe_prev = (listelm)->field.tqe_prev; \
    (elm)->field.tqe_next = (listelm); \
    *(listelm)->field.tqe_prev = (elm); \
    (listelm)->field.tqe_prev \
    = &(elm)->field.tqe_next; \
} while (/*CONSTCOND*/0)

#define TAILQ_REMOVE(head, elm, field) do { \
    QUEUEDEBUG_TAILQ_PREREMOVE((head), (elm), field) \
    QUEUEDEBUG_TAILQ_OP((elm), field) \
    if (((elm)->field.tqe_next != TAILQ_END(head)) \
        (elm)->field.tqe_next->field.tqe_prev = \
            (elm)->field.tqe_prev; \
    else \
        (head)->tqh_last = (elm)->field.tqe_prev; \
    *(elm)->field.tqe_prev = (elm)->field.tqe_next; \
    QUEUEDEBUG_TAILQ_POSTREMOVE((elm), field); \
} while (/*CONSTCOND*/0)

#define TAILQ_REPLACE(head, elm, elm2, field) do { \
    if (((elm2)->field.tqe_next = (elm)->field.tqe_next) != \
        TAILQ_END(head)) \
        (elm2)->field.tqe_next->field.tqe_prev = \
            &(elm2)->field.tqe_next; \
    else \
        (head)->tqh_last = &(elm2)->field.tqe_next; \
    (elm2)->field.tqe_prev = (elm)->field.tqe_prev; \
    *(elm2)->field.tqe_prev = (elm2); \
    QUEUEDEBUG_TAILQ_POSTREMOVE((elm), \
    field); \
} while (/*CONSTCOND*/0)

#define TAILQ_CONCAT(head1, head2, field) do { \
    if (!TAILQ_EMPTY(head2)) { \
        *(head1)->tqh_last = (head2)->tqh_first; \
        (head2)->tqh_first->field.tqe_prev = (head1)->tqh_last; \
        (head1)->tqh_last = (head2)->tqh_last; \
    }

```

```

TAILQ_INIT((head2)); \
} \
} while (/*CONSTCOND*/0)

/*
 * Singly-linked Tail queue declarations.
 */
#define STAILQ_HEAD(name, type) \
struct name { \
    struct type *stqh_first; /* first element */ \
    struct type **stqh_last; /* addr of last next element */ \
}

#define STAILQ_HEAD_INITIALIZER(head) \
{ NULL, &(head).stqh_first }

#define STAILQ_ENTRY(type) \
struct { \
    struct type *stqe_next; /* next element */ \
}

/*
 * Singly-linked Tail queue access methods.
 */
#define STAILQ_FIRST(head) ((head)->stqh_first)
#define STAILQ_END(head) NULL
#define STAILQ_NEXT(elm, field) ((elm)->field.stqe_next)
#define STAILQ_EMPTY(head) (STAILQ_FIRST(head) \
    == STAILQ_END(head))

/*
 * Singly-linked Tail queue functions.
 */
#define STAILQ_INIT(head) do { \
    (head)->stqh_first = NULL; \
    (head)->stqh_last = &(head)->stqh_first; \
} while (/*CONSTCOND*/0)

#define STAILQ_INSERT_HEAD(head, elm, field) do { \
    if (((elm)->field.stqe_next = (head)->stqh_first) == NULL) \
        (head)->stqh_last = &(elm)->field.stqe_next; \
    (head)->stqh_first = (elm); \
} while (/*CONSTCOND*/0)

#define STAILQ_INSERT_TAIL(head, elm, field) do { \
    (elm)->field.stqe_next = NULL; \
    *(head)->stqh_last = (elm); \
    (head)->stqh_last = &(elm)->field.stqe_next; \
} while (/*CONSTCOND*/0)

```

```

} while (/*CONSTCOND*/0)

#define STAILQ_INSERT_AFTER(head, listelm, elm, field) do { \
    if (((elm)->field.stqe_next = (listelm)->field.stqe_next) == NULL)\
        (head)->stqh_last = &(elm)->field.stqe_next; \
    (listelm)->field.stqe_next = (elm); \
} while (/*CONSTCOND*/0)

#define STAILQ_REMOVE_HEAD(head, field) do { \
    if (((head)->stqh_first = (head)->stqh_first->field.stqe_next) \
        == NULL) \
        (head)->stqh_last = &(head)->stqh_first; \
} while (/*CONSTCOND*/0)

#define STAILQ_REMOVE(head, elm, type, field) do { \
    if ((head)->stqh_first == (elm)) { \
        STAILQ_REMOVE_HEAD((head), field); \
    } else { \
        struct type *curelm = (head)->stqh_first; \
        while (curelm->field.stqe_next != (elm)) \
            curelm = curelm->field.stqe_next; \
        if ((curelm->field.stqe_next = \
            curelm->field.stqe_next->field.stqe_next) == NULL) \
            (head)->stqh_last = &(curelm)->field.stqe_next; \
    } \
} while (/*CONSTCOND*/0)

#define STAILQ_FOREACH(var, head, field) \
    for ((var) = ((head)->stqh_first); \
        (var); \
        (var) = ((var)->field.stqe_next))

#define STAILQ_FOREACH_SAFE(var, head, field, tvar) \
    for ((var) = STAILQ_FIRST((head)); \
        (var) && ((tvar) = STAILQ_NEXT((var), field), 1); \
        (var) = (tvar))

#define STAILQ_CONCAT(head1, head2) do { \
    if (!STAILQ_EMPTY((head2))) { \
        *(head1)->stqh_last \
        = (head2)->stqh_first; \
        (head1)->stqh_last = (head2)->stqh_last; \
        STAILQ_INIT((head2)); \
    } \
} while (/*CONSTCOND*/0)

#define STAILQ_LAST(head, type, field) \
    (STAILQ_EMPTY((head)) ? \

```

```

NULL :    \
        ((struct type *)(void *) \
        ((char *)((head)->stqh_last) - offsetof(struct type, field))))

#ifndef _KERNEL
/*
 * Circular queue definitions. Do not use. We still keep the macros
 * for compatibility but because of pointer aliasing issues their use
 * is discouraged!
 */

/*
 * __launder_type(): We use this ugly hack to work around the the compiler
 * noticing that two types may not alias each other and elide tests in code.
 * We hit this in the CIRCLEQ macros when comparing 'struct name *' and
 * 'struct type *' (see CIRCLEQ_HEAD()). Modern compilers (such as GCC
 * 4.8) declare these comparisons as always false, causing the code to
 * not run as designed.
 *
 * This hack is only to be used for comparisons and thus can be fully const.
 * Do not use for assignment.
 *
 * If we ever choose to change the ABI of the CIRCLEQ macros, we could fix
 * this by changing the head/tail sentinel values, but see the note above
 * this one.
 */
static __inline const void * __launder_type(const void *);
static __inline const void *
__launder_type(const void *__x)
{
    __asm __volatile("" : "+r" (__x));
    return __x;
}

#if defined(QUEUEDEBUG)
#define QUEUEDEBUG_CIRCLEQ_HEAD(head, field) \
    if ((head)->cqh_first != CIRCLEQ_ENDC(head) && \
        (head)->cqh_first->field.cqe_prev != CIRCLEQ_ENDC(head)) \
        QUEUEDEBUG_ABORT("CIRCLEQ head forw %p %s:%d", (head), \
            __FILE__, __LINE__); \
    if ((head)->cqh_last != CIRCLEQ_ENDC(head) && \
        (head)->cqh_last->field.cqe_next != CIRCLEQ_ENDC(head)) \
        QUEUEDEBUG_ABORT("CIRCLEQ head back %p %s:%d", (head), \
            __FILE__, __LINE__);
#define QUEUEDEBUG_CIRCLEQ_ELM(head, elm, field) \
    if ((elm)->field.cqe_next == CIRCLEQ_ENDC(head)) { \
        if ((head)->cqh_last != (elm)) \

```

```

    QUEUEDEBUG_ABORT("CIRCLEQ
elm last %p %s:%d", \
    (elm), __FILE__, __LINE__); \
} else { \
    if ((elm)->field.cqe_next->field.cqe_prev != (elm)) \
        QUEUEDEBUG_ABORT("CIRCLEQ elm forw %p %s:%d", \
            (elm), __FILE__, __LINE__); \
    } \
    if ((elm)->field.cqe_prev == CIRCLEQ_ENDC(head)) { \
        if ((head)->cqh_first != (elm)) \
            QUEUEDEBUG_ABORT("CIRCLEQ elm first %p %s:%d", \
                (elm), __FILE__, __LINE__); \
    } else { \
        if ((elm)->field.cqe_prev->field.cqe_next != (elm)) \
            QUEUEDEBUG_ABORT("CIRCLEQ elm prev %p %s:%d", \
                (elm), __FILE__, __LINE__); \
    }
#define QUEUEDEBUG_CIRCLEQ_POSTREMOVE(elm, field) \
    (elm)->field.cqe_next = (void *)1L; \
    (elm)->field.cqe_prev = (void *)1L;
#else
#define QUEUEDEBUG_CIRCLEQ_HEAD(head, field)
#define QUEUEDEBUG_CIRCLEQ_ELM(head, elm, field)
#define QUEUEDEBUG_CIRCLEQ_POSTREMOVE(elm, field)
#endif

#define CIRCLEQ_HEAD(name, type) \
struct name { \
    struct type *cqh_first; /* \
    first element */ \
    struct type *cqh_last; /* last element */ \
}

#define CIRCLEQ_HEAD_INITIALIZER(head) \
{ CIRCLEQ_END(&head), CIRCLEQ_END(&head) }

#define CIRCLEQ_ENTRY(type) \
struct { \
    struct type *cqe_next; /* next element */ \
    struct type *cqe_prev; /* previous element */ \
}

/*
 * Circular queue functions.
 */
#define CIRCLEQ_INIT(head) do { \
    (head)->cqh_first = CIRCLEQ_END(head); \
    (head)->cqh_last = CIRCLEQ_END(head); \

```

```

} while (/*CONSTCOND*/0)

#define CIRCLEQ_INSERT_AFTER(head, listelm, elm, field) do { \
    QUEUEDEBDEBUG_CIRCLEQ_HEAD((head), field) \
    QUEUEDEBDEBUG_CIRCLEQ_ELM((head), (listelm), field) \
    (elm)->field.cqe_next = (listelm)->field.cqe_next; \
    (elm)->field.cqe_prev = (listelm); \
    if ((listelm)->field.cqe_next == CIRCLEQ_ENDC(head)) \
        (head)->cqh_last = (elm); \
    else \
        (listelm)->field.cqe_next->field.cqe_prev = (elm); \
    (listelm)->field.cqe_next = (elm); \
} while (/*CONSTCOND*/0)

#define CIRCLEQ_INSERT_BEFORE(head, \
    listelm, elm, field) do { \
    QUEUEDEBDEBUG_CIRCLEQ_HEAD((head), field) \
    QUEUEDEBDEBUG_CIRCLEQ_ELM((head), (listelm), field) \
    (elm)->field.cqe_next = (listelm); \
    (elm)->field.cqe_prev = (listelm)->field.cqe_prev; \
    if ((listelm)->field.cqe_prev == CIRCLEQ_ENDC(head)) \
        (head)->cqh_first = (elm); \
    else \
        (listelm)->field.cqe_prev->field.cqe_next = (elm); \
    (listelm)->field.cqe_prev = (elm); \
} while (/*CONSTCOND*/0)

#define CIRCLEQ_INSERT_HEAD(head, elm, field) do { \
    QUEUEDEBDEBUG_CIRCLEQ_HEAD((head), field) \
    (elm)->field.cqe_next = (head)->cqh_first; \
    (elm)->field.cqe_prev = CIRCLEQ_END(head); \
    if ((head)->cqh_last == CIRCLEQ_ENDC(head)) \
        (head)->cqh_last = (elm); \
    else \
        (head)->cqh_first->field.cqe_prev = (elm); \
    (head)->cqh_first = (elm); \
} while (/*CONSTCOND*/0)

#define CIRCLEQ_INSERT_TAIL(head, elm, field) do { \
    QUEUEDEBDEBUG_CIRCLEQ_HEAD((head), field) \
    (elm)->field.cqe_next \
    = CIRCLEQ_END(head); \
    (elm)->field.cqe_prev = (head)->cqh_last; \
    if ((head)->cqh_first == CIRCLEQ_ENDC(head)) \
        (head)->cqh_first = (elm); \
    else \
        (head)->cqh_last->field.cqe_next = (elm); \
    (head)->cqh_last = (elm); \
} while (/*CONSTCOND*/0)

```



```

} while (/*CONSTCOND*/0)

#define CIRCLEQ_REMOVE(head, elm, field) do { \
    QUEUEDEBUG_CIRCLEQ_HEAD((head), field) \
    QUEUEDEBUG_CIRCLEQ_ELM((head), (elm), field) \
    if ((elm)->field.cqe_next == CIRCLEQ_ENDC(head)) \
        (head)->cqh_last = (elm)->field.cqe_prev; \
    else \
        (elm)->field.cqe_next->field.cqe_prev = \
            (elm)->field.cqe_prev; \
    if ((elm)->field.cqe_prev == CIRCLEQ_ENDC(head)) \
        (head)->cqh_first = (elm)->field.cqe_next; \
    else \
        (elm)->field.cqe_prev->field.cqe_next = \
            (elm)->field.cqe_next; \
    QUEUEDEBUG_CIRCLEQ_POSTREMOVE((elm), field) \
} while (/*CONSTCOND*/0)

#define CIRCLEQ_FOREACH(var, head, field) \
    for ((var) = ((head)->cqh_first); \
        (var) != CIRCLEQ_ENDC(head); \
        (var) \
        = ((var)->field.cqe_next))

#define CIRCLEQ_FOREACH_REVERSE(var, head, field) \
    for ((var) = ((head)->cqh_last); \
        (var) != CIRCLEQ_ENDC(head); \
        (var) = ((var)->field.cqe_prev))

/*
 * Circular queue access methods.
 */

#define CIRCLEQ_FIRST(head) ((head)->cqh_first)
#define CIRCLEQ_LAST(head) ((head)->cqh_last)
/* For comparisons */
#define CIRCLEQ_ENDC(head) (__launter_type(head))
/* For assignments */
#define CIRCLEQ_END(head) ((void *)(head))
#define CIRCLEQ_NEXT(elm, field) ((elm)->field.cqe_next)
#define CIRCLEQ_PREV(elm, field) ((elm)->field.cqe_prev)
#define CIRCLEQ_EMPTY(head) \
    (CIRCLEQ_FIRST(head) == CIRCLEQ_ENDC(head))

#define CIRCLEQ_LOOP_NEXT(head, elm, field) \
    (((elm)->field.cqe_next == CIRCLEQ_ENDC(head)) \
     ? ((head)->cqh_first) \
     : (elm)->field.cqe_next)
#define CIRCLEQ_LOOP_PREV(head, elm, field) \

```

```

(((elm)->field.cqe_prev == CIRCLEQ_ENDC(head)) \
    ? ((head)->cqh_last) \
    :
    (elm->field.cqe_prev))
#endif /* !_KERNEL */

#endif /* !_SYS_QUEUE_H_ */
#ifndef _SYS_CDEFS_H_
#define _SYS_CDEFS_H_

#warning usage of non-standard #include <sys/cdefs.h> is deprecated

#undef __P
#undef __PMT

#define __P(args) args
#define __PMT(args) args

#define __CONCAT(x,y) x ## y
#define __STRING(x) #x

#ifdef __cplusplus
# define __BEGIN_DECLS extern "C" {
# define __END_DECLS }
#else
# define __BEGIN_DECLS
# define __END_DECLS
#endif

#if defined(__GNUC__) && !defined(__cplusplus)
# define __THROW __attribute__((__nothrow__))
# define __NTH(fct) __attribute__((__nothrow__)) fct
#else
# define __THROW
# define __NTH(fct) fct
#endif

#endif /* _SYS_CDEFS_H_ */
# Contributor: Fabian Affolter <fabian@affolter-engineering.ch>
# Maintainer: Fabian Affolter <fabian@affolter-engineering.ch>
pkgname=py3-flake8-copyright
_pkgname=flake8-copyright
pkgver=0.2.4
pkgrel=3
pkgdesc="Extension for flake8 which checks for copyrights"
options="!check" # No testsuite
url="https://github.com/savoirfairelinux/flake8-copyright"
arch="noarch"

```

```

license="MIT"
depends="py3-flake8 py3-setuptools"
makedepends="py3-gpep517 py3-wheel"
subpackages="$pkgname-pyc"
source="https://files.pythonhosted.org/packages/source/${_pkgname:0:1}/${_pkgname}/${_pkgname}-${pkgver}.tar.gz"
builddir="$srcdir"/$_pkgname-$pkgver

replaces="py-flake8-copyright"          # Backwards compatibility
provides="py-flake8-copyright=$pkgver-r$pkgrel" # Backwards compatibility

build() {
    gpep517 build-wheel \
        --wheel-dir .dist \
        --output-fd 3 3>&1 >&2
}

package() {
    gpep517 install-wheel --destdir "$pkgdir" \
        .dist/*.whl
}

sha512sums="
a6ab47e1bb715618f075c51f398e18180404871b3b0faf1c2d30701d5203db6bc23771bf22ffb5bafcd8ee856b9b64237
b316bd503ae7dceed6ca284ccd5a74d
    flake8-copyright-0.2.4.tar.gz
"
(The MIT License)

```

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```

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/* $NetBSD: tree.h,v 1.20 2013/09/14 13:20:45 joerg Exp $ */
/* $OpenBSD: tree.h,v 1.13 2011/07/09 00:19:45 pirofti Exp $ */
/* Modified by Void Linux. */
/*
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*/

#ifndef _SYS_TREE_H_
#define _SYS_TREE_H_

#ifdef __GNUC__
#define __GNUC_PREREQ__(x, y) \
    ((__GNUC__ == (x) && __GNUC_MINOR__ >= (y)) || \
     (__GNUC__ > (x)))
#else
#define __GNUC_PREREQ__(x, y) 0
#endif

#if __GNUC_PREREQ__(2, 7) || defined(__lint__)
#define _sys_tree_h_unused __attribute__((__unused__))
#else
#define _sys_tree_h_unused /* delete */
#endif

```

```

/*
 * This file defines data structures for different types of trees:
 * splay trees and red-black trees.
 *
 * A splay tree is a self-organizing
 * data structure. Every operation
 * on the tree causes a splay to happen. The splay moves the requested
 * node to the root of the tree and partly rebalances it.
 *
 * This has the benefit that request locality causes faster lookups as
 * the requested nodes move to the top of the tree. On the other hand,
 * every lookup causes memory writes.
 *
 * The Balance Theorem bounds the total access time for m operations
 * and n inserts on an initially empty tree as  $O((m + n)\lg n)$ . The
 * amortized cost for a sequence of m accesses to a splay tree is  $O(\lg n)$ ;
 *
 * A red-black tree is a binary search tree with the node color as an
 * extra attribute. It fulfills a set of conditions:
 * - every search path from the root to a leaf consists of the
 *   same number of black nodes,
 * - each red node (except for the root) has a black parent,
 * - each leaf node is black.
 *
 * Every operation on a red-black tree is bounded as  $O(\lg n)$ .
 * The maximum height of a red-black tree is  $2\lg(n+1)$ .
 */

```

```

#define SPLAY_HEAD(name, type) \
struct name { \
    struct type *sph_root; /* root of the tree */ \
}

```

```

#define SPLAY_INITIALIZER(root) \
{ NULL }

```

```

#define SPLAY_INIT(root) do { \
    (root)->sph_root = NULL; \
} while (/*CONSTCOND*/ 0)

```

```

#define SPLAY_ENTRY(type) \
struct { \
    struct type *spe_left; /* left element */ \
    struct type *spe_right; /* right element */ \
}

```

```

#define SPLAY_LEFT(elm, field) (elm)->field.spe_left
#define SPLAY_RIGHT(elm, field) (elm)->field.spe_right

```

```

#define SPLAY_ROOT(head) (head)->sph_root
#define SPLAY_EMPTY(head) (SPLAY_ROOT(head) == NULL)

/* SPLAY_ROTATE_{LEFT,RIGHT} expect that tmp hold SPLAY_{RIGHT,LEFT} */
#define SPLAY_ROTATE_RIGHT(head, tmp, field) do { \
    SPLAY_LEFT((head)->sph_root, field) = SPLAY_RIGHT(tmp, field); \
    SPLAY_RIGHT(tmp, field) = (head)->sph_root; \
    (head)->sph_root = tmp; \
} while (/*CONSTCOND*/ 0)

#define SPLAY_ROTATE_LEFT(head, tmp, field) do { \
    SPLAY_RIGHT((head)->sph_root, \
    field) = SPLAY_LEFT(tmp, field); \
    SPLAY_LEFT(tmp, field) = (head)->sph_root; \
    (head)->sph_root = tmp; \
} while (/*CONSTCOND*/ 0)

#define SPLAY_LINKLEFT(head, tmp, field) do { \
    SPLAY_LEFT(tmp, field) = (head)->sph_root; \
    tmp = (head)->sph_root; \
    (head)->sph_root = SPLAY_LEFT((head)->sph_root, field); \
} while (/*CONSTCOND*/ 0)

#define SPLAY_LINKRIGHT(head, tmp, field) do { \
    SPLAY_RIGHT(tmp, field) = (head)->sph_root; \
    tmp = (head)->sph_root; \
    (head)->sph_root = SPLAY_RIGHT((head)->sph_root, field); \
} while (/*CONSTCOND*/ 0)

#define SPLAY_ASSEMBLE(head, node, left, right, field) do { \
    SPLAY_RIGHT(left, field) = SPLAY_LEFT((head)->sph_root, field); \
    SPLAY_LEFT(right, field) = SPLAY_RIGHT((head)->sph_root, field); \
    SPLAY_LEFT((head)->sph_root, field) = SPLAY_RIGHT(node, field); \
    SPLAY_RIGHT((head)->sph_root, field) = SPLAY_LEFT(node, field); \
} while (/*CONSTCOND*/ 0)

/* Generates prototypes and inline functions */

#define
    SPLAY_PROTOTYPE(name, type, field, cmp) \
void name##_SPLAY(struct name *, struct type *); \
void name##_SPLAY_MINMAX(struct name *, int); \
struct type *name##_SPLAY_INSERT(struct name *, struct type *); \
struct type *name##_SPLAY_REMOVE(struct name *, struct type *); \
\
/* Finds the node with the same key as elm */ \
static __inline struct type * \
name##_SPLAY_FIND(struct name *head, struct type *elm) \

```

```

{
    \
    if (SPLAY_EMPTY(head))
        return(NULL);
    name##_SPLAY(head, elm);
    if ((cmp)(elm, (head)->sph_root) == 0)
        return (head->sph_root);
    return (NULL);
}

static __inline _sys_tree_h_unused struct type *
name##_SPLAY_NEXT(struct name *head, struct type *elm)
{
    name##_SPLAY(head, elm);
    if (SPLAY_RIGHT(elm, field) != NULL) {
        elm = SPLAY_RIGHT(elm, field);
        while (SPLAY_LEFT(elm, field) != NULL) {
            elm = SPLAY_LEFT(elm, field);
        }
    }
    else
        elm = NULL;
    return (elm);
}

static _sys_tree_h_unused __inline struct type *
name##_SPLAY_MIN_MAX(struct name *head, int val)
{
    name##_SPLAY_MINMAX(head, val);
    return (SPLAY_ROOT(head));
}

/* Main splay operation.
 * Moves node close to the key of elm to top
 */
#define SPLAY_GENERATE(name, type, field, cmp)
struct type *
name##_SPLAY_INSERT(struct name *head, struct type *elm)
{
    if (SPLAY_EMPTY(head)) {
        SPLAY_LEFT(elm, field) = SPLAY_RIGHT(elm, field) = NULL;
    } else {
        int __comp;
        name##_SPLAY(head, elm);
        __comp = (cmp)(elm, (head)->sph_root);
        if (__comp < 0) {
            SPLAY_LEFT(elm, field) = SPLAY_LEFT((head)->sph_root, field);
            SPLAY_RIGHT(elm, field) = (head)->sph_root;
            SPLAY_LEFT((head)->sph_root, field) = NULL;

```

```

    } else if (__comp > 0) { \
        SPLAY_RIGHT(elm,
field) = SPLAY_RIGHT((head)->sph_root, field);\
        SPLAY_LEFT(elm, field) = (head)->sph_root; \
        SPLAY_RIGHT((head)->sph_root, field) = NULL; \
    } else \
        return ((head)->sph_root); \
} \
(head)->sph_root = (elm); \
return (NULL); \
} \
\
struct type * \
name##_SPLAY_REMOVE(struct name *head, struct type *elm) \
{ \
    struct type *__tmp; \
    if (SPLAY_EMPTY(head)) \
        return (NULL); \
    name##_SPLAY(head, elm); \
    if ((cmp)(elm, (head)->sph_root) == 0) { \
        if (SPLAY_LEFT((head)->sph_root, field) == NULL) { \
            (head)->sph_root = SPLAY_RIGHT((head)->sph_root, field);\
        } else { \
            __tmp = SPLAY_RIGHT((head)->sph_root, field); \
            (head)->sph_root = SPLAY_LEFT((head)->sph_root, field);\
            name##_SPLAY(head, elm); \
            SPLAY_RIGHT((head)->sph_root, field) = __tmp; \
        } \
        return (elm); \
    } \
    return (NULL); \
} \
\
void \
name##_SPLAY(struct
name *head, struct type *elm) \
{ \
    struct type __node, *__left, *__right, *__tmp; \
    int __comp; \
    \
    SPLAY_LEFT(&__node, field) = SPLAY_RIGHT(&__node, field) = NULL;\
    __left = __right = &__node; \
    \
    while ((__comp = (cmp)(elm, (head)->sph_root)) != 0) { \
        if (__comp < 0) { \
            __tmp = SPLAY_LEFT((head)->sph_root, field); \
            if (__tmp == NULL) \
                break; \

```



```

if ((cmp)(elm, __tmp) < 0){ \
    SPLAY_ROTATE_RIGHT(head, __tmp, field); \
    if (SPLAY_LEFT((head)->sph_root, field) == NULL)\
        break; \
} \
SPLAY_LINKLEFT(head, __right, field); \
} else if (__comp > 0) { \
    __tmp = SPLAY_RIGHT((head)->sph_root, field); \
    if (__tmp == NULL) \
        break; \
    if ((cmp)(elm, __tmp) > 0){ \
        SPLAY_ROTATE_LEFT(head, __tmp, field); \
        if (SPLAY_RIGHT((head)->sph_root, field) == NULL)\
            break; \
    } \
    SPLAY_LINKRIGHT(head, __left, field); \
} \
} \
SPLAY_ASSEMBLE(head,
&__node, __left, __right, field); \
} \
\
/* Splay with either the minimum or the maximum element \
* Used to find minimum or maximum element in tree. \
*/ \
void name##_SPLAY_MINMAX(struct name *head, int __comp) \
{ \
    struct type __node, *__left, *__right, *__tmp; \
    \
    SPLAY_LEFT(&__node, field) = SPLAY_RIGHT(&__node, field) = NULL; \
    __left = __right = &__node; \
    \
    while (1) { \
        if (__comp < 0) { \
            __tmp = SPLAY_LEFT((head)->sph_root, field); \
            if (__tmp == NULL) \
                break; \
            if (__comp < 0){ \
                SPLAY_ROTATE_RIGHT(head, __tmp, field); \
                if (SPLAY_LEFT((head)->sph_root, field) == NULL)\
                    break; \
            } \
            SPLAY_LINKLEFT(head, __right, field); \
        } else if (__comp > 0) { \
            __tmp = SPLAY_RIGHT((head)->sph_root, field); \
            if (__tmp == NULL) \
                break; \
            if (__comp > 0) { \

```

```

    SPLAY_ROTATE_LEFT(head, __tmp, field); \
    if (SPLAY_RIGHT((head)->sph_root,
field) == NULL)\
        break; \
    } \
    SPLAY_LINKRIGHT(head, __left, field); \
    } \
    } \
    SPLAY_ASSEMBLE(head, &__node, __left, __right, field); \
}

#define SPLAY_NEGINF -1
#define SPLAY_INF 1

#define SPLAY_INSERT(name, x, y) name##_SPLAY_INSERT(x, y)
#define SPLAY_REMOVE(name, x, y) name##_SPLAY_REMOVE(x, y)
#define SPLAY_FIND(name, x, y) name##_SPLAY_FIND(x, y)
#define SPLAY_NEXT(name, x, y) name##_SPLAY_NEXT(x, y)
#define SPLAY_MIN(name, x) (SPLAY_EMPTY(x) ? NULL \
    : name##_SPLAY_MIN_MAX(x, SPLAY_NEGINF))
#define SPLAY_MAX(name, x) (SPLAY_EMPTY(x) ? NULL \
    : name##_SPLAY_MIN_MAX(x, SPLAY_INF))

#define SPLAY_FOREACH(x, name, head) \
    for ((x) = SPLAY_MIN(name, head); \
        (x) != NULL; \
        (x) = SPLAY_NEXT(name, head, x))

/* Macros that define a red-black tree */
#define RB_HEAD(name, type) \
    struct name { \
        struct type *rbh_root; /* root of the tree */ \
    }

#define RB_INITIALIZER(root) \
    { \
        NULL \
    }

#define RB_INIT(root) do { \
    (root)->rbh_root = NULL; \
} while (/*CONSTCOND*/ 0)

#define RB_BLACK 0
#define RB_RED 1
#define RB_ENTRY(type) \
    struct { \
        struct type *rbe_left; /* left element */ \
        struct type *rbe_right; /* right element */ \
    }

```

```

struct type *rbe_parent; /* parent element */ \
int rbe_color; /* node color */ \
}

#define RB_LEFT(elm, field) (elm)->field.rbe_left
#define RB_RIGHT(elm, field) (elm)->field.rbe_right
#define RB_PARENT(elm, field) (elm)->field.rbe_parent
#define RB_COLOR(elm, field) (elm)->field.rbe_color
#define RB_ROOT(head) (head)->rbh_root
#define RB_EMPTY(head) (RB_ROOT(head) == NULL)

#define RB_SET(elm, parent, field) do { \
    RB_PARENT(elm, field) = parent; \
    RB_LEFT(elm, field) = RB_RIGHT(elm, field) = NULL; \
    RB_COLOR(elm, field) = RB_RED; \
} while (/*CONSTCOND*/ 0)

#define RB_SET_BLACKRED(black, red, field) do { \
    RB_COLOR(black, field) = RB_BLACK; \
    RB_COLOR(red, field) \
    = RB_RED; \
} while (/*CONSTCOND*/ 0)

#ifndef RB_AUGMENT
#define RB_AUGMENT(x) do {} while (/*CONSTCOND*/ 0)
#endif

#define RB_ROTATE_LEFT(head, elm, tmp, field) do { \
    (tmp) = RB_RIGHT(elm, field); \
    if ((RB_RIGHT(elm, field) = RB_LEFT(tmp, field)) != NULL) { \
        RB_PARENT(RB_LEFT(tmp, field), field) = (elm); \
    } \
    RB_AUGMENT(elm); \
    if ((RB_PARENT(tmp, field) = RB_PARENT(elm, field)) != NULL) { \
        if ((elm) == RB_LEFT(RB_PARENT(elm, field), field)) \
            RB_LEFT(RB_PARENT(elm, field), field) = (tmp); \
        else \
            RB_RIGHT(RB_PARENT(elm, field), field) = (tmp); \
    } else \
        (head)->rbh_root = (tmp); \
    RB_LEFT(tmp, field) = (elm); \
    RB_PARENT(elm, field) = (tmp); \
    RB_AUGMENT(tmp); \
    if ((RB_PARENT(tmp, field))) \
        RB_AUGMENT(RB_PARENT(tmp, field)); \
} while (/*CONSTCOND*/ 0)

#define RB_ROTATE_RIGHT(head, elm, tmp, field) do { \

```

```

(tmp) = RB_LEFT(elm, field); \
if ((RB_LEFT(elm, field) = RB_RIGHT(tmp, field))
!= NULL) { \
    RB_PARENT(RB_RIGHT(tmp, field), field) = (elm); \
} \
RB_AUGMENT(elm); \
if ((RB_PARENT(tmp, field) = RB_PARENT(elm, field)) != NULL) { \
    if ((elm) == RB_LEFT(RB_PARENT(elm, field), field)) \
        RB_LEFT(RB_PARENT(elm, field), field) = (tmp); \
    else \
        RB_RIGHT(RB_PARENT(elm, field), field) = (tmp); \
} else \
    (head)->rbh_root = (tmp); \
RB_RIGHT(tmp, field) = (elm); \
RB_PARENT(elm, field) = (tmp); \
RB_AUGMENT(tmp); \
if ((RB_PARENT(tmp, field))) \
    RB_AUGMENT(RB_PARENT(tmp, field)); \
} while (/*CONSTCOND*/ 0)

/* Generates prototypes and inline functions */
#define RB_PROTOTYPE(name, type, field, cmp) \
    RB_PROTOTYPE_INTERNAL(name, type, field, cmp,)
#define RB_PROTOTYPE_STATIC(name, type, field, cmp) \
    RB_PROTOTYPE_INTERNAL(name, type, field, cmp, _sys_tree_h_unused static)
#define RB_PROTOTYPE_INTERNAL(name, type, field, cmp, attr) \
    attr void name##_RB_INSERT_COLOR(struct name *, struct
    type *); \
    attr void name##_RB_REMOVE_COLOR(struct name *, struct type *, struct type *); \
    attr struct type *name##_RB_REMOVE(struct name *, struct type *); \
    attr struct type *name##_RB_INSERT(struct name *, struct type *); \
    attr struct type *name##_RB_FIND(struct name *, struct type *); \
    attr struct type *name##_RB_NFIND(struct name *, struct type *); \
    attr struct type *name##_RB_NEXT(struct type *); \
    attr struct type *name##_RB_PREV(struct type *); \
    attr struct type *name##_RB_MINMAX(struct name *, int); \
    \

/* Main rb operation.
* Moves node close to the key of elm to top
*/
#define RB_GENERATE(name, type, field, cmp) \
    RB_GENERATE_INTERNAL(name, type, field, cmp,)
#define RB_GENERATE_STATIC(name, type, field, cmp) \
    RB_GENERATE_INTERNAL(name, type, field, cmp, _sys_tree_h_unused static)
#define RB_GENERATE_INTERNAL(name, type, field, cmp, attr) \
    attr void \
    name##_RB_INSERT_COLOR(struct name *head, struct type *elm) \

```

```

{
    \
    struct type
    *parent, *gparent, *tmp;
    \
    while ((parent = RB_PARENT(elm, field)) != NULL && \
        RB_COLOR(parent, field) == RB_RED) {
        \
        gparent = RB_PARENT(parent, field);
        \
        if (parent == RB_LEFT(gparent, field)) {
            \
            tmp = RB_RIGHT(gparent, field);
            \
            if (tmp && RB_COLOR(tmp, field) == RB_RED) {
                \
                RB_COLOR(tmp, field) = RB_BLACK;
                \
                RB_SET_BLACKRED(parent, gparent, field);
                \
                elm = gparent;
                \
                continue;
            }
            \
            if (RB_RIGHT(parent, field) == elm) {
                \
                RB_ROTATE_LEFT(head, parent, tmp, field);
                \
                tmp = parent;
                \
                parent = elm;
                \
                elm = tmp;
            }
            \
            RB_SET_BLACKRED(parent, gparent, field);
            \
            RB_ROTATE_RIGHT(head, gparent, tmp, field);
        }
        \
        else {
            \
            tmp = RB_LEFT(gparent, field);
            \
            if (tmp && RB_COLOR(tmp, field) == RB_RED) {
                \
                RB_COLOR(tmp, field) = RB_BLACK;
                \
                RB_SET_BLACKRED(parent, gparent, field);
                \
                elm = gparent;
                \
                continue;
            }
            \
            if (RB_LEFT(parent, field) == elm)
        {
            \
            RB_ROTATE_RIGHT(head, parent, tmp, field);
            \
            tmp = parent;
            \
            parent = elm;
            \
            elm = tmp;
        }
        \
        RB_SET_BLACKRED(parent, gparent, field);
        \
        RB_ROTATE_LEFT(head, gparent, tmp, field);
    }
    \
}
    \
RB_COLOR(head->rbh_root, field) = RB_BLACK;
\
}
    \
attr void
    \
name##_RB_REMOVE_COLOR(struct name *head, struct type *parent, struct type *elm) \
{
    \
    struct type *tmp;
    \

```

```

while ((elm == NULL || RB_COLOR(elm, field) == RB_BLACK) && \
    elm != RB_ROOT(head)) { \
    if (RB_LEFT(parent, field) == elm) { \
        tmp = RB_RIGHT(parent, field); \
        if (RB_COLOR(tmp, field) == RB_RED) { \
            RB_SET_BLACKRED(tmp, parent, field); \
            RB_ROTATE_LEFT(head, parent, tmp, field); \
            tmp = RB_RIGHT(parent, field); \
        } \
        if ((RB_LEFT(tmp, field) == NULL || \
            RB_COLOR(RB_LEFT(tmp, field), field) == RB_BLACK) && \
            (RB_RIGHT(tmp, field) == NULL || \
            RB_COLOR(RB_RIGHT(tmp, field), field) == RB_BLACK)) {\
            RB_COLOR(tmp, field) = RB_RED; \
            elm = parent; \
            parent = RB_PARENT(elm, field); \
        } else { \
            if (RB_RIGHT(tmp, field) == NULL || \
                RB_COLOR(RB_RIGHT(tmp, field), field) == RB_BLACK) {\
                struct type *oleft; \
                if ((oleft = RB_LEFT(tmp, field)) \
                    != NULL) \
                    RB_COLOR(oleft, field) = RB_BLACK; \
                RB_COLOR(tmp, field) = RB_RED; \
                RB_ROTATE_RIGHT(head, tmp, oleft, field); \
                tmp = RB_RIGHT(parent, field); \
            } \
            RB_COLOR(tmp, field) = RB_COLOR(parent, field); \
            RB_COLOR(parent, field) = RB_BLACK; \
            if (RB_RIGHT(tmp, field)) \
                RB_COLOR(RB_RIGHT(tmp, field), field) = RB_BLACK; \
            RB_ROTATE_LEFT(head, parent, tmp, field); \
            elm = RB_ROOT(head); \
            break; \
        } \
    } else { \
        tmp = RB_LEFT(parent, field); \
        if (RB_COLOR(tmp, field) == RB_RED) { \
            RB_SET_BLACKRED(tmp, parent, field); \
            RB_ROTATE_RIGHT(head, parent, tmp, field); \
            tmp \
= RB_LEFT(parent, field); \
        } \
        if ((RB_LEFT(tmp, field) == NULL || \
            RB_COLOR(RB_LEFT(tmp, field), field) == RB_BLACK) && \
            (RB_RIGHT(tmp, field) == NULL || \
            RB_COLOR(RB_RIGHT(tmp, field), field) == RB_BLACK)) {\

```

```

RB_COLOR(tmp, field) = RB_RED; \
elm = parent; \
parent = RB_PARENT(elm, field); \
} else { \
if (RB_LEFT(tmp, field) == NULL || \
    RB_COLOR(RB_LEFT(tmp, field), field) == RB_BLACK) {\
    struct type *oright; \
    if ((oright = RB_RIGHT(tmp, field)) \
        != NULL) \
        RB_COLOR(oright, field) = RB_BLACK;\
    RB_COLOR(tmp, field) = RB_RED; \
    RB_ROTATE_LEFT(head, tmp, oright, field);\
    tmp = RB_LEFT(parent, field); \
} \
RB_COLOR(tmp, field) = RB_COLOR(parent, field);\
RB_COLOR(parent, field) = RB_BLACK; \
if (RB_LEFT(tmp, field)) \
    RB_COLOR(RB_LEFT(tmp, field), field) = RB_BLACK;\
RB_ROTATE_RIGHT(head, parent, tmp, field);\
elm = RB_ROOT(head); \
break; \
} \
} \
} \
if
(elm) \
    RB_COLOR(elm, field) = RB_BLACK; \
} \
\
attr struct type * \
name##_RB_REMOVE(struct name *head, struct type *elm) \
{ \
    struct type *child, *parent, *old = elm; \
    int color; \
    if (RB_LEFT(elm, field) == NULL) \
        child = RB_RIGHT(elm, field); \
    else if (RB_RIGHT(elm, field) == NULL) \
        child = RB_LEFT(elm, field); \
    else { \
        struct type *left; \
        elm = RB_RIGHT(elm, field); \
        while ((left = RB_LEFT(elm, field)) != NULL) \
            elm = left; \
        child = RB_RIGHT(elm, field); \
        parent = RB_PARENT(elm, field); \
        color = RB_COLOR(elm, field); \
        if (child) \
            RB_PARENT(child, field) = parent; \

```

```

if (parent) { \
  if (RB_LEFT(parent, field) == elm) \
    RB_LEFT(parent, field) = child; \
  else \
    RB_RIGHT(parent, field) = child; \
  RB_AUGMENT(parent); \
} else \
  RB_ROOT(head)
= child; \
if (RB_PARENT(elm, field) == old) \
  parent = elm; \
(elm)->field = (old)->field; \
if (RB_PARENT(old, field)) { \
  if (RB_LEFT(RB_PARENT(old, field), field) == old)\
    RB_LEFT(RB_PARENT(old, field), field) = elm;\
  else \
    RB_RIGHT(RB_PARENT(old, field), field) = elm;\
  RB_AUGMENT(RB_PARENT(old, field)); \
} else \
  RB_ROOT(head) = elm; \
RB_PARENT(RB_LEFT(old, field), field) = elm; \
if (RB_RIGHT(old, field)) \
  RB_PARENT(RB_RIGHT(old, field), field) = elm; \
if (parent) { \
  left = parent; \
  do { \
    RB_AUGMENT(left); \
  } while ((left = RB_PARENT(left, field)) != NULL); \
} \
goto color; \
} \
parent = RB_PARENT(elm, field); \
color = RB_COLOR(elm, field); \
if (child) \
  RB_PARENT(child, field) = parent; \
if (parent) { \
  if (RB_LEFT(parent, field) == elm) \
    RB_LEFT(parent, field) = child; \
  else \
    RB_RIGHT(parent,
field) = child; \
  RB_AUGMENT(parent); \
} else \
  RB_ROOT(head) = child; \
color: \
if (color == RB_BLACK) \
  name##_RB_REMOVE_COLOR(head, parent, child); \
return (old); \

```



```

}    \
    \
/* Inserts a node into the RB tree */ \
attr struct type *    \
name##_RB_INSERT(struct name *head, struct type *elm) \
{    \
    struct type *tmp;    \
    struct type *parent = NULL;    \
    int comp = 0;    \
    tmp = RB_ROOT(head);    \
    while (tmp) {    \
        parent = tmp;    \
        comp = (cmp)(elm, parent);    \
        if (comp < 0)    \
            tmp = RB_LEFT(tmp, field);    \
        else if (comp > 0)    \
            tmp = RB_RIGHT(tmp, field);    \
        else    \
            return (tmp);    \
    }    \
    RB_SET(elm, parent, field);    \
    if (parent != NULL) {    \
        if (comp < 0)    \
            RB_LEFT(parent, field) = elm;    \
        else    \
            RB_RIGHT(parent, field) = elm;    \
        RB_AUGMENT(parent);    \
    } else    \
        RB_ROOT(head) = elm;    \
    name##_RB_INSERT_COLOR(head,    \
    elm);    \
    return (NULL);    \
}    \
    \
/* Finds the node with the same key as elm */ \
attr struct type *    \
name##_RB_FIND(struct name *head, struct type *elm) \
{    \
    struct type *tmp = RB_ROOT(head);    \
    int comp;    \
    while (tmp) {    \
        comp = cmp(elm, tmp);    \
        if (comp < 0)    \
            tmp = RB_LEFT(tmp, field);    \
        else if (comp > 0)    \
            tmp = RB_RIGHT(tmp, field);    \
        else    \
            return (tmp);    \
    }

```

```

} \
return (NULL); \
} \
\
/* Finds the first node greater than or equal to the search key */\
attr struct type * \
name##_RB_NFIND(struct name *head, struct type *elm) \
{ \
    struct type *tmp = RB_ROOT(head); \
    struct type *res = NULL; \
    int comp; \
    while (tmp) { \
        comp = cmp(elm, tmp); \
        if (comp < 0) { \
            res = tmp; \
            tmp = RB_LEFT(tmp, field); \
        } \
        else if (comp > 0) \
            tmp = \
RB_RIGHT(tmp, field); \
        else \
            return (tmp); \
    } \
    return (res); \
} \
\
/* ARGSUSED */ \
attr struct type * \
name##_RB_NEXT(struct type *elm) \
{ \
    if (RB_RIGHT(elm, field)) { \
        elm = RB_RIGHT(elm, field); \
        while (RB_LEFT(elm, field)) \
            elm = RB_LEFT(elm, field); \
    } else { \
        if (RB_PARENT(elm, field) && \
            (elm == RB_LEFT(RB_PARENT(elm, field), field))) \
            elm = RB_PARENT(elm, field); \
        else { \
            while (RB_PARENT(elm, field) && \
                (elm == RB_RIGHT(RB_PARENT(elm, field), field))) \
                elm = RB_PARENT(elm, field); \
            elm = RB_PARENT(elm, field); \
        } \
    } \
    return (elm); \
} \
\

```

```

/* ARGSUSED */      \
attr struct type *      \
name##_RB_PREV(struct type *elm)      \
{      \
    if (RB_LEFT(elm, field)) {      \
        elm = RB_LEFT(elm, field);      \
        while (RB_RIGHT(elm, field))      \
            elm = RB_RIGHT(elm, field);      \
    }      \
    else {      \
        if (RB_PARENT(elm, field) &&      \
            (elm == RB_RIGHT(RB_PARENT(elm, field), field)))      \
            elm = RB_PARENT(elm, field);      \
        else {      \
            while (RB_PARENT(elm, field) &&      \
                (elm == RB_LEFT(RB_PARENT(elm, field), field)))      \
                elm = RB_PARENT(elm, field);      \
            elm = RB_PARENT(elm, field);      \
        }      \
    }      \
    return (elm);      \
}      \
\
attr struct type *      \
name##_RB_MINMAX(struct name *head, int val)      \
{      \
    struct type *tmp = RB_ROOT(head);      \
    struct type *parent = NULL;      \
    while (tmp) {      \
        parent = tmp;      \
        if (val < 0)      \
            tmp = RB_LEFT(tmp, field);      \
        else      \
            tmp = RB_RIGHT(tmp, field);      \
    }      \
    return (parent);      \
}

#define RB_NEGINF -1
#define RB_INF 1

#define RB_INSERT(name, x, y) name##_RB_INSERT(x, y)
#define RB_REMOVE(name, x, y) name##_RB_REMOVE(x, y)
#define RB_FIND(name, x, y) name##_RB_FIND(x, y)
#define RB_NFIND(name, x, y) name##_RB_NFIND(x, y)
#define RB_NEXT(name, x, y) name##_RB_NEXT(y)
#define RB_PREV(name, x, y) name##_RB_PREV(y)

```

```

#define RB_MIN(name, x) name##_RB_MINMAX(x, RB_NEGINF)
#define RB_MAX(name, x) name##_RB_MINMAX(x, RB_INF)

#define RB_FOREACH(x, name, head) \
    for ((x) = RB_MIN(name, head); \
        (x) != NULL; \
        (x) = name##_RB_NEXT(x))

#define RB_FOREACH_FROM(x, name, y) \
    for ((x) = (y); \
        ((x) != NULL) && ((y) = name##_RB_NEXT(x), (x) != NULL); \
        (x) = (y))

#define RB_FOREACH_SAFE(x, name, head, y) \
    for ((x) = RB_MIN(name, head); \
        ((x) != NULL) && ((y) = name##_RB_NEXT(x), (x) != NULL); \
        (x) = (y))

#define RB_FOREACH_REVERSE(x, name, head) \
    for ((x) = RB_MAX(name, head); \
        (x) != NULL; \
        (x) = name##_RB_PREV(x))

#define RB_FOREACH_REVERSE_FROM(x, name, y) \
    for ((x) = (y); \
        ((x) != NULL) && ((y) = name##_RB_PREV(x), (x) != NULL); \
        (x) = (y))

#define RB_FOREACH_REVERSE_SAFE(x, name, \
    head, y) \
    for ((x) = RB_MAX(name, head); \
        ((x) != NULL) && ((y) = name##_RB_PREV(x), (x) != NULL); \
        (x) = (y))

#endif /* _SYS_TREE_H_ */
# Contributor: Wen Heping <wenhepingalpine@sohu.com>
# Maintainer: Wen Heping <wenhepingalpine@sohu.com>
pkgname=perl-software-license
pkgver=0.104007
pkgrel=0
# _pkgreal is used by apkbuild-cpan to find modules at MetaCpan
_pkgreal=Software-License
pkgdesc="packages that provide templated software licenses"
url="https://metacpan.org/release/Software-License/"
arch="noarch"
license="GPL-1.0-or-later OR Artistic-1.0-Perl"
depends="perl perl-data-section perl-text-template"
checkdepends="perl-try-tiny"

```

```

subpackages="$pkgname-doc"
source="https://cpan.metacpan.org/authors/id/L/LE/LEONT/Software-License-$pkgver.tar.gz"
builddir="$srcdir/${_pkgreal-$pkgver}"

build() {
    export CFLAGS=$(perl -MConfig -E 'say $Config{ccflags}')
    PERL_MM_USE_DEFAULT=1 perl -I. Makefile.PL \
        INSTALLDIRS=vendor \
        NO_PACKLIST=1 \
        NO_PERLLOCAL=1
    make
}

check() {
    export CFLAGS=$(perl -MConfig -E 'say $Config{ccflags}')
    make test
}

package() {
    make DESTDIR="$pkgdir" install
}

sha512sums="
12d75e9583b3013d9b4a282467f1ac80ab6b7f3251926d66591d01404489b528f22adc396dfd4528a0f0ca650f0eed6d
9c959e69eace2169c6ed1cffe5277e4
Software-License-0.104007.tar.gz
"
(The MIT License)

```

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```

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SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.
# Contributor: Dhruvin Gandhi <contact@dhruvin>
# Maintainer: Patrycja Rosa <alpine@ptrcnull.me>
pkgname=py3-license-expression
_pkgname=license_expression
pkgver=30.4.4
pkgrel=0
pkgdesc="Library to parse, compare, simplify and normalize license expressions"
url="https://github.com/nexB/license-expression"
arch="noarch"
license="Apache-2.0"
depends="python3 py3-boolean.py"
makedepends="py3-setuptools py3-setuptools_scm py3-gpep517 py3-wheel"
checkdepends="py3-pytest py3-pytest-xdist"
subpackages="$pkgname-pyc"
source="https://files.pythonhosted.org/packages/source/l/${_pkgname}/${_pkgname}-${pkgver}.tar.gz"
builddir="$srcdir/${_pkgname}-${pkgver}"

build() {
    gpep517 build-wheel \
        --wheel-dir .dist \
        --output-fd 3 3>&1 >&2
}

check() {
    python3 -m venv --clear --without-pip --system-site-packages .testenv
    .testenv/bin/python3 -m installer .dist/*.whl
    .testenv/bin/python3 -m pytest
}

package() {
    python3 -m installer -d "$pkgdir" \
        .dist/*.whl
}

sha512sums="
f46dd4cf524b3962115fe26f5545bfdd6767275b482724af51e7ca07da79244969a3bfc5d2fd5b95bc0f19d1b95a26a8f3
ab36c676e56ec302178d7166588066
    license_expression-30.4.4.tar.gz
"

```

1.399 alpine-base 3.23.0-r0

1.399.1 Available under license :

```
# Contributor: Carlo Landmeter <clandmeter@alpinelinux.org>
# Maintainer: Kevin Daudt <kdaudt@alpinelinux.org>
pkgname=spdx-licenses
pkgver=3.27.0
pkgrel=0
pkgdesc="Various data formats for the SPDX License List"
url="https://spdx.org/"
arch="noarch"
options="!check" # no test suite
license="CC-BY-3.0"
source="license-list-data-$pkgver.tar.gz::https://github.com/spdx/license-list-data/archive/v$pkgver.tar.gz"
builddir="$srcdir/license-list-data-$pkgver"
subpackages="$pkgname-list"

_types="html json rdfa rdft rdfturtle rdfxml template text"

for type in $_types; do
    subpackages="$subpackages $pkgname-$type:_subpkg"
done

package() {
    mkdir -p "$pkgdir"
}

_subpkg() {
    local type=${subpkgname/$pkgname-/}
    pkgdesc="$pkgdesc ($type)"
    install_if="$pkgname=$pkgver-r$pkgrel"
    mkdir -p "$subpkgdir"/usr/share/spdx
    cp -r "$builddir"/$type "$subpkgdir"/usr/share/spdx/
}

list() {
    pkgdesc="$pkgdesc (licence list)"
    mkdir -p "$subpkgdir"/usr/share/spdx
    local i; for i in "$builddir"/text/*.txt;
    do
        local license=${i##*/}
        echo ${license%.*} >> "$subpkgdir"/usr/share/spdx/license.lst
    done
}

sha512sums="
16d59c81e331b54b52639826f83408d98144cdad70eacc3e8ce35dc3b13992e4794cf7515eb9db200efd390a0c0e35ae9
d4706fbe0ca6a8d236189e88870720c  license-list-data-3.27.0.tar.gz
"
```

```

# Automatically generated by apkbuild-cpan, template 4
# Contributor: Valery Kartel <valery.kartel@gmail.com>
# Maintainer: Celeste <cielesti@protonmail.com>
maintainer="Celeste <cielesti@protonmail.com>"
pkgname=perl-bsd-resource
pkgver=1.2911
pkgrel=11
#_pkgreal is used by apkbuild-cpan to find modules at MetaCpan
_pkgreal=BSD-Resource
pkgdesc="Perl extension implements the BSD process resource limit functions"
url="https://metacpan.org/release/BSD-Resource/"
arch="all"
license="Artistic-2.0 OR LGPL-2.0"
depends="perl"
makedepends="perl-dev"
subpackages="$pkgname-doc"
source="https://cpan.metacpan.org/authors/id/J/JH/JHI/BSD-Resource-$pkgver.tar.gz"
builddir="$srcdir/${_pkgreal}-${pkgver}"

build() {
    export CFLAGS=$(perl -MConfig -E 'say $Config{ccflags}')
    PERL_MM_USE_DEFAULT=1 perl -I. Makefile.PL \
        INSTALLDIRS=vendor \
        NO_PACKLIST=1 \
        NO_PERLLOCAL=1
    make
}

check() {
    export CFLAGS=$(perl -MConfig -E 'say $Config{ccflags}')
    make test
}

package() {
    make DESTDIR="$pkgdir" install
}

sha512sums="
d0032d41c7c0468ed1c6d8f57b885f6cb97a5039d754c8cb60b2067daedaf53bd15fb6561a3d0f828df16dfa5417f663b
8065ba65f4fea16dc9262728b3b6b85
    BSD-Resource-1.2911.tar.gz
"

maintainer="Achill Gilgenast <achill@achill.org>"
pkgname=cargo-license
pkgver=0.7.0
pkgrel=1
pkgdesc="Cargo subcommand to see license of dependencies"
url="https://github.com/onur/cargo-license"

```



```

arch="all"
license="MIT"
makedepends="cargo cargo-auditable"
source="$pkgname-$pkgver.tar.gz::https://crates.io/api/v1/crates/cargo-license/$pkgver/download"

prepare() {
    default_prepare

    cargo fetch --target="$CTARGET" --locked
}

build() {
    cargo auditable build --release --frozen
}

check() {
    cargo test --frozen
}

package() {
    install -Dm755 target/release/cargo-license -t "$pkgdir"/usr/bin
}

sha512sums="
9b3f0ead35515e85ef4074ebdbdbe5b9ec8bcaec244fabe414e2ed60f90366e8b1692d8bf7ffe4c07d778e60d94bab86bc
0c8be9823232e9c360a38bc65e9c5a cargo-license-0.7.0.tar.gz
"

#!/sbin/openrc-run

command="/usr/libexec/xdg-permission-store"
supervisor=supervise-daemon
command_args="--replace $command_args"
error_logger="logger -t '${RC_SVCNAME}' -p daemon.error"

depend() {
    need dbus
}

# Contributor: Maxim Karasev <begs@disroot.org>
# Maintainer: mio <miyopan@e.email>
pkgname=bsd-games
pkgver=3.3
pkgrel=2
pkgdesc="traditional text mode games from BSD"
url="https://bsd-games.sourceforge.io/"
arch="all"
license="BSD-3-Clause"
install="$pkgname.post-install"
makedepends="ncurses-dev coreutils" # configure causes busybox expr error

```

```

subpackages="$pkgname-doc"
source="https://sourceforge.net/projects/bsd-games/files/bsd-games-$pkgver.tar.gz
0001-bsd-games-scores-dir.patch
"

options="!check" # no tests

build() {
# some GNU autoconf options are ignored, but it works
./configure \
--build=$CBUILD \
--host=$CHOST \
--prefix=/usr \
--sysconfdir=/etc \
--mandir=/usr/share/man \
--scoredir=/usr/share/$pkgname
make
}

package() {
make DESTDIR="$pkgdir" install
install -Dm644 LICENSE "$pkgdir"/usr/share/licenses/bsd-games/LICENSE
}

sha512sums="
aaf36d09d4fe68514a5c279063d7e77a9a9a84c447037cba974b29faa07eb80c2aab2379d0699c196b5c27ffe1b2bb2c6
8d3390143e0e62d5e3d210ccfb61294
bsd-games-3.3.tar.gz
e1def0d4835a877242c4173fae862e278a7858738e0bacacbb045a42bcabec2aa7c72d000bbd2421ce35fe66cdc1f52c0
577b7e278029ca5ed50f7aab22319f6 0001-bsd-games-scores-dir.patch
"

```

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mini_sendmail - accept email on behalf of real sendmail

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Maintainer: Natanael Copa <ncopa@alpinelinux.org>

pkgname=libart-lgpl

pkgver=2.3.21

pkgrel=8

pkgdesc="A library for high-performance 2D graphics"

url="https://www.levien.com/libart/"

arch="all"

options="!check" # No test suite.

license="LGPL-2.0-or-later"

subpackages="\$pkgname-dev"

source="https://download.gnome.org/sources/libart-lgpl/2.3/libart-lgpl-\$pkgver.tar.bz2"

"

builddir="\$srcdir"/libart-lgpl-\$pkgver

prepare() {

update_config_sub

default_prepare

```

}

build() {
./configure \
--build=$CBUILD \
--host=$CHOST \
--prefix=/usr
make
}

package() {
make DESTDIR="$pkgdir" install
}

sha512sums="8a632a6a4da59e5e8c02ec2f5a57e36d182b325b46513765425e5f171ff9ae326af1b133725beba28f7e7
6654309e001aee9bace727b5b4c8589405256a3c020 libart_lgpl-2.3.21.tar.bz2"
# Contributor: Patrycja Rosa <alpine@ptrcnull.me>
# Maintainer: Patrycja Rosa <alpine@ptrcnull.me>
pkgname=bsd-compat-headers
pkgver=0.7.2
pkgrel=6
pkgdesc="BSD compatibility headers (cdefs, queue, tree)"
url="https://gitlab.alpinelinux.org/alpine/aports"
arch="noarch"
license="BSD-2-Clause AND BSD-3-Clause"
source="
cdefs.h
queue.h
tree.h
"
bulddir="$srcdir"
options="!check" # just headers

package() {
mkdir -p "$pkgdir"
install -Dm644 -t "$pkgdir"/usr/include/sys \
cdefs.h queue.h tree.h
}
sha512sums="
37c8fc73c7aea7b490f7850927e2bb91d12137c9e59e22c084146d515696dbc7973b5de92f4c987ba080dd2502ba8312
7006442c3f019b6447a620c0cae73178 cdefs.h
2f0d5e6e4dc3350285cf17009265dddcbe12431c111868eea39bc8cb038ab7c1f2acacbb21735c4e9d4a1fd106a8fc0f86
11ea33987d4faba37dde5ce6da0750 queue.h
d9ac210d81feb8ad2655bc80fb065d3fe20ae4417b32b4a1711e6738a4870140005c13373b5d1846ef3ce5ae6da45f2da
cef2092881eded0a2e94f6a07752ef3 tree.h
"

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```

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The X-Spline code was written Carole Blanc (blanc@labri.u-bordeaux.fr) and Christophe Schlick (schlick@labri.u-bordeaux.fr) starting from an initial implementation done by C. Feuille, S. Grosbois, L. Maziere and L. Minihot as a student practice (Universite Bordeaux, France). For additional information about X-splines, see:
"X-Splines: A Spline Model Designed for the End User" by C. Blanc and C. Schlick, Proceedings of SIGGRAPH'95
<http://dept-info.labri.u-bordeaux.fr/~schlick/DOC/sig1.html>
/* \$NetBSD: queue.h,v 1.70 2015/11/02 15:21:23 christos Exp \$ */

```
/*
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*

* @(#)queue.h 8.5 (Berkeley) 8/20/94

*/

#ifndef _SYS_QUEUE_H_

#define _SYS_QUEUE_H_

/*

* This file defines five types of data structures: singly-linked lists,
* lists, simple queues, tail queues, and circular queues.

*

* A singly-linked list is headed by a single forward pointer. The
* elements are singly linked for minimum space and
* pointer manipulation
* overhead at the expense of O(n) removal for arbitrary elements. New
* elements can be added to the list after an existing element or at the
* head of the list. Elements being removed from the head of the list
* should use the explicit macro for this purpose for optimum
* efficiency. A singly-linked list may only be traversed in the forward
* direction. Singly-linked lists are ideal for applications with large
* datasets and few or no removals or for implementing a LIFO queue.

*

* A list is headed by a single forward pointer (or an array of forward
* pointers for a hash table header). The elements are doubly linked
* so that an arbitrary element can be removed without a need to
* traverse the list. New elements can be added to the list before
* or after an existing element or at the head of the list. A list
* may only be traversed in the forward direction.

*

* A simple queue is headed by a pair of pointers, one the head of the
* list and the

other to the tail of the list. The elements are singly

* linked to save space, so elements can only be removed from the
* head of the list. New elements can be added to the list after
* an existing element, at the head of the list, or at the end of the
* list. A simple queue may only be traversed in the forward direction.

*

* A tail queue is headed by a pair of pointers, one to the head of the

- * list and the other to the tail of the list. The elements are doubly
- * linked so that an arbitrary element can be removed without a need to
- * traverse the list. New elements can be added to the list before or
- * after an existing element, at the head of the list, or at the end of
- * the list. A tail queue may be traversed in either direction.
- *
- * A circle queue is headed by a pair of pointers, one to the head of the
- * list and the other to the tail of the list. The elements are doubly
- * linked so that an arbitrary element can be removed without a need to
- * traverse the list. New elements
- can be added to the list before or after
- * an existing element, at the head of the list, or at the end of the list.
- * A circle queue may be traversed in either direction, but has a more
- * complex end of list detection.
- *
- * For details on the use of these macros, see the queue(3) manual page.
- */

```
/*
 * Include the definition of NULL only on NetBSD because sys/null.h
 * is not available elsewhere. This conditional makes the header
 * portable and it can simply be dropped verbatim into any system.
 * The caveat is that on other systems some other header
 * must provide NULL before the macros can be used.
 */
```

```
#ifdef __NetBSD__
#include <sys/null.h>
#endif

#if defined(QUEUEDEBUG)
# if defined(_KERNEL)
#  define QUEUEDEBUG_ABORT(...) panic(__VA_ARGS__)
# else
#  include <err.h>
#  define QUEUEDEBUG_ABORT(...) err(1, __VA_ARGS__)
# endif
#endif
```

```
/*
 * Singly-linked List definitions.
 */

#define SLIST_HEAD(name, type) \
struct name { \
    struct type *slh_first; /* first \
    element */ \
}

#define SLIST_HEAD_INITIALIZER(head) \
```

```

{ NULL }

#define SLIST_ENTRY(type)  \
struct {  \
    struct type *sle_next; /* next element */  \
}

/*
 * Singly-linked List access methods.
 */
#define SLIST_FIRST(head) ((head)->slh_first)
#define SLIST_END(head) NULL
#define SLIST_EMPTY(head) ((head)->slh_first == NULL)
#define SLIST_NEXT(elm, field) ((elm)->field.sle_next)

#define SLIST_FOREACH(var, head, field)  \
for((var) = (head)->slh_first;  \
    (var) != SLIST_END(head);  \
    (var) = (var)->field.sle_next)

#define SLIST_FOREACH_SAFE(var, head, field, tvar)  \
for ((var) = SLIST_FIRST((head));  \
    (var) != SLIST_END(head) &&  \
    ((tvar) = SLIST_NEXT((var), field), 1);  \
    (var) = (tvar))

/*
 * Singly-linked List functions.
 */
#define SLIST_INIT(head) do {  \
    (head)->slh_first = SLIST_END(head);  \
} while (/*CONSTCOND*/0)

#define SLIST_INSERT_AFTER(slistelm, elm, field) do {  \
    (elm)->field.sle_next = (slistelm)->field.sle_next;  \
    (slistelm)->field.sle_next  \
    = (elm);  \
} while (/*CONSTCOND*/0)

#define SLIST_INSERT_HEAD(head, elm, field) do {  \
    (elm)->field.sle_next = (head)->slh_first;  \
    (head)->slh_first = (elm);  \
} while (/*CONSTCOND*/0)

#define SLIST_REMOVE_AFTER(slistelm, field) do {  \
    (slistelm)->field.sle_next =  \
        SLIST_NEXT(SLIST_NEXT((slistelm), field), field);  \
} while (/*CONSTCOND*/0)

```



```

#define SLIST_REMOVE_HEAD(head, field) do { \
    (head)->slh_first = (head)->slh_first->field.sle_next; \
} while (/*CONSTCOND*/0)

#define SLIST_REMOVE(head, elm, type, field) do { \
    if ((head)->slh_first == (elm)) { \
        SLIST_REMOVE_HEAD((head), field); \
    } \
    else { \
        struct type *curelm = (head)->slh_first; \
        while(curelm->field.sle_next != (elm)) \
            curelm = curelm->field.sle_next; \
        curelm->field.sle_next = \
            curelm->field.sle_next->field.sle_next; \
    } \
} while (/*CONSTCOND*/0)

/*
 * List definitions.
 */
#define LIST_HEAD(name, type) \
struct name { \
    struct type *lh_first; /* first element */ \
}

#define LIST_HEAD_INITIALIZER(head) \
{ NULL }

#define LIST_ENTRY(type) \
struct { \
    struct type *le_next; /* next element */ \
    struct type **le_prev; /* address of previous next element */ \
}

/*
 * List access methods.
 */
#define LIST_FIRST(head) ((head)->lh_first)
#define LIST_END(head) NULL
#define LIST_EMPTY(head) ((head)->lh_first == LIST_END(head))
#define LIST_NEXT(elm, field) ((elm)->field.le_next)

#define LIST_FOREACH(var, head, field) \
for ((var) = ((head)->lh_first); \
     (var) != LIST_END(head); \
     (var) = ((var)->field.le_next))

```

```

#define LIST_FOREACH_SAFE(var, head, field, tvar) \
for ((var) = LIST_FIRST((head)); \
    (var) != LIST_END(head) && \
    ((tvar) = LIST_NEXT((var), field), 1); \
    (var) = (tvar))

#define LIST_MOVE(head1, head2) do { \
    LIST_INIT((head2)); \
    if (!LIST_EMPTY((head1))) \
    { \
        (head2)->lh_first = (head1)->lh_first; \
        LIST_INIT((head1)); \
    } \
} while (/*CONSTCOND*/0)

/*
 * List functions.
 */

#if defined(QUEUEDEBUG)
#define QUEUEDEBUG_LIST_INSERT_HEAD(head, elm, field) \
if ((head)->lh_first && \
    (head)->lh_first->field.le_prev != &(head)->lh_first) \
    QUEUEDEBUG_ABORT("LIST_INSERT_HEAD %p %s:%d", (head), \
        __FILE__, __LINE__);
#define QUEUEDEBUG_LIST_OP(elm, field) \
if ((elm)->field.le_next && \
    (elm)->field.le_next->field.le_prev != \
    &(elm)->field.le_next) \
    QUEUEDEBUG_ABORT("LIST_* forw %p %s:%d", (elm), \
        __FILE__, __LINE__); \
if (*(elm)->field.le_prev != (elm)) \
    QUEUEDEBUG_ABORT("LIST_* back %p %s:%d", (elm), \
        __FILE__, __LINE__);
#define QUEUEDEBUG_LIST_POSTREMOVE(elm, field) \
(elm)->field.le_next = (void *)1L; \
(elm)->field.le_prev = (void *)1L;
#else
#define QUEUEDEBUG_LIST_INSERT_HEAD(head, elm, field)
#define QUEUEDEBUG_LIST_OP(elm, field)
#define QUEUEDEBUG_LIST_POSTREMOVE(elm, field)
#endif

#define LIST_INIT(head) do { \
    (head)->lh_first = LIST_END(head); \
} while (/*CONSTCOND*/0)

```

```

#define LIST_INSERT_AFTER(listelm, elm, field) do { \
    QUEUEDEBUG_LIST_OP((listelm), field) \
    if (((elm)->field.le_next = (listelm)->field.le_next) != \
        LIST_END(head)) \
        (listelm)->field.le_next->field.le_prev = \
            &(elm)->field.le_next; \
    (listelm)->field.le_next = (elm); \
    (elm)->field.le_prev = &(listelm)->field.le_next; \
} while (/*CONSTCOND*/0)

#define LIST_INSERT_BEFORE(listelm, elm, field) do { \
    QUEUEDEBUG_LIST_OP((listelm), field) \
    (elm)->field.le_prev = (listelm)->field.le_prev; \
    (elm)->field.le_next = (listelm); \
    *(listelm)->field.le_prev = (elm); \
    (listelm)->field.le_prev = &(elm)->field.le_next; \
} while (/*CONSTCOND*/0)

#define LIST_INSERT_HEAD(head, elm, field) do { \
    QUEUEDEBUG_LIST_INSERT_HEAD((head), (elm), field) \
    if (((elm)->field.le_next \
        = (head)->lh_first) != LIST_END(head)) \
        (head)->lh_first->field.le_prev = &(elm)->field.le_next; \
    (head)->lh_first = (elm); \
    (elm)->field.le_prev = &(head)->lh_first; \
} while (/*CONSTCOND*/0)

#define LIST_REMOVE(elm, field) do { \
    QUEUEDEBUG_LIST_OP((elm), field) \
    if ((elm)->field.le_next != NULL) \
        (elm)->field.le_next->field.le_prev = \
            (elm)->field.le_prev; \
    *(elm)->field.le_prev = (elm)->field.le_next; \
    QUEUEDEBUG_LIST_POSTREMOVE((elm), field) \
} while (/*CONSTCOND*/0)

#define LIST_REPLACE(elm, elm2, field) do { \
    if (((elm2)->field.le_next = (elm)->field.le_next) != NULL) \
        (elm2)->field.le_next->field.le_prev = \
            &(elm2)->field.le_next; \
    (elm2)->field.le_prev = (elm)->field.le_prev; \
    *(elm2)->field.le_prev = (elm2); \
    QUEUEDEBUG_LIST_POSTREMOVE((elm), field) \
} while (/*CONSTCOND*/0)

/*
 * Simple queue definitions.
 */

```

```

#define SIMPLEQ_HEAD(name, type) \
struct name { \
    struct \
    type *sqh_first; /* first element */ \
    struct type **sqh_last; /* addr of last next element */ \
}

#define SIMPLEQ_HEAD_INITIALIZER(head) \
{ NULL, &(head).sqh_first }

#define SIMPLEQ_ENTRY(type) \
struct { \
    struct type *sqe_next; /* next element */ \
}

/*
 * Simple queue access methods.
 */
#define SIMPLEQ_FIRST(head) ((head)->sqh_first)
#define SIMPLEQ_END(head) NULL
#define SIMPLEQ_EMPTY(head) ((head)->sqh_first == SIMPLEQ_END(head))
#define SIMPLEQ_NEXT(elm, field) ((elm)->field.sqe_next)

#define SIMPLEQ_FOREACH(var, head, field) \
for ((var) = ((head)->sqh_first); \
     (var) != SIMPLEQ_END(head); \
     (var) = ((var)->field.sqe_next))

#define SIMPLEQ_FOREACH_SAFE(var, head, field, next) \
for ((var) = ((head)->sqh_first); \
     (var) != SIMPLEQ_END(head) && \
     ((next = ((var)->field.sqe_next)), 1); \
     (var) = (next))

/*
 * Simple queue functions.
 */
#define SIMPLEQ_INIT(head) do { \
    (head)->sqh_first = NULL; \
    (head)->sqh_last \
    = &(head)->sqh_first; \
} while (/*CONSTCOND*/0)

#define SIMPLEQ_INSERT_HEAD(head, elm, field) do { \
    if (((elm)->field.sqe_next = (head)->sqh_first) == NULL) \
        (head)->sqh_last = &(elm)->field.sqe_next; \
    (head)->sqh_first = (elm); \
} while (/*CONSTCOND*/0)

```

```

#define SIMPLEQ_INSERT_TAIL(head, elm, field) do { \
    (elm)->field.sqe_next = NULL; \
    *(head)->sqh_last = (elm); \
    (head)->sqh_last = &(elm)->field.sqe_next; \
} while (/*CONSTCOND*/0)

#define SIMPLEQ_INSERT_AFTER(head, listelm, elm, field) do { \
    if (((elm)->field.sqe_next = (listelm)->field.sqe_next) == NULL) \
        (head)->sqh_last = &(elm)->field.sqe_next; \
    (listelm)->field.sqe_next = (elm); \
} while (/*CONSTCOND*/0)

#define SIMPLEQ_REMOVE_HEAD(head, field) do { \
    if (((head)->sqh_first = (head)->sqh_first->field.sqe_next) == NULL) \
        (head)->sqh_last = &(head)->sqh_first; \
} while (/*CONSTCOND*/0)

#define SIMPLEQ_REMOVE_AFTER(head, elm, field) do { \
    if \
        (((elm)->field.sqe_next = (elm)->field.sqe_next->field.sqe_next) \
         == NULL) \
        (head)->sqh_last = &(elm)->field.sqe_next; \
} while (/*CONSTCOND*/0)

#define SIMPLEQ_REMOVE(head, elm, type, field) do { \
    if ((head)->sqh_first == (elm)) { \
        SIMPLEQ_REMOVE_HEAD((head), field); \
    } else { \
        struct type *curelm = (head)->sqh_first; \
        while (curelm->field.sqe_next != (elm)) \
            curelm = curelm->field.sqe_next; \
        if ((curelm->field.sqe_next = \
            curelm->field.sqe_next->field.sqe_next) == NULL) \
            (head)->sqh_last = &(curelm)->field.sqe_next; \
    } \
} while (/*CONSTCOND*/0)

#define SIMPLEQ_CONCAT(head1, head2) do { \
    if (!SIMPLEQ_EMPTY((head2))) { \
        *(head1)->sqh_last = (head2)->sqh_first; \
        (head1)->sqh_last = (head2)->sqh_last; \
        SIMPLEQ_INIT((head2)); \
    } \
} while (/*CONSTCOND*/0)

#define SIMPLEQ_LAST(head, type, field) \
    (SIMPLEQ_EMPTY((head)) ? \

```

```

NULL :    \
        ((struct type
*)(void *) \
        ((char *)((head)->sqh_last) - offsetof(struct type, field))))

/*
 * Tail queue definitions.
 */
#define _TAILQ_HEAD(name, type, qual)    \
struct name {                            \
    qual type *tqh_first; /* first element */ \
    qual type *qual *tqh_last; /* addr of last next element */ \
}
#define TAILQ_HEAD(name, type) _TAILQ_HEAD(name, struct type,)

#define TAILQ_HEAD_INITIALIZER(head)    \
{ TAILQ_END(head), &(head).tqh_first }

#define _TAILQ_ENTRY(type, qual)    \
struct {                             \
    qual type *tqe_next; /* next element */ \
    qual type *qual *tqe_prev; /* address of previous next element */ \
}
#define TAILQ_ENTRY(type) _TAILQ_ENTRY(struct type,)

/*
 * Tail queue access methods.
 */
#define TAILQ_FIRST(head) ((head)->tqh_first)
#define TAILQ_END(head) (NULL)
#define TAILQ_NEXT(elm, field) ((elm)->field.tqe_next)
#define TAILQ_LAST(head, headname) \
    (((struct headname *) (void *)((head)->tqh_last))->tqh_last)
#define TAILQ_PREV(elm, headname, field) \
    (((struct headname *) (void *)((elm)->field.tqe_prev))->tqh_last)
#define TAILQ_EMPTY(head) (TAILQ_FIRST(head) == TAILQ_END(head))

#define TAILQ_FOREACH(var, head, field)    \
for ((var) = ((head)->tqh_first); \
     (var) != TAILQ_END(head); \
     (var) = ((var)->field.tqe_next))

#define TAILQ_FOREACH_SAFE(var, head, field, next) \
for ((var) = ((head)->tqh_first); \
     (var) != TAILQ_END(head) && \
     ((next) = TAILQ_NEXT(var, field), 1); (var) = (next))

```

```

#define TAILQ_FOREACH_REVERSE(var, head, headname, field) \
for ((var) = TAILQ_LAST((head), headname); \
    (var) != TAILQ_END(head); \
    (var) = TAILQ_PREV((var), headname, field))

#define TAILQ_FOREACH_REVERSE_SAFE(var, head, headname, field, prev) \
for ((var) = TAILQ_LAST((head), headname); \
    (var) != TAILQ_END(head) && \
    ((prev) = TAILQ_PREV((var), headname, field), 1); (var) = (prev))

/*
 * Tail queue functions.
 */
#if defined(QUEUEDEBUG)
#define QUEUEDEBUG_TAILQ_INSERT_HEAD(head, \
    elm, field) \
    if ((head)->tqh_first && \
        (head)->tqh_first->field.tqe_prev != &(head)->tqh_first) \
        QUEUEDEBUG_ABORT("TAILQ_INSERT_HEAD %p %s:%d", (head), \
            __FILE__, __LINE__);
#define QUEUEDEBUG_TAILQ_INSERT_TAIL(head, elm, field) \
    if (*(head)->tqh_last != NULL) \
        QUEUEDEBUG_ABORT("TAILQ_INSERT_TAIL %p %s:%d", (head), \
            __FILE__, __LINE__);
#define QUEUEDEBUG_TAILQ_OP(elm, field) \
    if ((elm)->field.tqe_next && \
        (elm)->field.tqe_next->field.tqe_prev != \
            &(elm)->field.tqe_next) \
        QUEUEDEBUG_ABORT("TAILQ_* forw %p %s:%d", (elm), \
            __FILE__, __LINE__); \
    if (*(elm)->field.tqe_prev != (elm)) \
        QUEUEDEBUG_ABORT("TAILQ_* back %p %s:%d", (elm), \
            __FILE__, __LINE__);
#define QUEUEDEBUG_TAILQ_PREREMOVE(head, elm, field) \
    if ((elm)->field.tqe_next == NULL && \
        (head)->tqh_last != &(elm)->field.tqe_next) \
        QUEUEDEBUG_ABORT("TAILQ_PREREMOVE head %p elm %p %s:%d", \
            (head), (elm), __FILE__, \
            __LINE__);
#define QUEUEDEBUG_TAILQ_POSTREMOVE(elm, field) \
    (elm)->field.tqe_next = (void *)1L; \
    (elm)->field.tqe_prev = (void *)1L;
#else
#define QUEUEDEBUG_TAILQ_INSERT_HEAD(head, elm, field)
#define QUEUEDEBUG_TAILQ_INSERT_TAIL(head, elm, field)
#define QUEUEDEBUG_TAILQ_OP(elm, field)
#define QUEUEDEBUG_TAILQ_PREREMOVE(head, elm, field)

```

```

#define QUEUEDEBUG_TAILQ_POSTREMOVE(elm, field)
#endif

#define TAILQ_INIT(head) do { \
    (head)->tqh_first = TAILQ_END(head); \
    (head)->tqh_last = &(head)->tqh_first; \
} while (/*CONSTCOND*/0)

#define TAILQ_INSERT_HEAD(head, elm, field) do { \
    QUEUEDEBUG_TAILQ_INSERT_HEAD((head), (elm), field) \
    if (((elm)->field.tqe_next = (head)->tqh_first) != TAILQ_END(head)) \
        (head)->tqh_first->field.tqe_prev = \
            &(elm)->field.tqe_next; \
    else \
        (head)->tqh_last = &(elm)->field.tqe_next; \
    (head)->tqh_first = (elm); \
    (elm)->field.tqe_prev = &(head)->tqh_first; \
} while (/*CONSTCOND*/0)

#define TAILQ_INSERT_TAIL(head, \
    elm, field) do { \
    QUEUEDEBUG_TAILQ_INSERT_TAIL((head), (elm), field) \
    (elm)->field.tqe_next = TAILQ_END(head); \
    (elm)->field.tqe_prev = (head)->tqh_last; \
    *(head)->tqh_last = (elm); \
    (head)->tqh_last = &(elm)->field.tqe_next; \
} while (/*CONSTCOND*/0)

#define TAILQ_INSERT_AFTER(head, listelm, elm, field) do { \
    QUEUEDEBUG_TAILQ_OP((listelm), field) \
    if (((elm)->field.tqe_next = (listelm)->field.tqe_next) != \
        TAILQ_END(head)) \
        (elm)->field.tqe_next->field.tqe_prev = \
            &(elm)->field.tqe_next; \
    else \
        (head)->tqh_last = &(elm)->field.tqe_next; \
    (listelm)->field.tqe_next = (elm); \
    (elm)->field.tqe_prev = &(listelm)->field.tqe_next; \
} while (/*CONSTCOND*/0)

#define TAILQ_INSERT_BEFORE(listelm, elm, field) do { \
    QUEUEDEBUG_TAILQ_OP((listelm), field) \
    (elm)->field.tqe_prev = (listelm)->field.tqe_prev; \
    (elm)->field.tqe_next = (listelm); \
    *(listelm)->field.tqe_prev = (elm); \
    (listelm)->field.tqe_prev \
    = &(elm)->field.tqe_next; \
} while (/*CONSTCOND*/0)

```



```
#define TAILQ_REMOVE(head, elm, field) do { \
    QUEUEDEBUG_TAILQ_PREREMOVE((head), (elm), field) \
    QUEUEDEBUG_TAILQ_OP((elm), field) \
    if (((elm)->field.tqe_next) != TAILQ_END(head)) \
        (elm)->field.tqe_next->field.tqe_prev = \
            (elm)->field.tqe_prev; \
    else \
        (head)->tqh_last = (elm)->field.tqe_prev; \
        *(elm)->field.tqe_prev = (elm)->field.tqe_next; \
    QUEUEDEBUG_TAILQ_POSTREMOVE((elm), field); \
} while (/*CONSTCOND*/0)
```

```
#define TAILQ_REPLACE(head, elm, elm2, field) do { \
    if (((elm2)->field.tqe_next = (elm)->field.tqe_next) != \
        TAILQ_END(head)) \
        (elm2)->field.tqe_next->field.tqe_prev = \
            &(elm2)->field.tqe_next; \
    else \
        (head)->tqh_last = &(elm2)->field.tqe_next; \
        (elm2)->field.tqe_prev = (elm)->field.tqe_prev; \
        *(elm2)->field.tqe_prev = (elm2); \
    QUEUEDEBUG_TAILQ_POSTREMOVE((elm), \
        field); \
} while (/*CONSTCOND*/0)
```

```
#define TAILQ_CONCAT(head1, head2, field) do { \
    if (!TAILQ_EMPTY(head2)) { \
        *(head1)->tqh_last = (head2)->tqh_first; \
        (head2)->tqh_first->field.tqe_prev = (head1)->tqh_last; \
        (head1)->tqh_last = (head2)->tqh_last; \
        TAILQ_INIT((head2)); \
    } \
} while (/*CONSTCOND*/0)
```

/*

* Singly-linked Tail queue declarations.

*/

```
#define STAILQ_HEAD(name, type) \
struct name { \
    struct type *stqh_first; /* first element */ \
    struct type **stqh_last; /* addr of last next element */ \
}
```

```
#define STAILQ_HEAD_INITIALIZER(head) \
{ NULL, &(head).stqh_first }
```

```
#define STAILQ_ENTRY(type) \
struct type {
```

```

struct {
    \
    struct type *stqe_next; /* next element */ \
}

/*
 * Singly-linked Tail queue access methods.
 */
#define STAILQ_FIRST(head) ((head)->stqh_first)
#define STAILQ_END(head) NULL
#define STAILQ_NEXT(elm, field) ((elm)->field.stqe_next)
#define STAILQ_EMPTY(head) (STAILQ_FIRST(head)
    == STAILQ_END(head))

/*
 * Singly-linked Tail queue functions.
 */
#define STAILQ_INIT(head) do { \
    (head)->stqh_first = NULL; \
    (head)->stqh_last = &(head)->stqh_first; \
} while (/*CONSTCOND*/0)

#define STAILQ_INSERT_HEAD(head, elm, field) do { \
    if (((elm)->field.stqe_next = (head)->stqh_first) == NULL) \
        (head)->stqh_last = &(elm)->field.stqe_next; \
    (head)->stqh_first = (elm); \
} while (/*CONSTCOND*/0)

#define STAILQ_INSERT_TAIL(head, elm, field) do { \
    (elm)->field.stqe_next = NULL; \
    *(head)->stqh_last = (elm); \
    (head)->stqh_last = &(elm)->field.stqe_next; \
} while (/*CONSTCOND*/0)

#define STAILQ_INSERT_AFTER(head, listelm, elm, field) do { \
    if (((elm)->field.stqe_next = (listelm)->field.stqe_next) == NULL) \
        (head)->stqh_last = &(elm)->field.stqe_next; \
    (listelm)->field.stqe_next = (elm); \
} while (/*CONSTCOND*/0)

#define STAILQ_REMOVE_HEAD(head, field) do { \
    if (((head)->stqh_first = (head)->stqh_first->field.stqe_next) \
        == NULL) \
        (head)->stqh_last = &(head)->stqh_first; \
} while (/*CONSTCOND*/0)

#define STAILQ_REMOVE(head, elm, type, field) do { \
    if ((head)->stqh_first == (elm)) { \
        STAILQ_REMOVE_HEAD((head), field); \
    }

```

```

} else {    \
    struct type *curelm = (head)->stqh_first; \
    while (curelm->field.stqe_next != (elm)) \
        curelm = curelm->field.stqe_next; \
    if ((curelm->field.stqe_next =    \
        curelm->field.stqe_next->field.stqe_next) == NULL) \
        (head)->stqh_last = &(curelm)->field.stqe_next; \
}    \
} while (/*CONSTCOND*/0)

#define STAILQ_FOREACH(var, head, field)    \
for ((var) = ((head)->stqh_first);    \
    (var);    \
    (var) = ((var)->field.stqe_next))

#define STAILQ_FOREACH_SAFE(var, head, field, tvar)    \
for ((var) = STAILQ_FIRST((head));    \
    (var) && ((tvar) = STAILQ_NEXT((var), field), 1);    \
    (var) = (tvar))

#define STAILQ_CONCAT(head1, head2) do {    \
    if (!STAILQ_EMPTY((head2))) {    \
        *(head1)->stqh_last    \
        = (head2)->stqh_first; \
        (head1)->stqh_last = (head2)->stqh_last; \
        STAILQ_INIT((head2));    \
    }    \
} while (/*CONSTCOND*/0)

#define STAILQ_LAST(head, type, field)    \
(STAILQ_EMPTY((head)) ?    \
    NULL :    \
    ((struct type *) (void *)    \
    ((char *) ((head)->stqh_last) - offsetof(struct type, field))))

#ifdef _KERNEL
/*
 * Circular queue definitions. Do not use. We still keep the macros
 * for compatibility but because of pointer aliasing issues their use
 * is discouraged!
 */

/*
 * __launder_type(): We use this ugly hack to work around the the compiler
 * noticing that two types may not alias each other and elide tests in code.
 * We hit this in the CIRCLEQ macros when comparing 'struct name *' and
 * 'struct type *' (see CIRCLEQ_HEAD()). Modern compilers (such as GCC

```

```

* 4.8) declare these comparisons as always false, causing the code to
* not run as designed.
*
* This hack is only to be used for comparisons and thus can be fully const.
* Do not use for assignment.
*
* If we ever choose to change the ABI of the CIRCLEQ macros, we could fix
* this by changing the head/tail sentinel values, but see the note above
* this one.
*/

```

```

static __inline const void * __launder_type(const void *);

```

```

static __inline const void *
__launder_type(const void *__x)
{
    __asm __volatile("" : "+r" (__x));
    return __x;
}

```

```

#if defined(QUEUEDEBUG)
#define QUEUEDEBUG_CIRCLEQ_HEAD(head, field) \
    if ((head)->cqh_first != CIRCLEQ_ENDC(head) && \
        (head)->cqh_first->field.cqe_prev != CIRCLEQ_ENDC(head)) \
        QUEUEDEBUG_ABORT("CIRCLEQ head forw %p %s:%d", (head), \
            __FILE__, __LINE__); \
    if ((head)->cqh_last != CIRCLEQ_ENDC(head) && \
        (head)->cqh_last->field.cqe_next != CIRCLEQ_ENDC(head)) \
        QUEUEDEBUG_ABORT("CIRCLEQ head back %p %s:%d", (head), \
            __FILE__, __LINE__);
#define QUEUEDEBUG_CIRCLEQ_ELM(head, elm, field) \
    if ((elm)->field.cqe_next == CIRCLEQ_ENDC(head)) { \
        if ((head)->cqh_last != (elm)) \
            QUEUEDEBUG_ABORT("CIRCLEQ \
elm last %p %s:%d", \
                (elm), __FILE__, __LINE__); \
    } else { \
        if ((elm)->field.cqe_next->field.cqe_prev != (elm)) \
            QUEUEDEBUG_ABORT("CIRCLEQ elm forw %p %s:%d", \
                (elm), __FILE__, __LINE__); \
    } \
    if ((elm)->field.cqe_prev == CIRCLEQ_ENDC(head)) { \
        if ((head)->cqh_first != (elm)) \
            QUEUEDEBUG_ABORT("CIRCLEQ elm first %p %s:%d", \
                (elm), __FILE__, __LINE__); \
    } else { \
        if ((elm)->field.cqe_prev->field.cqe_next != (elm)) \
            QUEUEDEBUG_ABORT("CIRCLEQ elm prev %p %s:%d", \
                (elm), __FILE__, __LINE__); \
    }

```

```

#define QUEUEDEBUG_CIRCLEQ_POSTREMOVE(elm, field) \
    (elm)->field.cqe_next = (void *)1L; \
    (elm)->field.cqe_prev = (void *)1L;
#else
#define QUEUEDEBUG_CIRCLEQ_HEAD(head, field)
#define QUEUEDEBUG_CIRCLEQ_ELM(head, elm, field)
#define QUEUEDEBUG_CIRCLEQ_POSTREMOVE(elm, field)
#endif

#define CIRCLEQ_HEAD(name, type) \
    struct name { \
        struct type *cqh_first; /* \
        first element */ \
        struct type *cqh_last; /* last element */ \
    }

#define CIRCLEQ_HEAD_INITIALIZER(head) \
    { CIRCLEQ_END(&head), CIRCLEQ_END(&head) }

#define CIRCLEQ_ENTRY(type) \
    struct { \
        struct type *cqe_next; /* next element */ \
        struct type *cqe_prev; /* previous element */ \
    }

/*
 * Circular queue functions.
 */
#define CIRCLEQ_INIT(head) do { \
    (head)->cqh_first = CIRCLEQ_END(head); \
    (head)->cqh_last = CIRCLEQ_END(head); \
} while (/*CONSTCOND*/0)

#define CIRCLEQ_INSERT_AFTER(head, listelm, elm, field) do { \
    QUEUEDEBUG_CIRCLEQ_HEAD((head), field) \
    QUEUEDEBUG_CIRCLEQ_ELM((head), (listelm), field) \
    (elm)->field.cqe_next = (listelm)->field.cqe_next; \
    (elm)->field.cqe_prev = (listelm); \
    if ((listelm)->field.cqe_next == CIRCLEQ_ENDC(head)) \
        (head)->cqh_last = (elm); \
    else \
        (listelm)->field.cqe_next->field.cqe_prev = (elm); \
    (listelm)->field.cqe_next = (elm); \
} while (/*CONSTCOND*/0)

#define CIRCLEQ_INSERT_BEFORE(head, \
    listelm, elm, field) do { \
    QUEUEDEBUG_CIRCLEQ_HEAD((head), field) \

```

```

QUEUEDEBUG_CIRCLEQ_ELM((head), (listelm), field) \
(elm)->field.cqe_next = (listelm); \
(elm)->field.cqe_prev = (listelm)->field.cqe_prev; \
if ((listelm)->field.cqe_prev == CIRCLEQ_ENDC(head)) \
(head)->cqh_first = (elm); \
else \
(listelm)->field.cqe_prev->field.cqe_next = (elm); \
(listelm)->field.cqe_prev = (elm); \
} while (/*CONSTCOND*/0)

```

```

#define CIRCLEQ_INSERT_HEAD(head, elm, field) do { \
QUEUEDEBUG_CIRCLEQ_HEAD((head), field) \
(elm)->field.cqe_next = (head)->cqh_first; \
(elm)->field.cqe_prev = CIRCLEQ_END(head); \
if ((head)->cqh_last == CIRCLEQ_ENDC(head)) \
(head)->cqh_last = (elm); \
else \
(head)->cqh_first->field.cqe_prev = (elm); \
(head)->cqh_first = (elm); \
} while (/*CONSTCOND*/0)

```

```

#define CIRCLEQ_INSERT_TAIL(head, elm, field) do { \
QUEUEDEBUG_CIRCLEQ_HEAD((head), field) \
(elm)->field.cqe_next \
= CIRCLEQ_END(head); \
(elm)->field.cqe_prev = (head)->cqh_last; \
if ((head)->cqh_first == CIRCLEQ_ENDC(head)) \
(head)->cqh_first = (elm); \
else \
(head)->cqh_last->field.cqe_next = (elm); \
(head)->cqh_last = (elm); \
} while (/*CONSTCOND*/0)

```

```

#define CIRCLEQ_REMOVE(head, elm, field) do { \
QUEUEDEBUG_CIRCLEQ_HEAD((head), field) \
QUEUEDEBUG_CIRCLEQ_ELM((head), (elm), field) \
if ((elm)->field.cqe_next == CIRCLEQ_ENDC(head)) \
(head)->cqh_last = (elm)->field.cqe_prev; \
else \
(elm)->field.cqe_next->field.cqe_prev = \
(elm)->field.cqe_prev; \
if ((elm)->field.cqe_prev == CIRCLEQ_ENDC(head)) \
(head)->cqh_first = (elm)->field.cqe_next; \
else \
(elm)->field.cqe_prev->field.cqe_next = \
(elm)->field.cqe_next; \
QUEUEDEBUG_CIRCLEQ_POSTREMOVE((elm), field) \
} while (/*CONSTCOND*/0)

```

```

#define CIRCLEQ_FOREACH(var, head, field) \
for ((var) = ((head)->cqh_first); \
    (var) != CIRCLEQ_ENDC(head); \
    (var) \
    = ((var)->field.cqe_next))

#define CIRCLEQ_FOREACH_REVERSE(var, head, field) \
for ((var) = ((head)->cqh_last); \
    (var) != CIRCLEQ_ENDC(head); \
    (var) = ((var)->field.cqe_prev))

/*
 * Circular queue access methods.
 */

#define CIRCLEQ_FIRST(head) ((head)->cqh_first)
#define CIRCLEQ_LAST(head) ((head)->cqh_last)
/* For comparisons */
#define CIRCLEQ_ENDC(head) (__launter_type(head))
/* For assignments */
#define CIRCLEQ_END(head) ((void *)(head))
#define CIRCLEQ_NEXT(elm, field) ((elm)->field.cqe_next)
#define CIRCLEQ_PREV(elm, field) ((elm)->field.cqe_prev)
#define CIRCLEQ_EMPTY(head) \
    (CIRCLEQ_FIRST(head) == CIRCLEQ_ENDC(head))

#define CIRCLEQ_LOOP_NEXT(head, elm, field) \
    (((elm)->field.cqe_next == CIRCLEQ_ENDC(head)) \
    ? ((head)->cqh_first) \
    : (elm->field.cqe_next))
#define CIRCLEQ_LOOP_PREV(head, elm, field) \
    (((elm)->field.cqe_prev == CIRCLEQ_ENDC(head)) \
    ? ((head)->cqh_last) \
    : \
    (elm->field.cqe_prev))
#endif /* !_KERNEL */

#endif /* !_SYS_QUEUE_H_ */
#ifndef _SYS_CDEFS_H_
#define _SYS_CDEFS_H_

#warning usage of non-standard #include <sys/cdefs.h> is deprecated

#undef __P
#undef __PMT

#define __P(args) args
#define __PMT(args) args

```

```

#define __CONCAT(x,y) x ## y
#define __STRING(x) #x

#ifdef __cplusplus
# define __BEGIN_DECLS extern "C" {
# define __END_DECLS }
#else
# define __BEGIN_DECLS
# define __END_DECLS
#endif

#if defined(__GNUC__) && !defined(__cplusplus)
# define __THROW __attribute__((__nothrow__))
# define __NTH(fct) __attribute__((__nothrow__)) fct
#else
# define __THROW
# define __NTH(fct) fct
#endif

#endif /* _SYS_CDEFS_H_ */
# Contributor: Fabian Affolter <fabian@affolter-engineering.ch>
# Maintainer: Fabian Affolter <fabian@affolter-engineering.ch>
pkgname=py3-flake8-copyright
_pkgname=flake8-copyright
pkgver=0.2.4
pkgrel=3
pkgdesc="Extension for flake8 which checks for copyrights"
options="!check" # No testsuite
url="https://github.com/savoirfairelinux/flake8-copyright"
arch="noarch"
license="MIT"
depends="py3-flake8 py3-setuptools"
makedepends="py3-gpep517 py3-wheel"
subpackages="$pkgname-pyc"
source="https://files.pythonhosted.org/packages/source/${_pkgname:0:1}/${_pkgname}/${_pkgname}-${pkgver}.tar.gz"
buildid="$srcdir"/$_pkgname-$pkgver

replaces="py-flake8-copyright" # Backwards compatibility
provides="py-flake8-copyright=${pkgver}-r${pkgrel}" # Backwards compatibility

build() {
    gpep517 build-wheel \
        --wheel-dir .dist \
        --output-fd 3 3>&1 >&2
}

package() {

```



```

gpep517 install-wheel --destdir "$pkgdir" \
.dist/*.whl
}

sha512sums="
a6ab47e1bb715618f075c51f398e18180404871b3b0faf1c2d30701d5203db6bc23771bf22ffb5bafcd8ee856b9b64237
b316bd503ae7dceed6ca284ccd5a74d
flake8-copyright-0.2.4.tar.gz
"
(The MIT License)

```

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/* \$NetBSD: tree.h,v 1.20 2013/09/14 13:20:45 joerg Exp \$ */

/* \$OpenBSD: tree.h,v 1.13 2011/07/09 00:19:45 pirofti Exp \$ */

/* Modified by Void Linux. */

/*

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*

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 */

```

#ifndef _SYS_TREE_H_
#define _SYS_TREE_H_

```

```

#ifdef __GNUC__
#define __GNUC_PREREQ__(x, y) \
  ((__GNUC__ == (x) && __GNUC_MINOR__ >= (y)) || \
   (__GNUC__ > (x)))
#else
#define __GNUC_PREREQ__(x, y) 0
#endif

```

```

#if __GNUC_PREREQ__(2, 7) || defined(__lint__)
#define _sys_tree_h_unused __attribute__((__unused__))
#else
#define _sys_tree_h_unused /* delete */
#endif

```

```
/*
```

* This file defines data structures for different types of trees:
 * splay trees and red-black trees.
 *
 * A splay tree is a self-organizing
 data structure. Every operation
 * on the tree causes a splay to happen. The splay moves the requested
 * node to the root of the tree and partly rebalances it.
 *
 * This has the benefit that request locality causes faster lookups as
 * the requested nodes move to the top of the tree. On the other hand,
 * every lookup causes memory writes.
 *
 * The Balance Theorem bounds the total access time for m operations
 * and n inserts on an initially empty tree as $O((m + n)\lg n)$. The
 * amortized cost for a sequence of m accesses to a splay tree is $O(\lg n)$;
 *
 * A red-black tree is a binary search tree with the node color as an

- * extra attribute. It fulfills a set of conditions:
- * - every search path from the root to a leaf consists of the
- * same number of black nodes,
- * - each red node (except for the root) has a black parent,
- * - each leaf node is black.
- *
- * Every operation on a red-black tree is bounded as $O(\lg n)$.
- * The maximum height of a red-black tree is $2\lg(n+1)$.
- */

```
#define SPLAY_HEAD(name, type) \
struct name { \
    struct type *sph_root; /* root of the tree */ \
}
```

```
#define SPLAY_INITIALIZER(root) \
{ NULL }
```

```
#define SPLAY_INIT(root) do { \
    (root)->sph_root = NULL; \
} while (/*CONSTCOND*/ 0)
```

```
#define SPLAY_ENTRY(type) \
struct { \
    struct type *spe_left; /* left element */ \
    struct type *spe_right; /* right element */ \
}
```

```
#define SPLAY_LEFT(elm, field) (elm)->field.spe_left
#define SPLAY_RIGHT(elm, field) (elm)->field.spe_right
#define SPLAY_ROOT(head) (head)->sph_root
#define SPLAY_EMPTY(head) (SPLAY_ROOT(head) == NULL)
```

```
/* SPLAY_ROTATE_{LEFT,RIGHT} expect that tmp hold SPLAY_{RIGHT,LEFT} */
#define SPLAY_ROTATE_RIGHT(head, tmp, field) do { \
    SPLAY_LEFT((head)->sph_root, field) = SPLAY_RIGHT(tmp, field); \
    SPLAY_RIGHT(tmp, field) = (head)->sph_root; \
    (head)->sph_root = tmp; \
} while (/*CONSTCOND*/ 0)
```

```
#define SPLAY_ROTATE_LEFT(head, tmp, field) do { \
    SPLAY_RIGHT((head)->sph_root, \
    field) = SPLAY_LEFT(tmp, field); \
    SPLAY_LEFT(tmp, field) = (head)->sph_root; \
    (head)->sph_root = tmp; \
} while (/*CONSTCOND*/ 0)
```

```
#define SPLAY_LINKLEFT(head, tmp, field) do { \
```

```

    SPLAY_LEFT(tmp, field) = (head)->sph_root; \
    tmp = (head)->sph_root; \
    (head)->sph_root = SPLAY_LEFT((head)->sph_root, field); \
} while (/*CONSTCOND*/ 0)

#define SPLAY_LINKRIGHT(head, tmp, field) do { \
    SPLAY_RIGHT(tmp, field) = (head)->sph_root; \
    tmp = (head)->sph_root; \
    (head)->sph_root = SPLAY_RIGHT((head)->sph_root, field); \
} while (/*CONSTCOND*/ 0)

#define SPLAY_ASSEMBLE(head, node, left, right, field) do { \
    SPLAY_RIGHT(left, field) = SPLAY_LEFT((head)->sph_root, field); \
    SPLAY_LEFT(right, field) = SPLAY_RIGHT((head)->sph_root, field); \
    SPLAY_LEFT((head)->sph_root, field) = SPLAY_RIGHT(node, field); \
    SPLAY_RIGHT((head)->sph_root, field) = SPLAY_LEFT(node, field); \
} while (/*CONSTCOND*/ 0)

/* Generates prototypes and inline functions */

#define
    SPLAY_PROTOTYPE(name, type, field, cmp) \
    void name##_SPLAY(struct name *, struct type *); \
    void name##_SPLAY_MINMAX(struct name *, int); \
    struct type *name##_SPLAY_INSERT(struct name *, struct type *); \
    struct type *name##_SPLAY_REMOVE(struct name *, struct type *); \
    \
/* Finds the node with the same key as elm */ \
static __inline struct type * \
name##_SPLAY_FIND(struct name *head, struct type *elm) \
{ \
    if (SPLAY_EMPTY(head)) \
        return(NULL); \
    name##_SPLAY(head, elm); \
    if ((cmp)(elm, (head)->sph_root) == 0) \
        return (head->sph_root); \
    return (NULL); \
} \
\
static __inline _sys_tree_h_unused struct type * \
name##_SPLAY_NEXT(struct name *head, struct type *elm) \
{ \
    name##_SPLAY(head, elm); \
    if (SPLAY_RIGHT(elm, field) != NULL) { \
        elm = SPLAY_RIGHT(elm, field); \
        while (SPLAY_LEFT(elm, field) != NULL) { \
            elm = SPLAY_LEFT(elm, field); \
        } \
    } \
} \

```

```

}
else \
    elm = NULL; \
return (elm); \
} \
\
static __sys_tree_h_unused __inline struct type * \
name##_SPLAY_MIN_MAX(struct name *head, int val) \
{ \
    name##_SPLAY_MINMAX(head, val); \
    return (SPLAY_ROOT(head)); \
}

/* Main splay operation.
 * Moves node close to the key of elm to top
 */
#define SPLAY_GENERATE(name, type, field, cmp) \
struct type * \
name##_SPLAY_INSERT(struct name *head, struct type *elm) \
{ \
    if (SPLAY_EMPTY(head)) { \
        SPLAY_LEFT(elm, field) = SPLAY_RIGHT(elm, field) = NULL; \
    } else { \
        int __comp; \
        name##_SPLAY(head, elm); \
        __comp = (cmp)(elm, (head)->sph_root); \
        if (__comp < 0) { \
            SPLAY_LEFT(elm, field) = SPLAY_LEFT((head)->sph_root, field); \
            SPLAY_RIGHT(elm, field) = (head)->sph_root; \
            SPLAY_LEFT((head)->sph_root, field) = NULL; \
        } else if (__comp > 0) { \
            SPLAY_RIGHT(elm, \
field) = SPLAY_RIGHT((head)->sph_root, field); \
            SPLAY_LEFT(elm, field) = (head)->sph_root; \
            SPLAY_RIGHT((head)->sph_root, field) = NULL; \
        } else \
            return ((head)->sph_root); \
    } \
    (head)->sph_root = (elm); \
    return (NULL); \
} \
\
struct type * \
name##_SPLAY_REMOVE(struct name *head, struct type *elm) \
{ \
    struct type *__tmp; \
    if (SPLAY_EMPTY(head)) \
        return (NULL); \

```

```

name##_SPLAY(head, elm); \
if ((cmp)(elm, (head)->sph_root) == 0) { \
    if (SPLAY_LEFT((head)->sph_root, field) == NULL) { \
        (head)->sph_root = SPLAY_RIGHT((head)->sph_root, field);\
    } else { \
        __tmp = SPLAY_RIGHT((head)->sph_root, field); \
        (head)->sph_root = SPLAY_LEFT((head)->sph_root, field);\
        name##_SPLAY(head, elm); \
        SPLAY_RIGHT((head)->sph_root, field) = __tmp; \
    } \
    return (elm); \
} \
return (NULL); \
} \
\
void \
name##_SPLAY(struct
name *head, struct type *elm) \
{ \
    struct type __node, *__left, *__right, *__tmp; \
    int __comp; \
    \
    SPLAY_LEFT(&__node, field) = SPLAY_RIGHT(&__node, field) = NULL;\
    __left = __right = &__node; \
    \
    while ((__comp = (cmp)(elm, (head)->sph_root)) != 0) { \
        if (__comp < 0) { \
            __tmp = SPLAY_LEFT((head)->sph_root, field); \
            if (__tmp == NULL) \
                break; \
            if ((cmp)(elm, __tmp) < 0){ \
                SPLAY_ROTATE_RIGHT(head, __tmp, field); \
                if (SPLAY_LEFT((head)->sph_root, field) == NULL)\
                    break; \
            } \
            SPLAY_LINKLEFT(head, __right, field); \
        } else if (__comp > 0) { \
            __tmp = SPLAY_RIGHT((head)->sph_root, field); \
            if (__tmp == NULL) \
                break; \
            if ((cmp)(elm, __tmp) > 0){ \
                SPLAY_ROTATE_LEFT(head, __tmp, field); \
                if (SPLAY_RIGHT((head)->sph_root, field) == NULL)\
                    break; \
            } \
            SPLAY_LINKRIGHT(head, __left, field); \
        } \
    } \
} \

```

```

    SPLAY_ASSEMBLE(head,
    &__node, __left, __right, field); \
} \
\
/* Splay with either the minimum or the maximum element \
* Used to find minimum or maximum element in tree. \
*/ \
void name##_SPLAY_MINMAX(struct name *head, int __comp) \
{ \
    struct type __node, *__left, *__right, *__tmp; \
    \
    SPLAY_LEFT(&__node, field) = SPLAY_RIGHT(&__node, field) = NULL;\
    __left = __right = &__node; \
    \
    while (1) { \
        if (__comp < 0) { \
            __tmp = SPLAY_LEFT((head)->sph_root, field);\
            if (__tmp == NULL) \
                break; \
            if (__comp < 0){ \
                SPLAY_ROTATE_RIGHT(head, __tmp, field);\
                if (SPLAY_LEFT((head)->sph_root, field) == NULL)\
                    break; \
            } \
            SPLAY_LINKLEFT(head, __right, field); \
        } else if (__comp > 0) { \
            __tmp = SPLAY_RIGHT((head)->sph_root, field);\
            if (__tmp == NULL) \
                break; \
            if (__comp > 0) { \
                SPLAY_ROTATE_LEFT(head, __tmp, field);\
                if (SPLAY_RIGHT((head)->sph_root,
field) == NULL)\
                    break; \
            } \
            SPLAY_LINKRIGHT(head, __left, field); \
        } \
    } \
    SPLAY_ASSEMBLE(head, &__node, __left, __right, field); \
}

#define SPLAY_NEGINF -1
#define SPLAY_INF 1

#define SPLAY_INSERT(name, x, y) name##_SPLAY_INSERT(x, y)
#define SPLAY_REMOVE(name, x, y) name##_SPLAY_REMOVE(x, y)
#define SPLAY_FIND(name, x, y) name##_SPLAY_FIND(x, y)
#define SPLAY_NEXT(name, x, y) name##_SPLAY_NEXT(x, y)

```

```

#define SPLAY_MIN(name, x) (SPLAY_EMPTY(x) ? NULL \
    : name##_SPLAY_MIN_MAX(x, SPLAY_NEGINF))
#define SPLAY_MAX(name, x) (SPLAY_EMPTY(x) ? NULL \
    : name##_SPLAY_MIN_MAX(x, SPLAY_INF))

#define SPLAY_FOREACH(x, name, head) \
    for ((x) = SPLAY_MIN(name, head); \
        (x) != NULL; \
        (x) = SPLAY_NEXT(name, head, x))

/* Macros that define a red-black tree */
#define RB_HEAD(name, type) \
    struct name { \
        struct type *rbh_root; /* root of the tree */ \
    }

#define RB_INITIALIZER(root) \
    { \
        NULL \
    }

#define RB_INIT(root) do { \
    (root)->rbh_root = NULL; \
} while (/*CONSTCOND*/ 0)

#define RB_BLACK 0
#define RB_RED 1
#define RB_ENTRY(type) \
    struct { \
        struct type *rbe_left; /* left element */ \
        struct type *rbe_right; /* right element */ \
        struct type *rbe_parent; /* parent element */ \
        int rbe_color; /* node color */ \
    }

#define RB_LEFT(elm, field) (elm)->field.rbe_left
#define RB_RIGHT(elm, field) (elm)->field.rbe_right
#define RB_PARENT(elm, field) (elm)->field.rbe_parent
#define RB_COLOR(elm, field) (elm)->field.rbe_color
#define RB_ROOT(head) (head)->rbh_root
#define RB_EMPTY(head) (RB_ROOT(head) == NULL)

#define RB_SET(elm, parent, field) do { \
    RB_PARENT(elm, field) = parent; \
    RB_LEFT(elm, field) = RB_RIGHT(elm, field) = NULL; \
    RB_COLOR(elm, field) = RB_RED; \
} while (/*CONSTCOND*/ 0)

#define RB_SET_BLACKRED(black, red, field) do { \

```



```

RB_COLOR(black, field) = RB_BLACK; \
RB_COLOR(red, field)
= RB_RED; \
} while (/*CONSTCOND*/ 0)

#ifndef RB_AUGMENT
#define RB_AUGMENT(x) do {} while (/*CONSTCOND*/ 0)
#endif

#define RB_ROTATE_LEFT(head, elm, tmp, field) do { \
    (tmp) = RB_RIGHT(elm, field); \
    if ((RB_RIGHT(elm, field) = RB_LEFT(tmp, field)) != NULL) { \
        RB_PARENT(RB_LEFT(tmp, field), field) = (elm); \
    } \
    RB_AUGMENT(elm); \
    if ((RB_PARENT(tmp, field) = RB_PARENT(elm, field)) != NULL) { \
        if ((elm) == RB_LEFT(RB_PARENT(elm, field), field)) \
            RB_LEFT(RB_PARENT(elm, field), field) = (tmp); \
        else \
            RB_RIGHT(RB_PARENT(elm, field), field) = (tmp); \
    } else \
        (head)->rbh_root = (tmp); \
    RB_LEFT(tmp, field) = (elm); \
    RB_PARENT(elm, field) = (tmp); \
    RB_AUGMENT(tmp); \
    if ((RB_PARENT(tmp, field))) \
        RB_AUGMENT(RB_PARENT(tmp, field)); \
} while (/*CONSTCOND*/ 0)

#define RB_ROTATE_RIGHT(head, elm, tmp, field) do { \
    (tmp) = RB_LEFT(elm, field); \
    if ((RB_LEFT(elm, field) = RB_RIGHT(tmp, field)) \
        != NULL) { \
        RB_PARENT(RB_RIGHT(tmp, field), field) = (elm); \
    } \
    RB_AUGMENT(elm); \
    if ((RB_PARENT(tmp, field) = RB_PARENT(elm, field)) != NULL) { \
        if ((elm) == RB_LEFT(RB_PARENT(elm, field), field)) \
            RB_LEFT(RB_PARENT(elm, field), field) = (tmp); \
        else \
            RB_RIGHT(RB_PARENT(elm, field), field) = (tmp); \
    } else \
        (head)->rbh_root = (tmp); \
    RB_RIGHT(tmp, field) = (elm); \
    RB_PARENT(elm, field) = (tmp); \
    RB_AUGMENT(tmp); \
    if ((RB_PARENT(tmp, field))) \
        RB_AUGMENT(RB_PARENT(tmp, field)); \
} while (/*CONSTCOND*/ 0)

```

```

} while (/*CONSTCOND*/ 0)

/* Generates prototypes and inline functions */
#define RB_PROTOTYPE(name, type, field, cmp) \
    RB_PROTOTYPE_INTERNAL(name, type, field, cmp,)
#define RB_PROTOTYPE_STATIC(name, type, field, cmp) \
    RB_PROTOTYPE_INTERNAL(name, type, field, cmp, _sys_tree_h_unused static)
#define RB_PROTOTYPE_INTERNAL(name, type, field, cmp, attr) \
    attr void name##_RB_INSERT_COLOR(struct name *, struct \
        type *); \
    attr void name##_RB_REMOVE_COLOR(struct name *, struct type *, struct type *);\
    attr struct type *name##_RB_REMOVE(struct name *, struct type *); \
    attr struct type *name##_RB_INSERT(struct name *, struct type *); \
    attr struct type *name##_RB_FIND(struct name *, struct type *); \
    attr struct type *name##_RB_NFIND(struct name *, struct type *); \
    attr struct type *name##_RB_NEXT(struct type *); \
    attr struct type *name##_RB_PREV(struct type *); \
    attr struct type *name##_RB_MINMAX(struct name *, int); \
    \

/* Main rb operation.
 * Moves node close to the key of elm to top
 */
#define RB_GENERATE(name, type, field, cmp) \
    RB_GENERATE_INTERNAL(name, type, field, cmp,)
#define RB_GENERATE_STATIC(name, type, field, cmp) \
    RB_GENERATE_INTERNAL(name, type, field, cmp, _sys_tree_h_unused static)
#define RB_GENERATE_INTERNAL(name, type, field, cmp, attr) \
    attr void \
    name##_RB_INSERT_COLOR(struct name *head, struct type *elm) \
    { \
        \
        struct type \
        *parent, *gparent, *tmp; \
        while ((parent = RB_PARENT(elm, field)) != NULL && \
            RB_COLOR(parent, field) == RB_RED) { \
            \
            gparent = RB_PARENT(parent, field); \
            if (parent == RB_LEFT(gparent, field)) { \
                tmp = RB_RIGHT(gparent, field); \
                if (tmp && RB_COLOR(tmp, field) == RB_RED) { \
                    RB_COLOR(tmp, field) = RB_BLACK; \
                    RB_SET_BLACKRED(parent, gparent, field);\
                    elm = gparent; \
                    continue; \
                } \
            } \
            if (RB_RIGHT(parent, field) == elm) { \
                RB_ROTATE_LEFT(head, parent, tmp, field);\
                tmp = parent; \
                parent = elm; \
            } \
        } \
    } \

```

```

    elm = tmp; \
} \
RB_SET_BLACKRED(parent, gparent, field); \
RB_ROTATE_RIGHT(head, gparent, tmp, field); \
} else { \
    tmp = RB_LEFT(gparent, field); \
    if (tmp && RB_COLOR(tmp, field) == RB_RED) { \
        RB_COLOR(tmp, field) = RB_BLACK; \
        RB_SET_BLACKRED(parent, gparent, field); \
        elm = gparent; \
        continue; \
    } \
    if (RB_LEFT(parent, field) == elm)
{ \
    RB_ROTATE_RIGHT(head, parent, tmp, field); \
    tmp = parent; \
    parent = elm; \
    elm = tmp; \
} \
    RB_SET_BLACKRED(parent, gparent, field); \
    RB_ROTATE_LEFT(head, gparent, tmp, field); \
} \
} \
RB_COLOR(head->rbh_root, field) = RB_BLACK; \
} \
\
attr void \
name##_RB_REMOVE_COLOR(struct name *head, struct type *parent, struct type *elm) \
{ \
    struct type *tmp; \
    while ((elm == NULL || RB_COLOR(elm, field) == RB_BLACK) && \
        elm != RB_ROOT(head)) { \
        if (RB_LEFT(parent, field) == elm) { \
            tmp = RB_RIGHT(parent, field); \
            if (RB_COLOR(tmp, field) == RB_RED) { \
                RB_SET_BLACKRED(tmp, parent, field); \
                RB_ROTATE_LEFT(head, parent, tmp, field); \
                tmp = RB_RIGHT(parent, field); \
            } \
            if ((RB_LEFT(tmp, field) == NULL || \
                RB_COLOR(RB_LEFT(tmp, field), field) == RB_BLACK) && \
                (RB_RIGHT(tmp, field) == NULL || \
                RB_COLOR(RB_RIGHT(tmp, field), field) == RB_BLACK)) { \
                RB_COLOR(tmp, field) = RB_RED; \
                elm = parent; \
                parent = RB_PARENT(elm, field); \
            } else { \

```

```

if (RB_RIGHT(tmp, field) == NULL || \
    RB_COLOR(RB_RIGHT(tmp, field), field) == RB_BLACK) {\
    struct type *oleft; \
    if ((oleft = RB_LEFT(tmp, field)) \
        != NULL) \
        RB_COLOR(oleft, field) = RB_BLACK;\
    RB_COLOR(tmp, field) = RB_RED; \
    RB_ROTATE_RIGHT(head, tmp, oleft, field);\
    tmp = RB_RIGHT(parent, field); \
} \
RB_COLOR(tmp, field) = RB_COLOR(parent, field);\
RB_COLOR(parent, field) = RB_BLACK; \
if (RB_RIGHT(tmp, field)) \
    RB_COLOR(RB_RIGHT(tmp, field), field) = RB_BLACK;\
RB_ROTATE_LEFT(head, parent, tmp, field);\
elm = RB_ROOT(head); \
break; \
} \
} else { \
    tmp = RB_LEFT(parent, field); \
    if (RB_COLOR(tmp, field) == RB_RED) { \
        RB_SET_BLACKRED(tmp, parent, field); \
        RB_ROTATE_RIGHT(head, parent, tmp, field);\
        tmp
= RB_LEFT(parent, field); \
    } \
    if ((RB_LEFT(tmp, field) == NULL || \
        RB_COLOR(RB_LEFT(tmp, field), field) == RB_BLACK) &&\
        (RB_RIGHT(tmp, field) == NULL || \
        RB_COLOR(RB_RIGHT(tmp, field), field) == RB_BLACK)) {\
        RB_COLOR(tmp, field) = RB_RED; \
        elm = parent; \
        parent = RB_PARENT(elm, field); \
    } else { \
        if (RB_LEFT(tmp, field) == NULL || \
            RB_COLOR(RB_LEFT(tmp, field), field) == RB_BLACK) {\
            struct type *oright; \
            if ((oright = RB_RIGHT(tmp, field)) \
                != NULL) \
                RB_COLOR(oright, field) = RB_BLACK;\
            RB_COLOR(tmp, field) = RB_RED; \
            RB_ROTATE_LEFT(head, tmp, oright, field);\
            tmp = RB_LEFT(parent, field); \
        } \
        RB_COLOR(tmp, field) = RB_COLOR(parent, field);\
        RB_COLOR(parent, field) = RB_BLACK; \
        if (RB_LEFT(tmp, field)) \
            RB_COLOR(RB_LEFT(tmp, field), field) = RB_BLACK;\

```

```

    RB_ROTATE_RIGHT(head, parent, tmp, field);\
    elm = RB_ROOT(head); \
    break; \
} \
} \
} \
if
(elm) \
    RB_COLOR(elm, field) = RB_BLACK; \
} \
\
attr struct type * \
name##_RB_REMOVE(struct name *head, struct type *elm) \
{ \
    struct type *child, *parent, *old = elm; \
    int color; \
    if (RB_LEFT(elm, field) == NULL) \
        child = RB_RIGHT(elm, field); \
    else if (RB_RIGHT(elm, field) == NULL) \
        child = RB_LEFT(elm, field); \
    else { \
        struct type *left; \
        elm = RB_RIGHT(elm, field); \
        while ((left = RB_LEFT(elm, field)) != NULL) \
            elm = left; \
        child = RB_RIGHT(elm, field); \
        parent = RB_PARENT(elm, field); \
        color = RB_COLOR(elm, field); \
        if (child) \
            RB_PARENT(child, field) = parent; \
        if (parent) { \
            if (RB_LEFT(parent, field) == elm) \
                RB_LEFT(parent, field) = child; \
            else \
                RB_RIGHT(parent, field) = child; \
            RB_AUGMENT(parent); \
        } else \
            RB_ROOT(head)
    = child; \
    if (RB_PARENT(elm, field) == old) \
        parent = elm; \
    (elm)->field = (old)->field; \
    if (RB_PARENT(old, field)) { \
        if (RB_LEFT(RB_PARENT(old, field), field) == old)\
            RB_LEFT(RB_PARENT(old, field), field) = elm;\
        else \
            RB_RIGHT(RB_PARENT(old, field), field) = elm;\
        RB_AUGMENT(RB_PARENT(old, field)); \
    }

```

```

    } else    \
        RB_ROOT(head) = elm;    \
    RB_PARENT(RB_LEFT(old, field), field) = elm;    \
    if (RB_RIGHT(old, field))    \
        RB_PARENT(RB_RIGHT(old, field), field) = elm;    \
    if (parent) {    \
        left = parent;    \
        do {    \
            RB_AUGMENT(left);    \
        } while ((left = RB_PARENT(left, field)) != NULL);    \
    }    \
    goto color;    \
}    \
parent = RB_PARENT(elm, field);    \
color = RB_COLOR(elm, field);    \
if (child)    \
    RB_PARENT(child, field) = parent;    \
if (parent) {    \
    if (RB_LEFT(parent, field) == elm)    \
        RB_LEFT(parent, field) = child;    \
    else    \
        RB_RIGHT(parent,
field) = child;    \
    RB_AUGMENT(parent);    \
} else    \
    RB_ROOT(head) = child;    \
color:    \
if (color == RB_BLACK)    \
    name##_RB_REMOVE_COLOR(head, parent, child);    \
return (old);    \
}    \
\
/* Inserts a node into the RB tree */    \
attr struct type *    \
name##_RB_INSERT(struct name *head, struct type *elm)    \
{    \
    struct type *tmp;    \
    struct type *parent = NULL;    \
    int comp = 0;    \
    tmp = RB_ROOT(head);    \
    while (tmp) {    \
        parent = tmp;    \
        comp = (cmp)(elm, parent);    \
        if (comp < 0)    \
            tmp = RB_LEFT(tmp, field);    \
        else if (comp > 0)    \
            tmp = RB_RIGHT(tmp, field);    \
        else    \

```

```

    return (tmp); \
} \
RB_SET(elm, parent, field); \
if (parent != NULL) { \
    if (comp < 0) \
        RB_LEFT(parent, field) = elm; \
    else \
        RB_RIGHT(parent, field) = elm; \
    RB_AUGMENT(parent); \
} else \
    RB_ROOT(head) = elm; \
name##_RB_INSERT_COLOR(head,
elm); \
return (NULL); \
} \
\
/* Finds the node with the same key as elm */ \
attr struct type * \
name##_RB_FIND(struct name *head, struct type *elm) \
{ \
    struct type *tmp = RB_ROOT(head); \
    int comp; \
    while (tmp) { \
        comp = cmp(elm, tmp); \
        if (comp < 0) \
            tmp = RB_LEFT(tmp, field); \
        else if (comp > 0) \
            tmp = RB_RIGHT(tmp, field); \
        else \
            return (tmp); \
    } \
    return (NULL); \
} \
\
/* Finds the first node greater than or equal to the search key */ \
attr struct type * \
name##_RB_NFIND(struct name *head, struct type *elm) \
{ \
    struct type *tmp = RB_ROOT(head); \
    struct type *res = NULL; \
    int comp; \
    while (tmp) { \
        comp = cmp(elm, tmp); \
        if (comp < 0) { \
            res = tmp; \
            tmp = RB_LEFT(tmp, field); \
        } \
        else if (comp > 0) \

```

```

    tmp =
    RB_RIGHT(tmp, field); \
    else \
    return (tmp); \
} \
return (res); \
} \
\
/* ARGSUSED */ \
attr struct type * \
name##_RB_NEXT(struct type *elm) \
{ \
    if (RB_RIGHT(elm, field)) { \
        elm = RB_RIGHT(elm, field); \
        while (RB_LEFT(elm, field)) \
            elm = RB_LEFT(elm, field); \
    } else { \
        if (RB_PARENT(elm, field) && \
            (elm == RB_LEFT(RB_PARENT(elm, field), field))) \
            elm = RB_PARENT(elm, field); \
        else { \
            while (RB_PARENT(elm, field) && \
                (elm == RB_RIGHT(RB_PARENT(elm, field), field))) \
                elm = RB_PARENT(elm, field); \
            elm = RB_PARENT(elm, field); \
        } \
    } \
    return (elm); \
} \
\
/* ARGSUSED */ \
attr struct type * \
name##_RB_PREV(struct type *elm) \
{ \
    if (RB_LEFT(elm, field)) { \
        elm = RB_LEFT(elm, field); \
        while (RB_RIGHT(elm, field)) \
            elm = RB_RIGHT(elm, field); \
    } \
    else { \
        if (RB_PARENT(elm, field) && \
            (elm == RB_RIGHT(RB_PARENT(elm, field), field))) \
            elm = RB_PARENT(elm, field); \
        else { \
            while (RB_PARENT(elm, field) && \
                (elm == RB_LEFT(RB_PARENT(elm, field), field))) \
                elm = RB_PARENT(elm, field); \
            elm = RB_PARENT(elm, field); \
        } \
    } \
}

```



```

    }    \
}    \
return (elm);    \
}    \
    \
attr struct type *    \
name##_RB_MINMAX(struct name *head, int val)    \
{    \
    struct type *tmp = RB_ROOT(head);    \
    struct type *parent = NULL;    \
    while (tmp) {    \
        parent = tmp;    \
        if (val < 0)    \
            tmp = RB_LEFT(tmp, field);    \
        else    \
            tmp = RB_RIGHT(tmp, field);    \
    }    \
    return (parent);    \
}

#define RB_NEGINF -1
#define RB_INF 1

#define RB_INSERT(name, x, y) name##_RB_INSERT(x, y)
#define RB_REMOVE(name, x, y) name##_RB_REMOVE(x, y)
#define RB_FIND(name, x, y) name##_RB_FIND(x, y)
#define RB_NFIND(name, x, y) name##_RB_NFIND(x,
y)
#define RB_NEXT(name, x, y) name##_RB_NEXT(y)
#define RB_PREV(name, x, y) name##_RB_PREV(y)
#define RB_MIN(name, x) name##_RB_MINMAX(x, RB_NEGINF)
#define RB_MAX(name, x) name##_RB_MINMAX(x, RB_INF)

#define RB_FOREACH(x, name, head)    \
for ((x) = RB_MIN(name, head);    \
     (x) != NULL;    \
     (x) = name##_RB_NEXT(x))

#define RB_FOREACH_FROM(x, name, y)    \
for ((x) = (y);    \
     ((x) != NULL) && ((y) = name##_RB_NEXT(x), (x) != NULL);    \
     (x) = (y))

#define RB_FOREACH_SAFE(x, name, head, y)    \
for ((x) = RB_MIN(name, head);    \
     ((x) != NULL) && ((y) = name##_RB_NEXT(x), (x) != NULL);    \
     (x) = (y))

```

```

#define RB_FOREACH_REVERSE(x, name, head) \
for ((x) = RB_MAX(name, head); \
    (x) != NULL; \
    (x) = name##_RB_PREV(x))

#define RB_FOREACH_REVERSE_FROM(x, name, y) \
for ((x) = (y); \
    ((x) != NULL) && ((y) = name##_RB_PREV(x), (x) != NULL); \
    (x) = (y))

#define RB_FOREACH_REVERSE_SAFE(x, name, \
head, y) \
for ((x) = RB_MAX(name, head); \
    ((x) != NULL) && ((y) = name##_RB_PREV(x), (x) != NULL); \
    (x) = (y))

#endif /* _SYS_TREE_H_ */
# Contributor: Wen Heping <wenhepingalpine@sohu.com>
# Maintainer: Wen Heping <wenhepingalpine@sohu.com>
pkgname=perl-software-license
pkgver=0.104007
pkgrel=0
# _pkgreal is used by apkbuild-cpan to find modules at MetaCpan
_pkgreal=Software-License
pkgdesc="packages that provide templated software licenses"
url="https://metacpan.org/release/Software-License/"
arch="noarch"
license="GPL-1.0-or-later OR Artistic-1.0-Perl"
depends="perl perl-data-section perl-text-template"
checkdepends="perl-try-tiny"
subpackages="$pkgname-doc"
source="https://cpan.metacpan.org/authors/id/L/LE/LEONT/Software-License-$pkgver.tar.gz"
buildid="$srcdir/${_pkgreal}-${pkgver}"

build() {
    export CFLAGS=$(perl -MConfig -E 'say $Config{ccflags}')
    PERL_MM_USE_DEFAULT=1 perl -I. Makefile.PL \
        INSTALLDIRS=vendor \
        NO_PACKLIST=1 \
        NO_PERLLOCAL=1
    make
}

check() {
    export CFLAGS=$(perl -MConfig -E 'say $Config{ccflags}')
    make test
}

```

```

package() {
    make DESTDIR="$pkgdir" install
}

sha512sums="
12d75e9583b3013d9b4a282467f1ac80ab6b7f3251926d66591d01404489b528f22adc396dfd4528a0f0ca650f0eed6d
9c959e69eace2169c6ed1cffe5277e4
    Software-License-0.104007.tar.gz
"
(The MIT License)

```

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```

# Contributor: Dhruvin Gandhi <contact@dhruvin>
# Maintainer: Patrycja Rosa <alpine@ptrcnull.me>
pkgname=py3-license-expression
_pkgname=license_expression
pkgver=30.4.4
pkgrel=0
pkgdesc="Library to parse, compare, simplify and normalize license expressions"
url="https://github.com/nexB/license-expression"
arch="noarch"
license="Apache-2.0"
depends="python3 py3-boolean.py"
makedepends="py3-setuptools py3-setuptools_scm py3-gp517 py3-wheel"
checkdepends="py3-pytest py3-pytest-xdist"
subpackages="$pkgname-pyc"
source="https://files.pythonhosted.org/packages/source/l/_pkgname/_pkgname-$pkgver.tar.gz"
buildid="$srcdir/_pkgname-$pkgver"

```

```

build() {
    gpep517 build-wheel \
        --wheel-dir .dist \
        --output-fd 3 3>&1 >&2
}

check() {
    python3 -m venv --clear --without-pip --system-site-packages .testenv
    .testenv/bin/python3 -m installer .dist/*.whl
    .testenv/bin/python3 -m pytest
}

package() {
    python3 -m installer -d "$pkgdir" \
        .dist/*.whl
}

sha512sums="
f46dd4cf524b3962115fe26f5545bfdd6767275b482724af51e7ca07da79244969a3bfc5d2fd5b95bc0f19d1b95a26a8f3
ab36c676e56ec302178d7166588066
    license_expression-30.4.4.tar.gz
"

```

1.400 ca-certificates-bundle 20251003-r0

1.400.1 Available under license :

```

# Contributor: Carlo Landmeter <clandmeter@alpinelinux.org>
# Maintainer: Kevin Daudt <kdaudt@alpinelinux.org>
pkgname=spdx-licenses
pkgver=3.27.0
pkgrel=0
pkgdesc="Various data formats for the SPDX License List"
url="https://spdx.org/"
arch="noarch"
options="!check" # no test suite
license="CC-BY-3.0"
source="license-list-data-$pkgver.tar.gz::https://github.com/spdx/license-list-data/archive/v$pkgver.tar.gz"
builddir="$srcdir/license-list-data-$pkgver"
subpackages="$pkgname-list"

_types="html json rdfa rdft rdfturtle rdfxml template text"

for type in $_types; do
    subpackages="$subpackages $pkgname-$type:_subpkg"
done

```

```

package() {
    mkdir -p "$pkgdir"
}

_subpkg() {
    local type=${subpkgname/$pkgname-/}
    pkgdesc="$pkgdesc ($type)"
    install_if="$pkgname=$pkgver-r$pkgrel"
    mkdir -p "$subpkgdir"/usr/share/spdx
    cp -r "$builddir"/$type "$subpkgdir"/usr/share/spdx/
}

list() {
    pkgdesc="$pkgdesc (licence list)"
    mkdir -p "$subpkgdir"/usr/share/spdx
    local i; for i in "$builddir"/text/*.txt;
    do
        local license=${i##*/}
        echo ${license%.*} >> "$subpkgdir"/usr/share/spdx/license.lst
    done
}

sha512sums="
16d59c81e331b54b52639826f83408d98144cdaa70eacc3e8ce35dc3b13992e4794cf7515eb9db200efd390a0c0e35ae9
d4706fbe0ca6a8d236189e88870720c  license-list-data-3.27.0.tar.gz
"

# Automatically generated by apkbuidl-cpan, template 4
# Contributor: Valery Kartel <valery.kartel@gmail.com>
# Maintainer: Celeste <cielesti@protonmail.com>
maintainer="Celeste <cielesti@protonmail.com>"
pkgname=perl-bsd-resource
pkgver=1.2911
pkgrel=11
#_pkgreal is used by apkbuidl-cpan to find modules at MetaCpan
_pkgreal=BSD-Resource
pkgdesc="Perl extension implements the BSD process resource limit functions"
url="https://metacpan.org/release/BSD-Resource/"
arch="all"
license="Artistic-2.0 OR LGPL-2.0"
depends="perl"
makedepends="perl-dev"
subpackages="$pkgname-doc"
source="https://cpan.metacpan.org/authors/id/J/JH/JHI/BSD-Resource-$pkgver.tar.gz"
builddir="$srcdir/${_pkgreal}-$pkgver"

build() {
    export CFLAGS=$(perl -MConfig -E 'say $Config{ccflags}')
    PERL_MM_USE_DEFAULT=1 perl -I. Makefile.PL \

```

```

INSTALLDIRS=vendor \
NO_PACKLIST=1 \
NO_PERLLOCAL=1
make
}

check() {
export CFLAGS=$(perl -MConfig -E 'say $Config{ccflags}')
make test
}

package() {
make DESTDIR="$pkgdir" install
}

sha512sums="
d0032d41c7c0468ed1c6d8f57b885f6cb97a5039d754c8cb60b2067daedaf53bd15fb6561a3d0f828df16dfa5417f663b
8065ba65f4fea16dc9262728b3b6b85
  BSD-Resource-1.2911.tar.gz
"

maintainer="Achill Gilgenast <achill@achill.org>"
pkgname=cargo-license
pkgver=0.7.0
pkgrel=1
pkgdesc="Cargo subcommand to see license of dependencies"
url="https://github.com/onur/cargo-license"
arch="all"
license="MIT"
makedepends="cargo cargo-auditable"
source="$pkgname-$pkgver.tar.gz::https://crates.io/api/v1/crates/cargo-license/$pkgver/download"

prepare() {
default_prepare

cargo fetch --target="$CTARGET" --locked
}

build() {
cargo auditable build --release --frozen
}

check() {
cargo test --frozen
}

package() {
install -Dm755 target/release/cargo-license -t "$pkgdir"/usr/bin
}

```

```

sha512sums="
9b3f0ead35515e85ef4074ebdbdbe5b9ec8bcaec244fabe414e2ed60f90366e8b1692d8bf7ffe4c07d778e60d94bab86bc
0c8be9823232e9c360a38bc65e9c5a cargo-license-0.7.0.tar.gz
"

#!/sbin/openrc-run

command="/usr/libexec/xdg-permission-store"
supervisor=supervise-daemon
command_args="--replace $command_args"
error_logger="logger -t '${RC_SVCNAME}' -p daemon.error"

depend() {
    need dbus
}
# Contributor: Maxim Karasev <begs@disroot.org>
# Maintainer: mio <miyopan@e.email>
pkgname=bsd-games
pkgver=3.3
pkgrel=2
pkgdesc="traditional text mode games from BSD"
url="https://bsd-games.sourceforge.io/"
arch="all"
license="BSD-3-Clause"
install="$pkgname.post-install"
makedepends="ncurses-dev coreutils" # configure causes busybox expr error
subpackages="$pkgname-doc"
source="https://sourceforge.net/projects/bsd-games/files/bsd-games-$pkgver.tar.gz
0001-bsd-games-scores-dir.patch
"

options="!check" # no tests

build() {
    # some GNU autoconf options are ignored, but it works
    ./configure \
        --build=$CBUILD \
        --host=$CHOST \
        --prefix=/usr \
        --sysconfdir=/etc \
        --mandir=/usr/share/man \
        --scoredir=/usr/share/$pkgname
    make
}

package() {
    make DESTDIR="$pkgdir" install
    install -Dm644 LICENSE "$pkgdir"/usr/share/licenses/bsd-games/LICENSE
}

```

```
sha512sums="
aaf36d09d4fe68514a5c279063d7e77a9a9a84c447037cba974b29faa07eb80c2aab2379d0699c196b5c27ffe1b2bb2c6
8d3390143e0e62d5e3d210ccfb61294
  bsd-games-3.3.tar.gz
e1def0d4835a877242c4173fae862e278a7858738e0bacacbb045a42bcabec2aa7c72d000bbd2421ce35fe66cdc1f52c0
577b7e278029ca5ed50f7aab22319f6 0001-bsd-games-scores-dir.patch
"
```

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mini_sendmail - accept email on behalf of real sendmail

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Maintainer: Natanael Copa <ncopa@alpinelinux.org>

pkgname=libart-lgpl

pkgver=2.3.21

pkgrel=8

pkgdesc="A library for high-performance 2D graphics"

url="https://www.levien.com/libart/"

arch="all"

options="!check" # No test suite.

license="LGPL-2.0-or-later"

subpackages="\$pkgname-dev"

source="https://download.gnome.org/sources/libart-lgpl/2.3/libart-lgpl-\$pkgver.tar.bz2"

"

builddir="\$srcdir"/libart-lgpl-\$pkgver

```
prepare() {  
    update_config_sub  
    default_prepare  
}
```

```
build() {  
    ./configure \  
        --build=$CBUILD \  
        --host=$CHOST \  
        --prefix=/usr  
    make  
}
```

```
package() {  
    make DESTDIR="$pkgdir" install  
}
```

sha512sums="8a632a6a4da59e5e8c02ec2f5a57e36d182b325b46513765425e5f171ff9ae326af1b133725beba28f7e76654309e001aee9bace727b5b4c8589405256a3c020 libart-lgpl-2.3.21.tar.bz2"

Contributor: Patrycja Rosa <alpine@ptrcnull.me>

Maintainer: Patrycja Rosa <alpine@ptrcnull.me>

pkgname=bsd-compat-headers

pkgver=0.7.2

pkgrel=6

pkgdesc="BSD compatibility headers (cdefs, queue, tree)"

```

url="https://gitlab.alpinelinux.org/alpine/aports"
arch="noarch"
license="BSD-2-Clause AND BSD-3-Clause"
source="
cdefs.h
queue.h
tree.h
"
builddir="$srcdir"
options="!check" # just headers

package() {
mkdir -p "$pkgdir"
install -Dm644 -t "$pkgdir"/usr/include/sys \
cdefs.h queue.h tree.h
}
sha512sums="
37c8fc73c7aea7b490f7850927e2bb91d12137c9e59e22c084146d515696dbc7973b5de92f4c987ba080dd2502ba8312
7006442c3f019b6447a620c0cae73178 cdefs.h
2f0d5e6e4dc3350285cf17009265dddcbe12431c111868eea39bc8cb038ab7c1f2acacbb21735c4e9d4a1fd106a8fc0f86
11ea33987d4faba37dde5ce6da0750 queue.h
d9ac210d81feb8ad2655bc80fb065d3fe20ae4417b32b4a1711e6738a4870140005c13373b5d1846ef3ce5ae6da45f2da
cef2092881eded0a2e94f6a07752ef3 tree.h
"

```

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The X-Spline code was written Carole Blanc (blanc@labri.u-bordeaux.fr) and Christophe Schlick (schlick@labri.u-bordeaux.fr) starting from an initial implementation done by C. Feuille, S. Grosbois, L. Maziere and L. Minihot as a student practice (Universite Bordeaux, France). For additional information about X-splines, see:

"X-Splines: A Spline Model Designed for the End User" by C. Blanc and C. Schlick, Proceedings of SIGGRAPH'95
<http://dept-info.labri.u-bordeaux.fr/~schlick/DOC/sig1.html>

/* \$NetBSD: queue.h,v 1.70 2015/11/02 15:21:23 christos Exp \$ */

/*

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*

* @(#)queue.h 8.5 (Berkeley) 8/20/94

*/

#ifndef _SYS_QUEUE_H_

#define _SYS_QUEUE_H_

/*

* This file defines five types of data structures: singly-linked lists,

* lists, simple queues, tail queues, and circular queues.

*

* A singly-linked list is headed by a single forward pointer. The

* elements are singly linked for minimum space and

pointer manipulation

- * overhead at the expense of $O(n)$ removal for arbitrary elements. New
- * elements can be added to the list after an existing element or at the
- * head of the list. Elements being removed from the head of the list
- * should use the explicit macro for this purpose for optimum
- * efficiency. A singly-linked list may only be traversed in the forward
- * direction. Singly-linked lists are ideal for applications with large
- * datasets and few or no removals or for implementing a LIFO queue.

*

- * A list is headed by a single forward pointer (or an array of forward
- * pointers for a hash table header). The elements are doubly linked
- * so that an arbitrary element can be removed without a need to
- * traverse the list. New elements can be added to the list before
- * or after an existing element or at the head of the list. A list
- * may only be traversed in the forward direction.

*

- * A simple queue is headed by a pair of pointers, one the head of the
- * list and the

other to the tail of the list. The elements are singly

- * linked to save space, so elements can only be removed from the
- * head of the list. New elements can be added to the list after
- * an existing element, at the head of the list, or at the end of the
- * list. A simple queue may only be traversed in the forward direction.

*

- * A tail queue is headed by a pair of pointers, one to the head of the
- * list and the other to the tail of the list. The elements are doubly
- * linked so that an arbitrary element can be removed without a need to
- * traverse the list. New elements can be added to the list before or
- * after an existing element, at the head of the list, or at the end of
- * the list. A tail queue may be traversed in either direction.

*

- * A circle queue is headed by a pair of pointers, one to the head of the
- * list and the other to the tail of the list. The elements are doubly
- * linked so that an arbitrary element can be removed without a need to
- * traverse the list. New elements

can be added to the list before or after

- * an existing element, at the head of the list, or at the end of the list.
- * A circle queue may be traversed in either direction, but has a more
- * complex end of list detection.

*

- * For details on the use of these macros, see the queue(3) manual page.

*/

/*

- * Include the definition of NULL only on NetBSD because sys/null.h
- * is not available elsewhere. This conditional makes the header
- * portable and it can simply be dropped verbatim into any system.
- * The caveat is that on other systems some other header

```

* must provide NULL before the macros can be used.
*/
#ifdef __NetBSD__
#include <sys/null.h>
#endif

#if defined(QUEUEDEBUG)
# if defined(_KERNEL)
#  define QUEUEDEBUG_ABORT(...) panic(__VA_ARGS__)
# else
#  include <err.h>
#  define QUEUEDEBUG_ABORT(...) err(1, __VA_ARGS__)
# endif
#endif

/*
* Singly-linked List definitions.
*/
#define SLIST_HEAD(name, type) \
struct name { \
    struct type *slh_first; /* first \
    element */ \
}

#define SLIST_HEAD_INITIALIZER(head) \
{ NULL }

#define SLIST_ENTRY(type) \
struct { \
    struct type *sle_next; /* next element */ \
}

/*
* Singly-linked List access methods.
*/
#define SLIST_FIRST(head) ((head)->slh_first)
#define SLIST_END(head) NULL
#define SLIST_EMPTY(head) ((head)->slh_first == NULL)
#define SLIST_NEXT(elm, field) ((elm)->field.sle_next)

#define SLIST_FOREACH(var, head, field) \
for((var) = (head)->slh_first; \
    (var) != SLIST_END(head); \
    (var) = (var)->field.sle_next)

#define SLIST_FOREACH_SAFE(var, head, field, tvar) \
for ((var) = SLIST_FIRST((head)); \
    (var) != SLIST_END(head) && \

```

```

        ((tvar) = SLIST_NEXT((var), field), 1); \
        (var) = (tvar))

/*
 * Singly-linked List functions.
 */
#define SLIST_INIT(head) do { \
    (head)->slh_first = SLIST_END(head); \
} while (/*CONSTCOND*/0)

#define SLIST_INSERT_AFTER(slistelm, elm, field) do { \
    (elm)->field.sle_next = (slistelm)->field.sle_next; \
    (slistelm)->field.sle_next \
    = (elm); \
} while (/*CONSTCOND*/0)

#define SLIST_INSERT_HEAD(head, elm, field) do { \
    (elm)->field.sle_next = (head)->slh_first; \
    (head)->slh_first = (elm); \
} while (/*CONSTCOND*/0)

#define SLIST_REMOVE_AFTER(slistelm, field) do { \
    (slistelm)->field.sle_next = \
        SLIST_NEXT(SLIST_NEXT((slistelm), field), field); \
} while (/*CONSTCOND*/0)

#define SLIST_REMOVE_HEAD(head, field) do { \
    (head)->slh_first = (head)->slh_first->field.sle_next; \
} while (/*CONSTCOND*/0)

#define SLIST_REMOVE(head, elm, type, field) do { \
    if ((head)->slh_first == (elm)) { \
        SLIST_REMOVE_HEAD((head), field); \
    } \
    else { \
        struct type *curelm = (head)->slh_first; \
        while(curelm->field.sle_next != (elm)) \
            curelm = curelm->field.sle_next; \
        curelm->field.sle_next = \
            curelm->field.sle_next->field.sle_next; \
    } \
} while (/*CONSTCOND*/0)

/*
 * List definitions.
 */
#define LIST_HEAD(name, type) \

```

```

struct name {      \
    struct type *lh_first; /* first element */ \
}

#define LIST_HEAD_INITIALIZER(head) \
    { NULL }

#define LIST_ENTRY(type) \
struct {      \
    struct type *le_next; /* next element */ \
    struct type **le_prev; /* address of previous next element */ \
}

/*
 * List access methods.
 */
#define LIST_FIRST(head) ((head)->lh_first)
#define LIST_END(head) NULL
#define LIST_EMPTY(head) ((head)->lh_first == LIST_END(head))
#define LIST_NEXT(elm, field) ((elm)->field.le_next)

#define LIST_FOREACH(var, head, field) \
    for ((var) = ((head)->lh_first); \
         (var) != LIST_END(head); \
         (var) = ((var)->field.le_next))

#define LIST_FOREACH_SAFE(var, head, field, tvar) \
    for ((var) = LIST_FIRST((head)); \
         (var) != LIST_END(head) && \
         ((tvar) = LIST_NEXT((var), field), 1); \
         (var) = (tvar))

#define LIST_MOVE(head1, head2) do { \
    LIST_INIT((head2)); \
    if (!LIST_EMPTY((head1))) \
    { \
        (head2)->lh_first = (head1)->lh_first; \
        LIST_INIT((head1)); \
    } \
} while (/*CONSTCOND*/0)

/*
 * List functions.
 */
#ifdef QUEUEDEBBUG
#define QUEUEDEBBUG_LIST_INSERT_HEAD(head, elm, field) \
    if ((head)->lh_first && \
        (head)->lh_first->field.le_prev != &(head)->lh_first) \

```

```

    QUEUEDEBUG_ABORT("LIST_INSERT_HEAD %p %s:%d", (head), \
        __FILE__, __LINE__);
#define QUEUEDEBUG_LIST_OP(elm, field) \
    if ((elm)->field.le_next && \
        (elm)->field.le_next->field.le_prev != \
        &(elm)->field.le_next) \
        QUEUEDEBUG_ABORT("LIST_* forw %p %s:%d", (elm), \
            __FILE__, __LINE__); \
    if (*(elm)->field.le_prev != (elm)) \
        QUEUEDEBUG_ABORT("LIST_* back %p %s:%d", (elm), \
            __FILE__, __LINE__);
#define QUEUEDEBUG_LIST_POSTREMOVE(elm, field) \
    (elm)->field.le_next = (void *)1L; \
    (elm)->field.le_prev = (void *)1L;
#else
#define QUEUEDEBUG_LIST_INSERT_HEAD(head, elm, field)
#define QUEUEDEBUG_LIST_OP(elm,
    field)
#define QUEUEDEBUG_LIST_POSTREMOVE(elm, field)
#endif

#define LIST_INIT(head) do { \
    (head)->lh_first = LIST_END(head); \
} while (/*CONSTCOND*/0)

#define LIST_INSERT_AFTER(listelm, elm, field) do { \
    QUEUEDEBUG_LIST_OP((listelm), field) \
    if (((elm)->field.le_next = (listelm)->field.le_next) != \
        LIST_END(head)) \
        (listelm)->field.le_next->field.le_prev = \
            &(elm)->field.le_next; \
    (listelm)->field.le_next = (elm); \
    (elm)->field.le_prev = &(listelm)->field.le_next; \
} while (/*CONSTCOND*/0)

#define LIST_INSERT_BEFORE(listelm, elm, field) do { \
    QUEUEDEBUG_LIST_OP((listelm), field) \
    (elm)->field.le_prev = (listelm)->field.le_prev; \
    (elm)->field.le_next = (listelm); \
    *(listelm)->field.le_prev = (elm); \
    (listelm)->field.le_prev = &(elm)->field.le_next; \
} while (/*CONSTCOND*/0)

#define LIST_INSERT_HEAD(head, elm, field) do { \
    QUEUEDEBUG_LIST_INSERT_HEAD((head), (elm), field) \
    if (((elm)->field.le_next
    = (head)->lh_first) != LIST_END(head))\
        (head)->lh_first->field.le_prev = &(elm)->field.le_next;\
}

```



```

(head)->lh_first = (elm); \
(elm)->field.le_prev = &(head)->lh_first; \
} while (/*CONSTCOND*/0)

#define LIST_REMOVE(elm, field) do { \
    QUEUEDEBUG_LIST_OP((elm), field) \
    if ((elm)->field.le_next != NULL) \
        (elm)->field.le_next->field.le_prev = \
            (elm)->field.le_prev; \
    *(elm)->field.le_prev = (elm)->field.le_next; \
    QUEUEDEBUG_LIST_POSTREMOVE((elm), field) \
} while (/*CONSTCOND*/0)

#define LIST_REPLACE(elm, elm2, field) do { \
    if (((elm2)->field.le_next = (elm)->field.le_next) != NULL) \
        (elm2)->field.le_next->field.le_prev = \
            &(elm2)->field.le_next; \
    (elm2)->field.le_prev = (elm)->field.le_prev; \
    *(elm2)->field.le_prev = (elm2); \
    QUEUEDEBUG_LIST_POSTREMOVE((elm), field) \
} while (/*CONSTCOND*/0)

/*
 * Simple queue definitions.
 */
#define SIMPLEQ_HEAD(name, type) \
struct name { \
    struct \
    type *sqh_first; /* first element */ \
    struct type **sqh_last; /* addr of last next element */ \
}

#define SIMPLEQ_HEAD_INITIALIZER(head) \
{ NULL, &(head).sqh_first }

#define SIMPLEQ_ENTRY(type) \
struct { \
    struct type *sqe_next; /* next element */ \
}

/*
 * Simple queue access methods.
 */
#define SIMPLEQ_FIRST(head) ((head)->sqh_first)
#define SIMPLEQ_END(head) NULL
#define SIMPLEQ_EMPTY(head) ((head)->sqh_first == SIMPLEQ_END(head))
#define SIMPLEQ_NEXT(elm, field) ((elm)->field.sqe_next)

```

```

#define SIMPLEQ_FOREACH(var, head, field) \
for ((var) = ((head)->sqh_first); \
    (var) != SIMPLEQ_END(head); \
    (var) = ((var)->field.sqe_next))

#define SIMPLEQ_FOREACH_SAFE(var, head, field, next) \
for ((var) = ((head)->sqh_first); \
    (var) != SIMPLEQ_END(head) && \
    ((next = ((var)->field.sqe_next)), 1); \
    (var) = (next))

/*
 * Simple queue functions.
 */
#define SIMPLEQ_INIT(head) do { \
    (head)->sqh_first = NULL; \
    (head)->sqh_last \
    = &(head)->sqh_first; \
} while (/*CONSTCOND*/0)

#define SIMPLEQ_INSERT_HEAD(head, elm, field) do { \
    if (((elm)->field.sqe_next = (head)->sqh_first) == NULL) \
        (head)->sqh_last = &(elm)->field.sqe_next; \
    (head)->sqh_first = (elm); \
} while (/*CONSTCOND*/0)

#define SIMPLEQ_INSERT_TAIL(head, elm, field) do { \
    (elm)->field.sqe_next = NULL; \
    *(head)->sqh_last = (elm); \
    (head)->sqh_last = &(elm)->field.sqe_next; \
} while (/*CONSTCOND*/0)

#define SIMPLEQ_INSERT_AFTER(head, listelm, elm, field) do { \
    if (((elm)->field.sqe_next = (listelm)->field.sqe_next) == NULL) \
        (head)->sqh_last = &(elm)->field.sqe_next; \
    (listelm)->field.sqe_next = (elm); \
} while (/*CONSTCOND*/0)

#define SIMPLEQ_REMOVE_HEAD(head, field) do { \
    if (((head)->sqh_first = (head)->sqh_first->field.sqe_next) == NULL) \
        (head)->sqh_last = &(head)->sqh_first; \
} while (/*CONSTCOND*/0)

#define SIMPLEQ_REMOVE_AFTER(head, elm, field) do { \
    if \
        (((elm)->field.sqe_next = (elm)->field.sqe_next->field.sqe_next) \
         == NULL) \
        (head)->sqh_last = &(elm)->field.sqe_next; \
} while (/*CONSTCOND*/0)

```

```

} while (/*CONSTCOND*/0)

#define SIMPLEQ_REMOVE(head, elm, type, field) do { \
    if ((head)->sqh_first == (elm)) { \
        SIMPLEQ_REMOVE_HEAD((head), field); \
    } else { \
        struct type *curelm = (head)->sqh_first; \
        while (curelm->field.sqe_next != (elm)) \
            curelm = curelm->field.sqe_next; \
        if ((curelm->field.sqe_next = \
            curelm->field.sqe_next->field.sqe_next) == NULL) \
            (head)->sqh_last = &(curelm->field.sqe_next); \
    } \
} while (/*CONSTCOND*/0)

#define SIMPLEQ_CONCAT(head1, head2) do { \
    if (!SIMPLEQ_EMPTY((head2))) { \
        *(head1)->sqh_last = (head2)->sqh_first; \
        (head1)->sqh_last = (head2)->sqh_last; \
        SIMPLEQ_INIT((head2)); \
    } \
} while (/*CONSTCOND*/0)

#define SIMPLEQ_LAST(head, type, field) \
    (SIMPLEQ_EMPTY((head)) ? \
    NULL : \
    ((struct type \
    *) (void *) \
    ((char *)((head)->sqh_last) - offsetof(struct type, field))))

/*
 * Tail queue definitions.
 */

#define _TAILQ_HEAD(name, type, qual) \
    struct name { \
        qual type *tqh_first; /* first element */ \
        qual type *qual *tqh_last; /* addr of last next element */ \
    }

#define TAILQ_HEAD(name, type) _TAILQ_HEAD(name, struct type,)

#define TAILQ_HEAD_INITIALIZER(head) \
    { TAILQ_END(head), &(head).tqh_first }

#define _TAILQ_ENTRY(type, qual) \
    struct { \
        qual type *tqe_next; /* next element */ \
        qual type *qual *tqe_prev; /* address of previous next element */ \
    }

```

```

#define TAILQ_ENTRY(type) _TAILQ_ENTRY(struct type,)

/*
 * Tail queue access methods.
 */

#define TAILQ_FIRST(head) ((head)->tqh_first)
#define TAILQ_END(head) (NULL)
#define TAILQ_NEXT(elm, field) ((elm)->field.tqe_next)
#define TAILQ_LAST(head, headname) \
    (((struct headname *) (void *) ((head)->tqh_last))->tqh_last)
#define TAILQ_PREV(elm, headname, field) \
    (((struct headname *) (void *) ((elm)->field.tqe_prev))->tqh_last)
#define TAILQ_EMPTY(head) (TAILQ_FIRST(head) == TAILQ_END(head))

#define TAILQ_FOREACH(var, head, field) \
    for ((var) = ((head)->tqh_first); \
        (var) != TAILQ_END(head); \
        (var) = ((var)->field.tqe_next))

#define TAILQ_FOREACH_SAFE(var, head, field, next) \
    for ((var) = ((head)->tqh_first); \
        (var) != TAILQ_END(head) && \
        ((next) = TAILQ_NEXT(var, field), 1); (var) = (next))

#define TAILQ_FOREACH_REVERSE(var, head, headname, field) \
    for ((var) = TAILQ_LAST((head), headname); \
        (var) != TAILQ_END(head); \
        (var) = TAILQ_PREV((var), headname, field))

#define TAILQ_FOREACH_REVERSE_SAFE(var, head, headname, field, prev) \
    for ((var) = TAILQ_LAST((head), headname); \
        (var) != TAILQ_END(head) && \
        ((prev) = TAILQ_PREV((var), headname, field), 1); (var) = (prev))

/*
 * Tail queue functions.
 */

#if defined(QUEUEDEBUG)
#define QUEUEDEBUG_TAILQ_INSERT_HEAD(head, \
    elm, field) \
    if ((head)->tqh_first && \
        (head)->tqh_first->field.tqe_prev != &(head)->tqh_first) \
        QUEUEDEBUG_ABORT("TAILQ_INSERT_HEAD %p %s:%d", (head), \
            __FILE__, __LINE__);
#define QUEUEDEBUG_TAILQ_INSERT_TAIL(head, elm, field) \
    if (*(head)->tqh_last != NULL) \

```

```

QUEUEDEBUG_ABORT("TAILQ_INSERT_TAIL %p %s:%d", (head), \
    __FILE__, __LINE__);
#define QUEUEDEBUG_TAILQ_OP(elm, field) \
if ((elm)->field.tqe_next && \
    (elm)->field.tqe_next->field.tqe_prev != \
    &(elm)->field.tqe_next) \
    QUEUEDEBUG_ABORT("TAILQ_* forw %p %s:%d", (elm), \
        __FILE__, __LINE__); \
if (*(elm)->field.tqe_prev != (elm)) \
    QUEUEDEBUG_ABORT("TAILQ_* back %p %s:%d", (elm), \
        __FILE__, __LINE__);
#define QUEUEDEBUG_TAILQ_PREREMOVE(head, elm, field) \
if ((elm)->field.tqe_next == NULL && \
    (head)->tqh_last != &(elm)->field.tqe_next) \
    QUEUEDEBUG_ABORT("TAILQ_PREREMOVE head %p elm %p %s:%d", \
        (head), (elm), __FILE__, \
        __LINE__);
#define QUEUEDEBUG_TAILQ_POSTREMOVE(elm, field) \
(elm)->field.tqe_next = (void *)1L; \
(elm)->field.tqe_prev = (void *)1L;
#else
#define QUEUEDEBUG_TAILQ_INSERT_HEAD(head, elm, field)
#define QUEUEDEBUG_TAILQ_INSERT_TAIL(head, elm, field)
#define QUEUEDEBUG_TAILQ_OP(elm, field)
#define QUEUEDEBUG_TAILQ_PREREMOVE(head, elm, field)
#define QUEUEDEBUG_TAILQ_POSTREMOVE(elm, field)
#endif

#define TAILQ_INIT(head) do { \
    (head)->tqh_first = TAILQ_END(head); \
    (head)->tqh_last = &(head)->tqh_first; \
} while (/*CONSTCOND*/0)

#define TAILQ_INSERT_HEAD(head, elm, field) do { \
    QUEUEDEBUG_TAILQ_INSERT_HEAD((head), (elm), field) \
    if (((elm)->field.tqe_next = (head)->tqh_first) != TAILQ_END(head)) \
        (head)->tqh_first->field.tqe_prev = \
            &(elm)->field.tqe_next; \
    else \
        (head)->tqh_last = &(elm)->field.tqe_next; \
    (head)->tqh_first = (elm); \
    (elm)->field.tqe_prev = &(head)->tqh_first; \
} while (/*CONSTCOND*/0)

#define TAILQ_INSERT_TAIL(head, \
    elm, field) do { \
    QUEUEDEBUG_TAILQ_INSERT_TAIL((head), (elm), field) \
    (elm)->field.tqe_next = TAILQ_END(head); \

```

```

(elm)->field.tqe_prev = (head)->tqh_last; \
*(head)->tqh_last = (elm); \
(head)->tqh_last = &(elm)->field.tqe_next; \
} while (/*CONSTCOND*/0)

#define TAILQ_INSERT_AFTER(head, listelm, elm, field) do { \
    QUEUEDEBUG_TAILQ_OP((listelm), field) \
    if (((elm)->field.tqe_next = (listelm)->field.tqe_next) != \
        TAILQ_END(head)) \
        (elm)->field.tqe_next->field.tqe_prev = \
            &(elm)->field.tqe_next; \
    else \
        (head)->tqh_last = &(elm)->field.tqe_next; \
        (listelm)->field.tqe_next = (elm); \
        (elm)->field.tqe_prev = &(listelm)->field.tqe_next; \
    } while (/*CONSTCOND*/0)

#define TAILQ_INSERT_BEFORE(listelm, elm, field) do { \
    QUEUEDEBUG_TAILQ_OP((listelm), field) \
    (elm)->field.tqe_prev = (listelm)->field.tqe_prev; \
    (elm)->field.tqe_next = (listelm); \
    *(listelm)->field.tqe_prev = (elm); \
    (listelm)->field.tqe_prev \
    = &(elm)->field.tqe_next; \
    } while (/*CONSTCOND*/0)

#define TAILQ_REMOVE(head, elm, field) do { \
    QUEUEDEBUG_TAILQ_PREREMOVE((head), (elm), field) \
    QUEUEDEBUG_TAILQ_OP((elm), field) \
    if (((elm)->field.tqe_next != TAILQ_END(head)) \
        (elm)->field.tqe_next->field.tqe_prev = \
            (elm)->field.tqe_prev; \
    else \
        (head)->tqh_last = (elm)->field.tqe_prev; \
        *(elm)->field.tqe_prev = (elm)->field.tqe_next; \
        QUEUEDEBUG_TAILQ_POSTREMOVE((elm), field); \
    } while (/*CONSTCOND*/0)

#define TAILQ_REPLACE(head, elm, elm2, field) do { \
    if (((elm2)->field.tqe_next = (elm)->field.tqe_next) != \
        TAILQ_END(head)) \
        (elm2)->field.tqe_next->field.tqe_prev = \
            &(elm2)->field.tqe_next; \
    else \
        (head)->tqh_last = &(elm2)->field.tqe_next; \
        (elm2)->field.tqe_prev = (elm)->field.tqe_prev; \
        *(elm2)->field.tqe_prev = (elm2); \
    QUEUEDEBUG_TAILQ_POSTREMOVE((elm),

```

```

    field); \
} while (/*CONSTCOND*/0)

#define TAILQ_CONCAT(head1, head2, field) do { \
    if (!TAILQ_EMPTY(head2)) { \
        *(head1)->tqh_last = (head2)->tqh_first; \
        (head2)->tqh_first->field.tqe_prev = (head1)->tqh_last; \
        (head1)->tqh_last = (head2)->tqh_last; \
        TAILQ_INIT((head2)); \
    } \
} while (/*CONSTCOND*/0)

/*
 * Singly-linked Tail queue declarations.
 */
#define STAILQ_HEAD(name, type) \
struct name { \
    struct type *stqh_first; /* first element */ \
    struct type **stqh_last; /* addr of last next element */ \
}

#define STAILQ_HEAD_INITIALIZER(head) \
{ NULL, &(head).stqh_first }

#define STAILQ_ENTRY(type) \
struct { \
    struct type *stqe_next; /* next element */ \
}

/*
 * Singly-linked Tail queue access methods.
 */
#define STAILQ_FIRST(head) ((head)->stqh_first)
#define STAILQ_END(head) NULL
#define STAILQ_NEXT(elm, field) ((elm)->field.stqe_next)
#define STAILQ_EMPTY(head) (STAILQ_FIRST(head) \
    == STAILQ_END(head))

/*
 * Singly-linked Tail queue functions.
 */
#define STAILQ_INIT(head) do { \
    (head)->stqh_first = NULL; \
    (head)->stqh_last = &(head)->stqh_first; \
} while (/*CONSTCOND*/0)

#define STAILQ_INSERT_HEAD(head, elm, field) do { \
    if (((elm)->field.stqe_next = (head)->stqh_first) == NULL) \

```

```

(head)->stqh_last = &(elm)->field.stqe_next; \
(head)->stqh_first = (elm); \
} while (/*CONSTCOND*/0)

#define STAILQ_INSERT_TAIL(head, elm, field) do { \
    (elm)->field.stqe_next = NULL; \
    *(head)->stqh_last = (elm); \
    (head)->stqh_last = &(elm)->field.stqe_next; \
} while (/*CONSTCOND*/0)

#define STAILQ_INSERT_AFTER(head, listelm, elm, field) do { \
    if (((elm)->field.stqe_next = (listelm)->field.stqe_next) == NULL)\
        (head)->stqh_last = &(elm)->field.stqe_next; \
    (listelm)->field.stqe_next = (elm); \
} while (/*CONSTCOND*/0)

#define STAILQ_REMOVE_HEAD(head, field) do { \
    if (((head)->stqh_first = (head)->stqh_first->field.stqe_next) \
        == NULL) \
        (head)->stqh_last = &(head)->stqh_first; \
} while (/*CONSTCOND*/0)

#define STAILQ_REMOVE(head, elm, type, field) do { \
    if ((head)->stqh_first == (elm)) { \
        STAILQ_REMOVE_HEAD((head), field); \
    } else { \
        struct type *curelm = (head)->stqh_first; \
        while (curelm->field.stqe_next != (elm)) \
            curelm = curelm->field.stqe_next; \
        if ((curelm->field.stqe_next = \
            curelm->field.stqe_next->field.stqe_next) == NULL) \
            (head)->stqh_last = &(curelm)->field.stqe_next; \
    } \
} while (/*CONSTCOND*/0)

#define STAILQ_FOREACH(var, head, field) \
    for ((var) = ((head)->stqh_first); \
        (var); \
        (var) = ((var)->field.stqe_next))

#define STAILQ_FOREACH_SAFE(var, head, field, tvar) \
    for ((var) = STAILQ_FIRST((head)); \
        (var) && ((tvar) = STAILQ_NEXT((var), field), 1); \
        (var) = (tvar))

#define STAILQ_CONCAT(head1, head2) do { \
    if (!STAILQ_EMPTY((head2))) { \
        *(head1)->stqh_last

```



```

= (head2)->stqh_first; \
(head1)->stqh_last = (head2)->stqh_last; \
STAILQ_INIT((head2)); \
} \
} while (/*CONSTCOND*/0)

#define STAILQ_LAST(head, type, field) \
(STAILQ_EMPTY((head)) ? \
NULL : \
((struct type *)((void *) \
((char *)((head)->stqh_last) - offsetof(struct type, field))))

#ifndef _KERNEL
/*
 * Circular queue definitions. Do not use. We still keep the macros
 * for compatibility but because of pointer aliasing issues their use
 * is discouraged!
 */

/*
 * __launder_type(): We use this ugly hack to work around the the compiler
 * noticing that two types may not alias each other and elide tests in code.
 * We hit this in the CIRCLEQ macros when comparing 'struct name *' and
 * 'struct type *' (see CIRCLEQ_HEAD()). Modern compilers (such as GCC
 * 4.8) declare these comparisons as always false, causing the code to
 * not run as designed.
 *
 * This hack is only to be used for comparisons and thus can be fully const.
 * Do not use for assignment.
 *
 * If we ever choose to change the ABI of the CIRCLEQ macros, we could fix
 * this by changing the head/tail sentinel values, but see the note above
 * this one.
 */
static __inline const void * __launder_type(const void *);
static __inline const void *
__launder_type(const void *__x)
{
    __asm __volatile("" : "+r" (__x));
    return __x;
}

#if defined(QUEUEDEBUG)
#define QUEUEDEBUG_CIRCLEQ_HEAD(head, field) \
if ((head)->cqh_first != CIRCLEQ_ENDC(head) && \
    (head)->cqh_first->field.cqe_prev != CIRCLEQ_ENDC(head)) \
    QUEUEDEBUG_ABORT("CIRCLEQ head forw %p %s:%d", (head), \

```

```

    __FILE__, __LINE__); \
if ((head)->cqh_last != CIRCLEQ_ENDC(head) && \
    (head)->cqh_last->field.cqe_next != CIRCLEQ_ENDC(head)) \
    QUEUEDEBDEBUG_ABORT("CIRCLEQ head back %p %s:%d", (head), \
        __FILE__, __LINE__);
#define QUEUEDEBDEBUG_CIRCLEQ_ELM(head, elm, field) \
if ((elm)->field.cqe_next == CIRCLEQ_ENDC(head)) { \
    if ((head)->cqh_last != (elm)) \
        QUEUEDEBDEBUG_ABORT("CIRCLEQ \
elm last %p %s:%d", \
            (elm), __FILE__, __LINE__); \
} else { \
    if ((elm)->field.cqe_next->field.cqe_prev != (elm)) \
        QUEUEDEBDEBUG_ABORT("CIRCLEQ elm forw %p %s:%d", \
            (elm), __FILE__, __LINE__); \
} \
if ((elm)->field.cqe_prev == CIRCLEQ_ENDC(head)) { \
    if ((head)->cqh_first != (elm)) \
        QUEUEDEBDEBUG_ABORT("CIRCLEQ elm first %p %s:%d", \
            (elm), __FILE__, __LINE__); \
} else { \
    if ((elm)->field.cqe_prev->field.cqe_next != (elm)) \
        QUEUEDEBDEBUG_ABORT("CIRCLEQ elm prev %p %s:%d", \
            (elm), __FILE__, __LINE__); \
}
#define QUEUEDEBDEBUG_CIRCLEQ_POSTREMOVE(elm, field) \
(elm)->field.cqe_next = (void *)1L; \
(elm)->field.cqe_prev = (void *)1L;
#else
#define QUEUEDEBDEBUG_CIRCLEQ_HEAD(head, field)
#define QUEUEDEBDEBUG_CIRCLEQ_ELM(head, elm, field)
#define QUEUEDEBDEBUG_CIRCLEQ_POSTREMOVE(elm, field)
#endif

#define CIRCLEQ_HEAD(name, type) \
struct name { \
    struct type *cqh_first; /* \
    first element */ \
    struct type *cqh_last; /* last element */ \
}

#define CIRCLEQ_HEAD_INITIALIZER(head) \
{ CIRCLEQ_END(&head), CIRCLEQ_END(&head) }

#define CIRCLEQ_ENTRY(type) \
struct { \
    struct type *cqe_next; /* next element */ \
    struct type *cqe_prev; /* previous element */ \
}

```

```

}

/*
 * Circular queue functions.
 */
#define CIRCLEQ_INIT(head) do { \
    (head)->cqh_first = CIRCLEQ_END(head); \
    (head)->cqh_last = CIRCLEQ_END(head); \
} while (/*CONSTCOND*/0)

#define CIRCLEQ_INSERT_AFTER(head, listelm, elm, field) do { \
    QUEUEDEBDEBUG_CIRCLEQ_HEAD((head), field) \
    QUEUEDEBDEBUG_CIRCLEQ_ELM((head), (listelm), field) \
    (elm)->field.cqe_next = (listelm)->field.cqe_next; \
    (elm)->field.cqe_prev = (listelm); \
    if ((listelm)->field.cqe_next == CIRCLEQ_ENDC(head)) \
        (head)->cqh_last = (elm); \
    else \
        (listelm)->field.cqe_next->field.cqe_prev = (elm); \
    (listelm)->field.cqe_next = (elm); \
} while (/*CONSTCOND*/0)

#define CIRCLEQ_INSERT_BEFORE(head, \
    listelm, elm, field) do { \
    QUEUEDEBDEBUG_CIRCLEQ_HEAD((head), field) \
    QUEUEDEBDEBUG_CIRCLEQ_ELM((head), (listelm), field) \
    (elm)->field.cqe_next = (listelm); \
    (elm)->field.cqe_prev = (listelm)->field.cqe_prev; \
    if ((listelm)->field.cqe_prev == CIRCLEQ_ENDC(head)) \
        (head)->cqh_first = (elm); \
    else \
        (listelm)->field.cqe_prev->field.cqe_next = (elm); \
    (listelm)->field.cqe_prev = (elm); \
} while (/*CONSTCOND*/0)

#define CIRCLEQ_INSERT_HEAD(head, elm, field) do { \
    QUEUEDEBDEBUG_CIRCLEQ_HEAD((head), field) \
    (elm)->field.cqe_next = (head)->cqh_first; \
    (elm)->field.cqe_prev = CIRCLEQ_END(head); \
    if ((head)->cqh_last == CIRCLEQ_ENDC(head)) \
        (head)->cqh_last = (elm); \
    else \
        (head)->cqh_first->field.cqe_prev = (elm); \
    (head)->cqh_first = (elm); \
} while (/*CONSTCOND*/0)

#define CIRCLEQ_INSERT_TAIL(head, elm, field) do { \
    QUEUEDEBDEBUG_CIRCLEQ_HEAD((head), field) \

```

```

(elm)->field.cqe_next
= CIRCLEQ_END(head); \
(elm)->field.cqe_prev = (head)->cqh_last; \
if ((head)->cqh_first == CIRCLEQ_ENDC(head)) \
    (head)->cqh_first = (elm); \
else \
    (head)->cqh_last->field.cqe_next = (elm); \
    (head)->cqh_last = (elm); \
} while (/*CONSTCOND*/0)

#define CIRCLEQ_REMOVE(head, elm, field) do { \
    QUEUEDEBUG_CIRCLEQ_HEAD((head), field) \
    QUEUEDEBUG_CIRCLEQ_ELM((head), (elm), field) \
    if ((elm)->field.cqe_next == CIRCLEQ_ENDC(head)) \
        (head)->cqh_last = (elm)->field.cqe_prev; \
    else \
        (elm)->field.cqe_next->field.cqe_prev = \
            (elm)->field.cqe_prev; \
    if ((elm)->field.cqe_prev == CIRCLEQ_ENDC(head)) \
        (head)->cqh_first = (elm)->field.cqe_next; \
    else \
        (elm)->field.cqe_prev->field.cqe_next = \
            (elm)->field.cqe_next; \
    QUEUEDEBUG_CIRCLEQ_POSTREMOVE((elm), field) \
} while (/*CONSTCOND*/0)

#define CIRCLEQ_FOREACH(var, head, field) \
    for ((var) = ((head)->cqh_first); \
        (var) != CIRCLEQ_ENDC(head); \
        (var) \
        = ((var)->field.cqe_next))

#define CIRCLEQ_FOREACH_REVERSE(var, head, field) \
    for ((var) = ((head)->cqh_last); \
        (var) != CIRCLEQ_ENDC(head); \
        (var) = ((var)->field.cqe_prev))

/*
 * Circular queue access methods.
 */
#define CIRCLEQ_FIRST(head) ((head)->cqh_first)
#define CIRCLEQ_LAST(head) ((head)->cqh_last)
/* For comparisons */
#define CIRCLEQ_ENDC(head) (__launter_type(head))
/* For assignments */
#define CIRCLEQ_END(head) ((void *)(head))
#define CIRCLEQ_NEXT(elm, field) ((elm)->field.cqe_next)
#define CIRCLEQ_PREV(elm, field) ((elm)->field.cqe_prev)

```

```

#define CIRCLEQ_EMPTY(head) \
    (CIRCLEQ_FIRST(head) == CIRCLEQ_ENDC(head))

#define CIRCLEQ_LOOP_NEXT(head, elm, field) \
    (((elm)->field.cqe_next == CIRCLEQ_ENDC(head)) \
     ? ((head)->cqh_first) \
     : (elm->field.cqe_next))
#define CIRCLEQ_LOOP_PREV(head, elm, field) \
    (((elm)->field.cqe_prev == CIRCLEQ_ENDC(head)) \
     ? ((head)->cqh_last) \
     : \
     (elm->field.cqe_prev))
#endif /* !_KERNEL */

#endif /* !_SYS_QUEUE_H_ */
#ifndef _SYS_CDEFS_H_
#define _SYS_CDEFS_H_

#warning usage of non-standard #include <sys/cdefs.h> is deprecated

#undef __P
#undef __PMT

#define __P(args) args
#define __PMT(args) args

#define __CONCAT(x,y) x ## y
#define __STRING(x) #x

#ifdef __cplusplus
# define __BEGIN_DECLS extern "C" {
# define __END_DECLS }
#else
# define __BEGIN_DECLS
# define __END_DECLS
#endif

#if defined(__GNUC__) && !defined(__cplusplus)
# define __THROW __attribute__((__nothrow__))
# define __NTH(fct) __attribute__((__nothrow__)) fct
#else
# define __THROW
# define __NTH(fct) fct
#endif

#endif /* _SYS_CDEFS_H_ */
# Contributor: Fabian Affolter <fabian@affolter-engineering.ch>
# Maintainer: Fabian Affolter <fabian@affolter-engineering.ch>

```

```

pkgname=py3-flake8-copyright
_pkgname=flake8-copyright
pkgver=0.2.4
pkgrel=3
pkgdesc="Extension for flake8 which checks for copyrights"
options="!check" # No testsuite
url="https://github.com/savoirfairelinux/flake8-copyright"
arch="noarch"
license="MIT"
depends="py3-flake8 py3-setuptools"
makedepends="py3-gpep517 py3-wheel"
subpackages="$pkgname-pyc"
source="https://files.pythonhosted.org/packages/source/${_pkgname:0:1}/${_pkgname}/${_pkgname}-${pkgver}.tar.gz"
builddir="$srcdir"/$_pkgname-$pkgver

replaces="py-flake8-copyright"          # Backwards compatibility
provides="py-flake8-copyright=$pkgver-r$pkgrel" # Backwards compatibility

build() {
    gpep517 build-wheel \
        --wheel-dir .dist \
        --output-fd 3 3>&1 >&2
}

package() {
    gpep517 install-wheel --destdir "$pkgdir" \
        .dist/*.whl
}

sha512sums="
a6ab47e1bb715618f075c51f398e18180404871b3b0faf1c2d30701d5203db6bc23771bf22ffb5bafcd8ee856b9b64237
b316bd503ae7dceed6ca284ccd5a74d
    flake8-copyright-0.2.4.tar.gz
"
(The MIT License)

```

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/* \$NetBSD: tree.h,v 1.20 2013/09/14 13:20:45 joerg Exp \$ */

/* \$OpenBSD: tree.h,v 1.13 2011/07/09 00:19:45 pirofti Exp \$ */

/* Modified by Void Linux. */

/*

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*

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*/

#ifndef _SYS_TREE_H_

#define _SYS_TREE_H_

#ifdef __GNUC__

#define __GNUC_PREREQ__(x, y) \

((__GNUC__ == (x) && __GNUC_MINOR__ >= (y)) || \

(__GNUC__ > (x)))

#else

#define __GNUC_PREREQ__(x, y) 0

#endif

```

#if __GNUC_PREREQ__(2, 7) || defined(__lint__)
#define _sys_tree_h_unused __attribute__((__unused__))
#else
#define _sys_tree_h_unused /* delete */
#endif

/*
 * This file defines data structures for different types of trees:
 * splay trees and red-black trees.
 *
 * A splay tree is a self-organizing
 * data structure. Every operation
 * on the tree causes a splay to happen. The splay moves the requested
 * node to the root of the tree and partly rebalances it.
 *
 * This has the benefit that request locality causes faster lookups as
 * the requested nodes move to the top of the tree. On the other hand,
 * every lookup causes memory writes.
 *
 * The Balance Theorem bounds the total access time for m operations
 * and n inserts on an initially empty tree as  $O((m + n)\lg n)$ . The
 * amortized cost for a sequence of m accesses to a splay tree is  $O(\lg n)$ ;
 *
 * A red-black tree is a binary search tree with the node color as an
 * extra attribute. It fulfills a set of conditions:
 * - every search path from the root to a leaf consists of the
 *   same number of black nodes,
 * - each red node (except for the root) has a black parent,
 * - each leaf node is black.
 *
 * Every operation on a red-black tree is bounded as  $O(\lg n)$ .
 * The maximum height of a red-black tree is  $2\lg(n+1)$ .
 */

#define SPLAY_HEAD(name, type) \
struct name { \
    struct type *sph_root; /* root of the tree */ \
}

#define SPLAY_INITIALIZER(root) \
{ NULL }

#define SPLAY_INIT(root) do { \
    (root)->sph_root = NULL; \
} while (/*CONSTCOND*/ 0)

#define SPLAY_ENTRY(type) \

```



```

struct {
    \
    struct type *spe_left; /* left element */ \
    struct type *spe_right; /* right element */ \
}

#define SPLAY_LEFT(elm, field) (elm)->field.spe_left
#define SPLAY_RIGHT(elm, field) (elm)->field.spe_right
#define SPLAY_ROOT(head) (head)->sph_root
#define SPLAY_EMPTY(head) (SPLAY_ROOT(head) == NULL)

/* SPLAY_ROTATE_{LEFT,RIGHT} expect that tmp hold SPLAY_{RIGHT,LEFT} */
#define SPLAY_ROTATE_RIGHT(head, tmp, field) do { \
    SPLAY_LEFT((head)->sph_root, field) = SPLAY_RIGHT(tmp, field); \
    SPLAY_RIGHT(tmp, field) = (head)->sph_root; \
    (head)->sph_root = tmp; \
} while (/*CONSTCOND*/ 0)

#define SPLAY_ROTATE_LEFT(head, tmp, field) do { \
    SPLAY_RIGHT((head)->sph_root, \
    field) = SPLAY_LEFT(tmp, field); \
    SPLAY_LEFT(tmp, field) = (head)->sph_root; \
    (head)->sph_root = tmp; \
} while (/*CONSTCOND*/ 0)

#define SPLAY_LINKLEFT(head, tmp, field) do { \
    SPLAY_LEFT(tmp, field) = (head)->sph_root; \
    tmp = (head)->sph_root; \
    (head)->sph_root = SPLAY_LEFT((head)->sph_root, field); \
} while (/*CONSTCOND*/ 0)

#define SPLAY_LINKRIGHT(head, tmp, field) do { \
    SPLAY_RIGHT(tmp, field) = (head)->sph_root; \
    tmp = (head)->sph_root; \
    (head)->sph_root = SPLAY_RIGHT((head)->sph_root, field); \
} while (/*CONSTCOND*/ 0)

#define SPLAY_ASSEMBLE(head, node, left, right, field) do { \
    SPLAY_RIGHT(left, field) = SPLAY_LEFT((head)->sph_root, field); \
    SPLAY_LEFT(right, field) = SPLAY_RIGHT((head)->sph_root, field); \
    SPLAY_LEFT((head)->sph_root, field) = SPLAY_RIGHT(node, field); \
    SPLAY_RIGHT((head)->sph_root, field) = SPLAY_LEFT(node, field); \
} while (/*CONSTCOND*/ 0)

/* Generates prototypes and inline functions */

#define
SPLAY_PROTOTYPE(name, type, field, cmp) \
void name##_SPLAY(struct name *, struct type *); \

```

```

void name##_SPLAY_MINMAX(struct name *, int); \
struct type *name##_SPLAY_INSERT(struct name *, struct type *); \
struct type *name##_SPLAY_REMOVE(struct name *, struct type *); \
\
/* Finds the node with the same key as elm */ \
static __inline struct type * \
name##_SPLAY_FIND(struct name *head, struct type *elm) \
{ \
    if (SPLAY_EMPTY(head)) \
        return(NULL); \
    name##_SPLAY(head, elm); \
    if ((cmp)(elm, (head)->sph_root) == 0) \
        return (head->sph_root); \
    return (NULL); \
} \
\
static __inline _sys_tree_h_unused struct type * \
name##_SPLAY_NEXT(struct name *head, struct type *elm) \
{ \
    name##_SPLAY(head, elm); \
    if (SPLAY_RIGHT(elm, field) != NULL) { \
        elm = SPLAY_RIGHT(elm, field); \
        while (SPLAY_LEFT(elm, field) != NULL) { \
            elm = SPLAY_LEFT(elm, field); \
        } \
    } \
    else \
        elm = NULL; \
    return (elm); \
} \
\
static _sys_tree_h_unused __inline struct type * \
name##_SPLAY_MIN_MAX(struct name *head, int val) \
{ \
    name##_SPLAY_MINMAX(head, val); \
    return (SPLAY_ROOT(head)); \
}

/* Main splay operation.
 * Moves node close to the key of elm to top
 */
#define SPLAY_GENERATE(name, type, field, cmp) \
struct type * \
name##_SPLAY_INSERT(struct name *head, struct type *elm) \
{ \
    if (SPLAY_EMPTY(head)) { \
        SPLAY_LEFT(elm, field) = SPLAY_RIGHT(elm, field) = NULL; \
    } else { \

```

```

int __comp;    \
name##_SPLAY(head, elm);    \
__comp = (cmp)(elm, (head)->sph_root);    \
if(__comp < 0) {    \
    SPLAY_LEFT(elm, field) = SPLAY_LEFT((head)->sph_root, field);\
    SPLAY_RIGHT(elm, field) = (head)->sph_root;    \
    SPLAY_LEFT((head)->sph_root, field) = NULL;    \
} else if (__comp > 0) {    \
    SPLAY_RIGHT(elm,
field) = SPLAY_RIGHT((head)->sph_root, field);\
    SPLAY_LEFT(elm, field) = (head)->sph_root;    \
    SPLAY_RIGHT((head)->sph_root, field) = NULL;    \
} else    \
    return ((head)->sph_root);    \
}    \
(head)->sph_root = (elm);    \
return (NULL);    \
}    \
\
struct type *    \
name##_SPLAY_REMOVE(struct name *head, struct type *elm)    \
{    \
    struct type *__tmp;    \
    if (SPLAY_EMPTY(head))    \
        return (NULL);    \
    name##_SPLAY(head, elm);    \
    if ((cmp)(elm, (head)->sph_root) == 0) {    \
        if (SPLAY_LEFT((head)->sph_root, field) == NULL) {    \
            (head)->sph_root = SPLAY_RIGHT((head)->sph_root, field);\
        } else {    \
            __tmp = SPLAY_RIGHT((head)->sph_root, field);\
            (head)->sph_root = SPLAY_LEFT((head)->sph_root, field);\
            name##_SPLAY(head, elm);    \
            SPLAY_RIGHT((head)->sph_root, field) = __tmp;    \
        }    \
        return (elm);    \
    }    \
    return (NULL);    \
}    \
\
void    \
name##_SPLAY(struct
name *head, struct type *elm)    \
{    \
    struct type __node, *__left, *__right, *__tmp;    \
    int __comp;    \
    \
    SPLAY_LEFT(&__node, field) = SPLAY_RIGHT(&__node, field) = NULL;\

```

```

__left = __right = &__node; \
\
while ((__comp = (cmp)(elm, (head)->sph_root)) != 0) { \
    if (__comp < 0) { \
        __tmp = SPLAY_LEFT((head)->sph_root, field); \
        if (__tmp == NULL) \
            break; \
        if ((cmp)(elm, __tmp) < 0){ \
            SPLAY_ROTATE_RIGHT(head, __tmp, field); \
            if (SPLAY_LEFT((head)->sph_root, field) == NULL)\
                break; \
        } \
        SPLAY_LINKLEFT(head, __right, field); \
    } else if (__comp > 0) { \
        __tmp = SPLAY_RIGHT((head)->sph_root, field); \
        if (__tmp == NULL) \
            break; \
        if ((cmp)(elm, __tmp) > 0){ \
            SPLAY_ROTATE_LEFT(head, __tmp, field); \
            if (SPLAY_RIGHT((head)->sph_root, field) == NULL)\
                break; \
        } \
        SPLAY_LINKRIGHT(head, __left, field); \
    } \
} \
SPLAY_ASSEMBLE(head,
&__node, __left, __right, field); \
} \
\
/* Splay with either the minimum or the maximum element \
* Used to find minimum or maximum element in tree. \
*/ \
void name##_SPLAY_MINMAX(struct name *head, int __comp) \
{ \
    struct type __node, *__left, *__right, *__tmp; \
    \
    SPLAY_LEFT(&__node, field) = SPLAY_RIGHT(&__node, field) = NULL;\
    __left = __right = &__node; \
    \
    while (1) { \
        if (__comp < 0) { \
            __tmp = SPLAY_LEFT((head)->sph_root, field); \
            if (__tmp == NULL) \
                break; \
            if (__comp < 0){ \
                SPLAY_ROTATE_RIGHT(head, __tmp, field); \
                if (SPLAY_LEFT((head)->sph_root, field) == NULL)\
                    break; \
            }

```

```

    } \
    SPLAY_LINKLEFT(head, __right, field); \
} else if (__comp > 0) { \
    __tmp = SPLAY_RIGHT((head)->sph_root, field); \
    if (__tmp == NULL) \
        break; \
    if (__comp > 0) { \
        SPLAY_ROTATE_LEFT(head, __tmp, field); \
        if (SPLAY_RIGHT((head)->sph_root,
field) == NULL)\
            break; \
    } \
    SPLAY_LINKRIGHT(head, __left, field); \
} \
} \
SPLAY_ASSEMBLE(head, &__node, __left, __right, field); \
}

#define SPLAY_NEGINF -1
#define SPLAY_INF 1

#define SPLAY_INSERT(name, x, y) name##_SPLAY_INSERT(x, y)
#define SPLAY_REMOVE(name, x, y) name##_SPLAY_REMOVE(x, y)
#define SPLAY_FIND(name, x, y) name##_SPLAY_FIND(x, y)
#define SPLAY_NEXT(name, x, y) name##_SPLAY_NEXT(x, y)
#define SPLAY_MIN(name, x) (SPLAY_EMPTY(x) ? NULL \
    : name##_SPLAY_MIN_MAX(x, SPLAY_NEGINF))
#define SPLAY_MAX(name, x) (SPLAY_EMPTY(x) ? NULL \
    : name##_SPLAY_MIN_MAX(x, SPLAY_INF))

#define SPLAY_FOREACH(x, name, head) \
    for ((x) = SPLAY_MIN(name, head); \
        (x) != NULL; \
        (x) = SPLAY_NEXT(name, head, x))

/* Macros that define a red-black tree */
#define RB_HEAD(name, type) \
    struct name { \
        struct type *rbh_root; /* root of the tree */ \
    }

#define RB_INITIALIZER(root) \
    { \
        NULL \
    }

#define RB_INIT(root) do { \
    (root)->rbh_root = NULL; \
} while (/*CONSTCOND*/ 0)

```

```

#define RB_BLACK 0
#define RB_RED 1
#define RB_ENTRY(type) \
struct { \
    struct type *rbe_left; /* left element */ \
    struct type *rbe_right; /* right element */ \
    struct type *rbe_parent; /* parent element */ \
    int rbe_color; /* node color */ \
}

#define RB_LEFT(elm, field) (elm)->field.rbe_left
#define RB_RIGHT(elm, field) (elm)->field.rbe_right
#define RB_PARENT(elm, field) (elm)->field.rbe_parent
#define RB_COLOR(elm, field) (elm)->field.rbe_color
#define RB_ROOT(head) (head)->rbh_root
#define RB_EMPTY(head) (RB_ROOT(head) == NULL)

#define RB_SET(elm, parent, field) do { \
    RB_PARENT(elm, field) = parent; \
    RB_LEFT(elm, field) = RB_RIGHT(elm, field) = NULL; \
    RB_COLOR(elm, field) = RB_RED; \
} while (/*CONSTCOND*/ 0)

#define RB_SET_BLACKRED(black, red, field) do { \
    RB_COLOR(black, field) = RB_BLACK; \
    RB_COLOR(red, field) \
    = RB_RED; \
} while (/*CONSTCOND*/ 0)

#ifndef RB_AUGMENT
#define RB_AUGMENT(x) do {} while (/*CONSTCOND*/ 0)
#endif

#define RB_ROTATE_LEFT(head, elm, tmp, field) do { \
    (tmp) = RB_RIGHT(elm, field); \
    if ((RB_RIGHT(elm, field) = RB_LEFT(tmp, field)) != NULL) { \
        RB_PARENT(RB_LEFT(tmp, field), field) = (elm); \
    } \
    RB_AUGMENT(elm); \
    if ((RB_PARENT(tmp, field) = RB_PARENT(elm, field)) != NULL) { \
        if ((elm) == RB_LEFT(RB_PARENT(elm, field), field)) \
            RB_LEFT(RB_PARENT(elm, field), field) = (tmp); \
        else \
            RB_RIGHT(RB_PARENT(elm, field), field) = (tmp); \
    } else \
        (head)->rbh_root = (tmp); \
    RB_LEFT(tmp, field) = (elm); \
}

```

```

RB_PARENT(elm, field) = (tmp); \
RB_AUGMENT(tmp); \
if ((RB_PARENT(tmp, field))) \
    RB_AUGMENT(RB_PARENT(tmp, field)); \
} while (/*CONSTCOND*/ 0)

#define RB_ROTATE_RIGHT(head, elm, tmp, field) do { \
    (tmp) = RB_LEFT(elm, field); \
    if ((RB_LEFT(elm, field) = RB_RIGHT(tmp, field)) \
        != NULL) { \
        RB_PARENT(RB_RIGHT(tmp, field), field) = (elm); \
    } \
    RB_AUGMENT(elm); \
    if ((RB_PARENT(tmp, field) = RB_PARENT(elm, field)) != NULL) { \
        if ((elm) == RB_LEFT(RB_PARENT(elm, field), field)) \
            RB_LEFT(RB_PARENT(elm, field), field) = (tmp); \
        else \
            RB_RIGHT(RB_PARENT(elm, field), field) = (tmp); \
    } else \
        (head)->rbh_root = (tmp); \
    RB_RIGHT(tmp, field) = (elm); \
    RB_PARENT(elm, field) = (tmp); \
    RB_AUGMENT(tmp); \
    if ((RB_PARENT(tmp, field))) \
        RB_AUGMENT(RB_PARENT(tmp, field)); \
} while (/*CONSTCOND*/ 0)

/* Generates prototypes and inline functions */
#define RB_PROTOTYPE(name, type, field, cmp) \
    RB_PROTOTYPE_INTERNAL(name, type, field, cmp,)
#define RB_PROTOTYPE_STATIC(name, type, field, cmp) \
    RB_PROTOTYPE_INTERNAL(name, type, field, cmp, _sys_tree_h_unused static)
#define RB_PROTOTYPE_INTERNAL(name, type, field, cmp, attr) \
    attr void name##_RB_INSERT_COLOR(struct name *, struct \
        type *); \
    attr void name##_RB_REMOVE_COLOR(struct name *, struct type *, struct type *); \
    attr struct type *name##_RB_REMOVE(struct name *, struct type *); \
    attr struct type *name##_RB_INSERT(struct name *, struct type *); \
    attr struct type *name##_RB_FIND(struct name *, struct type *); \
    attr struct type *name##_RB_NFIND(struct name *, struct type *); \
    attr struct type *name##_RB_NEXT(struct type *); \
    attr struct type *name##_RB_PREV(struct type *); \
    attr struct type *name##_RB_MINMAX(struct name *, int); \
    \

/* Main rb operation.
 * Moves node close to the key of elm to top
 */

```

```

#define RB_GENERATE(name, type, field, cmp) \
    RB_GENERATE_INTERNAL(name, type, field, cmp,)
#define RB_GENERATE_STATIC(name, type, field, cmp) \
    RB_GENERATE_INTERNAL(name, type, field, cmp, _sys_tree_h_unused static)
#define RB_GENERATE_INTERNAL(name, type, field, cmp, attr) \
    attr void \
    name##_RB_INSERT_COLOR(struct name *head, struct type *elm) \
    { \
        struct type \
        *parent, *gparent, *tmp; \
        while ((parent = RB_PARENT(elm, field)) != NULL && \
            RB_COLOR(parent, field) == RB_RED) { \
            gparent = RB_PARENT(parent, field); \
            if (parent == RB_LEFT(gparent, field)) { \
                tmp = RB_RIGHT(gparent, field); \
                if (tmp && RB_COLOR(tmp, field) == RB_RED) { \
                    RB_COLOR(tmp, field) = RB_BLACK; \
                    RB_SET_BLACKRED(parent, gparent, field); \
                    elm = gparent; \
                    continue; \
                } \
                if (RB_RIGHT(parent, field) == elm) { \
                    RB_ROTATE_LEFT(head, parent, tmp, field); \
                    tmp = parent; \
                    parent = elm; \
                    elm = tmp; \
                } \
                RB_SET_BLACKRED(parent, gparent, field); \
                RB_ROTATE_RIGHT(head, gparent, tmp, field); \
            } else { \
                tmp = RB_LEFT(gparent, field); \
                if (tmp && RB_COLOR(tmp, field) == RB_RED) { \
                    RB_COLOR(tmp, field) = RB_BLACK; \
                    RB_SET_BLACKRED(parent, gparent, field); \
                    elm = gparent; \
                    continue; \
                } \
                if (RB_LEFT(parent, field) == elm) \
            { \
                RB_ROTATE_RIGHT(head, parent, tmp, field); \
                tmp = parent; \
                parent = elm; \
                elm = tmp; \
            } \
            RB_SET_BLACKRED(parent, gparent, field); \
            RB_ROTATE_LEFT(head, gparent, tmp, field); \
        } \
    } \

```



```

RB_COLOR(head->rbh_root, field) = RB_BLACK; \
} \
\
attr void \
name##_RB_REMOVE_COLOR(struct name *head, struct type *parent, struct type *elm) \
{ \
    struct type *tmp; \
    while ((elm == NULL || RB_COLOR(elm, field) == RB_BLACK) && \
        elm != RB_ROOT(head)) { \
        if (RB_LEFT(parent, field) == elm) { \
            tmp = RB_RIGHT(parent, field); \
            if (RB_COLOR(tmp, field) == RB_RED) { \
                RB_SET_BLACKRED(tmp, parent, field); \
                RB_ROTATE_LEFT(head, parent, tmp, field); \
                tmp = RB_RIGHT(parent, field); \
            } \
            if ((RB_LEFT(tmp, field) == NULL || \
                RB_COLOR(RB_LEFT(tmp, field), field) == RB_BLACK) && \
                (RB_RIGHT(tmp, field) == NULL || \
                RB_COLOR(RB_RIGHT(tmp, \
field), field) == RB_BLACK)) { \
                RB_COLOR(tmp, field) = RB_RED; \
                elm = parent; \
                parent = RB_PARENT(elm, field); \
            } else { \
                if (RB_RIGHT(tmp, field) == NULL || \
                    RB_COLOR(RB_RIGHT(tmp, field), field) == RB_BLACK) { \
                    struct type *oleft; \
                    if ((oleft = RB_LEFT(tmp, field)) \
                        != NULL) \
                        RB_COLOR(oleft, field) = RB_BLACK; \
                    RB_COLOR(tmp, field) = RB_RED; \
                    RB_ROTATE_RIGHT(head, tmp, oleft, field); \
                    tmp = RB_RIGHT(parent, field); \
                } \
                RB_COLOR(tmp, field) = RB_COLOR(parent, field); \
                RB_COLOR(parent, field) = RB_BLACK; \
                if (RB_RIGHT(tmp, field)) \
                    RB_COLOR(RB_RIGHT(tmp, field), field) = RB_BLACK; \
                RB_ROTATE_LEFT(head, parent, tmp, field); \
                elm = RB_ROOT(head); \
                break; \
            } \
        } else { \
            tmp = RB_LEFT(parent, field); \
            if (RB_COLOR(tmp, field) == RB_RED) { \
                RB_SET_BLACKRED(tmp, parent, field); \
                RB_ROTATE_RIGHT(head, parent, tmp, field); \

```

```

    tmp
= RB_LEFT(parent, field); \
} \
if ((RB_LEFT(tmp, field) == NULL || \
    RB_COLOR(RB_LEFT(tmp, field), field) == RB_BLACK) &&\
    (RB_RIGHT(tmp, field) == NULL || \
    RB_COLOR(RB_RIGHT(tmp, field), field) == RB_BLACK)) {\
    RB_COLOR(tmp, field) = RB_RED; \
    elm = parent; \
    parent = RB_PARENT(elm, field); \
} else { \
    if (RB_LEFT(tmp, field) == NULL || \
        RB_COLOR(RB_LEFT(tmp, field), field) == RB_BLACK) {\
        struct type *oright; \
        if ((oright = RB_RIGHT(tmp, field)) \
            != NULL) \
            RB_COLOR(oright, field) = RB_BLACK;\
        RB_COLOR(tmp, field) = RB_RED; \
        RB_ROTATE_LEFT(head, tmp, oright, field);\
        tmp = RB_LEFT(parent, field); \
    } \
    RB_COLOR(tmp, field) = RB_COLOR(parent, field);\
    RB_COLOR(parent, field) = RB_BLACK; \
    if (RB_LEFT(tmp, field)) \
        RB_COLOR(RB_LEFT(tmp, field), field) = RB_BLACK;\
    RB_ROTATE_RIGHT(head, parent, tmp, field);\
    elm = RB_ROOT(head); \
    break; \
} \
} \
} \
if
(elm) \
    RB_COLOR(elm, field) = RB_BLACK; \
} \
\
attr struct type * \
name##_RB_REMOVE(struct name *head, struct type *elm) \
{ \
    struct type *child, *parent, *old = elm; \
    int color; \
    if (RB_LEFT(elm, field) == NULL) \
        child = RB_RIGHT(elm, field); \
    else if (RB_RIGHT(elm, field) == NULL) \
        child = RB_LEFT(elm, field); \
    else { \
        struct type *left; \
        elm = RB_RIGHT(elm, field); \

```

```

while ((left = RB_LEFT(elm, field)) != NULL) \
    elm = left; \
child = RB_RIGHT(elm, field); \
parent = RB_PARENT(elm, field); \
color = RB_COLOR(elm, field); \
if (child) \
    RB_PARENT(child, field) = parent; \
if (parent) { \
    if (RB_LEFT(parent, field) == elm) \
        RB_LEFT(parent, field) = child; \
    else \
        RB_RIGHT(parent, field) = child; \
    RB_AUGMENT(parent); \
} else \
    RB_ROOT(head)
= child; \
if (RB_PARENT(elm, field) == old) \
    parent = elm; \
(elm)->field = (old)->field; \
if (RB_PARENT(old, field)) { \
    if (RB_LEFT(RB_PARENT(old, field), field) == old)\
        RB_LEFT(RB_PARENT(old, field), field) = elm;\
    else \
        RB_RIGHT(RB_PARENT(old, field), field) = elm;\
    RB_AUGMENT(RB_PARENT(old, field)); \
} else \
    RB_ROOT(head) = elm; \
RB_PARENT(RB_LEFT(old, field), field) = elm; \
if (RB_RIGHT(old, field)) \
    RB_PARENT(RB_RIGHT(old, field), field) = elm; \
if (parent) { \
    left = parent; \
    do { \
        RB_AUGMENT(left); \
    } while ((left = RB_PARENT(left, field)) != NULL); \
} \
goto color; \
} \
parent = RB_PARENT(elm, field); \
color = RB_COLOR(elm, field); \
if (child) \
    RB_PARENT(child, field) = parent; \
if (parent) { \
    if (RB_LEFT(parent, field) == elm) \
        RB_LEFT(parent, field) = child; \
    else \
        RB_RIGHT(parent,

```

```

field) = child; \
    RB_AUGMENT(parent); \
} else \
    RB_ROOT(head) = child; \
color: \
if (color == RB_BLACK) \
    name##_RB_REMOVE_COLOR(head, parent, child); \
return (old); \
} \
\

/* Inserts a node into the RB tree */ \
attr struct type * \
name##_RB_INSERT(struct name *head, struct type *elm) \
{ \
    struct type *tmp; \
    struct type *parent = NULL; \
    int comp = 0; \
    tmp = RB_ROOT(head); \
    while (tmp) { \
        parent = tmp; \
        comp = (cmp)(elm, parent); \
        if (comp < 0) \
            tmp = RB_LEFT(tmp, field); \
        else if (comp > 0) \
            tmp = RB_RIGHT(tmp, field); \
        else \
            return (tmp); \
    } \
    RB_SET(elm, parent, field); \
    if (parent != NULL) { \
        if (comp < 0) \
            RB_LEFT(parent, field) = elm; \
        else \
            RB_RIGHT(parent, field) = elm; \
        RB_AUGMENT(parent); \
    } else \
        RB_ROOT(head) = elm; \
    name##_RB_INSERT_COLOR(head, \
        elm); \
    return (NULL); \
} \
\

/* Finds the node with the same key as elm */ \
attr struct type * \
name##_RB_FIND(struct name *head, struct type *elm) \
{ \
    struct type *tmp = RB_ROOT(head); \
    int comp; \

```

```

while (tmp) {
    comp = cmp(elm, tmp);
    if (comp < 0)
        tmp = RB_LEFT(tmp, field);
    else if (comp > 0)
        tmp = RB_RIGHT(tmp, field);
    else
        return (tmp);
}
return (NULL);
}

/* Finds the first node greater than or equal to the search key */
attr struct type *
name##_RB_NFIND(struct name *head, struct type *elm)
{
    struct type *tmp = RB_ROOT(head);
    struct type *res = NULL;
    int comp;
    while (tmp) {
        comp = cmp(elm, tmp);
        if (comp < 0) {
            res = tmp;
            tmp = RB_LEFT(tmp, field);
        }
        else if (comp > 0)
            tmp =
RB_RIGHT(tmp, field);
        else
            return (tmp);
    }
    return (res);
}

/* ARGSUSED */
attr struct type *
name##_RB_NEXT(struct type *elm)
{
    if (RB_RIGHT(elm, field)) {
        elm = RB_RIGHT(elm, field);
        while (RB_LEFT(elm, field))
            elm = RB_LEFT(elm, field);
    } else {
        if (RB_PARENT(elm, field) &&
            (elm == RB_LEFT(RB_PARENT(elm, field), field)))
            elm = RB_PARENT(elm, field);
        else {
            while (RB_PARENT(elm, field) &&

```

```

        (elm == RB_RIGHT(RB_PARENT(elm, field), field)))\
    elm = RB_PARENT(elm, field); \
    elm = RB_PARENT(elm, field); \
} \
} \
return (elm); \
} \
\
/* ARGSUSED */ \
attr struct type * \
name##_RB_PREV(struct type *elm) \
{ \
    if (RB_LEFT(elm, field)) { \
        elm = RB_LEFT(elm, field); \
        while (RB_RIGHT(elm, field)) \
            elm = RB_RIGHT(elm, field); \
    }
    else { \
        if (RB_PARENT(elm, field) && \
            (elm == RB_RIGHT(RB_PARENT(elm, field), field))) \
            elm = RB_PARENT(elm, field); \
        else { \
            while (RB_PARENT(elm, field) && \
                (elm == RB_LEFT(RB_PARENT(elm, field), field)))\
                elm = RB_PARENT(elm, field); \
            elm = RB_PARENT(elm, field); \
        } \
    } \
    return (elm); \
} \
\
attr struct type * \
name##_RB_MINMAX(struct name *head, int val) \
{ \
    struct type *tmp = RB_ROOT(head); \
    struct type *parent = NULL; \
    while (tmp) { \
        parent = tmp; \
        if (val < 0) \
            tmp = RB_LEFT(tmp, field); \
        else \
            tmp = RB_RIGHT(tmp, field); \
    } \
    return (parent); \
}

#define RB_NEGINF -1
#define RB_INF 1

```

```

#define RB_INSERT(name, x, y) name##_RB_INSERT(x, y)
#define RB_REMOVE(name, x, y) name##_RB_REMOVE(x, y)
#define RB_FIND(name, x, y) name##_RB_FIND(x, y)
#define RB_NFIND(name, x, y) name##_RB_NFIND(x,
y)
#define RB_NEXT(name, x, y) name##_RB_NEXT(y)
#define RB_PREV(name, x, y) name##_RB_PREV(y)
#define RB_MIN(name, x) name##_RB_MINMAX(x, RB_NEGINF)
#define RB_MAX(name, x) name##_RB_MINMAX(x, RB_INF)

#define RB_FOREACH(x, name, head) \
for ((x) = RB_MIN(name, head); \
(x) != NULL; \
(x) = name##_RB_NEXT(x))

#define RB_FOREACH_FROM(x, name, y) \
for ((x) = (y); \
((x) != NULL) && ((y) = name##_RB_NEXT(x), (x) != NULL); \
(x) = (y))

#define RB_FOREACH_SAFE(x, name, head, y) \
for ((x) = RB_MIN(name, head); \
((x) != NULL) && ((y) = name##_RB_NEXT(x), (x) != NULL); \
(x) = (y))

#define RB_FOREACH_REVERSE(x, name, head) \
for ((x) = RB_MAX(name, head); \
(x) != NULL; \
(x) = name##_RB_PREV(x))

#define RB_FOREACH_REVERSE_FROM(x, name, y) \
for ((x) = (y); \
((x) != NULL) && ((y) = name##_RB_PREV(x), (x) != NULL); \
(x) = (y))

#define RB_FOREACH_REVERSE_SAFE(x, name,
head, y) \
for ((x) = RB_MAX(name, head); \
((x) != NULL) && ((y) = name##_RB_PREV(x), (x) != NULL); \
(x) = (y))

#endif /* _SYS_TREE_H_ */
# Contributor: Wen Heping <wenhepingalpine@sohu.com>
# Maintainer: Wen Heping <wenhepingalpine@sohu.com>
pkgname=perl-software-license
pkgver=0.104007
pkgrel=0

```

```
# _pkgreal is used by apkbuild-cpan to find modules at MetaCpan
_pkgreal=Software-License
pkgdesc="packages that provide templated software licenses"
url="https://metacpan.org/release/Software-License/"
arch="noarch"
license="GPL-1.0-or-later OR Artistic-1.0-Perl"
depends="perl perl-data-section perl-text-template"
checkdepends="perl-try-tiny"
subpackages="$pkgname-doc"
source="https://cpan.metacpan.org/authors/id/L/LE/LEONT/Software-License-$pkgver.tar.gz"
builddir="$srcdir/${_pkgreal}-${pkgver}"

build() {
    export CFLAGS=$(perl -MConfig -E 'say $Config{ccflags}')
    PERL_MM_USE_DEFAULT=1 perl -I. Makefile.PL \
        INSTALLDIRS=vendor \
        NO_PACKLIST=1 \
        NO_PERLLOCAL=1
    make
}

check() {
    export CFLAGS=$(perl -MConfig -E 'say $Config{ccflags}')
    make test
}

package() {
    make DESTDIR="$pkgdir" install
}

sha512sums="
12d75e9583b3013d9b4a282467f1ac80ab6b7f3251926d66591d01404489b528f22adc396dfd4528a0f0ca650f0eed6d
9c959e69eace2169c6ed1cffe5277e4
Software-License-0.104007.tar.gz
"
(The MIT License)
```

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Contributor: Dhruvin Gandhi <contact@dhruvin>

Maintainer: Patrycja Rosa <alpine@ptrcnull.me>

pkgname=py3-license-expression

_pkgname=license_expression

pkgver=30.4.4

pkgrel=0

pkgdesc="Library to parse, compare, simplify and normalize license expressions"

url="https://github.com/nexB/license-expression"

arch="noarch"

license="Apache-2.0"

depends="python3 py3-boolean.py"

makedepends="py3-setuptools py3-setuptools_scm py3-gpep517 py3-wheel"

checkdepends="py3-pytest py3-pytest-xdist"

subpackages="\$pkgname-pyc"

source="https://files.pythonhosted.org/packages/source/l/\${_pkgname}/\${_pkgname}-\${pkgver}.tar.gz"

builddir="\$srcdir/\${_pkgname}-\${pkgver}"

```
build() {
    gpep517 build-wheel \
        --wheel-dir .dist \
        --output-fd 3 3>&1 >&2
}
```

```
check() {
    python3 -m venv --clear --without-pip --system-site-packages .testenv
    .testenv/bin/python3 -m installer .dist/*.whl
    .testenv/bin/python3 -m pytest
}
```

```
package() {
    python3 -m installer -d "$pkgdir" \
        .dist/*.whl
}
```

sha512sums="

f46dd4cf524b3962115fe26f5545bfdd6767275b482724af51e7ca07da79244969a3bfc5d2fd5b95bc0f19d1b95a26a8f3
ab36c676e56ec302178d7166588066

```
license_expression-30.4.4.tar.gz
```

```
"
```

1.401 alpine-release 3.23.0-r0

1.401.1 Available under license :

```
# Contributor: Carlo Landmeter <clandmeter@alpinelinux.org>
# Maintainer: Kevin Daudt <kdaudt@alpinelinux.org>
pkgname=spdx-licenses
pkgver=3.27.0
pkgrel=0
pkgdesc="Various data formats for the SPDX License List"
url="https://spdx.org/"
arch="noarch"
options="!check" # no test suite
license="CC-BY-3.0"
source="license-list-data-$pkgver.tar.gz::https://github.com/spdx/license-list-data/archive/v$pkgver.tar.gz"
builddir="$srcdir/license-list-data-$pkgver"
subpackages="$pkgname-list"

_types="html json rdfa rdft rdfturtle rdfxml template text"

for type in $_types; do
    subpackages="$subpackages $pkgname-$type:_subpkg"
done

package() {
    mkdir -p "$pkgdir"
}

_subpkg() {
    local type=${subpkgname/$pkgname-/}
    pkgdesc="$pkgdesc ($type)"
    install_if="$pkgname=$pkgver-r$pkgrel"
    mkdir -p "$subpkgdir"/usr/share/spdx
    cp -r "$builddir"/$type "$subpkgdir"/usr/share/spdx/
}

list() {
    pkgdesc="$pkgdesc (licence list)"
    mkdir -p "$subpkgdir"/usr/share/spdx
    local i; for i in "$builddir"/text/*.txt;
    do
        local license=${i##*/}
        echo ${license%.*} >> "$subpkgdir"/usr/share/spdx/license.lst
    done
}
```

```

sha512sums="
16d59c81e331b54b52639826f83408d98144cdaa70eacc3e8ce35dc3b13992e4794cf7515eb9db200efd390a0c0e35ae9
d4706fbe0ca6a8d236189e88870720c license-list-data-3.27.0.tar.gz
"

# Automatically generated by apkbuid-cpan, template 4
# Contributor: Valery Kartel <valery.kartel@gmail.com>
# Maintainer: Celeste <cielesti@protonmail.com>
maintainer="Celeste <cielesti@protonmail.com>"
pkgname=perl-bsd-resource
pkgver=1.2911
pkgrel=11
#_pkgreal is used by apkbuid-cpan to find modules at MetaCpan
_pkgreal=BSD-Resource
pkgdesc="Perl extension implements the BSD process resource limit functions"
url="https://metacpan.org/release/BSD-Resource/"
arch="all"
license="Artistic-2.0 OR LGPL-2.0"
depends="perl"
makedepends="perl-dev"
subpackages="$pkgname-doc"
source="https://cpan.metacpan.org/authors/id/J/JH/JHI/BSD-Resource-$pkgver.tar.gz"
builddir="$srcdir/${_pkgreal}-${pkgver}"

build() {
    export CFLAGS=$(perl -MConfig -E 'say $Config{ccflags}')
    PERL_MM_USE_DEFAULT=1 perl -I. Makefile.PL \
        INSTALLDIRS=vendor \
        NO_PACKLIST=1 \
        NO_PERLLOCAL=1
    make
}

check() {
    export CFLAGS=$(perl -MConfig -E 'say $Config{ccflags}')
    make test
}

package() {
    make DESTDIR="$pkgdir" install
}

sha512sums="
d0032d41c7c0468ed1c6d8f57b885f6cb97a5039d754c8cb60b2067daedaf53bd15fb6561a3d0f828df16dfa5417f663b
8065ba65f4fea16dc9262728b3b6b85
    BSD-Resource-1.2911.tar.gz
"

```

```

maintainer="Achill Gilgenast <achill@achill.org>"
pkgname=cargo-license
pkgver=0.7.0
pkgrel=1
pkgdesc="Cargo subcommand to see license of dependencies"
url="https://github.com/onur/cargo-license"
arch="all"
license="MIT"
makedepends="cargo cargo-auditable"
source="$pkgname-$pkgver.tar.gz::https://crates.io/api/v1/crates/cargo-license/$pkgver/download"

prepare() {
    default_prepare

    cargo fetch --target="$CTARGET" --locked
}

build() {
    cargo auditable build --release --frozen
}

check() {
    cargo test --frozen
}

package() {
    install -Dm755 target/release/cargo-license -t "$pkgdir"/usr/bin
}

sha512sums="
9b3f0ead35515e85ef4074ebdbdbe5b9ec8bcaec244fabe414e2ed60f90366e8b1692d8bf7ffe4c07d778e60d94bab86bc
0c8be9823232e9c360a38bc65e9c5a  cargo-license-0.7.0.tar.gz
"

#!/sbin/openrc-run

command="/usr/libexec/xdg-permission-store"
supervisor=supervise-daemon
command_args="--replace $command_args"
error_logger="logger -t '${RC_SVCNAME}' -p daemon.error"

depend() {
    need dbus
}

# Contributor: Maxim Karasev <begs@disroot.org>
# Maintainer: mio <miyopan@e.email>
pkgname=bsd-games
pkgver=3.3
pkgrel=2

```

```

pkgdesc="traditional text mode games from BSD"
url="https://bsd-games.sourceforge.io/"
arch="all"
license="BSD-3-Clause"
install="$pkgname.post-install"
makedepends="ncurses-dev coreutils" # configure causes busybox expr error
subpackages="$pkgname-doc"
source="https://sourceforge.net/projects/bsd-games/files/bsd-games-$pkgver.tar.gz
0001-bsd-games-scores-dir.patch
"
options="!check" # no tests

build() {
    # some GNU autoconf options are ignored, but it works
    ./configure \
        --build=$CBUILD \
        --host=$CHOST \
        --prefix=/usr \
        --sysconfdir=/etc \
        --mandir=/usr/share/man \
        --scoredir=/usr/share/$pkgname
    make
}

package() {
    make DESTDIR="$pkgdir" install
    install -Dm644 LICENSE "$pkgdir"/usr/share/licenses/bsd-games/LICENSE
}

sha512sums="
aaf36d09d4fe68514a5c279063d7e77a9a9a84c447037cba974b29faa07eb80c2aab2379d0699c196b5c27ffe1b2bb2c6
8d3390143e0e62d5e3d210ccfb61294
    bsd-games-3.3.tar.gz
e1def0d4835a877242c4173fae862e278a7858738e0bacacbb045a42bcabec2aa7c72d000bbd2421ce35fe66cdc1f52c0
577b7e278029ca5ed50f7aab22319f6 0001-bsd-games-scores-dir.patch
"

MIT License

```

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mini_sendmail - accept email on behalf of real sendmail

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Maintainer: Natanael Copa <ncopa@alpinelinux.org>

pkgname=libart-lgpl

pkgver=2.3.21

pkgrel=8

pkgdesc="A library for high-performance 2D graphics"

url="https://www.levien.com/libart/"

arch="all"

options="!check" # No test suite.

license="LGPL-2.0-or-later"

subpackages="\$pkgname-dev"

source="https://download.gnome.org/sources/libart-lgpl/2.3/libart-lgpl-\$pkgver.tar.bz2"

"

```
builddir="$srcdir"/libart_lgpl-$pkgver
```

```
prepare() {  
    update_config_sub  
    default_prepare  
}
```

```
build() {  
    ./configure \  
    --build=$CBUILD \  
    --host=$CHOST \  
    --prefix=/usr  
    make  
}
```

```
package() {  
    make DESTDIR="$pkgdir" install  
}
```

```
sha512sums="8a632a6a4da59e5e8c02ec2f5a57e36d182b325b46513765425e5f171ff9ae326af1b133725beba28f7e7  
6654309e001aee9bace727b5b4c8589405256a3c020 libart_lgpl-2.3.21.tar.bz2"
```

```
# Contributor: Patrycja Rosa <alpine@ptrcnull.me>
```

```
# Maintainer: Patrycja Rosa <alpine@ptrcnull.me>
```

```
pkgname=bsd-compat-headers
```

```
pkgver=0.7.2
```

```
pkgrel=6
```

```
pkgdesc="BSD compatibility headers (cdefs, queue, tree)"
```

```
url="https://gitlab.alpinelinux.org/alpine/aports"
```

```
arch="noarch"
```

```
license="BSD-2-Clause AND BSD-3-Clause"
```

```
source="
```

```
    cdefs.h
```

```
    queue.h
```

```
    tree.h
```

```
"
```

```
builddir="$srcdir"
```

```
options="!check" # just headers
```

```
package() {  
    mkdir -p "$pkgdir"  
    install -Dm644 -t "$pkgdir"/usr/include/sys \  
    cdefs.h queue.h tree.h  
}
```

```
sha512sums="
```

```
37c8fc73c7aea7b490f7850927e2bb91d12137c9e59e22c084146d515696dbc7973b5de92f4c987ba080dd2502ba8312
```

```
7006442c3f019b6447a620c0cae73178 cdefs.h
```

```
2f0d5e6e4dc3350285cf17009265dddcbe12431c111868eea39bc8cb038ab7c1f2acacbb21735c4e9d4a1fd106a8fc0f86
```

11ea33987d4faba37dde5ce6da0750 queue.h
d9ac210d81feb8ad2655bc80fb065d3fe20ae4417b32b4a1711e6738a4870140005c13373b5d1846ef3ce5ae6da45f2da
cef2092881eded0a2e94f6a07752ef3 tree.h
"

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The X-Spline code was written Carole Blanc (blanc@labri.u-bordeaux.fr) and Christophe Schlick (schlick@labri.u-bordeaux.fr) starting from an initial implementation done by C. Feuille, S. Grosbois, L. Maziere and L. Minihot as a student practice (Universite Bordeaux, France). For additional information about X-splines, see:

"X-Splines: A Spline Model Designed for the End User" by C. Blanc and C. Schlick, Proceedings of SIGGRAPH'95
<http://dept-info.labri.u-bordeaux.fr/~schlick/DOC/sig1.html>

/* \$NetBSD: queue.h,v 1.70 2015/11/02 15:21:23 christos Exp \$ */

/*

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*

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- *
- * @(#)queue.h 8.5 (Berkeley) 8/20/94
- */

```
#ifndef _SYS_QUEUE_H_
#define _SYS_QUEUE_H_
```

```
/*
 * This file defines five types of data structures: singly-linked lists,
 * lists, simple queues, tail queues, and circular queues.
 *
 * A singly-linked list is headed by a single forward pointer. The
 * elements are singly linked for minimum space and
 * pointer manipulation
 * overhead at the expense of O(n) removal for arbitrary elements. New
 * elements can be added to the list after an existing element or at the
 * head of the list. Elements being removed from the head of the list
 * should use the explicit macro for this purpose for optimum
 * efficiency. A singly-linked list may only be traversed in the forward
 * direction. Singly-linked lists are ideal for applications with large
 * datasets and few or no removals or for implementing a LIFO queue.
 *
 * A list is headed by a single forward pointer (or an array of forward
 * pointers for a hash table header). The elements are doubly linked
 * so that an arbitrary element can be removed without a need to
 * traverse the list. New elements can be added to the list before
 * or after an existing element or at the head of the list. A list
 * may only be traversed in the forward direction.
 *
 * A simple queue is headed by a pair of pointers, one the head of the
 * list and the
 * other to the tail of the list. The elements are singly
 * linked to save space, so elements can only be removed from the
```

```

* head of the list. New elements can be added to the list after
* an existing element, at the head of the list, or at the end of the
* list. A simple queue may only be traversed in the forward direction.
*
* A tail queue is headed by a pair of pointers, one to the head of the
* list and the other to the tail of the list. The elements are doubly
* linked so that an arbitrary element can be removed without a need to
* traverse the list. New elements can be added to the list before or
* after an existing element, at the head of the list, or at the end of
* the list. A tail queue may be traversed in either direction.
*
* A circle queue is headed by a pair of pointers, one to the head of the
* list and the other to the tail of the list. The elements are doubly
* linked so that an arbitrary element can be removed without a need to
* traverse the list. New elements
can be added to the list before or after
* an existing element, at the head of the list, or at the end of the list.
* A circle queue may be traversed in either direction, but has a more
* complex end of list detection.
*
* For details on the use of these macros, see the queue(3) manual page.
*/

/*
* Include the definition of NULL only on NetBSD because sys/null.h
* is not available elsewhere. This conditional makes the header
* portable and it can simply be dropped verbatim into any system.
* The caveat is that on other systems some other header
* must provide NULL before the macros can be used.
*/
#ifdef __NetBSD__
#include <sys/null.h>
#endif

#if defined(QEUEDEBUG)
# if defined(_KERNEL)
#  define QEUEDEBUG_ABORT(...) panic(__VA_ARGS__)
# else
#  include <err.h>
#  define QEUEDEBUG_ABORT(...) err(1, __VA_ARGS__)
# endif
#endif

/*
* Singly-linked List definitions.
*/
#define SLIST_HEAD(name, type) \
struct name { \

```

```

struct type *slh_first; /* first
element */ \
}

#define SLIST_HEAD_INITIALIZER(head) \
{ NULL }

#define SLIST_ENTRY(type) \
struct { \
    struct type *sle_next; /* next element */ \
}

/*
 * Singly-linked List access methods.
 */

#define SLIST_FIRST(head) ((head)->slh_first)
#define SLIST_END(head) NULL
#define SLIST_EMPTY(head) ((head)->slh_first == NULL)
#define SLIST_NEXT(elm, field) ((elm)->field.sle_next)

#define SLIST_FOREACH(var, head, field) \
for((var) = (head)->slh_first; \
    (var) != SLIST_END(head); \
    (var) = (var)->field.sle_next)

#define SLIST_FOREACH_SAFE(var, head, field, tvar) \
for ((var) = SLIST_FIRST((head)); \
    (var) != SLIST_END(head) && \
    ((tvar) = SLIST_NEXT((var), field), 1); \
    (var) = (tvar))

/*
 * Singly-linked List functions.
 */

#define SLIST_INIT(head) do { \
    (head)->slh_first = SLIST_END(head); \
} while (/*CONSTCOND*/)

#define SLIST_INSERT_AFTER(slistelm, elm, field) do { \
    (elm)->field.sle_next = (slistelm)->field.sle_next; \
    (slistelm)->field.sle_next \
    = (elm); \
} while (/*CONSTCOND*/)

#define SLIST_INSERT_HEAD(head, elm, field) do { \
    (elm)->field.sle_next = (head)->slh_first; \
    (head)->slh_first = (elm); \
} while (/*CONSTCOND*/)

```

```

#define SLIST_REMOVE_AFTER(slistelm, field) do { \
    (slistelm)->field.sle_next = \
        SLIST_NEXT(SLIST_NEXT((slistelm), field), field); \
} while (/*CONSTCOND*/0)

#define SLIST_REMOVE_HEAD(head, field) do { \
    (head)->slh_first = (head)->slh_first->field.sle_next; \
} while (/*CONSTCOND*/0)

#define SLIST_REMOVE(head, elm, type, field) do { \
    if ((head)->slh_first == (elm)) { \
        SLIST_REMOVE_HEAD((head), field); \
    } \
    else { \
        struct type *curelm = (head)->slh_first; \
        while(curelm->field.sle_next != (elm)) \
            curelm = curelm->field.sle_next; \
        curelm->field.sle_next = \
            curelm->field.sle_next->field.sle_next; \
    } \
} while (/*CONSTCOND*/0)

/*
 * List definitions.
 */
#define LIST_HEAD(name, type) \
struct name { \
    struct type *lh_first; /* first element */ \
}

#define LIST_HEAD_INITIALIZER(head) \
{ NULL }

#define LIST_ENTRY(type) \
struct { \
    struct type *le_next; /* next element */ \
    struct type **le_prev; /* address of previous next element */ \
}

/*
 * List access methods.
 */
#define LIST_FIRST(head) ((head)->lh_first)
#define LIST_END(head) NULL
#define LIST_EMPTY(head) ((head)->lh_first == LIST_END(head))
#define LIST_NEXT(elm, field) ((elm)->field.le_next)

```

```

#define LIST_FOREACH(var, head, field) \
for ((var) = ((head)->lh_first); \
    (var) != LIST_END(head); \
    (var) = ((var)->field.le_next))

#define LIST_FOREACH_SAFE(var, head, field, tvar) \
for ((var) = LIST_FIRST((head)); \
    (var) != LIST_END(head) && \
    ((tvar) = LIST_NEXT((var), field), 1); \
    (var) = (tvar))

#define LIST_MOVE(head1, head2) do { \
    LIST_INIT((head2)); \
    if (!LIST_EMPTY((head1))) \
    { \
        (head2)->lh_first = (head1)->lh_first; \
        LIST_INIT((head1)); \
    } \
} while (/*CONSTCOND*/0)

/*
 * List functions.
 */

#if defined(QUEUEDEBUG)
#define QUEUEDEBUG_LIST_INSERT_HEAD(head, elm, field) \
if ((head)->lh_first && \
    (head)->lh_first->field.le_prev != &(head)->lh_first) \
    QUEUEDEBUG_ABORT("LIST_INSERT_HEAD %p %s:%d", (head), \
        __FILE__, __LINE__);
#define QUEUEDEBUG_LIST_OP(elm, field) \
if ((elm)->field.le_next && \
    (elm)->field.le_next->field.le_prev != \
    &(elm)->field.le_next) \
    QUEUEDEBUG_ABORT("LIST_* forw %p %s:%d", (elm), \
        __FILE__, __LINE__); \
if (*(elm)->field.le_prev != (elm)) \
    QUEUEDEBUG_ABORT("LIST_* back %p %s:%d", (elm), \
        __FILE__, __LINE__);
#define QUEUEDEBUG_LIST_POSTREMOVE(elm, field) \
(elm)->field.le_next = (void *)1L; \
(elm)->field.le_prev = (void *)1L;
#else
#define QUEUEDEBUG_LIST_INSERT_HEAD(head, elm, field)
#define QUEUEDEBUG_LIST_OP(elm, field)
#define QUEUEDEBUG_LIST_POSTREMOVE(elm, field)
#endif

```

```

#define LIST_INIT(head) do { \
    (head)->lh_first = LIST_END(head); \
} while (/*CONSTCOND*/0)

#define LIST_INSERT_AFTER(listelm, elm, field) do { \
    QUEUEDEBUG_LIST_OP((listelm), field) \
    if (((elm)->field.le_next = (listelm)->field.le_next) != \
        LIST_END(head)) \
        (listelm)->field.le_next->field.le_prev = \
            &(elm)->field.le_next; \
    (listelm)->field.le_next = (elm); \
    (elm)->field.le_prev = &(listelm)->field.le_next; \
} while (/*CONSTCOND*/0)

#define LIST_INSERT_BEFORE(listelm, elm, field) do { \
    QUEUEDEBUG_LIST_OP((listelm), field) \
    (elm)->field.le_prev = (listelm)->field.le_prev; \
    (elm)->field.le_next = (listelm); \
    *(listelm)->field.le_prev = (elm); \
    (listelm)->field.le_prev = &(elm)->field.le_next; \
} while (/*CONSTCOND*/0)

#define LIST_INSERT_HEAD(head, elm, field) do { \
    QUEUEDEBUG_LIST_INSERT_HEAD((head), (elm), field) \
    if (((elm)->field.le_next \
        = (head)->lh_first) != LIST_END(head)) \
        (head)->lh_first->field.le_prev = &(elm)->field.le_next; \
    (head)->lh_first = (elm); \
    (elm)->field.le_prev = &(head)->lh_first; \
} while (/*CONSTCOND*/0)

#define LIST_REMOVE(elm, field) do { \
    QUEUEDEBUG_LIST_OP((elm), field) \
    if ((elm)->field.le_next != NULL) \
        (elm)->field.le_next->field.le_prev = \
            (elm)->field.le_prev; \
    *(elm)->field.le_prev = (elm)->field.le_next; \
    QUEUEDEBUG_LIST_POSTREMOVE((elm), field) \
} while (/*CONSTCOND*/0)

#define LIST_REPLACE(elm, elm2, field) do { \
    if (((elm2)->field.le_next = (elm)->field.le_next) != NULL) \
        (elm2)->field.le_next->field.le_prev = \
            &(elm2)->field.le_next; \
    (elm2)->field.le_prev = (elm)->field.le_prev; \
    *(elm2)->field.le_prev = (elm2); \
    QUEUEDEBUG_LIST_POSTREMOVE((elm), field) \
} while (/*CONSTCOND*/0)

```

```

} while (/*CONSTCOND*/0)

/*
 * Simple queue definitions.
 */
#define SIMPLEQ_HEAD(name, type)  \
struct name {  \
    struct  \
    type *sqh_first; /* first element */  \
    struct type **sqh_last; /* addr of last next element */  \
}

#define SIMPLEQ_HEAD_INITIALIZER(head)  \
{ NULL, &(head).sqh_first }

#define SIMPLEQ_ENTRY(type)  \
struct {  \
    struct type *sqe_next; /* next element */  \
}

/*
 * Simple queue access methods.
 */
#define SIMPLEQ_FIRST(head) ((head)->sqh_first)
#define SIMPLEQ_END(head) NULL
#define SIMPLEQ_EMPTY(head) ((head)->sqh_first == SIMPLEQ_END(head))
#define SIMPLEQ_NEXT(elm, field) ((elm)->field.sqe_next)

#define SIMPLEQ_FOREACH(var, head, field)  \
for ((var) = ((head)->sqh_first);  \
     (var) != SIMPLEQ_END(head);  \
     (var) = ((var)->field.sqe_next))

#define SIMPLEQ_FOREACH_SAFE(var, head, field, next)  \
for ((var) = ((head)->sqh_first);  \
     (var) != SIMPLEQ_END(head) &&  \
     ((next = ((var)->field.sqe_next)), 1);  \
     (var) = (next))

/*
 * Simple queue functions.
 */
#define SIMPLEQ_INIT(head) do {  \
    (head)->sqh_first = NULL;  \
    (head)->sqh_last  \
    = &(head)->sqh_first;  \
} while (/*CONSTCOND*/0)

```

```

#define SIMPLEQ_INSERT_HEAD(head, elm, field) do { \
    if (((elm)->field.sqe_next = (head)->sqh_first) == NULL) \
        (head)->sqh_last = &(elm)->field.sqe_next; \
    (head)->sqh_first = (elm); \
} while (/*CONSTCOND*/0)

#define SIMPLEQ_INSERT_TAIL(head, elm, field) do { \
    (elm)->field.sqe_next = NULL; \
    *(head)->sqh_last = (elm); \
    (head)->sqh_last = &(elm)->field.sqe_next; \
} while (/*CONSTCOND*/0)

#define SIMPLEQ_INSERT_AFTER(head, listelm, elm, field) do { \
    if (((elm)->field.sqe_next = (listelm)->field.sqe_next) == NULL) \
        (head)->sqh_last = &(elm)->field.sqe_next; \
    (listelm)->field.sqe_next = (elm); \
} while (/*CONSTCOND*/0)

#define SIMPLEQ_REMOVE_HEAD(head, field) do { \
    if (((head)->sqh_first = (head)->sqh_first->field.sqe_next) == NULL) \
        (head)->sqh_last = &(head)->sqh_first; \
} while (/*CONSTCOND*/0)

#define SIMPLEQ_REMOVE_AFTER(head, elm, field) do { \
    if \
        (((elm)->field.sqe_next = (elm)->field.sqe_next->field.sqe_next) \
         == NULL) \
        (head)->sqh_last = &(elm)->field.sqe_next; \
} while (/*CONSTCOND*/0)

#define SIMPLEQ_REMOVE(head, elm, type, field) do { \
    if ((head)->sqh_first == (elm)) { \
        SIMPLEQ_REMOVE_HEAD((head), field); \
    } else { \
        struct type *curelm = (head)->sqh_first; \
        while (curelm->field.sqe_next != (elm)) \
            curelm = curelm->field.sqe_next; \
        if ((curelm->field.sqe_next = \
            curelm->field.sqe_next->field.sqe_next) == NULL) \
            (head)->sqh_last = &(curelm)->field.sqe_next; \
    } \
} while (/*CONSTCOND*/0)

#define SIMPLEQ_CONCAT(head1, head2) do { \
    if (!SIMPLEQ_EMPTY((head2))) { \
        *(head1)->sqh_last = (head2)->sqh_first; \
        (head1)->sqh_last = (head2)->sqh_last; \
        SIMPLEQ_INIT((head2)); \
    } \
} while (/*CONSTCOND*/0)

```



```

} \
} while (/*CONSTCOND*/0)

#define SIMPLEQ_LAST(head, type, field) \
(SIMPLEQ_EMPTY((head)) ? \
NULL : \
((struct type \
*)(void *) \
((char *)((head)->sqh_last) - offsetof(struct type, field))))

/*
 * Tail queue definitions.
 */
#define _TAILQ_HEAD(name, type, qual) \
struct name { \
    qual type *tqh_first; /* first element */ \
    qual type *qual *tqh_last; /* addr of last next element */ \
}
#define TAILQ_HEAD(name, type) _TAILQ_HEAD(name, struct type,)

#define TAILQ_HEAD_INITIALIZER(head) \
{ TAILQ_END(head), &(head).tqh_first }

#define _TAILQ_ENTRY(type, qual) \
struct { \
    qual type *tqe_next; /* next element */ \
    qual type *qual *tqe_prev; /* address of previous next element */ \
}
#define TAILQ_ENTRY(type) _TAILQ_ENTRY(struct type,)

/*
 * Tail queue access methods.
 */
#define TAILQ_FIRST(head) ((head)->tqh_first)
#define TAILQ_END(head) (NULL)
#define TAILQ_NEXT(elm, field) ((elm)->field.tqe_next)
#define TAILQ_LAST(head, headname) \
(*(((struct headname *) (void *)((head)->tqh_last))->tqh_last))
#define TAILQ_PREV(elm, headname, field) \
(*(((struct headname \
*)(void *)((elm)->field.tqe_prev))->tqh_last))
#define TAILQ_EMPTY(head) (TAILQ_FIRST(head) == TAILQ_END(head))

#define TAILQ_FOREACH(var, head, field) \
for ((var) = ((head)->tqh_first); \
     (var) != TAILQ_END(head); \
     (var) = ((var)->field.tqe_next))

```

```

#define TAILQ_FOREACH_SAFE(var, head, field, next) \
for ((var) = ((head)->tqh_first); \
     (var) != TAILQ_END(head) && \
     ((next) = TAILQ_NEXT(var, field), 1); (var) = (next))

#define TAILQ_FOREACH_REVERSE(var, head, headname, field) \
for ((var) = TAILQ_LAST((head), headname); \
     (var) != TAILQ_END(head); \
     (var) = TAILQ_PREV((var), headname, field))

#define TAILQ_FOREACH_REVERSE_SAFE(var, head, headname, field, prev) \
for ((var) = TAILQ_LAST((head), headname); \
     (var) != TAILQ_END(head) && \
     ((prev) = TAILQ_PREV((var), headname, field), 1); (var) = (prev))

/*
 * Tail queue functions.
 */
#if defined(QUEUEDEBUG)
#define QUEUEDEBUG_TAILQ_INSERT_HEAD(head, \
elm, field) \
if ((head)->tqh_first && \
     (head)->tqh_first->field.tqe_prev != &(head)->tqh_first) \
    QUEUEDEBUG_ABORT("TAILQ_INSERT_HEAD %p %s:%d", (head), \
        __FILE__, __LINE__);
#define QUEUEDEBUG_TAILQ_INSERT_TAIL(head, elm, field) \
if (*(head)->tqh_last != NULL) \
    QUEUEDEBUG_ABORT("TAILQ_INSERT_TAIL %p %s:%d", (head), \
        __FILE__, __LINE__);
#define QUEUEDEBUG_TAILQ_OP(elm, field) \
if ((elm)->field.tqe_next && \
     (elm)->field.tqe_next->field.tqe_prev != \
     &(elm)->field.tqe_next) \
    QUEUEDEBUG_ABORT("TAILQ_* forw %p %s:%d", (elm), \
        __FILE__, __LINE__); \
if (*(elm)->field.tqe_prev != (elm)) \
    QUEUEDEBUG_ABORT("TAILQ_* back %p %s:%d", (elm), \
        __FILE__, __LINE__);
#define QUEUEDEBUG_TAILQ_PREREMOVE(head, elm, field) \
if ((elm)->field.tqe_next == NULL && \
     (head)->tqh_last != &(elm)->field.tqe_next) \
    QUEUEDEBUG_ABORT("TAILQ_PREREMOVE head %p elm %p %s:%d", \
        (head), (elm), __FILE__, \
        __LINE__);
#define QUEUEDEBUG_TAILQ_POSTREMOVE(elm, field) \
(elm)->field.tqe_next = (void *)1L; \
(elm)->field.tqe_prev = (void *)1L;

```

```

#else
#define QUEUEDEBUG_TAILQ_INSERT_HEAD(head, elm, field)
#define QUEUEDEBUG_TAILQ_INSERT_TAIL(head, elm, field)
#define QUEUEDEBUG_TAILQ_OP(elm, field)
#define QUEUEDEBUG_TAILQ_PREREMOVE(head, elm, field)
#define QUEUEDEBUG_TAILQ_POSTREMOVE(elm, field)
#endif

#define TAILQ_INIT(head) do { \
    (head)->tqh_first = TAILQ_END(head); \
    (head)->tqh_last = &(head)->tqh_first; \
} while (/*CONSTCOND*/0)

#define TAILQ_INSERT_HEAD(head, elm, field) do { \
    QUEUEDEBUG_TAILQ_INSERT_HEAD((head), (elm), field) \
    if (((elm)->field.tqe_next = (head)->tqh_first) != TAILQ_END(head)) \
    (head)->tqh_first->field.tqe_prev = \
        &(elm)->field.tqe_next; \
    else \
    (head)->tqh_last = &(elm)->field.tqe_next; \
    (head)->tqh_first = (elm); \
    (elm)->field.tqe_prev = &(head)->tqh_first; \
} while (/*CONSTCOND*/0)

#define TAILQ_INSERT_TAIL(head, \
    elm, field) do { \
    QUEUEDEBUG_TAILQ_INSERT_TAIL((head), (elm), field) \
    (elm)->field.tqe_next = TAILQ_END(head); \
    (elm)->field.tqe_prev = (head)->tqh_last; \
    *(head)->tqh_last = (elm); \
    (head)->tqh_last = &(elm)->field.tqe_next; \
} while (/*CONSTCOND*/0)

#define TAILQ_INSERT_AFTER(head, listelm, elm, field) do { \
    QUEUEDEBUG_TAILQ_OP((listelm), field) \
    if (((elm)->field.tqe_next = (listelm)->field.tqe_next) != \
        TAILQ_END(head)) \
    (elm)->field.tqe_next->field.tqe_prev = \
        &(elm)->field.tqe_next; \
    else \
    (head)->tqh_last = &(elm)->field.tqe_next; \
    (listelm)->field.tqe_next = (elm); \
    (elm)->field.tqe_prev = &(listelm)->field.tqe_next; \
} while (/*CONSTCOND*/0)

#define TAILQ_INSERT_BEFORE(listelm, elm, field) do { \
    QUEUEDEBUG_TAILQ_OP((listelm), field) \
    (elm)->field.tqe_prev = (listelm)->field.tqe_prev; \

```

```

(elm)->field.tqe_next = (listelm); \
*(listelm)->field.tqe_prev = (elm); \
(listelm)->field.tqe_prev
= &(elm)->field.tqe_next; \
} while (/*CONSTCOND*/0)

#define TAILQ_REMOVE(head, elm, field) do { \
    QUEUEDEBUG_TAILQ_PREREMOVE((head), (elm), field) \
    QUEUEDEBUG_TAILQ_OP((elm), field) \
    if (((elm)->field.tqe_next) != TAILQ_END(head)) \
        (elm)->field.tqe_next->field.tqe_prev = \
            (elm)->field.tqe_prev; \
    else \
        (head)->tqh_last = (elm)->field.tqe_prev; \
    *(elm)->field.tqe_prev = (elm)->field.tqe_next; \
    QUEUEDEBUG_TAILQ_POSTREMOVE((elm), field); \
} while (/*CONSTCOND*/0)

#define TAILQ_REPLACE(head, elm, elm2, field) do { \
    if (((elm2)->field.tqe_next = (elm)->field.tqe_next) != \
        TAILQ_END(head)) \
        (elm2)->field.tqe_next->field.tqe_prev = \
            &(elm2)->field.tqe_next; \
    else \
        (head)->tqh_last = &(elm2)->field.tqe_next; \
    (elm2)->field.tqe_prev = (elm)->field.tqe_prev; \
    *(elm2)->field.tqe_prev = (elm2); \
    QUEUEDEBUG_TAILQ_POSTREMOVE((elm), \
        field); \
} while (/*CONSTCOND*/0)

#define TAILQ_CONCAT(head1, head2, field) do { \
    if (!TAILQ_EMPTY(head2)) { \
        *(head1)->tqh_last = (head2)->tqh_first; \
        (head2)->tqh_first->field.tqe_prev = (head1)->tqh_last; \
        (head1)->tqh_last = (head2)->tqh_last; \
        TAILQ_INIT((head2)); \
    } \
} while (/*CONSTCOND*/0)

/*
 * Singly-linked Tail queue declarations.
 */

#define STAILQ_HEAD(name, type) \
struct name { \
    struct type *stqh_first; /* first element */ \
    struct type **stqh_last; /* addr of last next element */ \
}

```

```

#define STAILQ_HEAD_INITIALIZER(head) \
{ NULL, &(head).stqh_first }

#define STAILQ_ENTRY(type) \
struct { \
    struct type *stqe_next; /* next element */ \
}

/*
 * Singly-linked Tail queue access methods.
 */
#define STAILQ_FIRST(head) ((head)->stqh_first)
#define STAILQ_END(head) NULL
#define STAILQ_NEXT(elm, field) ((elm)->field.stqe_next)
#define STAILQ_EMPTY(head) (STAILQ_FIRST(head) \
    == STAILQ_END(head))

/*
 * Singly-linked Tail queue functions.
 */
#define STAILQ_INIT(head) do { \
    (head)->stqh_first = NULL; \
    (head)->stqh_last = &(head)->stqh_first; \
} while (/*CONSTCOND*/0)

#define STAILQ_INSERT_HEAD(head, elm, field) do { \
    if (((elm)->field.stqe_next = (head)->stqh_first) == NULL) \
        (head)->stqh_last = &(elm)->field.stqe_next; \
    (head)->stqh_first = (elm); \
} while (/*CONSTCOND*/0)

#define STAILQ_INSERT_TAIL(head, elm, field) do { \
    (elm)->field.stqe_next = NULL; \
    *(head)->stqh_last = (elm); \
    (head)->stqh_last = &(elm)->field.stqe_next; \
} while (/*CONSTCOND*/0)

#define STAILQ_INSERT_AFTER(head, listelm, elm, field) do { \
    if (((elm)->field.stqe_next = (listelm)->field.stqe_next) == NULL) \
        (head)->stqh_last = &(elm)->field.stqe_next; \
    (listelm)->field.stqe_next = (elm); \
} while (/*CONSTCOND*/0)

#define STAILQ_REMOVE_HEAD(head, field) do { \
    if (((head)->stqh_first = (head)->stqh_first->field.stqe_next) \
        == NULL) \
        (head)->stqh_last = &(head)->stqh_first; \
}

```

```

} while (/*CONSTCOND*/0)

#define STAILQ_REMOVE(head, elm, type, field) do { \
    if ((head)->stqh_first == (elm)) { \
        STAILQ_REMOVE_HEAD((head), field); \
    } else { \
        struct type *curelm = (head)->stqh_first; \
        while (curelm->field.stqe_next != (elm)) \
            curelm = curelm->field.stqe_next; \
        if ((curelm->field.stqe_next = \
            curelm->field.stqe_next->field.stqe_next) == NULL) \
            (head)->stqh_last = &(curelm->field.stqe_next); \
    } \
} while (/*CONSTCOND*/0)

#define STAILQ_FOREACH(var, head, field) \
    for ((var) = ((head)->stqh_first); \
        (var); \
        (var) = ((var)->field.stqe_next))

#define STAILQ_FOREACH_SAFE(var, head, field, tvar) \
    for ((var) = STAILQ_FIRST((head)); \
        (var) && ((tvar) = STAILQ_NEXT((var), field), 1); \
        (var) = (tvar))

#define STAILQ_CONCAT(head1, head2) do { \
    if (!STAILQ_EMPTY((head2))) { \
        *(head1)->stqh_last \
        = (head2)->stqh_first; \
        (head1)->stqh_last = (head2)->stqh_last; \
        STAILQ_INIT((head2)); \
    } \
} while (/*CONSTCOND*/0)

#define STAILQ_LAST(head, type, field) \
    (STAILQ_EMPTY((head)) ? \
    NULL : \
    ((struct type *) (void *) \
    ((char *)((head)->stqh_last) - offsetof(struct type, field))))

#ifdef _KERNEL
/*
 * Circular queue definitions. Do not use. We still keep the macros
 * for compatibility but because of pointer aliasing issues their use
 * is discouraged!
 */

```

```

/*
 * __launder_type(): We use this ugly hack to work around the the compiler
 * noticing that two types may not alias each other and elide tests in code.
 * We hit this in the CIRCLEQ macros when comparing 'struct name *' and
 * 'struct type *' (see CIRCLEQ_HEAD()). Modern compilers (such as GCC
 * 4.8) declare these comparisons as always false, causing the code to
 * not run as designed.
 *
 * This hack is only to be used for comparisons and thus can be fully const.
 * Do not use for assignment.
 *
 * If we ever choose to change the ABI of the CIRCLEQ macros, we could fix
 * this by changing the head/tail sentinel values, but see the note above
 * this one.
 */
static __inline const void * __launder_type(const void *);
static __inline const void *
__launder_type(const void *__x)
{
    __asm __volatile("" : "+r" (__x));
    return __x;
}

#if defined(QUEUEDEBUG)
#define QUEUEDEBUG_CIRCLEQ_HEAD(head, field) \
    if ((head)->cqh_first != CIRCLEQ_ENDC(head) && \
        (head)->cqh_first->field.cqe_prev != CIRCLEQ_ENDC(head)) \
        QUEUEDEBUG_ABORT("CIRCLEQ head forw %p %s:%d", (head), \
            __FILE__, __LINE__); \
    if ((head)->cqh_last != CIRCLEQ_ENDC(head) && \
        (head)->cqh_last->field.cqe_next != CIRCLEQ_ENDC(head)) \
        QUEUEDEBUG_ABORT("CIRCLEQ head back %p %s:%d", (head), \
            __FILE__, __LINE__);
#define QUEUEDEBUG_CIRCLEQ_ELM(head, elm, field) \
    if ((elm)->field.cqe_next == CIRCLEQ_ENDC(head)) { \
        if ((head)->cqh_last != (elm)) \
            QUEUEDEBUG_ABORT("CIRCLEQ \
elm last %p %s:%d", \
                (elm), __FILE__, __LINE__); \
    } else { \
        if ((elm)->field.cqe_next->field.cqe_prev != (elm)) \
            QUEUEDEBUG_ABORT("CIRCLEQ elm forw %p %s:%d", \
                (elm), __FILE__, __LINE__); \
    } \
    if ((elm)->field.cqe_prev == CIRCLEQ_ENDC(head)) { \
        if ((head)->cqh_first != (elm)) \
            QUEUEDEBUG_ABORT("CIRCLEQ elm first %p %s:%d", \
                (elm), __FILE__, __LINE__); \
    }

```

```

} else { \
if ((elm)->field.cqe_prev->field.cqe_next != (elm)) \
    QUEUEDEBUG_ABORT("CIRCLEQ elm prev %p %s:%d", \
        (elm), __FILE__, __LINE__); \
}

#define QUEUEDEBUG_CIRCLEQ_POSTREMOVE(elm, field) \
    (elm)->field.cqe_next = (void *)1L; \
    (elm)->field.cqe_prev = (void *)1L;
#else
#define QUEUEDEBUG_CIRCLEQ_HEAD(head, field)
#define QUEUEDEBUG_CIRCLEQ_ELM(head, elm, field)
#define QUEUEDEBUG_CIRCLEQ_POSTREMOVE(elm, field)
#endif

#define CIRCLEQ_HEAD(name, type) \
struct name { \
    struct type *cqh_first; /* \
    first element */ \
    struct type *cqh_last; /* last element */ \
}

#define CIRCLEQ_HEAD_INITIALIZER(head) \
    { CIRCLEQ_END(&head), CIRCLEQ_END(&head) }

#define CIRCLEQ_ENTRY(type) \
struct { \
    struct type *cqe_next; /* next element */ \
    struct type *cqe_prev; /* previous element */ \
}

/*
 * Circular queue functions.
 */

#define CIRCLEQ_INIT(head) do { \
    (head)->cqh_first = CIRCLEQ_END(head); \
    (head)->cqh_last = CIRCLEQ_END(head); \
} while (/*CONSTCOND*/0)

#define CIRCLEQ_INSERT_AFTER(head, listelm, elm, field) do { \
    QUEUEDEBUG_CIRCLEQ_HEAD((head), field) \
    QUEUEDEBUG_CIRCLEQ_ELM((head), (listelm), field) \
    (elm)->field.cqe_next = (listelm)->field.cqe_next; \
    (elm)->field.cqe_prev = (listelm); \
    if ((listelm)->field.cqe_next == CIRCLEQ_ENDC(head)) \
        (head)->cqh_last = (elm); \
    else \
        (listelm)->field.cqe_next->field.cqe_prev = (elm); \
    (listelm)->field.cqe_next = (elm); \
} while (0)

```



```

} while (/*CONSTCOND*/0)

#define CIRCLEQ_INSERT_BEFORE(head,
listelm, elm, field) do { \
    QUEUEDEBDEBUG_CIRCLEQ_HEAD((head), field) \
    QUEUEDEBDEBUG_CIRCLEQ_ELM((head), (listelm), field) \
    (elm)->field.cqe_next = (listelm); \
    (elm)->field.cqe_prev = (listelm)->field.cqe_prev; \
    if ((listelm)->field.cqe_prev == CIRCLEQ_ENDC(head)) \
        (head)->cqh_first = (elm); \
    else \
        (listelm)->field.cqe_prev->field.cqe_next = (elm); \
    (listelm)->field.cqe_prev = (elm); \
} while (/*CONSTCOND*/0)

#define CIRCLEQ_INSERT_HEAD(head, elm, field) do { \
    QUEUEDEBDEBUG_CIRCLEQ_HEAD((head), field) \
    (elm)->field.cqe_next = (head)->cqh_first; \
    (elm)->field.cqe_prev = CIRCLEQ_END(head); \
    if ((head)->cqh_last == CIRCLEQ_ENDC(head)) \
        (head)->cqh_last = (elm); \
    else \
        (head)->cqh_first->field.cqe_prev = (elm); \
    (head)->cqh_first = (elm); \
} while (/*CONSTCOND*/0)

#define CIRCLEQ_INSERT_TAIL(head, elm, field) do { \
    QUEUEDEBDEBUG_CIRCLEQ_HEAD((head), field) \
    (elm)->field.cqe_next \
    = CIRCLEQ_END(head); \
    (elm)->field.cqe_prev = (head)->cqh_last; \
    if ((head)->cqh_first == CIRCLEQ_ENDC(head)) \
        (head)->cqh_first = (elm); \
    else \
        (head)->cqh_last->field.cqe_next = (elm); \
    (head)->cqh_last = (elm); \
} while (/*CONSTCOND*/0)

#define CIRCLEQ_REMOVE(head, elm, field) do { \
    QUEUEDEBDEBUG_CIRCLEQ_HEAD((head), field) \
    QUEUEDEBDEBUG_CIRCLEQ_ELM((head), (elm), field) \
    if ((elm)->field.cqe_next == CIRCLEQ_ENDC(head)) \
        (head)->cqh_last = (elm)->field.cqe_prev; \
    else \
        (elm)->field.cqe_next->field.cqe_prev = \
            (elm)->field.cqe_prev; \
    if ((elm)->field.cqe_prev == CIRCLEQ_ENDC(head)) \
        (head)->cqh_first = (elm)->field.cqe_next; \

```

```

else \
    (elm)->field.cqe_prev->field.cqe_next = \
        (elm)->field.cqe_next; \
    QUEUEDEBUG_CIRCLEQ_POSTREMOVE((elm), field) \
} while (/*CONSTCOND*/0)

#define CIRCLEQ_FOREACH(var, head, field) \
    for ((var) = ((head)->cqh_first); \
        (var) != CIRCLEQ_ENDC(head); \
        (var) \
        = ((var)->field.cqe_next))

#define CIRCLEQ_FOREACH_REVERSE(var, head, field) \
    for ((var) = ((head)->cqh_last); \
        (var) != CIRCLEQ_ENDC(head); \
        (var) = ((var)->field.cqe_prev))

/*
 * Circular queue access methods.
 */
#define CIRCLEQ_FIRST(head) ((head)->cqh_first)
#define CIRCLEQ_LAST(head) ((head)->cqh_last)
/* For comparisons */
#define CIRCLEQ_ENDC(head) (__laundry_type(head))
/* For assignments */
#define CIRCLEQ_END(head) ((void *)(head))
#define CIRCLEQ_NEXT(elm, field) ((elm)->field.cqe_next)
#define CIRCLEQ_PREV(elm, field) ((elm)->field.cqe_prev)
#define CIRCLEQ_EMPTY(head) \
    (CIRCLEQ_FIRST(head) == CIRCLEQ_ENDC(head))

#define CIRCLEQ_LOOP_NEXT(head, elm, field) \
    (((elm)->field.cqe_next == CIRCLEQ_ENDC(head)) \
     ? ((head)->cqh_first) \
     : (elm->field.cqe_next))
#define CIRCLEQ_LOOP_PREV(head, elm, field) \
    (((elm)->field.cqe_prev == CIRCLEQ_ENDC(head)) \
     ? ((head)->cqh_last) \
     : \
     (elm->field.cqe_prev))
#endif /* !_KERNEL */

#endif /* !_SYS_QUEUE_H_ */
#ifdef _SYS_CDEFS_H_
#define _SYS_CDEFS_H_

#warning usage of non-standard #include <sys/cdefs.h> is deprecated

```

```

#undef __P
#undef __PMT

#define __P(args) args
#define __PMT(args) args

#define __CONCAT(x,y) x ## y
#define __STRING(x) #x

#ifdef __cplusplus
# define __BEGIN_DECLS extern "C" {
# define __END_DECLS }
#else
# define __BEGIN_DECLS
# define __END_DECLS
#endif

#if defined(__GNUC__) && !defined(__cplusplus)
# define __THROW __attribute__((__nothrow__))
# define __NTH(fct) __attribute__((__nothrow__)) fct
#else
# define __THROW
# define __NTH(fct) fct
#endif

#endif /* _SYS_CDEFS_H_ */
# Contributor: Fabian Affolter <fabian@affolter-engineering.ch>
# Maintainer: Fabian Affolter <fabian@affolter-engineering.ch>
pkgname=py3-flake8-copyright
_pkgname=flake8-copyright
pkgver=0.2.4
pkgrel=3
pkgdesc="Extension for flake8 which checks for copyrights"
options="!check" # No testsuite
url="https://github.com/savoirfairelinux/flake8-copyright"
arch="noarch"
license="MIT"
depends="py3-flake8 py3-setuptools"
makedepends="py3-gp517 py3-wheel"
subpackages="$pkgname-pyc"
source="https://files.pythonhosted.org/packages/source/${_pkgname:0:1}/${_pkgname}/${_pkgname}-${pkgver}.tar.gz"
buildid="$srcdir"/$_pkgname-$pkgver

replaces="py-flake8-copyright" # Backwards compatibility
provides="py-flake8-copyright=$pkgver-r$pkgrel" # Backwards compatibility

build() {
    gp517 build-wheel \

```

```

--wheel-dir .dist \
--output-fd 3 3>&1 >&2
}

package() {
gpep517 install-wheel --destdir "$pkgdir" \
.dist/*.whl
}

sha512sums="
a6ab47e1bb715618f075c51f398e18180404871b3b0faf1c2d30701d5203db6bc23771bf22ffb5bafcd8ee856b9b64237
b316bd503ae7dceed6ca284ccd5a74d
flake8-copyright-0.2.4.tar.gz
"
(The MIT License)

```

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/* \$NetBSD: tree.h,v 1.20 2013/09/14 13:20:45 joerg Exp \$ */

/* \$OpenBSD: tree.h,v 1.13 2011/07/09 00:19:45 pirofti Exp \$ */

/* Modified by Void Linux. */

/*

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*

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- */

```
#ifndef _SYS_TREE_H_
#define _SYS_TREE_H_
```

```
#ifdef __GNUC__
#define __GNUC_PREREQ__(x, y) \
((__GNUC__ == (x) && __GNUC_MINOR__ >= (y)) || \
 (__GNUC__ > (x)))
#else
#define __GNUC_PREREQ__(x, y) 0
#endif
```

```
#if __GNUC_PREREQ__(2, 7) || defined(__lint__)
#define _sys_tree_h_unused __attribute__((__unused__))
#else
#define _sys_tree_h_unused /* delete */
#endif
```

```
/*
```

- * This file defines data structures for different types of trees:
- * splay trees and red-black trees.
- *
- * A splay tree is a self-organizing
- data structure. Every operation
- * on the tree causes a splay to happen. The splay moves the requested
- * node to the root of the tree and partly rebalances it.
- *
- * This has the benefit that request locality causes faster lookups as
- * the requested nodes move to the top of the tree. On the other hand,
- * every lookup causes memory writes.
- *

- * The Balance Theorem bounds the total access time for m operations
- * and n inserts on an initially empty tree as $O((m + n)\lg n)$. The
- * amortized cost for a sequence of m accesses to a splay tree is $O(\lg n)$;
- *
- * A red-black tree is a binary search tree with the node color as an
- * extra attribute. It fulfills a set of conditions:
- * - every search path from the root to a leaf consists of the
- * same number of black nodes,
- * - each red node (except for the root) has a black parent,
- * - each leaf node is black.
- *
- * Every operation on a red-black tree is bounded as $O(\lg n)$.
- * The maximum height of a red-black tree is $2\lg(n+1)$.
- */

```
#define SPLAY_HEAD(name, type) \
struct name { \
    struct type *sph_root; /* root of the tree */ \
}
```

```
#define SPLAY_INITIALIZER(root) \
{ NULL }
```

```
#define SPLAY_INIT(root) do { \
    (root)->sph_root = NULL; \
} while (/*CONSTCOND*/ 0)
```

```
#define SPLAY_ENTRY(type) \
struct { \
    struct type *spe_left; /* left element */ \
    struct type *spe_right; /* right element */ \
}
```

```
#define SPLAY_LEFT(elm, field) (elm)->field.spe_left
#define SPLAY_RIGHT(elm, field) (elm)->field.spe_right
#define SPLAY_ROOT(head) (head)->sph_root
#define SPLAY_EMPTY(head) (SPLAY_ROOT(head) == NULL)
```

```
/* SPLAY_ROTATE_{LEFT,RIGHT} expect that tmp hold SPLAY_{RIGHT,LEFT} */
#define SPLAY_ROTATE_RIGHT(head, tmp, field) do { \
    SPLAY_LEFT((head)->sph_root, field) = SPLAY_RIGHT(tmp, field); \
    SPLAY_RIGHT(tmp, field) = (head)->sph_root; \
    (head)->sph_root = tmp; \
} while (/*CONSTCOND*/ 0)
```

```
#define SPLAY_ROTATE_LEFT(head, tmp, field) do { \
    SPLAY_RIGHT((head)->sph_root,
```

```

field) = SPLAY_LEFT(tmp, field); \
SPLAY_LEFT(tmp, field) = (head)->sph_root; \
(head)->sph_root = tmp; \
} while (/*CONSTCOND*/ 0)

#define SPLAY_LINKLEFT(head, tmp, field) do { \
SPLAY_LEFT(tmp, field) = (head)->sph_root; \
tmp = (head)->sph_root; \
(head)->sph_root = SPLAY_LEFT((head)->sph_root, field); \
} while (/*CONSTCOND*/ 0)

#define SPLAY_LINKRIGHT(head, tmp, field) do { \
SPLAY_RIGHT(tmp, field) = (head)->sph_root; \
tmp = (head)->sph_root; \
(head)->sph_root = SPLAY_RIGHT((head)->sph_root, field); \
} while (/*CONSTCOND*/ 0)

#define SPLAY_ASSEMBLE(head, node, left, right, field) do { \
SPLAY_RIGHT(left, field) = SPLAY_LEFT((head)->sph_root, field); \
SPLAY_LEFT(right, field) = SPLAY_RIGHT((head)->sph_root, field); \
SPLAY_LEFT((head)->sph_root, field) = SPLAY_RIGHT(node, field); \
SPLAY_RIGHT((head)->sph_root, field) = SPLAY_LEFT(node, field); \
} while (/*CONSTCOND*/ 0)

/* Generates prototypes and inline functions */

#define
SPLAY_PROTOTYPE(name, type, field, cmp) \
void name##_SPLAY(struct name *, struct type *); \
void name##_SPLAY_MINMAX(struct name *, int); \
struct type *name##_SPLAY_INSERT(struct name *, struct type *); \
struct type *name##_SPLAY_REMOVE(struct name *, struct type *); \
\
/* Finds the node with the same key as elm */ \
static __inline struct type * \
name##_SPLAY_FIND(struct name *head, struct type *elm) \
{ \
if (SPLAY_EMPTY(head)) \
return(NULL); \
name##_SPLAY(head, elm); \
if ((cmp)(elm, (head)->sph_root) == 0) \
return (head->sph_root); \
return (NULL); \
} \
\
static __inline _sys_tree_h_unused struct type * \
name##_SPLAY_NEXT(struct name *head, struct type *elm) \
{ \

```

```

name##_SPLAY(head, elm); \
if (SPLAY_RIGHT(elm, field) != NULL) { \
    elm = SPLAY_RIGHT(elm, field); \
    while (SPLAY_LEFT(elm, field) != NULL) { \
        elm = SPLAY_LEFT(elm, field); \
    } \
} \
else \
    elm = NULL; \
return (elm); \
} \
\
static __sys_tree_h_unused __inline struct type * \
name##_SPLAY_MIN_MAX(struct name *head, int val) \
{ \
    name##_SPLAY_MINMAX(head, val); \
    return (SPLAY_ROOT(head)); \
}

/* Main splay operation.
 * Moves node close to the key of elm to top
 */
#define SPLAY_GENERATE(name, type, field, cmp) \
struct type * \
name##_SPLAY_INSERT(struct name *head, struct type *elm) \
{ \
    if (SPLAY_EMPTY(head)) { \
        SPLAY_LEFT(elm, field) = SPLAY_RIGHT(elm, field) = NULL; \
    } else { \
        int __comp; \
        name##_SPLAY(head, elm); \
        __comp = (cmp)(elm, (head)->sph_root); \
        if (__comp < 0) { \
            SPLAY_LEFT(elm, field) = SPLAY_LEFT((head)->sph_root, field); \
            SPLAY_RIGHT(elm, field) = (head)->sph_root; \
            SPLAY_LEFT((head)->sph_root, field) = NULL; \
        } else if (__comp > 0) { \
            SPLAY_RIGHT(elm, \
field) = SPLAY_RIGHT((head)->sph_root, field); \
            SPLAY_LEFT(elm, field) = (head)->sph_root; \
            SPLAY_RIGHT((head)->sph_root, field) = NULL; \
        } else \
            return ((head)->sph_root); \
    } \
    (head)->sph_root = (elm); \
    return (NULL); \
} \
\

```



```

struct type * \
name##_SPLAY_REMOVE(struct name *head, struct type *elm) \
{ \
    struct type *__tmp; \
    if (SPLAY_EMPTY(head)) \
        return (NULL); \
    name##_SPLAY(head, elm); \
    if ((cmp)(elm, (head)->sph_root) == 0) { \
        if (SPLAY_LEFT((head)->sph_root, field) == NULL) { \
            (head)->sph_root = SPLAY_RIGHT((head)->sph_root, field);\
        } else { \
            __tmp = SPLAY_RIGHT((head)->sph_root, field); \
            (head)->sph_root = SPLAY_LEFT((head)->sph_root, field);\
            name##_SPLAY(head, elm); \
            SPLAY_RIGHT((head)->sph_root, field) = __tmp; \
        } \
        return (elm); \
    } \
    return (NULL); \
} \
\
void \
name##_SPLAY(struct \
    name *head, struct type *elm) \
{ \
    struct type __node, *__left, *__right, *__tmp; \
    int __comp; \
    \
    SPLAY_LEFT(&__node, field) = SPLAY_RIGHT(&__node, field) = NULL;\
    __left = __right = &__node; \
    \
    while ((__comp = (cmp)(elm, (head)->sph_root)) != 0) { \
        if (__comp < 0) { \
            __tmp = SPLAY_LEFT((head)->sph_root, field); \
            if (__tmp == NULL) \
                break; \
            if ((cmp)(elm, __tmp) < 0){ \
                SPLAY_ROTATE_RIGHT(head, __tmp, field); \
                if (SPLAY_LEFT((head)->sph_root, field) == NULL)\
                    break; \
            } \
            SPLAY_LINKLEFT(head, __right, field); \
        } else if (__comp > 0) { \
            __tmp = SPLAY_RIGHT((head)->sph_root, field); \
            if (__tmp == NULL) \
                break; \
            if ((cmp)(elm, __tmp) > 0){ \
                SPLAY_ROTATE_LEFT(head, __tmp, field); \

```

```

    if (SPLAY_RIGHT((head)->sph_root, field) == NULL)\
        break; \
} \
SPLAY_LINKRIGHT(head, __left, field); \
} \
} \
SPLAY_ASSEMBLE(head,
&__node, __left, __right, field); \
} \
\
/* Splay with either the minimum or the maximum element \
* Used to find minimum or maximum element in tree. \
*/ \
void name##_SPLAY_MINMAX(struct name *head, int __comp) \
{ \
    struct type __node, *__left, *__right, *__tmp; \
\
    SPLAY_LEFT(&__node, field) = SPLAY_RIGHT(&__node, field) = NULL;\
    __left = __right = &__node; \
\
    while (1) { \
        if (__comp < 0) { \
            __tmp = SPLAY_LEFT((head)->sph_root, field); \
            if (__tmp == NULL) \
                break; \
            if (__comp < 0){ \
                SPLAY_ROTATE_RIGHT(head, __tmp, field); \
                if (SPLAY_LEFT((head)->sph_root, field) == NULL)\
                    break; \
            } \
            SPLAY_LINKLEFT(head, __right, field); \
        } else if (__comp > 0) { \
            __tmp = SPLAY_RIGHT((head)->sph_root, field); \
            if (__tmp == NULL) \
                break; \
            if (__comp > 0) { \
                SPLAY_ROTATE_LEFT(head, __tmp, field); \
                if (SPLAY_RIGHT((head)->sph_root,
field) == NULL)\
                    break; \
            } \
            SPLAY_LINKRIGHT(head, __left, field); \
        } \
    } \
    SPLAY_ASSEMBLE(head, &__node, __left, __right, field); \
}

```

```

#define SPLAY_NEGINF -1

```

```

#define SPLAY_INF 1

#define SPLAY_INSERT(name, x, y) name##_SPLAY_INSERT(x, y)
#define SPLAY_REMOVE(name, x, y) name##_SPLAY_REMOVE(x, y)
#define SPLAY_FIND(name, x, y) name##_SPLAY_FIND(x, y)
#define SPLAY_NEXT(name, x, y) name##_SPLAY_NEXT(x, y)
#define SPLAY_MIN(name, x) (SPLAY_EMPTY(x) ? NULL \
    : name##_SPLAY_MIN_MAX(x, SPLAY_NEGINF))
#define SPLAY_MAX(name, x) (SPLAY_EMPTY(x) ? NULL \
    : name##_SPLAY_MIN_MAX(x, SPLAY_INF))

#define SPLAY_FOREACH(x, name, head) \
    for ((x) = SPLAY_MIN(name, head); \
        (x) != NULL; \
        (x) = SPLAY_NEXT(name, head, x))

/* Macros that define a red-black tree */
#define RB_HEAD(name, type) \
    struct name { \
        struct type *rbh_root; /* root of the tree */ \
    }

#define RB_INITIALIZER(root) \
    { \
        NULL \
    }

#define RB_INIT(root) do { \
    (root)->rbh_root = NULL; \
} while (/*CONSTCOND*/ 0)

#define RB_BLACK 0
#define RB_RED 1
#define RB_ENTRY(type) \
    struct { \
        struct type *rbe_left; /* left element */ \
        struct type *rbe_right; /* right element */ \
        struct type *rbe_parent; /* parent element */ \
        int rbe_color; /* node color */ \
    }

#define RB_LEFT(elm, field) (elm)->field.rbe_left
#define RB_RIGHT(elm, field) (elm)->field.rbe_right
#define RB_PARENT(elm, field) (elm)->field.rbe_parent
#define RB_COLOR(elm, field) (elm)->field.rbe_color
#define RB_ROOT(head) (head)->rbh_root
#define RB_EMPTY(head) (RB_ROOT(head) == NULL)

#define RB_SET(elm, parent, field) do { \

```

```

RB_PARENT(elm, field) = parent; \
RB_LEFT(elm, field) = RB_RIGHT(elm, field) = NULL; \
RB_COLOR(elm, field) = RB_RED; \
} while (/*CONSTCOND*/ 0)

#define RB_SET_BLACKRED(black, red, field) do { \
    RB_COLOR(black, field) = RB_BLACK; \
    RB_COLOR(red, field) \
    = RB_RED; \
} while (/*CONSTCOND*/ 0)

#ifndef RB_AUGMENT
#define RB_AUGMENT(x) do {} while (/*CONSTCOND*/ 0)
#endif

#define RB_ROTATE_LEFT(head, elm, tmp, field) do { \
    (tmp) = RB_RIGHT(elm, field); \
    if ((RB_RIGHT(elm, field) = RB_LEFT(tmp, field)) != NULL) { \
        RB_PARENT(RB_LEFT(tmp, field), field) = (elm); \
    } \
    RB_AUGMENT(elm); \
    if ((RB_PARENT(tmp, field) = RB_PARENT(elm, field)) != NULL) { \
        if ((elm) == RB_LEFT(RB_PARENT(elm, field), field)) \
            RB_LEFT(RB_PARENT(elm, field), field) = (tmp); \
        else \
            RB_RIGHT(RB_PARENT(elm, field), field) = (tmp); \
    } else \
        (head)->rbh_root = (tmp); \
    RB_LEFT(tmp, field) = (elm); \
    RB_PARENT(elm, field) = (tmp); \
    RB_AUGMENT(tmp); \
    if ((RB_PARENT(tmp, field))) \
        RB_AUGMENT(RB_PARENT(tmp, field)); \
} while (/*CONSTCOND*/ 0)

#define RB_ROTATE_RIGHT(head, elm, tmp, field) do { \
    (tmp) = RB_LEFT(elm, field); \
    if ((RB_LEFT(elm, field) = RB_RIGHT(tmp, field)) \
    != NULL) { \
        RB_PARENT(RB_RIGHT(tmp, field), field) = (elm); \
    } \
    RB_AUGMENT(elm); \
    if ((RB_PARENT(tmp, field) = RB_PARENT(elm, field)) != NULL) { \
        if ((elm) == RB_LEFT(RB_PARENT(elm, field), field)) \
            RB_LEFT(RB_PARENT(elm, field), field) = (tmp); \
        else \
            RB_RIGHT(RB_PARENT(elm, field), field) = (tmp); \
    } else \

```

```

(head)->rbh_root = (tmp); \
RB_RIGHT(tmp, field) = (elm); \
RB_PARENT(elm, field) = (tmp); \
RB_AUGMENT(tmp); \
if ((RB_PARENT(tmp, field))) \
    RB_AUGMENT(RB_PARENT(tmp, field)); \
} while (/*CONSTCOND*/ 0)

/* Generates prototypes and inline functions */
#define RB_PROTOTYPE(name, type, field, cmp) \
    RB_PROTOTYPE_INTERNAL(name, type, field, cmp,)
#define RB_PROTOTYPE_STATIC(name, type, field, cmp) \
    RB_PROTOTYPE_INTERNAL(name, type, field, cmp, _sys_tree_h_unused static)
#define RB_PROTOTYPE_INTERNAL(name, type, field, cmp, attr) \
    attr void name##_RB_INSERT_COLOR(struct name *, struct \
        type *); \
    attr void name##_RB_REMOVE_COLOR(struct name *, struct type *, struct type *);\
    attr struct type *name##_RB_REMOVE(struct name *, struct type *); \
    attr struct type *name##_RB_INSERT(struct name *, struct type *); \
    attr struct type *name##_RB_FIND(struct name *, struct type *); \
    attr struct type *name##_RB_NFIND(struct name *, struct type *); \
    attr struct type *name##_RB_NEXT(struct type *); \
    attr struct type *name##_RB_PREV(struct type *); \
    attr struct type *name##_RB_MINMAX(struct name *, int); \
    \

/* Main rb operation.
 * Moves node close to the key of elm to top
 */
#define RB_GENERATE(name, type, field, cmp) \
    RB_GENERATE_INTERNAL(name, type, field, cmp,)
#define RB_GENERATE_STATIC(name, type, field, cmp) \
    RB_GENERATE_INTERNAL(name, type, field, cmp, _sys_tree_h_unused static)
#define RB_GENERATE_INTERNAL(name, type, field, cmp, attr) \
    attr void \
    name##_RB_INSERT_COLOR(struct name *head, struct type *elm) \
    { \
        struct type \
        *parent, *gparent, *tmp; \
        while ((parent = RB_PARENT(elm, field)) != NULL && \
            RB_COLOR(parent, field) == RB_RED) { \
            gparent = RB_PARENT(parent, field); \
            if (parent == RB_LEFT(gparent, field)) { \
                tmp = RB_RIGHT(gparent, field); \
                if (tmp && RB_COLOR(tmp, field) == RB_RED) { \
                    RB_COLOR(tmp, field) = RB_BLACK; \
                    RB_SET_BLACKRED(parent, gparent, field);\
                    elm = gparent; \

```

```

        continue; \
    } \
    if (RB_RIGHT(parent, field) == elm) { \
        RB_ROTATE_LEFT(head, parent, tmp, field);\
        tmp = parent; \
        parent = elm; \
        elm = tmp; \
    } \
    RB_SET_BLACKRED(parent, gparent, field); \
    RB_ROTATE_RIGHT(head, gparent, tmp, field); \
} else { \
    tmp = RB_LEFT(gparent, field); \
    if (tmp && RB_COLOR(tmp, field) == RB_RED) { \
        RB_COLOR(tmp, field) = RB_BLACK; \
        RB_SET_BLACKRED(parent, gparent, field);\
        elm = gparent; \
        continue; \
    } \
    if (RB_LEFT(parent, field) == elm)
{ \
    RB_ROTATE_RIGHT(head, parent, tmp, field);\
    tmp = parent; \
    parent = elm; \
    elm = tmp; \
} \
    RB_SET_BLACKRED(parent, gparent, field); \
    RB_ROTATE_LEFT(head, gparent, tmp, field); \
} \
} \
RB_COLOR(head->rbh_root, field) = RB_BLACK; \
} \
\
attr void \
name##_RB_REMOVE_COLOR(struct name *head, struct type *parent, struct type *elm) \
{ \
    struct type *tmp; \
    while ((elm == NULL || RB_COLOR(elm, field) == RB_BLACK) && \
        elm != RB_ROOT(head)) { \
        if (RB_LEFT(parent, field) == elm) { \
            tmp = RB_RIGHT(parent, field); \
            if (RB_COLOR(tmp, field) == RB_RED) { \
                RB_SET_BLACKRED(tmp, parent, field); \
                RB_ROTATE_LEFT(head, parent, tmp, field);\
                tmp = RB_RIGHT(parent, field); \
            } \
            if ((RB_LEFT(tmp, field) == NULL || \
                RB_COLOR(RB_LEFT(tmp, field), field) == RB_BLACK) && \
                (RB_RIGHT(tmp, field) == NULL || \

```

```

        RB_COLOR(RB_RIGHT(tmp,
field), field) == RB_BLACK)) {\
    RB_COLOR(tmp, field) = RB_RED; \
    elm = parent; \
    parent = RB_PARENT(elm, field); \
} else { \
    if (RB_RIGHT(tmp, field) == NULL || \
        RB_COLOR(RB_RIGHT(tmp, field), field) == RB_BLACK) {\
        struct type *oleft; \
        if ((oleft = RB_LEFT(tmp, field)) \
            != NULL) \
            RB_COLOR(oleft, field) = RB_BLACK;\
        RB_COLOR(tmp, field) = RB_RED; \
        RB_ROTATE_RIGHT(head, tmp, oleft, field);\
        tmp = RB_RIGHT(parent, field); \
    } \
    RB_COLOR(tmp, field) = RB_COLOR(parent, field);\
    RB_COLOR(parent, field) = RB_BLACK; \
    if (RB_RIGHT(tmp, field)) \
        RB_COLOR(RB_RIGHT(tmp, field), field) = RB_BLACK;\
    RB_ROTATE_LEFT(head, parent, tmp, field);\
    elm = RB_ROOT(head); \
    break; \
} \
} else { \
    tmp = RB_LEFT(parent, field); \
    if (RB_COLOR(tmp, field) == RB_RED) { \
        RB_SET_BLACKRED(tmp, parent, field); \
        RB_ROTATE_RIGHT(head, parent, tmp, field);\
        tmp
= RB_LEFT(parent, field); \
    } \
    if ((RB_LEFT(tmp, field) == NULL || \
        RB_COLOR(RB_LEFT(tmp, field), field) == RB_BLACK) &&\
        (RB_RIGHT(tmp, field) == NULL || \
        RB_COLOR(RB_RIGHT(tmp, field), field) == RB_BLACK)) {\
        RB_COLOR(tmp, field) = RB_RED; \
        elm = parent; \
        parent = RB_PARENT(elm, field); \
    } else { \
        if (RB_LEFT(tmp, field) == NULL || \
            RB_COLOR(RB_LEFT(tmp, field), field) == RB_BLACK) {\
            struct type *oright; \
            if ((oright = RB_RIGHT(tmp, field)) \
                != NULL) \
                RB_COLOR(oright, field) = RB_BLACK;\
            RB_COLOR(tmp, field) = RB_RED; \
            RB_ROTATE_LEFT(head, tmp, oright, field);\

```

```

    tmp = RB_LEFT(parent, field); \
} \
RB_COLOR(tmp, field) = RB_COLOR(parent, field);\
RB_COLOR(parent, field) = RB_BLACK; \
if (RB_LEFT(tmp, field)) \
    RB_COLOR(RB_LEFT(tmp, field), field) = RB_BLACK;\
RB_ROTATE_RIGHT(head, parent, tmp, field);\
elm = RB_ROOT(head); \
break; \
} \
} \
} \
if
(elm) \
    RB_COLOR(elm, field) = RB_BLACK; \
} \
\
attr struct type * \
name##_RB_REMOVE(struct name *head, struct type *elm) \
{ \
    struct type *child, *parent, *old = elm; \
    int color; \
    if (RB_LEFT(elm, field) == NULL) \
        child = RB_RIGHT(elm, field); \
    else if (RB_RIGHT(elm, field) == NULL) \
        child = RB_LEFT(elm, field); \
    else { \
        struct type *left; \
        elm = RB_RIGHT(elm, field); \
        while ((left = RB_LEFT(elm, field)) != NULL) \
            elm = left; \
        child = RB_RIGHT(elm, field); \
        parent = RB_PARENT(elm, field); \
        color = RB_COLOR(elm, field); \
        if (child) \
            RB_PARENT(child, field) = parent; \
        if (parent) { \
            if (RB_LEFT(parent, field) == elm) \
                RB_LEFT(parent, field) = child; \
            else \
                RB_RIGHT(parent, field) = child; \
            RB_AUGMENT(parent); \
        } else \
            RB_ROOT(head)
= child; \
    if (RB_PARENT(elm, field) == old) \
        parent = elm; \
    (elm)->field = (old)->field; \
}

```



```

if (RB_PARENT(old, field)) { \
    if (RB_LEFT(RB_PARENT(old, field), field) == old)\
        RB_LEFT(RB_PARENT(old, field), field) = elm;\
    else \
        RB_RIGHT(RB_PARENT(old, field), field) = elm;\
    RB_AUGMENT(RB_PARENT(old, field)); \
} else \
    RB_ROOT(head) = elm; \
RB_PARENT(RB_LEFT(old, field), field) = elm; \
if (RB_RIGHT(old, field)) \
    RB_PARENT(RB_RIGHT(old, field), field) = elm; \
if (parent) { \
    left = parent; \
    do { \
        RB_AUGMENT(left); \
    } while ((left = RB_PARENT(left, field)) != NULL); \
} \
goto color; \
} \
parent = RB_PARENT(elm, field); \
color = RB_COLOR(elm, field); \
if (child) \
    RB_PARENT(child, field) = parent; \
if (parent) { \
    if (RB_LEFT(parent, field) == elm) \
        RB_LEFT(parent, field) = child; \
    else \
        RB_RIGHT(parent, field) = child; \
    RB_AUGMENT(parent); \
} else \
    RB_ROOT(head) = child; \
color: \
if (color == RB_BLACK) \
    name##_RB_REMOVE_COLOR(head, parent, child); \
return (old); \
} \
\
/* Inserts a node into the RB tree */ \
attr struct type * \
name##_RB_INSERT(struct name *head, struct type *elm) \
{ \
    struct type *tmp; \
    struct type *parent = NULL; \
    int comp = 0; \
    tmp = RB_ROOT(head); \
    while (tmp) { \
        parent = tmp; \

```

```

    comp = (cmp)(elm, parent); \
    if (comp < 0) \
        tmp = RB_LEFT(tmp, field); \
    else if (comp > 0) \
        tmp = RB_RIGHT(tmp, field); \
    else \
        return (tmp); \
} \
RB_SET(elm, parent, field); \
if (parent != NULL) { \
    if (comp < 0) \
        RB_LEFT(parent, field) = elm; \
    else \
        RB_RIGHT(parent, field) = elm; \
    RB_AUGMENT(parent); \
} else \
    RB_ROOT(head) = elm; \
name##_RB_INSERT_COLOR(head, \
elm); \
return (NULL); \
} \
\
/* Finds the node with the same key as elm */ \
attr struct type * \
name##_RB_FIND(struct name *head, struct type *elm) \
{ \
    struct type *tmp = RB_ROOT(head); \
    int comp; \
    while (tmp) { \
        comp = cmp(elm, tmp); \
        if (comp < 0) \
            tmp = RB_LEFT(tmp, field); \
        else if (comp > 0) \
            tmp = RB_RIGHT(tmp, field); \
        else \
            return (tmp); \
    } \
    return (NULL); \
} \
\
/* Finds the first node greater than or equal to the search key */ \
attr struct type * \
name##_RB_NFIND(struct name *head, struct type *elm) \
{ \
    struct type *tmp = RB_ROOT(head); \
    struct type *res = NULL; \
    int comp; \
    while (tmp) { \

```

```

comp = cmp(elm, tmp); \
if (comp < 0) { \
    res = tmp; \
    tmp = RB_LEFT(tmp, field); \
} \
else if (comp > 0) \
    tmp =
RB_RIGHT(tmp, field); \
else \
    return (tmp); \
} \
return (res); \
} \
\
/* ARGSUSED */ \
attr struct type * \
name##_RB_NEXT(struct type *elm) \
{ \
    if (RB_RIGHT(elm, field)) { \
        elm = RB_RIGHT(elm, field); \
        while (RB_LEFT(elm, field)) \
            elm = RB_LEFT(elm, field); \
    } else { \
        if (RB_PARENT(elm, field) && \
            (elm == RB_LEFT(RB_PARENT(elm, field), field))) \
            elm = RB_PARENT(elm, field); \
        else { \
            while (RB_PARENT(elm, field) && \
                (elm == RB_RIGHT(RB_PARENT(elm, field), field))) \
                elm = RB_PARENT(elm, field); \
            elm = RB_PARENT(elm, field); \
        } \
    } \
    return (elm); \
} \
\
/* ARGSUSED */ \
attr struct type * \
name##_RB_PREV(struct type *elm) \
{ \
    if (RB_LEFT(elm, field)) { \
        elm = RB_LEFT(elm, field); \
        while (RB_RIGHT(elm, field)) \
            elm = RB_RIGHT(elm, field); \
    } \
    else { \
        if (RB_PARENT(elm, field) && \
            (elm == RB_RIGHT(RB_PARENT(elm, field), field))) \

```

```

    elm = RB_PARENT(elm, field); \
else { \
    while (RB_PARENT(elm, field) && \
        (elm == RB_LEFT(RB_PARENT(elm, field), field)))\
        elm = RB_PARENT(elm, field); \
    elm = RB_PARENT(elm, field); \
} \
} \
return (elm); \
} \
\
attr struct type * \
name##_RB_MINMAX(struct name *head, int val) \
{ \
    struct type *tmp = RB_ROOT(head); \
    struct type *parent = NULL; \
    while (tmp) { \
        parent = tmp; \
        if (val < 0) \
            tmp = RB_LEFT(tmp, field); \
        else \
            tmp = RB_RIGHT(tmp, field); \
    } \
    return (parent); \
}

#define RB_NEGINF -1
#define RB_INF 1

#define RB_INSERT(name, x, y) name##_RB_INSERT(x, y)
#define RB_REMOVE(name, x, y) name##_RB_REMOVE(x, y)
#define RB_FIND(name, x, y) name##_RB_FIND(x, y)
#define RB_NFIND(name, x, y) name##_RB_NFIND(x, y)
#define RB_NEXT(name, x, y) name##_RB_NEXT(y)
#define RB_PREV(name, x, y) name##_RB_PREV(y)
#define RB_MIN(name, x) name##_RB_MINMAX(x, RB_NEGINF)
#define RB_MAX(name, x) name##_RB_MINMAX(x, RB_INF)

#define RB_FOREACH(x, name, head) \
    for ((x) = RB_MIN(name, head); \
        (x) != NULL; \
        (x) = name##_RB_NEXT(x))

#define RB_FOREACH_FROM(x, name, y) \
    for ((x) = (y); \
        ((x) != NULL) && ((y) = name##_RB_NEXT(x), (x) != NULL); \
        (x) = (y))

```

```

#define RB_FOREACH_SAFE(x, name, head, y) \
for ((x) = RB_MIN(name, head); \
     ((x) != NULL) && ((y) = name##_RB_NEXT(x), (x) != NULL); \
     (x) = (y))

#define RB_FOREACH_REVERSE(x, name, head) \
for ((x) = RB_MAX(name, head); \
     (x) != NULL; \
     (x) = name##_RB_PREV(x))

#define RB_FOREACH_REVERSE_FROM(x, name, y) \
for ((x) = (y); \
     ((x) != NULL) && ((y) = name##_RB_PREV(x), (x) != NULL); \
     (x) = (y))

#define RB_FOREACH_REVERSE_SAFE(x, name, \
head, y) \
for ((x) = RB_MAX(name, head); \
     ((x) != NULL) && ((y) = name##_RB_PREV(x), (x) != NULL); \
     (x) = (y))

#endif /* _SYS_TREE_H_ */
# Contributor: Wen Heping <wenhepingalpine@sohu.com>
# Maintainer: Wen Heping <wenhepingalpine@sohu.com>
pkgname=perl-software-license
pkgver=0.104007
pkgrel=0
# _pkgreal is used by apkbuild-cpan to find modules at MetaCpan
_pkgreal=Software-License
pkgdesc="packages that provide templated software licenses"
url="https://metacpan.org/release/Software-License/"
arch="noarch"
license="GPL-1.0-or-later OR Artistic-1.0-Perl"
depends="perl perl-data-section perl-text-template"
checkdepends="perl-try-tiny"
subpackages="$pkgname-doc"
source="https://cpan.metacpan.org/authors/id/L/LE/LEONT/Software-License-$pkgver.tar.gz"
buildid="$srcdir/${_pkgreal}-${pkgver}"

build() {
export CFLAGS=$(perl -MConfig -E 'say $Config{ccflags}')
PERL_MM_USE_DEFAULT=1 perl -I. Makefile.PL \
INSTALLDIRS=vendor \
NO_PACKLIST=1 \
NO_PERLLOCAL=1
make
}

```

```

check() {
    export CFLAGS=$(perl -MConfig -E 'say $Config{ccflags}')
    make test
}

package() {
    make DESTDIR="$pkgdir" install
}

sha512sums="
12d75e9583b3013d9b4a282467f1ac80ab6b7f3251926d66591d01404489b528f22adc396dfd4528a0f0ca650f0eed6d
9c959e69eace2169c6ed1cffe5277e4
Software-License-0.104007.tar.gz
"
(The MIT License)

```

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Contributor: Dhruvin Gandhi <contact@dhruvin.me>

Maintainer: Patrycja Rosa <alpine@ptrcnull.me>

pkgname=py3-license-expression

_pkgname=license_expression

pkgver=30.4.4

pkgrel=0

pkgdesc="Library to parse, compare, simplify and normalize license expressions"

url="https://github.com/nexB/license-expression"

arch="noarch"

license="Apache-2.0"

```

depends="python3 py3-boolean.py"
makedepends="py3-setuptools py3-setuptools_scm py3-gpep517 py3-wheel"
checkdepends="py3-pytest py3-pytest-xdist"
subpackages="$pkgname-pyc"
source="https://files.pythonhosted.org/packages/source/l/${_pkgname}/${_pkgname}-${pkgver}.tar.gz"
builddir="$srcdir/${_pkgname}-${pkgver}"

build() {
    gpep517 build-wheel \
        --wheel-dir .dist \
        --output-fd 3 3>&1 >&2
}

check() {
    python3 -m venv --clear --without-pip --system-site-packages .testenv
    .testenv/bin/python3 -m installer .dist/*.whl
    .testenv/bin/python3 -m pytest
}

package() {
    python3 -m installer -d "$pkgdir" \
        .dist/*.whl
}

sha512sums="
f46dd4cf524b3962115fe26f5545bfdd6767275b482724af51e7ca07da79244969a3bfc5d2fd5b95bc0f19d1b95a26a8f3
ab36c676e56ec302178d7166588066
    license_expression-30.4.4.tar.gz
"

```

1.402 alpine-baselayout-data 3.7.1-r8

1.402.1 Available under license :

```

# Automatically generated by apkbuild-cpan, template 1
# Contributor: Francesco Colista <francesco.colista@gmail.com>
# Maintainer: Francesco Colista <francesco.colista@gmail.com>
pkgname=perl-software-license
_pkgreal=Software-License
pkgver=0.103004
pkgrel=0
pkgdesc="packages that provide templated software licenses"
url="http://search.cpan.org/dist/Software-License/"
arch="noarch"
license="GPL PerlArtistic"
cpandepends="perl-text-template perl-data-section perl-sub-install"
cpanmakedepends=""
depends="$cpandepends"

```

```

makedepends="perl-dev $cpanmakedepends"
subpackages="$pkgname-doc"
source="http://search.cpan.org/CPAN/authors/id/R/RJ/RJBS/${_pkgreal-$pkgver}.tar.gz"

_buildddir="$srcdir/${_pkgreal-$pkgver}"

prepare() {
    cd "$_buildddir"
    export CFLAGS=`perl -MConfig -E 'say $Config{ccflags}`
    PERL_MM_USE_DEFAULT=1 perl Makefile.PL INSTALLDIRS=vendor
}

build() {
    cd "$_buildddir"
    export CFLAGS=`perl -MConfig -E 'say $Config{ccflags}`
    make && make test
}

package() {
    cd "$_buildddir"
    make
    DESTDIR="$pkgdir" install || return 1
    find "$pkgdir" \( -name perllocal.pod -o -name .packlist \) -delete
}

md5sums="0c5fd53d93818566234578b27d667b35 Software-License-0.103004.tar.gz"
# Maintainer: Natanael Copa <ncopa@alpinelinux.org>
pkgname=libart-lgpl
pkgver=2.3.21
pkgrel=5
pkgdesc="A library for high-performance 2D graphics"
url="http://www.levien.com/libart/"
arch="all"
license="LGPL"
depends=
makedepends=
subpackages="$pkgname-dev"
source="https://download.gnome.org/sources/libart-lgpl/2.3/libart-lgpl-${pkgver}.tar.bz2"
"

_buildddir="$srcdir/libart-lgpl-${pkgver}"

prepare() {
    cd "$_buildddir"
    update_config_sub || return 1
}

build() {
    cd "$_buildddir"

```



```
./configure \
--build=$CBUILD \
--host=$CHOST \
--prefix=/usr \
|| return 1
make || return 1
}
```

```
package() {
cd "$_builddir"
make DESTDIR="$pkgdir" install || return 1
}
```

```
sha512sums="8a632a6a4da59e5e8c02ec2f5a57e36d182b325b46513765425e5f171ff9ae326af1b133725beba28f7e7
6654309e001aee9bace727b5b4c8589405256a3c020 libart_lgpl-2.3.21.tar.bz2"
```

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```
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# Contributor: Valery Kartel <valery.kartel@gmail.com>
# Maintainer: Valery Kartel <valery.kartel@gmail.com>
pkgname=perl-bsd-resource
_pkgreal=BSD-Resource
pkgver=1.2909
pkgrel=2
```

```

pkgdesc="Perl extension implements the BSD process resource limit functions"
url="http://search.cpan.org/dist/BSD-Resource/"
arch="all"
license="GPL PerlArtistic"
cpandepends=""
cpanmakedepends=" "
depends="$cpandepends"
makedepends="perl-dev $cpanmakedepends"
subpackages="$pkgname-doc"
source="http://search.cpan.org/CPAN/authors/id/J/JH/JHI/${_pkgreal}-${pkgver}.tar.gz"

_buildddir="${srcdir}/${_pkgreal}-${pkgver}"

prepare() {
    cd "$_buildddir"
    export CFLAGS=`perl -MConfig -E 'say $Config{ccflags}`
    PERL_MM_USE_DEFAULT=1 perl Makefile.PL INSTALLDIRS=vendor
}

build() {
    cd "$_buildddir"
    export CFLAGS=`perl -MConfig -E 'say $Config{ccflags}`
    make && make test || return 1
}

package() {
    cd "$_buildddir"
    make DESTDIR="$pkgdir" install || return 1
    find "$pkgdir"
    \(-name perllocal.pod -o -name .packlist\) -delete
}

md5sums="3c6dd2fa953088aa87e263f40818d012 BSD-Resource-1.2909.tar.gz"
sha256sums="c47d460e2bd00d8d049f6ff4a0f1f61957e289e8de45af5fc79e851e2e855e06 BSD-Resource-1.2909.tar.gz"
sha512sums="5f489eaac5089e82081b7cf51d62638750e443751b49415407354da96b17771819b5e6e85529faa41ddd85743363750157943c7f7700276cce2bd40a429fa430 BSD-Resource-1.2909.tar.gz"
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pkgname=py-flake8-copyright

_pkgname=flake8-copyright

pkgver=0.2.0

pkgrel=1

pkgdesc="Extension for flake8 which checks for copyrights"

url="https://github.com/savoirfairelinux/flake8-copyright"

arch="noarch"

license="MIT"

depends="flake8"

makedepends="python3-dev"

source="https://files.pythonhosted.org/packages/source/\${_pkgname:0:1}/\${_pkgname}/\${_pkgname}-\${pkgver}.tar.gz"

builddir="\$srcdir"/\${_pkgname}-\${pkgver}

build() {

```

cd "$builddir"
python3 setup.py build || return 1
}

package() {
cd "$builddir"
python3 setup.py install --prefix=/usr --root="$pkgdir" || return 1
}

md5sums="c6348990c6d74933bf5d5f6a55a14bdf flake8-copyright-0.2.0.tar.gz"
sha256sums="aeef26eb4d5223c9cd5b101e68175fcef6d2b353bf36da688fdde62fccfe2b73 flake8-copyright-0.2.0.tar.gz"
sha512sums="bab1bfaeed3a525ac3c7da12b1f2ec338c204cc69b72d05cd39560e528faff5d586c3b1be9570f4a977a7e2417b586e543bfba12abce256b2023c8c4993eeb90flake8-copyright-0.2.0.tar.gz"
mini_sendmail - accept email on behalf of real sendmail

```

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1.403 ssl-client 1.37.0-r29

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Julian Seward, Cambridge, UK.

jseward@bzip.org

bzip2/libbzip2 version 1.0.4 of 20 December 2006

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1.404 brotli 1.2.0-r0

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1.405 libncursesw 6.5_p20251123-r0

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1.413 iputils-arping 20250605-r0

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1.419 gcompat 1.1.0-r4

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1.420 py3-parsing 3.2.3-r0

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1.422 libstdc++ 15.2.0-r2

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Any

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GCC RUNTIME LIBRARY EXCEPTION

Version 3.1, 31 March 2009

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```
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```

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/* Use the Sequent Symmetry assembler syntax. */

/* Define the syntax of pseudo-ops, labels and comments. */

/* Prefix for internally generated assembler
labels. If we aren't using
underscores, we are using prefix `.'s to identify labels that should
be ignored, as in `i386/gas.h' --karl@cs.umb.edu */

#define LPREFIX "L"

/* Assembler pseudos to introduce constants of various size. */

#define ASM_BYTE "\t.byte\t"
#define ASM_SHORT "\t.word\t"
#define ASM_LONG "\t.long\t"
#define ASM_QUAD "\t.quad\t" /* Should not be used for 32bit compilation. */

/* This was suggested, but it shouldn't be right for debugger output. -- RMS
#define ASM_OUTPUT_SOURCE_FILENAME(FILE, NAME) */

/* Define the syntax of labels and symbol definitions/declarations. */

/* This is how to output an assembler line
that says to advance the location counter by SIZE bytes. */

#define ASM_OUTPUT_SKIP(FILE,SIZE) \
    fprintf (FILE, "\t.space " HOST_WIDE_INT_PRINT_UNSIGNED"\n", (SIZE))

/* Define the syntax of labels and symbol definitions/declarations. */

/* This says how to output an assembler line
to define a global common symbol. */

#define
    ASM_OUTPUT_COMMON(FILE, NAME, SIZE, ROUNDED) \
    ( fputs (".comm ", (FILE)), \
      assemble_name ((FILE), (NAME)), \
      fprintf ((FILE), "%u\n", (int)(ROUNDED)))

/* This says how to output an assembler line
to define a local common symbol. */

#define ASM_OUTPUT_LOCAL(FILE, NAME, SIZE, ROUNDED) \

```

```

( fputs (".lcomm ", (FILE)), \
assemble_name ((FILE), (NAME)), \
fprintf ((FILE), ",%u\n", (int)(ROUNDED))))

#ifdef HAVE_GAS_LCOMM_WITH_ALIGNMENT
#define ASM_OUTPUT_ALIGNED_LOCAL(FILE, NAME, SIZE, ALIGNMENT) \
( fputs (".lcomm ", (FILE)), \
assemble_name ((FILE), (NAME)), \
fprintf ((FILE), ",%u,%u\n", (int)(SIZE), (int)(ALIGNMENT) / BITS_PER_UNIT))
#endif

/* This is how to output an assembler line
that says to advance the location counter
to a multiple of 2**LOG bytes. */

#define ASM_OUTPUT_ALIGN(FILE,LOG) \
if ((LOG)!=0) fprintf ((FILE), "\t.align %d\n", (LOG))

/* This is how to store into the string BUF
the symbol_ref name of an internal numbered
label where
PREFIX is the class of label and NUM is the number within the class.
This is suitable for output with `assemble_name'. */

#define ASM_GENERATE_INTERNAL_LABEL(BUF,PREFIX,NUMBER) \
sprintf ((BUF), "%s%d", (PREFIX), (long)(NUMBER))

/* The prefix to add to user-visible assembler symbols. */

#define USER_LABEL_PREFIX "_"

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```
#ifndef __VTV_H__
#define __VTV_H__

/* We could have used an enumeration here but it just makes it more
   difficult for the compiler to generate a call to this. These are
   used as arguments to the function __VLTChangePermission, declared
   below. */
#define __VLTP_READ_ONLY 0
#define __VLTP_READ_WRITE 1

#ifdef __cplusplus
extern "C" void __VLTChangePermission (int);
#else
extern void __VLTChangePermission (int);
#endif

#ifdef BIG_PAGE_SIZE
/* TODO - Replace '4096' below with correct big page size. */
#define VTV_PAGE_SIZE 4096
#else
#ifdef defined(__sun__) && defined(__svr4__) && defined(__sparc__)
#define VTV_PAGE_SIZE 8192
#elif defined(__loongarch_lp64)
/* The page size is configurable by the kernel to be 4,
```

16 or 64 KiB.

For now, only the default page size of 16KiB is supported. */

```
#define VTV_PAGE_SIZE 16384
#else
#define VTV_PAGE_SIZE 4096
#endif
#endif
```

```
#endif /* __VTV_H__ */
```

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Version 3, 29 June 2007

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1.423 libgcc 15.2.0-r2

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Any

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/* Definitions for BSD assembler syntax for Intel 386

(actually AT&T syntax for insns and operands,

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/* Use the Sequent Symmetry assembler syntax. */

/* Define the syntax of pseudo-ops, labels and comments. */

/* Prefix for internally generated assembler
labels. If we aren't using
underscores, we are using prefix `.'s to identify labels that should
be ignored, as in `i386/gas.h' --karl@cs.umb.edu */

#define LPREFIX "L"

/* Assembler pseudos to introduce constants of various size. */

#define ASM_BYTE "\t.byte\t"
#define ASM_SHORT "\t.word\t"
#define ASM_LONG "\t.long\t"
#define ASM_QUAD "\t.quad\t" /* Should not be used for 32bit compilation. */

/* This was suggested, but it shouldn't be right for debugger output. -- RMS
#define ASM_OUTPUT_SOURCE_FILENAME(FILE, NAME) */

/* Define the syntax of labels and symbol definitions/declarations. */

/* This is how to output an assembler line
that says to advance the location counter by SIZE bytes. */

#define ASM_OUTPUT_SKIP(FILE,SIZE) \
fprintf (FILE, "\t.space " HOST_WIDE_INT_PRINT_UNSIGNED"\n", (SIZE))


```

/* Define the syntax of labels and symbol definitions/declarations. */

/* This says how to output an assembler line
to define a global common symbol. */

#define
ASM_OUTPUT_COMMON(FILE, NAME, SIZE, ROUNDED) \
( fputs(".comm ", (FILE)), \
assemble_name((FILE), (NAME)), \
fprintf((FILE), "%u\n", (int)(ROUNDED)))

/* This says how to output an assembler line
to define a local common symbol. */

#define ASM_OUTPUT_LOCAL(FILE, NAME, SIZE, ROUNDED) \
( fputs(".lcomm ", (FILE)), \
assemble_name((FILE), (NAME)), \
fprintf((FILE), "%u\n", (int)(ROUNDED)))

#ifdef HAVE_GAS_LCOMM_WITH_ALIGNMENT
#define ASM_OUTPUT_ALIGNED_LOCAL(FILE, NAME, SIZE, ALIGNMENT) \
( fputs(".lcomm ", (FILE)), \
assemble_name((FILE), (NAME)), \
fprintf((FILE), "%u,%u\n", (int)(SIZE), (int)(ALIGNMENT) / BITS_PER_UNIT))
#endif

/* This is how to output an assembler line
that says to advance the location counter
to a multiple of 2**LOG bytes. */

#define ASM_OUTPUT_ALIGN(FILE, LOG) \
if ((LOG)!=0) fprintf((FILE), "\t.align %d\n", (LOG))

/* This is how to store into the string BUF
the symbol_ref name of an internal numbered
label where
PREFIX is the class of label and NUM is the number within the class.
This is suitable for output with `assemble_name'. */

#define ASM_GENERATE_INTERNAL_LABEL(BUF, PREFIX, NUMBER) \
sprintf((BUF), "%s%d", (PREFIX), (long)(NUMBER))

/* The prefix to add to user-visible assembler symbols. */

#define USER_LABEL_PREFIX "_"

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Julian Seward, jseward@bzip.org
bzip2/libbzip2 version 1.0.6 of 6 September 2010

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```
#ifndef __VTV_H__  
#define __VTV_H__
```

```
/* We could have used an enumeration here but it just makes it more  
difficult for the compiler to generate a call to this. These are  
used as arguments to the function __VLTChangePermission, declared  
below. */
```

```
#define __VLTP_READ_ONLY 0
```



```

#define __VLTP_READ_WRITE 1

#ifdef __cplusplus
extern "C" void __VLTChangePermission (int);
#else
extern void __VLTChangePermission (int);
#endif

#ifdef BIG_PAGE_SIZE
/* TODO - Replace '4096' below with correct big page size. */
#define VTV_PAGE_SIZE 4096
#else
#ifdef defined(__sun__) && defined(__svr4__) && defined(__sparc__)
#define VTV_PAGE_SIZE 8192
#elif defined(__loongarch_lp64)
/* The page size is configurable by the kernel to be 4,
16 or 64 KiB.
For now, only the default page size of 16KiB is supported. */
#define VTV_PAGE_SIZE 16384
#else
#define VTV_PAGE_SIZE 4096
#endif
#endif

#endif /* __VTV_H__ */

```

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1.424 x-net 0.48.0

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Upstream-Contact: Thomas E. Dickey <dickey@invisible-island.net>

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Upstream-Contact: Thomas E. Dickey <dickey@invisible-island.net>

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Files: terminal.xbm

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Comment: vile: txtmode file-encoding=utf-8

1.426 nspr 4.36-r0

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1.427 nss 3.118.1-r0

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# Contributor: Carlo Landmeter <clandmeter@alpinelinux.org>
# Maintainer: Kevin Daudt <kdaudt@alpinelinux.org>
pkgname=spdx-licenses
pkgver=3.27.0
pkgrel=0
pkgdesc="Various data formats for the SPDX License List"
url="https://spdx.org/"
arch="noarch"
options="!check" # no test suite
license="CC-BY-3.0"
source="license-list-data-$pkgver.tar.gz::https://github.com/spdx/license-list-data/archive/v$pkgver.tar.gz"
builddir="$srcdir/license-list-data-$pkgver"
subpackages="$pkgname-list"

_types="html json rdfa rdft rdfturtle rdfxml template text"

for type in $_types; do
    subpackages="$subpackages $pkgname-$type:_subpkg"
done

package() {
    mkdir -p "$pkgdir"
}

_subpkg() {
    local type=${subpkgname/$pkgname-/}
    pkgdesc="$pkgdesc ($type)"
    install_if="$pkgname=$pkgver-r$pkgrel"
    mkdir -p "$subpkgdir"/usr/share/spdx
    cp -r "$builddir"/$type "$subpkgdir"/usr/share/spdx/
}

list() {
    pkgdesc="$pkgdesc (licence list)"
    mkdir -p "$subpkgdir"/usr/share/spdx
    local i; for i in "$builddir"/text/*.txt;
    do
        local license=${i##*/}
        echo ${license%.*} >> "$subpkgdir"/usr/share/spdx/license.lst
    done
}

sha512sums="
16d59c81e331b54b52639826f83408d98144cdaa70eacc3e8ce35dc3b13992e4794cf7515eb9db200efd390a0c0e35ae9
```

```

d4706fbe0ca6a8d236189e88870720c license-list-data-3.27.0.tar.gz
"

# Automatically generated by apkbuid-cpan, template 4
# Contributor: Valery Kartel <valery.kartel@gmail.com>
# Maintainer: Celeste <cielesti@protonmail.com>
maintainer="Celeste <cielesti@protonmail.com>"
pkgname=perl-bsd-resource
pkgver=1.2911
pkgrel=11
#_pkgreal is used by apkbuid-cpan to find modules at MetaCpan
_pkgreal=BSD-Resource
pkgdesc="Perl extension implements the BSD process resource limit functions"
url="https://metacpan.org/release/BSD-Resource/"
arch="all"
license="Artistic-2.0 OR LGPL-2.0"
depends="perl"
makedepends="perl-dev"
subpackages="$pkgname-doc"
source="https://cpan.metacpan.org/authors/id/J/JH/JHI/BSD-Resource-$pkgver.tar.gz"
builddir="$srcdir/${_pkgreal}-$pkgver"

build() {
    export CFLAGS=$(perl -MConfig -E 'say $Config{ccflags}')
    PERL_MM_USE_DEFAULT=1 perl -I. Makefile.PL \
        INSTALLDIRS=vendor \
        NO_PACKLIST=1 \
        NO_PERLLOCAL=1
    make
}

check() {
    export CFLAGS=$(perl -MConfig -E 'say $Config{ccflags}')
    make test
}

package() {
    make DESTDIR="$pkgdir" install
}

sha512sums="
d0032d41c7c0468ed1c6d8f57b885f6cb97a5039d754c8cb60b2067daedaf53bd15fb6561a3d0f828df16dfa5417f663b
8065ba65f4fea16dc9262728b3b6b85
    BSD-Resource-1.2911.tar.gz
"

maintainer="Achill Gilgenast <achill@achill.org>"
pkgname=cargo-license
pkgver=0.7.0
pkgrel=1

```

```

pkgdesc="Cargo subcommand to see license of dependencies"
url="https://github.com/onur/cargo-license"
arch="all"
license="MIT"
makedepends="cargo cargo-auditable"
source="$pkgname-$pkgver.tar.gz::https://crates.io/api/v1/crates/cargo-license/$pkgver/download"

prepare() {
    default_prepare

    cargo fetch --target="$CTARGET" --locked
}

build() {
    cargo auditable build --release --frozen
}

check() {
    cargo test --frozen
}

package() {
    install -Dm755 target/release/cargo-license -t "$pkgdir"/usr/bin
}

sha512sums="
9b3f0ead35515e85ef4074ebdbdbe5b9ec8bcaec244fabe414e2ed60f90366e8b1692d8bf7ffe4c07d778e60d94bab86bc
0c8be9823232e9c360a38bc65e9c5a cargo-license-0.7.0.tar.gz
"

#!/sbin/openrc-run

command="/usr/libexec/xdg-permission-store"
supervisor=supervise-daemon
command_args="--replace $command_args"
error_logger="logger -t '${RC_SVCNAME}' -p daemon.error"

depend() {
    need dbus
}

# Contributor: Maxim Karasev <begs@disroot.org>
# Maintainer: mio <miyopan@e.email>
pkgname=bsd-games
pkgver=3.3
pkgrelease=2
pkgdesc="traditional text mode games from BSD"
url="https://bsd-games.sourceforge.io/"
arch="all"
license="BSD-3-Clause"

```

```

install="$pkgname.post-install"
makedepends="ncurses-dev coreutils" # configure causes busybox expr error
subpackages="$pkgname-doc"
source="https://sourceforge.net/projects/bsd-games/files/bsd-games-$pkgver.tar.gz
0001-bsd-games-scores-dir.patch
"

options="!check" # no tests

build() {
# some GNU autoconf options are ignored, but it works
./configure \
--build=$CBUILD \
--host=$CHOST \
--prefix=/usr \
--sysconfdir=/etc \
--mandir=/usr/share/man \
--scoaredir=/usr/share/$pkgname
make
}

package() {
make DESTDIR="$pkgdir" install
install -Dm644 LICENSE "$pkgdir"/usr/share/licenses/bsd-games/LICENSE
}

sha512sums="
aaf36d09d4fe68514a5c279063d7e77a9a9a84c447037cba974b29faa07eb80c2aab2379d0699c196b5c27ffe1b2bb2c6
8d3390143e0e62d5e3d210ccfb61294
    bsd-games-3.3.tar.gz
e1def0d4835a877242c4173fae862e278a7858738e0bacacbb045a42bcabec2aa7c72d000bbd2421ce35fe66cdc1f52c0
577b7e278029ca5ed50f7aab22319f6 0001-bsd-games-scores-dir.patch
"

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mini_sendmail - accept email on behalf of real sendmail

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Maintainer: Natanael Copa <ncopa@alpinelinux.org>

pkgname=libart-lgpl

pkgver=2.3.21

pkgrel=8

pkgdesc="A library for high-performance 2D graphics"

url="https://www.levien.com/libart/"

arch="all"

options="!check" # No test suite.

license="LGPL-2.0-or-later"

subpackages="\$pkgname-dev"

source="https://download.gnome.org/sources/libart-lgpl/2.3/libart-lgpl-\$pkgver.tar.bz2"

"

builddir="\$srcdir"/libart-lgpl-\$pkgver

prepare() {

```

update_config_sub
default_prepare
}

build() {
./configure \
--build=$CBUILD \
--host=$CHOST \
--prefix=/usr
make
}

package() {
make DESTDIR="$pkgdir" install
}

sha512sums="8a632a6a4da59e5e8c02ec2f5a57e36d182b325b46513765425e5f171ff9ae326af1b133725beba28f7e7
6654309e001aee9bace727b5b4c8589405256a3c020 libart_lgpl-2.3.21.tar.bz2"
# Contributor: Patrycja Rosa <alpine@ptrcnull.me>
# Maintainer: Patrycja Rosa <alpine@ptrcnull.me>
pkgname=bsd-compat-headers
pkgver=0.7.2
pkgrel=6
pkgdesc="BSD compatibility headers (cdefs, queue, tree)"
url="https://gitlab.alpinelinux.org/alpine/aports"
arch="noarch"
license="BSD-2-Clause AND BSD-3-Clause"
source="
cdefs.h
queue.h
tree.h
"
bulddir="$srcdir"
options="!check" # just headers

package() {
mkdir -p "$pkgdir"
install -Dm644 -t "$pkgdir"/usr/include/sys \
cdefs.h queue.h tree.h
}
sha512sums="
37c8fc73c7aea7b490f7850927e2bb91d12137c9e59e22c084146d515696dbc7973b5de92f4c987ba080dd2502ba8312
7006442c3f019b6447a620c0cae73178 cdefs.h
2f0d5e6e4dc3350285cf17009265dddcbe12431c111868eea39bc8cb038ab7c1f2acacbb21735c4e9d4a1fd106a8fc0f86
11ea33987d4faba37dde5ce6da0750 queue.h
d9ac210d81feb8ad2655bc80fb065d3fe20ae4417b32b4a1711e6738a4870140005c13373b5d1846ef3ce5ae6da45f2da
cef2092881eded0a2e94f6a07752ef3 tree.h
"

```

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"X-Splines: A Spline Model Designed for the End User" by C. Blanc and C. Schlick, Proceedings of SIGGRAPH'95
<http://dept-info.labri.u-bordeaux.fr/~schlick/DOC/sig1.html>
/* \$NetBSD: queue.h,v 1.70 2015/11/02 15:21:23 christos Exp \$ */

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 * OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION)
 * HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT
 * LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY
 * OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF
 * SUCH DAMAGE.

*

* @(#)queue.h 8.5 (Berkeley) 8/20/94

*/

```
#ifndef _SYS_QUEUE_H_
#define _SYS_QUEUE_H_
```

/*

* This file defines five types of data structures: singly-linked lists,
 * lists, simple queues, tail queues, and circular queues.
 *
 * A singly-linked list is headed by a single forward pointer. The
 * elements are singly linked for minimum space and
 * pointer manipulation
 * overhead at the expense of O(n) removal for arbitrary elements. New
 * elements can be added to the list after an existing element or at the
 * head of the list. Elements being removed from the head of the list
 * should use the explicit macro for this purpose for optimum
 * efficiency. A singly-linked list may only be traversed in the forward
 * direction. Singly-linked lists are ideal for applications with large
 * datasets and few or no removals or for implementing a LIFO queue.

*

* A list is headed by a single forward pointer (or an array of forward
 * pointers for a hash table header). The elements are doubly linked
 * so that an arbitrary element can be removed without a need to
 * traverse the list. New elements can be added to the list before
 * or after an existing element or at the head of the list. A list
 * may only be traversed in the forward direction.

*

* A simple queue is headed by a pair of pointers, one the head of the
 * list and the
 * other to the tail of the list. The elements are singly
 * linked to save space, so elements can only be removed from the
 * head of the list. New elements can be added to the list after
 * an existing element, at the head of the list, or at the end of the
 * list. A simple queue may only be traversed in the forward direction.

*

```

* A tail queue is headed by a pair of pointers, one to the head of the
* list and the other to the tail of the list. The elements are doubly
* linked so that an arbitrary element can be removed without a need to
* traverse the list. New elements can be added to the list before or
* after an existing element, at the head of the list, or at the end of
* the list. A tail queue may be traversed in either direction.
*
* A circle queue is headed by a pair of pointers, one to the head of the
* list and the other to the tail of the list. The elements are doubly
* linked so that an arbitrary element can be removed without a need to
* traverse the list. New elements
can be added to the list before or after
* an existing element, at the head of the list, or at the end of the list.
* A circle queue may be traversed in either direction, but has a more
* complex end of list detection.
*
* For details on the use of these macros, see the queue(3) manual page.
*/

/*
* Include the definition of NULL only on NetBSD because sys/null.h
* is not available elsewhere. This conditional makes the header
* portable and it can simply be dropped verbatim into any system.
* The caveat is that on other systems some other header
* must provide NULL before the macros can be used.
*/
#ifdef __NetBSD__
#include <sys/null.h>
#endif

#if defined(QUEUEDEBUG)
# if defined(_KERNEL)
#  define QUEUEDEBUG_ABORT(...) panic(__VA_ARGS__)
# else
#  include <err.h>
#  define QUEUEDEBUG_ABORT(...) err(1, __VA_ARGS__)
# endif
#endif

/*
* Singly-linked List definitions.
*/
#define SLIST_HEAD(name, type) \
struct name { \
    struct type *slh_first; /* first \
element */ \
}

```

```

#define SLIST_HEAD_INITIALIZER(head)  \
{ NULL }

#define SLIST_ENTRY(type)  \
struct {  \
    struct type *sle_next; /* next element */  \
}

/*
 * Singly-linked List access methods.
 */
#define SLIST_FIRST(head) ((head)->slh_first)
#define SLIST_END(head) NULL
#define SLIST_EMPTY(head) ((head)->slh_first == NULL)
#define SLIST_NEXT(elm, field) ((elm)->field.sle_next)

#define SLIST_FOREACH(var, head, field)  \
for((var) = (head)->slh_first;  \
    (var) != SLIST_END(head);  \
    (var) = (var)->field.sle_next)

#define SLIST_FOREACH_SAFE(var, head, field, tvar)  \
for ((var) = SLIST_FIRST((head));  \
    (var) != SLIST_END(head) &&  \
    ((tvar) = SLIST_NEXT((var), field), 1);  \
    (var) = (tvar))

/*
 * Singly-linked List functions.
 */
#define SLIST_INIT(head) do {  \
    (head)->slh_first = SLIST_END(head);  \
} while (/*CONSTCOND*/0)

#define SLIST_INSERT_AFTER(slistelm, elm, field) do {  \
    (elm)->field.sle_next = (slistelm)->field.sle_next;  \
    (slistelm)->field.sle_next  \
    = (elm);  \
} while (/*CONSTCOND*/0)

#define SLIST_INSERT_HEAD(head, elm, field) do {  \
    (elm)->field.sle_next = (head)->slh_first;  \
    (head)->slh_first = (elm);  \
} while (/*CONSTCOND*/0)

#define SLIST_REMOVE_AFTER(slistelm, field) do {  \
    (slistelm)->field.sle_next =  \
        SLIST_NEXT(SLIST_NEXT((slistelm), field), field);  \
} while (/*CONSTCOND*/0)

```

```

} while (/*CONSTCOND*/0)

#define SLIST_REMOVE_HEAD(head, field) do { \
    (head)->slh_first = (head)->slh_first->field.sle_next; \
} while (/*CONSTCOND*/0)

#define SLIST_REMOVE(head, elm, type, field) do { \
    if ((head)->slh_first == (elm)) { \
        SLIST_REMOVE_HEAD((head), field); \
    } \
    else { \
        struct type *curelm = (head)->slh_first; \
        while(curelm->field.sle_next != (elm)) \
            curelm = curelm->field.sle_next; \
        curelm->field.sle_next = \
            curelm->field.sle_next->field.sle_next; \
    } \
} while (/*CONSTCOND*/0)

/*
 * List definitions.
 */
#define LIST_HEAD(name, type) \
struct name { \
    struct type *lh_first; /* first element */ \
}

#define LIST_HEAD_INITIALIZER(head) \
{ NULL }

#define LIST_ENTRY(type) \
struct { \
    struct type *le_next; /* next element */ \
    struct type **le_prev; /* address of previous next element */ \
}

/*
 * List access methods.
 */
#define LIST_FIRST(head) ((head)->lh_first)
#define LIST_END(head) NULL
#define LIST_EMPTY(head) ((head)->lh_first == LIST_END(head))
#define LIST_NEXT(elm, field) ((elm)->field.le_next)

#define LIST_FOREACH(var, head, field) \
for ((var) = ((head)->lh_first); \
    (var) != LIST_END(head); \

```

```

(var) = ((var)->field.le_next))

#define LIST_FOREACH_SAFE(var, head, field, tvar) \
for ((var) = LIST_FIRST((head)); \
    (var) != LIST_END(head) && \
    ((tvar) = LIST_NEXT((var), field), 1); \
    (var) = (tvar))

#define LIST_MOVE(head1, head2) do { \
    LIST_INIT((head2)); \
    if (!LIST_EMPTY((head1))) \
    { \
        (head2)->lh_first = (head1)->lh_first; \
        LIST_INIT((head1)); \
    } \
} while (/*CONSTCOND*/0)

/*
 * List functions.
 */

#if defined(QUEUEDEBUG)
#define QUEUEDEBUG_LIST_INSERT_HEAD(head, elm, field) \
if ((head)->lh_first && \
    (head)->lh_first->field.le_prev != &(head)->lh_first) \
    QUEUEDEBUG_ABORT("LIST_INSERT_HEAD %p %s:%d", (head), \
        __FILE__, __LINE__);
#define QUEUEDEBUG_LIST_OP(elm, field) \
if ((elm)->field.le_next && \
    (elm)->field.le_next->field.le_prev != \
    &(elm)->field.le_next) \
    QUEUEDEBUG_ABORT("LIST_* forw %p %s:%d", (elm), \
        __FILE__, __LINE__); \
if (*(elm)->field.le_prev != (elm)) \
    QUEUEDEBUG_ABORT("LIST_* back %p %s:%d", (elm), \
        __FILE__, __LINE__);
#define QUEUEDEBUG_LIST_POSTREMOVE(elm, field) \
(elm)->field.le_next = (void *)1L; \
(elm)->field.le_prev = (void *)1L;
#else
#define QUEUEDEBUG_LIST_INSERT_HEAD(head, elm, field)
#define QUEUEDEBUG_LIST_OP(elm, field)
#define QUEUEDEBUG_LIST_POSTREMOVE(elm, field)
#endif

#define LIST_INIT(head) do { \
    (head)->lh_first = LIST_END(head); \
} while (/*CONSTCOND*/0)

```



```

#define LIST_INSERT_AFTER(listelm, elm, field) do { \
    QUEUEDEBUG_LIST_OP((listelm), field) \
    if (((elm)->field.le_next = (listelm)->field.le_next) != \
        LIST_END(head)) \
        (listelm)->field.le_next->field.le_prev = \
            &(elm)->field.le_next; \
    (listelm)->field.le_next = (elm); \
    (elm)->field.le_prev = &(listelm)->field.le_next; \
} while (/*CONSTCOND*/0)

#define LIST_INSERT_BEFORE(listelm, elm, field) do { \
    QUEUEDEBUG_LIST_OP((listelm), field) \
    (elm)->field.le_prev = (listelm)->field.le_prev; \
    (elm)->field.le_next = (listelm); \
    *(listelm)->field.le_prev = (elm); \
    (listelm)->field.le_prev = &(elm)->field.le_next; \
} while (/*CONSTCOND*/0)

#define LIST_INSERT_HEAD(head, elm, field) do { \
    QUEUEDEBUG_LIST_INSERT_HEAD((head), (elm), field) \
    if (((elm)->field.le_next \
        = (head)->lh_first) != LIST_END(head)) \
        (head)->lh_first->field.le_prev = &(elm)->field.le_next; \
    (head)->lh_first = (elm); \
    (elm)->field.le_prev = &(head)->lh_first; \
} while (/*CONSTCOND*/0)

#define LIST_REMOVE(elm, field) do { \
    QUEUEDEBUG_LIST_OP((elm), field) \
    if ((elm)->field.le_next != NULL) \
        (elm)->field.le_next->field.le_prev = \
            (elm)->field.le_prev; \
    *(elm)->field.le_prev = (elm)->field.le_next; \
    QUEUEDEBUG_LIST_POSTREMOVE((elm), field) \
} while (/*CONSTCOND*/0)

#define LIST_REPLACE(elm, elm2, field) do { \
    if (((elm2)->field.le_next = (elm)->field.le_next) != NULL) \
        (elm2)->field.le_next->field.le_prev = \
            &(elm2)->field.le_next; \
    (elm2)->field.le_prev = (elm)->field.le_prev; \
    *(elm2)->field.le_prev = (elm2); \
    QUEUEDEBUG_LIST_POSTREMOVE((elm), field) \
} while (/*CONSTCOND*/0)

/*
* Simple queue definitions.

```

```

*/
#define SIMPLEQ_HEAD(name, type)  \
struct name {  \
    struct  \
    type *sqh_first; /* first element */  \
    struct type **sqh_last; /* addr of last next element */  \
}

#define SIMPLEQ_HEAD_INITIALIZER(head)  \
{ NULL, &(head).sqh_first }

#define SIMPLEQ_ENTRY(type)  \
struct {  \
    struct type *sqe_next; /* next element */  \
}

/*
 * Simple queue access methods.
 */
#define SIMPLEQ_FIRST(head) ((head)->sqh_first)
#define SIMPLEQ_END(head) NULL
#define SIMPLEQ_EMPTY(head) ((head)->sqh_first == SIMPLEQ_END(head))
#define SIMPLEQ_NEXT(elm, field) ((elm)->field.sqe_next)

#define SIMPLEQ_FOREACH(var, head, field)  \
for ((var) = ((head)->sqh_first);  \
     (var) != SIMPLEQ_END(head);  \
     (var) = ((var)->field.sqe_next))

#define SIMPLEQ_FOREACH_SAFE(var, head, field, next)  \
for ((var) = ((head)->sqh_first);  \
     (var) != SIMPLEQ_END(head) &&  \
     ((next = ((var)->field.sqe_next)), 1);  \
     (var) = (next))

/*
 * Simple queue functions.
 */
#define SIMPLEQ_INIT(head) do {  \
    (head)->sqh_first = NULL;  \
    (head)->sqh_last  \
    = &(head)->sqh_first;  \
} while (/*CONSTCOND*/0)

#define SIMPLEQ_INSERT_HEAD(head, elm, field) do {  \
    if (((elm)->field.sqe_next = (head)->sqh_first) == NULL)  \
        (head)->sqh_last = &(elm)->field.sqe_next;  \
    (head)->sqh_first = (elm);  \
}

```

```

} while (/*CONSTCOND*/0)

#define SIMPLEQ_INSERT_TAIL(head, elm, field) do { \
    (elm)->field.sqe_next = NULL; \
    *(head)->sqh_last = (elm); \
    (head)->sqh_last = &(elm)->field.sqe_next; \
} while (/*CONSTCOND*/0)

#define SIMPLEQ_INSERT_AFTER(head, listelm, elm, field) do { \
    if (((elm)->field.sqe_next = (listelm)->field.sqe_next) == NULL) \
        (head)->sqh_last = &(elm)->field.sqe_next; \
    (listelm)->field.sqe_next = (elm); \
} while (/*CONSTCOND*/0)

#define SIMPLEQ_REMOVE_HEAD(head, field) do { \
    if (((head)->sqh_first = (head)->sqh_first->field.sqe_next) == NULL) \
        (head)->sqh_last = &(head)->sqh_first; \
} while (/*CONSTCOND*/0)

#define SIMPLEQ_REMOVE_AFTER(head, elm, field) do { \
    if \
        (((elm)->field.sqe_next = (elm)->field.sqe_next->field.sqe_next) \
         == NULL) \
        (head)->sqh_last = &(elm)->field.sqe_next; \
} while (/*CONSTCOND*/0)

#define SIMPLEQ_REMOVE(head, elm, type, field) do { \
    if ((head)->sqh_first == (elm)) { \
        SIMPLEQ_REMOVE_HEAD((head), field); \
    } else { \
        struct type *curelm = (head)->sqh_first; \
        while (curelm->field.sqe_next != (elm)) \
            curelm = curelm->field.sqe_next; \
        if ((curelm->field.sqe_next = \
            curelm->field.sqe_next->field.sqe_next) == NULL) \
            (head)->sqh_last = &(curelm)->field.sqe_next; \
    } \
} while (/*CONSTCOND*/0)

#define SIMPLEQ_CONCAT(head1, head2) do { \
    if (!SIMPLEQ_EMPTY((head2))) { \
        *(head1)->sqh_last = (head2)->sqh_first; \
        (head1)->sqh_last = (head2)->sqh_last; \
        SIMPLEQ_INIT((head2)); \
    } \
} while (/*CONSTCOND*/0)

#define SIMPLEQ_LAST(head, type, field) \

```

```

(SIMPLEQ_EMPTY((head)) ? \
NULL : \
    ((struct type
*)(void *) \
    ((char *)((head)->sqh_last) - offsetof(struct type, field))))

/*
 * Tail queue definitions.
 */
#define _TAILQ_HEAD(name, type, qual) \
struct name { \
    qual type *tqh_first; /* first element */ \
    qual type *qual *tqh_last; /* addr of last next element */ \
}
#define TAILQ_HEAD(name, type) _TAILQ_HEAD(name, struct type,)

#define TAILQ_HEAD_INITIALIZER(head) \
{ TAILQ_END(head), &(head).tqh_first }

#define _TAILQ_ENTRY(type, qual) \
struct { \
    qual type *tqe_next; /* next element */ \
    qual type *qual *tqe_prev; /* address of previous next element */ \
}
#define TAILQ_ENTRY(type) _TAILQ_ENTRY(struct type,)

/*
 * Tail queue access methods.
 */
#define TAILQ_FIRST(head) ((head)->tqh_first)
#define TAILQ_END(head) (NULL)
#define TAILQ_NEXT(elm, field) ((elm)->field.tqe_next)
#define TAILQ_LAST(head, headname) \
    (((struct headname *) (void *)((head)->tqh_last))->tqh_last)
#define TAILQ_PREV(elm, headname, field) \
    (((struct headname *) (void *)((elm)->field.tqe_prev))->tqh_last)
#define TAILQ_EMPTY(head) (TAILQ_FIRST(head) == TAILQ_END(head))

#define TAILQ_FOREACH(var, head, field) \
for ((var) = ((head)->tqh_first); \
    (var) != TAILQ_END(head); \
    (var) = ((var)->field.tqe_next))

#define TAILQ_FOREACH_SAFE(var, head, field, next) \
for ((var) = ((head)->tqh_first); \
    (var) != TAILQ_END(head) && \

```

```

((next) = TAILQ_NEXT(var, field), 1); (var) = (next))

#define TAILQ_FOREACH_REVERSE(var, head, headname, field) \
for ((var) = TAILQ_LAST((head), headname); \
    (var) != TAILQ_END(head); \
    (var) = TAILQ_PREV((var), headname, field))

#define TAILQ_FOREACH_REVERSE_SAFE(var, head, headname, field, prev) \
for ((var) = TAILQ_LAST((head), headname); \
    (var) != TAILQ_END(head) && \
    ((prev) = TAILQ_PREV((var), headname, field), 1); (var) = (prev))

/*
 * Tail queue functions.
 */
#if defined(QUEUEDEBUG)
#define QUEUEDEBUG_TAILQ_INSERT_HEAD(head, \
    elm, field) \
if ((head)->tqh_first && \
    (head)->tqh_first->field.tqe_prev != &(head)->tqh_first) \
    QUEUEDEBUG_ABORT("TAILQ_INSERT_HEAD %p %s:%d", (head), \
        __FILE__, __LINE__);
#define QUEUEDEBUG_TAILQ_INSERT_TAIL(head, elm, field) \
if (*(head)->tqh_last != NULL) \
    QUEUEDEBUG_ABORT("TAILQ_INSERT_TAIL %p %s:%d", (head), \
        __FILE__, __LINE__);
#define QUEUEDEBUG_TAILQ_OP(elm, field) \
if ((elm)->field.tqe_next && \
    (elm)->field.tqe_next->field.tqe_prev != \
    &(elm)->field.tqe_next) \
    QUEUEDEBUG_ABORT("TAILQ_* forw %p %s:%d", (elm), \
        __FILE__, __LINE__); \
if (*(elm)->field.tqe_prev != (elm)) \
    QUEUEDEBUG_ABORT("TAILQ_* back %p %s:%d", (elm), \
        __FILE__, __LINE__);
#define QUEUEDEBUG_TAILQ_PREREMOVE(head, elm, field) \
if ((elm)->field.tqe_next == NULL && \
    (head)->tqh_last != &(elm)->field.tqe_next) \
    QUEUEDEBUG_ABORT("TAILQ_PREREMOVE head %p elm %p %s:%d", \
        (head), (elm), __FILE__, \
        __LINE__);
#define QUEUEDEBUG_TAILQ_POSTREMOVE(elm, field) \
(elm)->field.tqe_next = (void *)1L; \
(elm)->field.tqe_prev = (void *)1L;
#else
#define QUEUEDEBUG_TAILQ_INSERT_HEAD(head, elm, field)
#define QUEUEDEBUG_TAILQ_INSERT_TAIL(head, elm, field)
#define QUEUEDEBUG_TAILQ_OP(elm, field)

```

```

#define QUEUEDEBUG_TAILQ_PREREMOVE(head, elm, field)
#define QUEUEDEBUG_TAILQ_POSTREMOVE(elm, field)
#endif

#define TAILQ_INIT(head) do { \
    (head)->tqh_first = TAILQ_END(head); \
    (head)->tqh_last = &(head)->tqh_first; \
} while (/*CONSTCOND*/0)

#define TAILQ_INSERT_HEAD(head, elm, field) do { \
    QUEUEDEBUG_TAILQ_INSERT_HEAD((head), (elm), field) \
    if (((elm)->field.tqe_next = (head)->tqh_first) != TAILQ_END(head)) \
    (head)->tqh_first->field.tqe_prev = \
        &(elm)->field.tqe_next; \
    else \
    (head)->tqh_last = &(elm)->field.tqe_next; \
    (head)->tqh_first = (elm); \
    (elm)->field.tqe_prev = &(head)->tqh_first; \
} while (/*CONSTCOND*/0)

#define TAILQ_INSERT_TAIL(head, \
    elm, field) do { \
    QUEUEDEBUG_TAILQ_INSERT_TAIL((head), (elm), field) \
    (elm)->field.tqe_next = TAILQ_END(head); \
    (elm)->field.tqe_prev = (head)->tqh_last; \
    *(head)->tqh_last = (elm); \
    (head)->tqh_last = &(elm)->field.tqe_next; \
} while (/*CONSTCOND*/0)

#define TAILQ_INSERT_AFTER(head, listelm, elm, field) do { \
    QUEUEDEBUG_TAILQ_OP((listelm), field) \
    if (((elm)->field.tqe_next = (listelm)->field.tqe_next) != \
        TAILQ_END(head)) \
    (elm)->field.tqe_next->field.tqe_prev = \
        &(elm)->field.tqe_next; \
    else \
    (head)->tqh_last = &(elm)->field.tqe_next; \
    (listelm)->field.tqe_next = (elm); \
    (elm)->field.tqe_prev = &(listelm)->field.tqe_next; \
} while (/*CONSTCOND*/0)

#define TAILQ_INSERT_BEFORE(listelm, elm, field) do { \
    QUEUEDEBUG_TAILQ_OP((listelm), field) \
    (elm)->field.tqe_prev = (listelm)->field.tqe_prev; \
    (elm)->field.tqe_next = (listelm); \
    *(listelm)->field.tqe_prev = (elm); \
    (listelm)->field.tqe_prev

```

```

= &(elm)->field.tqe_next; \
} while (/*CONSTCOND*/0)

#define TAILQ_REMOVE(head, elm, field) do { \
    QUEUEDEBUG_TAILQ_PREREMOVE((head), (elm), field) \
    QUEUEDEBUG_TAILQ_OP((elm), field) \
    if (((elm)->field.tqe_next != TAILQ_END(head)) \
        (elm)->field.tqe_next->field.tqe_prev = \
            (elm)->field.tqe_prev; \
    else \
        (head)->tqh_last = (elm)->field.tqe_prev; \
        *(elm)->field.tqe_prev = (elm)->field.tqe_next; \
    QUEUEDEBUG_TAILQ_POSTREMOVE((elm), field); \
} while (/*CONSTCOND*/0)

#define TAILQ_REPLACE(head, elm, elm2, field) do { \
    if (((elm2)->field.tqe_next = (elm)->field.tqe_next) != \
        TAILQ_END(head)) \
        (elm2)->field.tqe_next->field.tqe_prev = \
            &(elm2)->field.tqe_next; \
    else \
        (head)->tqh_last = &(elm2)->field.tqe_next; \
        (elm2)->field.tqe_prev = (elm)->field.tqe_prev; \
        *(elm2)->field.tqe_prev = (elm2); \
    QUEUEDEBUG_TAILQ_POSTREMOVE((elm), \
        field); \
} while (/*CONSTCOND*/0)

#define TAILQ_CONCAT(head1, head2, field) do { \
    if (!TAILQ_EMPTY(head2)) { \
        *(head1)->tqh_last = (head2)->tqh_first; \
        (head2)->tqh_first->field.tqe_prev = (head1)->tqh_last; \
        (head1)->tqh_last = (head2)->tqh_last; \
        TAILQ_INIT((head2)); \
    } \
} while (/*CONSTCOND*/0)

/*
 * Singly-linked Tail queue declarations.
 */

#define STAILQ_HEAD(name, type) \
struct name { \
    struct type *stqh_first; /* first element */ \
    struct type **stqh_last; /* addr of last next element */ \
}

#define STAILQ_HEAD_INITIALIZER(head) \
{ NULL, &(head).stqh_first }

```

```

#define STAILQ_ENTRY(type)    \
struct {                      \
    struct type *stqe_next; /* next element */ \
}

/*
 * Singly-linked Tail queue access methods.
 */
#define STAILQ_FIRST(head) ((head)->stqh_first)
#define STAILQ_END(head) NULL
#define STAILQ_NEXT(elm, field) ((elm)->field.stqe_next)
#define STAILQ_EMPTY(head) (STAILQ_FIRST(head) \
    == STAILQ_END(head))

/*
 * Singly-linked Tail queue functions.
 */
#define STAILQ_INIT(head) do { \
    (head)->stqh_first = NULL; \
    (head)->stqh_last = &(head)->stqh_first; \
} while (/*CONSTCOND*/0)

#define STAILQ_INSERT_HEAD(head, elm, field) do { \
    if (((elm)->field.stqe_next = (head)->stqh_first) == NULL) \
        (head)->stqh_last = &(elm)->field.stqe_next; \
    (head)->stqh_first = (elm); \
} while (/*CONSTCOND*/0)

#define STAILQ_INSERT_TAIL(head, elm, field) do { \
    (elm)->field.stqe_next = NULL; \
    *(head)->stqh_last = (elm); \
    (head)->stqh_last = &(elm)->field.stqe_next; \
} while (/*CONSTCOND*/0)

#define STAILQ_INSERT_AFTER(head, listelm, elm, field) do { \
    if (((elm)->field.stqe_next = (listelm)->field.stqe_next) == NULL) \
        (head)->stqh_last = &(elm)->field.stqe_next; \
    (listelm)->field.stqe_next = (elm); \
} while (/*CONSTCOND*/0)

#define STAILQ_REMOVE_HEAD(head, field) do { \
    if (((head)->stqh_first = (head)->stqh_first->field.stqe_next) \
        == NULL) \
        (head)->stqh_last = &(head)->stqh_first; \
} while (/*CONSTCOND*/0)

#define STAILQ_REMOVE(head, elm, type, field) do { \

```



```

if ((head)->stqh_first == (elm)) { \
    STAILQ_REMOVE_HEAD((head), field); \
} else { \
    struct type *curelm = (head)->stqh_first; \
    while (curelm->field.stqe_next != (elm)) \
        curelm = curelm->field.stqe_next; \
    if ((curelm->field.stqe_next = \
        curelm->field.stqe_next->field.stqe_next) == NULL) \
        (head)->stqh_last = &(curelm->field.stqe_next); \
} \
} while (/*CONSTCOND*/0)

#define STAILQ_FOREACH(var, head, field) \
    for ((var) = ((head)->stqh_first); \
        (var); \
        (var) = ((var)->field.stqe_next))

#define STAILQ_FOREACH_SAFE(var, head, field, tvar) \
    for ((var) = STAILQ_FIRST((head)); \
        (var) && ((tvar) = STAILQ_NEXT((var), field), 1); \
        (var) = (tvar))

#define STAILQ_CONCAT(head1, head2) do { \
    if (!STAILQ_EMPTY((head2))) { \
        *(head1)->stqh_last \
        = (head2)->stqh_first; \
        (head1)->stqh_last = (head2)->stqh_last; \
        STAILQ_INIT((head2)); \
    } \
} while (/*CONSTCOND*/0)

#define STAILQ_LAST(head, type, field) \
    (STAILQ_EMPTY((head)) ? \
    NULL : \
    ((struct type *) (void *) \
    ((char *) ((head)->stqh_last) - offsetof(struct type, field))))

#ifdef _KERNEL
/*
 * Circular queue definitions. Do not use. We still keep the macros
 * for compatibility but because of pointer aliasing issues their use
 * is discouraged!
 */

/*
 * __launder_type(): We use this ugly hack to work around the the compiler
 * noticing that two types may not alias each other and elide tests in code.

```

* We hit this in the CIRCLEQ macros when comparing 'struct name *' and
 * 'struct type *' (see CIRCLEQ_HEAD()). Modern compilers (such as GCC
 * 4.8) declare these comparisons as always false, causing the code to
 * not run as designed.
 *
 * This hack is only to be used for comparisons and thus can be fully const.
 * Do not use for assignment.
 *
 * If we ever choose to change the ABI of the CIRCLEQ macros, we could fix
 * this by changing the head/tail sentinel values, but see the note above
 * this one.
 */

```
static __inline const void * __launder_type(const void *);
static __inline const void *
__launder_type(const void *__x)
{
    __asm __volatile("" : "+r" (__x));
    return __x;
}

#if defined(QUEUEDEBUG)
#define QUEUEDEBUG_CIRCLEQ_HEAD(head, field) \
    if ((head)->cqh_first != CIRCLEQ_ENDC(head) && \
        (head)->cqh_first->field.cqe_prev != CIRCLEQ_ENDC(head)) \
        QUEUEDEBUG_ABORT("CIRCLEQ head forw %p %s:%d", (head), \
            __FILE__, __LINE__); \
    if ((head)->cqh_last != CIRCLEQ_ENDC(head) && \
        (head)->cqh_last->field.cqe_next != CIRCLEQ_ENDC(head)) \
        QUEUEDEBUG_ABORT("CIRCLEQ head back %p %s:%d", (head), \
            __FILE__, __LINE__);
#define QUEUEDEBUG_CIRCLEQ_ELM(head, elm, field) \
    if ((elm)->field.cqe_next == CIRCLEQ_ENDC(head)) { \
        if ((head)->cqh_last != (elm)) \
            QUEUEDEBUG_ABORT("CIRCLEQ \
elm last %p %s:%d", \
                (elm), __FILE__, __LINE__); \
    } else { \
        if ((elm)->field.cqe_next->field.cqe_prev != (elm)) \
            QUEUEDEBUG_ABORT("CIRCLEQ elm forw %p %s:%d", \
                (elm), __FILE__, __LINE__); \
    } \
    if ((elm)->field.cqe_prev == CIRCLEQ_ENDC(head)) { \
        if ((head)->cqh_first != (elm)) \
            QUEUEDEBUG_ABORT("CIRCLEQ elm first %p %s:%d", \
                (elm), __FILE__, __LINE__); \
    } else { \
        if ((elm)->field.cqe_prev->field.cqe_next != (elm)) \
            QUEUEDEBUG_ABORT("CIRCLEQ elm prev %p %s:%d", \
                (elm), __FILE__, __LINE__); \
    }
```

```

        (elm), __FILE__, __LINE__); \
    }
#define QUEUEDEBUG_CIRCLEQ_POSTREMOVE(elm, field) \
    (elm)->field.cqe_next = (void *)1L; \
    (elm)->field.cqe_prev = (void *)1L;
#else
#define QUEUEDEBUG_CIRCLEQ_HEAD(head, field)
#define QUEUEDEBUG_CIRCLEQ_ELM(head, elm, field)
#define QUEUEDEBUG_CIRCLEQ_POSTREMOVE(elm, field)
#endif

#define CIRCLEQ_HEAD(name, type) \
struct name { \
    struct type *cqh_first; /* \
    first element */ \
    struct type *cqh_last; /* last element */ \
}

#define CIRCLEQ_HEAD_INITIALIZER(head) \
    { CIRCLEQ_END(&head), CIRCLEQ_END(&head) }

#define CIRCLEQ_ENTRY(type) \
struct { \
    struct type *cqe_next; /* next element */ \
    struct type *cqe_prev; /* previous element */ \
}

/*
 * Circular queue functions.
 */
#define CIRCLEQ_INIT(head) do { \
    (head)->cqh_first = CIRCLEQ_END(head); \
    (head)->cqh_last = CIRCLEQ_END(head); \
} while (/*CONSTCOND*/0)

#define CIRCLEQ_INSERT_AFTER(head, listelm, elm, field) do { \
    QUEUEDEBUG_CIRCLEQ_HEAD((head), field) \
    QUEUEDEBUG_CIRCLEQ_ELM((head), (listelm), field) \
    (elm)->field.cqe_next = (listelm)->field.cqe_next; \
    (elm)->field.cqe_prev = (listelm); \
    if ((listelm)->field.cqe_next == CIRCLEQ_ENDC(head)) \
        (head)->cqh_last = (elm); \
    else \
        (listelm)->field.cqe_next->field.cqe_prev = (elm); \
    (listelm)->field.cqe_next = (elm); \
} while (/*CONSTCOND*/0)

#define CIRCLEQ_INSERT_BEFORE(head,

```

```

listelm, elm, field) do { \
    QUEUEDEBUG_CIRCLEQ_HEAD((head), field) \
    QUEUEDEBUG_CIRCLEQ_ELM((head), (listelm), field) \
    (elm)->field.cqe_next = (listelm); \
    (elm)->field.cqe_prev = (listelm)->field.cqe_prev; \
    if ((listelm)->field.cqe_prev == CIRCLEQ_ENDC(head)) \
        (head)->cqh_first = (elm); \
    else \
        (listelm)->field.cqe_prev->field.cqe_next = (elm); \
    (listelm)->field.cqe_prev = (elm); \
} while (/*CONSTCOND*/0)

```

```

#define CIRCLEQ_INSERT_HEAD(head, elm, field) do { \
    QUEUEDEBUG_CIRCLEQ_HEAD((head), field) \
    (elm)->field.cqe_next = (head)->cqh_first; \
    (elm)->field.cqe_prev = CIRCLEQ_END(head); \
    if ((head)->cqh_last == CIRCLEQ_ENDC(head)) \
        (head)->cqh_last = (elm); \
    else \
        (head)->cqh_first->field.cqe_prev = (elm); \
    (head)->cqh_first = (elm); \
} while (/*CONSTCOND*/0)

```

```

#define CIRCLEQ_INSERT_TAIL(head, elm, field) do { \
    QUEUEDEBUG_CIRCLEQ_HEAD((head), field) \
    (elm)->field.cqe_next \
    = CIRCLEQ_END(head); \
    (elm)->field.cqe_prev = (head)->cqh_last; \
    if ((head)->cqh_first == CIRCLEQ_ENDC(head)) \
        (head)->cqh_first = (elm); \
    else \
        (head)->cqh_last->field.cqe_next = (elm); \
    (head)->cqh_last = (elm); \
} while (/*CONSTCOND*/0)

```

```

#define CIRCLEQ_REMOVE(head, elm, field) do { \
    QUEUEDEBUG_CIRCLEQ_HEAD((head), field) \
    QUEUEDEBUG_CIRCLEQ_ELM((head), (elm), field) \
    if ((elm)->field.cqe_next == CIRCLEQ_ENDC(head)) \
        (head)->cqh_last = (elm)->field.cqe_prev; \
    else \
        (elm)->field.cqe_next->field.cqe_prev = \
            (elm)->field.cqe_prev; \
    if ((elm)->field.cqe_prev == CIRCLEQ_ENDC(head)) \
        (head)->cqh_first = (elm)->field.cqe_next; \
    else \
        (elm)->field.cqe_prev->field.cqe_next = \
            (elm)->field.cqe_next; \
} while (/*CONSTCOND*/0)

```

```

QUEUEDEBUG_CIRCLEQ_POSTREMOVE((elm), field) \
} while (/*CONSTCOND*/0)

#define CIRCLEQ_FOREACH(var, head, field) \
for ((var) = ((head)->cqh_first); \
    (var) != CIRCLEQ_ENDC(head); \
    (var) \
    = ((var)->field.cqe_next))

#define CIRCLEQ_FOREACH_REVERSE(var, head, field) \
for ((var) = ((head)->cqh_last); \
    (var) != CIRCLEQ_ENDC(head); \
    (var) = ((var)->field.cqe_prev))

/*
 * Circular queue access methods.
 */

#define CIRCLEQ_FIRST(head) ((head)->cqh_first)
#define CIRCLEQ_LAST(head) ((head)->cqh_last)
/* For comparisons */
#define CIRCLEQ_ENDC(head) (__launter_type(head))
/* For assignments */
#define CIRCLEQ_END(head) ((void *)(head))
#define CIRCLEQ_NEXT(elm, field) ((elm)->field.cqe_next)
#define CIRCLEQ_PREV(elm, field) ((elm)->field.cqe_prev)
#define CIRCLEQ_EMPTY(head) \
    (CIRCLEQ_FIRST(head) == CIRCLEQ_ENDC(head))

#define CIRCLEQ_LOOP_NEXT(head, elm, field) \
    (((elm)->field.cqe_next == CIRCLEQ_ENDC(head)) \
    ? ((head)->cqh_first) \
    : (elm->field.cqe_next))
#define CIRCLEQ_LOOP_PREV(head, elm, field) \
    (((elm)->field.cqe_prev == CIRCLEQ_ENDC(head)) \
    ? ((head)->cqh_last) \
    : \
    (elm->field.cqe_prev))
#endif /* !_KERNEL */

#endif /* !_SYS_QUEUE_H_ */

# Contributor: Fabian Affolter <fabian@affolter-engineering.ch>
# Maintainer: Fabian Affolter <fabian@affolter-engineering.ch>
pkgname=py3-flake8-copyright
_pkgname=flake8-copyright
pkgver=0.2.4
pkgrel=3
pkgdesc="Extension for flake8 which checks for copyrights"
options="!check" # No testsuite

```

```

url="https://github.com/savoirfairelinux/flake8-copyright"
arch="noarch"
license="MIT"
depends="py3-flake8 py3-setuptools"
makedepends="py3-gpep517 py3-wheel"
subpackages="$pkgname-pyc"
source="https://files.pythonhosted.org/packages/source/${_pkgname:0:1}/${_pkgname}/${_pkgname}-${pkgver}.tar.gz"
builddir="$srcdir"/$_pkgname-$pkgver

replaces="py-flake8-copyright"          # Backwards compatibility
provides="py-flake8-copyright=$pkgver-r$pkgrel" # Backwards compatibility

build() {
    gpep517 build-wheel \
        --wheel-dir .dist \
        --output-fd 3 3>&1 >&2
}

package() {
    gpep517 install-wheel --destdir "$pkgdir" \
        .dist/*.whl
}

sha512sums="
a6ab47e1bb715618f075c51f398e18180404871b3b0faf1c2d30701d5203db6bc23771bf22ffb5bafcd8ee856b9b64237
b316bd503ae7dceed6ca284ccd5a74d
    flake8-copyright-0.2.4.tar.gz
"

#ifndef _SYS_CDEFS_H_
#define _SYS_CDEFS_H_

#warning usage of non-standard #include <sys/cdefs.h> is deprecated

#undef __P
#undef __PMT

#define __P(args) args
#define __PMT(args) args

#define __CONCAT(x,y) x ## y
#define __STRING(x) #x

#ifdef __cplusplus
# define __BEGIN_DECLS extern "C" {
# define __END_DECLS }
#else
# define __BEGIN_DECLS
# define __END_DECLS

```

```
#endif

#if defined(__GNUC__) && !defined(__cplusplus)
# define __THROW __attribute__((__nothrow__))
# define __NTH(fct) __attribute__((__nothrow__)) fct
#else
# define __THROW
# define __NTH(fct) fct
#endif
```

```
#endif /* _SYS_CDEFS_H_ */
(The MIT License)
```

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```
/* $NetBSD: tree.h,v 1.20 2013/09/14 13:20:45 joerg Exp $ */
```

```
/* $OpenBSD: tree.h,v 1.13 2011/07/09 00:19:45 pirofti Exp $ */
```

```
/* Modified by Void Linux. */
```

```
/*
```

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```

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```
*
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- */

```
#ifndef _SYS_TREE_H_
#define _SYS_TREE_H_
```

```
#ifdef __GNUC__
#define __GNUC_PREREQ__(x, y) \
((__GNUC__ == (x) && __GNUC_MINOR__ >= (y)) || \
 (__GNUC__ > (x)))
#else
#define __GNUC_PREREQ__(x, y) 0
#endif
```

```
#if __GNUC_PREREQ__(2, 7) || defined(__lint__)
#define _sys_tree_h_unused __attribute__((__unused__))
#else
#define _sys_tree_h_unused /* delete */
#endif
```

```
/*
* This file defines data structures for different types of trees:
* splay trees and red-black trees.
*
* A splay tree is a self-organizing
data structure. Every operation
* on the tree causes a splay to happen. The splay moves the requested
* node to the root of the tree and partly rebalances it.
*
* This has the benefit that request locality causes faster lookups as
* the requested nodes move to the top of the tree. On the other hand,
* every lookup causes memory writes.
*
* The Balance Theorem bounds the total access time for m operations
* and n inserts on an initially empty tree as O((m + n)lg n). The
* amortized cost for a sequence of m accesses to a splay tree is O(lg n);
```



```

*
* A red-black tree is a binary search tree with the node color as an
* extra attribute. It fulfills a set of conditions:
* - every search path from the root to a leaf consists of the
*   same number of black nodes,
* - each red node (except for the root) has a black parent,
* - each leaf node is black.
*
* Every operation on a red-black tree is bounded as  $O(\lg n)$ .
* The maximum height of a red-black tree is  $2\lg(n+1)$ .
*/

#define SPLAY_HEAD(name, type) \
struct name { \
    struct type *sph_root; /* root of the tree */ \
}

#define SPLAY_INITIALIZER(root) \
{ NULL }

#define SPLAY_INIT(root) do { \
    (root)->sph_root = NULL; \
} while (/*CONSTCOND*/ 0)

#define SPLAY_ENTRY(type) \
struct { \
    struct type *spe_left; /* left element */ \
    struct type *spe_right; /* right element */ \
}

#define SPLAY_LEFT(elm, field) (elm)->field.spe_left
#define SPLAY_RIGHT(elm, field) (elm)->field.spe_right
#define SPLAY_ROOT(head) (head)->sph_root
#define SPLAY_EMPTY(head) (SPLAY_ROOT(head) == NULL)

/* SPLAY_ROTATE_{LEFT,RIGHT} expect that tmp hold SPLAY_{RIGHT,LEFT} */
#define SPLAY_ROTATE_RIGHT(head, tmp, field) do { \
    SPLAY_LEFT((head)->sph_root, field) = SPLAY_RIGHT(tmp, field); \
    SPLAY_RIGHT(tmp, field) = (head)->sph_root; \
    (head)->sph_root = tmp; \
} while (/*CONSTCOND*/ 0)

#define SPLAY_ROTATE_LEFT(head, tmp, field) do { \
    SPLAY_RIGHT((head)->sph_root, \
    field) = SPLAY_LEFT(tmp, field); \
    SPLAY_LEFT(tmp, field) = (head)->sph_root; \
    (head)->sph_root = tmp; \
} while (/*CONSTCOND*/ 0)

```

```

#define SPLAY_LINKLEFT(head, tmp, field) do { \
    SPLAY_LEFT(tmp, field) = (head)->sph_root; \
    tmp = (head)->sph_root; \
    (head)->sph_root = SPLAY_LEFT((head)->sph_root, field); \
} while (/*CONSTCOND*/ 0)

#define SPLAY_LINKRIGHT(head, tmp, field) do { \
    SPLAY_RIGHT(tmp, field) = (head)->sph_root; \
    tmp = (head)->sph_root; \
    (head)->sph_root = SPLAY_RIGHT((head)->sph_root, field); \
} while (/*CONSTCOND*/ 0)

#define SPLAY_ASSEMBLE(head, node, left, right, field) do { \
    SPLAY_RIGHT(left, field) = SPLAY_LEFT((head)->sph_root, field); \
    SPLAY_LEFT(right, field) = SPLAY_RIGHT((head)->sph_root, field); \
    SPLAY_LEFT((head)->sph_root, field) = SPLAY_RIGHT(node, field); \
    SPLAY_RIGHT((head)->sph_root, field) = SPLAY_LEFT(node, field); \
} while (/*CONSTCOND*/ 0)

/* Generates prototypes and inline functions */

#define
    SPLAY_PROTOTYPE(name, type, field, cmp) \
void name##_SPLAY(struct name *, struct type *); \
void name##_SPLAY_MINMAX(struct name *, int); \
struct type *name##_SPLAY_INSERT(struct name *, struct type *); \
struct type *name##_SPLAY_REMOVE(struct name *, struct type *); \
\
/* Finds the node with the same key as elm */ \
static __inline struct type * \
name##_SPLAY_FIND(struct name *head, struct type *elm) \
{ \
    if (SPLAY_EMPTY(head)) \
        return(NULL); \
    name##_SPLAY(head, elm); \
    if ((cmp)(elm, (head)->sph_root) == 0) \
        return (head->sph_root); \
    return (NULL); \
} \
\
static __inline _sys_tree_h_unused struct type * \
name##_SPLAY_NEXT(struct name *head, struct type *elm) \
{ \
    name##_SPLAY(head, elm); \
    if (SPLAY_RIGHT(elm, field) != NULL) { \
        elm = SPLAY_RIGHT(elm, field); \
        while (SPLAY_LEFT(elm, field) != NULL) { \

```

```

    elm = SPLAY_LEFT(elm, field); \
} \
}
else \
    elm = NULL; \
return (elm); \
} \
\
static __sys_tree_h_unused __inline struct type * \
name##_SPLAY_MIN_MAX(struct name *head, int val) \
{ \
    name##_SPLAY_MINMAX(head, val); \
    return (SPLAY_ROOT(head)); \
}

/* Main splay operation.
 * Moves node close to the key of elm to top
 */
#define SPLAY_GENERATE(name, type, field, cmp) \
struct type * \
name##_SPLAY_INSERT(struct name *head, struct type *elm) \
{ \
    if (SPLAY_EMPTY(head)) { \
        SPLAY_LEFT(elm, field) = SPLAY_RIGHT(elm, field) = NULL; \
    } else { \
        int __comp; \
        name##_SPLAY(head, elm); \
        __comp = (cmp)(elm, (head)->sph_root); \
        if (__comp < 0) { \
            SPLAY_LEFT(elm, field) = SPLAY_LEFT((head)->sph_root, field); \
            SPLAY_RIGHT(elm, field) = (head)->sph_root; \
            SPLAY_LEFT((head)->sph_root, field) = NULL; \
        } else if (__comp > 0) { \
            SPLAY_RIGHT(elm, \
field) = SPLAY_RIGHT((head)->sph_root, field); \
            SPLAY_LEFT(elm, field) = (head)->sph_root; \
            SPLAY_RIGHT((head)->sph_root, field) = NULL; \
        } else \
            return ((head)->sph_root); \
    } \
    (head)->sph_root = (elm); \
    return (NULL); \
} \
\
struct type * \
name##_SPLAY_REMOVE(struct name *head, struct type *elm) \
{ \
    struct type *__tmp; \

```

```

if (SPLAY_EMPTY(head)) \
    return (NULL); \
name##_SPLAY(head, elm); \
if ((cmp)(elm, (head)->sph_root) == 0) { \
    if (SPLAY_LEFT((head)->sph_root, field) == NULL) { \
        (head)->sph_root = SPLAY_RIGHT((head)->sph_root, field);\
    } else { \
        __tmp = SPLAY_RIGHT((head)->sph_root, field); \
        (head)->sph_root = SPLAY_LEFT((head)->sph_root, field);\
        name##_SPLAY(head, elm); \
        SPLAY_RIGHT((head)->sph_root, field) = __tmp; \
    } \
    return (elm); \
} \
return (NULL); \
} \
\
void \
name##_SPLAY(struct
    name *head, struct type *elm) \
{ \
    struct type __node, *__left, *__right, *__tmp; \
    int __comp; \
    \
    SPLAY_LEFT(&__node, field) = SPLAY_RIGHT(&__node, field) = NULL;\
    __left = __right = &__node; \
    \
    while ((__comp = (cmp)(elm, (head)->sph_root)) != 0) { \
        if (__comp < 0) { \
            __tmp = SPLAY_LEFT((head)->sph_root, field); \
            if (__tmp == NULL) \
                break; \
            if ((cmp)(elm, __tmp) < 0){ \
                SPLAY_ROTATE_RIGHT(head, __tmp, field); \
                if (SPLAY_LEFT((head)->sph_root, field) == NULL)\
                    break; \
            } \
            SPLAY_LINKLEFT(head, __right, field); \
        } else if (__comp > 0) { \
            __tmp = SPLAY_RIGHT((head)->sph_root, field); \
            if (__tmp == NULL) \
                break; \
            if ((cmp)(elm, __tmp) > 0){ \
                SPLAY_ROTATE_LEFT(head, __tmp, field); \
                if (SPLAY_RIGHT((head)->sph_root, field) == NULL)\
                    break; \
            } \
            SPLAY_LINKRIGHT(head, __left, field); \
        } \
    } \
}

```

```

    } \
} \
SPLAY_ASSEMBLE(head,
&__node, __left, __right, field); \
} \
\
/* Splay with either the minimum or the maximum element \
* Used to find minimum or maximum element in tree. \
*/ \
void name##_SPLAY_MINMAX(struct name *head, int __comp) \
{ \
    struct type __node, *__left, *__right, *__tmp; \
\
    SPLAY_LEFT(&__node, field) = SPLAY_RIGHT(&__node, field) = NULL;\
    __left = __right = &__node; \
\
    while (1) { \
        if (__comp < 0) { \
            __tmp = SPLAY_LEFT((head)->sph_root, field); \
            if (__tmp == NULL) \
                break; \
            if (__comp < 0){ \
                SPLAY_ROTATE_RIGHT(head, __tmp, field); \
                if (SPLAY_LEFT((head)->sph_root, field) == NULL)\
                    break; \
            } \
            SPLAY_LINKLEFT(head, __right, field); \
        } else if (__comp > 0) { \
            __tmp = SPLAY_RIGHT((head)->sph_root, field); \
            if (__tmp == NULL) \
                break; \
            if (__comp > 0) { \
                SPLAY_ROTATE_LEFT(head, __tmp, field); \
                if (SPLAY_RIGHT((head)->sph_root,
field) == NULL)\
                    break; \
            } \
            SPLAY_LINKRIGHT(head, __left, field); \
        } \
    } \
    SPLAY_ASSEMBLE(head, &__node, __left, __right, field); \
}

#define SPLAY_NEGINF -1
#define SPLAY_INF 1

#define SPLAY_INSERT(name, x, y) name##_SPLAY_INSERT(x, y)
#define SPLAY_REMOVE(name, x, y) name##_SPLAY_REMOVE(x, y)

```

```

#define SPLAY_FIND(name, x, y) name##_SPLAY_FIND(x, y)
#define SPLAY_NEXT(name, x, y) name##_SPLAY_NEXT(x, y)
#define SPLAY_MIN(name, x) (SPLAY_EMPTY(x) ? NULL \
    : name##_SPLAY_MIN_MAX(x, SPLAY_NEGINF))
#define SPLAY_MAX(name, x) (SPLAY_EMPTY(x) ? NULL \
    : name##_SPLAY_MIN_MAX(x, SPLAY_INF))

#define SPLAY_FOREACH(x, name, head) \
    for ((x) = SPLAY_MIN(name, head); \
        (x) != NULL; \
        (x) = SPLAY_NEXT(name, head, x))

/* Macros that define a red-black tree */
#define RB_HEAD(name, type) \
    struct name { \
        struct type *rbh_root; /* root of the tree */ \
    }

#define RB_INITIALIZER(root) \
    { \
        NULL \
    }

#define RB_INIT(root) do { \
    (root)->rbh_root = NULL; \
} while (/*CONSTCOND*/ 0)

#define RB_BLACK 0
#define RB_RED 1
#define RB_ENTRY(type) \
    struct { \
        struct type *rbe_left; /* left element */ \
        struct type *rbe_right; /* right element */ \
        struct type *rbe_parent; /* parent element */ \
        int rbe_color; /* node color */ \
    }

#define RB_LEFT(elm, field) (elm)->field.rbe_left
#define RB_RIGHT(elm, field) (elm)->field.rbe_right
#define RB_PARENT(elm, field) (elm)->field.rbe_parent
#define RB_COLOR(elm, field) (elm)->field.rbe_color
#define RB_ROOT(head) (head)->rbh_root
#define RB_EMPTY(head) (RB_ROOT(head) == NULL)

#define RB_SET(elm, parent, field) do { \
    RB_PARENT(elm, field) = parent; \
    RB_LEFT(elm, field) = RB_RIGHT(elm, field) = NULL; \
    RB_COLOR(elm, field) = RB_RED; \
} while (/*CONSTCOND*/ 0)

```

```

#define RB_SET_BLACKRED(black, red, field) do { \
    RB_COLOR(black, field) = RB_BLACK; \
    RB_COLOR(red, field) \
    = RB_RED; \
} while (/*CONSTCOND*/ 0)

#ifndef RB_AUGMENT
#define RB_AUGMENT(x) do {} while (/*CONSTCOND*/ 0)
#endif

#define RB_ROTATE_LEFT(head, elm, tmp, field) do { \
    (tmp) = RB_RIGHT(elm, field); \
    if ((RB_RIGHT(elm, field) = RB_LEFT(tmp, field)) != NULL) { \
        RB_PARENT(RB_LEFT(tmp, field), field) = (elm); \
    } \
    RB_AUGMENT(elm); \
    if ((RB_PARENT(tmp, field) = RB_PARENT(elm, field)) != NULL) { \
        if ((elm) == RB_LEFT(RB_PARENT(elm, field), field)) \
            RB_LEFT(RB_PARENT(elm, field), field) = (tmp); \
        else \
            RB_RIGHT(RB_PARENT(elm, field), field) = (tmp); \
    } else \
        (head)->rbh_root = (tmp); \
    RB_LEFT(tmp, field) = (elm); \
    RB_PARENT(elm, field) = (tmp); \
    RB_AUGMENT(tmp); \
    if ((RB_PARENT(tmp, field))) \
        RB_AUGMENT(RB_PARENT(tmp, field)); \
} while (/*CONSTCOND*/ 0)

#define RB_ROTATE_RIGHT(head, elm, tmp, field) do { \
    (tmp) = RB_LEFT(elm, field); \
    if ((RB_LEFT(elm, field) = RB_RIGHT(tmp, field)) \
    != NULL) { \
        RB_PARENT(RB_RIGHT(tmp, field), field) = (elm); \
    } \
    RB_AUGMENT(elm); \
    if ((RB_PARENT(tmp, field) = RB_PARENT(elm, field)) != NULL) { \
        if ((elm) == RB_LEFT(RB_PARENT(elm, field), field)) \
            RB_LEFT(RB_PARENT(elm, field), field) = (tmp); \
        else \
            RB_RIGHT(RB_PARENT(elm, field), field) = (tmp); \
    } else \
        (head)->rbh_root = (tmp); \
    RB_RIGHT(tmp, field) = (elm); \
    RB_PARENT(elm, field) = (tmp); \
    RB_AUGMENT(tmp); \
} while (/*CONSTCOND*/ 0)

```

```

if ((RB_PARENT(tmp, field))) \
    RB_AUGMENT(RB_PARENT(tmp, field)); \
} while (/*CONSTCOND*/ 0)

/* Generates prototypes and inline functions */
#define RB_PROTOTYPE(name, type, field, cmp) \
    RB_PROTOTYPE_INTERNAL(name, type, field, cmp,)
#define RB_PROTOTYPE_STATIC(name, type, field, cmp) \
    RB_PROTOTYPE_INTERNAL(name, type, field, cmp, _sys_tree_h_unused static)
#define RB_PROTOTYPE_INTERNAL(name, type, field, cmp, attr) \
    attr void name##_RB_INSERT_COLOR(struct name *, struct \
        type *); \
    attr void name##_RB_REMOVE_COLOR(struct name *, struct type *, struct type *);\
    attr struct type *name##_RB_REMOVE(struct name *, struct type *); \
    attr struct type *name##_RB_INSERT(struct name *, struct type *); \
    attr struct type *name##_RB_FIND(struct name *, struct type *); \
    attr struct type *name##_RB_NFIND(struct name *, struct type *); \
    attr struct type *name##_RB_NEXT(struct type *); \
    attr struct type *name##_RB_PREV(struct type *); \
    attr struct type *name##_RB_MINMAX(struct name *, int); \
    \

/* Main rb operation.
 * Moves node close to the key of elm to top
 */
#define RB_GENERATE(name, type, field, cmp) \
    RB_GENERATE_INTERNAL(name, type, field, cmp,)
#define RB_GENERATE_STATIC(name, type, field, cmp) \
    RB_GENERATE_INTERNAL(name, type, field, cmp, _sys_tree_h_unused static)
#define RB_GENERATE_INTERNAL(name, type, field, cmp, attr) \
    attr void \
    name##_RB_INSERT_COLOR(struct name *head, struct type *elm) \
    { \
        struct type \
        *parent, *gparent, *tmp; \
        while ((parent = RB_PARENT(elm, field)) != NULL && \
            RB_COLOR(parent, field) == RB_RED) { \
            gparent = RB_PARENT(parent, field); \
            if (parent == RB_LEFT(gparent, field)) { \
                tmp = RB_RIGHT(gparent, field); \
                if (tmp && RB_COLOR(tmp, field) == RB_RED) { \
                    RB_COLOR(tmp, field) = RB_BLACK; \
                    RB_SET_BLACKRED(parent, gparent, field);\
                    elm = gparent; \
                    continue; \
                } \
            } \
            if (RB_RIGHT(parent, field) == elm) { \
                RB_ROTATE_LEFT(head, parent, tmp, field);\

```



```

    tmp = parent; \
    parent = elm; \
    elm = tmp; \
} \
RB_SET_BLACKRED(parent, gparent, field); \
RB_ROTATE_RIGHT(head, gparent, tmp, field); \
} else { \
    tmp = RB_LEFT(gparent, field); \
    if (tmp && RB_COLOR(tmp, field) == RB_RED) { \
        RB_COLOR(tmp, field) = RB_BLACK; \
        RB_SET_BLACKRED(parent, gparent, field); \
        elm = gparent; \
        continue; \
    } \
    if (RB_LEFT(parent, field) == elm)
{ \
    RB_ROTATE_RIGHT(head, parent, tmp, field); \
    tmp = parent; \
    parent = elm; \
    elm = tmp; \
} \
    RB_SET_BLACKRED(parent, gparent, field); \
    RB_ROTATE_LEFT(head, gparent, tmp, field); \
} \
} \
RB_COLOR(head->rbh_root, field) = RB_BLACK; \
} \
\
attr void \
name##_RB_REMOVE_COLOR(struct name *head, struct type *parent, struct type *elm) \
{ \
    struct type *tmp; \
    while ((elm == NULL || RB_COLOR(elm, field) == RB_BLACK) && \
        elm != RB_ROOT(head)) { \
        if (RB_LEFT(parent, field) == elm) { \
            tmp = RB_RIGHT(parent, field); \
            if (RB_COLOR(tmp, field) == RB_RED) { \
                RB_SET_BLACKRED(tmp, parent, field); \
                RB_ROTATE_LEFT(head, parent, tmp, field); \
                tmp = RB_RIGHT(parent, field); \
            } \
            if ((RB_LEFT(tmp, field) == NULL || \
                RB_COLOR(RB_LEFT(tmp, field), field) == RB_BLACK) && \
                (RB_RIGHT(tmp, field) == NULL || \
                RB_COLOR(RB_RIGHT(tmp,
field), field) == RB_BLACK)) {\
                RB_COLOR(tmp, field) = RB_RED; \
                elm = parent; \

```

```

parent = RB_PARENT(elm, field); \
} else { \
if (RB_RIGHT(tmp, field) == NULL || \
    RB_COLOR(RB_RIGHT(tmp, field), field) == RB_BLACK) {\
    struct type *oleft; \
    if ((oleft = RB_LEFT(tmp, field)) \
        != NULL) \
        RB_COLOR(oleft, field) = RB_BLACK;\
    RB_COLOR(tmp, field) = RB_RED; \
    RB_ROTATE_RIGHT(head, tmp, oleft, field);\
    tmp = RB_RIGHT(parent, field); \
} \
RB_COLOR(tmp, field) = RB_COLOR(parent, field);\
RB_COLOR(parent, field) = RB_BLACK; \
if (RB_RIGHT(tmp, field)) \
    RB_COLOR(RB_RIGHT(tmp, field), field) = RB_BLACK;\
RB_ROTATE_LEFT(head, parent, tmp, field);\
elm = RB_ROOT(head); \
break; \
} \
} else { \
tmp = RB_LEFT(parent, field); \
if (RB_COLOR(tmp, field) == RB_RED) { \
    RB_SET_BLACKRED(tmp, parent, field); \
    RB_ROTATE_RIGHT(head, parent, tmp, field);\
    tmp \
= RB_LEFT(parent, field); \
} \
if ((RB_LEFT(tmp, field) == NULL || \
    RB_COLOR(RB_LEFT(tmp, field), field) == RB_BLACK) &&\
    (RB_RIGHT(tmp, field) == NULL || \
    RB_COLOR(RB_RIGHT(tmp, field), field) == RB_BLACK)) {\
    RB_COLOR(tmp, field) = RB_RED; \
    elm = parent; \
    parent = RB_PARENT(elm, field); \
} else { \
if (RB_LEFT(tmp, field) == NULL || \
    RB_COLOR(RB_LEFT(tmp, field), field) == RB_BLACK) {\
    struct type *oright; \
    if ((oright = RB_RIGHT(tmp, field)) \
        != NULL) \
        RB_COLOR(oright, field) = RB_BLACK;\
    RB_COLOR(tmp, field) = RB_RED; \
    RB_ROTATE_LEFT(head, tmp, oright, field);\
    tmp = RB_LEFT(parent, field); \
} \
RB_COLOR(tmp, field) = RB_COLOR(parent, field);\
RB_COLOR(parent, field) = RB_BLACK; \

```

```

    if (RB_LEFT(tmp, field)) \
        RB_COLOR(RB_LEFT(tmp, field), field) = RB_BLACK;\
    RB_ROTATE_RIGHT(head, parent, tmp, field);\
    elm = RB_ROOT(head); \
    break; \
} \
} \
} \
if
(elm) \
    RB_COLOR(elm, field) = RB_BLACK; \
} \
\
attr struct type * \
name##_RB_REMOVE(struct name *head, struct type *elm) \
{ \
    struct type *child, *parent, *old = elm; \
    int color; \
    if (RB_LEFT(elm, field) == NULL) \
        child = RB_RIGHT(elm, field); \
    else if (RB_RIGHT(elm, field) == NULL) \
        child = RB_LEFT(elm, field); \
    else { \
        struct type *left; \
        elm = RB_RIGHT(elm, field); \
        while ((left = RB_LEFT(elm, field)) != NULL) \
            elm = left; \
        child = RB_RIGHT(elm, field); \
        parent = RB_PARENT(elm, field); \
        color = RB_COLOR(elm, field); \
        if (child) \
            RB_PARENT(child, field) = parent; \
        if (parent) { \
            if (RB_LEFT(parent, field) == elm) \
                RB_LEFT(parent, field) = child; \
            else \
                RB_RIGHT(parent, field) = child; \
            RB_AUGMENT(parent); \
        } else \
            RB_ROOT(head)
    = child; \
    if (RB_PARENT(elm, field) == old) \
        parent = elm; \
    (elm)->field = (old)->field; \
    if (RB_PARENT(old, field)) { \
        if (RB_LEFT(RB_PARENT(old, field), field) == old)\
            RB_LEFT(RB_PARENT(old, field), field) = elm;\
        else \

```

```

    RB_RIGHT(RB_PARENT(old, field), field) = elm;\
    RB_AUGMENT(RB_PARENT(old, field)); \
} else \
    RB_ROOT(head) = elm; \
    RB_PARENT(RB_LEFT(old, field), field) = elm; \
    if (RB_RIGHT(old, field)) \
        RB_PARENT(RB_RIGHT(old, field), field) = elm;\
    if (parent) { \
        left = parent; \
        do { \
            RB_AUGMENT(left); \
        } while ((left = RB_PARENT(left, field)) != NULL);\
    } \
    goto color; \
} \
parent = RB_PARENT(elm, field); \
color = RB_COLOR(elm, field); \
if (child) \
    RB_PARENT(child, field) = parent; \
if (parent) { \
    if (RB_LEFT(parent, field) == elm) \
        RB_LEFT(parent, field) = child; \
    else \
        RB_RIGHT(parent,
field) = child; \
    RB_AUGMENT(parent); \
} else \
    RB_ROOT(head) = child; \
color: \
    if (color == RB_BLACK) \
        name##_RB_REMOVE_COLOR(head, parent, child); \
    return (old); \
} \
\
/* Inserts a node into the RB tree */ \
attr struct type * \
name##_RB_INSERT(struct name *head, struct type *elm) \
{ \
    struct type *tmp; \
    struct type *parent = NULL; \
    int comp = 0; \
    tmp = RB_ROOT(head); \
    while (tmp) { \
        parent = tmp; \
        comp = (cmp)(elm, parent); \
        if (comp < 0) \
            tmp = RB_LEFT(tmp, field); \
        else if (comp > 0) \

```

```

    tmp = RB_RIGHT(tmp, field); \
else \
    return (tmp); \
} \
RB_SET(elm, parent, field); \
if (parent != NULL) { \
    if (comp < 0) \
        RB_LEFT(parent, field) = elm; \
    else \
        RB_RIGHT(parent, field) = elm; \
    RB_AUGMENT(parent); \
} else \
    RB_ROOT(head) = elm; \
name##_RB_INSERT_COLOR(head, \
elm); \
return (NULL); \
} \
\
/* Finds the node with the same key as elm */ \
attr struct type * \
name##_RB_FIND(struct name *head, struct type *elm) \
{ \
    struct type *tmp = RB_ROOT(head); \
    int comp; \
    while (tmp) { \
        comp = cmp(elm, tmp); \
        if (comp < 0) \
            tmp = RB_LEFT(tmp, field); \
        else if (comp > 0) \
            tmp = RB_RIGHT(tmp, field); \
        else \
            return (tmp); \
    } \
    return (NULL); \
} \
\
/* Finds the first node greater than or equal to the search key */ \
attr struct type * \
name##_RB_NFIND(struct name *head, struct type *elm) \
{ \
    struct type *tmp = RB_ROOT(head); \
    struct type *res = NULL; \
    int comp; \
    while (tmp) { \
        comp = cmp(elm, tmp); \
        if (comp < 0) { \
            res = tmp; \
            tmp = RB_LEFT(tmp, field); \
        } \
    } \
    return (res); \
} \

```

```

    } \
    else if (comp > 0) \
        tmp =
RB_RIGHT(tmp, field); \
    else \
        return (tmp); \
    } \
    return (res); \
} \
\
/* ARGSUSED */ \
attr struct type * \
name##_RB_NEXT(struct type *elm) \
{ \
    if (RB_RIGHT(elm, field)) { \
        elm = RB_RIGHT(elm, field); \
        while (RB_LEFT(elm, field)) \
            elm = RB_LEFT(elm, field); \
    } else { \
        if (RB_PARENT(elm, field) && \
            (elm == RB_LEFT(RB_PARENT(elm, field), field))) \
            elm = RB_PARENT(elm, field); \
        else { \
            while (RB_PARENT(elm, field) && \
                (elm == RB_RIGHT(RB_PARENT(elm, field), field))) \
                elm = RB_PARENT(elm, field); \
            elm = RB_PARENT(elm, field); \
        } \
    } \
    return (elm); \
} \
\
/* ARGSUSED */ \
attr struct type * \
name##_RB_PREV(struct type *elm) \
{ \
    if (RB_LEFT(elm, field)) { \
        elm = RB_LEFT(elm, field); \
        while (RB_RIGHT(elm, field)) \
            elm = RB_RIGHT(elm, field); \
    } \
    else { \
        if (RB_PARENT(elm, field) && \
            (elm == RB_RIGHT(RB_PARENT(elm, field), field))) \
            elm = RB_PARENT(elm, field); \
        else { \
            while (RB_PARENT(elm, field) && \
                (elm == RB_LEFT(RB_PARENT(elm, field), field))) \

```

```

    elm = RB_PARENT(elm, field); \
    elm = RB_PARENT(elm, field); \
} \
} \
return (elm); \
} \
\
attr struct type * \
name##_RB_MINMAX(struct name *head, int val) \
{ \
    struct type *tmp = RB_ROOT(head); \
    struct type *parent = NULL; \
    while (tmp) { \
        parent = tmp; \
        if (val < 0) \
            tmp = RB_LEFT(tmp, field); \
        else \
            tmp = RB_RIGHT(tmp, field); \
    } \
    return (parent); \
}

#define RB_NEGINF -1
#define RB_INF 1

#define RB_INSERT(name, x, y) name##_RB_INSERT(x, y)
#define RB_REMOVE(name, x, y) name##_RB_REMOVE(x, y)
#define RB_FIND(name, x, y) name##_RB_FIND(x, y)
#define RB_NFIND(name, x, y) name##_RB_NFIND(x, \
y)
#define RB_NEXT(name, x, y) name##_RB_NEXT(y)
#define RB_PREV(name, x, y) name##_RB_PREV(y)
#define RB_MIN(name, x) name##_RB_MINMAX(x, RB_NEGINF)
#define RB_MAX(name, x) name##_RB_MINMAX(x, RB_INF)

#define RB_FOREACH(x, name, head) \
for ((x) = RB_MIN(name, head); \
(x) != NULL; \
(x) = name##_RB_NEXT(x))

#define RB_FOREACH_FROM(x, name, y) \
for ((x) = (y); \
((x) != NULL) && ((y) = name##_RB_NEXT(x), (x) != NULL); \
(x) = (y))

#define RB_FOREACH_SAFE(x, name, head, y) \
for ((x) = RB_MIN(name, head); \
((x) != NULL) && ((y) = name##_RB_NEXT(x), (x) != NULL); \

```

```

(x) = (y))

#define RB_FOREACH_REVERSE(x, name, head) \
for ((x) = RB_MAX(name, head); \
    (x) != NULL; \
    (x) = name##_RB_PREV(x))

#define RB_FOREACH_REVERSE_FROM(x, name, y) \
for ((x) = (y); \
    ((x) != NULL) && ((y) = name##_RB_PREV(x), (x) != NULL); \
    (x) = (y))

#define RB_FOREACH_REVERSE_SAFE(x, name, \
head, y) \
for ((x) = RB_MAX(name, head); \
    ((x) != NULL) && ((y) = name##_RB_PREV(x), (x) != NULL); \
    (x) = (y))

#endif /* _SYS_TREE_H_ */
# Contributor: Wen Heping <wenhepingalpine@sohu.com>
# Maintainer: Wen Heping <wenhepingalpine@sohu.com>
pkgname=perl-software-license
pkgver=0.104007
pkgrel=0
# _pkgreal is used by apkbuild-cpan to find modules at MetaCpan
_pkgreal=Software-License
pkgdesc="packages that provide templated software licenses"
url="https://metacpan.org/release/Software-License/"
arch="noarch"
license="GPL-1.0-or-later OR Artistic-1.0-Perl"
depends="perl perl-data-section perl-text-template"
checkdepends="perl-try-tiny"
subpackages="$pkgname-doc"
source="https://cpan.metacpan.org/authors/id/L/LE/LEONT/Software-License-$pkgver.tar.gz"
builddir="$srcdir/${_pkgreal}-${pkgver}"

build() {
    export CFLAGS=$(perl -MConfig -E 'say $Config{ccflags}')
    PERL_MM_USE_DEFAULT=1 perl -I. Makefile.PL \
        INSTALLDIRS=vendor \
        NO_PACKLIST=1 \
        NO_PERLLOCAL=1
    make
}

check() {
    export CFLAGS=$(perl -MConfig -E 'say $Config{ccflags}')
    make test
}

```



```
}
```

```
package() {  
  make DESTDIR="$pkgdir" install  
}
```

```
sha512sums="  
12d75e9583b3013d9b4a282467f1ac80ab6b7f3251926d66591d01404489b528f22adc396dfd4528a0f0ca650f0eed6d  
9c959e69eace2169c6ed1cffe5277e4  
  Software-License-0.104007.tar.gz  
"
```

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Contributor: Dhruvin Gandhi <contact@dhruvin>

Maintainer: Patrycja Rosa <alpine@ptrcnull.me>

pkgname=py3-license-expression

_pkgname=license_expression

pkgver=30.4.4

pkgrel=0

pkgdesc="Library to parse, compare, simplify and normalize license expressions"

url="https://github.com/nexB/license-expression"

arch="noarch"

license="Apache-2.0"

depends="python3 py3-boolean.py"

makedepends="py3-setuptools py3-setuptools_scm py3-gpep517 py3-wheel"

checkdepends="py3-pytest py3-pytest-xdist"

subpackages="\$pkgname-pyc"

```

source="https://files.pythonhosted.org/packages/source/l/${_pkgname}/${_pkgname}-${pkgver}.tar.gz"
builddir="${srcdir}/${_pkgname}-${pkgver}"

build() {
    gpep517 build-wheel \
        --wheel-dir .dist \
        --output-fd 3 3>&1 >&2
}

check() {
    python3 -m venv --clear --without-pip --system-site-packages .testenv
    .testenv/bin/python3 -m installer .dist/*.whl
    .testenv/bin/python3 -m pytest
}

package() {
    python3 -m installer -d "$pkgdir" \
        .dist/*.whl
}

sha512sums="
f46dd4cf524b3962115fe26f5545bfdd6767275b482724af51e7ca07da79244969a3bfc5d2fd5b95bc0f19d1b95a26a8f3
ab36c676e56ec302178d7166588066
    license_expression-30.4.4.tar.gz
"

```

1.428 py3-pip 25.1.1-r1

1.428.1 Available under license :

```

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UNRECOGNIZED LICENSE; MD5 sum: 45874240865793abc3a77b0bbdf3dc51
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UNRECOGNIZED LICENSE; MD5 sum: d2e8c3bce80da2a2e51cffd44205a7b1
UNRECOGNIZED LICENSE; MD5 sum: 89c981cb43c0c7a860b8a18449e92a38
UNRECOGNIZED LICENSE; MD5 sum: f7cacecf6ff92c07405436643ace4302
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J*VT$$ ~nH-dKp>NXw
'h4xOAZu'OR#diT>?ECesh
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m^2fXZ;wzmUnjWU]52+\Gfmy8sUP-"7DbuhoAUo9sM"T_ST
,9%=la1?O"+l[0]y:4o$6}D
HzPs_`1rPK5d#Ahr6s%license.dist-0.2.dist-info/RECORD.jwsUT DPmgux%N@EHq()04@:*`w].9?\'$mZK'3'
}g7.hI[zMeH4 TQzI9 +g\v7+L? iOU{RC3;>>p_,7:N-f@]i#
;_*bl-X,sZzoI]4a%JQy+KI(:d=^Su`t5U@d"R7PK
d#A~XY@@@ license.dist-0.2.dist-info/WHEELUT FDPmguxWheel-Version: 0.1
Packager: bdist_wheel
Root-Is-Purelib: true

```

PK

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A. HISTORY OF THE SOFTWARE

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Python was created in the early 1990s by Guido van Rossum at Stichting Mathematisch Centrum (CWI, see <https://www.cwi.nl>) in the Netherlands as a successor of a language called ABC. Guido remains Python's principal author, although it includes many contributions from others.

In 1995, Guido continued his work on Python at the Corporation for National Research Initiatives (CNRI, see <https://www.cnri.reston.va.us>) in Reston, Virginia where he released several versions of the software.

In May 2000, Guido and the Python core development team moved to BeOpen.com to form the BeOpen PythonLabs team. In October of the same year, the PythonLabs team moved to Digital Creations, which became Zope Corporation. In 2001, the Python Software Foundation (PSF, see <https://www.python.org/psf/>) was formed, a non-profit organization created specifically to own Python-related Intellectual Property. Zope Corporation was a sponsoring member of the PSF.

All

Python releases are Open Source (see <https://opensource.org> for the Open Source Definition). Historically, most, but not all, Python releases have also been GPL-compatible; the table below summarizes the various releases.

Release	Derived from	Year	Owner	GPL-compatible? (1)

0.9.0 thru 1.2		1991-1995	CWI	yes
1.3 thru 1.5.2	1.2	1995-1999	CNRI	yes
1.6	1.5.2	2000	CNRI	no
2.0	1.6	2000	BeOpen.com	no
1.6.1	1.6	2001	CNRI	yes (2)
2.1	2.0+1.6.1	2001	PSF	no
2.0.1	2.0+1.6.1	2001	PSF	yes
2.1.1	2.1+2.0.1	2001	PSF	yes
2.1.2	2.1.1	2002	PSF	yes
2.1.3	2.1.2	2002	PSF	yes
2.2 and above	2.1.1	2001-now		
PSF	yes			

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Thanks to the many outside volunteers who have worked under Guido's direction to make these releases possible.

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as a successor of a language called ABC. Guido remains Python's
principal author, although it includes many contributions from others.

In 1995, Guido continued his work on Python at the Corporation for
National Research Initiatives (CNRI, see <http://www.cnri.reston.va.us>)
in Reston, Virginia where he released several versions of the
software.

In May 2000, Guido and the Python core development team moved to
BeOpen.com to form the BeOpen PythonLabs team. In October of the same
year, the PythonLabs team moved to Digital Creations (now Zope
Corporation, see <http://www.zope.com>). In 2001, the Python Software
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1.3 thru 1.5.2	1.2	1995-1999	CNRI	yes
1.6	1.5.2	2000	CNRI	no
2.0	1.6	2000	BeOpen.com	no
1.6.1	1.6	2001	CNRI	yes (2)
2.1	2.0+1.6.1	2001	PSF	no
2.0.1	2.0+1.6.1	2001	PSF	yes
2.1.1	2.1+2.0.1	2001	PSF	yes
2.2	2.1.1	2001	PSF	yes
2.1.2	2.1.1	2002	PSF	yes
2.1.3				
2.1.2	2002	PSF	yes	
2.2.1	2.2	2002	PSF	yes
2.2.2	2.2.1	2002	PSF	yes
2.2.3	2.2.2	2003	PSF	yes
2.3	2.2.2	2002-2003	PSF	yes
2.3.1	2.3	2002-2003	PSF	yes
2.3.2	2.3.1	2002-2003	PSF	yes
2.3.3	2.3.2	2002-2003	PSF	yes
2.3.4	2.3.3	2004	PSF	yes
2.3.5	2.3.4	2005	PSF	yes
2.4	2.3	2004	PSF	yes
2.4.1	2.4	2005	PSF	yes
2.4.2	2.4.1	2005	PSF	yes
2.4.3	2.4.2	2006	PSF	yes
2.4.4	2.4.3	2006	PSF	yes
2.5	2.4	2006	PSF	yes
2.5.1	2.5	2007	PSF	yes
2.5.2	2.5.1	2008	PSF	yes
2.5.3	2.5.2	2008	PSF	yes
2.6	2.5	2008	PSF	yes
2.6.1	2.6	2008	PSF	yes
2.6.2	2.6.1	2009	PSF	yes
2.6.3	2.6.2	2009	PSF	yes
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BeOpen.com to form the BeOpen PythonLabs team. In October of the same
year, the PythonLabs team moved to Digital Creations (now Zope
Corporation, see <http://www.zope.com>). In 2001, the Python Software
Foundation (PSF, see <http://www.python.org/psf/>) was formed, a
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2.1.2	2.1.1	2002	PSF	yes
2.1.3				
2.1.2	2002	PSF	yes	
2.2.1	2.2	2002	PSF	yes
2.2.2	2.2.1	2002	PSF	yes
2.2.3	2.2.2	2003	PSF	yes
2.3	2.2.2	2002-2003	PSF	yes
2.3.1	2.3	2002-2003	PSF	yes
2.3.2	2.3.1	2002-2003	PSF	yes
2.3.3	2.3.2	2002-2003	PSF	yes
2.3.4	2.3.3	2004	PSF	yes
2.3.5	2.3.4	2005	PSF	yes
2.4	2.3	2004	PSF	yes
2.4.1	2.4	2005	PSF	yes
2.4.2	2.4.1	2005	PSF	yes
2.4.3	2.4.2	2006	PSF	yes
2.4.4	2.4.3	2006	PSF	yes
2.5	2.4	2006	PSF	yes
2.5.1	2.5	2007	PSF	yes
2.5.2	2.5.1	2008	PSF	yes
2.5.3	2.5.2	2008	PSF	yes
2.6	2.5	2008	PSF	yes
2.6.1	2.6	2008	PSF	yes
2.6.2	2.6.1	2009	PSF	yes
2.6.3	2.6.2	2009	PSF	yes
2.6.4	2.6.3	2009	PSF	yes
2.6.5	2.6.4	2010	PSF	yes

3.0	2.6	2008	PSF	yes
3.0.1	3.0	2009	PSF	yes
3.1	3.0.1	2009	PSF	yes
3.1.1	3.1	2009	PSF	yes
3.1.2	3.1	2010	PSF	yes
3.2	3.1	2010	PSF	yes

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Version 3.1, 31 March 2009

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```
/* Use the Sequent Symmetry assembler syntax. */
```

```
/* Define the syntax of pseudo-ops, labels and comments. */
```

```
/* Prefix for internally generated assembler
   labels. If we aren't using
   underscores, we are using prefix `.'s to identify labels that should
   be ignored, as in `i386/gas.h' --karl@cs.umb.edu */
```

```
#define LPREFIX "L"
```

```
/* Assembler pseudos to introduce constants of various size. */
```

```
#define ASM_BYTE "\t.byte\t"
#define ASM_SHORT "\t.word\t"
#define ASM_LONG "\t.long\t"
#define ASM_QUAD "\t.quad\t" /* Should not be used for 32bit compilation. */
```

```

/* This was suggested, but it shouldn't be right for debugger output. -- RMS
#define ASM_OUTPUT_SOURCE_FILENAME(FILE, NAME) */

/* Define the syntax of labels and symbol definitions/declarations. */

/* This is how to output an assembler line
that says to advance the location counter by SIZE bytes. */

#define ASM_OUTPUT_SKIP(FILE,SIZE) \
fprintf (FILE, "\t.space " HOST_WIDE_INT_PRINT_UNSIGNED"\n", (SIZE))

/* Define the syntax of labels and symbol definitions/declarations. */

/* This says how to output an assembler line
to define a global common symbol. */

#define
ASM_OUTPUT_COMMON(FILE, NAME, SIZE, ROUNDED) \
( fputs (".comm ", (FILE)), \
assemble_name ((FILE), (NAME)), \
fprintf ((FILE), "%u\n", (int)(ROUNDED)))

/* This says how to output an assembler line
to define a local common symbol. */

#define ASM_OUTPUT_LOCAL(FILE, NAME, SIZE, ROUNDED) \
( fputs (".lcomm ", (FILE)), \
assemble_name ((FILE), (NAME)), \
fprintf ((FILE), "%u\n", (int)(ROUNDED)))

#ifdef HAVE_GAS_LCOMM_WITH_ALIGNMENT
#define ASM_OUTPUT_ALIGNED_LOCAL(FILE, NAME, SIZE, ALIGNMENT) \
( fputs (".lcomm ", (FILE)), \
assemble_name ((FILE), (NAME)), \
fprintf ((FILE), "%u,%u\n", (int)(SIZE), (int)(ALIGNMENT) / BITS_PER_UNIT))
#endif

/* This is how to output an assembler line
that says to advance the location counter
to a multiple of 2**LOG bytes. */

#define ASM_OUTPUT_ALIGN(FILE,LOG) \
if ((LOG)!=0) fprintf ((FILE), "\t.align %d\n", (LOG))

/* This is how to store into the string BUF
the symbol_ref name of an internal numbered

```

label where

PREFIX is the class of label and NUM is the number within the class.

This is suitable for output with `assemble_name'. */

```
#define ASM_GENERATE_INTERNAL_LABEL(BUF,PREFIX,NUMBER) \
    sprintf ((BUF), "%s%d", (PREFIX), (long)(NUMBER))
```

/* The prefix to add to user-visible assembler symbols. */

```
#define USER_LABEL_PREFIX "_"
```

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Version 3.1, 31 March 2009

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02110-1301, USA. */

```
#ifndef __VTV_H__
#define __VTV_H__

/* We could have used an enumeration here but it just makes it more
   difficult for the compiler to generate a call to this. These are
   used as arguments to the function __VLTChangePermission, declared
   below. */
#define __VLTP_READ_ONLY 0
#define __VLTP_READ_WRITE 1

#ifdef __cplusplus
extern "C" void __VLTChangePermission (int);
#else
extern void __VLTChangePermission (int);
#endif

#ifdef BIG_PAGE_SIZE
/* TODO - Replace '4096' below with correct big page size. */
#define VTV_PAGE_SIZE 4096
#else
#ifdef defined(__sun__) && defined(__svr4__) && defined(__sparc__)
#define VTV_PAGE_SIZE 8192
#elif defined(__loongarch_lp64)
/* The page size is configurable by the kernel to be 4,
   16 or 64 KiB.
   For now, only the default page size of 16KiB is supported. */
#define VTV_PAGE_SIZE 16384
#else
#define VTV_PAGE_SIZE 4096
#endif
#endif

#endif /* __VTV_H__ */
```

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A. HISTORY OF THE SOFTWARE

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Python was created in the early 1990s by Guido van Rossum at Stichting Mathematisch Centrum (CWI, see <https://www.cwi.nl>) in the Netherlands as a successor of a language called ABC. Guido remains Python's principal author, although it includes many contributions from others.

In 1995, Guido continued his work on Python at the Corporation for National Research Initiatives (CNRI, see <https://www.cnri.reston.va.us>) in Reston, Virginia where he released several versions of the software.

In May 2000, Guido and the Python core development team moved to BeOpen.com to form the BeOpen PythonLabs team. In October of the same year, the PythonLabs team moved to Digital Creations, which became Zope Corporation. In 2001, the Python Software Foundation (PSF, see <https://www.python.org/psf/>) was formed, a non-profit organization created specifically to own Python-related Intellectual Property. Zope Corporation was a sponsoring member of the PSF.

All

Python releases are Open Source (see <https://opensource.org> for the Open Source Definition). Historically, most, but not all, Python releases have also been GPL-compatible; the table below summarizes the various releases.

Release	Derived from	Year	Owner	GPL-compatible? (1)
0.9.0 thru 1.2		1991-1995	CWI	yes
1.3 thru 1.5.2	1.2	1995-1999	CNRI	yes
1.6	1.5.2	2000	CNRI	no
2.0	1.6	2000	BeOpen.com	no
1.6.1	1.6	2001	CNRI	yes (2)
2.1	2.0+1.6.1	2001	PSF	no
2.0.1	2.0+1.6.1	2001	PSF	yes
2.1.1	2.1+2.0.1	2001	PSF	yes
2.1.2	2.1.1	2002	PSF	yes
2.1.3	2.1.2	2002	PSF	yes
2.2 and above	2.1.1	2001-now		
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Python was created in the early 1990s by Guido van Rossum at Stichting Mathematisch Centrum (CWI, see <https://www.cwi.nl>) in the Netherlands as a successor of a language called ABC. Guido remains Python's principal author, although it includes many contributions from others.

In 1995, Guido continued his work on Python at the Corporation for National Research Initiatives (CNRI, see <https://www.cnri.reston.va.us>) in Reston, Virginia where he released several versions of the software.

In May 2000, Guido and the Python core development team moved to BeOpen.com to form the BeOpen PythonLabs team. In October of the same year, the PythonLabs team moved to Digital Creations, which became Zope Corporation. In 2001, the Python Software Foundation (PSF, see <https://www.python.org/psf/>) was formed, a non-profit organization created specifically to own Python-related Intellectual Property. Zope Corporation was a sponsoring member of the PSF.

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1.3 thru 1.5.2	1.2	1995-1999	CNRI	yes
1.6	1.5.2	2000	CNRI	no
2.0	1.6	2000	BeOpen.com	no
1.6.1	1.6	2001	CNRI	yes (2)
2.1	2.0+1.6.1	2001	PSF	no
2.0.1	2.0+1.6.1	2001	PSF	yes
2.1.1	2.1+2.0.1	2001	PSF	yes

2.1.2	2.1.1	2002	PSF	yes
2.1.3	2.1.2	2002	PSF	yes
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A. HISTORY OF THE SOFTWARE

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Python was created in the early 1990s by Guido van Rossum at Stichting
Mathematisch Centrum (CWI, see <http://www.cwi.nl>) in the Netherlands
as a successor of a language called ABC. Guido remains Python's
principal author, although it includes many contributions from others.

In 1995, Guido continued his work on Python at the Corporation for
National Research Initiatives (CNRI, see <http://www.cnri.reston.va.us>)
in Reston, Virginia where he released several versions of the
software.

In May 2000, Guido and the Python core development team moved to
BeOpen.com to form the BeOpen PythonLabs team. In October of the same
year, the PythonLabs team moved to Digital Creations (now Zope
Corporation, see <http://www.zope.com>). In 2001, the Python Software
Foundation (PSF, see <http://www.python.org/psf/>) was formed, a
non-profit organization created specifically to own Python-related
Intellectual Property. Zope Corporation is a sponsoring member
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the PSF.

All Python releases are Open Source (see <http://www.opensource.org> for
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releases have also been GPL-compatible; the table below summarizes
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Release	Derived from	Year	Owner	GPL- compatible? (1)
0.9.0 thru 1.2		1991-1995	CWI	yes
1.3 thru 1.5.2	1.2	1995-1999	CNRI	yes

1.6	1.5.2	2000	CNRI	no
2.0	1.6	2000	BeOpen.com	no
1.6.1	1.6	2001	CNRI	yes (2)
2.1	2.0+1.6.1	2001	PSF	no
2.0.1	2.0+1.6.1	2001	PSF	yes
2.1.1	2.1+2.0.1	2001	PSF	yes
2.2	2.1.1	2001	PSF	yes
2.1.2	2.1.1	2002	PSF	yes
2.1.3				
2.1.2	2002	PSF	yes	
2.2.1	2.2	2002	PSF	yes
2.2.2	2.2.1	2002	PSF	yes
2.2.3	2.2.2	2003	PSF	yes
2.3	2.2.2	2002-2003	PSF	yes
2.3.1	2.3	2002-2003	PSF	yes
2.3.2	2.3.1	2002-2003	PSF	yes
2.3.3	2.3.2	2002-2003	PSF	yes
2.3.4	2.3.3	2004	PSF	yes
2.3.5	2.3.4	2005	PSF	yes
2.4	2.3	2004	PSF	yes
2.4.1	2.4	2005	PSF	yes
2.4.2	2.4.1	2005	PSF	yes
2.4.3	2.4.2	2006	PSF	yes
2.4.4	2.4.3	2006	PSF	yes
2.5	2.4	2006	PSF	yes
2.5.1	2.5	2007	PSF	yes
2.5.2	2.5.1	2008	PSF	yes
2.5.3	2.5.2	2008	PSF	yes
2.6	2.5	2008	PSF	yes
2.6.1	2.6	2008	PSF	yes
2.6.2	2.6.1	2009	PSF	yes
2.6.3	2.6.2	2009	PSF	yes
2.6.4	2.6.3	2009	PSF	yes
2.6.5	2.6.4	2010	PSF	yes
2.7	2.6	2010	PSF	yes

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Python was created in the early 1990s by Guido van Rossum at Stichting Mathematisch Centrum (CWI, see <http://www.cwi.nl>) in the Netherlands as a successor of a language called ABC. Guido remains Python's principal author, although it includes many contributions from others.

In 1995, Guido continued his work on Python at the Corporation for National Research Initiatives (CNRI, see <http://www.cnri.reston.va.us>) in Reston, Virginia where he released several versions of the software.

In May 2000, Guido and the Python core development team moved to BeOpen.com to form the BeOpen PythonLabs team. In October of the same year, the PythonLabs team moved to Digital Creations (now Zope Corporation, see <http://www.zope.com>). In 2001, the Python Software Foundation (PSF, see <http://www.python.org/psf/>) was formed, a non-profit organization created specifically to own Python-related Intellectual Property. Zope Corporation is a sponsoring member of the PSF.

All Python releases are Open Source (see <http://www.opensource.org> for the Open Source Definition). Historically, most, but not all, Python releases have also been GPL-compatible; the table below summarizes the various releases.

Release	Derived from	Year	Owner	GPL- compatible? (1)
0.9.0 thru 1.2		1991-1995	CWI	yes
1.3 thru 1.5.2	1.2	1995-1999	CNRI	yes
1.6	1.5.2	2000	CNRI	no
2.0	1.6	2000	BeOpen.com	no
1.6.1	1.6	2001	CNRI	yes (2)
2.1	2.0+1.6.1	2001	PSF	no
2.0.1	2.0+1.6.1	2001	PSF	yes
2.1.1	2.1+2.0.1	2001	PSF	yes
2.2	2.1.1	2001	PSF	yes
2.1.2	2.1.1	2002	PSF	yes
2.1.3				
2.1.2	2002	PSF	yes	
2.2.1	2.2	2002	PSF	yes
2.2.2	2.2.1	2002	PSF	yes
2.2.3	2.2.2	2003	PSF	yes
2.3	2.2.2	2002-2003	PSF	yes
2.3.1	2.3	2002-2003	PSF	yes
2.3.2	2.3.1	2002-2003	PSF	yes
2.3.3	2.3.2	2002-2003	PSF	yes
2.3.4	2.3.3	2004	PSF	yes
2.3.5	2.3.4	2005	PSF	yes
2.4	2.3	2004	PSF	yes
2.4.1	2.4	2005	PSF	yes
2.4.2	2.4.1	2005	PSF	yes
2.4.3	2.4.2	2006	PSF	yes
2.4.4	2.4.3	2006	PSF	yes
2.5	2.4	2006	PSF	yes
2.5.1	2.5	2007	PSF	yes
2.5.2	2.5.1	2008	PSF	yes
2.5.3	2.5.2	2008	PSF	yes
2.6	2.5	2008	PSF	yes
2.6.1	2.6	2008	PSF	yes
2.6.2	2.6.1	2009	PSF	yes
2.6.3	2.6.2	2009	PSF	yes
2.6.4	2.6.3	2009	PSF	yes
2.6.5	2.6.4	2010	PSF	yes
3.0	2.6	2008	PSF	yes
3.0.1	3.0	2009	PSF	yes
3.1	3.0.1	2009	PSF	yes
3.1.1	3.1	2009	PSF	yes
3.1.2	3.1	2010	PSF	yes
3.2	3.1	2010	PSF	yes

Footnotes:

(1) GPL-compatible doesn't mean that we're distributing Python under the GPL. All Python licenses, unlike the GPL, let you distribute a modified version without making your changes open source. The GPL-compatible licenses make it possible to combine Python with other software that is released under the GPL; the others don't.

(2) According to Richard Stallman, 1.6.1 is not GPL-compatible, because its license has a choice of law clause. According to CNRI, however, Stallman's lawyer has told CNRI's lawyer that 1.6.1 is "not incompatible" with the GPL.

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1.434 py3-setuptools-pyc 80.9.0-r2

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The code contained in this directory was automatically generated using the following command:

```
python -m validate_pyproject.pre_compile --output-dir=setuputils/config/_validate_pyproject --enable-plugins
setuputils.distutils --very-verbose -t setuputils=setuputils/config/setuputils.schema.json -t
distutils=setuputils/config/distutils.schema.json
```

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`fastjsonschema`
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`validate-pyproject`

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In 1995, Guido continued his work on Python at the Corporation for National Research Initiatives (CNRI, see <https://www.cnri.reston.va.us>) in Reston, Virginia where he released several versions of the software.

In May 2000, Guido and the Python core development team moved to BeOpen.com to form the BeOpen PythonLabs team. In October of the same year, the PythonLabs team moved to Digital Creations, which became Zope Corporation. In 2001, the Python Software Foundation (PSF, see <https://www.python.org/psf/>) was formed, a non-profit organization created specifically to own Python-related Intellectual Property.

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    * memoizedHashCode

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    c getAddressLinesCount
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newBuilder )(Lcom/google/type/PostalAddress$Builder;
    DEFAULT_INSTANCE Lcom/google/type/PostalAddress;

    toBuilder
L    mergeFrom H(Lcom/google/type/PostalAddress;)Lcom/google/type/PostalAddress$Builder;
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L - Z(Lcom/google/protobuf/GeneratedMessageV3$BuilderParent;Lcom/google/type/PostalAddress$1;)V
    newBuilderForType
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#? ' &com/google/type/PostalAddressOrBuilder serialVersionUID J
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LANGUAGE_CODE_FIELD_NUMBER POSTAL_CODE_FIELD_NUMBER
SORTING_CODE_FIELD_NUMBER ADMINISTRATIVE_AREA_FIELD_NUMBER
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RECIPIENTS_FIELD_NUMBER
ORGANIZATION_FIELD_NUMBER Signature
=Lcom/google/protobuf/Parser<Lcom/google/type/PostalAddress;>; Code LineNumberTable LocalVariableTable this
builder 0Lcom/google/protobuf/GeneratedMessageV3$Builder; LocalVariableTypeTable
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6(Lcom/google/protobuf/GeneratedMessageV3$Builder<*>;)V newInstance
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?Lcom/google/protobuf/GeneratedMessageV3$UnusedPrivateParameter; internalGetFieldAccessorTable
=()Lcom/google/protobuf/GeneratedMessageV3$FieldAccessorTable; bs
Lcom/google/protobuf/ByteString; s Ljava/lang/String; ref
StackMapTable getRegionCodeBytes "(Lcom/google/protobuf/ByteString; b getLanguageCodeBytes
getPostalCodeBytes getSortingCodeBytes getAdministrativeAreaBytes getLocalityBytes getSublocalityBytes
getAddressLines index getAddressLinesBytes
getRecipients getRecipientsBytes getOrganizationBytes
isInitialized ()Z i output 'Lcom/google/protobuf/CodedOutputStream;
Exceptions p java/io/IOException dataSize obj other hash 6(Ljava/nio/ByteBuffer;)Lcom/google/type/PostalAddress;
data Ljava/nio/ByteBuffer; y 2com/google/protobuf/InvalidProtocolBufferException
a(Ljava/nio/ByteBuffer;Lcom/google/protobuf/ExtensionRegistryLite;)Lcom/google/type/PostalAddress;
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!Lcom/google/type/PostalAddress$1;
access$302 #(Lcom/google/type/PostalAddress;I)I
access$402 E(Lcom/google/type/PostalAddress;Ljava/lang/Object;)Ljava/lang/Object;
access$502
access$602

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access$802
access$902 access$1002 access$1102
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ArrayList; access$1202 access$1302
access$400 3(Lcom/google/type/PostalAddress;)Ljava/lang/Object;
access$500
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access$900 access$1000 access$1100
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Descriptor FieldAccessorTable 4com/google/protobuf/GeneratedMessageV3$BuilderParent
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No license file was found, but licenses were detected in source scan.

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1.436 shadow 4.18.0-r0

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1.438 protobuf-go 1.36.11

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1.439 procps 4.0.5-r0

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1.440 libproc2 4.0.5-r0

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1.441 gorm-gorm 1.31.1

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NR START END SECTORS SIZE NAME UUID

1	32	7679	7648	3.7M	8f8378c0-01
2	7680	16383	8704	4.3M	8f8378c0-02
5	7936	12799	4864	2.4M	
6	12544	16127	3584	1.8M	

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/*

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*/

```
#ifndef UTIL_LINUX_PT_BSD_H
#define UTIL_LINUX_PT_BSD_H
```

```
#define BSD_MAXPARTITIONS 16
#define BSD_FS_UNUSED 0
```

```

#ifndef BSD_DISKMAGIC
#define BSD_DISKMAGIC ((uint32_t) 0x82564557)
#endif

#define BSD_LINUX_BOOTDIR "/usr/ucb/mdec"

#if defined (__alpha__) || defined (__powerpc__) || \
    defined (__ia64__) || defined (__hppa__)
#define BSD_LABELSECTOR 0
#define BSD_LABELOFFSET 64
#else
#define BSD_LABELSECTOR 1
#define BSD_LABELOFFSET 0
#endif

#define BSD_BBSIZE      8192 /* size of boot area, with label */
#define BSD_SBSIZE      8192 /* max size of fs superblock */

struct bsd_disklabel {
    uint32_t d_magic; /* the magic number */
    int16_t d_type; /* drive type */
    int16_t d_subtype; /* controller/d_type specific */
    char d_typename[16]; /* type name, e.g. "eagle" */
    char d_packname[16]; /* pack identifier */

    /* disk geometry: */
    uint32_t d_sectsize; /*
    # of bytes per sector */
    uint32_t d_nsectors; /* # of data sectors per track */
    uint32_t d_ntracks; /* # of tracks per cylinder */
    uint32_t d_ncylinders; /* # of data cylinders per unit */
    uint32_t d_secpercyl; /* # of data sectors per cylinder */
    uint32_t d_secperunit; /* # of data sectors per unit */

    /*
    * Spares (bad sector replacements) below
    * are not counted in d_nsectors or d_secpercyl.
    * Spare sectors are assumed to be physical sectors
    * which occupy space at the end of each track and/or cylinder.
    */
    uint16_t d_sparepertrack; /* # of spare sectors per track */
    uint16_t d_sparepercyl; /* # of spare sectors per cylinder */

    /*
    * Alternate cylinders include maintenance, replacement,
    * configuration description areas, etc.
    */
    uint32_t d_acylinders; /* # of alt. cylinders per unit */

```

```

/* hardware characteristics: */
/*
* d_interleave, d_trackskew and d_cylskew describe perturbations
* in the media format used to compensate for a slow
controller.
* Interleave is physical sector interleave, set up by the formatter
* or controller when formatting. When interleaving is in use,
* logically adjacent sectors are not physically contiguous,
* but instead are separated by some number of sectors.
* It is specified as the ratio of physical sectors traversed
* per logical sector. Thus an interleave of 1:1 implies contiguous
* layout, while 2:1 implies that logical sector 0 is separated
* by one sector from logical sector 1.
* d_trackskew is the offset of sector 0 on track N
* relative to sector 0 on track N-1 on the same cylinder.
* Finally, d_cylskew is the offset of sector 0 on cylinder N
* relative to sector 0 on cylinder N-1.
*/
uint16_t d_rpm; /* rotational speed */
uint16_t d_interleave; /* hardware sector interleave */
uint16_t d_trackskew; /* sector 0 skew, per track */
uint16_t d_cylskew; /* sector 0 skew, per cylinder */
uint32_t d_headswitch; /* head switch time, usec */
uint32_t d_trkseek; /*
track-to-track seek, usec */
uint32_t d_flags; /* generic flags */
uint32_t d_drivedata[5]; /* drive-type specific information */
uint32_t d_spare[5]; /* reserved for future use */
uint32_t d_magic2; /* the magic number (again) */
uint16_t d_checksum; /* xor of data incl. partitions */

/* filesystem and partition information: */
uint16_t d_npartitions; /* number of partitions in following */
uint32_t d_bbsize; /* size of boot area at sn0, bytes */
uint32_t d_sbsize; /* max size of fs superblock, bytes */

struct bsd_partition { /* the partition table */
uint32_t p_size; /* number of sectors in partition */
uint32_t p_offset; /* starting sector */
uint32_t p_fsize; /* filesystem basic fragment size */
uint8_t p_fstype; /* filesystem type, see below */
uint8_t p_frag; /* filesystem fragments per block */
uint16_t p_cpg; /* filesystem cylinders per group */
} __attribute__((packed))
d_partitions[BSD_MAXPARTITIONS]; /* actually may be more */
} __attribute__((packed));

```

```

/* d_type values: */
#define BSD_DTYPE_SMD 1 /* SMD, XSMD; VAX hp/up */
#define BSD_DTYPE_MSCP 2 /* MSCP */
#define BSD_DTYPE_DEC 3 /* other DEC (rk, rl) */
#define BSD_DTYPE_SCSI 4 /* SCSI */
#define BSD_DTYPE_ESDI 5 /* ESDI interface */
#define BSD_DTYPE_ST506 6 /* ST506 etc. */
#define BSD_DTYPE_HPIB 7 /* CS/80 on HP-IB */
#define BSD_DTYPE_HPFL 8 /* HP Fiber-link */
#define BSD_DTYPE_FLOPPY 10 /* floppy */

/* d_subtype values: */
#define BSD_DSTYPE_INDOSPART 0x8 /* is inside dos partition */
#define BSD_DSTYPE_DOSPART(s) ((s) & 3) /* dos partition number */
#define BSD_DSTYPE_GEOMETRY 0x10 /* drive params in label */

/*
 * Filesystem type and version.
 * Used to interpret other filesystem-specific
 * per-partition information.
 */
#define BSD_FS_UNUSED 0 /* unused */
#define BSD_FS_SWAP 1 /* swap */
#define BSD_FS_V6 2 /* Sixth Edition */
#define BSD_FS_V7
    3 /* Seventh Edition */
#define BSD_FS_SYSV 4 /* System V */
#define BSD_FS_V71K 5 /* V7 with 1K blocks (4.1, 2.9) */
#define BSD_FS_V8 6 /* Eighth Edition, 4K blocks */
#define BSD_FS_BSDFFS 7 /* 4.2BSD fast file system */
#define BSD_FS_BSDLFS 9 /* 4.4BSD log-structured file system */
#define BSD_FS_OTHER 10 /* in use, but unknown/unsupported */
#define BSD_FS_HPFS 11 /* OS/2 high-performance file system */
#define BSD_FS_ISO9660 12 /* ISO-9660 filesystem (cdrom) */
#define BSD_FS_ISOFS BSD_FS_ISO9660
#define BSD_FS_BOOT 13 /* partition contains bootstrap */
#define BSD_FS_ADOS 14 /* AmigaDOS fast file system */
#define BSD_FS_HFS 15 /* Macintosh HFS */
#define BSD_FS_ADVFS 16 /* Digital Unix AdvFS */

/* this is annoying, but it's also the way it is :-/ */
#ifdef __alpha__
#define BSD_FS_EXT2 8 /* ext2 file system */
#else
#define BSD_FS_MSDOS 8 /* MS-DOS file system */
#endif

```

```

/*
 * flags shared by various drives:
 */
#define BSD_D_REMOVABLE 0x01 /*
removable media */
#define BSD_D_ECC      0x02 /* supports ECC */
#define BSD_D_BADSECT 0x04 /* supports bad sector forw. */
#define BSD_D_RAMDISK 0x08 /* disk emulator */
#define BSD_D_CHAIN    0x10 /* can do back-back transfers */
#define BSD_D_DOSPART 0x20 /* within MSDOS partition */

#endif /* UTIL_LINUX_PT_BSD_H */

```

1.443 netcat-openbsd 1.234.1-r0

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1.444 wget 1.25.0-r2

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/* Extract the last component (base name) of a file name.

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```
#ifndef _BASENAME_LGPL_H
#define _BASENAME_LGPL_H

/* This file uses _GL_ATTRIBUTE_PURE. */
#if !_GL_CONFIG_H_INCLUDED
#error "Please include config.h first."
#endif

#include <stddef.h>

#ifndef
DOUBLE_SLASH_IS_DISTINCT_ROOT
# define DOUBLE_SLASH_IS_DISTINCT_ROOT 0
#endif

#ifdef __cplusplus
extern "C" {
#endif

/* Return the address of the last file name component of FILENAME.
   If FILENAME has some trailing slash(es), they are considered to be
   part of the last component.
   If FILENAME has no relative file name components because it is a file
   system root, return the empty string.
   Examples:
       FILENAME    RESULT
       "foo.c"     "foo.c"
       "foo/bar.c"  "bar.c"
       "/foo/bar.c" "bar.c"
       "foo/bar/"   "bar/"
       "foo/bar//"   "bar/"
```

```

"/"      ""
"//"     ""
""       ""

The return value is a tail of the given FILENAME; do NOT free() it! */

/* This function was traditionally called 'basename', but we avoid this
function name because
* Various platforms have different functions in their libc.
In particular, the glibc basename(),
defined in <string.h>, does
not consider trailing slashes to be part of the component:
FILENAME  RESULT
"foo/bar/" ""
"foo/bar/" ""
* The 'basename' command eliminates trailing slashes and for a root
produces a non-empty result:
FILENAME  RESULT
"foo/bar/" "bar"
"foo/bar/" "bar"
"/"       "/"
"//"      "/"
*/

extern char *last_component (char const *filename) _GL_ATTRIBUTE_PURE;

/* Return the length of the basename FILENAME.
Typically FILENAME is the value returned by base_name or last_component.
Act like strlen (FILENAME), except omit all trailing slashes. */
extern size_t base_len (char const *filename) _GL_ATTRIBUTE_PURE;

#ifdef __cplusplus
} /* extern "C" */
#endif

#endif /* _BASENAME_LGPL_H */

```

1.445 drill 1.8.4-r1

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1.446 Idns 1.8.4-r1

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1.447 htop 3.4.1-r1

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1.448 libcurl 8.17.0-r1

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1.450 netty-codec-dns 4.1.129.Final

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Manifest-Version: 1.0
 Bundle-License: <https://www.apache.org/licenses/LICENSE-2.0>
 Bundle-SymbolicName: io.netty.codec-dns
 Built-By: root
 Bnd-LastModified: 1765488196214
 Specification-Title: Netty/Codec/DNS
 Implementation-Vendor-Id: io.netty
 Bundle-DocURL: <https://netty.io/>
 Import-Package: io.netty.buffer;version="[4.1,5)",io.netty.channel;version="[4.1,5)",io.netty.channel.socket;version="[4.1,5)",io.netty.handler.codec;version="[4.1,5)",io.netty.util;version="[4.1,5)",io.netty.util.collection;version="[4.1,5)",io.netty.util.internal;version="[4.1,5)",sun.nio.ch;resolution:=optional,org.eclipse.jetty.npn;version="[1,2)";resolution:=optional,org.eclipse.jetty.alpn;version="[1,2)";resolution:=optional,org.bouncycastle.jcajce.provider;version="[1.0,2)";resolution:=optional
 Require-Capability: osgi.ee;filter="(&(osgi.ee=JavaSE)(version=1.6))"
 Export-Package: io.netty.handler.codec.dns;uses:="io.netty.buffer,io.netty.channel,io.netty.channel.socket,io.netty.handler.codec,io.netty.util";version="4.1.129"
 Bundle-Name: Netty/Codec/DNS
 Build-Jdk-Spec: 1.8
 Implementation-Title: Netty/Codec/DNS
 Bundle-Description: Netty is an asynchronous event-driven network application framework for rapid development of maintainable high performance protocol servers and clients.
 Automatic-Module-Name: io.netty.codec.dns
 Implementation-Version: 4.1.129.Final
 Specification-Vendor: The Netty Project

Bundle-ManifestVersion: 2
Bundle-Vendor: The Netty Project
Tool: Bnd-6.3.1.202206071316
Implementation-Vendor: The Netty Project
Bundle-Version: 4.1.129.Final
Created-By: Apache Maven Bundle Plugin 5.1.8
Build-Jdk: 1.8.0_472
Specification-Version: 4.1
Implementation-URL: <https://netty.io/netty-codec-dns/>

Found in path(s):

* /netty-codec-dns-4-1-129-final-jar/META-INF/MANIFEST.MF

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/opt/cola/permits/2809020210_1767938886.7190917/0/netty-codec-dns-4-1-129-final-jar/META-INF/maven/io.netty/netty-codec-dns/pom.xml<?xml version="1.0" encoding="UTF-8"?>

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1.451 netty 4.1.129.Final

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/opt/cola/permits/2809020182_1767939950.9960835/0/netty-all-4-1-129-final-jar/META-INF/maven/io.netty/netty-all/pom.xml<?xml version="1.0" encoding="UTF-8"?>

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Manifest-Version: 1.0
Bundle-License: <https://www.apache.org/licenses/LICENSE-2.0>
Bundle-SymbolicName: io.netty.all
Built-By: runner
Bnd-LastModified: 1765488828727
Specification-Title: Netty/All-in-One
Implementation-Vendor-Id: io.netty
Bundle-DocURL: <https://netty.io/>
Import-Package: sun.nio.ch;resolution:=optional,org.eclipse.jetty.npn;version="[1,2)";resolution:=optional,org.eclipse.jetty.alpn;version="[1,2)";resolution:=optional,org.bouncycastle.jcajce.provider;version="[1.0,2)";resolution:=optional
Bundle-Name: Netty/All-in-One

Build-Jdk-Spec: 1.8
Implementation-Title: Netty/All-in-One
Bundle-Description: Netty is an asynchronous event-driven network application framework for rapid development of maintainable high performance protocol servers and clients.
Automatic-Module-Name: io.netty.all
Implementation-Version: 4.1.129.Final
Specification-Vendor: The Netty Project
Bundle-ManifestVersion: 2
Bundle-Vendor:
The Netty Project
Tool: Bnd-6.3.1.202206071316
Implementation-Vendor: The Netty Project
Bundle-Version: 4.1.129.Final
Created-By: Apache Maven Bundle Plugin 5.1.8
Build-Jdk: 1.8.0_472
Specification-Version: 4.1
Implementation-URL: <https://netty.io/netty-all/>

Found in path(s):

* /netty-all-4-1-129-final-jar/META-INF/MANIFEST.MF

1.452 netty-transport-native-unix-common

4.1.129.Final

1.452.1 Available under license :

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

/opt/cola/permits/2809020261_1767940275.697603/0/netty-transport-native-unix-common-4-1-129-final-jar/META-INF/maven/io.netty/netty-transport-native-unix-common/pom.xml<?xml version="1.0" encoding="UTF-8"?>

Found in path(s):

*

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

Manifest-Version: 1.0
Bundle-License: <https://www.apache.org/licenses/LICENSE-2.0>
Bundle-SymbolicName: io.netty.transport-native-unix-common
Built-By: root
Bnd-LastModified: 1765488205312
Specification-Title: Netty/Transport/Native/Unix/Common
Implementation-Vendor-Id: io.netty
Bundle-DocURL: <https://netty.io/>
Import-Package: io.netty.buffer;version="[4.1,5)",io.netty.channel;ver

sion="[4.1,5)",io.netty.channel.socket;version="[4.1,5)",io.netty.util;version="[4.1,5)",io.netty.util.internal;version="[4.1,5)",sun.nio.ch;resolution:=optional,org.eclipse.jetty.npn;version="[1,2)";resolution:=optional,org.eclipse.jetty.alpn;version="[1,2)";resolution:=optional,org.bouncycastle.jcajce.provider;version="[1.0,2)";resolution:=optional

Require-Capability: osgi.ee;filter="(&(osgi.ee=JavaSE)(version=1.6))"

Export-Package: io.netty.channel.unix;uses="io.netty.buffer,io.netty.channel,io.netty.channel.socket,io.netty.util";version="4.1.129"

Bundle-Name:

Netty/Transport/Native/Unix/Common

Build-Jdk-Spec: 1.8

Implementation-Title: Netty/Transport/Native/Unix/Common

Bundle-Description: Static library which contains common unix utilities.

Automatic-Module-Name: io.netty.transport.unix.common

Implementation-Version: 4.1.129.Final

Specification-Vendor: The Netty Project

Bundle-ManifestVersion: 2

Bundle-Vendor: The Netty Project

Tool: Bnd-6.3.1.202206071316

Implementation-Vendor: The Netty Project

Bundle-Version: 4.1.129.Final

Created-By: Apache Maven Bundle Plugin 5.1.8

Build-Jdk: 1.8.0_472

Specification-Version: 4.1

Implementation-URL: <https://netty.io/netty-transport-native-unix-common/>

Found in path(s):

* /netty-transport-native-unix-common-4-1-129-final-jar/META-INF/MANIFEST.MF

1.453 netty-transport 4.1.129.Final

1.453.1 Available under license :

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

Manifest-Version: 1.0

Bundle-License: <https://www.apache.org/licenses/LICENSE-2.0>

Bundle-SymbolicName: io.netty.transport

Built-By: root

Bnd-LastModified: 1765488181045

Specification-Title: Netty/Transport

Implementation-Vendor-Id: io.netty

Bundle-DocURL: <https://netty.io/>

Import-Package: io.netty.bootstrap,io.netty.buffer;version="[4.1,5)",io.netty.channel,io.netty.channel.nio,io.netty.channel.oio,io.netty.ch


```

annel.socket,io.netty.resolver;version="[4.1,5)",io.netty.util;versio
n="[4.1,5)",io.netty.util.concurrent;version="[4.1,5)",io.netty.util.
internal;version="[4.1,5)",io.netty.util.internal.logging;version="[4
.1,5)",sun.nio.ch;resolution:=optional,org.eclipse.jetty.npn;version=
"[1,2)";resolution:=optional,org.eclipse.jetty.alpn;version="[1,2)";r
esolution:=optional,org.bouncycastle.jcajce.provider;version="[1.0,2)
";resolution:=optional
Require-Capability: osgi.ee;filter="(&(osgi.ee=JavaSE)(version=1.6))"
Export-Package:
  io.netty.bootstrap;uses:="io.netty.channel,io.netty.re
solver,io.netty.util";version="4.1.129",io.netty.channel;uses:="io.ne
tty.bootstrap,io.netty.buffer,io.netty.util,io.netty.util.concurrent"
;version="4.1.129",io.netty.channel.embedded;uses:="io.netty.channel"
;version="4.1.129",io.netty.channel.group;uses:="io.netty.channel,io.
netty.util.concurrent";version="4.1.129",io.netty.channel.internal;ve
rsion="4.1.129",io.netty.channel.local;uses:="io.netty.channel";versi
on="4.1.129",io.netty.channel.nio;uses:="io.netty.buffer,io.netty.cha
nnel,io.netty.util,io.netty.util.concurrent";version="4.1.129",io.net
ty.channel.oio;uses:="io.netty.buffer,io.netty.channel";version="4.1.
129",io.netty.channel.pool;uses:="io.netty.bootstrap,io.netty.channel
,io.netty.util.concurrent";version="4.1.129",io.netty.channel.socket;
uses:="io.netty.buffer,io.netty.channel,io.netty.util";version="4.1.1
29",io.netty.channel.socket.nio;uses:="io.netty.buffer,io.netty.chann
el,io.netty.channel.nio,io.netty.channel.socket";version="4.1.129",io
.netty.channel.socket.oio;uses:="io.netty.buffer,io.netty.channel,io.
netty.channel.oio,io.netty.channel.socket";version="4.1.129"
Bundle-Name: Netty/Transport
Build-Jdk-Spec: 1.8
Implementation-Title: Netty/Transport
Bundle-Description: Netty is an asynchronous event-driven network appl
ication framework for rapid development of maintainable high perfo
rmance protocol servers and clients.
Automatic-Module-Name: io.netty.transport
Implementation-Version: 4.1.129.Final
Specification-Vendor: The Netty Project
Bundle-ManifestVersion: 2
Bundle-Vendor: The Netty Project
Tool: Bnd-6.3.1.202206071316
Implementation-Vendor: The Netty Project
Bundle-Version: 4.1.129.Final
Created-By: Apache Maven Bundle Plugin 5.1.8
Build-Jdk: 1.8.0_472
Specification-Version: 4.1
Implementation-URL: https://netty.io/netty-transport/

```

Found in path(s):

* /netty-transport-4-1-129-final-jar/META-INF/MANIFEST.MF

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

/opt/cola/permits/2809020196_1767939537.7518682/0/netty-transport-4-1-129-final-jar/META-INF/maven/io.netty/netty-transport/pom.xml<?xml version="1.0" encoding="UTF-8"?>

Found in path(s):

*

1.454 netty-transport-classes-epoll

4.1.129.Final

1.454.1 Available under license :

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

Manifest-Version: 1.0

Bundle-License: <https://www.apache.org/licenses/LICENSE-2.0>

Bundle-SymbolicName: io.netty.transport-classes-epoll

Built-By: root

Bnd-LastModified: 1765488295451

Specification-Title: Netty/Transport/Classes/Epoll

Implementation-Vendor-Id: io.netty

Bundle-DocURL: <https://netty.io/>

Import-Package: io.netty.buffer;version="[4.1,5)",io.netty.channel;version="[4.1,5)",io.netty.channel.socket;version="[4.1,5)",io.netty.channel.unix;version="[4.1,5)",io.netty.util;version="[4.1,5)",io.netty.util.collection;version="[4.1,5)",io.netty.util.concurrent;version="[4.1,5)",io.netty.util.internal;version="[4.1,5)",io.netty.util.internal.logging;version="[4.1,5)",sun.nio.ch;resolution:=optional,org.eclipse.jetty.npn;version="[1,2)";resolution:=optional,org.eclipse.jetty.alpn;version="[1,2)";resolution:=optional,org.bouncycastle.jcajce.provider;version="[1.0,2)";resolution:=optional

Require-Capability:

osgi.ee;filter="(&(osgi.ee=JavaSE)(version=1.6))"

Export-Package: io.netty.channel.epoll;uses:="io.netty.buffer,io.netty.channel,io.netty.channel.socket,io.netty.channel.unix,io.netty.util,io.netty.util.concurrent";version="4.1.129"

Bundle-Name: Netty/Transport/Classes/Epoll

Build-Jdk-Spec: 1.8

Implementation-Title: Netty/Transport/Classes/Epoll

Bundle-Description: Netty is an asynchronous event-driven network application framework for rapid development of maintainable high performance protocol servers and clients.

Automatic-Module-Name: io.netty.transport.classes.epoll

Implementation-Version: 4.1.129.Final

Specification-Vendor: The Netty Project

Bundle-ManifestVersion: 2
Bundle-Vendor: The Netty Project
Tool: Bnd-6.3.1.202206071316
Implementation-Vendor: The Netty Project
Bundle-Version: 4.1.129.Final
Created-By: Apache Maven Bundle Plugin 5.1.8
Build-Jdk: 1.8.0_472
Specification-Version: 4.1
Implementation-URL: <https://netty.io/netty-transport-classes-epoll/>

Found

in path(s):

* /netty-transport-classes-epoll-4-1-129-final-jar/META-INF/MANIFEST.MF

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

/opt/cola/permits/2809020254_1767939549.7176828/0/netty-transport-classes-epoll-4-1-129-final-jar/META-INF/maven/io.netty/netty-transport-classes-epoll/pom.xml<?xml version="1.0" encoding="UTF-8"?>
/opt/cola/permits/2809020254_1767939549.7176828/0/netty-transport-classes-epoll-4-1-129-final-jar/META-INF/native-image/io.netty/netty-transport-classes-epoll/native-image.properties# Copyright 2023 The Netty Project

Found in path(s):

*

1.455 netty-handler 4.1.129.Final

1.455.1 Available under license :

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

Manifest-Version: 1.0
Bundle-License: <https://www.apache.org/licenses/LICENSE-2.0>
Bundle-SymbolicName: io.netty.handler
Built-By: root
Bnd-LastModified: 1765488213104
Specification-Title: Netty/Handler
Implementation-Vendor-Id: io.netty
Bundle-DocURL: <https://netty.io/>
Import-Package: sun.security.ssl;resolution:=optional,org.eclipse.jetty.npn;version="[1,2)";resolution:=optional,org.eclipse.jetty.alpn;version="[1,2)";resolution:=optional,io.netty.buffer;version="[4.1,5)",io.netty.channel;version="[4.1,5)",io.netty.channel.socket;version="[4.1,5)",io.netty.channel.unix;version="[4.1,5)",io.netty.handler.codec;version="[4.1,5)",io.netty.handler.codec.base64;version="[4.1,5)",io.netty.handler.ssl,io.netty.handler.ssl.util,io.netty.internal.tcnative;version="[2.0,3)";resolution:=optional,io.netty.resolver;version="[4.1,5)",io.netty.util;version="[4.1,5)",io.netty.util.concurrent;version="[4.1,5)",io.netty.util.internal;version="[4.1,5)",io.netty.util

```
.internal.logging;version="[4.1,5)",javax.crypto,javax.crypto.spec,ja
vax.net.ssl,javax.security.auth.x500,javax.security.cert,org.bouncycastle
asn1.pkcs;version="[1.69,2)";resolution:=optional,org.bouncycastle
le.asn1.x500;version="[1.69,2)";resolution:=optional,org.bouncycastle
.cert;version="[1.69,2)";resolution:=optional,org.bouncycastle.cert.j
cajce;version="[1.69,2)";resolution:=optional,org.bouncycastle.openss
l;version="[1.69,2)";resolution:=optional,org.bouncycastle.openssl.jc
ajce;version="[1.69,2)";resolution:=optional,org.bouncycastle.operato
r;version="[1.69,2)";resolution:=optional,org.bouncycastle.operator.j
cajce;version="[1.69,2)";resolution:=optional,org.bouncycastle.pkcs;v
ersion="[1.69,2)";resolution:=optional,org.conscrypt;version="[2.5,3)
";resolution:=optional,sun.nio.ch;resolution:=optional,org.bouncycastle
le.jcajce.provider;version="[1.0,2)";resolution:=optional
Require-Capability: osgi.ee;filter="(&(osgi.ee=JavaSE)(version=1.6))"
Export-Package:
    io.netty.handler.address;uses:="io.netty.channel,io.net
tty.resolver";version="4.1.129",io.netty.handler.flow;uses:="io.netty
.channel";version="4.1.129",io.netty.handler.flush;uses:="io.netty.ch
annel";version="4.1.129",io.netty.handler.ipfilter;uses:="io.netty.ch
annel";version="4.1.129",io.netty.handler.logging;uses:="io.netty.cha
nnel,io.netty.util.internal.logging";version="4.1.129",io.netty.handl
er.pcap;uses:="io.netty.channel";version="4.1.129",io.netty.handler.s
sl;uses:="io.netty.buffer,io.netty.channel,io.netty.handler.codec,io.
netty.util,io.netty.util.concurrent,javax.crypto,javax.net.ssl";versi
on="4.1.129",io.netty.handler.ssl.ocsp;uses:="io.netty.channel,io.net
ty.handler.ssl";version="4.1.129",io.netty.handler.ssl.util;uses:="ja
vax.net.ssl,javax.security.auth.x500,javax.security.cert";version="4.
1.129",io.netty.handler.stream;uses:="io.netty.buffer,io.netty.channe
l";version="4.1.129",io.netty.handler.timeout;uses:="io.netty.channel
";version="4.1.129",io.netty.handler.traffic;uses:="io.netty.channel,
io.netty.util.concurrent";version="4.1.129"
Bundle-Name: Netty/Handler
Build-Jdk-Spec: 1.8
Implementation-Title: Netty/Handler
Bundle-Description: Netty is an asynchronous event-driven network appl
ication framework for rapid development of maintainable high perfo
rmance protocol servers and clients.
Automatic-Module-Name: io.netty.handler
Implementation-Version: 4.1.129.Final
Specification-Vendor: The Netty Project
Bundle-ManifestVersion: 2
Bundle-Vendor: The Netty Project
Tool: Bnd-6.3.1.202206071316
Implementation-Vendor: The Netty Project
Bundle-Version: 4.1.129.Final
Created-By: Apache Maven Bundle Plugin 5.1.8
Build-Jdk: 1.8.0_472
Specification-Version: 4.1
```

Implementation-URL: <https://netty.io/netty-handler/>

Found in path(s):

* /netty-handler-4-1-129-final-jar/META-INF/MANIFEST.MF

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

Found in path(s):

* nextSliceSize

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

/opt/cola/permits/2809020189_1767939330.5567386/0/netty-handler-4-1-129-final-jar/io/netty/handler/ssl/SslHandler.class

Found in path(s):

* dstsLength

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

/opt/cola/permits/2809020189_1767939330.5567386/0/netty-handler-4-1-129-final-jar/META-INF/maven/io.netty/netty-handler/pom.xml<?xml version="1.0" encoding="UTF-8"?>
/opt/cola/permits/2809020189_1767939330.5567386/0/netty-handler-4-1-129-final-jar/META-INF/native-image/io.netty/netty-handler/native-image.properties# Copyright 2019 The Netty Project
/opt/cola/permits/2809020189_1767939330.5567386/0/netty-handler-4-1-129-final-jar/io/netty/handler/ssl/ReferenceCountedOpenSslEngine.class

Found in path(s):

*

1.456 netty-resolver 4.1.129.Final

1.456.1 Available under license :

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

Manifest-Version: 1.0

Bundle-License: <https://www.apache.org/licenses/LICENSE-2.0>

Bundle-SymbolicName: io.netty.resolver

Built-By: root

Bnd-LastModified: 1765488172687

Specification-Title: Netty/Resolver

Implementation-Vendor-Id: io.netty

Bundle-DocURL: <https://netty.io/>

Import-Package: io.netty.util;version="[4.1,5)",io.netty.util.concurrent;version="[4.1,5)",io.netty.util.internal;version="[4.1,5)",io.netty.util.internal.logging;version="[4.1,5)",sun.nio.ch;resolution:=optional,org.eclipse.jetty.npn;version="[1,2)";resolution:=optional,org.eclipse.jetty.alpn;version="[1,2)";resolution:=optional,org.bouncycastle

le.jcace.provider;version="[1.0,2)";resolution:=optional
Require-Capability: osgi.ee;filter:="(&(osgi.ee=JavaSE)(version=1.6))"
Export-Package: io.netty.resolver;uses:="io.netty.util.concurrent";version="4.1.129"
Bundle-Name: Netty/Resolver
Build-Jdk-Spec: 1.8
Implementation-Title: Netty/Resolver
Bundle-Description:
Netty is an asynchronous event-driven network application framework for rapid development of maintainable high performance protocol servers and clients.
Automatic-Module-Name: io.netty.resolver
Implementation-Version: 4.1.129.Final
Specification-Vendor: The Netty Project
Bundle-ManifestVersion: 2
Bundle-Vendor: The Netty Project
Tool: Bnd-6.3.1.202206071316
Implementation-Vendor: The Netty Project
Bundle-Version: 4.1.129.Final
Created-By: Apache Maven Bundle Plugin 5.1.8
Build-Jdk: 1.8.0_472
Specification-Version: 4.1
Implementation-URL: <https://netty.io/netty-resolver/>

Found in path(s):

* /netty-resolver-4-1-129-final-jar/META-INF/MANIFEST.MF

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

/opt/cola/permits/2809020203_1767939392.315053/0/netty-resolver-4-1-129-final-jar/META-INF/maven/io.netty/netty-resolver/pom.xml<?xml version="1.0" encoding="UTF-8"?>

Found in path(s):

*

1.457 netty-codec-socks 4.1.129.Final

1.457.1 Available under license :

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

Manifest-Version: 1.0
Bundle-License: <https://www.apache.org/licenses/LICENSE-2.0>
Bundle-SymbolicName: io.netty.codec-socks
Built-By: root
Bnd-LastModified: 1765488257146
Specification-Title: Netty/Codec/Socks
Implementation-Vendor-Id: io.netty

Bundle-DocURL: <https://netty.io/>
 Import-Package: io.netty.buffer;version="[4.1,5)",io.netty.channel;version="[4.1,5)",io.netty.handler.codec;version="[4.1,5)",io.netty.handler.codec.socksx,io.netty.handler.codec.socksx.v4,io.netty.handler.codec.socksx.v5,io.netty.util;version="[4.1,5)",io.netty.util.internal;version="[4.1,5)",io.netty.util.internal.logging;version="[4.1,5)",sun.nio.ch;resolution:=optional,org.eclipse.jetty.npn;version="[1,2)",resolution:=optional,org.eclipse.jetty.alpn;version="[1,2)",resolution:=optional,org.bouncycastle.jcajce.provider;version="[1.0,2)",resolution:=optional
 Require-Capability: osgi.ee;filter="(&(osgi.ee=JavaSE)(version=1.6))"
 Export-Package:
 io.netty.handler.codec.socks;uses:="io.netty.buffer,io.netty.channel,io.netty.handler.codec";version="4.1.129",io.netty.handler.codec.socksx;uses:="io.netty.buffer,io.netty.channel,io.netty.handler.codec,io.netty.handler.codec.socksx.v5";version="4.1.129",io.netty.handler.codec.socksx.v4;uses:="io.netty.buffer,io.netty.channel,io.netty.handler.codec,io.netty.handler.codec.socksx";version="4.1.129",io.netty.handler.codec.socksx.v5;uses:="io.netty.buffer,io.netty.channel,io.netty.handler.codec,io.netty.handler.codec.socksx";version="4.1.129"
 Bundle-Name: Netty/Codec/Socks
 Build-Jdk-Spec: 1.8
 Implementation-Title: Netty/Codec/Socks
 Bundle-Description: Netty is an asynchronous event-driven network application framework for rapid development of maintainable high performance protocol servers and clients.
 Automatic-Module-Name: io.netty.codec.socks
 Implementation-Version: 4.1.129.Final
 Specification-Vendor: The Netty Project
 Bundle-ManifestVersion:
 2
 Bundle-Vendor: The Netty Project
 Tool: Bnd-6.3.1.202206071316
 Implementation-Vendor: The Netty Project
 Bundle-Version: 4.1.129.Final
 Created-By: Apache Maven Bundle Plugin 5.1.8
 Build-Jdk: 1.8.0_472
 Specification-Version: 4.1
 Implementation-URL: <https://netty.io/netty-codec-socks/>

Found in path(s):

* /netty-codec-socks-4-1-129-final-jar/META-INF/MANIFEST.MF

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

/opt/cola/permits/2809020247_1767939186.4642782/0/netty-codec-socks-4-1-129-final-jar/META-INF/maven/io.netty/netty-codec-socks/pom.xml<?xml version="1.0" encoding="UTF-8"?>

Found in path(s):

*

1.458 netty-buffer 4.1.129.Final

1.458.1 Available under license :

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

/opt/cola/permits/2809020231_1767938678.3505518/0/netty-buffer-4-1-129-final-jar/META-INF/maven/io.netty/netty-buffer/pom.xml<?xml version="1.0" encoding="UTF-8"?>
/opt/cola/permits/2809020231_1767938678.3505518/0/netty-buffer-4-1-129-final-jar/META-INF/native-image/io.netty/netty-buffer/native-image.properties# Copyright 2019 The Netty Project

Found in path(s):

*

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

Manifest-Version: 1.0

Bundle-License: <https://www.apache.org/licenses/LICENSE-2.0>

Bundle-SymbolicName: io.netty.buffer

Built-By: root

Bnd-LastModified: 1765488167264

Specification-Title: Netty/Buffer

Implementation-Vendor-Id: io.netty

Bundle-DocURL: <https://netty.io/>

Import-Package: io.netty.util;version="[4.1,5)",io.netty.util.concurrent;version="[4.1,5)",io.netty.util.internal;version="[4.1,5)",io.netty.util.internal.logging;version="[4.1,5)",sun.nio.ch;resolution:=optional,org.eclipse.jetty.npn;version="[1,2)";resolution:=optional,org.eclipse.jetty.alpn;version="[1,2)";resolution:=optional,org.bouncycastle.jcajce.provider;version="[1.0,2)";resolution:=optional
Require-Capability: osgi.ee;filter="(&(osgi.ee=JavaSE)(version=1.6))"
Export-Package: io.netty.buffer;uses:="io.netty.util";version="4.1.129",io.netty.buffer.search;uses:="io.netty.util";version="4.1.129"

Bundle-Name: Netty/Buffer

Build-Jdk-Spec:

1.8

Implementation-Title: Netty/Buffer

Bundle-Description: Netty is an asynchronous event-driven network application framework for rapid development of maintainable high performance protocol servers and clients.

Automatic-Module-Name: io.netty.buffer

Implementation-Version: 4.1.129.Final

Specification-Vendor: The Netty Project

Bundle-ManifestVersion: 2

Bundle-Vendor: The Netty Project
Tool: Bnd-6.3.1.202206071316
Implementation-Vendor: The Netty Project
Bundle-Version: 4.1.129.Final
Created-By: Apache Maven Bundle Plugin 5.1.8
Build-Jdk: 1.8.0_472
Specification-Version: 4.1
Implementation-URL: <https://netty.io/netty-buffer/>

Found in path(s):

* /netty-buffer-4-1-129-final-jar/META-INF/MANIFEST.MF

1.459 netty-codec-http 4.1.129.Final

1.459.1 Available under license :

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

Manifest-Version: 1.0
Bundle-License: <https://www.apache.org/licenses/LICENSE-2.0>
Bundle-SymbolicName: io.netty.codec-http
Built-By: root
Bnd-LastModified: 1765488223559
Specification-Title: Netty/Codec/HTTP
Implementation-Vendor-Id: io.netty
Bundle-DocURL: <https://netty.io/>
Import-Package: com.aayushatharva.brotli4j.encoder;resolution:=optional,com.jcraft.jzlib;resolution:=optional,io.netty.buffer;version="[4.1,5)",io.netty.channel;version="[4.1,5)",io.netty.channel.embedded;version="[4.1,5)",io.netty.handler.codec;version="[4.1,5)",io.netty.handler.codec.base64;version="[4.1,5)",io.netty.handler.codec.compression;version="[4.1,5)",io.netty.handler.codec.http,io.netty.handler.codec.http.cookie,io.netty.handler.codec.http.websocketx,io.netty.handler.codec.http.websocketx.extensions,io.netty.handler.ssl;version="[4.1,5)",io.netty.handler.stream;version="[4.1,5)",io.netty.util;version="[4.1,5)",io.netty.util.concurrent;version="[4.1,5)",io.netty.util.internal;version="[4.1,5)",io.netty.util.internal.logging;version="[4.1,5)",sun.nio.ch;resolution:=optional,org.eclipse.jetty.npn;version="[1,2)";resolution:=optional,org.eclipse.jetty.alpn;version="[1,2)";resolution:=optional,org.bouncycastle.jcajce.provider;version="[1.0,2)";resolution:=optional
Require-Capability: osgi.ee;filter="(&(osgi.ee=JavaSE)(version=1.6))"
Export-Package: io.netty.handler.codec.http;uses="io.netty.buffer,io.netty.channel,io.netty.channel.embedded,io.netty.handler.codec,io.netty.handler.codec.compression,io.netty.handler.codec.http.cookie,io.netty.handler.stream,io.netty.util";version="4.1.129",io.netty.handler.codec.http.cookie;version="4.1.129",io.netty.handler.codec.http.cors;uses="io.netty.channel,io.netty.handler.codec.http";version="4.1.129"

"io.netty.handler.codec.http.multipart;uses="io.netty.buffer,io.netty.channel,io.netty.handler.codec,io.netty.handler.codec.http,io.netty.handler.stream,io.netty.util";version="4.1.129",io.netty.handler.codec.http.websocketx;uses="io.netty.buffer,io.netty.channel,io.netty.handler.codec,io.netty.handler.codec.http,io.netty.handler.stream,io.netty.util,io.netty.util.internal.logging";version="4.1.129",io.netty.handler.codec.http.websocketx.extensions;uses="io.netty.channel,io.netty.handler.codec,io.netty.handler.codec.http,io.netty.handler.codec.http.websocketx";version="4.1.129",io.netty.handler.codec.http.websocketx.extensions.compression;uses="io.netty.channel,io.netty.handler.codec.http.websocketx.extensions";version="4.1.129",io.netty.handler.codec.rtsp;uses="io.netty.buffer,io.netty.channel,io.netty.handler.codec.http,io.netty.util";version="4.1.129",io.netty.handler.codec.sdp;uses="io.netty.buffer,io.netty.channel,io.netty.handler.codec,io.netty.handler.codec.http,io.netty.util";version="4.1.129"

Bundle-Name: Netty/Codec/HTTP

Build-Jdk-Spec: 1.8

Implementation-Title: Netty/Codec/HTTP

Bundle-Description:

Netty is an asynchronous event-driven network application framework for rapid development of maintainable high performance protocol servers and clients.

Automatic-Module-Name: io.netty.codec.http

Implementation-Version: 4.1.129.Final

Specification-Vendor: The Netty Project

Bundle-ManifestVersion: 2

Bundle-Vendor: The Netty Project

Tool: Bnd-6.3.1.202206071316

Implementation-Vendor: The Netty Project

Bundle-Version: 4.1.129.Final

Created-By: Apache Maven Bundle Plugin 5.1.8

Build-Jdk: 1.8.0_472

Specification-Version: 4.1

Implementation-URL: <https://netty.io/netty-codec-http/>

Found in path(s):

* /netty-codec-http-4-1-129-final-jar/META-INF/MANIFEST.MF

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/opt/cola/permits/2809020224_1767939003.377432/0/netty-codec-http-4-1-129-final-jar/META-INF/maven/io.netty/netty-codec-http/pom.xml<?xml version="1.0" encoding="UTF-8"?>

/opt/cola/permits/2809020224_1767939003.377432/0/netty-codec-http-4-1-129-final-jar/META-INF/native-image/io.netty/netty-codec-http/native-image.properties# Copyright 2019 The Netty Project

/opt/cola/permits/2809020224_1767939003.377432/0/netty-codec-http-4-1-129-final-jar/io/netty/handler/codec/http/QueryStringEncoder.class encodeUtf8ComponentSlow

Found in path(s):

*

1.460 netty-resolver-dns 4.1.129.Final

1.460.1 Available under license :

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```
/opt/cola/permits/2809020286_1767939496.2233806/0/netty-resolver-dns-4-1-129-final-jar/META-INF/maven/io.netty/netty-resolver-dns/pom.xml<?xml version="1.0" encoding="UTF-8"?>
/opt/cola/permits/2809020286_1767939496.2233806/0/netty-resolver-dns-4-1-129-final-jar/META-INF/native-image/io.netty/netty-resolver-dns/native-image.properties# Copyright 2020 The Netty Project
```

Found in path(s):

*

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Manifest-Version: 1.0

Bundle-License: <https://www.apache.org/licenses/LICENSE-2.0>

Bundle-SymbolicName: io.netty.resolver-dns

Built-By: root

Bnd-LastModified: 1765488274365

Specification-Title: Netty/Resolver/DNS

Implementation-Vendor-Id: io.netty

Bundle-DocURL: <https://netty.io/>

Import-Package: sun.net.dns;resolution:=optional,io.netty.bootstrap;version="[4.1,5)",io.netty.buffer;version="[4.1,5)",io.netty.channel;version="[4.1,5)",io.netty.channel.socket;version="[4.1,5)",io.netty.handler.codec;version="[4.1,5)",io.netty.handler.codec.dns;version="[4.1,5)",io.netty.handler.logging;version="[4.1,5)",io.netty.resolver;version="[4.1,5)",io.netty.util;version="[4.1,5)",io.netty.util.collection;version="[4.1,5)",io.netty.util.concurrent;version="[4.1,5)",io.netty.util.internal;version="[4.1,5)",io.netty.util.internal.logging;version="[4.1,5)",javax.naming.directory,sun.nio.ch;resolution:=optional,org.eclipse.jetty.npn;version="[1,2)",resolution:=optional,org.eclipse.jetty.alpn;version="[1,2)",resolution:=optional,org.bouncycastle.jcajce.provider;version="[1.0,2)",resolution:=optional

Require-Capability: osgi.ee;filter="(&(osgi.ee=JavaSE)(version=1.6))"

Export-Package: io.netty.resolver.dns;uses:="io.netty.channel,io.netty.channel.socket,io.netty.handler.codec.dns,io.netty.handler.logging,io.netty.resolver,io.netty.util,io.netty.util.concurrent";version="4.1.129"

Bundle-Name: Netty/Resolver/DNS

Build-Jdk-Spec: 1.8

Implementation-Title: Netty/Resolver/DNS

Bundle-Description: Netty is an asynchronous event-driven network application framework for rapid development of maintainable high performance protocol servers and clients.

Automatic-Module-Name: io.netty.resolver.dns
Implementation-Version: 4.1.129.Final
Specification-Vendor: The Netty Project
Bundle-ManifestVersion: 2
Bundle-Vendor: The Netty Project
Tool: Bnd-6.3.1.202206071316
Implementation-Vendor: The Netty Project
Bundle-Version:
4.1.129.Final
Created-By: Apache Maven Bundle Plugin 5.1.8
Build-Jdk: 1.8.0_472
Specification-Version: 4.1
Implementation-URL: <https://netty.io/netty-resolver-dns/>

Found in path(s):

* /netty-resolver-dns-4-1-129-final-jar/META-INF/MANIFEST.MF

1.461 netty-codec 4.1.129.Final

1.461.1 Available under license :

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

Manifest-Version: 1.0
Bundle-License: <https://www.apache.org/licenses/LICENSE-2.0>
Bundle-SymbolicName: io.netty.codec
Built-By: root
Bnd-LastModified: 1765488189781
Specification-Title: Netty/Codec
Implementation-Vendor-Id: io.netty
Bundle-DocURL: <https://netty.io/>
Import-Package: com.aayushatharva.brotli4j;resolution:=optional,com.aayushatharva.brotli4j.decoder;resolution:=optional,com.aayushatharva.brotli4j.encoder;resolution:=optional,com.github.luben.zstd;version="[1.5,2)";resolution:=optional,com.github.luben.zstd.util;version="[1.5,2)";resolution:=optional,com.google.protobuf;version="[2.6,3)";resolution:=optional,com.google.protobuf.nano;resolution:=optional,com.jcraft.jzlib;resolution:=optional,com.ning.compress;version="[1.0,2)";resolution:=optional,com.ning.compress.lzf;version="[1.0,2)";resolution:=optional,com.ning.compress.lzf.util;version="[1.0,2)";resolution:=optional,io.netty.buffer;version="[4.1,5)",io.netty.channel;version="[4.1,5)",io.netty.channel.socket;version="[4.1,5)",io.netty.handler.codec;version="[4.1,5)",io.netty.util;version="[4.1,5)",io.netty.util.concurrent;version="[4.1,5)",io.netty.util.internal;version="[4.1,5)",io.netty.util.internal.logging;version="[4.1,5)",lzma.sdk;resolution:=optional,lzma.sdk.lzma;resolution:=optional,net.jpountz.lz4;resolution:=optional,net.jpountz.xxhash;resolution:=optional,org.jboss.marshalling;resolution:=optional,sun.nio.ch;resolution:=optional,org.eclipse.jetty.npn;version="[4.1,5)"

n="[1,2)";resolution:=optional,org.eclipse.jetty.alpn;version="[1,2)"
 ;resolution:=optional,org.bouncycastle.jcajce.provider;version="[1.0,
 2)";resolution:=optional
 Require-Capability: osgi.ee;filter="(&(osgi.ee=JavaSE)(version=1.6))"
 Export-Package: io.netty.handler.codec;uses:="io.netty.buffer,io.netty
 .channel,io.netty.channel.socket,io.netty.util";version="4.1.129",io.
 netty.handler.codec.base64;uses:="io.netty.buffer,io.netty.channel,io
 .netty.handler.codec";version="4.1.129",io.netty.handler.codec.bytes;
 uses:="io.netty.buffer,io.netty.channel,io.netty.handler.codec";versi
 on="4.1.129",io.netty.handler.codec.compression;uses:="com.aayushatha
 rva.brotli4j.encoder,io.netty.buffer,io.netty.channel,io.netty.handle
 r.codec,net.jpountz.lz4";version="4.1.129",io.netty.handler.codec.js
 o
 n;uses:="io.netty.buffer,io.netty.channel,io.netty.handler.codec";ver
 sion="4.1.129",io.netty.handler.codec.marshalling;uses:="io.netty.bu
 ffer,io.netty.channel,io.netty.handler.codec,org.jboss.marshalling";ve
 rsion="4.1.129",io.netty.handler.codec.protobuf;uses:="com.google.pro
 tobuf,com.google.protobuf.nano,io.netty.buffer,io.netty.channel,io.ne
 tty.handler.codec";version="4.1.129",io.netty.handler.codec.serializa
 tion;uses:="io.netty.buffer,io.netty.channel,io.netty.handler.codec";
 version="4.1.129",io.netty.handler.codec.string;uses:="io.netty.buffe
 r,io.netty.channel,io.netty.handler.codec";version="4.1.129",io.netty
 .handler.codec.xml;uses:="io.netty.buffer,io.netty.channel,io.netty.h
 andler.codec";version="4.1.129"
 Bundle-Name: Netty/Codec
 Build-Jdk-Spec: 1.8
 Implementation-Title: Netty/Codec
 Bundle-Description: Netty is an asynchronous event-driven network appl
 ication framework for rapid development of maintainable high perfo
 rmance protocol servers and clients.
 Automatic-Module-Name: io.netty.codec
 Implementation-Version: 4.1.129.Final
 Specification-Vendor: The Netty Project
 Bundle-ManifestVersion: 2
 Bundle-Vendor: The Netty Project
 Tool: Bnd-6.3.1.202206071316
 Implementation-Vendor: The Netty Project
 Bundle-Version: 4.1.129.Final
 Created-By: Apache Maven Bundle Plugin 5.1.8
 Build-Jdk: 1.8.0_472
 Specification-Version: 4.1
 Implementation-URL: https://netty.io/netty-codec/

Found in path(s):

* /netty-codec-4-1-129-final-jar/META-INF/MANIFEST.MF

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

/opt/cola/permits/2809020240_1767938754.3624387/0/netty-codec-4-1-129-final-jar/META-
 INF/maven/io.netty/netty-codec/pom.xml<?xml version="1.0" encoding="UTF-8"?>

Found in path(s):

*

1.462 netty-handler-proxy 4.1.129.Final

1.462.1 Available under license :

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

Manifest-Version: 1.0

Bundle-License: <https://www.apache.org/licenses/LICENSE-2.0>

Bundle-SymbolicName: io.netty.handler-proxy

Built-By: root

Bnd-LastModified: 1765488268997

Specification-Title: Netty/Handler/Proxy

Implementation-Vendor-Id: io.netty

Bundle-DocURL: <https://netty.io/>

Import-Package: io.netty.buffer;version="[4.1,5)",io.netty.channel;version="[4.1,5)",io.netty.handler.codec.base64;version="[4.1,5)",io.netty.handler.codec.http;version="[4.1,5)",io.netty.handler.codec.socksx.v4;version="[4.1,5)",io.netty.handler.codec.socksx.v5;version="[4.1,5)",io.netty.util;version="[4.1,5)",io.netty.util.concurrent;version="[4.1,5)",io.netty.util.internal;version="[4.1,5)",io.netty.util.internal.logging;version="[4.1,5)",sun.nio.ch;resolution:=optional,org.eclipse.jetty.npn;version="[1,2)";resolution:=optional,org.eclipse.jetty.alpn;version="[1,2)";resolution:=optional,org.bouncycastle.jcajce.provider;version="[1.0,2)";resolution:=optional

Require-Capability:

osgi.ee;filter:="(&(osgi.ee=JavaSE)(version=1.6))"

Export-Package: io.netty.handler.proxy;uses:="io.netty.channel,io.netty.handler.codec.http,io.netty.util.concurrent";version="4.1.129"

Bundle-Name: Netty/Handler/Proxy

Build-Jdk-Spec: 1.8

Implementation-Title: Netty/Handler/Proxy

Bundle-Description: Netty is an asynchronous event-driven network application framework for rapid development of maintainable high performance protocol servers and clients.

Automatic-Module-Name: io.netty.handler.proxy

Implementation-Version: 4.1.129.Final

Specification-Vendor: The Netty Project

Bundle-ManifestVersion: 2

Bundle-Vendor: The Netty Project

Tool: Bnd-6.3.1.202206071316

Implementation-Vendor: The Netty Project

Bundle-Version: 4.1.129.Final
Created-By: Apache Maven Bundle Plugin 5.1.8
Build-Jdk: 1.8.0_472
Specification-Version: 4.1
Implementation-URL: <https://netty.io/netty-handler-proxy/>

Found in path(s):

* /netty-handler-proxy-4-1-129-final-jar/META-INF/MANIFEST.MF

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/opt/cola/permits/2809020217_1767939346.356427/0/netty-handler-proxy-4-1-129-final-jar/META-INF/maven/io.netty/netty-handler-proxy/pom.xml<?xml version="1.0" encoding="UTF-8"?>

Found in path(s):

*

1.463 genproto-googleapis-api 0.0.0-20251213004720-97cd9d5aeac2

1.463.1 Available under license :

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1.464 genproto-googleapis-rpc 0.0.0-20251213004720-97cd9d5aeac2

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1.465 libedit 20251016.3.1-r0

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1.466 tre 0.8.0-r2

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```
# Maintainer: Natanael Copa <ncopa@alpinelinux.org>
pkgname=smartmontools
pkgver=7.5
pkgrel=0
pkgdesc="Control and monitor S.M.A.R.T. enabled hard drives"
url="https://www.smartmontools.org/"
arch="all"
license="GPL-2.0-or-later"
# Contributor: Carlo Landmeter <clandmeter@alpinelinux.org>
# Maintainer: Kevin Daudt <kdaudt@alpinelinux.org>
pkgname=spdx-licenses
pkgver=3.27.0
pkgrel=0
pkgdesc="Various data formats for the SPDX License List"
url="https://spdx.org/"
arch="noarch"
options="!check" # no test suite
license="CC-BY-3.0"
source="license-list-data-$pkgver.tar.gz::https://github.com/spdx/license-list-data/archive/v$pkgver.tar.gz"
builddir="$srcdir/license-list-data-$pkgver"
subpackages="$pkgname-list"

_types="html json rdfa rdnt rdfturtle rdfxml template text"

for type in $_types; do
    subpackages="$subpackages $pkgname-$type:_subpkg"
done

package() {
    mkdir -p "$pkgdir"
}

_subpkg() {
    local type=${subpkgname/$pkgname-/}
    pkgdesc="$pkgdesc ($type)"
    install_if="$pkgname=$pkgver-r$pkgrel"
    mkdir -p "$subpkgdir"/usr/share/spdx
```

```

cp -r "$builddir"/$type "$subpkgdir"/usr/share/spdx/
}

list() {
    pkgdesc="$pkgdesc (licence list)"
    mkdir -p "$subpkgdir"/usr/share/spdx
    local i; for i in "$builddir"/text/*.txt;
    do
        local license=${i##*/}
        echo ${license%.*} >> "$subpkgdir"/usr/share/spdx/license.lst
    done
}

sha512sums="
16d59c81e331b54b52639826f83408d98144cdaa70eacc3e8ce35dc3b13992e4794cf7515eb9db200efd390a0c0e35ae9
d4706fbe0ca6a8d236189e88870720c  license-list-data-3.27.0.tar.gz
"

# Automatically generated by apkgbuild-cpan, template 4
# Contributor: Valery Kartel <valery.kartel@gmail.com>
# Maintainer: Celeste <cielesti@protonmail.com>
maintainer="Celeste <cielesti@protonmail.com>"
pkgname=perl-bsd-resource
pkgver=1.2911
pkgrel=11
#_pkgreal is used by apkgbuild-cpan to find modules at MetaCpan
_pkgreal=BSD-Resource
pkgdesc="Perl extension implements the BSD process resource limit functions"
url="https://metacpan.org/release/BSD-Resource/"
arch="all"
license="Artistic-2.0 OR LGPL-2.0"
depends="perl"
makedepends="perl-dev"
subpackages="$pkgname-doc"
source="https://cpan.metacpan.org/authors/id/J/JH/JHI/BSD-Resource-$pkgver.tar.gz"
builddir="$srcdir/${_pkgreal}-${pkgver}"

build() {
    export CFLAGS=$(perl -MConfig -E 'say $Config{ccflags}')
    PERL_MM_USE_DEFAULT=1 perl -I. Makefile.PL \
        INSTALLDIRS=vendor \
        NO_PACKLIST=1 \
        NO_PERLLOCAL=1
    make
}

check() {
    export CFLAGS=$(perl -MConfig -E 'say $Config{ccflags}')
    make test
}

```

```
}
```

```
package() {  
  make DESTDIR="$pkgdir" install  
}
```

```
sha512sums="  
d0032d41c7c0468ed1c6d8f57b885f6cb97a5039d754c8cb60b2067daedaf53bd15fb6561a3d0f828df16dfa5417f663b  
8065ba65f4fea16dc9262728b3b6b85  
  BSD-Resource-1.2911.tar.gz  
"
```

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Version 3, 29 June 2007

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```

maintainer="Achill Gilgenast <achill@achill.org>"
pkgname=cargo-license
pkgver=0.7.0
pkgrel=1
pkgdesc="Cargo subcommand to see license of dependencies"
url="https://github.com/onur/cargo-license"
arch="all"
license="MIT"
makedepends="cargo cargo-auditable"
source="$pkgname-$pkgver.tar.gz::https://crates.io/api/v1/crates/cargo-license/$pkgver/download"

prepare() {
    default_prepare

    cargo fetch --target="$CTARGET" --locked
}

build() {
    cargo auditable build --release --frozen
}

check() {
    cargo test --frozen
}

package() {
    install -Dm755 target/release/cargo-license -t "$pkgdir"/usr/bin
}

sha512sums="
9b3f0ead35515e85ef4074ebdbdbe5b9ec8bcaec244fabe414e2ed60f90366e8b1692d8bf7ffe4c07d778e60d94bab86bc
0c8be9823232e9c360a38bc65e9c5a  cargo-license-0.7.0.tar.gz
"

# Contributor: Maxim Karasev <begs@disroot.org>
# Maintainer: mio <miyopan@e.email>
pkgname=bsd-games
pkgver=3.3
pkgrel=2
pkgdesc="traditional text mode games from BSD"
url="https://bsd-games.sourceforge.io/"
arch="all"
license="BSD-3-Clause"
install="$pkgname.post-install"
makedepends="ncurses-dev coreutils" # configure causes busybox expr error
subpackages="$pkgname-doc"
source="https://sourceforge.net/projects/bsd-games/files/bsd-games-$pkgver.tar.gz
0001-bsd-games-scores-dir.patch
"

```

```
options="!check" # no tests
```

```
build() {  
    # some GNU autoconf options are ignored, but it works  
    ./configure \  
    --build=$CBUILD \  
    --host=$CHOST \  
    --prefix=/usr \  
    --sysconfdir=/etc \  
    --mandir=/usr/share/man \  
    --sourcedir=/usr/share/$pkgname  
    make  
}  
  
package() {  
    make DESTDIR="$pkgdir" install  
    install -Dm644 LICENSE "$pkgdir"/usr/share/licenses/bsd-games/LICENSE  
}
```

```
sha512sums="  
aaf36d09d4fe68514a5c279063d7e77a9a9a84c447037cba974b29faa07eb80c2aab2379d0699c196b5c27ffe1b2bb2c6  
8d3390143e0e62d5e3d210ccfb61294  
    bsd-games-3.3.tar.gz  
e1def0d4835a877242c4173fae862e278a7858738e0bacacbb045a42bcabec2aa7c72d000bbd2421ce35fe66cdc1f52c0  
577b7e278029ca5ed50f7aab22319f6 0001-bsd-games-scores-dir.patch  
"
```

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```

# Maintainer: Natanael Copa <ncopa@alpinelinux.org>
pkgname=libart-lgpl
pkgver=2.3.21
pkgrel=8
pkgdesc="A library for high-performance 2D graphics"
url="https://www.levien.com/libart/"
arch="all"
options="!check" # No test suite.
license="LGPL-2.0-or-later"
subpackages="$pkgname-dev"
source="https://download.gnome.org/sources/libart-lgpl/2.3/libart-lgpl-$pkgver.tar.bz2"
"

builddir="$srcdir"/libart-lgpl-$pkgver

prepare() {
    update_config_sub
    default_prepare
}

build() {
    ./configure \
        --build=$CBUILD \
        --host=$CHOST \
        --prefix=/usr
    make
}

package() {
    make DESTDIR="$pkgdir" install
}

sha512sums="8a632a6a4da59e5e8c02ec2f5a57e36d182b325b46513765425e5f171ff9ae326af1b133725beba28f7e7
6654309e001aee9bace727b5b4c8589405256a3c020 libart-lgpl-2.3.21.tar.bz2"
mini_sendmail - accept email on behalf of real sendmail

```

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Contributor: Sören Tempel <soeren+alpine@soeren-tempel.net>

Contributor: Leonardo Arena <rnalrd@alpinelinux.org>

Maintainer: Natanael Copa <ncopa@alpinelinux.org>

pkgname=util-linux

pkgver=2.41.2

pkgrel=0

pkgdesc="Random collection of Linux utilities"

url="https://git.kernel.org/cgit/utils/util-linux/util-linux.git"

arch="all"

license="GPL-3.0-or-later AND GPL-2.0-or-later AND GPL-2.0-only AND GPL-1.0-only AND LGPL-2.1-or-later AND BSD-1-Clause AND BSD-3-Clause AND BSD-4-Clause-UC AND MIT AND Public-Domain"

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The Kohonen neural network code for color optimization was written by Anthony Dekker.

Parts Copyright (c) 1995 by C. Blanc and C. Schlick

The X-Spline code was written Carole Blanc (blanc@labri.u-bordeaux.fr) and Christophe Schlick (schlick@labri.u-bordeaux.fr) starting from an initial implementation done by C. Feuille, S. Grosbois, L. Maziere and L. Minihot as a student practice (Universite Bordeaux, France). For additional information about X-splines, see:

"X-Splines: A Spline Model Designed for the End User" by C. Blanc and C. Schlick, Proceedings of SIGGRAPH'95

<http://dept-info.labri.u-bordeaux.fr/~schlick/DOC/sig1.html>

Contributor: Fabian Affolter <fabian@affolter-engineering.ch>

Maintainer: Fabian Affolter <fabian@affolter-engineering.ch>

pkgname=py3-flake8-copyright

_pkgname=flake8-copyright

pkgver=0.2.4

pkgrel=3

pkgdesc="Extension for flake8 which checks for copyrights"

options="!check" # No testsuite

url="https://github.com/savoirfairelinux/flake8-copyright"

arch="noarch"

license="MIT"

depends="py3-flake8 py3-setuptools"

makedepends="py3-gpep517 py3-wheel"

subpackages="\$pkgname-pyc"

source="https://files.pythonhosted.org/packages/source/\${_pkgname:0:1}/\${_pkgname}/\${_pkgname}-\${pkgver}.tar.gz"

builddir="\$srcdir"/\$_pkgname-\$pkgver

replaces="py-flake8-copyright" # Backwards compatibility

provides="py-flake8-copyright=\$pkgver-r\$pkgrel" # Backwards compatibility

build() {

gpep517 build-wheel \

--wheel-dir .dist \

--output-fd 3 3>&1 >&2

}

package() {

gpep517 install-wheel --destdir "\$pkgdir" \

.dist/*.whl

}

sha512sums="

a6ab47e1bb715618f075c51f398e18180404871b3b0faf1c2d30701d5203db6bc23771bf22ffb5bafcd8ee856b9b64237

b316bd503ae7dceed6ca284ccd5a74d

flake8-copyright-0.2.4.tar.gz

"

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/* \$NetBSD: tree.h,v 1.20 2013/09/14 13:20:45 joerg Exp \$ */

/* \$OpenBSD: tree.h,v 1.13 2011/07/09 00:19:45 pirofti Exp \$ */

/* Modified by Void Linux. */

/*

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*/

#ifndef _SYS_TREE_H_

#define _SYS_TREE_H_

```

#ifdef __GNUC__
#define __GNUC_PREREQ__(x, y) \
    ((__GNUC__ == (x) && __GNUC_MINOR__ >= (y)) || \
     (__GNUC__ > (x)))
#else
#define __GNUC_PREREQ__(x, y) 0
#endif

#if __GNUC_PREREQ__(2, 7) || defined(__lint__)
#define _sys_tree_h_unused __attribute__((__unused__))
#else
#define _sys_tree_h_unused /* delete */
#endif

/*
 * This file defines data structures for different types of trees:
 * splay trees and red-black trees.
 *
 * A splay tree is a self-organizing
 * data structure. Every operation
 * on the tree causes a splay to happen. The splay moves the requested
 * node to the root of the tree and partly rebalances it.
 *
 * This has the benefit that request locality causes faster lookups as
 * the requested nodes move to the top of the tree. On the other hand,
 * every lookup causes memory writes.
 *
 * The Balance Theorem bounds the total access time for m operations
 * and n inserts on an initially empty tree as  $O((m + n)\lg n)$ . The
 * amortized cost for a sequence of m accesses to a splay tree is  $O(\lg n)$ ;
 *
 * A red-black tree is a binary search tree with the node color as an
 * extra attribute. It fulfills a set of conditions:
 * - every search path from the root to a leaf consists of the
 *   same number of black nodes,
 * - each red node (except for the root) has a black parent,
 * - each leaf node is black.
 *
 * Every operation on a red-black tree is bounded as  $O(\lg n)$ .
 * The maximum height of a red-black tree is  $2\lg(n+1)$ .
 */

#define SPLAY_HEAD(name, type) \
    struct name { \
        struct type *sph_root; /* root of the tree */ \
    }

#define SPLAY_INITIALIZER(root) \

```



```

{ NULL }

#define SPLAY_INIT(root) do { \
    (root)->sph_root = NULL; \
} while (/*CONSTCOND*/ 0)

#define SPLAY_ENTRY(type) \
struct { \
    struct type *spe_left; /* left element */ \
    struct type *spe_right; /* right element */ \
}

#define SPLAY_LEFT(elm, field) (elm)->field.spe_left
#define SPLAY_RIGHT(elm, field) (elm)->field.spe_right
#define SPLAY_ROOT(head) (head)->sph_root
#define SPLAY_EMPTY(head) (SPLAY_ROOT(head) == NULL)

/* SPLAY_ROTATE_{LEFT,RIGHT} expect that tmp hold SPLAY_{RIGHT,LEFT} */
#define SPLAY_ROTATE_RIGHT(head, tmp, field) do { \
    SPLAY_LEFT((head)->sph_root, field) = SPLAY_RIGHT(tmp, field); \
    SPLAY_RIGHT(tmp, field) = (head)->sph_root; \
    (head)->sph_root = tmp; \
} while (/*CONSTCOND*/ 0)

#define SPLAY_ROTATE_LEFT(head, tmp, field) do { \
    SPLAY_RIGHT((head)->sph_root, \
    field) = SPLAY_LEFT(tmp, field); \
    SPLAY_LEFT(tmp, field) = (head)->sph_root; \
    (head)->sph_root = tmp; \
} while (/*CONSTCOND*/ 0)

#define SPLAY_LINKLEFT(head, tmp, field) do { \
    SPLAY_LEFT(tmp, field) = (head)->sph_root; \
    tmp = (head)->sph_root; \
    (head)->sph_root = SPLAY_LEFT((head)->sph_root, field); \
} while (/*CONSTCOND*/ 0)

#define SPLAY_LINKRIGHT(head, tmp, field) do { \
    SPLAY_RIGHT(tmp, field) = (head)->sph_root; \
    tmp = (head)->sph_root; \
    (head)->sph_root = SPLAY_RIGHT((head)->sph_root, field); \
} while (/*CONSTCOND*/ 0)

#define SPLAY_ASSEMBLE(head, node, left, right, field) do { \
    SPLAY_RIGHT(left, field) = SPLAY_LEFT((head)->sph_root, field); \
    SPLAY_LEFT(right, field) = SPLAY_RIGHT((head)->sph_root, field); \
    SPLAY_LEFT((head)->sph_root, field) = SPLAY_RIGHT(node, field); \
    SPLAY_RIGHT((head)->sph_root, field) = SPLAY_LEFT(node, field); \
}

```

```

} while (/*CONSTCOND*/ 0)

/* Generates prototypes and inline functions */

#define
    SPLAY_PROTOTYPE(name, type, field, cmp) \
void name##_SPLAY(struct name *, struct type *); \
void name##_SPLAY_MINMAX(struct name *, int); \
struct type *name##_SPLAY_INSERT(struct name *, struct type *); \
struct type *name##_SPLAY_REMOVE(struct name *, struct type *); \
    \
/* Finds the node with the same key as elm */ \
static __inline struct type * \
name##_SPLAY_FIND(struct name *head, struct type *elm) \
{ \
    if (SPLAY_EMPTY(head)) \
        return(NULL); \
    name##_SPLAY(head, elm); \
    if ((cmp)(elm, (head)->sph_root) == 0) \
        return (head->sph_root); \
    return (NULL); \
} \
    \
static __inline _sys_tree_h_unused struct type * \
name##_SPLAY_NEXT(struct name *head, struct type *elm) \
{ \
    name##_SPLAY(head, elm); \
    if (SPLAY_RIGHT(elm, field) != NULL) { \
        elm = SPLAY_RIGHT(elm, field); \
        while (SPLAY_LEFT(elm, field) != NULL) { \
            elm = SPLAY_LEFT(elm, field); \
        } \
    } \
    else \
        elm = NULL; \
    return (elm); \
} \
    \
static _sys_tree_h_unused __inline struct type * \
name##_SPLAY_MIN_MAX(struct name *head, int val) \
{ \
    name##_SPLAY_MINMAX(head, val); \
    return (SPLAY_ROOT(head)); \
}

/* Main splay operation.
 * Moves node close to the key of elm to top
 */

```

```

#define SPLAY_GENERATE(name, type, field, cmp) \
struct type * \
name##_SPLAY_INSERT(struct name *head, struct type *elm) \
{ \
    if (SPLAY_EMPTY(head)) { \
        SPLAY_LEFT(elm, field) = SPLAY_RIGHT(elm, field) = NULL; \
    } else { \
        int __comp; \
        name##_SPLAY(head, elm); \
        __comp = (cmp)(elm, (head)->sph_root); \
        if(__comp < 0) { \
            SPLAY_LEFT(elm, field) = SPLAY_LEFT((head)->sph_root, field);\
            SPLAY_RIGHT(elm, field) = (head)->sph_root; \
            SPLAY_LEFT((head)->sph_root, field) = NULL; \
        } else if (__comp > 0) { \
            SPLAY_RIGHT(elm, \
field) = SPLAY_RIGHT((head)->sph_root, field);\
            SPLAY_LEFT(elm, field) = (head)->sph_root; \
            SPLAY_RIGHT((head)->sph_root, field) = NULL; \
        } else \
            return ((head)->sph_root); \
    } \
    (head)->sph_root = (elm); \
    return (NULL); \
} \
\
struct type * \
name##_SPLAY_REMOVE(struct name *head, struct type *elm) \
{ \
    struct type *__tmp; \
    if (SPLAY_EMPTY(head)) \
        return (NULL); \
    name##_SPLAY(head, elm); \
    if ((cmp)(elm, (head)->sph_root) == 0) { \
        if (SPLAY_LEFT((head)->sph_root, field) == NULL) { \
            (head)->sph_root = SPLAY_RIGHT((head)->sph_root, field);\
        } else { \
            __tmp = SPLAY_RIGHT((head)->sph_root, field); \
            (head)->sph_root = SPLAY_LEFT((head)->sph_root, field);\
            name##_SPLAY(head, elm); \
            SPLAY_RIGHT((head)->sph_root, field) = __tmp; \
        } \
        return (elm); \
    } \
    return (NULL); \
} \
\
void \

```

```

name##_SPLAY(struct
name *head, struct type *elm) \
{ \
struct type __node, *__left, *__right, *__tmp; \
int __comp; \
\
SPLAY_LEFT(&__node, field) = SPLAY_RIGHT(&__node, field) = NULL;\
__left = __right = &__node; \
\
while ((__comp = (cmp)(elm, (head)->sph_root)) != 0) { \
if (__comp < 0) { \
__tmp = SPLAY_LEFT((head)->sph_root, field); \
if (__tmp == NULL) \
break; \
if ((cmp)(elm, __tmp) < 0){ \
SPLAY_ROTATE_RIGHT(head, __tmp, field); \
if (SPLAY_LEFT((head)->sph_root, field) == NULL)\
break; \
} \
SPLAY_LINKLEFT(head, __right, field); \
} else if (__comp > 0) { \
__tmp = SPLAY_RIGHT((head)->sph_root, field); \
if (__tmp == NULL) \
break; \
if ((cmp)(elm, __tmp) > 0){ \
SPLAY_ROTATE_LEFT(head, __tmp, field); \
if (SPLAY_RIGHT((head)->sph_root, field) == NULL)\
break; \
} \
SPLAY_LINKRIGHT(head, __left, field); \
} \
} \
SPLAY_ASSEMBLE(head,
&__node, __left, __right, field); \
} \
\
/* Splay with either the minimum or the maximum element \
* Used to find minimum or maximum element in tree. \
*/ \
void name##_SPLAY_MINMAX(struct name *head, int __comp) \
{ \
struct type __node, *__left, *__right, *__tmp; \
\
SPLAY_LEFT(&__node, field) = SPLAY_RIGHT(&__node, field) = NULL;\
__left = __right = &__node; \
\
while (1) { \
if (__comp < 0) { \

```

```

__tmp = SPLAY_LEFT((head)->sph_root, field); \
if (__tmp == NULL) \
    break; \
if (__comp < 0){ \
    SPLAY_ROTATE_RIGHT(head, __tmp, field); \
    if (SPLAY_LEFT((head)->sph_root, field) == NULL)\
        break; \
} \
SPLAY_LINKLEFT(head, __right, field); \
} else if (__comp > 0) { \
    __tmp = SPLAY_RIGHT((head)->sph_root, field); \
    if (__tmp == NULL) \
        break; \
    if (__comp > 0) { \
        SPLAY_ROTATE_LEFT(head, __tmp, field); \
        if (SPLAY_RIGHT((head)->sph_root,
field) == NULL)\
            break; \
    } \
    SPLAY_LINKRIGHT(head, __left, field); \
} \
} \
SPLAY_ASSEMBLE(head, &__node, __left, __right, field); \
}

#define SPLAY_NEGINF -1
#define SPLAY_INF 1

#define SPLAY_INSERT(name, x, y) name##_SPLAY_INSERT(x, y)
#define SPLAY_REMOVE(name, x, y) name##_SPLAY_REMOVE(x, y)
#define SPLAY_FIND(name, x, y) name##_SPLAY_FIND(x, y)
#define SPLAY_NEXT(name, x, y) name##_SPLAY_NEXT(x, y)
#define SPLAY_MIN(name, x) (SPLAY_EMPTY(x) ? NULL \
    : name##_SPLAY_MIN_MAX(x, SPLAY_NEGINF))
#define SPLAY_MAX(name, x) (SPLAY_EMPTY(x) ? NULL \
    : name##_SPLAY_MIN_MAX(x, SPLAY_INF))

#define SPLAY_FOREACH(x, name, head) \
    for ((x) = SPLAY_MIN(name, head); \
        (x) != NULL; \
        (x) = SPLAY_NEXT(name, head, x))

/* Macros that define a red-black tree */
#define RB_HEAD(name, type) \
struct name { \
    struct type *rbh_root; /* root of the tree */ \
}

```

```

#define RB_INITIALIZER(root) \
{
    NULL }

#define RB_INIT(root) do { \
    (root)->rbh_root = NULL; \
} while (/*CONSTCOND*/ 0)

#define RB_BLACK 0
#define RB_RED 1
#define RB_ENTRY(type) \
struct { \
    struct type *rbe_left; /* left element */ \
    struct type *rbe_right; /* right element */ \
    struct type *rbe_parent; /* parent element */ \
    int rbe_color; /* node color */ \
}

#define RB_LEFT(elm, field) (elm)->field.rbe_left
#define RB_RIGHT(elm, field) (elm)->field.rbe_right
#define RB_PARENT(elm, field) (elm)->field.rbe_parent
#define RB_COLOR(elm, field) (elm)->field.rbe_color
#define RB_ROOT(head) (head)->rbh_root
#define RB_EMPTY(head) (RB_ROOT(head) == NULL)

#define RB_SET(elm, parent, field) do { \
    RB_PARENT(elm, field) = parent; \
    RB_LEFT(elm, field) = RB_RIGHT(elm, field) = NULL; \
    RB_COLOR(elm, field) = RB_RED; \
} while (/*CONSTCOND*/ 0)

#define RB_SET_BLACKRED(black, red, field) do { \
    RB_COLOR(black, field) = RB_BLACK; \
    RB_COLOR(red, field) \
    = RB_RED; \
} while (/*CONSTCOND*/ 0)

#ifndef RB_AUGMENT
#define RB_AUGMENT(x) do {} while (/*CONSTCOND*/ 0)
#endif

#define RB_ROTATE_LEFT(head, elm, tmp, field) do { \
    (tmp) = RB_RIGHT(elm, field); \
    if ((RB_RIGHT(elm, field) = RB_LEFT(tmp, field)) != NULL) { \
        RB_PARENT(RB_LEFT(tmp, field), field) = (elm); \
    } \
    RB_AUGMENT(elm); \
    if ((RB_PARENT(tmp, field) = RB_PARENT(elm, field)) != NULL) { \

```

```

if ((elm) == RB_LEFT(RB_PARENT(elm, field), field)) \
    RB_LEFT(RB_PARENT(elm, field), field) = (tmp); \
else \
    RB_RIGHT(RB_PARENT(elm, field), field) = (tmp); \
} else \
    (head)->rbh_root = (tmp); \
    RB_LEFT(tmp, field) = (elm); \
    RB_PARENT(elm, field) = (tmp); \
    RB_AUGMENT(tmp); \
    if ((RB_PARENT(tmp, field))) \
        RB_AUGMENT(RB_PARENT(tmp, field)); \
} while (/*CONSTCOND*/ 0)

#define RB_ROTATE_RIGHT(head, elm, tmp, field) do { \
    (tmp) = RB_LEFT(elm, field); \
    if ((RB_LEFT(elm, field) = RB_RIGHT(tmp, field)) \
        != NULL) { \
        RB_PARENT(RB_RIGHT(tmp, field), field) = (elm); \
    } \
    RB_AUGMENT(elm); \
    if ((RB_PARENT(tmp, field) = RB_PARENT(elm, field)) != NULL) { \
        if ((elm) == RB_LEFT(RB_PARENT(elm, field), field)) \
            RB_LEFT(RB_PARENT(elm, field), field) = (tmp); \
        else \
            RB_RIGHT(RB_PARENT(elm, field), field) = (tmp); \
    } else \
        (head)->rbh_root = (tmp); \
    RB_RIGHT(tmp, field) = (elm); \
    RB_PARENT(elm, field) = (tmp); \
    RB_AUGMENT(tmp); \
    if ((RB_PARENT(tmp, field))) \
        RB_AUGMENT(RB_PARENT(tmp, field)); \
} while (/*CONSTCOND*/ 0)

/* Generates prototypes and inline functions */
#define RB_PROTOTYPE(name, type, field, cmp) \
    RB_PROTOTYPE_INTERNAL(name, type, field, cmp,)
#define RB_PROTOTYPE_STATIC(name, type, field, cmp) \
    RB_PROTOTYPE_INTERNAL(name, type, field, cmp, _sys_tree_h_unused static)
#define RB_PROTOTYPE_INTERNAL(name, type, field, cmp, attr) \
    attr void name##_RB_INSERT_COLOR(struct name *, struct \
        type *); \
    attr void name##_RB_REMOVE_COLOR(struct name *, struct type *, struct type *); \
    attr struct type *name##_RB_REMOVE(struct name *, struct type *); \
    attr struct type *name##_RB_INSERT(struct name *, struct type *); \
    attr struct type *name##_RB_FIND(struct name *, struct type *); \
    attr struct type *name##_RB_NFIND(struct name *, struct type *); \
    attr struct type *name##_RB_NEXT(struct type *); \

```

```

attr struct type *name##_RB_PREV(struct type *); \
attr struct type *name##_RB_MINMAX(struct name *, int); \
\

/* Main rb operation.
 * Moves node close to the key of elm to top
 */
#define RB_GENERATE(name, type, field, cmp) \
    RB_GENERATE_INTERNAL(name, type, field, cmp,)
#define RB_GENERATE_STATIC(name, type, field, cmp) \
    RB_GENERATE_INTERNAL(name, type, field, cmp, _sys_tree_h_unused static)
#define RB_GENERATE_INTERNAL(name, type, field, cmp, attr) \
attr void \
name##_RB_INSERT_COLOR(struct name *head, struct type *elm) \
{ \
    struct type \
    *parent, *gparent, *tmp; \
    while ((parent = RB_PARENT(elm, field)) != NULL && \
        RB_COLOR(parent, field) == RB_RED) { \
        gparent = RB_PARENT(parent, field); \
        if (parent == RB_LEFT(gparent, field)) { \
            tmp = RB_RIGHT(gparent, field); \
            if (tmp && RB_COLOR(tmp, field) == RB_RED) { \
                RB_COLOR(tmp, field) = RB_BLACK; \
                RB_SET_BLACKRED(parent, gparent, field);\
                elm = gparent; \
                continue; \
            } \
            if (RB_RIGHT(parent, field) == elm) { \
                RB_ROTATE_LEFT(head, parent, tmp, field);\
                tmp = parent; \
                parent = elm; \
                elm = tmp; \
            } \
            RB_SET_BLACKRED(parent, gparent, field); \
            RB_ROTATE_RIGHT(head, gparent, tmp, field); \
        } else { \
            tmp = RB_LEFT(gparent, field); \
            if (tmp && RB_COLOR(tmp, field) == RB_RED) { \
                RB_COLOR(tmp, field) = RB_BLACK; \
                RB_SET_BLACKRED(parent, gparent, field);\
                elm = gparent; \
                continue; \
            } \
            if (RB_LEFT(parent, field) == elm) \
        { \
            RB_ROTATE_RIGHT(head, parent, tmp, field);\
            tmp = parent; \

```



```

    parent = elm; \
    elm = tmp; \
} \
RB_SET_BLACKRED(parent, gparent, field); \
RB_ROTATE_LEFT(head, gparent, tmp, field); \
} \
} \
RB_COLOR(head->rbh_root, field) = RB_BLACK; \
} \
\
attr void \
name##_RB_REMOVE_COLOR(struct name *head, struct type *parent, struct type *elm) \
{ \
    struct type *tmp; \
    while ((elm == NULL || RB_COLOR(elm, field) == RB_BLACK) && \
        elm != RB_ROOT(head)) { \
        if (RB_LEFT(parent, field) == elm) { \
            tmp = RB_RIGHT(parent, field); \
            if (RB_COLOR(tmp, field) == RB_RED) { \
                RB_SET_BLACKRED(tmp, parent, field); \
                RB_ROTATE_LEFT(head, parent, tmp, field); \
                tmp = RB_RIGHT(parent, field); \
            } \
            if ((RB_LEFT(tmp, field) == NULL || \
                RB_COLOR(RB_LEFT(tmp, field), field) == RB_BLACK) && \
                (RB_RIGHT(tmp, field) == NULL || \
                RB_COLOR(RB_RIGHT(tmp, \
field), field) == RB_BLACK)) {\
                RB_COLOR(tmp, field) = RB_RED; \
                elm = parent; \
                parent = RB_PARENT(elm, field); \
            } else { \
                if (RB_RIGHT(tmp, field) == NULL || \
                    RB_COLOR(RB_RIGHT(tmp, field), field) == RB_BLACK) {\
                    struct type *oleft; \
                    if ((oleft = RB_LEFT(tmp, field)) \
                        != NULL) \
                        RB_COLOR(oleft, field) = RB_BLACK; \
                    RB_COLOR(tmp, field) = RB_RED; \
                    RB_ROTATE_RIGHT(head, tmp, oleft, field); \
                    tmp = RB_RIGHT(parent, field); \
                } \
                RB_COLOR(tmp, field) = RB_COLOR(parent, field); \
                RB_COLOR(parent, field) = RB_BLACK; \
                if (RB_RIGHT(tmp, field)) \
                    RB_COLOR(RB_RIGHT(tmp, field), field) = RB_BLACK; \
                RB_ROTATE_LEFT(head, parent, tmp, field); \
                elm = RB_ROOT(head); \
            } \
        } \
    } \
}

```

```

    break; \
} \
} else { \
    tmp = RB_LEFT(parent, field); \
    if (RB_COLOR(tmp, field) == RB_RED) { \
        RB_SET_BLACKRED(tmp, parent, field); \
        RB_ROTATE_RIGHT(head, parent, tmp, field);\
        tmp
= RB_LEFT(parent, field); \
    } \
    if ((RB_LEFT(tmp, field) == NULL || \
        RB_COLOR(RB_LEFT(tmp, field), field) == RB_BLACK) &&\
        (RB_RIGHT(tmp, field) == NULL || \
        RB_COLOR(RB_RIGHT(tmp, field), field) == RB_BLACK)) {\
        RB_COLOR(tmp, field) = RB_RED; \
        elm = parent; \
        parent = RB_PARENT(elm, field); \
    } else { \
        if (RB_LEFT(tmp, field) == NULL || \
            RB_COLOR(RB_LEFT(tmp, field), field) == RB_BLACK) {\
            struct type *oright; \
            if ((oright = RB_RIGHT(tmp, field)) \
                != NULL) \
                RB_COLOR(oright, field) = RB_BLACK;\
            RB_COLOR(tmp, field) = RB_RED; \
            RB_ROTATE_LEFT(head, tmp, oright, field);\
            tmp = RB_LEFT(parent, field); \
        } \
        RB_COLOR(tmp, field) = RB_COLOR(parent, field);\
        RB_COLOR(parent, field) = RB_BLACK; \
        if (RB_LEFT(tmp, field)) \
            RB_COLOR(RB_LEFT(tmp, field), field) = RB_BLACK;\
        RB_ROTATE_RIGHT(head, parent, tmp, field);\
        elm = RB_ROOT(head); \
        break; \
    } \
} \
} \
} \
if
(elm) \
    RB_COLOR(elm, field) = RB_BLACK; \
} \
\
attr struct type * \
name##_RB_REMOVE(struct name *head, struct type *elm) \
{ \
    struct type *child, *parent, *old = elm; \
    int color; \

```

```

if (RB_LEFT(elm, field) == NULL) \
    child = RB_RIGHT(elm, field); \
else if (RB_RIGHT(elm, field) == NULL) \
    child = RB_LEFT(elm, field); \
else { \
    struct type *left; \
    elm = RB_RIGHT(elm, field); \
    while ((left = RB_LEFT(elm, field)) != NULL) \
        elm = left; \
    child = RB_RIGHT(elm, field); \
    parent = RB_PARENT(elm, field); \
    color = RB_COLOR(elm, field); \
    if (child) \
        RB_PARENT(child, field) = parent; \
    if (parent) { \
        if (RB_LEFT(parent, field) == elm) \
            RB_LEFT(parent, field) = child; \
        else \
            RB_RIGHT(parent, field) = child; \
        RB_AUGMENT(parent); \
    } else \
        RB_ROOT(head)
= child; \
if (RB_PARENT(elm, field) == old) \
    parent = elm; \
(elm)->field = (old)->field; \
if (RB_PARENT(old, field)) { \
    if (RB_LEFT(RB_PARENT(old, field), field) == old)\
        RB_LEFT(RB_PARENT(old, field), field) = elm;\
    else \
        RB_RIGHT(RB_PARENT(old, field), field) = elm;\
    RB_AUGMENT(RB_PARENT(old, field)); \
} else \
    RB_ROOT(head) = elm; \
RB_PARENT(RB_LEFT(old, field), field) = elm; \
if (RB_RIGHT(old, field)) \
    RB_PARENT(RB_RIGHT(old, field), field) = elm; \
if (parent) { \
    left = parent; \
    do { \
        RB_AUGMENT(left); \
    } while ((left = RB_PARENT(left, field)) != NULL); \
} \
goto color; \
} \
parent = RB_PARENT(elm, field); \
color = RB_COLOR(elm, field); \
if (child) \

```

```

RB_PARENT(child, field) = parent; \
if (parent) { \
    if (RB_LEFT(parent, field) == elm) \
        RB_LEFT(parent, field) = child; \
    else \
        RB_RIGHT(parent,
field) = child; \
    RB_AUGMENT(parent); \
} else \
    RB_ROOT(head) = child; \
color: \
if (color == RB_BLACK) \
    name##_RB_REMOVE_COLOR(head, parent, child); \
return (old); \
} \
\
/* Inserts a node into the RB tree */ \
attr struct type * \
name##_RB_INSERT(struct name *head, struct type *elm) \
{ \
    struct type *tmp; \
    struct type *parent = NULL; \
    int comp = 0; \
    tmp = RB_ROOT(head); \
    while (tmp) { \
        parent = tmp; \
        comp = (cmp)(elm, parent); \
        if (comp < 0) \
            tmp = RB_LEFT(tmp, field); \
        else if (comp > 0) \
            tmp = RB_RIGHT(tmp, field); \
        else \
            return (tmp); \
    } \
    RB_SET(elm, parent, field); \
    if (parent != NULL) { \
        if (comp < 0) \
            RB_LEFT(parent, field) = elm; \
        else \
            RB_RIGHT(parent, field) = elm; \
        RB_AUGMENT(parent); \
    } else \
        RB_ROOT(head) = elm; \
    name##_RB_INSERT_COLOR(head,
elm); \
    return (NULL); \
} \
\

```

```

/* Finds the node with the same key as elm */ \
attr struct type * \
name##_RB_FIND(struct name *head, struct type *elm) \
{ \
    struct type *tmp = RB_ROOT(head); \
    int comp; \
    while (tmp) { \
        comp = cmp(elm, tmp); \
        if (comp < 0) \
            tmp = RB_LEFT(tmp, field); \
        else if (comp > 0) \
            tmp = RB_RIGHT(tmp, field); \
        else \
            return (tmp); \
    } \
    return (NULL); \
} \

/* Finds the first node greater than or equal to the search key */\
attr struct type * \
name##_RB_NFIND(struct name *head, struct type *elm) \
{ \
    struct type *tmp = RB_ROOT(head); \
    struct type *res = NULL; \
    int comp; \
    while (tmp) { \
        comp = cmp(elm, tmp); \
        if (comp < 0) { \
            res = tmp; \
            tmp = RB_LEFT(tmp, field); \
        } \
        else if (comp > 0) \
            tmp = \
RB_RIGHT(tmp, field); \
        else \
            return (tmp); \
    } \
    return (res); \
} \

/* ARGSUSED */ \
attr struct type * \
name##_RB_NEXT(struct type *elm) \
{ \
    if (RB_RIGHT(elm, field)) { \
        elm = RB_RIGHT(elm, field); \
        while (RB_LEFT(elm, field)) \
            elm = RB_LEFT(elm, field); \
    } \
}

```

```

} else {
    \
    if (RB_PARENT(elm, field) &&
        (elm == RB_LEFT(RB_PARENT(elm, field), field))) \
        elm = RB_PARENT(elm, field); \
    else {
        \
        while (RB_PARENT(elm, field) &&
            (elm == RB_RIGHT(RB_PARENT(elm, field), field))) \
            elm = RB_PARENT(elm, field); \
        elm = RB_PARENT(elm, field); \
    } \
} \
return (elm); \
} \
\
/* ARGSUSED */ \
attr struct type * \
name##_RB_PREV(struct type *elm) \
{
    \
    if (RB_LEFT(elm, field)) { \
        elm = RB_LEFT(elm, field); \
        while (RB_RIGHT(elm, field)) \
            elm = RB_RIGHT(elm, field); \
    }
    else {
        \
        if (RB_PARENT(elm, field) &&
            (elm == RB_RIGHT(RB_PARENT(elm, field), field))) \
            elm = RB_PARENT(elm, field); \
        else {
            \
            while (RB_PARENT(elm, field) &&
                (elm == RB_LEFT(RB_PARENT(elm, field), field))) \
                elm = RB_PARENT(elm, field); \
            elm = RB_PARENT(elm, field); \
        } \
    } \
    return (elm); \
} \
\
attr struct type * \
name##_RB_MINMAX(struct name *head, int val) \
{
    \
    struct type *tmp = RB_ROOT(head); \
    struct type *parent = NULL; \
    while (tmp) {
        \
        parent = tmp; \
        if (val < 0) \
            tmp = RB_LEFT(tmp, field); \
        else \
            tmp = RB_RIGHT(tmp, field); \
    }

```

```

}    \
return (parent);    \
}

#define RB_NEGINF -1
#define RB_INF 1

#define RB_INSERT(name, x, y) name##_RB_INSERT(x, y)
#define RB_REMOVE(name, x, y) name##_RB_REMOVE(x, y)
#define RB_FIND(name, x, y) name##_RB_FIND(x, y)
#define RB_NFIND(name, x, y) name##_RB_NFIND(x,
y)
#define RB_NEXT(name, x, y) name##_RB_NEXT(y)
#define RB_PREV(name, x, y) name##_RB_PREV(y)
#define RB_MIN(name, x) name##_RB_MINMAX(x, RB_NEGINF)
#define RB_MAX(name, x) name##_RB_MINMAX(x, RB_INF)

#define RB_FOREACH(x, name, head)    \
for ((x) = RB_MIN(name, head);    \
(x) != NULL;    \
(x) = name##_RB_NEXT(x))

#define RB_FOREACH_FROM(x, name, y)    \
for ((x) = (y);    \
((x) != NULL) && ((y) = name##_RB_NEXT(x), (x) != NULL); \
(x) = (y))

#define RB_FOREACH_SAFE(x, name, head, y)    \
for ((x) = RB_MIN(name, head);    \
((x) != NULL) && ((y) = name##_RB_NEXT(x), (x) != NULL); \
(x) = (y))

#define RB_FOREACH_REVERSE(x, name, head)    \
for ((x) = RB_MAX(name, head);    \
(x) != NULL;    \
(x) = name##_RB_PREV(x))

#define RB_FOREACH_REVERSE_FROM(x, name, y)    \
for ((x) = (y);    \
((x) != NULL) && ((y) = name##_RB_PREV(x), (x) != NULL); \
(x) = (y))

#define RB_FOREACH_REVERSE_SAFE(x, name,
head, y)    \
for ((x) = RB_MAX(name, head);    \
((x) != NULL) && ((y) = name##_RB_PREV(x), (x) != NULL); \
(x) = (y))

```

```

#endif /* _SYS_TREE_H_ */
# Contributor: Wen Heping <wenhepingalpine@sohu.com>
# Maintainer: Wen Heping <wenhepingalpine@sohu.com>
pkgname=perl-software-license
pkgver=0.104007
pkgrel=0
# _pkgreal is used by apkbuild-cpan to find modules at MetaCpan
_pkgreal=Software-License
pkgdesc="packages that provide templated software licenses"
url="https://metacpan.org/release/Software-License/"
arch="noarch"
license="GPL-1.0-or-later OR Artistic-1.0-Perl"
depends="perl perl-data-section perl-text-template"
checkdepends="perl-try-tiny"
subpackages="$pkgname-doc"
source="https://cpan.metacpan.org/authors/id/L/LE/LEONT/Software-License-$pkgver.tar.gz"
builddir="$srcdir/${_pkgreal}-${pkgver}"

build() {
    export CFLAGS=$(perl -MConfig -E 'say $Config{ccflags}')
    PERL_MM_USE_DEFAULT=1 perl -I. Makefile.PL \
        INSTALLDIRS=vendor \
        NO_PACKLIST=1 \
        NO_PERLLOCAL=1
    make
}

check() {
    export CFLAGS=$(perl -MConfig -E 'say $Config{ccflags}')
    make test
}

package() {
    make DESTDIR="$pkgdir" install
}

sha512sums="
12d75e9583b3013d9b4a282467f1ac80ab6b7f3251926d66591d01404489b528f22adc396dfd4528a0f0ca650f0eed6d
9c959e69eace2169c6ed1cffe5277e4
    Software-License-0.104007.tar.gz
"
(The MIT License)

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a copy of this software and associated documentation files (the
"Software"), to deal in the Software without restriction, including

```


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```
# Contributor: Dhruvin Gandhi <contact@dhruvin>
# Maintainer: Patrycja Rosa <alpine@ptrcnull.me>
pkgname=py3-license-expression
_pkgname=license_expression
pkgver=30.4.4
pkgrel=0
pkgdesc="Library to parse, compare, simplify and normalize license expressions"
url="https://github.com/nexB/license-expression"
arch="noarch"
license="Apache-2.0"
depends="python3 py3-boolean.py"
makedepends="py3-setuptools py3-setuptools_scm py3-gp517 py3-wheel"
checkdepends="py3-pytest py3-pytest-xdist"
subpackages="$pkgname-pyc"
source="https://files.pythonhosted.org/packages/source/l/_pkgname/_pkgname-$pkgver.tar.gz"
builddir="$srcdir/$pkgname-$pkgver"
```

```
build() {
    gp517 build-wheel \
        --wheel-dir .dist \
        --output-fd 3 3>&1 >&2
}
```

```
check() {
    python3 -m venv --clear --without-pip --system-site-packages .testenv
    .testenv/bin/python3 -m installer .dist/*.whl
    .testenv/bin/python3 -m pytest
}
```

```
package() {
    python3 -m installer -d "$pkgdir" \
        .dist/*.whl
}
```

```
}
```

```
sha512sums="
f46dd4cf524b3962115fe26f5545bfdd6767275b482724af51e7ca07da79244969a3bfc5d2fd5b95bc0f19d1b95a26a8f3
ab36c676e56ec302178d7166588066
  license_expression-30.4.4.tar.gz
"
```

1.467 etcd-client 3.6.7

1.467.1 Available under license :

Features

This document provides an overview of etcd features and general development guidelines for adding and deprecating them. The project maintainers can override these guidelines per the need of the project following the project governance.

Overview

The etcd features fall into three stages, experimental, stable, and unsafe.

Experimental

Any new feature is usually added as an experimental feature. An experimental feature is characterized as below:

- Might be buggy due to a lack of user testing. Enabling the feature may not work as expected.
- Disabled by default when added initially.
- Support for such a feature may be dropped at any time without notice
 - Feature-related issues may be given lower priorities.
 - It can be removed in the next minor or major release without following the feature deprecation policy unless it graduates to a stable future.

Stable

A stable feature is characterized as below:

- Supported as part of the supported releases of etcd.
- - May be enabled by default.
- Discontinuation of support must follow the feature deprecation policy.

Unsafe

Unsafe features are rare and listed under the `Unsafe feature:` section in the etcd usage documentation. By default, they are disabled. They should be used with caution following documentation. An unsafe feature can be removed in the next minor or major release without following the feature deprecation policy.

Development Guidelines

Adding a new feature

Any new enhancements to the etcd are typically added as an experimental feature. The general development requirements are listed below. They can be somewhat flexible depending on the scope of the feature and review discussions and will evolve over time.

- Open an issue
 - It must provide a clear need for the proposed feature.
 - It should list development work items as checkboxes. There must be one work item towards future graduation to a stable future.
 - Label the issue with `type/feature` and `experimental`.
 - Keep the issue open for tracking purposes until a decision is made on graduation.
- Open a Pull Request (PR)
 - Provide unit tests. Integration tests are also recommended as possible.
 - Provide robust e2e test coverage. If the feature being added is complicated or quickly needed, maintainers can decide to go with e2e tests for basic coverage initially and have robust coverage added at a later time before the feature graduation to the stable feature.
 - Provide logs for proper debugging.
 - Provide metrics and benchmarks as needed.
 - The Feature should be disabled by default.
 - Any configuration flags related to the implementation of the feature must be prefixed with `experimental` e.g. `--experimental-feature-name`.
 - Add a CHANGELOG entry.
- At least two maintainers must approve feature requirements and related code changes.

Graduating an Experimental feature to Stable

It is important that experimental features don't get stuck in that stage.

They should be revisited and moved to the stable stage following the graduation steps as described here.

Locate graduation candidate

Decide if an experimental feature is ready for graduation to the stable stage.

- Find the issue that was used to enable the experimental feature initially. One way to find such issues is to search for issues with `type/feature` and `experimental` labels.
- Fix any known open issues against the feature.
- Make sure the feature was enabled for at least one previous release. Check the PR(s) reference from the issue to see when the feature-related code changes were merged.

Provide implementation

If an experimental feature is found ready for graduation to the stable stage, open a Pull Request (PR) with the following changes.

- Add robust e2e tests if not already provided.
- Add a new stable feature flag identical to the experimental feature flag but without the `--experimental` prefix.
- Deprecate the experimental feature following the [feature deprecation policy](#Deprecating-a-feature).
- Implementation must ensure that both the graduated and deprecated experimental feature flags work as expected. Note that both these flags will co-exist for the timeframe described in the feature deprecation policy.
- Enable the graduated feature by default if needed.

At least two maintainers must approve the work. Patch releases should not be considered for graduation.

Deprecating a feature

Experimental

An experimental feature deprecates when it graduates to the stable stage.

- Add a deprecation message in the documentation of the experimental feature with a recommendation to use a related stable feature. e.g. `DEPRECATED. Use <feature-name> instead.`
- Add a `deprecated` label in the issue that was initially used to enable the experimental feature.

Stable

As the project evolves, a stable feature may sometimes need to be deprecated and removed. Such a situation should be handled using the steps below:

- Create an issue for tracking purposes.
- Add a deprecation message in the feature usage documentation before a planned release for feature deprecation. e.g. `To be deprecated in <release>.`. If a new feature replaces the `To be deprecated` feature, then also provide a message saying so. e.g. `Use <feature-name> instead.`.
- Deprecate the feature in the planned release with a message as part of the feature usage documentation. e.g. `DEPRECATED`. If a new feature replaces the deprecated feature, then also provide a message saying so. e.g. `DEPRECATED. Use <feature-name> instead.`.
- Add a `deprecated` label in the related issue.

Remove the deprecated feature in the following release. Close any related issue(s). At least two maintainers must approve the work. Patch releases should not be considered for deprecation.

Set up the local cluster

For testing and development deployments, the quickest and easiest way is to configure a local cluster. For a production deployment, refer to the [clustering][clustering] section.

Local standalone cluster

Starting a cluster

Run the following to deploy an etcd cluster as a standalone cluster:

```
...  
$ ./etcd  
...  
...
```

If the `etcd` binary is not present in the current working directory, it might be located either at `\$GOPATH/bin/etcd` or at `/usr/local/bin/etcd`. Run the command appropriately.

The running etcd member listens on `localhost:2379` for client requests.

Interacting with the cluster

Use `etcdctl` to interact with the running cluster:

1. Store an example key-value pair in the cluster:

```
...  
$ ./etcdctl put foo bar  
OK  
...
```

If OK is printed, storing the key-value pair is successful.

2. Retrieve the value of `foo`:

```
...  
$ ./etcdctl get foo  
bar  
...
```

If `bar` is returned, interaction with the etcd cluster is working as expected.

Local multi-member cluster

Starting a cluster

A `Procfile` at the base of the etcd git repository is provided to easily configure a local multi-member cluster. To start a multi-member cluster, navigate to the root of the etcd source tree and perform the following:

1. Install `goreman` to control Procfile-based applications:

```
...  
$ go install github.com/mattn/goreman@latest  
...
```

The installation will place executables in the `$GOPATH/bin`. If `$GOPATH` environment variable is not set, the tool will be installed into the `$HOME/go/bin`. Make sure that `$PATH` is set accordingly in your environment.

2. Start a cluster with `goreman` using etcd's stock Procfile:

```
...  
$ goreman -f Procfile start  
...
```

The members start running. They listen on `localhost:2379`, `localhost:22379`, and `localhost:32379` respectively for client requests.

Interacting with the cluster

Use `etcdctl` to interact with the running cluster:

1. Print
the list of members:

...

```
$ etcdctl --write-out=table --endpoints=localhost:2379 member list
```

...

The list of etcd members is displayed as follows:

...

```
+-----+-----+-----+-----+-----+
|  ID    | STATUS | NAME  | PEER ADDRS | CLIENT ADDRS |
+-----+-----+-----+-----+-----+
| 8211f1d0f64f3269 | started | infra1 | http://127.0.0.1:2380 | http://127.0.0.1:2379 |
| 91bc3c398fb3c146 | started | infra2 | http://127.0.0.1:22380 | http://127.0.0.1:22379 |
| fd422379fda50e48 | started | infra3 | http://127.0.0.1:32380 | http://127.0.0.1:32379 |
+-----+-----+-----+-----+-----+
```

...

2. Store an example key-value pair in the cluster:

...

```
$ etcdctl put foo bar
```

OK

...

If OK is printed, storing the key-value pair is successful.

###

Testing fault tolerance

To exercise etcd's fault tolerance, kill a member and attempt to retrieve the key.

1. Identify the process name of the member to be stopped.

The `/etc/passwd` lists the properties of the multi-member cluster. For example, consider the member with the process name, `etcd2`.

2. Stop the member:

...

```
# kill etcd2
```

```
$ goreman run stop etcd2
```

...

3. Store a key:

...

```
$ etcdctl put key hello
OK
...
```

4. Retrieve the key that is stored in the previous step:

```
...
$ etcdctl get key
hello
...
```

5. Retrieve a key from the stopped member:

```
...
$ etcdctl --endpoints=localhost:22379 get key
...
```

The command should display an error caused by connection failure:

```
...
2017/06/18 23:07:35 grpc: Conn.resetTransport failed to create client transport: connection error: desc =
"transport: dial tcp 127.0.0.1:22379: getsockopt: connection refused"; Reconnecting to "localhost:22379"
Error: grpc:
timed out trying to connect
...
```

6. Restart the stopped member:

```
...
$ goreman run restart etcd2
...
```

7. Get the key from the restarted member:

```
...
$ etcdctl --endpoints=localhost:22379 get key
hello
...
```

Restarting the member re-establishes the connection. `etcdctl` will now be able to retrieve the key successfully. To learn more about interacting with etcd, read [interacting with etcd section][interacting].

[clustering]: <https://etcd.io/docs/latest/op-guide/clustering/>
[interacting]: https://etcd.io/docs/latest/dev-guide/interacting_v3/
Issue triage guidelines

Purpose

Speed up issue management.

The `etcd` issues are listed at <<https://github.com/etcd-io/etcd/issues>> and are identified with labels. For example, an issue that is identified as a bug will be set to the label `type/bug`.

The etcd project uses labels to indicate common attributes such as `area`, `type`, and `priority` of incoming issues.

New issues will often start without any labels, but typically `etcd` maintainers, reviewers, and members will add labels by following these triage guidelines. The detailed list of labels can be found at <<https://github.com/etcd-io/etcd/labels>>.

Scope

This document serves as the primary guidelines for triaging incoming issues in `etcd`.

All contributors are encouraged and welcome to help manage issues which will help reduce the burden on project maintainers, though the work and responsibilities discussed in this document are created with `etcd` project reviewers and members in mind as these individuals will have triage access to the etcd project which is a requirement for actions like applying labels or closing issues.

Refer to [etcd community membership](<https://github.com/etcd-io/etcd/blob/main/Documentation/contributor-guide/community-membership.md>) for guidance on becoming an etcd project member or reviewer.

Step 1 - Find an issue to triage

To get started you can use the following recommended issue searches to identify issues that are in need of triage:

- * [Issues that have no labels](<https://github.com/etcd-io/etcd/issues?q=is%3Aissue+is%3Aopen+sort%3Aupdated+no%3Alabel>)
- * [Issues created recently](<https://github.com/etcd-io/etcd/issues?q=is%3Aissue+is%3Aopen+>)
- * [Issues not assigned but linked pr](<https://github.com/etcd-io/etcd/issues?q=is%3Aopen+is%3Aissue+no%3Aassignee+linked%3Apr>)
- * [Issues with no comments](<https://github.com/etcd-io/etcd/issues?q=is%3Aopen+is%3Aissue+comments%3A0+>)
- * [Issues with help wanted](<https://github.com/etcd-io/etcd/issues?q=is%3Aopen+is%3Aissue+label%3A%22help+wanted%22+>)

##

Step 2 - Check the issue is valid

Before we start adding labels or trying to work out a priority, our first triage step needs to be working out if the issue actually belongs to the etcd project and is not a duplicate.

Issues that don't belong to etcd

Sometimes issues are reported that belong to other projects that `etcd` use. For example, `grpc` or `golang` issues. Such issues should be addressed by asking the reporter to open issues in the appropriate other projects.

These issues can generally be closed unless a maintainer and issue reporter see a need to keep it open for tracking purposes. If you have triage permissions please close it, alternatively mention the @etcd-io/members group to

request a member with triage access to close the issue.

Duplicate issues

If an issue is a duplicate, add a comment stating so along with a reference for the original issue and if you have triage permissions please close it, alternatively mention the @etcd-io/members group to request a member with triage access close the issue.

Step 3 - Apply the appropriate type of label

Adding a `type` label to an issue helps create visibility on the health of the project and helps contributors identify potential priorities, i.e. addressing existing bugs or test flakes before implementing new features.

Support requests

As a general rule, the focus for etcd support is to address common themes in a broad way that helps all users, i.e. through channels like known issues, frequently asked questions, and high-quality documentation. To make the best use of project members time we should avoid providing 1:1 support if a broad approach is available.

Some people mistakenly use our GitHub bug report or feature request templates to file support requests. Usually, they are asking for help operating or configuring some aspect of etcd. Support requests for etcd should instead be raised as [discussions](https://github.com/etcd-io/etcd/discussions).

Common

types of support requests are:

1. Questions about configuring or operating existing well-documented etcd features, for example, <<https://github.com/etcd-io/etcd/issues/15945>>. Note - If an existing feature is not well documented please apply the `area/documentation` label and propose documentation improvements that would prevent future users from stumbling on the problem again.
2. Bug reports or questions about unsupported versions of etcd, for example <<https://github.com/etcd-io/etcd/issues/15796>>. When responding to these issues please refer to our [supported versions documentation](https://etcd.io/docs/latest/op-guide/versioning) and encourage the reporter to upgrade to a recent patch release of a supported version as soon as possible. We should limit the effort supporting users that do not make the effort to run a supported version of etcd or ensure their version is patched.
3. Bug reports that do not provide a complete list of steps to reproduce the issue and/or contributors are not able to reproduce the issue, for example, <<https://github.com/etcd-io/etcd/issues/15740>>. We should limit the effort we put into reproducing issues ourselves and motivate users to provide the necessary information to accept the bug report.
4. General questions that are filed using feature request or bug report issue templates, for example, <<https://github.com/etcd-io/etcd/issues/15914>>. Note - These types of requests may surface good additions to our [frequently asked questions](https://etcd.io/docs/v3.5/faq).

If you identify that an issue is a support request please:

1. Add the ``type/support`` or ``type/question`` label.
2. Add the following comment to inform the issue creator that discussions should be used instead and that this issue will be converted to a discussion.

> Thank you for your question, this support issue will be moved to our [Discussion Forums](https://github.com/etcd-io/etcd/discussions).

>

> We are trying to consolidate the channels to which questions for help/support are posted so that we can improve our efficiency in responding to your requests, and make it easier for you to find answers to frequently asked questions and how to address common use cases.

>

> We regularly see messages posted in multiple forums, with the full response thread only in one place or, worse, spread across multiple forums. Also, the large volume of support issues on GitHub is making it difficult for us to use issues to identify real bugs.

>

> Members of the etcd community use Discussion Forums to field support requests. Before posting a new question, please search these for answers to similar questions, and also familiarize yourself with:

>

> 1. [user documentation](https://etcd.io/docs/latest)

> 2. [frequently asked questions](https://etcd.io/docs/v3.5/faq)

>

> Again, thanks for using etcd and raising this question.

>

> The etcd team

3. Finally, click ``Convert to discussion`` on the right-hand panel, selecting the appropriate discussion category.

Bug reports

If an issue has been raised as a bug it should already have the ``type/bug`` label, however, if this is missing for an issue you determine to be a bug please add the label manually.

The next step is to validate if the issue is indeed a bug. If not, add a comment with the findings and close the trivial issue. For non-trivial issues, wait to hear back from the issue reporter and see if there is any objection. If the issue reporter does not reply in 30 days, close the issue.

If the problem can not be reproduced or requires more information, leave a comment for the issue reporter as soon as possible while the issue is fresh for the issue reporter.

Feature requests

New feature requests should be created via the etcd feature request template and in theory already have the ``type/feature`` label, however, if this is missing for an issue you determine to be a feature please add the label manually.

Test flakes

Test flakes

are a specific type of bug that the etcd project tracks separately as these are a priority to address. These should be created via the test flake template and in theory already have the `type/flake` label, however, if this is missing for an issue you determine to be related to a flaking test please add the label manually.

Step 4 - Define the areas impacted

Adding an `area` label to an issue helps create visibility on which areas of the etcd project require attention and helps contributors find issues to work on relating to their particular skills or knowledge of the etcd codebase.

If an issue crosses multiple domains please add additional `area` labels to reflect that.

Below is a brief summary of the area labels in active use by the etcd project along with any notes on their use:

Label	Notes
---	---
area/external	Tracking label for issues raised that are external to etcd.
area/community	
area/raft	
area/clientv3	
area/performance	
area/security	
area/tls	
area/auth	
area/etcdctl	
area/etcdutl	
area/contrib	Not to be confused with `area/community` this label is specifically used for issues relating to community-maintained scripts or files in the `contrib/` directory which aren't part of the core etcd project.
area/documentation	
area/tooling	Generally used in relation to the third party / external utilities or tools that are used in various stages of the etcd build, test, or release process, for example, tooling to create sboms.
area/testing	
area/robustness-testing	

Step 5 - Prioritise the issue

If an issue lacks a priority label it has not been formally prioritized yet.

Adding a `priority` label helps the etcd project understand what is important and should be worked on now, and conversely, what is not as important and is on the project backlog.

Priority label	What it means	Examples
---	---	---
`priority/critical-urgent`		

Maintainers are responsible for making sure that these issues (in their area) are being actively worked on i.e., drop what you're doing. The stuff is burning. These should be fixed before the next release.	user-visible critical bugs in core features broken builds on tier1 supported platforms tests and critical security issues	
`priority/important-soon`	Must be staffed and worked on either currently or very soon ideally in time for the next release.	
`priority/important-longterm`	Important over the long term, but may not be currently staffed and/or may require multiple releases to complete.	
`priority/backlog`	General agreement that this is a nice-to-have, but no one's available to work on it anytime soon. Community contributions would be most welcome in the meantime, though it might take a while to get them reviewed if reviewers are fully occupied with higher-priority issues for example, immediately before a release.	
`priority/awaiting-more-evidence`		
Possibly useful, but not yet enough support to actually get it done.	Mostly placeholders for potentially good ideas, so that they don't get completely forgotten, and can be referenced or deduped every time they come up	

Step 6 - Support new contributors

As part of the `etcd` triage process once the `kind` and `area` have been determined, please consider if the issue would be suitable for a less experienced contributor. The `good first issue` label is a subset of the `help wanted` label, indicating that members have committed to providing extra assistance for new contributors. All `good first issue` items also have the `help wanted` label.

Help wanted

Items marked with the `help wanted` label need to ensure that they meet these criteria:

* **Low Barrier to Entry** - It should be easy for new contributors.

* **Clear** - The task is agreed upon and does not require further discussions in the community.

* **Goldilocks priority** - The priority

should not be so high that a core contributor should do it, but not too low that it isn't useful enough for a core contributor to spend time reviewing it, answering questions, helping get it into a release, etc.

Good first issue

Items marked with `good first issue` are intended for first-time contributors. It indicates that members will keep an eye out for these pull requests and shepherd it through our processes.

New contributors should not be left to find an approver, ping for reviews, decipher test commands, or identify that their build failed due to a flake. It is important to make new contributors feel welcome and valued. We should assure them that they will have an extra level of help with their first contribution.

After a contributor has successfully completed one or two `good first issue` items, they should be ready to move on to `help wanted` items.

* **No Barrier to Entry** - The task is something that a new contributor can tackle without advanced setup or domain knowledge.

*

****Solution Explained**** - The recommended solution is clearly described in the issue.

* ****Gives Examples**** - Link to examples of similar implementations so new contributors have a reference guide for their changes.

* ****Identifies Relevant Code**** - The relevant code and tests to be changed should be linked in the issue.

* ****Ready to Test**** - There should be existing tests that can be modified, or existing test cases fit to be copied. If the area of code doesn't have tests, before labeling the issue, add a test fixture. This prep often makes a great help wanted task!

Step 7 - Follow up

Once initial triage has been completed, issues need to be re-evaluated over time to ensure they don't become stale incorrectly.

Track important issues

If an issue is at risk of being closed by the stale bot in the future, but is an important issue for the etcd project, then please apply the `stage/tracked` label and remove any `stale` labels that exist. This will ensure the project does not lose sight of the issue.

Close incomplete issues

Issues that lack enough information from the issue reporter should be closed if the issue reporter does not provide information in 30 days. Issues can always be re-opened at a later date if new information is provided.

Check for incomplete work

If an issue owned by a developer has no pull request created in 30 days, contact the issue owner and kindly ask about the status of their work, or to release ownership on the issue if needed.

Branch management

Guide

- * New development occurs on the [main branch][main].
- * The main branch should always have a green build!
- * Backwards-compatible bug fixes should target the main branch and subsequently be ported to stable branches.
- * Once the main branch is ready for release, it will be tagged and become the new stable branch.

The etcd team has adopted a *rolling release model* and supports two stable versions of etcd.

Main branch

The `main` branch is our development branch. All new features land here first.

To try new and experimental features, pull `main` and play with it. Note that `main` may not be stable because new

features may introduce bugs.

Before the release of the next stable version, feature PRs will be frozen. A [release manager](./release.md#release-management) will be assigned to the major/minor version and will lead the etcd community in testing, bug-fix, and documentation of the release for one to two weeks.

Stable branches

All branches with the prefix `release-` are considered `_stable_` branches.

After every minor release (semver.org), we will have a new stable branch for that release, managed by a [patch release manager](./release.md#release-management). We will keep fixing the backward-compatible bugs for the latest two stable releases. A `_patch_` release to each supported release branch, incorporating any bug fixes, will be once every two weeks, given any patches.

[main]: <https://github.com/etcd-io/etcd/tree/main>
PR management

Purpose

Speed up PR management.

The `etcd` PRs are listed at <https://github.com/etcd-io/etcd/pulls>
A PR can have various labels, milestones, reviewers, etc. The detailed list of labels can be found at <https://github.com/kubernetes/kubernetes/labels>

Following are a few example searches on PR for convenience:

- * [Open PRs for milestone etcd-v3.6](<https://github.com/etcd-io/etcd/pulls?utf8=%E2%9C%93&q=is%3Apr+is%3Aopen+milestone%3Aetcd-v3.6>)
- * [PRs under investigation](<https://github.com/etcd-io/etcd/labels/Investigating>)

Scope

These guidelines serve as a primary document for managing PRs in `etcd`. Everyone is welcome to help manage PRs but the work and responsibilities discussed in this document are created with `etcd` maintainers and active contributors in mind.

Ensure tests are run

The etcd project use Kubernetes Prow and GitHub Actions to run tests. To ensure all required tests run if a pull request is ready for testing and still has the `needs-ok-to-test` label then please comment on the pull request `/ok-to-test`.

Handle inactive PRs

Poke PR owner if review comments are not addressed in 15 days. If the PR owner does not reply in 90 days, update the PR with a new commit if possible. If not, inactive PR should be closed after 180 days.

Poke reviewer if needed

Reviewers are responsive in a timely fashion, but considering everyone is busy, give them some time after requesting a review if a quick response is not provided. If the response is not provided in 10 days, feel free to contact them via adding a comment in the PR or sending an email or message on Slack.

Verify important labels are in place

Make sure that appropriate reviewers are added to the PR. Also, make sure that a milestone is identified. If any of these or other important labels are missing, add them. If a correct label cannot be decided, leave a comment for the maintainers to do so as needed.

Roadmap

etcd uses GitHub milestones to track all tasks in each major or minor release. The `roadmap.md` file only records the most important tasks for each release. The list is based on the current maintainer capacity that may shift over time. Proposed milestones are what we think we can deliver with the people we have. If we have more support on the important stuff, we could pick up more items from the backlog. Note that etcd will continue to mainly focus on technical debt over the next few major or minor releases.

Each item has an assigned priority. Refer to [priority definitions](https://github.com/etcd-io/etcd/blob/main/Documentation/contributor-guide/triage_issues.md#step-5---prioritise-the-issue).

v3.6.0

For a full list of tasks in `v3.6.0`, please see [milestone etcd-v3.6](https://github.com/etcd-io/etcd/milestone/38).

Title	Priority	Status	Note
[Support downgrade](https://github.com/etcd-io/etcd/issues/11716)	priority/important-soon	In progress	etcd will support downgrade starting from 3.6.0. But it will also support offline downgrade from 3.5 to 3.4.
[StoreV2 deprecation](https://github.com/etcd-io/etcd/issues/12913)	priority/important-soon	In progress	This task will be covered in both 3.6 and 3.7.
[Release raft 3.6.0](https://github.com/etcd-io/raft/issues/89)	priority/important-soon	Not started	etcd 3.6.0 will depends on raft 3.6.0
[Release bbolt 1.4.0](https://github.com/etcd-io/bbolt/issues/553)	priority/important-soon	Not started	etcd 3.6.0 will depends on bbolt 1.4.0
[Support /livez and /readyz endpoints](https://github.com/etcd-io/etcd/issues/16007)	priority/important-longterm	In progress	It provides clearer APIs, and can also work around the stalled writes issue
[Bump gRPC](https://github.com/etcd-io/etcd/issues/16290)			

priority/important-longterm | Completed | It isn't guaranteed to be resolved in 3.6, and might be postponed to 3.7 depending on the effort and risk. |

| [Deprecate grpc-gateway or bump it](https://github.com/etcd-io/etcd/issues/14499) | priority/important-longterm | Completed | It isn't guaranteed to be resolved in 3.6, and might be postponed to 3.7 depending on the effort and risk. |

| [bbolt: Add logger into bbolt](https://github.com/etcd-io/bbolt/issues/509) | priority/important-longterm | Completed | It's important to diagnose bbolt issues |

| [bbolt: Add surgery commands](https://github.com/etcd-io/bbolt/issues/370) | priority/important-longterm | Completed | Surgery commands are important for fixing corrupted db files |

| [Evaluate and (Graduate or deprecate/remove) experimental features](https://github.com/etcd-io/etcd/issues/16292) | priority/backlog | Not started | This task will be covered in both 3.6 and 3.7. |

v3.7.0

For a full list of tasks in `v3.7.0`, please see [milestone etcd-v3.7](https://github.com/etcd-io/etcd/milestone/39).

Title	Priority	Note
[StoreV2 deprecation](https://github.com/etcd-io/etcd/issues/12913)	P0	Finish the remaining tasks 3.7.
[Refactor lease: Lease might be revoked by mistake by old leader](https://github.com/etcd-io/etcd/issues/15247)	P1	to be investigated & discussed
[Integrate raft's new feature (async write) into etcd](https://github.com/etcd-io/etcd/issues/16291)	P1	It should improve the performance
[bbolt: Support customizing the bbolt rebalance threshold](https://github.com/etcd-io/bbolt/issues/422)	P2	It may get rid of etcd's defragmentation. Both bbolt and etcd need to be changed.
[Evaluate and (graduate or deprecate/remove) experimental features](https://github.com/etcd-io/etcd/issues/16292)	P2	Finish the remaining tasks 3.7.

Backlog (future releases)

Title	Priority	Note
[Remove the dependency on grpc-go's experimental API](https://github.com/etcd-io/etcd/issues/15145)		
[Protobuf: cleanup both golang/protobuf and gogo/protobuf](https://github.com/etcd-io/etcd/issues/14533)		
[Proposals should include a merkle root](https://github.com/etcd-io/etcd/issues/13839)		
[Add Distributed Tracing using OpenTelemetry](https://github.com/etcd-io/etcd/issues/12460)		
[Support CA rotation](https://github.com/etcd-io/etcd/issues/11555)		
[bbolt: Migrate all commands to cobra style commands](https://github.com/etcd-io/bbolt/issues/472)		

|
| [raft: enhance the configuration change validation](https://github.com/etcd-io/raft/issues/80) | | |
Release

The guide talks about how to release a new version of etcd.

The procedure includes some manual steps for sanity checking, but it can probably be further scripted. Please keep this document up-to-date if making changes to the release process.

Release management

The following pool of release candidates manages the release of each etcd major/minor version as well as manages patches

to each stable release branch. They are responsible for communicating the timelines and status of each release and for ensuring the stability of the release branch.

- Benjamin Wang [@ahrtr](https://github.com/ahrtr)
- James Blair [@jmhbzn](https://github.com/jmhbnz)
- Marek Siarkowicz [@serathius](https://github.com/serathius)
- Sahdev Zala [@spzala](https://github.com/spzala)
- Wenjia Zhang [@wenjiaswe](https://github.com/wenjiaswe)

All release version numbers follow the format of [semantic versioning 2.0.0](http://semver.org/).

Major, minor version release, or its pre-release

- Ensure the relevant [milestone](https://github.com/etcd-io/etcd/milestones) on GitHub is complete. All referenced issues should be closed or moved elsewhere.
- Ensure the latest [upgrade documentation](https://etcd.io/docs/next/upgrades) is available.
- Bump [hardcoded MinClusterVersion in the repository](https://github.com/etcd-io/etcd/blob/v3.4.15/version/version.go#L29), if necessary.
- Add feature capability maps for the new version, if necessary.

Patch version release

- To request a backport, developers submit cherry-pick PRs targeting the release branch. The commits should not include merge commits. The commits should be restricted to bug fixes and security patches.
- The cherry-pick PRs should target the appropriate release branch (`base:release-<major>-<minor>`). The k8s infra cherry pick robot `/cherrypick <branch>` PR chatops command may be used to automatically generate cherry-pick PRs.
- The release patch manager reviews the cherry-pick PRs. Please discuss carefully what is backported to the patch release. Each patch release should be strictly better than its predecessor.
- The release patch manager will cherry-pick these commits starting from the oldest one into stable branch.

Write a release note

- Write an introduction for the new release. For example, what major bug we fix, what new features we introduce, or

what performance improvement we make.

- Put `[GH XXXX]` at the head of the change line to reference the Pull Request that introduces the change.

Moreover, add a link on it to jump to the Pull Request.

- Find PRs with the `release-note` label and explain them in the `NEWS` file, as a straightforward summary of changes for end-users.

Patch release criteria

The etcd project aims to release a new patch version if any of the following conditions are met:

- Fixed one or more major CVEs (≥ 7.5).
- Fixed one or more critical bugs.
- Fixed three or more major bugs.
- Fixed five or more minor bugs.

Release guide

Prerequisites

There are some

prerequisites, which should be done before the release process. These are one-time operations, which don't need to be executed before releasing each version.

1. Generate a GPG key and add it to your GitHub account. Refer to the links on [settings](https://github.com/settings/keys).
2. Ensure you have a Linux machine, on which the git, Golang, and docker have been installed.
 - Ensure the Golang version matches the version defined in `.go-version` file.
 - Ensure non-privileged users can run docker commands, refer to the [Linux postinstall](https://docs.docker.com/engine/install/linux-postinstall/).
 - Ensure there is at least 5GB of free space on your Linux machine.
3. Install gsutil, refer to [gsutil_install](https://cloud.google.com/storage/docs/gsutil_install). When asked about cloud project to use, pick `etcd-development`.
4. Authenticate the image registry, refer to [Authentication methods](https://cloud.google.com/container-registry/docs/advanced-authentication).
 - `gcloud auth login`
 - `gcloud auth configure-docker`
5. Install gh, refer to [GitHub's documentation](https://github.com/cli/cli#installation). Ensure that running `gh auth login` succeeds for the GitHub account you use to contribute to etcd, and that `gh auth status` has a clean exit and doesn't show any issues.

Release steps

1. Raise an issue to publish the release plan, e.g. [issues/17350](https://github.com/etcd-io/etcd/issues/17350).
2. Raise a `kubernetes/org` pull request to temporarily elevate permissions for the GitHub release team.
3. Once permissions are elevated, temporarily relax [branch protections](https://github.com/etcd-io/etcd/settings/branches) to allow pushing changes directly to `release-\*` branches in GitHub.
4. Verify you can pass the authentication to the image registries,
 - `docker login gcr.io`

- `docker login quay.io`

- If the release person doesn't have access to 1password, one of the owners (@ahrtr, @ivanvc, @jmhbnz, @serathius) needs to share the password with them per [this guide](https://support.1password.com/share-items/). See rough steps below,

- [Sign in](https://team-etcd.1password.com/home) to your account on 1password.com.

- Click `Your Vault Items` on the right side.

- Select `Password of quay.io`.

- Click `Share` on the top right, and set expiration as `1 hour` and only available to the release person using his/her email.

- Click `Copy Link` then send the link to the release person via slack or email.

5. Clone the etcd repository and checkout the target branch,

- `git clone --branch release-3.X git@github.com:etcd-io/etcd.git`

6. Run the release script under the repository's root directory, replacing `\${VERSION}` with a value without the `v` prefix, i.e. `3.5.13`.

- `DRY\_RUN=false ./scripts/release.sh \${VERSION}`

- **NOTE:** When doing a pre-release (i.e., a version from the main branch, 3.6.0-alpha.2), you will need to explicitly set the branch to main:

```
...
```

```
DRY_RUN=false BRANCH=main ./scripts/release.sh ${VERSION}
```

```
...
```

It generates all release binaries under the directory `tmp/etcd-release-\${VERSION}/etcd/release/` and images.

Binaries are pushed to the Google Cloud bucket

under project `etcd-development`, and images are pushed to `quay.io` and `gcr.io`.

7. Publish the release page on GitHub

- Open the **draft** release URL shown by the release script

- Click the pen button at the top right to edit the release

- Review that it looks correct, reviewing that the bottom checkboxes are checked depending on the release version (v3.4 no checkboxes, v3.5 has the set as latest release checkbox checked, v3.6 has the set as pre-release checkbox checked)

- Then, publish the release

8. Announce to the etcd-dev googlegroup

Follow the format of previous release emails sent to etcd-dev@googlegroups.com, see an example below. After sending out the email, ask one of the mailing list maintainers to approve the email from the pending list. Additionally, label the release email as `Release`.

```
```text
```

Hello,

etcd v3.4.30 is now public!

<https://github.com/etcd-io/etcd/releases/tag/v3.4.30>

Thanks to everyone who contributed to the release!

etcd team

...

9. Update the changelog to reflect the correct release date.
10. Paste the release link to the issue raised in Step 1 and close the issue.
11. Restore standard branch protection settings and raise a follow-up `kubernetes/org` pull request to return to least privilege permissions.
12. Create a new stable branch through `git push origin release-\${VERSION\_MAJOR}.\${VERSION\_MINOR}` if this is a new major or minor stable release.
13. Re-generate a new password for quay.io if needed (e.g. shared to a contributor who isn't in the release team, and we should rotate the password at least once every 3 months).

#### #### Release known issues

1. Timeouts pushing binaries - If binaries fail to fully upload to Google Cloud storage, the script must be re-run using the same command. Any artifacts that are already pushed will be overwritten to ensure they are correct. The storage bucket does not use object versioning so incorrect files cannot remain.
2. Timeouts pushing images - It is rare, although possible for connection timeouts to occur when publishing etcd release images to `quay.io` or `gcr.io`. If this occurs, it is known to be safe to rerun the release script command appending the `--no-upload` flag, and image uploads will gracefully resume.
3. GPG vs SSH signing - The release scripts assume that git tags will be signed with a GPG key. Since 2022 GitHub has supported [signing commits and tags using ssh](https://github.blog/changelog/2022-08-23-ssh-commit-verification-now-supported). Until further release script updates are completed you will need to disable this feature in your `~/.gitconfig` and revert to signing via GPG to perform etcd releases.

#### # Golang modules

The etcd project (since version 3.5) is organized into multiple [golang modules](https://golang.org/ref/mod) hosted in a [single repository](https://golang.org/ref/mod#vcs-dir).

![modules graph](modules.svg)

There are the following modules:

- **go.etcd.io/etcd/api/v3** - contains API definitions (like protos & proto-generated libraries) that defines communication protocol between etcd clients and servers.
- **go.etcd.io/etcd/pkg/v3** - a collection of utility packages used by etcd without being specific to etcd itself. A package belongs here only if it could possibly be moved out into its own repository in the future. Please avoid adding here code that has a lot of dependencies on its own, as they automatically become dependencies of the client library (that we want to keep lightweight).
- **go.etcd.io/etcd/client/v3** - client library used to contact etcd over the network (grpc). Recommended for all new usage of etcd.

- **go.etcd.io/raft/v3** - implementation of distributed consensus protocol. Should have no etcd specific code. Hosted in a separate repository: <https://github.com/etcd-io/raft>.
- **go.etcd.io/etcd/server/v3** - etcd implementation. The code in this package is internal to etcd and should not be consumed by external projects. The package layout and API can change within the minor versions.
- **go.etcd.io/etcd/etcdctl/v3** - a command line tool to access and manage etcd.
- **go.etcd.io/etcd/tests/v3** - a module that contains all integration tests of etcd. Notice: All unit tests (fast and not requiring cross-module dependencies) should be kept in the local modules of the code under the test.
- **go.etcd.io/bbolt** - implementation of persistent b-tree. Hosted in a separate repository: <https://github.com/etcd-io/bbolt>.

### ### Operations

1. All etcd modules should be released in the same versions, e.g. `go.etcd.io/etcd/client/v3@v3.5.10` must depend on `go.etcd.io/etcd/api/v3@v3.5.10`.`

The consistent updating of versions can be performed using:

```
```shell script
% DRY_RUN=false TARGET_VERSION="v3.5.10" ./scripts/release_mod.sh update_versions
```
```

2. The released modules should be tagged according to <https://golang.org/ref/mod#vcs-version> rules, i.e. each module should get its own tag.

The tagging can be performed using:

```
```shell script
% DRY_RUN=false REMOTE_REPO="origin" ./scripts/release_mod.sh push_mod_tags
```
```

3. All etcd modules should depend on the same versions of underlying dependencies.

This can be verified using:

```
```shell script
% PASSES="dep" ./test.sh
```
```

4. The go.mod files must not contain dependencies not being used and must conform to `go mod tidy` format.`

This is being verified by:

```
```
% PASSES="mod_tidy" ./test.sh
```
```

5. To trigger actions across all modules (e.g. auto-format all files), please use/expand the following script:

```
```shell script
% ./scripts/fix.sh
```
```

###

Future

As a North Star, we would like to evaluate etcd modules towards the following model:

![modules graph](modules-future.svg)

This assumes:

- Splitting etcdmigrate/etcdadm out of etcdctl binary.  
Thanks to this etcdctl would become clearly a command-line wrapper around network client API, while etcdmigrate/etcdadm would support direct physical operations on the etcd storage files.
- Splitting etcd-proxy out of ./etcd binary, as it contains more experimental code so carries additional risk & dependencies.
- Deprecation of support for v2 protocol.

# Reporting bugs

If any part of the etcd project has bugs or documentation mistakes, please let us know by [opening an issue][etcd-issue]. We treat bugs and mistakes very seriously and believe no issue is too small. Before creating a bug report, please check that an issue reporting the same problem does not already exist.

To make the bug report accurate and easy to understand, please try to create bug reports that are:

- Specific. Include as many details as possible: which version, what environment, what configuration, etc. If the bug is related to running the etcd server, please attach the etcd log (the starting log with the etcd configuration is especially important).
- Reproducible. Include the steps to reproduce the problem. We understand some issues might be hard to reproduce, please include the steps that might lead to the problem. If possible, please attach the affected etcd data dir and stack trace to the bug report.
- Isolated. Please try to isolate and reproduce the bug with minimum dependencies. It would significantly slow down the speed to fix a bug if too many dependencies are involved in a bug report. Debugging external systems that rely on etcd is out of scope, but we are happy to provide guidance in the right direction or help with using etcd itself.
- Unique. Do not duplicate existing bug reports.
- Scoped. One bug per report. Do not follow up with another bug inside one report.

It may be worthwhile to read [Elika Etemads article on filing good bug reports][filing-good-bugs] before creating a bug report.

We might ask for further information to locate a bug. A duplicated bug report will be closed.

## Frequently asked questions

### How to get a stack trace

```
``` bash
$ kill -QUIT $PID
```
```

### How to get the etcd version

```
``` bash
$ etcd --version
```
```

### How to get etcd configuration and log when it runs as systemd service etcd2.service

```
``` bash
$ sudo systemctl cat etcd2
$ sudo journalctl -u etcd2
```
```

Due to an upstream systemd bug, journald may miss the last few log lines when its processes exit. If journalctl says etcd stopped without a fatal or panic message, try `sudo journalctl -f -t etcd2` to get the full log.

[etcd-issue]: <https://github.com/etcd-io/etcd/issues/new>  
[filing-good-bugs]: <http://fantasai.inkedblade.net/style/talks/filing-good-bugs/>  
# Community membership

This doc outlines the various responsibilities of contributor roles in etcd.

| Role       | Responsibilities                             | Requirements                                                  | Defined by                   |
|------------|----------------------------------------------|---------------------------------------------------------------|------------------------------|
| Member     | Active contributor in the community          | Sponsored by 2 reviewers and multiple contributions           | etcd GitHub org member       |
| Reviewer   | Review contributions from other members      | History of review and authorship                              | [OWNERS] file reviewer entry |
| Maintainer | Set direction and priorities for the project | Demonstrated responsibility and excellent technical judgement | [OWNERS] file approver entry |

## New contributors

New contributors should be welcomed to the community by existing members, helped with PR workflow, and directed to relevant documentation and communication channels.

## ## Established community members

Established community members are expected to demonstrate their adherence to the principles in this document, familiarity with project organization, roles, policies, procedures, conventions, etc., and technical and/or writing ability. Role-specific expectations, responsibilities, and requirements are enumerated below.

## ## Member

Members are continuously active contributors to the community. They can have issues and PRs assigned to them. Members are expected to remain active contributors to the community.

**\*\*Defined by:\*\*** Member of the etcd GitHub organization.

## ### Requirements

- Enabled [two-factor authentication] on their GitHub account
- Have made multiple contributions to the project or community. Contribution may include, but is not limited to:
  - Authoring or reviewing PRs on GitHub. At least one PR must be **\*\*merged\*\***.
  - Filing or commenting on issues on

### GitHub

- Contributing to community discussions (e.g. meetings, Slack, email discussion forums, Stack Overflow)
- Subscribed to [etcd-dev@googlegroups.com](https://groups.google.com/g/etcd-dev)
- Have read the [contributor guide]
- Sponsored by two active maintainers or reviewers.
  - Sponsors must be from multiple member companies to demonstrate integration across the community.
  - With no objections from other maintainers
- Open a [membership nomination] issue against the `kubernetes/org` repo
  - Ensure your sponsors are @mentioned on the issue
  - Make sure that the list of contributions included is representative of your work on the project.
- Members can be removed by a supermajority of the maintainers or can resign by notifying the maintainers.

## ### Responsibilities and privileges

- Responsive to issues and PRs assigned to them
- Granted "triage access" to etcd project
- Active owner of code they have contributed (unless ownership is explicitly transferred)



- Code is well-tested
- Tests consistently pass
- Addresses bugs or issues discovered after code is accepted

**\*\*Note:\*\*** Members who frequently contribute code are expected to proactively perform code reviews and work towards becoming a *\*reviewer\**.

## ## Reviewers

Reviewers are contributors who have demonstrated greater skill in reviewing the code from other contributors. They are knowledgeable about both the codebase and software engineering principles. Their LGTM counts towards merging a code change into the project. A reviewer is generally on the ladder towards maintainership.

**\*\*Defined by:\*\*** *\*reviewers\** entry in the [OWNERS] file.

### ### Requirements

- member for at least 3 months.
- Primary reviewer for at least 5 PRs to the codebase.
- Reviewed or contributed at least 20 substantial PRs to the codebase.
- Knowledgeable about the codebase.
- Sponsored by two active maintainers.
  - Sponsors must be from multiple member companies to demonstrate integration across the community.
  - With no objections from other maintainers
- Reviewers can be removed by a supermajority of the maintainers or can resign by notifying the maintainers.

### ### Responsibilities and privileges

- Code reviewer status may be a precondition to accepting large code contributions
- Responsible for project quality control via code reviews
  - Focus on code quality and correctness, including testing and factoring
  - May also review for more holistic issues, but not a requirement
- Expected to be responsive to review requests
- Assigned PRs to review related to area of expertise
- Assigned test bugs related to area of expertise
- Granted "triage access" to etcd project

## ## Maintainers

Maintainers are first and foremost contributors who have shown they are committed to the long-term success of a project. Maintainership is about building trust with the current maintainers and being a person that they can depend on to make decisions in the best interest of the project in a consistent

manner.

**\*\*Defined by:\*\*** \*approvers\* entry in the [OWNERS] file.

### ### Requirements

- Deep understanding of the technical goals and direction of the project
- Deep understanding of the technical domain of the project
- Sustained contributions to design and direction by doing all of:
  - Authoring and reviewing proposals
  - Initiating, contributing, and resolving discussions (emails, GitHub issues, meetings)
  - Identifying subtle or complex issues in the designs and implementation of PRs
- Directly contributed to the project through implementation and/or review
- Sponsored by two active maintainers and elected by supermajority
  - Sponsors must be from multiple member companies to demonstrate integration across the community.
- To become a maintainer send an email with your candidacy to [etcd-maintainers-private@googlegroups.com](mailto:etcd-maintainers-private@googlegroups.com)
  - Ensure your sponsors are @mentioned in the email
  - Include a list of contributions representative of your work on the project.

- Existing maintainers vote will privately and respond to the email with either acceptance or feedback for suggested improvement.

- With your membership approved you are expected to:
  - Open a PR and add an entry to the [OWNERS] file
  - Subscribe to [etcd-maintainers@googlegroups.com](mailto:etcd-maintainers@googlegroups.com) and [etcd-maintainers-private@googlegroups.com](mailto:etcd-maintainers-private@googlegroups.com)
  - Request to join [etcd-maintainer teams of etcd organization of GitHub](<https://github.com/orgs/etcd-io/teams/maintainers-etcd>)
  - Request to join the private slack channel for etcd maintainers on [kubernetes slack](<http://slack.kubernetes.io/>)
  - Request access to etcd-development GCP project where we publish releases
  - Request access to passwords shared between maintainers

### ### Responsibilities and privileges

- Make and approve technical design decisions
- Set technical direction and priorities
- Define milestones and releases
- Mentor and guide reviewers, and contributors to the project.
- Participate when called upon in the [security disclosure and release process]
- Ensure the continued health of the project
  - Adequate test coverage to confidently release
  - Tests are passing reliably (i.e. not flaky) and are fixed when they fail
- Ensure a healthy process for discussion and decision-making is in place.
- Work with other maintainers to maintain the project's overall health and success holistically

### ### Retiring

Life priorities, interests, and passions can change. Maintainers can retire and move to [emeritus maintainers]. If a maintainer needs to step down, they should

inform other maintainers and, if possible, help find someone to pick up the related work. At the very least, ensure the related work can be continued. Afterward, they can remove themselves from the list of existing maintainers.

If a maintainer has not been performing their duties for 12 months, they can be removed by other maintainers. In that case, the inactive maintainer will be first notified via an email. If the situation doesn't improve, they will be removed.

If an emeritus maintainer wants to regain an active role, they can do so by renewing their contributions. Active maintainers should welcome such a move. Retiring other maintainers or regaining the status should require the approval of at least two active maintainers.

## ## Acknowledgements

Contributor roles and responsibilities were written based on [Kubernetes community membership]

[OWNERS]: /OWNERS

[contributor guide]: /CONTRIBUTING.md

[membership nomination]: <https://github.com/kubernetes/org/issues/new?assignees=&labels=area%2Fgithub-membership&projects=&template=membership.yml&title=REQUEST%3A+New+membership+for+%3Cyour-GH-handle%3E>

[Kubernetes community membership]: <https://github.com/kubernetes/community/blob/master/community-membership.md>

[emeritus maintainers]: /README.md#etcd-emeritus-maintainers

[security disclosure and release process]: /security/README.md

[two-factor authentication]: <https://docs.github.com/en/authentication/securing-your-account-with-two-factor-authentication-2fa/about-two-factor-authentication>

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Version 2.0, January 2004

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# Logging Conventions

etcd uses the [zap][zap] library for logging application output categorized into \*levels\*. A log message's level is determined according to these conventions:

\* Debug: Everything is still fine, but even common operations may be logged, and less helpful but more quantity of notices. Usually not used in production.

\* Examples:

- \* Send a normal message to a remote peer
- \* Write a log entry to disk

\* Info: Normal, working log information, everything is fine, but helpful notices for auditing or common operations. Should rather not be logged more frequently than once per a few seconds in a normal server's operation.

\* Examples:

- \* Startup configuration
- \* Start to do a snapshot

\* Warning: (Hopefully) Temporary conditions that may cause errors, but may work fine. A replica disappearing (that may reconnect) is a warning.

\* Examples:

- \* Failure to send a raft message to a remote peer
- \* Failure to receive heartbeat message within the configured election timeout

\* Error: Data has been lost, a request has failed for a bad reason, or a required resource has been lost.

\* Examples:

- \* Failure to allocate disk space for WAL

\* Panic: Unrecoverable or unexpected error situation that requires stopping execution.

\* Examples:

- \* Failure to create the database

\* Fatal: Unrecoverable or unexpected error situation that requires immediate exit. Mostly used in the test.

\* Examples:

- \* Failure to find the data directory
- \* Failure to run a test function

[zap]: <https://github.com/uber-go/zap>

# Dependency management

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## ## Main branch

The dependabot is enabled & [configured](https://github.com/etcd-io/etcd/blob/main/.github/dependabot.yml) to manage dependencies for etcd `main` branch. But dependabot doesn't work well for multi-module repository like `etcd`,

see [dependabot-core/issues/6678](https://github.com/dependabot/dependabot-core/issues/6678).

Usually, human intervention is required

each time when dependabot automatically opens some PRs to bump dependencies.

Please see the guidance below.

## ### Dependencies used in workflows

The PRs that automatically bump dependencies (see examples below) used in workflows are fine and can be approved & merged directly as long as all checks are successful.

- [build(deps): bump github/codeql-action from 2.2.11 to 2.2.12](https://github.com/etcd-io/etcd/pull/15736)
- [build(deps): bump actions/checkout from 3.5.0 to 3.5.2](https://github.com/etcd-io/etcd/pull/15735)
- [build(deps): bump ossf/scorecard-action from 2.1.2 to 2.1.3](https://github.com/etcd-io/etcd/pull/15607)

## ### Bumping order

When multiple etcd modules depend on the same package, please bump the package version for all the modules in the correct order. The rule is simple:

if module A depends on module B, then bump the dependency for module B before module A. If the two modules do not depend on each other, then

it doesn't matter to bump which module first. For

example, multiple modules depend on `github.com/spf13/cobra`, so we need to bump the dependency in the following order,

- go.etcd.io/etcd/pkg/v3
- go.etcd.io/etcd/server/v3
- go.etcd.io/etcd/etcdctl/v3
- go.etcd.io/etcd/etcdutl/v3
- go.etcd.io/etcd/tests/v3
- go.etcd.io/etcd/v3
- go.etcd.io/etcd/tools/v3

For more details about etcd Golang modules, please check <<https://etcd.io/docs/next/dev-internal/modules>>

Note the module `go.etcd.io/etcd/tools/v3` doesn't depend on any other modules, nor by any other modules, so it doesn't matter when to bump dependencies for it.

## ### Steps to bump a dependency

Use the `github.com/spf13/cobra` as an example, follow the steps below to bump it from 1.6.1 to 1.7.0 for module

```
`go.etcd.io/etcd/etcdctl/v3`,
```

```
```bash
cd ${ETCD_ROOT_DIR}/etcdctl
go get github.com/spf13/cobra@v1.7.0
go mod tidy
cd ..
./scripts/fix.sh
```
```

Execute the same steps for all other modules. When you finish bumping the dependency for all modules, then commit the change,

```
```bash
git
add .
git commit --signoff -m "dependency: bump github.com/spf13/cobra from 1.6.1 to 1.7.0"
```
```

Please close the related PRs which were automatically opened by dependabot.

When you bump multiple dependencies in one PR, it's recommended to create a separate commit for each dependency. But it isn't a must; for example, you can get all dependencies bumping for the module ``go.etcd.io/etcd/tools/v3`` included in one commit.

#### #### Troubleshooting

In an event of bumping the version of `protoc`, `protoc` plugins or `grpc-gateway`, it might change `*.proto`` file which can result in the following error:

```
```bash
[0;31mFAIL: 'genproto' FAILED at Wed Jul 31 07:09:08 UTC 2024
make: *** [Makefile:134: verify-genproto] Error 255
```
```

To fix the above error, run the following script from the root of `etcd` repository:

```
```bash
./scripts/genproto.sh
```
```

#### ### Indirect dependencies

Usually, we don't bump a dependency if all modules just indirectly depend on it, such as ``github.com/go-logr/logr``.

If

an indirect dependency (e.g. ``D1``) causes any CVE or bugs that affect `etcd`, usually the module (e.g. ``M1``, not part of `etcd`, but used by `etcd`)

which depends on it should bump the dependency (`D1`), and then etcd just needs to bump `M1`. However, if the module (`M1`) somehow doesn't bump the problematic dependency, then etcd can still bump it (`D1`) directly following the same steps above. But as a long-term solution, etcd should try to remove the dependency on such module (`M1`) that lack maintenance.

For mixed cases, in which some modules directly while others indirectly depend on a dependency, we have multiple options,

- Bump the dependency for all modules, no matter it's direct or indirect dependency.
- Bump the dependency only for modules that directly depend on it.

We should try to follow the first way, and temporarily fall back to the second one if we run into any issue on the first way. Eventually we should fix the issue and ensure all modules depend on the same version of the dependency.

### Known incompatible dependency updates

#### arduino/setup-protoc

Please refer to [build(deps): bump arduino/setup-protoc from 1.3.0 to 2.0.0](https://github.com/etcd-io/etcd/pull/16016)

### Rotation worksheet

The dependabot scheduling interval is weekly; it means dependabot will automatically raise a bunch of PRs per week.

Usually, human intervention is required each time. We have a [rotation worksheet](https://docs.google.com/spreadsheets/d/1jodHIO7Dk2VWTs1IRnfMFaRktS9IH8XRyifOnPdSY8I/edit#gid=1394774387), and everyone is welcome to participate; you just need to register your name in the worksheet.

## Stable branches

Usually, we don't proactively bump dependencies for stable releases unless there are any CVEs or bugs that affect etcd.

If we have to do it, then follow the same guidance above. Note that there is no `./scripts/fix.sh` in release-3.4, so no need to execute it for 3.4.

## Golang versions

The etcd project aims to maintain a development branch that is on the latest [Go version](https://go.dev/dl), ideally, this will align with the Go version in use for Kubernetes project development. For an example of how to update etcd to a new minor release of Go refer to issue <https://github.com/etcd-io/etcd/issues/16393> and the linked pull requests.

Suggested steps for performing a minor version upgrade for the etcd development branch:

1. Carefully review new Go version release notes and potentially related blog posts for any deprecations, performance impacts, or other considerations.
2. Create a GitHub issue to signal intent to upgrade and invite discussion, for example, <<https://github.com/etcd-io/etcd/issues/16393>>.
3. Complete the upgrade locally in your development environment by editing `.go-version` and running `make fix`.
4. Run performance benchmarks locally to compare before and after.
5. Raise a pull request for the changes, for example, <<https://github.com/etcd-io/etcd/pull/16394>>.

Stable etcd release branches will be maintained

to stay on the latest patch release of a supported Go version. Upgrading minor versions will be completed before the minor version in use currently is no longer supported. Refer to the [Go release policy](<https://go.dev/doc/devel/release>).

For an example of how to update etcd to a new patch release of Go refer to issue <<https://github.com/etcd-io/etcd/issues/16343>> and the linked pull requests.

References:

- <<https://github.com/kubernetes/sig-release/blob/master/release-engineering/handbooks/go.md>>

## Core dependencies mappings

[bbolt](<https://github.com/etcd-io/bbolt>) and [raft](<https://github.com/etcd-io/raft>) are two core dependencies of etcd.

Both etcd 3.4.x and 3.5.x depend on bbolt 1.3.x, and etcd 3.6.x (`main` branch`) depends on bbolt 1.4.x.

raft is included in the etcd repository for release-3.4 and release-3.5 branches, so etcd 3.4.x and 3.5.x do not depend on any external raft module. We moved raft into [a separate repository](<https://github.com/etcd-io/raft>) starting from 3.6 (`main` branch`), and the first raft release will be v3.6.0, so etcd 3.6.x will depend on raft 3.6.x.

Please see the table below:

| etcd versions | bbolt versions | raft versions |
|---------------|----------------|---------------|
| 3.4.x         | v1.3.x         | N/A           |
| 3.5.x         | v1.3.x         | N/A           |
| 3.6.x         | v1.4.x         | v3.6.x        |

## 1.468 etcd-api 3.6.7

## 1.468.1 Available under license :

### # Features

This document provides an overview of etcd features and general development guidelines for adding and deprecating them. The project maintainers can override these guidelines per the need of the project following the project governance.

### ## Overview

The etcd features fall into three stages, experimental, stable, and unsafe.

#### ### Experimental

Any new feature is usually added as an experimental feature. An experimental feature is characterized as below:

- Might be buggy due to a lack of user testing. Enabling the feature may not work as expected.
- Disabled by default when added initially.
- Support for such a feature may be dropped at any time without notice
  - Feature-related issues may be given lower priorities.
  - It can be removed in the next minor or major release without following the feature deprecation policy unless it graduates to a stable future.

#### ### Stable

A stable feature is characterized as below:

- Supported as part of the supported releases of etcd.
- - May be enabled by default.
- Discontinuation of support must follow the feature deprecation policy.

#### ### Unsafe

Unsafe features are rare and listed under the `Unsafe feature:` section in the etcd usage documentation. By default, they are disabled. They should be used with caution following documentation. An unsafe feature can be removed in the next minor or major release without following the feature deprecation policy.

### ## Development Guidelines

#### ### Adding a new feature

Any new enhancements to the etcd are typically added as an experimental feature. The general development requirements are listed below. They can be somewhat flexible depending on the scope of the feature and review discussions and will evolve over time.

- Open an issue
  - It must provide a clear need for the proposed feature.
  - It should list development work items as checkboxes. There must be one work item towards future graduation to a stable future.
  - Label the issue with `type/feature` and `experimental`.

- Keep the issue open for tracking purposes until a decision is made on graduation.
- Open a Pull Request (PR)
  - Provide unit tests. Integration tests are also recommended as possible.
  - Provide robust e2e test coverage. If the feature being added is complicated or quickly needed, maintainers can decide to go with e2e tests for basic coverage initially and have robust coverage added at a later time before the feature graduation to the stable feature.
  - Provide logs for proper debugging.
  - Provide metrics and benchmarks as needed.
  - The Feature should be disabled by default.
  - Any configuration flags related to the implementation of the feature must be prefixed with `experimental` e.g. `--experimental-feature-name`.
  - Add a CHANGELOG entry.
- At least two maintainers must approve feature requirements and related code changes.

### ### Graduating an Experimental feature to Stable

It is important that experimental features don't get stuck in that stage.

They should be revisited and moved to the stable stage following the graduation steps as described here.

#### #### Locate graduation candidate

Decide if an experimental feature is ready for graduation to the stable stage.

- Find the issue that was used to enable the experimental feature initially. One way to find such issues is to search for issues with `type/feature` and `experimental` labels.
- Fix any known open issues against the feature.
- Make sure the feature was enabled for at least one previous release. Check the PR(s) reference from the issue to see when the feature-related code changes were merged.

#### #### Provide implementation

If an experimental feature is found ready for graduation to the stable stage, open a Pull Request (PR) with the following changes.

- Add robust e2e tests if not already provided.
- Add a new stable feature flag identical to the experimental feature flag but without the `--experimental` prefix.
- Deprecate the experimental feature following the [feature deprecation policy](#Deprecating-a-feature).
- Implementation must ensure that both the graduated and deprecated experimental feature flags work as expected. Note that both these flags will co-exist for the timeframe described in the feature deprecation policy.
- Enable the graduated feature by default if needed.

At least two maintainers must approve the work. Patch releases should not be considered for graduation.

### ### Deprecating a feature

#### #### Experimental

An experimental feature deprecates when it graduates to the stable stage.

- Add a deprecation message in the documentation of the experimental feature with a recommendation to use a related stable feature. e.g. `DEPRECATED. Use <feature-name> instead.`
- Add a `deprecated` label in the issue that was initially used to enable the experimental feature.

#### #### Stable

As the project evolves, a stable feature may sometimes need to be deprecated and removed. Such a situation should be handled using the steps below:

- Create an issue for tracking purposes.
- Add a deprecation message in the feature usage documentation before a planned release for feature deprecation. e.g. `To be deprecated in <release>`. If a new feature replaces the `To be deprecated` feature, then also provide a message saying so. e.g. `Use <feature-name> instead`.
- Deprecate the feature in the planned release with a message as part of the feature usage documentation. e.g. `DEPRECATED`. If a new feature replaces the deprecated feature, then also provide a message saying so. e.g. `DEPRECATED. Use <feature-name> instead`.
- Add a `deprecated` label in the related issue.

Remove the deprecated feature in the following release. Close any related issue(s). At least two maintainers must approve the work. Patch releases should not be considered for deprecation.

# Set up the local cluster

For testing and development deployments, the quickest and easiest way is to configure a local cluster. For a production deployment, refer to the [clustering][clustering] section.

#### ## Local standalone cluster

##### ### Starting a cluster

Run the following to deploy an etcd cluster as a standalone cluster:

```
...
$./etcd
...
...
```

If the `etcd` binary is not present in the current working directory, it might be located either at `\$GOPATH/bin/etcd` or at `/usr/local/bin/etcd`. Run the command appropriately.

The running etcd member listens on `localhost:2379` for client requests.

##### ### Interacting with the cluster

Use `etcdctl` to interact with the running cluster:

1. Store an example key-value pair in the cluster:

```
...
$./etcdctl put foo bar
OK
...
```

If OK is printed, storing the key-value pair is successful.

2. Retrieve the value of ``foo``:

```
...
$./etcdctl get foo
bar
...
```

If ``bar`` is returned, interaction with the etcd cluster is working as expected.

## Local multi-member cluster

### Starting a cluster

A ``Procfile`` at the base of the etcd git repository is provided to easily configure a local multi-member cluster. To start a multi-member cluster, navigate to the root of the etcd source tree and perform the following:

1. Install ``goreman`` to control Procfile-based applications:

```
...
$ go install github.com/mattn/goreman@latest
...
```

The installation will place executables in the `$GOPATH/bin`. If `$GOPATH` environment variable is not set, the tool will be installed into the `$HOME/go/bin`. Make sure that `$PATH` is set accordingly in your environment.

2. Start a cluster with ``goreman`` using etcd's stock Procfile:

```
...
$ goreman -f Procfile start
...
```

The members start running. They listen on ``localhost:2379``, ``localhost:22379``, and ``localhost:32379`` respectively for client requests.

### Interacting with the cluster

Use ``etcdctl`` to interact with the running cluster:

1. Print  
the list of members:

```
...
$ etcdctl --write-out=table --endpoints=localhost:2379 member list
...
```

The list of etcd members is displayed as follows:

```
...
```



```
+-----+-----+-----+-----+
| ID | STATUS | NAME | PEER ADDRS | CLIENT ADDRS |
+-----+-----+-----+-----+
8211f1d0f64f3269	started	infra1	http://127.0.0.1:2380	http://127.0.0.1:2379
91bc3c398fb3c146	started	infra2	http://127.0.0.1:22380	http://127.0.0.1:22379
fd422379fda50e48	started	infra3	http://127.0.0.1:32380	http://127.0.0.1:32379
+-----+-----+-----+-----+
...

```

2. Store an example key-value pair in the cluster:

```
...
$ etcdctl put foo bar
OK
...
```

If OK is printed, storing the key-value pair is successful.

```
###
Testing fault tolerance
```

To exercise etcd's fault tolerance, kill a member and attempt to retrieve the key.

1. Identify the process name of the member to be stopped.

The ``Procfile`` lists the properties of the multi-member cluster. For example, consider the member with the process name, ``etcd2``.

2. Stop the member:

```
...
kill etcd2
$ goreman run stop etcd2
...
```

3. Store a key:

```
...
$ etcdctl put key hello
OK
...
```

4. Retrieve the key that is stored in the previous step:

```
...
$ etcdctl get key
hello
...
```

5. Retrieve a key from the stopped member:

```
...
$ etcdctl --endpoints=localhost:22379 get key
...
```

The command should display an error caused by connection failure:

```
...
2017/06/18 23:07:35 grpc: Conn.resetTransport failed to create client transport: connection error: desc =
"transport: dial tcp 127.0.0.1:22379: getsockopt: connection refused"; Reconnecting to "localhost:22379"
Error: grpc:
timed out trying to connect
...
```

6. Restart the stopped member:

```
...
$ goreman run restart etcd2
...
```

7. Get the key from the restarted member:

```
...
$ etcdctl --endpoints=localhost:22379 get key
hello
...
```

Restarting the member re-establishes the connection. `etcdctl` will now be able to retrieve the key successfully. To learn more about interacting with etcd, read [interacting with etcd section][interacting].

[clustering]: <https://etcd.io/docs/latest/op-guide/clustering/>  
[interacting]: [https://etcd.io/docs/latest/dev-guide/interacting\\_v3/](https://etcd.io/docs/latest/dev-guide/interacting_v3/)  
# Branch management

## ## Guide

- \* New development occurs on the [main branch][main].
- \* The main branch should always have a green build!
- \* Backwards-compatible bug fixes should target the main branch and subsequently be ported to stable branches.
- \* Once the main branch is ready for release, it will be tagged and become the new stable branch.

The etcd team has adopted a \*rolling release model\* and supports two stable versions of etcd.

## ### Main branch

The `main` branch is our development branch. All new features land here first.

To try new and experimental features, pull `main` and play with it. Note that `main` may not be stable because new features may introduce bugs.

Before the release of the next stable version, feature PRs will be frozen. A [release manager](./release.md#release-management) will be assigned to the major/minor version and will lead the etcd community in testing, bug-fix, and documentation of the release for one to two weeks.

### ### Stable branches

All branches with the prefix `release-` are considered `_stable_` branches.

After every minor release ([semver.org](https://semver.org/)), we will have a new stable branch for that release, managed by a [patch release manager](./release.md#release-management). We will keep fixing the backward-compatible bugs for the latest two stable releases. A `_patch_` release to each supported release branch, incorporating any bug fixes, will be once every two weeks, given any patches.

[main]: <https://github.com/etcd-io/etcd/tree/main>

# Issue triage guidelines

### ## Purpose

Speed up issue management.

The `etcd` issues are listed at <https://github.com/etcd-io/etcd/issues> and are identified with labels. For example, an issue that is identified as a bug will be set to the label `type/bug`.

The etcd project uses labels to indicate common attributes such as `area`, `type`, and `priority` of incoming issues.

New issues will often start without any labels, but typically `etcd` maintainers, reviewers, and members will add labels by following these triage guidelines. The detailed list of labels can be found at <https://github.com/etcd-io/etcd/labels>.

### ## Scope

This document serves as the primary guidelines for triaging incoming issues in `etcd`.

All contributors are encouraged and welcome to help manage issues which will help reduce the burden on project maintainers, though the work and responsibilities discussed in this document are created with `etcd` project reviewers and members in mind as these individuals will have triage access to the etcd project which is a requirement for actions like applying labels or closing issues.

Refer to [etcd community membership](https://github.com/etcd-io/etcd/blob/main/Documentation/contributor-guide/community-membership.md) for guidance on becoming an etcd project member or reviewer.

### ## Step 1 - Find an issue to triage

To get started you can use the following recommended issue searches to identify issues that are in need of triage:

- \* [Issues that have no labels](https://github.com/etcd-io/etcd/issues?q=is%3Aissue+is%3Aopen+sort%3Aupdated+no%3Alabel)
- \* [Issues created recently](https://github.com/etcd-io/etcd/issues?q=is%3Aissue+is%3Aopen+)
- \* [Issues not assigned but linked pr](https://github.com/etcd-io/etcd/issues?q=is%3Aopen+is%3Aissue+no%3Aassignee+linked%3Apr)
- \* [Issues with no comments](https://github.com/etcd-io/etcd/issues?q=is%3Aopen+is%3Aissue+comments%3A0+)
- \* [Issues with help wanted](https://github.com/etcd-io/etcd/issues?q=is%3Aopen+is%3Aissue+label%3A%22help+wanted%22+)

##

Step 2 - Check the issue is valid

Before we start adding labels or trying to work out a priority, our first triage step needs to be working out if the issue actually belongs to the etcd project and is not a duplicate.

### Issues that don't belong to etcd

Sometimes issues are reported that belong to other projects that `etcd` use. For example, `grpc` or `golang` issues. Such issues should be addressed by asking the reporter to open issues in the appropriate other projects.

These issues can generally be closed unless a maintainer and issue reporter see a need to keep it open for tracking purposes. If you have triage permissions please close it, alternatively mention the @etcd-io/members group to request a member with triage access to close the issue.

### Duplicate issues

If an issue is a duplicate, add a comment stating so along with a reference for the original issue and if you have triage permissions please close it, alternatively mention the @etcd-io/members group to request a member with triage access close the issue.

## Step 3 - Apply the appropriate type of label

Adding a `type` label to an issue helps create visibility on the health of the project and helps contributors identify potential priorities, i.e. addressing existing bugs or test flakes before implementing new features.

### Support requests

As a general rule, the focus for etcd support is to address common themes in a broad way that helps all users, i.e. through channels like known issues, frequently asked questions, and high-quality documentation. To make the best use of project members time we should avoid providing 1:1 support if a broad approach is available.

Some people mistakenly use our GitHub bug report or feature request templates to file support requests. Usually, they are asking for help operating or configuring some aspect of etcd. Support requests for etcd should instead be raised as [discussions](https://github.com/etcd-io/etcd/discussions).

Common

types of support requests are:

1. Questions about configuring or operating existing well-documented etcd features, for example, <<https://github.com/etcd-io/etcd/issues/15945>>. Note - If an existing feature is not well documented please apply the `area/documentation` label and propose documentation improvements that would prevent future users from stumbling on the problem again.
2. Bug reports or questions about unsupported versions of etcd, for example <<https://github.com/etcd-io/etcd/issues/15796>>. When responding to these issues please refer to our [supported versions documentation](<https://etcd.io/docs/latest/op-guide/versioning>) and encourage the reporter to upgrade to a recent patch release of a supported version as soon as possible. We should limit the effort supporting users that do not make the effort to run a supported version of etcd or ensure their version is patched.
3. Bug reports that do not provide a complete list of steps to reproduce the issue and/or contributors are not able to reproduce the issue, for example, <<https://github.com/etcd-io/etcd/issues/15740>>. We should limit the effort we put into reproducing issues ourselves and motivate users to provide the necessary information to accept the bug report.
4. General questions that are filed using feature request or bug report issue templates, for example, <<https://github.com/etcd-io/etcd/issues/15914>>. Note - These types of requests may surface good additions to our [frequently asked questions](<https://etcd.io/docs/v3.5/faq>).

If you identify that an issue is a support request please:

1. Add the `type/support` or `type/question` label.
2. Add the following comment to inform the issue creator that discussions should be used instead and that this issue will be converted to a discussion.

> Thank you for your question, this support issue will be moved to our [Discussion Forums](<https://github.com/etcd-io/etcd/discussions>).

>

> We are trying to consolidate the channels to which questions for help/support are posted so that we can improve our efficiency in responding to your requests, and make it easier for you to find answers to frequently asked questions and how to address common use cases.

>

> We regularly see messages posted in multiple forums, with the full response thread only in one place or, worse, spread across multiple forums. Also, the large volume of support issues on GitHub is making it difficult for us to use issues to identify real bugs.

>

> Members of the etcd community use Discussion Forums to field support requests. Before posting a new question, please search these for answers to similar questions, and also familiarize yourself with:

>

> 1. [user documentation](<https://etcd.io/docs/latest>)

> 2. [frequently asked questions](<https://etcd.io/docs/v3.5/faq>)

>

> Again, thanks for using etcd and raising this question.

>

> The etcd team

3. Finally, click `Convert to discussion` on the right-hand panel, selecting the appropriate discussion category.

### ### Bug reports

If an issue has been raised as a bug it should already have the `type/bug` label, however, if this is missing for an issue you determine to be a bug please add the label manually.

The next step is to validate if the issue is indeed a bug. If not, add a comment with the findings and close the trivial issue. For non-trivial issues, wait to hear back from the issue reporter and see if there is any objection. If the issue reporter does not reply in 30 days, close the issue.

If the problem can not be reproduced or requires more information, leave a comment for the issue reporter as soon as possible while the issue is fresh for the issue reporter.

### ### Feature requests

New feature requests should be created via the etcd feature request template and in theory already have the `type/feature` label, however, if this is missing for an issue you determine to be a feature please add the label manually.

### ### Test flakes

#### Test flakes

are a specific type of bug that the etcd project tracks separately as these are a priority to address. These should be created via the test flake template and in theory already have the `type/flake` label, however, if this is missing for an issue you determine to be related to a flaking test please add the label manually.

## ## Step 4 - Define the areas impacted

Adding an `area` label to an issue helps create visibility on which areas of the etcd project require attention and helps contributors find issues to work on relating to their particular skills or knowledge of the etcd codebase.

If an issue crosses multiple domains please add additional `area` labels to reflect that.

Below is a brief summary of the area labels in active use by the etcd project along with any notes on their use:

| Label            | Notes                                                       |
|------------------|-------------------------------------------------------------|
| ---              | ---                                                         |
| area/external    | Tracking label for issues raised that are external to etcd. |
| area/community   |                                                             |
| area/raft        |                                                             |
| area/clientv3    |                                                             |
| area/performance |                                                             |
| area/security    |                                                             |

|                         |                                                                                                                                                                                                               |  |
|-------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|
| area/tls                |                                                                                                                                                                                                               |  |
| area/auth               |                                                                                                                                                                                                               |  |
| area/etcdctl            |                                                                                                                                                                                                               |  |
| area/etcdutl            |                                                                                                                                                                                                               |  |
| area/contrib            | Not to be confused with `area/community` this label is specifically used for issues relating to community-maintained scripts or files in the `contrib/` directory which aren't part of the core etcd project. |  |
| area/documentation      |                                                                                                                                                                                                               |  |
| area/tooling            | Generally used in relation to the third party / external utilities or tools that are used in various stages of the etcd build, test, or release process, for example, tooling to create sboms.                |  |
| area/testing            |                                                                                                                                                                                                               |  |
| area/robustness-testing |                                                                                                                                                                                                               |  |

## ## Step 5 - Prioritise the issue

If an issue lacks a priority label it has not been formally prioritized yet.

Adding a `priority` label helps the etcd project understand what is important and should be worked on now, and conversely, what is not as important and is on the project backlog.

| Priority label                    | What it means                                                                                                                                                                                                                                                                                                                                       | Examples |
|-----------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|
| ---                               | ---                                                                                                                                                                                                                                                                                                                                                 | ---      |
| `priority/critical-urgent`        | Maintainers are responsible for making sure that these issues (in their area) are being actively worked on i.e., drop what you're doing. The stuff is burning. These should be fixed before the next release.   user-visible critical bugs in core features <br> broken builds on tier1 supported platforms <br> tests and critical security issues |          |
| `priority/important-soon`         | Must be staffed and worked on either currently or very soon ideally in time for the next release.                                                                                                                                                                                                                                                   |          |
| `priority/important-longterm`     | Important over the long term, but may not be currently staffed and/or may require multiple releases to complete.                                                                                                                                                                                                                                    |          |
| `priority/backlog`                | General agreement that this is a nice-to-have, but no one's available to work on it anytime soon. Community contributions would be most welcome in the meantime, though it might take a while to get them reviewed if reviewers are fully occupied with higher-priority issues for example, immediately before a release.                           |          |
| `priority/awaiting-more-evidence` | Possibly useful, but not yet enough support to actually get it done.   Mostly placeholders for potentially good ideas, so that they don't get completely forgotten, and can be referenced or deduped every time they come up                                                                                                                        |          |

## ## Step 6 - Support new contributors

As part of the `etcd` triage process once the `kind` and `area` have been determined, please consider if the issue would be suitable for a less experienced contributor. The `good first issue` label is a subset of the `help wanted` label, indicating that members have committed to providing extra assistance for new contributors. All `good first issue` items also have the `help wanted` label.

### ### Help wanted

Items marked with the `help wanted` label need to ensure that they meet these criteria:

\* **Low Barrier to Entry** - It should be easy for new contributors.

\* **Clear** - The task is agreed upon and does not require further discussions in the community.

\* **Goldilocks priority** - The priority

should not be so high that a core contributor should do it, but not too low that it isn't useful enough for a core contributor to spend time reviewing it, answering questions, helping get it into a release, etc.

### Good first issue

Items marked with `good first issue` are intended for first-time contributors. It indicates that members will keep an eye out for these pull requests and shepherd it through our processes.

New contributors should not be left to find an approver, ping for reviews, decipher test commands, or identify that their build failed due to a flake. It is important to make new contributors feel welcome and valued. We should assure them that they will have an extra level of help with their first contribution.

After a contributor has successfully completed one or two `good first issue` items, they should be ready to move on to `help wanted` items.

\* **No Barrier to Entry** - The task is something that a new contributor can tackle without advanced setup or domain knowledge.

\*

\* **Solution Explained** - The recommended solution is clearly described in the issue.

\* **Gives Examples** - Link to examples of similar implementations so new contributors have a reference guide for their changes.

\* **Identifies Relevant Code** - The relevant code and tests to be changed should be linked in the issue.

\* **Ready to Test** - There should be existing tests that can be modified, or existing test cases fit to be copied. If the area of code doesn't have tests, before labeling the issue, add a test fixture. This prep often makes a great help wanted task!

### Step 7 - Follow up

Once initial triage has been completed, issues need to be re-evaluated over time to ensure they don't become stale incorrectly.

### Track important issues

If an issue is at risk of being closed by the stale bot in the future, but is an important issue for the etcd project, then please apply the `stage/tracked` label and remove any `stale` labels that exist. This will ensure the project does not lose sight of the issue.

### Close incomplete issues



Issues that lack enough information from the issue reporter should be closed if the issue reporter does not provide information in 30 days. Issues can always be re-opened at a later date if new information is provided.

### ### Check for incomplete work

If an issue owned by a developer has no pull request created in 30 days, contact the issue owner and kindly ask about the status of their work, or to release ownership on the issue if needed.

### # PR management

#### ## Purpose

Speed up PR management.

The `etcd` PRs are listed at <https://github.com/etcd-io/etcd/pulls>

A PR can have various labels, milestones, reviewers, etc. The detailed list of labels can be found at <https://github.com/kubernetes/kubernetes/labels>

Following are a few example searches on PR for convenience:

\* [Open PRS for milestone etcd-v3.6](<https://github.com/etcd-io/etcd/pulls?utf8=%E2%9C%93&q=is%3Apr+is%3Aopen+milestone%3Aetcd-v3.6>)

\* [PRs under investigation](<https://github.com/etcd-io/etcd/labels/Investigating>)

#### ## Scope

These guidelines serve as a primary document for managing PRs in `etcd`. Everyone is welcome to help manage PRs but the work and responsibilities discussed in this document are created with `etcd` maintainers and active contributors in mind.

#### ## Ensure tests are run

The etcd project use Kubernetes Prow and GitHub Actions to run tests. To ensure all required tests run if a pull request is ready for testing and still has the `needs-ok-to-test` label then please comment on the pull request `/ok-to-test`.

#### ## Handle inactive PRs

Poke PR owner if review comments are not addressed in 15 days. If the PR owner does not reply in 90 days, update the PR with a new commit if possible. If not, inactive PR should be closed after 180 days.

#### ## Poke reviewer if needed

Reviewers are responsive in a timely fashion, but considering everyone is busy, give them some time after requesting a review if a quick response is not provided. If the response is not provided in 10 days, feel free to contact them via adding a comment in the PR or sending an email or message on Slack.

#### ## Verify important labels are in place

Make sure that appropriate reviewers are added to the PR. Also, make sure that a milestone is identified. If any of these or other important labels are missing, add them. If a correct label cannot be decided, leave a comment for the

maintainers to do so as needed.

## # Roadmap

etcd uses GitHub milestones to track all tasks in each major or minor release. The `roadmap.md` file only records the most important tasks for each release. The list is based on the current maintainer capacity that may shift over time. Proposed milestones are what we think we can deliver with the people we have. If we have more support on the important stuff, we could pick up more items from the backlog. Note that etcd will continue to mainly focus on technical debt over the next few major or minor releases.

Each item has an assigned priority. Refer to [priority definitions](https://github.com/etcd-io/etcd/blob/main/Documentation/contributor-guide/triage\_issues.md#step-5---prioritise-the-issue).

## ## v3.6.0

For a full list of tasks in `v3.6.0`, please see [milestone etcd-v3.6](https://github.com/etcd-io/etcd/milestone/38).

| Title                                                                                | Priority                    | Status      | Note                                                                                                         |
|--------------------------------------------------------------------------------------|-----------------------------|-------------|--------------------------------------------------------------------------------------------------------------|
| [Support downgrade](https://github.com/etcd-io/etcd/issues/11716)                    | priority/important-soon     | In progress | etcd will support downgrade starting from 3.6.0. But it will also support offline downgrade from 3.5 to 3.4. |
| [StoreV2 deprecation](https://github.com/etcd-io/etcd/issues/12913)                  | priority/important-soon     | In progress | This task will be covered in both 3.6 and 3.7.                                                               |
| [Release raft 3.6.0](https://github.com/etcd-io/raft/issues/89)                      | priority/important-soon     | Not started | etcd 3.6.0 will depends on raft 3.6.0                                                                        |
| [Release bbolt 1.4.0](https://github.com/etcd-io/bbolt/issues/553)                   | priority/important-soon     | Not started | etcd 3.6.0 will depends on bbolt 1.4.0                                                                       |
| [Support /livez and /readyz endpoints](https://github.com/etcd-io/etcd/issues/16007) | priority/important-longterm | In progress | It provides clearer APIs, and can also work around the stalled writes issue                                  |
| [Bump gRPC](https://github.com/etcd-io/etcd/issues/16290)                            | priority/important-longterm | Completed   | It isn't guaranteed to be resolved in 3.6, and might be postponed to 3.7 depending on the effort and risk.   |
| [Deprecate grpc-gateway or bump it](https://github.com/etcd-io/etcd/issues/14499)    | priority/important-longterm | Completed   | It isn't guaranteed to be resolved in 3.6, and might be postponed to 3.7 depending on the effort and risk.   |
| [bbolt: Add logger into bbolt](https://github.com/etcd-io/bbolt/issues/509)          | priority/important-longterm | Completed   | It's important to diagnose bbolt issues                                                                      |
| [bbolt: Add surgery commands](https://github.com/etcd-io/bbolt/issues/370)           |                             |             |                                                                                                              |

priority/important-longterm | Completed | Surgery commands are important for fixing corrupted db files  
 |  
 | [Evaluate and (Graduate or deprecate/remove) experimental features](https://github.com/etcd-io/etcd/issues/16292) | priority/backlog | Not started | This task will be covered in both 3.6 and 3.7.  
 |

## ## v3.7.0

For a full list of tasks in `v3.7.0`, please see [milestone etcd-v3.7](https://github.com/etcd-io/etcd/milestone/39).

| Title                                                                                                             | Priority | Note                                                                              |
|-------------------------------------------------------------------------------------------------------------------|----------|-----------------------------------------------------------------------------------|
| ----- ----- -----                                                                                                 |          |                                                                                   |
| [StoreV2 deprecation](https://github.com/etcd-io/etcd/issues/12913)                                               | P0       | Finish the remaining tasks 3.7.                                                   |
| [Refactor lease: Lease might be revoked by mistake by old leader](https://github.com/etcd-io/etcd/issues/15247)   | P1       | to be investigated & discussed                                                    |
| [Integrate raft's new feature (async write) into etcd](https://github.com/etcd-io/etcd/issues/16291)              | P1       | It should improve the performance                                                 |
| [bbolt: Support customizing the bbolt rebalance threshold](https://github.com/etcd-io/bbolt/issues/422)           | P2       | It may get rid of etcd's defragmentation. Both bbolt and etcd need to be changed. |
| [Evaluate and (graduate or deprecate/remove) experimental features](https://github.com/etcd-io/etcd/issues/16292) | P2       | Finish the remaining tasks 3.7.                                                   |

## ## Backlog (future releases)

| Title                                                                                                    | Priority | Note |
|----------------------------------------------------------------------------------------------------------|----------|------|
| ----- ----- -----                                                                                        |          |      |
| [Remove the dependency on grpc-go's experimental API](https://github.com/etcd-io/etcd/issues/15145)      |          |      |
| [Protobuf: cleanup both golang/protobuf and gogo/protobuf](https://github.com/etcd-io/etcd/issues/14533) |          |      |
| [Proposals should include a merkle root](https://github.com/etcd-io/etcd/issues/13839)                   |          |      |
| [Add Distributed Tracing using OpenTelemetry](https://github.com/etcd-io/etcd/issues/12460)              |          |      |
| [Support CA rotation](https://github.com/etcd-io/etcd/issues/11555)                                      |          |      |
| [bbolt: Migrate all commands to cobra style commands](https://github.com/etcd-io/bbolt/issues/472)       |          |      |
| [raft: enhance the configuration change validation](https://github.com/etcd-io/raft/issues/80)           |          |      |

## # Release

The guide talks about how to release a new version of etcd.

The procedure includes some manual steps for sanity checking, but it can probably be further scripted. Please keep this document up-to-date if making changes to the release process.

## ## Release management

The following pool of release candidates manages the release of each etcd major/minor version as well as manages patches to each stable release branch. They are responsible for communicating the timelines and status of each release and for ensuring the stability of the release branch.

- Benjamin Wang [[@ahrtr](https://github.com/ahrtr)](<https://github.com/ahrtr>)
- James Blair [[@jmhbnz](https://github.com/jmhbnz)](<https://github.com/jmhbnz>)
- Marek Siarkowicz [[@serathius](https://github.com/serathius)](<https://github.com/serathius>)
- Sahdev Zala [[@spzala](https://github.com/spzala)](<https://github.com/spzala>)
- Wenjia Zhang [[@wenjiaswe](https://github.com/wenjiaswe)](<https://github.com/wenjiaswe>)

All release version numbers follow the format of [semantic versioning 2.0.0](<http://semver.org/>).

### ### Major, minor version release, or its pre-release

- Ensure the relevant [milestone](<https://github.com/etcd-io/etcd/milestones>) on GitHub is complete. All referenced issues should be closed or moved elsewhere.
- Ensure the latest [upgrade documentation](<https://etcd.io/docs/next/upgrades>) is available.
- Bump [hardcoded MinClusterVersion in the repository](<https://github.com/etcd-io/etcd/blob/v3.4.15/version/version.go#L29>), if necessary.
- Add feature capability maps for the new version, if necessary.

### ### Patch version release

- To request a backport, developers submit cherry-pick PRs targeting the release branch. The commits should not include merge commits. The commits should be restricted to bug fixes and security patches.
- The cherry-pick PRs should target the appropriate release branch (`base:release-<major>-<minor>`). The k8s infra cherry pick robot ``cherry-pick <branch>`` PR chatops command may be used to automatically generate cherry-pick PRs.
- The release patch manager reviews the cherry-pick PRs. Please discuss carefully what is backported to the patch release. Each patch release should be strictly better than its predecessor.
- The release patch manager will cherry-pick these commits starting from the oldest one into stable branch.

### ## Write a release note

- Write an introduction for the new release. For example, what major bug we fix, what new features we introduce, or what performance improvement we make.
- Put ``[GH XXXX]`` at the head of the change line to reference the Pull Request that introduces the change. Moreover, add a link on it to jump to the Pull Request.
- Find PRs with the ``release-note`` label and explain them in the ``NEWS`` file, as a straightforward summary of changes for end-users.

### ## Patch release criteria

The etcd project aims to release a new patch version if any of the following conditions are met:

- Fixed one or more major CVEs ( $\geq 7.5$ ).
- Fixed one or more critical bugs.
- Fixed three or more major bugs.
- Fixed five or more minor bugs.

## ## Release guide

### ### Prerequisites

There are some

prerequisites, which should be done before the release process. These are one-time operations, which don't need to be executed before releasing each version.

1. Generate a GPG key and add it to your GitHub account. Refer to the links on [settings](https://github.com/settings/keys).
2. Ensure you have a Linux machine, on which the git, Golang, and docker have been installed.
  - Ensure the Golang version matches the version defined in `.go-version`` file.
  - Ensure non-privileged users can run docker commands, refer to the [Linux postinstall](https://docs.docker.com/engine/install/linux-postinstall/).
  - Ensure there is at least 5GB of free space on your Linux machine.
3. Install gsutil, refer to [gsutil\_install](https://cloud.google.com/storage/docs/gsutil\_install). When asked about cloud project to use, pick `etcd-development``.
4. Authenticate the image registry, refer to [Authentication methods](https://cloud.google.com/container-registry/docs/advanced-authentication).
  - `gcloud auth login``
  - `gcloud auth configure-docker``
5. Install gh, refer to [GitHub's documentation](https://github.com/cli/cli#installation). Ensure that running `gh auth login`` succeeds for the GitHub account you use to contribute to etcd, and that `gh auth status`` has a clean exit and doesn't show any issues.

### ### Release steps

1. Raise an issue to publish the release plan, e.g. [issues/17350](https://github.com/etcd-io/etcd/issues/17350).
2. Raise a `kubernetes/org`` pull request to temporarily elevate permissions for the GitHub release team.
3. Once permissions are elevated, temporarily relax [branch protections](https://github.com/etcd-io/etcd/settings/branches) to allow pushing changes directly to `release-*`` branches in GitHub.
4. Verify you can pass the authentication to the image registries,
  - `docker login gcr.io``
  - `docker login quay.io``
  - If the release person doesn't have access to 1password, one of the owners (@ahrtr, @ivanvc, @jmhbnz, @serathius) needs to share the password with them per [this guide](https://support.1password.com/share-items/). See rough steps below,
    - [Sign in](https://team-etcd.1password.com/home) to your account on 1password.com.
    - Click `Your Vault Items`` on the right side.
    - Select `Password of quay.io``.
    - Click `Share`` on the top right, and set expiration as `1 hour`` and only available to the release person using his/her email.

- Click `Copy Link` then send the link to the release person via slack or email.
5. Clone the etcd repository and checkout the target branch,
    - `git clone --branch release-3.X git@github.com:etcd-io/etcd.git`
  6. Run the release script under the repository's root directory, replacing `\${VERSION}` with a value without the `v` prefix, i.e. `3.5.13`.
    - `DRY_RUN=false ./scripts/release.sh ${VERSION}`
    - **NOTE:** When doing a pre-release (i.e., a version from the main branch, 3.6.0-alpha.2), you will need to explicitly set the branch to main:

```

...
DRY_RUN=false BRANCH=main ./scripts/release.sh ${VERSION}
...

```

It generates all release binaries under the directory `/tmp/etcd-release-${VERSION}/etcd/release/` and images. Binaries are pushed to the Google Cloud bucket under project etcd-development, and images are pushed to quay.io and gcr.io.`

7. Publish the release page on GitHub
  - Open the **draft** release URL shown by the release script
  - Click the pen button at the top right to edit the release
  - Review that it looks correct, reviewing that the bottom checkboxes are checked depending on the release version (v3.4 no checkboxes, v3.5 has the set as latest release checkbox checked, v3.6 has the set as pre-release checkbox checked)
  - Then, publish the release
8. Announce to the etcd-dev googlegroup

Follow the format of previous release emails sent to `etcd-dev@googlegroups.com`, see an example below. After sending out the email, ask one of the mailing list maintainers to approve the email from the pending list. Additionally, label the release email as `Release`.

```

```text
Hello,

```

etcd v3.4.30 is now public!

<https://github.com/etcd-io/etcd/releases/tag/v3.4.30>

Thanks to everyone who contributed to the release!

```

etcd team
...

```

9. Update the changelog to reflect the correct release date.
10. Paste the release link to the issue raised in Step 1 and close the issue.
11. Restore standard branch protection settings and raise a follow-up `kubernetes/org` pull request to return to least privilege permissions.
12. Create a new stable branch through `git push origin release-${VERSION_MAJOR}.${VERSION_MINOR}` if this is a new major or minor stable release.
13. Re-generate a new password for quay.io if needed (e.g. shared to a contributor who isn't in the release team, and

we should rotate the password at least once every 3 months).

Release known issues

1. Timeouts pushing binaries - If binaries fail to fully upload to Google Cloud storage, the script must be re-run using the same command. Any artifacts that are already pushed will be overwritten to ensure they are correct. The storage bucket does not use object versioning so incorrect files cannot remain.
2. Timeouts pushing images - It is rare, although possible for connection timeouts to occur when publishing etcd release images to `quay.io` or `gcr.io`. If this occurs, it is known to be safe to rerun the release script command appending the `--no-upload` flag, and image uploads will gracefully resume.
3. GPG vs SSH signing - The release scripts assume that git tags will be signed with a GPG key. Since 2022 GitHub has supported [signing commits and tags using ssh](https://github.blog/changelog/2022-08-23-ssh-commit-verification-now-supported). Until further release script updates are completed you will need to disable this feature in your `~/.gitconfig` and revert to signing via GPG to perform etcd releases.

Golang modules

The etcd project (since version 3.5) is organized into multiple [golang modules](https://golang.org/ref/mod) hosted in a [single repository](https://golang.org/ref/mod#vcs-dir).

![modules graph](modules.svg)

There are the following modules:

- **go.etcd.io/etcd/api/v3** - contains API definitions (like protos & proto-generated libraries) that defines communication protocol between etcd clients and servers.
- **go.etcd.io/etcd/pkg/v3** - a collection of utility packages used by etcd without being specific to etcd itself. A package belongs here only if it could possibly be moved out into its own repository in the future. Please avoid adding here code that has a lot of dependencies on its own, as they automatically become dependencies of the client library (that we want to keep lightweight).
- **go.etcd.io/etcd/client/v3** - client library used to contact etcd over the network (grpc). Recommended for all new usage of etcd.
- **go.etcd.io/raft/v3**
 - implementation of distributed consensus protocol. Should have no etcd specific code. Hosted in a separate repository: <https://github.com/etcd-io/raft>.
- **go.etcd.io/etcd/server/v3** - etcd implementation.
The code in this package is internal to etcd and should not be consumed by external projects. The package layout and API can change within the minor versions.

- **go.etcd.io/etcd/etcdctl/v3** - a command line tool to access and manage etcd.

- **go.etcd.io/etcd/tests/v3** - a module that contains all integration tests of etcd.

Notice: All unit tests (fast and not requiring cross-module dependencies) should be kept in the local modules of the code under the test.

- **go.etcd.io/bbolt** - implementation of persistent b-tree.

Hosted in a separate repository: <https://github.com/etcd-io/bbolt>.

Operations

1. All etcd modules should be released in the same versions, e.g.

`go.etcd.io/etcd/client/v3@v3.5.10` must depend on `go.etcd.io/etcd/api/v3@v3.5.10`.

The consistent updating of versions can be performed using:

```
```shell script
% DRY_RUN=false TARGET_VERSION="v3.5.10" ./scripts/release_mod.sh update_versions
```
```

2. The released modules should be tagged according to <https://golang.org/ref/mod#vcs-version> rules, i.e. each module should get its own tag.

The tagging can be performed using:

```
```shell script
% DRY_RUN=false REMOTE_REPO="origin" ./scripts/release_mod.sh push_mod_tags
```
```

3. All etcd modules should depend on the same versions of underlying dependencies.

This can be verified using:

```
```shell script
% PASSES="dep" ./test.sh
```
```

4. The go.mod files must not contain dependencies not being used and must conform to `go mod tidy` format.

This is being verified by:

```
```
% PASSES="mod_tidy" ./test.sh
```
```

5. To trigger actions across all modules (e.g. auto-format all files), please use/expand the following script:

```
```shell script
% ./scripts/fix.sh
```
```

###

Future

As a North Star, we would like to evaluate etcd modules towards the following model:

![modules graph](modules-future.svg)

This assumes:

- Splitting etcdmigrate/etcdadm out of etcdctl binary.
Thanks to this etcdctl would become clearly a command-line wrapper around network client API, while etcdmigrate/etcdadm would support direct physical operations on the etcd storage files.
- Splitting etcd-proxy out of ./etcd binary, as it contains more experimental code so carries additional risk & dependencies.
- Deprecation of support for v2 protocol.

Reporting bugs

If any part of the etcd project has bugs or documentation mistakes, please let us know by [opening an issue][etcd-issue]. We treat bugs and mistakes very seriously and believe no issue is too small. Before creating a bug report, please check that an issue reporting the same problem does not already exist.

To make the bug report accurate and easy to understand, please try to create bug reports that are:

- Specific. Include as many details as possible: which version, what environment, what configuration, etc. If the bug is related to running the etcd server, please attach the etcd log (the starting log with the etcd configuration is especially important).
- Reproducible. Include the steps to reproduce the problem. We understand some issues might be hard to reproduce, please include the steps that might lead to the problem. If possible, please attach the affected etcd data dir and stack trace to the bug report.
- Isolated. Please try to isolate and reproduce the bug with minimum dependencies. It would significantly slow down the speed to fix a bug if too many dependencies are involved in a bug report. Debugging external systems that rely on etcd is out of scope, but we are happy to provide guidance in the right direction or help with using etcd itself.
- Unique. Do not duplicate existing bug reports.
- Scoped. One bug per report. Do not follow up with another bug inside one report.

It may be worthwhile to read [Elika Etemads article on filing good bug reports][filing-good-bugs] before creating a bug report.

We might ask for further information to locate a bug. A duplicated bug report will be closed.

Frequently asked questions

How to get a stack trace

```
``` bash
```

```
$ kill -QUIT $PID
```

```
```
```

```
### How to get the etcd version
```

```
``` bash
```

```
$ etcd --version
```

```
```
```

```
### How to get etcd configuration and log when it runs as systemd service etcd2.service
```

```
``` bash
```

```
$ sudo systemctl cat etcd2
```

```
$ sudo journalctl -u etcd2
```

```
```
```

Due to an upstream systemd bug, journald

may miss the last few log lines when its processes exit. If journalctl says etcd stopped without a fatal or panic message, try `sudo journalctl -f -t etcd2` to get the full log.

[etcd-issue]: <https://github.com/etcd-io/etcd/issues/new>

[filing-good-bugs]: <http://fantasai.inkedblade.net/style/talks/filing-good-bugs/>

Community membership

This doc outlines the various responsibilities of contributor roles in etcd.

Role	Responsibilities	Requirements	Defined by
Member	Active contributor in the community	Sponsored by 2 reviewers and multiple contributions	
Reviewer	Review contributions from other members	History of review and authorship	
[OWNERS] file reviewer entry			
Maintainer	Set direction and priorities for the project	Demonstrated responsibility and excellent technical judgement	[OWNERS] file approver entry

```
## New contributors
```

New contributors should be welcomed to the community by existing members, helped with

PR workflow, and directed to relevant documentation and communication channels.

```
## Established community members
```

Established community members are expected to demonstrate their adherence to the principles in this document, familiarity with project organization, roles,

policies, procedures, conventions, etc., and technical and/or writing ability. Role-specific expectations, responsibilities, and requirements are enumerated below.

Member

Members are continuously active contributors to the community. They can have issues and PRs assigned to them. Members are expected to remain active contributors to the community.

****Defined by:**** Member of the etcd GitHub organization.

Requirements

- Enabled [two-factor authentication] on their GitHub account
- Have made multiple contributions to the project or community. Contribution may include, but is not limited to:
 - Authoring or reviewing PRs on GitHub. At least one PR must be ****merged****.
 - Filing or commenting on issues on

GitHub

- Contributing to community discussions (e.g. meetings, Slack, email discussion forums, Stack Overflow)
- Subscribed to [etcd-dev@googlegroups.com](https://groups.google.com/g/etcd-dev)
- Have read the [contributor guide]
- Sponsored by two active maintainers or reviewers.
 - Sponsors must be from multiple member companies to demonstrate integration across the community.
 - With no objections from other maintainers
- Open a [membership nomination] issue against the `kubernetes/org` repo
 - Ensure your sponsors are @mentioned on the issue
 - Make sure that the list of contributions included is representative of your work on the project.
- Members can be removed by a supermajority of the maintainers or can resign by notifying the maintainers.

Responsibilities and privileges

- Responsive to issues and PRs assigned to them
- Granted "triage access" to etcd project
- Active owner of code they have contributed (unless ownership is explicitly transferred)
 - Code is well-tested
 - Tests consistently pass
 - Addresses bugs or issues discovered after code is accepted

****Note:**** Members who frequently contribute code are expected to proactively perform code reviews and work towards becoming a ***reviewer***.

Reviewers

Reviewers are contributors who have demonstrated greater skill in reviewing the code from other contributors. They are knowledgeable about both

the codebase and software engineering principles. Their LGTM counts towards merging a code change into the project. A reviewer is generally on the ladder towards maintainership.

****Defined by:**** *reviewers* entry in the [OWNERS] file.

Requirements

- member for at least 3 months.
- Primary reviewer for at least 5 PRs to the codebase.
- Reviewed or contributed at least 20 substantial PRs to the codebase.
- Knowledgeable about the codebase.
- Sponsored by two active maintainers.
 - Sponsors must be from multiple member companies to demonstrate integration across the community.
 - With no objections from other maintainers
- Reviewers can be removed by a supermajority of the maintainers or can resign by notifying the maintainers.

Responsibilities and privileges

- Code reviewer status may be a precondition to accepting large code contributions
- Responsible for project quality control via code reviews
 - Focus on code quality and correctness, including testing and factoring
 - May also review for more holistic issues, but not a requirement
- Expected to be responsive to review requests
- Assigned PRs to review related to area of expertise
- Assigned test bugs related to area of expertise
- Granted "triage access" to etcd project

Maintainers

Maintainers are first and foremost contributors who have shown they are committed to the long-term success of a project. Maintainership is about building trust with the current maintainers and being a person that they can depend on to make decisions in the best interest of the project in a consistent manner.

****Defined by:**** *approvers* entry in the [OWNERS] file.

Requirements

- Deep understanding of the technical goals and direction of the project
- Deep understanding of the technical domain of the project
- Sustained contributions to design and direction by doing all of:
 - Authoring and reviewing proposals
 - Initiating, contributing, and resolving discussions (emails, GitHub issues, meetings)
 - Identifying subtle or complex issues in the designs and implementation of PRs

- Directly contributed to the project through implementation and/or review
- Sponsored by two active maintainers and elected by supermajority
 - Sponsors must be from multiple member companies to demonstrate integration across the community.
- To become a maintainer send an email with your candidacy to etcd-maintainers-private@googlegroups.com
 - Ensure your sponsors are @mentioned in the email
 - Include a list of contributions representative of your work on the project.

Existing maintainers vote will privately and respond to the email with either acceptance or feedback for suggested improvement.

- With your membership approved you are expected to:
 - Open a PR and add an entry to the [OWNERS] file
 - Subscribe to etcd-maintainers@googlegroups.com and etcd-maintainers-private@googlegroups.com
 - Request to join [etcd-maintainer teams of etcd organization of GitHub](<https://github.com/orgs/etcd-io/teams/maintainers-etcd>)
 - Request to join the private slack channel for etcd maintainers on [kubernetes slack](<http://slack.kubernetes.io/>)
 - Request access to etcd-development GCP project where we publish releases
 - Request access to passwords shared between maintainers

Responsibilities and privileges

- Make and approve technical design decisions
- Set technical direction and priorities
- Define milestones and releases
- Mentor and guide reviewers, and contributors to the project.
- Participate when called upon in the [security disclosure and release process]
- Ensure the continued health of the project
 - Adequate test coverage to confidently release
 - Tests are passing reliably (i.e. not flaky) and are fixed when they fail
- Ensure a healthy process for discussion and decision-making is in place.
- Work with other maintainers to maintain the project's overall health and success holistically

Retiring

Life priorities, interests, and passions can change. Maintainers can retire and move to [emeritus maintainers]. If a maintainer needs to step down, they should inform other maintainers and, if possible, help find someone to pick up the related work. At the very least, ensure the related work can be continued. Afterward, they can remove themselves from the list of existing maintainers.

If a maintainer has not been performing their duties for 12 months, they can be removed by other maintainers. In that case, the inactive maintainer will be first notified via an email. If the situation doesn't improve, they will be removed.

If an emeritus maintainer wants to regain an active role, they can do so by renewing their contributions. Active maintainers should welcome such a move. Retiring other maintainers or regaining the status should require the approval of at least two active maintainers.

Acknowledgements

Contributor roles and responsibilities were written based on [Kubernetes community membership]

[OWNERS]: /OWNERS

[contributor guide]: /CONTRIBUTING.md

[membership nomination]: <https://github.com/kubernetes/org/issues/new?assignees=&labels=area%2Fgithub-membership&projects=&template=membership.yml&title=REQUEST%3A+New+membership+for+%3Cyour-GH-handle%3E>

[Kubernetes community membership]: <https://github.com/kubernetes/community/blob/master/community-membership.md>

[emeritus maintainers]: /README.md#etcd-emeritus-maintainers

[security disclosure and release process]: /security/README.md

[two-factor authentication]: <https://docs.github.com/en/authentication/securing-your-account-with-two-factor-authentication-2fa/about-two-factor-authentication>

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Logging Conventions

etcd uses the [zap][zap] library for logging application output categorized into *levels*. A log message's level is determined according to these conventions:

* Debug: Everything is still fine, but even common operations may be logged, and less helpful but more quantity of notices. Usually not used in production.

* Examples:

* Send a normal message to a remote peer

* Write a log entry to disk

* Info: Normal, working log information, everything is fine, but helpful notices for auditing or common operations. Should rather not be logged more frequently than once per a few seconds in a normal server's operation.

* Examples:

- * Startup configuration
- * Start to do a snapshot

- * Warning: (Hopefully) Temporary conditions that may cause errors, but may work fine. A replica disappearing (that may reconnect) is a warning.
 - * Examples:
 - * Failure to send a raft message to a remote peer
 - * Failure to receive heartbeat message within the configured election timeout

- * Error: Data has been lost, a request has failed for a bad reason, or a required resource has been lost.
 - * Examples:
 - * Failure to allocate disk space for WAL

- * Panic: Unrecoverable or unexpected error situation that requires stopping execution.
 - * Examples:
 - * Failure to create the database

- * Fatal: Unrecoverable or unexpected error situation that requires immediate exit. Mostly used in the test.
 - * Examples:
 - * Failure to find the data directory
 - * Failure to run a test function

[zap]: <https://github.com/uber-go/zap>

Dependency management

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Main branch

The dependabot is enabled & [configured](<https://github.com/etcd-io/etcd/blob/main/.github/dependabot.yml>) to manage dependencies for etcd `main` branch. But dependabot doesn't work well for multi-module repository like `etcd`,

see [dependabot-core/issues/6678](<https://github.com/dependabot/dependabot-core/issues/6678>).

Usually, human intervention is required

each time when dependabot automatically opens some PRs to bump dependencies.
Please see the guidance below.

Dependencies used in workflows

The PRs that automatically bump dependencies (see examples below) used in workflows are fine and can be approved & merged directly as long as all checks are successful.

- [build(deps): bump github/codeql-action from 2.2.11 to 2.2.12](https://github.com/etcd-io/etcd/pull/15736)
- [build(deps): bump actions/checkout from 3.5.0 to 3.5.2](https://github.com/etcd-io/etcd/pull/15735)
- [build(deps): bump ossf/scorecard-action from 2.1.2 to 2.1.3](https://github.com/etcd-io/etcd/pull/15607)

Bumping order

When multiple etcd modules depend on the same package, please bump the package version for all the modules in the correct order. The rule is simple:

if module A depends on module B, then bump the dependency for module B before module A. If the two modules do not depend on each other, then

it doesn't matter to bump which module first. For

example, multiple modules depend on `github.com/spf13/cobra`, so we need to bump the dependency in the following order,

- go.etcd.io/etcd/pkg/v3
- go.etcd.io/etcd/server/v3
- go.etcd.io/etcd/etcdctl/v3
- go.etcd.io/etcd/etcdutl/v3
- go.etcd.io/etcd/tests/v3
- go.etcd.io/etcd/v3
- go.etcd.io/etcd/tools/v3

For more details about etcd Golang modules, please check <<https://etcd.io/docs/next/dev-internal/modules>>

Note the module `go.etcd.io/etcd/tools/v3` doesn't depend on any other modules, nor by any other modules, so it doesn't matter when to bump dependencies for it.

Steps to bump a dependency

Use the `github.com/spf13/cobra` as an example, follow the steps below to bump it from 1.6.1 to 1.7.0 for module `go.etcd.io/etcd/etcdctl/v3`,

```
```bash
cd ${ETCD_ROOT_DIR}/etcdctl
go get github.com/spf13/cobra@v1.7.0
go mod tidy
cd ..
./scripts/fix.sh
```
```

Execute the same steps for all other modules. When you finish bumping the dependency for all modules, then

commit the change,

```
```bash
git
add .
git commit --signoff -m "dependency: bump github.com/spf13/cobra from 1.6.1 to 1.7.0"
```
```

Please close the related PRs which were automatically opened by dependabot.

When you bump multiple dependencies in one PR, it's recommended to create a separate commit for each dependency. But it isn't a must; for example, you can get all dependencies bumping for the module ``go.etcd.io/etcd/tools/v3`` included in one commit.

Troubleshooting

In an event of bumping the version of `protoc`, `protoc` plugins or `grpc-gateway`, it might change ``.proto`` file which can result in the following error:

```
```bash
[0;31mFAIL: 'genproto' FAILED at Wed Jul 31 07:09:08 UTC 2024
make: *** [Makefile:134: verify-genproto] Error 255
```
```

To fix the above error, run the following script from the root of `etcd` repository:

```
```bash
./scripts/genproto.sh
```
```

Indirect dependencies

Usually, we don't bump a dependency if all modules just indirectly depend on it, such as ``github.com/go-logr/logr``.

If

an indirect dependency (e.g. ``D1``) causes any CVE or bugs that affect `etcd`, usually the module (e.g. ``M1``, not part of `etcd`, but used by `etcd`) which depends on it should bump the dependency (``D1``), and then `etcd` just needs to bump ``M1``. However, if the module (``M1``) somehow doesn't bump the problematic dependency, then `etcd` can still bump it (``D1``) directly following the same steps above. But as a long-term solution, `etcd` should try to remove the dependency on such module (``M1``) that lack maintenance.

For mixed cases, in which some modules directly while others indirectly depend on a dependency, we have multiple options,

- Bump the dependency for all modules, no matter it's direct or indirect dependency.
- Bump the dependency only for modules that directly depend on it.

We should try to follow the first way, and temporarily fall back to the second one if we run into any issue on the first way. Eventually we should fix the issue and ensure all modules depend on the same version of the dependency.

Known incompatible dependency updates

arduino/setup-protoc

Please refer to [build(deps): bump arduino/setup-protoc from 1.3.0 to 2.0.0](https://github.com/etcd-io/etcd/pull/16016)

Rotation worksheet

The dependabot scheduling interval is weekly; it means dependabot will automatically raise a bunch of PRs per week.

Usually, human intervention is required each time. We have a [rotation worksheet](https://docs.google.com/spreadsheets/d/1jodHIO7Dk2VWTs1IRnfMFaRktS9IH8XRyifOnPdSY8I/edit#gid=1394774387),

and everyone is welcome to participate; you just need to register your name in the worksheet.

Stable branches

Usually, we don't proactively bump dependencies for stable releases unless there are any CVEs or bugs that affect etcd.

If we have to do it, then follow the same guidance above. Note that there is no `./scripts/fix.sh` in release-3.4, so no need to execute it for 3.4.

Golang versions

The etcd project aims to maintain a development branch that is on the latest [Go version](https://go.dev/dl), ideally, this will align with the Go version in use for Kubernetes project development. For an example of how to update etcd to a new minor release of Go refer to issue <https://github.com/etcd-io/etcd/issues/16393> and the linked pull requests.

Suggested steps for performing a minor version upgrade for the etcd development branch:

1. Carefully review new Go version release notes and potentially related blog posts for any deprecations, performance impacts, or other considerations.
2. Create a GitHub issue to signal intent to upgrade and invite discussion, for example, <https://github.com/etcd-io/etcd/issues/16393>.
3. Complete the upgrade locally in your development environment by editing `.go-version` and running `make fix`.
4. Run performance benchmarks locally to compare before and after.
5. Raise a pull request for the changes, for example, <https://github.com/etcd-io/etcd/pull/16394>.

Stable etcd release branches will be maintained

to stay on the latest patch release of a supported Go version. Upgrading minor versions will be completed before the minor version in use currently is no longer supported. Refer to the [Go release policy](https://go.dev/doc/devel/release).

For an example of how to update etcd to a new patch release of Go refer to issue <<https://github.com/etcd-io/etcd/issues/16343>> and the linked pull requests.

References:

- <<https://github.com/kubernetes/sig-release/blob/master/release-engineering/handbooks/go.md>>

Core dependencies mappings

[bbolt](https://github.com/etcd-io/bbolt) and [raft](https://github.com/etcd-io/raft) are two core dependencies of etcd.

Both etcd 3.4.x and 3.5.x depend on bbolt 1.3.x, and etcd 3.6.x (`main` branch) depends on bbolt 1.4.x.

raft is included in the etcd repository for release-3.4 and release-3.5 branches, so etcd 3.4.x and 3.5.x do not depend on any

external raft module. We moved raft into [a separate repository](https://github.com/etcd-io/raft) starting from 3.6 (`main` branch), and the first raft release will be v3.6.0, so etcd 3.6.x will depend on raft 3.6.x.

Please see the table below:

etcd versions	bbolt versions	raft versions
----- ----- -----		
3.4.x	v1.3.x	N/A
3.5.x	v1.3.x	N/A
3.6.x	v1.4.x	v3.6.x

1.469 etcd-client-pkg 3.6.7

1.469.1 Available under license :

Features

This document provides an overview of etcd features and general development guidelines for adding and deprecating them. The project maintainers can override these guidelines per the need of the project following the project governance.

Overview

The etcd features fall into three stages, experimental, stable, and unsafe.

Experimental

Any new feature is usually added as an experimental feature. An experimental feature is characterized as below:

- Might be buggy due to a lack of user testing. Enabling the feature may not work as expected.
- Disabled by default when added initially.
- Support for such a feature may be dropped at any time without notice
 - Feature-related issues may be given lower priorities.
 - It can be removed in the next minor or major release without following the feature deprecation policy unless it graduates to a stable future.

Stable

A stable feature is characterized as below:

- Supported as part of the supported releases of etcd.
- May be enabled by default.
- Discontinuation of support must follow the feature deprecation policy.

Unsafe

Unsafe features are rare and listed under the `Unsafe feature:` section in the etcd usage documentation. By default, they are disabled. They should be used with caution following documentation. An unsafe feature can be removed in the next minor or major release without following the feature deprecation policy.

Development Guidelines

Adding a new feature

Any new enhancements to the etcd are typically added as an experimental feature. The general development requirements are listed below. They can be somewhat flexible depending on the scope of the feature and review discussions and will evolve over time.

- Open an issue
 - It must provide a clear need for the proposed feature.
 - It should list development work items as checkboxes. There must be one work item towards future graduation to a stable future.
 - Label the issue with `type/feature` and `experimental`.
 - Keep the issue open for tracking purposes until a decision is made on graduation.
- Open a Pull Request (PR)
 - Provide unit tests. Integration tests are also recommended as possible.
 - Provide robust e2e test coverage. If the feature being added is complicated or quickly needed, maintainers can decide to go with e2e tests for basic coverage initially and have robust coverage added at a later time before the feature graduation to the stable feature.
 - Provide logs for proper debugging.
 - Provide metrics and benchmarks as needed.
 - The Feature should be disabled by default.
 - Any configuration flags related to the implementation of the feature must be prefixed with `experimental` e.g. `--experimental-feature-name`.
 - Add a CHANGELOG entry.
- At least two maintainers must approve feature requirements and related code changes.

Graduating an Experimental feature to Stable

It is important that experimental features don't get stuck in that stage.

They should be revisited and moved to the stable stage following the graduation steps as described here.

Locate graduation candidate

Decide if an experimental feature is ready for graduation to the stable stage.

- Find the issue that was used to enable the experimental feature initially. One way to find such issues is to search for issues with `type/feature` and `experimental` labels.
- Fix any known open issues against the feature.
- Make sure the feature was enabled for at least one previous release. Check the PR(s) reference from the issue to see when the feature-related code changes were merged.

Provide implementation

If an experimental feature is found ready for graduation to the stable stage, open a Pull Request (PR) with the following changes.

- Add robust e2e tests if not already provided.
- Add a new stable feature flag identical to the experimental feature flag but without the `--experimental` prefix.
- Deprecate the experimental feature following the [feature deprecation policy](#Deprecating-a-feature).
- Implementation must ensure that both the graduated and deprecated experimental feature flags work as expected. Note that both these flags will co-exist for the timeframe described in the feature deprecation policy.
- Enable the graduated feature by default if needed.

At least two maintainers must approve the work. Patch releases should not be considered for graduation.

Deprecating a feature

Experimental

An experimental feature deprecates when it graduates to the stable stage.

- Add a deprecation message in the documentation of the experimental feature with a recommendation to use a related stable feature. e.g. `DEPRECATED. Use <feature-name> instead.`
- Add a `deprecated` label in the issue that was initially used to enable the experimental feature.

Stable

As the project evolves, a stable feature may sometimes need to be deprecated and removed. Such a situation should be handled using the steps below:

- Create an issue for tracking purposes.
- Add a deprecation message in the feature usage documentation before a planned release for feature deprecation. e.g. `To be deprecated in <release>.`. If a new feature replaces the `To be deprecated` feature, then also provide a message saying so. e.g. `Use <feature-name> instead.`.
- Deprecate the feature in the planned release with a message as part of the feature usage documentation. e.g. `DEPRECATED`. If a new feature replaces the deprecated feature, then also provide a message saying so. e.g. `DEPRECATED. Use <feature-name> instead.`.
- Add a `deprecated` label in the related issue.

Remove the deprecated feature in the following release. Close any related issue(s). At least two maintainers must approve the work. Patch releases should not be considered for deprecation.

Set up the local cluster

For testing and development deployments, the quickest and easiest way is to configure a local cluster. For a production deployment, refer to the [clustering][clustering] section.

Local standalone cluster

Starting a cluster

Run the following to deploy an etcd cluster as a standalone cluster:

```
...  
$ ./etcd  
...  
...
```

If the `etcd` binary is not present in the current working directory, it might be located either at `$GOPATH/bin/etcd` or at `/usr/local/bin/etcd`. Run the command appropriately.

The running etcd member listens on `localhost:2379` for client requests.

Interacting with the cluster

Use `etcdctl` to interact with the running cluster:

1. Store an example key-value pair in the cluster:

```
...  
$ ./etcdctl put foo bar  
OK  
...
```

If OK is printed, storing the key-value pair is successful.

2. Retrieve the value of `foo`:

```
...  
$ ./etcdctl get foo  
bar  
...
```

If `bar` is returned, interaction with the etcd cluster is working as expected.

Local multi-member cluster

Starting a cluster

A `Procfile` at the base of the etcd git repository is provided to easily configure a local multi-member cluster. To start a multi-member cluster, navigate to the root of the etcd source tree and perform the following:

1. Install `goreman` to control Procfile-based applications:

```
...  
$ go install github.com/mattn/goreman@latest  
...
```

The installation will place executables in the `$GOPATH/bin`. If `$GOPATH` environment variable is not set, the tool will be installed into the `$HOME/go/bin`. Make sure that `$PATH` is set accordingly in your environment.

2. Start a cluster with `goreman` using etcd's stock Procfile:

```
...  
$ goreman -f Procfile start  
...
```

The members start running. They listen on `localhost:2379`, `localhost:22379`, and `localhost:32379` respectively for client requests.

Interacting with the cluster

Use `etcdctl` to interact with the running cluster:

1. Print the list of members:

```
...  
$ etcdctl --write-out=table --endpoints=localhost:2379 member list  
...
```

The list of etcd members is displayed as follows:

```
...  
+-----+-----+-----+-----+-----+  
| ID      | STATUS | NAME  | PEER ADDRS  | CLIENT ADDRS |  
+-----+-----+-----+-----+-----+  
| 8211f1d0f64f3269 | started | infra1 | http://127.0.0.1:2380 | http://127.0.0.1:2379 |  
| 91bc3c398fb3c146 | started | infra2 | http://127.0.0.1:22380 | http://127.0.0.1:22379 |  
| fd422379fda50e48 | started | infra3 | http://127.0.0.1:32380 | http://127.0.0.1:32379 |  
+-----+-----+-----+-----+-----+  
...
```

2. Store an example key-value pair in the cluster:

```
...  
$ etcdctl put foo bar
```

OK

...

If OK is printed, storing the key-value pair is successful.

###

Testing fault tolerance

To exercise etcd's fault tolerance, kill a member and attempt to retrieve the key.

1. Identify the process name of the member to be stopped.

The ``Procfile`` lists the properties of the multi-member cluster. For example, consider the member with the process name, ``etcd2``.

2. Stop the member:

...

```
# kill etcd2
```

```
$ goreman run stop etcd2
```

...

3. Store a key:

...

```
$ etcdctl put key hello
```

OK

...

4. Retrieve the key that is stored in the previous step:

...

```
$ etcdctl get key
```

```
hello
```

...

5. Retrieve a key from the stopped member:

...

```
$ etcdctl --endpoints=localhost:22379 get key
```

...

The command should display an error caused by connection failure:

...

```
2017/06/18 23:07:35 grpc: Conn.resetTransport failed to create client transport: connection error: desc =
"transport: dial tcp 127.0.0.1:22379: getsockopt: connection refused"; Reconnecting to "localhost:22379"
```

```
Error: grpc:
```

timed out trying to connect

...

6. Restart the stopped member:

...

```
$ goreman run restart etcd2
```

...

7. Get the key from the restarted member:

...

```
$ etcdctl --endpoints=localhost:22379 get key
```

```
hello
```

...

Restarting the member re-establishes the connection. `etcdctl` will now be able to retrieve the key successfully. To learn more about interacting with etcd, read [interacting with etcd section][interacting].

[clustering]: <https://etcd.io/docs/latest/op-guide/clustering/>

[interacting]: https://etcd.io/docs/latest/dev-guide/interacting_v3/

Branch management

Guide

- * New development occurs on the [main branch][main].
- * The main branch should always have a green build!
- * Backwards-compatible bug fixes should target the main branch and subsequently be ported to stable branches.
- * Once the main branch is ready for release, it will be tagged and become the new stable branch.

The etcd team has adopted a *rolling release model* and supports two stable versions of etcd.

Main branch

The `main` branch is our development branch. All new features land here first.

To try new and experimental features, pull `main` and play with it. Note that `main` may not be stable because new features may introduce bugs.

Before the release of the next stable version, feature PRs will be frozen. A [release manager](./release.md#release-management) will be assigned to the major/minor version and will lead the etcd community in testing, bug-fix, and documentation of the release for one to two weeks.

Stable branches

All branches with the prefix `release-` are considered `_stable_` branches.

After every minor release (semver.org), we will have a new stable branch for that release,

managed by a [patch release manager](./release.md#release-management). We will keep fixing the backward-compatible bugs for the latest two stable releases. A `_patch_` release to each supported release branch, incorporating any bug fixes, will be once every two weeks, given any patches.

[main]: <https://github.com/etcd-io/etcd/tree/main>

Issue triage guidelines

Purpose

Speed up issue management.

The `etcd`` issues are listed at <https://github.com/etcd-io/etcd/issues> and are identified with labels. For example, an issue that is identified as a bug will be set to the label `type/bug``.

The etcd project uses labels to indicate common attributes such as `area``, `type``, and `priority`` of incoming issues.

New issues will often start without any labels, but typically `etcd`` maintainers, reviewers, and members will add labels by following these triage guidelines. The detailed list of labels can be found at <https://github.com/etcd-io/etcd/labels>.

Scope

This document serves as the primary guidelines for triaging incoming issues in `etcd``.

All contributors are encouraged and welcome to help manage issues which will help reduce the burden on project maintainers, though the work and responsibilities discussed in this document are created with `etcd`` project reviewers and members in mind as these individuals will have triage access to the etcd project which is a requirement for actions like applying labels or closing issues.

Refer to [etcd community membership](<https://github.com/etcd-io/etcd/blob/main/Documentation/contributor-guide/community-membership.md>) for guidance on becoming an etcd project member or reviewer.

Step 1 - Find an issue to triage

To get started you can use the following recommended issue searches to identify issues that are in need of triage:

- * [Issues that have no labels](<https://github.com/etcd-io/etcd/issues?q=is%3Aissue+is%3Aopen+sort%3Aupdated+no%3Alabel>)
- * [Issues created recently](<https://github.com/etcd-io/etcd/issues?q=is%3Aissue+is%3Aopen+>)
- * [Issues not assigned but linked pr](<https://github.com/etcd-io/etcd/issues?q=is%3Aopen+is%3Aissue+no%3Aassignee+linked%3Apr>)
- * [Issues with no comments](<https://github.com/etcd-io/etcd/issues?q=is%3Aopen+is%3Aissue+comments%3A0+>)
- * [Issues with help wanted](<https://github.com/etcd-io/etcd/issues?q=is%3Aopen+is%3Aissue+label%3A%22help+wanted%22+>)

##

Step 2 - Check the issue is valid

Before we start adding labels or trying to work out a priority, our first triage step needs to be working out if the issue actually belongs to the etcd project and is not a duplicate.

Issues that don't belong to etcd

Sometimes issues are reported that belong to other projects that `etcd` use. For example, `grpc` or `golang` issues. Such issues should be addressed by asking the reporter to open issues in the appropriate other projects.

These issues can generally be closed unless a maintainer and issue reporter see a need to keep it open for tracking purposes. If you have triage permissions please close it, alternatively mention the @etcd-io/members group to request a member with triage access to close the issue.

Duplicate issues

If an issue is a duplicate, add a comment stating so along with a reference for the original issue and if you have triage permissions please close it, alternatively mention the @etcd-io/members group to request a member with triage access close the issue.

Step 3 - Apply the appropriate type of label

Adding a `type` label to an issue helps create visibility on the health of the project and helps contributors identify potential priorities, i.e. addressing existing bugs or test flakes before implementing new features.

Support requests

As a general rule, the focus for etcd support is to address common themes in a broad way that helps all users, i.e. through channels like known issues, frequently asked questions, and high-quality documentation. To make the best use of project members time we should avoid providing 1:1 support if a broad approach is available.

Some people mistakenly use our GitHub bug report or feature request templates to file support requests. Usually, they are asking for help operating or configuring some aspect of etcd. Support requests for etcd should instead be raised as [discussions](https://github.com/etcd-io/etcd/discussions).

Common

types of support requests are:

1. Questions about configuring or operating existing well-documented etcd features, for example, <<https://github.com/etcd-io/etcd/issues/15945>>. Note - If an existing feature is not well documented please apply the `area/documentation` label and propose documentation improvements that would prevent future users from stumbling on the problem again.
2. Bug reports or questions about unsupported versions of etcd, for example <<https://github.com/etcd-io/etcd/issues/15796>>. When responding to these issues please refer to our [supported versions documentation](https://etcd.io/docs/latest/op-guide/versioning) and encourage the reporter to upgrade to a recent patch release of a supported version as soon as possible. We should limit the effort supporting users that do not make the effort to run a supported version of etcd or ensure their version is patched.
3. Bug reports that do not provide a complete list of steps to reproduce the issue and/or contributors

are not able to reproduce the issue, for example, <<https://github.com/etcd-io/etcd/issues/15740>>. We should limit the effort we put into reproducing issues ourselves and motivate users to provide the necessary information to accept the bug report.

4. General questions that are filed using feature request or bug report issue templates, for example, <<https://github.com/etcd-io/etcd/issues/15914>>. Note - These types of requests may surface good additions to our [frequently asked questions](<https://etcd.io/docs/v3.5/faq>).

If you identify that an issue is a support request please:

1. Add the `type/support` or `type/question` label.

2. Add the following comment to inform the issue creator that discussions should be used instead and that this issue will be converted to a discussion.

> Thank you for your question, this support issue will be moved to our [Discussion Forums](<https://github.com/etcd-io/etcd/discussions>).

>

> We are trying to consolidate the channels to which questions for help/support are posted so that we can improve our efficiency in responding to your requests, and make it easier for you to find answers to frequently asked questions and how to address common use cases.

>

> We regularly see messages posted in multiple forums, with the full response thread only in one place or, worse, spread across multiple forums. Also, the large volume of support issues on GitHub is making it difficult for us to use issues to identify real bugs.

>

> Members of the etcd community use Discussion Forums to field support requests. Before posting a new question, please search these for answers to similar questions, and also familiarize yourself with:

>

> 1. [user documentation](<https://etcd.io/docs/latest>)

> 2. [frequently asked questions](<https://etcd.io/docs/v3.5/faq>)

>

> Again, thanks for using etcd and raising this question.

>

> The etcd team

3. Finally, click `Convert to discussion` on the right-hand panel, selecting the appropriate discussion category.

Bug reports

If an issue has been raised as a bug it should already have the `type/bug` label, however, if this is missing for an issue you determine to be a bug please add the label manually.

The next step is to validate if the issue is indeed a bug. If not, add a comment with the findings and close the trivial issue. For non-trivial issues, wait to hear back from the issue reporter and see if there is any objection. If the issue reporter does not reply in 30 days, close the issue.

If the problem can not be reproduced or requires more information, leave a comment for the issue reporter as soon as possible while the issue is fresh for the issue reporter.

Feature requests

New feature requests should be created via the etcd feature request template and in theory already have the `type/feature` label, however, if this is missing for an issue you determine to be a feature please add the label manually.

Test flakes

Test flakes

are a specific type of bug that the etcd project tracks separately as these are a priority to address. These should be created via the test flake template and in theory already have the `type/flake` label, however, if this is missing for an issue you determine to be related to a flaking test please add the label manually.

Step 4 - Define the areas impacted

Adding an `area` label to an issue helps create visibility on which areas of the etcd project require attention and helps contributors find issues to work on relating to their particular skills or knowledge of the etcd codebase.

If an issue crosses multiple domains please add additional `area` labels to reflect that.

Below is a brief summary of the area labels in active use by the etcd project along with any notes on their use:

Label	Notes
---	---
area/external	Tracking label for issues raised that are external to etcd.
area/community	
area/raft	
area/clientv3	
area/performance	
area/security	
area/tls	
area/auth	
area/etcdctl	
area/etcdutl	
area/contrib	Not to be confused with `area/community` this label is specifically used for issues relating to community-maintained scripts or files in the `contrib/` directory which aren't part of the core etcd project.
area/documentation	
area/tooling	Generally used in relation to the third party / external utilities or tools that are used in various stages of the etcd build, test, or release process, for example, tooling to create sboms.
area/testing	
area/robustness-testing	

Step 5 - Prioritise the issue

If an issue lacks a priority label it has not been formally prioritized yet.

Adding a `priority` label helps the etcd project understand what is important and should be worked on now, and conversely, what is not as important and is on the project backlog.

Priority label	What it means	Examples

---	---	---

`priority/critical-urgent`		

	Maintainers are responsible for making sure that these issues (in their area) are being actively worked on i.e., drop what you're doing. The stuff is burning. These should be fixed before the next release. user-visible critical bugs in core features broken builds on tier1 supported platforms tests and critical security issues	

`priority/important-soon`	Must be staffed and worked on either currently or very soon ideally in time for the next release.	

`priority/important-longterm`	Important over the long term, but may not be currently staffed and/or may require multiple releases to complete.	

`priority/backlog`	General agreement that this is a nice-to-have, but no one's available to work on it anytime soon. Community contributions would be most welcome in the meantime, though it might take a while to get them reviewed if reviewers are fully occupied with higher-priority issues for example, immediately before a release.	

`priority/awaiting-more-evidence`		

	Possibly useful, but not yet enough support to actually get it done. Mostly placeholders for potentially good ideas, so that they don't get completely forgotten, and can be referenced or deduped every time they come up	

Step 6 - Support new contributors

As part of the `etcd` triage process once the `kind` and `area` have been determined, please consider if the issue would be suitable for a less experienced contributor. The `good first issue` label is a subset of the `help wanted` label, indicating that members have committed to providing extra assistance for new contributors. All `good first issue` items also have the `help wanted` label.

Help wanted

Items marked with the `help wanted` label need to ensure that they meet these criteria:

* **Low Barrier to Entry** - It should be easy for new contributors.

* **Clear** - The task is agreed upon and does not require further discussions in the community.

* **Goldilocks priority** - The priority

should not be so high that a core contributor should do it, but not too low that it isn't useful enough for a core contributor to spend time reviewing it, answering questions, helping get it into a release, etc.

Good first issue

Items marked with `good first issue` are intended for first-time contributors. It indicates that members will keep an eye out for these pull requests and shepherd it through our processes.

New contributors should not be left to find an approver, ping for reviews, decipher test commands, or identify that

their build failed due to a flake. It is important to make new contributors feel welcome and valued. We should assure them that they will have an extra level of help with their first contribution.

After a contributor has successfully completed one or two `good first issue` items, they should be ready to move on to `help wanted` items.

* **No Barrier to Entry** - The task is something that a new contributor can tackle without advanced setup or domain knowledge.

*

Solution Explained - The recommended solution is clearly described in the issue.

* **Gives Examples** - Link to examples of similar implementations so new contributors have a reference guide for their changes.

* **Identifies Relevant Code** - The relevant code and tests to be changed should be linked in the issue.

* **Ready to Test** - There should be existing tests that can be modified, or existing test cases fit to be copied. If the area of code doesn't have tests, before labeling the issue, add a test fixture. This prep often makes a great help wanted task!

Step 7 - Follow up

Once initial triage has been completed, issues need to be re-evaluated over time to ensure they don't become stale incorrectly.

Track important issues

If an issue is at risk of being closed by the stale bot in the future, but is an important issue for the etcd project, then please apply the `stage/tracked` label and remove any `stale` labels that exist. This will ensure the project does not lose sight of the issue.

Close incomplete issues

Issues that lack enough information from the issue reporter should be closed if the issue reporter does not provide information in 30 days. Issues can always be re-opened at a later date if new information is provided.

Check for incomplete work

If an issue owned by a developer has no pull request created in 30 days, contact the issue owner and kindly ask about the status of their work, or to release ownership on the issue if needed.

PR management

Purpose

Speed up PR management.

The `etcd` PRs are listed at <https://github.com/etcd-io/etcd/pulls>

A PR can have various labels, milestones, reviewers, etc. The detailed list of labels can be found at <https://github.com/kubernetes/kubernetes/labels>

Following are a few example searches on PR for convenience:

- * [Open PRs for milestone etcd-v3.6](<https://github.com/etcd-io/etcd/pulls?utf8=%E2%9C%93&q=is%3Apr+is%3Aopen+milestone%3Aetcd-v3.6>)
- * [PRs under investigation](<https://github.com/etcd-io/etcd/labels/Investigating>)

Scope

These guidelines serve as a primary document for managing PRs in `etcd`. Everyone is welcome to help manage PRs but the work and responsibilities discussed in this document are created with `etcd` maintainers and active contributors in mind.

Ensure tests are run

The etcd project use Kubernetes Prow and GitHub Actions to run tests. To ensure all required tests run if a pull request is ready for testing and still has the `needs-ok-to-test` label then please comment on the pull request `/ok-to-test`.

Handle inactive PRs

Poke PR owner if review comments are not addressed in 15 days. If the PR owner does not reply in 90 days, update the PR with a new commit if possible. If not, inactive PR should be closed after 180 days.

Poke reviewer if needed

Reviewers are responsive in a timely fashion, but considering everyone is busy, give them some time after requesting a review if a quick response is not provided. If the response is not provided in 10 days, feel free to contact them via adding a comment in the PR or sending an email or message on Slack.

Verify important labels are in place

Make sure that appropriate reviewers are added to the PR. Also, make sure that a milestone is identified. If any of these or other important labels are missing, add them. If a correct label cannot be decided, leave a comment for the maintainers to do so as needed.

Roadmap

etcd uses GitHub milestones to track all tasks in each major or minor release. The `roadmap.md` file only records the most important tasks for each release. The list is based on the current maintainer capacity that may shift over time. Proposed milestones are what we think we can deliver with the people we have. If we have more support on the important stuff, we could pick up more items from the backlog. Note that etcd will continue to mainly focus on technical debt over the next few major or minor releases.

Each item has an assigned priority. Refer to [priority definitions](https://github.com/etcd-io/etcd/blob/main/Documentation/contributor-guide/triage_issues.md#step-5---prioritise-the-issue).

v3.6.0

For a full list of tasks in `v3.6.0`, please see [milestone etcd-v3.6](https://github.com/etcd-io/etcd/milestone/38).

Title	Priority	Status	Note
----- ----- -----			
[Support downgrade](https://github.com/etcd-io/etcd/issues/11716)	priority/important-soon	In progress	etcd will support downgrade starting from 3.6.0. But it will also support offline downgrade from 3.5 to 3.4.
[StoreV2 deprecation](https://github.com/etcd-io/etcd/issues/12913)	priority/important-soon	In progress	This task will be covered in both 3.6 and 3.7.
[Release raft 3.6.0](https://github.com/etcd-io/raft/issues/89)	priority/important-soon	Not started	etcd 3.6.0 will depends on raft 3.6.0
[Release bbolt 1.4.0](https://github.com/etcd-io/bbolt/issues/553)	priority/important-soon	Not started	etcd 3.6.0 will depends on bbolt 1.4.0
[Support /livez and /readyz endpoints](https://github.com/etcd-io/etcd/issues/16007)	priority/important-longterm	In progress	It provides clearer APIs, and can also work around the stalled writes issue
[Bump gRPC](https://github.com/etcd-io/etcd/issues/16290)	priority/important-longterm	Completed	It isn't guaranteed to be resolved in 3.6, and might be postponed to 3.7 depending on the effort and risk.
[Deprecate grpc-gateway or bump it](https://github.com/etcd-io/etcd/issues/14499)	priority/important-longterm	Completed	It isn't guaranteed to be resolved in 3.6, and might be postponed to 3.7 depending on the effort and risk.
[bbolt: Add logger into bbolt](https://github.com/etcd-io/bbolt/issues/509)	priority/important-longterm	Completed	It's important to diagnose bbolt issues
[bbolt: Add surgery commands](https://github.com/etcd-io/bbolt/issues/370)	priority/important-longterm	Completed	Surgery commands are important for fixing corrupted db files
[Evaluate and (Graduate or deprecate/remove) experimental features](https://github.com/etcd-io/etcd/issues/16292)	priority/backlog	Not started	This task will be covered in both 3.6 and 3.7.

v3.7.0

For a full list of tasks in `v3.7.0`, please see [milestone etcd-v3.7](https://github.com/etcd-io/etcd/milestone/39).

Title	Priority	Note
----- ----- -----		
----- ----- -----		

[StoreV2 deprecation](https://github.com/etcd-io/etcd/issues/12913)	P0	Finish
the remaining tasks 3.7.		
[Refactor lease: Lease might be revoked by mistake by old leader](https://github.com/etcd-io/etcd/issues/15247)		
P1	to be investigated & discussed	
[Integrate raft's new feature (async write) into etcd](https://github.com/etcd-io/etcd/issues/16291)	P1	
It should improve the performance		
[bbolt: Support customizing the bbolt rebalance threshold](https://github.com/etcd-io/bbolt/issues/422)	P2	
It may get rid of etcd's defragmentation. Both bbolt and etcd need to be changed.		
[Evaluate and (graduate or deprecate/remove) experimental features](https://github.com/etcd-io/etcd/issues/16292)		
P2	Finish the remaining tasks 3.7.	

Backlog (future releases)

Title	Priority	Note
-----	-----	-----
[Remove the dependency on grpc-go's experimental API](https://github.com/etcd-io/etcd/issues/15145)		
[Protobuf: cleanup both golang/protobuf and gogo/protobuf](https://github.com/etcd-io/etcd/issues/14533)		
[Proposals should include a merkle root](https://github.com/etcd-io/etcd/issues/13839)		
[Add Distributed Tracing using OpenTelemetry](https://github.com/etcd-io/etcd/issues/12460)		
[Support CA rotation](https://github.com/etcd-io/etcd/issues/11555)		
[bbolt: Migrate all commands to cobra style commands](https://github.com/etcd-io/bbolt/issues/472)		
[raft: enhance the configuration change validation](https://github.com/etcd-io/raft/issues/80)		

Release

The guide talks about how to release a new version of etcd.

The procedure includes some manual steps for sanity checking, but it can probably be further scripted. Please keep this document up-to-date if making changes to the release process.

Release management

The following pool of release candidates manages the release of each etcd major/minor version as well as manages patches

to each stable release branch. They are responsible for communicating the timelines and status of each release and for ensuring the stability of the release branch.

- Benjamin Wang [@ahrtr](https://github.com/ahrtr)
- James Blair [@jmhbznz](https://github.com/jmhbnz)
- Marek Siarkowicz [@serathius](https://github.com/serathius)
- Sahdev Zala [@spzala](https://github.com/spzala)
- Wenjia Zhang [@wenjiaswe](https://github.com/wenjiaswe)

All release version numbers follow the format of [semantic versioning 2.0.0](http://semver.org/).

Major, minor version release, or its pre-release

- Ensure the relevant [milestone](https://github.com/etcd-io/etcd/milestones) on GitHub is complete. All referenced issues should be closed or moved elsewhere.
- Ensure the latest [upgrade documentation](https://etcd.io/docs/next/upgrades) is available.
- Bump [hardcoded MinClusterVersion in the repository](https://github.com/etcd-io/etcd/blob/v3.4.15/version/version.go#L29), if necessary.
- Add feature capability maps for the new version, if necessary.

Patch version release

- To request a backport, developers submit cherry-pick PRs targeting the release branch. The commits should not include merge commits. The commits should be restricted to bug fixes and security patches.
- The cherry-pick PRs should target the appropriate release branch (`base:release-<major>-<minor>`). The k8s infra cherry pick robot `/cherrypick <branch>` PR chatops command may be used to automatically generate cherry-pick PRs.
- The release patch manager reviews the cherry-pick PRs. Please discuss carefully what is backported to the patch release. Each patch release should be strictly better than its predecessor.
- The release patch manager will cherry-pick these commits starting from the oldest one into stable branch.

Write a release note

- Write an introduction for the new release. For example, what major bug we fix, what new features we introduce, or what performance improvement we make.
- Put `[GH XXXX]` at the head of the change line to reference the Pull Request that introduces the change. Moreover, add a link on it to jump to the Pull Request.
- Find PRs with the `release-note` label and explain them in the `NEWS` file, as a straightforward summary of changes for end-users.

Patch release criteria

The etcd project aims to release a new patch version if any of the following conditions are met:

- Fixed one or more major CVEs (≥ 7.5).
- Fixed one or more critical bugs.
- Fixed three or more major bugs.
- Fixed five or more minor bugs.

Release guide

Prerequisites

There are some prerequisites, which should be done before the release process. These are one-time operations, which don't need to be executed before releasing each version.

1. Generate a GPG key and add it to your GitHub account. Refer to the links on [settings](https://github.com/settings/keys).

2. Ensure you have a Linux machine, on which the git, Golang, and docker have been installed.
 - Ensure the Golang version matches the version defined in `.go-version`` file.
 - Ensure non-privileged users can run docker commands, refer to the [Linux postinstall](https://docs.docker.com/engine/install/linux-postinstall/).
 - Ensure there is at least 5GB of free space on your Linux machine.
3. Install gsutil, refer to [gsutil_install](https://cloud.google.com/storage/docs/gsutil_install). When asked about cloud project to use, pick ``etcd-development``.
4. Authenticate the image registry, refer to [Authentication methods](https://cloud.google.com/container-registry/docs/advanced-authentication).
 - ``gcloud auth login``
 - ``gcloud auth configure-docker``
5. Install gh, refer to [GitHub's documentation](https://github.com/cli/cli#installation). Ensure that running ``gh auth login`` succeeds for the GitHub account you use to contribute to etcd, and that ``gh auth status`` has a clean exit and doesn't show any issues.

Release steps

1. Raise an issue to publish the release plan, e.g. [issues/17350](https://github.com/etcd-io/etcd/issues/17350).
2. Raise a ``kubernetes/org`` pull request to temporarily elevate permissions for the GitHub release team.
3. Once permissions are elevated, temporarily relax [branch protections](https://github.com/etcd-io/etcd/settings/branches) to allow pushing changes directly to ``release-*`` branches in GitHub.
4. Verify you can pass the authentication to the image registries,
 - ``docker login gcr.io``
 - ``docker login quay.io``
 - If the release person doesn't have access to 1password, one of the owners (@ahrtr, @ivanvc, @jmhbzn, @serathius) needs to share the password with them per [this guide](https://support.1password.com/share-items/). See rough steps below,
 - [Sign in](https://team-etcd.1password.com/home) to your account on 1password.com.
 - Click ``Your Vault Items`` on the right side.
 - Select ``Password of quay.io``.
 - Click ``Share`` on the top right, and set expiration as ``1 hour`` and only available to the release person using his/her email.
 - Click ``Copy Link`` then send the link to the release person via slack or email.
5. Clone the etcd repository and checkout the target branch,
 - ``git clone --branch release-3.X git@github.com:etcd-io/etcd.git``
6. Run the release script under the repository's root directory, replacing ``${VERSION}`` with a value without the ``v`` prefix, i.e. ``3.5.13``.
 - ``DRY_RUN=false ./scripts/release.sh ${VERSION}``
 - **NOTE:** When doing a pre-release (i.e., a version from the main branch, 3.6.0-alpha.2), you will need to explicitly set the branch to main:

...

```
DRY_RUN=false BRANCH=main ./scripts/release.sh ${VERSION}
```

...

It generates all release binaries under the directory ``/tmp/etcd-release-${VERSION}/etcd/release/`` and images.

Binaries are pushed to the Google Cloud bucket

under project `etcd-development`, and images are pushed to `quay.io` and `gcr.io`.

7. Publish the release page on GitHub

- Open the ****draft**** release URL shown by the release script
- Click the pen button at the top right to edit the release
- Review that it looks correct, reviewing that the bottom checkboxes are checked depending on the release version (v3.4 no checkboxes, v3.5 has the set as latest release checkbox checked, v3.6 has the set as pre-release checkbox checked)
- Then, publish the release

8. Announce to the etcd-dev googlegroup

Follow the format of previous release emails sent to etcd-dev@googlegroups.com, see an example below. After sending out the email, ask one of the mailing list maintainers to approve the email from the pending list. Additionally, label the release email as `Release`.

```
```text
```

Hello,

etcd v3.4.30 is now public!

<https://github.com/etcd-io/etcd/releases/tag/v3.4.30>

Thanks to everyone who contributed to the release!

etcd team

```
```
```

9. Update the changelog to reflect the correct release date.

10. Paste the release link to the issue raised in Step 1 and close the issue.

11. Restore standard branch protection settings and raise a follow-up `kubernetes/org` pull request to return to least privilege permissions.

12. Create a new stable branch through `git push origin release-\${VERSION\_MAJOR}.\${VERSION\_MINOR}` if this is a new major or minor stable release.

13. Re-generate a new password for quay.io if needed (e.g. shared to a contributor who isn't in the release team, and we should rotate the password at least once every 3 months).

Release known issues

1. Timeouts pushing binaries - If binaries fail to fully upload to Google Cloud storage, the script must be re-run using the same command. Any artifacts that are already pushed will be overwritten to ensure they are correct. The storage bucket does not use object versioning so incorrect files cannot remain.

2. Timeouts pushing images - It is rare, although possible for connection timeouts to occur when publishing etcd release images to `quay.io` or `gcr.io`. If this occurs, it is known to be safe to rerun the release script command appending the `--no-upload` flag, and image uploads will gracefully resume.

3. GPG vs SSH signing - The release scripts assume that git tags will be signed with a GPG key. Since 2022 GitHub has supported [signing commits and tags using ssh](https://github.blog/changelog/2022-08-23-ssh-commit-

verification-now-supported). Until further release script updates are completed you will need to disable this feature in your `~/gitconfig` and revert to signing via GPG to perform etcd releases.`

Golang modules

The etcd project (since version 3.5) is organized into multiple [golang modules](https://golang.org/ref/mod) hosted in a [single repository](https://golang.org/ref/mod#vcs-dir).

![modules graph](modules.svg)

There are the following modules:

- **go.etcd.io/etcd/api/v3** - contains API definitions (like protos & proto-generated libraries) that defines communication protocol between etcd clients and servers.
- **go.etcd.io/etcd/pkg/v3** - a collection of utility packages used by etcd without being specific to etcd itself. A package belongs here only if it could possibly be moved out into its own repository in the future. Please avoid adding here code that has a lot of dependencies on its own, as they automatically become dependencies of the client library (that we want to keep lightweight).
- **go.etcd.io/etcd/client/v3** - client library used to contact etcd over the network (grpc). Recommended for all new usage of etcd.
- **go.etcd.io/raft/v3**
 - implementation of distributed consensus protocol. Should have no etcd specific code. Hosted in a separate repository: <https://github.com/etcd-io/raft>.
- **go.etcd.io/etcd/server/v3** - etcd implementation.
The code in this package is internal to etcd and should not be consumed by external projects. The package layout and API can change within the minor versions.
- **go.etcd.io/etcd/etcdctl/v3** - a command line tool to access and manage etcd.
- **go.etcd.io/etcd/tests/v3** - a module that contains all integration tests of etcd.
Notice: All unit tests (fast and not requiring cross-module dependencies) should be kept in the local modules of the code under the test.
- **go.etcd.io/bbolt** - implementation of persistent b-tree.
Hosted in a separate repository: <https://github.com/etcd-io/bbolt>.

Operations

1. All etcd modules should be released in the same versions, e.g. `go.etcd.io/etcd/client/v3@v3.5.10` must depend on `go.etcd.io/etcd/api/v3@v3.5.10`.`

The consistent updating of versions can be performed using:

```
```shell script
% DRY_RUN=false TARGET_VERSION="v3.5.10" ./scripts/release_mod.sh update_versions
```
```

2. The released modules should be tagged according to <https://golang.org/ref/mod#vcs-version> rules, i.e. each module should get its own tag.

The tagging can be performed using:

```
```shell script
% DRY_RUN=false REMOTE_REPO="origin" ./scripts/release_mod.sh push_mod_tags
```
```

3. All etcd modules should depend on the same versions of underlying dependencies.

This can be verified using:

```
```shell script
% PASSES="dep" ./test.sh
```
```

4. The go.mod files must not contain dependencies not being used and must conform to `go mod tidy` format.

This is being verified by:

```
```
% PASSES="mod_tidy" ./test.sh
```
```

5. To trigger actions across all modules (e.g. auto-format all files), please use/expand the following script:

```
```shell script
% ./scripts/fix.sh
```
```

###

Future

As a North Star, we would like to evaluate etcd modules towards the following model:

![modules graph](modules-future.svg)

This assumes:

- Splitting etcdmigrate/etcdadm out of etcdctl binary.
Thanks to this etcdctl would become clearly a command-line wrapper around network client API, while etcdmigrate/etcdadm would support direct physical operations on the etcd storage files.
- Splitting etcd-proxy out of ./etcd binary, as it contains more experimental code so carries additional risk & dependencies.
- Deprecation of support for v2 protocol.

Reporting bugs

If any part of the etcd project has bugs or documentation mistakes, please let us know by [opening an issue][etcd-issue]. We treat bugs and mistakes very seriously and believe no issue is too small. Before creating a bug report, please check that an issue reporting the same problem does not already exist.

To make the bug report accurate and easy to understand, please try to create bug reports that are:

- Specific. Include as many details as possible: which version, what environment, what configuration, etc. If the bug is related to running the etcd server, please attach the etcd log (the starting log with the etcd configuration is especially important).
- Reproducible. Include the steps to reproduce the problem. We understand some issues might be hard to reproduce, please include the steps that might lead to the problem. If possible, please attach the affected etcd data dir and stack trace to the bug report.
- Isolated. Please try to isolate and reproduce the bug with minimum dependencies. It would significantly slow down the speed to fix a bug if too many dependencies are involved in a bug report. Debugging external systems that rely on etcd is out of scope, but we are happy to provide guidance in the right direction or help with using etcd itself.
- Unique. Do not duplicate existing bug reports.
- Scoped. One bug per report. Do not follow up with another bug inside one report.

It may be worthwhile to read [Elika Etemads article on filing good bug reports][filing-good-bugs] before creating a bug report.

We might ask for further information to locate a bug. A duplicated bug report will be closed.

Frequently asked questions

How to get a stack trace

```
``` bash
$ kill -QUIT $PID
```
```

How to get the etcd version

```
``` bash
$ etcd --version
```
```

How to get etcd configuration and log when it runs as systemd service etcd2.service

```
``` bash
$ sudo systemctl cat etcd2
```

```
$ sudo journalctl -u etcd2
...
```

Due to an upstream systemd bug, journald may miss the last few log lines when its processes exit. If journalctl says etcd stopped without a fatal or panic message, try `sudo journalctl -f -t etcd2` to get the full log.

[etcd-issue]: <https://github.com/etcd-io/etcd/issues/new>

[filing-good-bugs]: <http://fantasai.inkedblade.net/style/talks/filing-good-bugs/>

# Community membership

This doc outlines the various responsibilities of contributor roles in etcd.

| Role       | Responsibilities                             | Requirements                                                  | Defined by |
|------------|----------------------------------------------|---------------------------------------------------------------|------------|
| Member     | Active contributor in the community          | Sponsored by 2 reviewers and multiple contributions           |            |
| Reviewer   | Review contributions from other members      | History of review and authorship                              |            |
| Maintainer | Set direction and priorities for the project | Demonstrated responsibility and excellent technical judgement |            |

## ## New contributors

New contributors should be welcomed to the community by existing members, helped with PR workflow, and directed to relevant documentation and communication channels.

## ## Established community members

Established community members are expected to demonstrate their adherence to the principles in this document, familiarity with project organization, roles, policies, procedures, conventions, etc., and technical and/or writing ability. Role-specific expectations, responsibilities, and requirements are enumerated below.

## ## Member

Members are continuously active contributors to the community. They can have issues and PRs assigned to them. Members are expected to remain active contributors to the community.

**\*\*Defined by:\*\*** Member of the etcd GitHub organization.

## ### Requirements

- Enabled [two-factor authentication] on their GitHub account
- Have made multiple contributions to the project or community. Contribution may include, but is not limited to:
  - Authoring or reviewing PRs on GitHub. At least one PR must be **\*\*merged\*\***.
  - Filing or commenting on issues on

#### GitHub

- Contributing to community discussions (e.g. meetings, Slack, email discussion forums, Stack Overflow)
- Subscribed to [etcd-dev@googlegroups.com](https://groups.google.com/g/etcd-dev)
- Have read the [contributor guide]
- Sponsored by two active maintainers or reviewers.
  - Sponsors must be from multiple member companies to demonstrate integration across the community.
  - With no objections from other maintainers
- Open a [membership nomination] issue against the `kubernetes/org` repo
  - Ensure your sponsors are @mentioned on the issue
  - Make sure that the list of contributions included is representative of your work on the project.
- Members can be removed by a supermajority of the maintainers or can resign by notifying the maintainers.

#### ### Responsibilities and privileges

- Responsive to issues and PRs assigned to them
- Granted "triage access" to etcd project
- Active owner of code they have contributed (unless ownership is explicitly transferred)
  - Code is well-tested
  - Tests consistently pass
  - Addresses bugs or issues discovered after code is accepted

**\*\*Note:\*\*** Members who frequently contribute code are expected to proactively perform code reviews and work towards becoming a **\*reviewer\***.

#### ## Reviewers

Reviewers are contributors who have demonstrated greater skill in reviewing the code from other contributors. They are knowledgeable about both the codebase and software engineering principles. Their LGTM counts towards merging a code change into the project. A reviewer is generally on the ladder towards maintainership.

**\*\*Defined by:\*\*** **\*reviewers\*** entry in the [OWNERS] file.

#### ### Requirements

- member for at least 3 months.
- Primary reviewer for at least 5 PRs to the codebase.
- Reviewed or contributed at least 20 substantial PRs to the codebase.
- Knowledgeable about the codebase.
- Sponsored by two active maintainers.

- Sponsors must be from multiple member companies to demonstrate integration across the community.
- With no objections from other maintainers
- Reviewers can be removed by a supermajority of the maintainers or can resign by notifying the maintainers.

### ### Responsibilities and privileges

- Code reviewer status may be a precondition to accepting large code contributions
- Responsible for project quality control via code reviews
  - Focus on code quality and correctness, including testing and factoring
  - May also review for more holistic issues, but not a requirement
- Expected to be responsive to review requests
- Assigned PRs to review related to area of expertise
- Assigned test bugs related to area of expertise
- Granted "triage access" to etcd project

### ## Maintainers

Maintainers are first and foremost contributors who have shown they are committed to the long-term success of a project. Maintainership is about building trust with the current maintainers and being a person that they can depend on to make decisions in the best interest of the project in a consistent manner.

**\*\*Defined by:\*\*** **\*approvers\*** entry in the [OWNERS] file.

### ### Requirements

- Deep understanding of the technical goals and direction of the project
- Deep understanding of the technical domain of the project
- Sustained contributions to design and direction by doing all of:
  - Authoring and reviewing proposals
  - Initiating, contributing, and resolving discussions (emails, GitHub issues, meetings)
  - Identifying subtle or complex issues in the designs and implementation of PRs
- Directly contributed to the project through implementation and/or review
- Sponsored by two active maintainers and elected by supermajority
  - Sponsors must be from multiple member companies to demonstrate integration across the community.
- To become a maintainer send an email with your candidacy to [etcd-maintainers-private@googlegroups.com](mailto:etcd-maintainers-private@googlegroups.com)
  - Ensure your sponsors are @mentioned in the email
  - Include a list of contributions representative of your work on the project.

- Existing maintainers will privately respond to the email with either acceptance or feedback for suggested improvement.

- With your membership approved you are expected to:
  - Open a PR and add an entry to the [OWNERS] file
  - Subscribe to [etcd-maintainers@googlegroups.com](mailto:etcd-maintainers@googlegroups.com) and [etcd-maintainers-private@googlegroups.com](mailto:etcd-maintainers-private@googlegroups.com)
  - Request to join [etcd-maintainer teams of etcd organization of GitHub](<https://github.com/orgs/etcd->

io/teams/maintainers-etcd)

- Request to join the private slack channel for etcd maintainers on [kubernetes slack](http://slack.kubernetes.io/)
- Request access to etcd-development GCP project where we publish releases
- Request access to passwords shared between maintainers

### ### Responsibilities and privileges

- Make and approve technical design decisions
- Set technical direction and priorities
- Define milestones and releases
- Mentor and guide reviewers, and contributors to the project.
- Participate when called upon in the [security disclosure and release process]
- Ensure the continued health of the project
  - Adequate test coverage to confidently release
  - Tests are passing reliably (i.e. not flaky) and are fixed when they fail
- Ensure a healthy process for discussion and decision-making is in place.
- Work with other maintainers to maintain the project's overall health and success holistically

### ### Retiring

Life priorities, interests, and passions can change. Maintainers can retire and move to [emeritus maintainers]. If a maintainer needs to step down, they should inform other maintainers and, if possible, help find someone to pick up the related work. At the very least, ensure the related work can be continued. Afterward, they can remove themselves from the list of existing maintainers.

If a maintainer has not been performing their duties for 12 months, they can be removed by other maintainers. In that case, the inactive maintainer will be first notified via an email. If the situation doesn't improve, they will be removed.

If an emeritus maintainer wants to regain an active role, they can do so by renewing their contributions. Active maintainers should welcome such a move. Retiring other maintainers or regaining the status should require the approval of at least two active maintainers.

### ## Acknowledgements

Contributor roles and responsibilities were written based on [Kubernetes community membership]

[OWNERS]: /OWNERS

[contributor guide]: /CONTRIBUTING.md

[membership nomination]: <https://github.com/kubernetes/org/issues/new?assignees=&labels=area%2Fgithub-membership&projects=&template=membership.yml&title=REQUEST%3A+New+membership+for+%3Cyour-GH-handle%3E>

[Kubernetes community membership]: <https://github.com/kubernetes/community/blob/master/community-membership.md>

[emeritus maintainers]: /README.md#etcd-emeritus-maintainers



[security disclosure and release process]: /security/README.md

[two-factor authentication]: <https://docs.github.com/en/authentication/securing-your-account-with-two-factor-authentication-2fa/about-two-factor-authentication>

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Version 2.0, January 2004  
<http://www.apache.org/licenses/>

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#### # Logging Conventions

etcd uses the [zap][zap] library for logging application output categorized into *\*levels\**. A log message's level is determined according to these conventions:

\* Debug: Everything is still fine, but even common operations may be logged, and less helpful but more quantity of notices. Usually not used in production.

\* Examples:

- \* Send a normal message to a remote peer
- \* Write a log entry to disk

\* Info: Normal, working log information, everything is fine, but helpful notices for auditing or common operations. Should rather not be logged more frequently than once per a few seconds in a normal server's operation.

\* Examples:

- \* Startup configuration
- \* Start to do a snapshot

\* Warning: (Hopefully) Temporary conditions that may cause errors, but may work fine. A replica disappearing (that may reconnect) is a warning.

\* Examples:

- \* Failure to send a raft message to a remote peer
- \* Failure to receive heartbeat message within the configured election timeout

\* Error: Data has been lost, a request has failed for a bad reason, or a required resource has been lost.

\* Examples:

- \* Failure to allocate disk space for WAL
- \* Panic: Unrecoverable or unexpected error situation that requires stopping execution.
- \* Examples:
  - \* Failure to create the database
- \* Fatal: Unrecoverable or unexpected error situation that requires immediate exit. Mostly used in the test.
- \* Examples:
  - \* Failure to find the data directory
  - \* Failure to run a test function

[zap]: <https://github.com/uber-go/zap>

# Dependency management

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## ## Main branch

The dependabot is enabled & [configured](<https://github.com/etcd-io/etcd/blob/main/.github/dependabot.yml>) to manage dependencies for etcd `main` branch. But dependabot doesn't work well for multi-module repository like `etcd`,

see [dependabot-core/issues/6678](<https://github.com/dependabot/dependabot-core/issues/6678>).

Usually, human intervention is required

each time when dependabot automatically opens some PRs to bump dependencies.

Please see the guidance below.

### ### Dependencies used in workflows

The PRs that automatically bump dependencies (see examples below) used in workflows are fine and can be approved & merged directly as long as all checks are successful.

- [build(deps): bump github/codeql-action from 2.2.11 to 2.2.12](<https://github.com/etcd-io/etcd/pull/15736>)
- [build(deps): bump actions/checkout from 3.5.0 to 3.5.2](<https://github.com/etcd-io/etcd/pull/15735>)
- [build(deps): bump ossf/scorecard-action from 2.1.2 to 2.1.3](<https://github.com/etcd-io/etcd/pull/15607>)

### ### Bumping order

When multiple etcd modules depend on the same package, please bump the package version for all the modules in the correct order. The rule is simple:

if module A depends on module B, then bump the dependency for module B before module A. If the two modules do not depend on each other, then

it doesn't matter to bump which module first. For

example, multiple modules depend on `github.com/spf13/cobra`, so we need to bump the dependency in the following order,

- go.etcd.io/etcd/pkg/v3
- go.etcd.io/etcd/server/v3
- go.etcd.io/etcd/etcdctl/v3
- go.etcd.io/etcd/etcdutl/v3
- go.etcd.io/etcd/tests/v3
- go.etcd.io/etcd/v3
- go.etcd.io/etcd/tools/v3

For more details about etcd Golang modules, please check <<https://etcd.io/docs/next/dev-internal/modules>>

Note the module `go.etcd.io/etcd/tools/v3` doesn't depend on any other modules, nor by any other modules, so it doesn't matter when to bump dependencies for it.

### ### Steps to bump a dependency

Use the `github.com/spf13/cobra` as an example, follow the steps below to bump it from 1.6.1 to 1.7.0 for module `go.etcd.io/etcd/etcdctl/v3`,

```
```bash
cd ${ETCD_ROOT_DIR}/etcdctl
go get github.com/spf13/cobra@v1.7.0
go mod tidy
cd ..
./scripts/fix.sh
```
```

Execute the same steps for all other modules. When you finish bumping the dependency for all modules, then commit the change,

```
```bash
git
add .
git commit --signoff -m "dependency: bump github.com/spf13/cobra from 1.6.1 to 1.7.0"
```
```

Please close the related PRs which were automatically opened by dependabot.

When you bump multiple dependencies in one PR, it's recommended to create a separate commit for each dependency. But it isn't a must; for example,

you can get all dependencies bumping for the module `go.etcd.io/etcd/tools/v3` included in one commit.

### #### Troubleshooting

In an event of bumping the version of protoc, protoc plugins or grpc-gateway, it might change `\*.proto` file which can result in the following error:

```
```bash
[0;31mFAIL: 'genproto' FAILED at Wed Jul 31 07:09:08 UTC 2024
make: *** [Makefile:134: verify-genproto] Error 255
```
```

To fix the above error, run the following script from the root of etcd repository:

```
```bash
./scripts/genproto.sh
```
```

### ### Indirect dependencies

Usually, we don't bump a dependency if all modules just indirectly depend on it, such as `github.com/go-logr/logr`.

If

an indirect dependency (e.g. `D1``) causes any CVE or bugs that affect etcd, usually the module (e.g. `M1``, not part of etcd, but used by etcd) which depends on it should bump the dependency (`D1``), and then etcd just needs to bump `M1``. However, if the module (`M1``) somehow doesn't bump the problematic dependency, then etcd can still bump it (`D1``) directly following the same steps above. But as a long-term solution, etcd should try to remove the dependency on such module (`M1``) that lack maintenance.

For mixed cases, in which some modules directly while others indirectly depend on a dependency, we have multiple options,

- Bump the dependency for all modules, no matter it's direct or indirect dependency.
- Bump the dependency only for modules that directly depend on it.

We should try to follow the first way, and temporarily fall back to the second one if we run into any issue on the first way. Eventually we should fix the issue and ensure all modules depend on the same version of the dependency.

### ### Known incompatible dependency updates

#### #### arduino/setup-protoc

Please refer to [build(deps): bump arduino/setup-protoc from 1.3.0 to 2.0.0](<https://github.com/etcd-io/etcd/pull/16016>)



### ### Rotation worksheet

The dependabot scheduling interval is weekly; it means dependabot will automatically raise a bunch of PRs per week.

Usually, human intervention is required each time. We have a [rotation worksheet](<https://docs.google.com/spreadsheets/d/1jodHIO7Dk2VWTs1IRnfMFaRktS9IH8XRyifOnPdSY8I/edit#gid=1394774387>),

and everyone is welcome to participate; you just need to register your name in the worksheet.

### ## Stable branches

Usually, we don't proactively bump dependencies for stable releases unless there are any CVEs or bugs that affect etcd.

If we have to do it, then follow the same guidance above. Note that there is no `./scripts/fix.sh`` in release-3.4, so no need to execute it for 3.4.

### ## Golang versions

The etcd project aims to maintain a development branch that is on the latest [Go version](<https://go.dev/dl>), ideally, this will align with the Go version in use for Kubernetes project development. For an example of how to update etcd to a new minor release of Go refer to issue <<https://github.com/etcd-io/etcd/issues/16393>> and the linked pull requests.

Suggested steps for performing a minor version upgrade for the etcd development branch:

1. Carefully review new Go version release notes and potentially related blog posts for any deprecations, performance impacts, or other considerations.
2. Create a GitHub issue to signal intent to upgrade and invite discussion, for example, <<https://github.com/etcd-io/etcd/issues/16393>>.
3. Complete the upgrade locally in your development environment by editing ``.go-version`` and running ``make fix``.
4. Run performance benchmarks locally to compare before and after.
5. Raise a pull request for the changes, for example, <<https://github.com/etcd-io/etcd/pull/16394>>.

Stable etcd release branches will be maintained to stay on the latest patch release of a supported Go version. Upgrading minor versions will be completed before the minor version in use currently is no longer supported. Refer to the [Go release policy](<https://go.dev/doc/devel/release>).

For an example of how to update etcd to a new patch release of Go refer to issue <<https://github.com/etcd-io/etcd/issues/16343>> and the linked pull requests.

References:

- <<https://github.com/kubernetes/sig-release/blob/master/release-engineering/handbooks/go.md>>

### ## Core dependencies mappings

[bbolt](https://github.com/etcd-io/bbolt) and [raft](https://github.com/etcd-io/raft) are two core dependencies of etcd.

Both etcd 3.4.x and 3.5.x depend on bbolt 1.3.x, and etcd 3.6.x (`main` branch) depends on bbolt 1.4.x.

raft is included in the etcd repository for release-3.4 and release-3.5 branches, so etcd 3.4.x and 3.5.x do not depend on any

external raft module. We moved raft into [a separate repository](https://github.com/etcd-io/raft) starting from 3.6 (`main` branch), and the first raft release will be v3.6.0, so etcd 3.6.x will depend on raft 3.6.x.

Please see the table below:

| etcd versions     | bbolt versions | raft versions |
|-------------------|----------------|---------------|
| ----- ----- ----- |                |               |
| 3.4.x             | v1.3.x         | N/A           |
| 3.5.x             | v1.3.x         | N/A           |
| 3.6.x             | v1.4.x         | v3.6.x        |

# 1.470 golang-genproto 0.0.0-20251213004720-97cd9d5aeac2

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# 1.471 go-yaml 1.19.1

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```
x:
- x x
{
 "x": [
 "x x"
]
}
```

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```
x:
- x
x
```

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## 1.474 mime-type 1.4.12

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## 1.475 goccy-go-yaml 1.19.1

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```
x:
- x x
{
 "x": [
 "x x"
]
}
```

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x:

- x

x

## 1.476 Iz4 4.1.23

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## 1.477 nats 1.48.0

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# 1.480 itchyny-gojq 0.12.18

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# 1.481 lua 5.4.8-r0

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```
/opt/cola/permits/2514356976_1767893668.3712664/0/lua-5-4-8-1-tar-gz/lua-5.4.8/doc/manual.html<!DOCTYPE
HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN">
/opt/cola/permits/2514356976_1767893668.3712664/0/lua-5-4-8-1-tar-gz/lua-5.4.8/doc/readme.html<!DOCTYPE
HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN">
/opt/cola/permits/2514356976_1767893668.3712664/0/lua-5-4-8-1-tar-gz/lua-5.4.8/src/lua.h/*
```

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\*

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```
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN">
```

Found in path(s):

\* /lua-5-4-8-1-tar-gz/lua-5.4.8/doc/contents.html

# 1.482 netty-resolver-dns-classes-macos

## 4.1.129.Final

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```
/opt/cola/permits/2812288639_1767939769.0217235/0/netty-resolver-dns-classes-macos-4-1-129-final-jar/META-
INF/maven/io.netty/netty-resolver-dns-classes-macos/pom.xml<?xml version="1.0" encoding="UTF-8"?>
```

Found in path(s):

\*

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Manifest-Version: 1.0

Bundle-License: <https://www.apache.org/licenses/LICENSE-2.0>

Bundle-SymbolicName: io.netty.resolver-dns-classes-macos

Built-By: root

Bnd-LastModified: 1765488303087

Specification-Title: Netty/Resolver/DNS/Classes/MacOS

Implementation-Vendor-Id: io.netty

Bundle-DocURL: <https://netty.io/>

Import-Package: io.netty.channel.unix;version="[4.1,5)",io.netty.resol  
ver.dns;version="[4.1,5)",io.netty.util.internal;version="[4.1,5)",io

.netty.util.internal.logging;version="[4.1,5)",sun.nio.ch;resolution:  
=optional,org.eclipse.jetty.npn;version="[1,2)";resolution:=optional,  
org.eclipse.jetty.alpn;version="[1,2)";resolution:=optional,org.bouncycastle.jcajce.provider;version="[1.0,2)";resolution:=optional  
Require-Capability: osgi.ee;filter="(&(osgi.ee=JavaSE)(version=1.6))"  
Export-Package: io.netty.resolver.dns.macos;uses="io.netty.resolver.dns";version="4.1.129"  
Bundle-Name: Netty/Resolver/DNS/Classes/MacOS  
Build-Jdk-Spec: 1.8  
Implementation-Title: Netty/Resolver/DNS/Classes/MacOS  
Bundle-Description: Netty is an asynchronous event-driven network application framework for rapid development of maintainable high performance protocol servers and clients.  
Automatic-Module-Name: io.netty.resolver.dns.classes.macos  
Implementation-Version: 4.1.129.Final  
Specification-Vendor: The Netty Project  
Bundle-ManifestVersion: 2  
Bundle-Vendor: The Netty Project  
Tool: Bnd-6.3.1.202206071316  
Implementation-Vendor: The Netty Project  
Bundle-Version: 4.1.129.Final  
Created-By: Apache Maven Bundle Plugin 5.1.8  
Build-Jdk: 1.8.0\_472  
Specification-Version: 4.1  
Implementation-URL: <https://netty.io/netty-resolver-dns-classes-macos/>

Found in path(s):

\* /netty-resolver-dns-classes-macos-4-1-129-final-jar/META-INF/MANIFEST.MF

## 1.483 netty-transport-native-epoll

### 4.1.129.Final

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/opt/cola/permits/2812759653\_1767939814.6989794/0/netty-transport-native-epoll-4-1-129-final-jar/META-INF/maven/io.netty/netty-transport-native-epoll/pom.xml<?xml version="1.0" encoding="UTF-8"?>

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Manifest-Version: 1.0

Bundle-License: <https://www.apache.org/licenses/LICENSE-2.0>

Bundle-SymbolicName: io.netty.transport-native-epoll  
Built-By: root  
Bnd-LastModified: 1765488319790  
Specification-Title: Netty/Transport/Native/Epoll  
Implementation-Vendor-Id: io.netty  
Bundle-DocURL: https://netty.io/  
Import-Package: sun.nio.ch;resolution:=optional,org.eclipse.jetty.npn;  
version="[1,2)";resolution:=optional,org.eclipse.jetty.alpn;version="[  
[1,2)";resolution:=optional,org.bouncycastle.jcajce.provider;version=  
"[1.0,2)";resolution:=optional  
Bundle-Name: Netty/Transport/Native/Epoll  
Build-Jdk-Spec: 1.8  
Implementation-Title: Netty/Transport/Native/Epoll  
Bundle-Description: Netty is an asynchronous event-driven network appl  
ication framework for rapid development of maintainable high perfo  
rmance protocol servers and clients.  
Automatic-Module-Name: io.netty.transport.epoll.linux.x86\_64  
Implementation-Version: 4.1.129.Final  
Specification-Vendor:  
The Netty Project  
Bundle-ManifestVersion: 2  
Bundle-Vendor: The Netty Project  
Tool: Bnd-6.3.1.202206071316  
Implementation-Vendor: The Netty Project  
Bundle-Version: 4.1.129.Final  
Created-By: Apache Maven Bundle Plugin 5.1.8  
Build-Jdk: 1.8.0\_472  
Specification-Version: 4.1  
Implementation-URL: https://netty.io/netty-transport-native-epoll/

Found in path(s):

\* /netty-transport-native-epoll-4-1-129-final-jar/META-INF/MANIFEST.MF

## 1.484 netty-resolver-dns-native-macos

### 4.1.129.Final

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/opt/cola/permits/2812759618\_1767939788.3074608/0/netty-resolver-dns-native-macos-4-1-129-final-jar/META-  
INF/maven/io.netty/netty-resolver-dns-native-macos/pom.xml<?xml version="1.0" encoding="UTF-8"?>

Found in path(s):

\*



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Manifest-Version: 1.0  
Bundle-License: <https://www.apache.org/licenses/LICENSE-2.0>  
Bundle-SymbolicName: io.netty.resolver-dns-native-macos  
Built-By: root  
Bnd-LastModified: 1765488305495  
Specification-Title: Netty/Resolver/DNS/Native/MacOS  
Implementation-Vendor-Id: io.netty  
Bundle-DocURL: <https://netty.io/>  
Import-Package: sun.nio.ch;resolution:=optional,org.eclipse.jetty.npn;version="[1,2)";resolution:=optional,org.eclipse.jetty.alpn;version="[1,2)";resolution:=optional,org.bouncycastle.jcajce.provider;version="[1.0,2)";resolution:=optional  
Bundle-Name: Netty/Resolver/DNS/Native/MacOS  
Build-Jdk-Spec: 1.8  
Implementation-Title: Netty/Resolver/DNS/Native/MacOS  
Bundle-Description: Netty is an asynchronous event-driven network application framework for rapid development of maintainable high performance protocol servers and clients.  
Automatic-Module-Name: io.netty.resolver.dns.macos.linux.x86\_64  
Implementation-Version:  
4.1.129.Final  
Specification-Vendor: The Netty Project  
Bundle-ManifestVersion: 2  
Bundle-Vendor: The Netty Project  
Tool: Bnd-6.3.1.202206071316  
Implementation-Vendor: The Netty Project  
Bundle-Version: 4.1.129.Final  
Created-By: Apache Maven Bundle Plugin 5.1.8  
Build-Jdk: 1.8.0\_472  
Specification-Version: 4.1  
Implementation-URL: <https://netty.io/netty-resolver-dns-native-macos/>

Found in path(s):

\* /netty-resolver-dns-native-macos-4-1-129-final-jar/META-INF/MANIFEST.MF

# 1.485 spring-boot 3.5.8

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# 1.486 gobject-introspection 1.86.0

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Version 2, June 1991

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That's all there is to it!  
gobject-introspection has two licenses; one for the typelib library, and one for the tools.

\* The typelib libraries (girepository/) are licensed under the LGPLv2+. See the file COPYING.LGPL.

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# 1.487 logrus 1.9.3

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# 1.488 less 685-r0

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The

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# 1.489 elfutils 0.194-r0

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Version 3, 29 June 2007



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# 1.490 werkzeug 3.1.5

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```
#ifndef __VTV_H__
#define __VTV_H__

/* We could have used an enumeration here but it just makes it more
 difficult for the compiler to generate a call to this. These are
 used as arguments to the function __VLTChangePermission, declared
 below. */
#define __VLTP_READ_ONLY 0
#define __VLTP_READ_WRITE 1

#ifdef __cplusplus
extern "C" void __VLTChangePermission (int);
#else
extern void __VLTChangePermission (int);
#endif

#ifdef BIG_PAGE_SIZE
/* TODO - Replace '4096' below with correct big page size. */
#define VTV_PAGE_SIZE 4096
#else
#ifdef defined(__sun__) && defined(__svr4__) && defined(__sparc__)
#define VTV_PAGE_SIZE 8192
#elif defined(__loongarch_lp64)
```

```

/* The page size is configurable by the kernel to
be 4, 16 or 64 KiB.
For now, only the default page size of 16KiB is supported. */
#define VTV_PAGE_SIZE 16384
#else
#define VTV_PAGE_SIZE 4096
#endif
#endif

#endif /* __VTV_H__ */
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The

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Version 3, 29 June 2007

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(This file is under construction.) \*- text \*-

If you've contributed to gas and your name isn't listed here, it is not meant as a slight. I just don't know about it. Email me, [nickc@redhat.com](mailto:nickc@redhat.com) and I'll correct the situation.

This file will eventually be deleted: The general info will go into the documentation, and info on specific files will go into an AUTHORS file, as requested by the FSF.

+++++

Dean Elsner wrote the original gas for vax. [more details?]

Jay Fenlason maintained gas for a while, adding support for gdb-specific debug information and the 68k series machines, most of the preprocessing pass, and extensive changes in messages.c,

input-file.c, write.c.

K. Richard Pixley maintained gas for a while, adding various enhancements and many bug fixes, including merging support for several processors, breaking gas up to handle multiple object file format backends (including heavy rewrite, testing, an integration of the coff and b.out backends), adding configuration including heavy testing and verification of cross assemblers and file splits and renaming, converted gas to strictly ansi C including full prototypes, added support for m680[34]0 & cpu32, considerable work on i960 including a coff port (including considerable amounts of reverse engineering), a sparc opcode file rewrite, decstation, rs6000, and hp300hpux host ports, updated "know" assertions and made them work, much other reorganization, cleanup, and lint.

Ken Raeburn wrote the high-level BFD interface code to replace most of the code in format-specific I/O modules.

The original Vax-VMS support was contributed by David L. Kashtan. Eric Youngdale and Pat Rankin have done much work with it since.

The Intel 80386 machine description was written by Eliot Dresselhaus.

Minh Tran-Le at IntelliCorp contributed some AIX 386 support.

The Motorola 88k machine description was contributed by Devon Bowen of Buffalo University and Torbjorn Granlund of the Swedish Institute of Computer Science.

Keith

Knowles at the Open Software Foundation wrote the original MIPS back end (tc-mips.c, tc-mips.h), and contributed Rose format support that hasn't been merged in yet. Ralph Campbell worked with the MIPS code to support a.out format.

Support for the Zilog Z8k and Hitachi H8/300, H8/500 and SH processors (tc-z8k, tc-h8300, tc-h8500, tc-sh), and IEEE 695 object file format (obj-ieee), was written by Steve Chamberlain of Cygnus Solutions. Steve also modified the COFF back end (obj-coffbfd) to use BFD for some low-level operations, for use with the Hitachi, 29k and Zilog targets.

John Gilmore built the AMD 29000 support, added .include support, and simplified the configuration of which versions accept which pseudo-ops. He updated the 68k machine description so that Motorola's opcodes always produced fixed-size instructions (e.g. jsr), while synthetic instructions remained shrinkable (jsr). John fixed many

bugs, including true tested cross-compilation support, and one bug in relaxation that took a week and required the proverbial one-bit fix.

Ian Lance Taylor of Cygnus Solutions merged the Motorola and MIT syntaxes for the 68k, completed support for some COFF targets (68k, i386 SVR3, and SCO Unix), wrote the ECOFF support based on Michael Meissner's mips-tfile program, wrote the PowerPC and RS/6000 support, and made a few other minor patches. He handled the binutils releases for versions 2.7 through 2.9.

David Edelsohn contributed fixes for the PowerPC and AIX support.

Steve Chamberlain made gas able to generate listings.

Support for the HP9000/300 was contributed by Glenn Engel of HP.

Support for ELF format files has been worked on by Mark Eichin of Cygnus Solutions (original, incomplete implementation), Pete Hoogenboom at the University of Utah (HPPA mainly), Michael Meissner of the Open Software Foundation (i386 mainly), and Ken Raeburn of Cygnus Solutions (sparc, initial 64-bit support).

Several engineers at Cygnus Solutions have also provided many small bug fixes and configuration enhancements.

The initial Alpha support was contributed by Carnegie-Mellon University. Additional work was done by Ken Raeburn of Cygnus Solutions. Richard Henderson then rewrote much of the Alpha support.

Ian Dall updated the support code for the National Semiconductor 32000 series, and added support for Mach 3 and NetBSD running on the PC532.

Klaus Kaempf ported the assembler and the binutils to openVMS/Alpha.

Steve Haworth contributed the support for the Texas Instruction c30 (tms320c30).

H.J. Lu has contributed many patches and much testing.

Alan Modra reworked much of the i386 backend, improving the error checking, updating the code, and improving the 16 bit support, using patches from the work of Martynas Kunigelis and H.J. Lu.

Many others have contributed large or small bugfixes and enhancements. If you've contributed significant work and are not mentioned on this list, and want to be, let us know. Some of the history has been lost;

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d) If a facility in the modified Library refers to a function or a table of data to be supplied by an application program that uses the facility, other than as an argument passed when the facility is invoked, then you must make a good faith effort to ensure that, in the event an application does not supply such function or table, the facility still operates, and performs whatever part of its purpose remains meaningful.

(For example, a function in a library to compute square roots has a purpose that is entirely well-defined independent of the application. Therefore, Subsection 2d requires that any application-supplied function or table used by this function must be optional: if the application does not supply it, the square root function must still compute square roots.)

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This option is useful when you wish to copy part of the code of the Library into a program that is not a library.

4. You may copy and distribute the Library (or a portion or derivative of it, under Section 2) in object code or executable form under the terms of Sections 1 and 2 above provided that you accompany it with the complete corresponding machine-readable source code, which must be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange.

If distribution of object code is made by offering access to copy from a designated place, then offering equivalent access to copy the source code from the same place satisfies the requirement to distribute the source code, even though third parties are not compelled to copy the source along with the object code.

5. A program that contains no derivative of any portion of the Library, but is designed to work with the Library by

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However, linking a "work that uses the Library" with the Library creates an executable that is a derivative of the Library (because it contains portions of the Library), rather than a "work that uses the library". The executable is therefore covered by this License. Section 6 states terms for distribution of such executables.

When a "work that uses the Library" uses material from a header file that is part of the Library, the object code for the work may be a derivative work of the Library even though the source code is not. Whether this is true is especially significant if the work can be linked without the Library, or if the work is itself a library. The threshold for this to be true is not precisely defined by law.

If such an object file uses only numerical parameters, data structure layouts and accessors, and small macros and small inline functions (ten lines or less in length), then the use of the object file is unrestricted, regardless of whether it is legally a derivative work. (Executables containing this object code plus portions of the Library will still fall under Section 6.)

Otherwise, if the work is a derivative of the Library, you may distribute the object code for the work under the terms of Section 6. Any executables containing that work also fall under Section 6, whether or not they are linked directly with the Library itself.

6. As an exception to the Sections above, you may also combine or link a "work that uses the Library" with the Library to produce a work containing portions of the Library, and distribute that work under terms of your choice, provided that the terms permit modification of the work for the customer's own use and reverse engineering for debugging such modifications.

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d) If distribution of the work is made by offering access to copy from a designated place, offer equivalent access to copy the above specified materials from the same place.

e) Verify that the user has already received a copy of these materials or that you have already sent this user a copy.

For an executable, the required form of the "work that uses the Library" must include any data and utility programs needed for reproducing the executable from it. However, as a special exception, the materials to be distributed need not include anything that is normally distributed (in either source or binary form) with the major components (compiler, kernel, and so on) of the operating system on which the executable runs, unless that component itself accompanies the executable.

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"Source code" for a work means the preferred form of the work for making modifications to it. For a library, complete source code means all the source code for all modules it contains, plus any associated interface definition files, plus the scripts used to control compilation and installation of the library.

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d) If a facility in the modified Library refers to a function or a table of data to be supplied by an application program that uses the facility, other than as an argument passed when the facility is invoked, then you must make a good faith effort to ensure that, in the event an application does not supply such function or table, the facility still operates, and performs whatever part of its purpose remains meaningful.

(For example, a function in a library to compute square roots has a purpose that is entirely well-defined independent of the application. Therefore, Subsection 2d requires that any application-supplied function or table used by this function must be optional: if the application does not supply it, the square root function must still compute square roots.)

These requirements apply to the modified work as a whole. If identifiable sections of that work are not derived from the Library, and can be reasonably considered independent and separate works in themselves, then this License, and its terms, do not apply to those sections when you distribute them as separate works. But when you distribute the same sections as

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4. You may copy and distribute the Library (or a portion or derivative of it, under Section 2) in object code or executable form under the terms of Sections 1 and 2 above provided that you accompany it with the complete

corresponding machine-readable source code, which must be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange.

If distribution of object code is made by offering access to copy from a designated place, then offering equivalent access to copy the source code from the same place satisfies the requirement to distribute the source code, even though third parties are not compelled to copy the source along with the object code.

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If such an object file uses only numerical parameters, data structure layouts and accessors, and small macros and small inline functions (ten lines or less in length), then the use of the object file is unrestricted, regardless of whether it is legally a derivative work. (Executables containing this object code plus portions of the Library will still fall under Section 6.)

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b) Use a suitable shared library mechanism for linking with the Library. A suitable mechanism is one that (1) uses at run time a copy of the library already present on the user's computer system, rather than copying library functions into the executable, and (2) will operate properly with a modified version of the library, if the user installs one, as long as the modified version is interface-compatible with the version that the work was made with.

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# 1.501 mpfr4 4.2.2-r0

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```
#
These procedures come from the source code of GFun.
#
getname:=proc(yofz::function(name), y, z)
y:=op(0,yofz);
if type(y,'procedure') then error `not an unassigned name`,y fi;
z:=op(yofz)
end proc;
```

```

#
returns the smallest i such that u(n+i) appears in a recurrence
#
minindex := proc(rec,u,n)
 min(op(map(op,indets(rec,'specfunc'('linear'(n),u)))))-n
end proc:

#
returns the largest i such that u(n+i) appears in a recurrence
#
maxindex := proc(rec,u,n)
 max(op(map(op,indets(rec,'specfunc'('linear'(n),u)))))-n
end proc:

#
A recurrence of the form $a(n+d) = p(n)/q(n) a(n)$ is represented through a record:
OneTermRecurrence : record(order, numerator, denominator)
#
`type/OneTermRecurrence` := 'record(order, numerator, denominator)';

#
#checkOneTermRecurrence
Input: a recurrence rec (either with or without initial conditions).
If it has initial conditions, they are ignored.
a(n): the name of the sequence and the name of the variable.
#
Output:
#
This procedure checks that rec is a recurrence of the form $a(n+d) = p(n)/q(n) a(n)$
If the check succeeds, it returns the corresponding record. If it fails, an error is
returned.
#
checkOneTermRecurrence := proc(rec, aofn)::OneTermRecurrence;
 local r, d, a, n, term1, term2, res;

 getname(aofn, a, n):
 if type(rec, 'set') then
 r:=select(has, rec, n);
 if nops(r)>1
 then error `invalid recurrence`, rec
 fi:
 if nops(r)=0
 then error "%1 does not appear in the recurrence", n

```

```

fi:
r := op(r):
else r:=rec:
fi:
if type(r,`=``)
then r:=op(1,r)-op(2,r)
fi:
if indets(r,'specfunc'('anything',a)) <> indets(r,'specfunc'('linear'(n),a))
then error "the recurrence contains elements that are not linear in %1", n
fi:
if nops(r) <> 2
then error "the recurrence contains %1 terms (expected 2)", nops(r)
fi:
r := subs(n=n-minindex(r, a, n), r):
d := maxindex(r, a, n):

term1 := select(has, r, a(n)):
term2 := select(has, r, a(n+d)):

res := factor(-(term1/a(n)) / (term2/a(n+d))):

Record('order'=d, 'numerator' = numer(res), 'denominator' = denom(res))
end proc:

#
my_factors factorizes p the same way as factors(p) would do except that the constant part is computed
differently. We assume here that p has integer coefficients, and we want to factorize it over polynomials
with integer coefficients. my_factors ensures that the factors have integer coefficients.
#
my_factors := proc(p)
local L, c, fact, i, my_c, my_fact, q:
L := factors(p):
c := L[1]: fact := L[2]:
my_c := c: my_fact := []:
for i from 1 to nops(fact) do
q := denom(fact[i][1]):
my_fact := [op(my_fact), [fact[i][1]*q, fact[i][2]]]:
my_c := my_c / (q^fact[i][2]):
od:
[my_c, my_fact]:
end proc:

#
This procedure decomposes a one-term recurrence with the following form:
$a(n+d) = c * s1(n)/s1(n+d) * s2(n+d)/s2(n) * p(n)/q(n) * a(n)$
#

```

```

Known issue: this procedure assumes that the only variables involved are
n and x with their usual meaning.
#
decomposeOneTermRecurrence := proc(formalRec::OneTermRecurrence, res_cste, res_s1, res_s2, res_p, res_q)
local p, q, cste, s1, s2, d, L, i, tmp, exponent, r, polyring;
p := formalRec:-numerator:
q := formalRec:-denominator:
d := formalRec:-order:
s1 := 1:
L := op(2,my_factors(p)): # L contains the non trivial factors of p
for i from 1 to nops(L) do
 tmp := L[i][1]: exponent := L[i][2]:
 r := gcd(tmp^exponent, subs(n=n-d, q)):
 p := quo(p,r,n): q := quo(q, subs(n=n+d, r),n): s1 := s1 * r:
od:

s2 := 1:
L := op(2,my_factors(p)): # L contains the *remaining* non trivial factors of p
for i from 1 to nops(L) do
 tmp := L[i][1]: exponent := L[i][2]:
 r := gcd(tmp^exponent, subs(n=n+d, q)):
 p := quo(p, r, n): q := quo(q, subs(n=n-d, r), n): s2 := s2 * r:
od:

Finally we look for the constant part (with respect to n) of p/q
cste := op(1, my_factors(p))/op(1, my_factors(q)):
p := p/op(1, my_factors(p)): q :=
q/op(1, my_factors(q)):
polyring := RegularChains[PolynomialRing]([n,x]):
L := op(2, my_factors(p)):
for i from 1 to nops(L) do
 if RegularChains[MainVariable](L[i][1], polyring) = x
 then cste := cste * L[i][1]^L[i][2]: p := quo(p,L[i][1]^L[i][2],x):
 fi:
od:
L := op(2, my_factors(q)):
for i from 1 to nops(L) do
 if RegularChains[MainVariable](L[i][1], polyring) = x
 then cste := cste / L[i][1]^L[i][2]: q := quo(q,L[i][1]^L[i][2],x):
 fi:
od:

res_cste := cste;
res_s1 := s1;
res_s2 := s2;
res_p := simplify(p);
res_q := simplify(q);
end proc:

```



```

#
#coeffrecToTermsrec
Input: a linear recurrence rec (either with or without initial conditions).
a(n): the name of the sequence and the name of the variable.
x: a value or symbolic name
#
Output:
The recurrence satisfied by $a(n)*x^n$. Note that this recurrence is also denoted by $a(n)$.
If initial conditions were provided, corresponding initial conditions are computed.
#
coeffrecToTermsrec
:= proc(rec, aofn, x)
local a,n,L,r,cond,d,i,tmp,c,res;
getname(aofn, a, n);
if type(rec, 'set') then
 L := selectremove(has, rec, n);
 r := L[1];
 if nops(r)>1
 then error `invalid recurrence`, rec
 fi;
 if nops(r)=0
 then error "%1 does not appear in the recurrence", n
 fi;
 r := op(r);
 cond := L[2];
else r := rec;
fi;
d := maxindex(r, a, n);
L := indets(r,'specfunc'('linear'(n),a));
if indets(r,'specfunc'('anything',a)) <> L
 then error "the recurrence contains elements that are not linear in %1", n
fi;
L := map(op, L);
for i from 1 to nops(L) do
 r := subs(a(op(i,L))=a(op(i,L))*x^(d-op(i,L)+n), r);
od;
if cond<>'cond' then
 c := {}:
 for i from 1 to nops(cond) do
 tmp := op(i, cond): # tmp should have the form 'a(k) = cste'
 if not type(tmp, '=') then error "Invalid initial condition: %1", tmp: fi;
 L := selectremove(has, {op(tmp)}, a);
 if (nops(L[1]) <> 1) or (nops(L[2])<>1)
 then error "Invalid initial condition: %1", tmp:
 fi;
 tmp := op(1, L[1]): # tmp has the form 'a(k)'

```

```

 c := {op(c), tmp = op(1, L[2])*x^op(tmp)}:
od:
res := {r, op(c)}:
else res := r:
fi:
res:
end proc:

#
This procedure removes the conditions of the form a(k)=0 from the initial conditions of rec
It returns a list L = [L1, L2, ...] where Li = [k, expr] representing the condition a(k)=expr.
Moreover, it asserts that the Li are ordered by increasing k.
#
removeTrivialConditions := proc(rec, aofn)
local a,n,i,L,tmp,c,cond,k:
getname(aofn, a, n):
if not type(rec, 'set') then
 error "%1 is not a recurrence with initial conditions", rec
else
 L := selectremove(has, rec, n):
 cond := L[2]:
 if nops(cond)=0
 then error "%1 does not contain initial conditions", rec
 fi:
fi:
c := []:
for i from 1 to nops(cond) do
 tmp := op(i, cond): # tmp should have the form 'a(k) = cste'
 if not type(tmp, '=') then error
 "Invalid initial condition: %1", tmp: fi:
 L := selectremove(has, {op(tmp)}, a):
 if (nops(L[1]) <> 1) or (nops(L[2])<>1)
 then error "Invalid initial condition: %1", tmp:
 fi:
 if op(1, L[2])<>0 then c := [op(c), [op(op(1, L[1])), op(1, L[2])]]: fi:
od:
We check that the conditions are ordered by increasing k.
if (nops(c)=0) then return c: fi:
k := c[1][1]:
for i from 2 to nops(c) do
 if (c[i][1]<=k)
 then error "Unexpected error in removeTrivialConditions: the conditions are not correctly ordered (%1)\n", c
 else k := c[i][1]
 fi:
od:
c:
end proc:

```

```

#
findFixpointOfDifferences: takes a set L of integer and returns the smallest set S
containing L and such that for each i, S[i]-S[i-1] \in S
findFixpointOfDifferences := proc(L)
local res, i;
res := L;
for i from 2 to nops(L) do
 res := { op(res), L[i]-L[i-1] };
od;
if (res=L) then return res else return findFixpointOfDifferences(res) fi;
end proc;

```

```

#
error_counter functions
allows one to follow the accumulation of errors in each variable.
an error_counter is a list of the form [[var1, c1], [var2, c2], ...]
where the vari are variable names and the ci indicate how many approximation errors
are accumulated in vari.
#

```

```

#
This procedure initializes the counter associated with variable var to 1 (and creates it if needed.)
It returns an up-to-date error_counter.
init_error_counter := proc (var, error_counter)
local i, res;
res := error_counter;
for i from 1 to nops(res) do
 if (res[i][1]=var)
 then res[i][2] := 1;
 return res;
 fi
od;
res := [op(res), [var, 1]];
end;

```

```

#
This procedure adds a given number to the counter associated with variable var.
It returns an up-to-date error_counter.
add_to_error_counter := proc (var, n, error_counter)
local i, res;
res := error_counter;
for i from 1 to nops(res) do
 if (res[i][1]=var)
 then res[i][2] := res[i][2]+n;

```

```

 return res:
 fi
od:

res := [op(res), [var, n]]:
end proc:

#
This procedure sets the value of the counter associated with variable var.
It returns an up-to-date error_counter.
set_error_counter := proc(var, n, error_counter)
 local i, err:
 err := error_counter:
 for i from 1 to nops(err) do
 if (err[i][1]=var)
 then err[i][2] := n:
 return err:
 fi
 od:
 err := [op(err), [var, n]]:
end proc:

#
This procedure initializes the counter associated to the multiplication of var2 and var3,
putting the result in variable var1.
It returns an up-to-date error_counter.
error_counter_of_a_multiplication := proc (var1, var2, var3, error_counter)
 local i, res, c2, c3:
 c2 := 0: c3 := 0:
 for i from 1 to nops(error_counter) do
 if (error_counter[i][1]=var2) then c2 := error_counter[i][2] fi:
 if (error_counter[i][1]=var3) then c3 := error_counter[i][2] fi:
 if (error_counter[i][1]=var1)
 then
 res := [op(error_counter[1..i-1]), op(error_counter[i+1..nops(error_counter)])]
]
 fi:
 od:
 if (res = 'res') then res := error_counter fi:
 res := [op(res), [var1, c2+c3+1]]:
end:

#
Copies the error counter of var2 into var1
error_counter_on_copy := proc(var1, var2, error_counter)
 local i, err, c2:
 c2 := 0:
 for i from 1 to nops(error_counter) do

```

```

if (error_counter[i][1] = var2) then c2 := error_counter[i][2] fi:
if (error_counter[i][1] = var1)
then
 err := [op(error_counter[1..i-1]), op(error_counter[i+1..nops(error_counter))]]
fi:
od:
if (err = 'err') then err := error_counter fi:
if (c2 <> 0) then err := [op(res), [var1, c2]] fi:
end proc:

#
Returns the value of the error counter associated to a variable
find_in_error_counter := proc(var, error_counter)
local i:
for i from 1 to nops(error_counter) do
 if (error_counter[i][1] = var) then return error_counter[i][2] fi:
od:
return 0:
end proc:

#
generate_multiply_rational(fd, var1, var2, r, error_counter, indent) generates code for performing
#
var1 = var2*r in MPFR
fd is the file descriptor in which the code shall be produced.
var1 and var2 are strings representing variable names. r is a Maple rational number.
error_counter is an error_counter (as described above).
indent is an optional argument. It is a string used to correctly indent the code. It is prefixed to any
generated line. Hence, if indent=" ", the generated code will be indented by 2 spaces.
An up-to-date error_counter is returned.
generate_multiply_rational := proc(fd, var1, var2, r, error_counter, indent:="")
local p,q,err:
err := error_counter:
if (whattype(r)<>'fraction') and (whattype(r)<>'integer')
then error "generate_multiply_rational used with non rational number %1", r: fi:
if (abs(r)=1)
then
 if (var1=var2)
 then
 if (r<>1) then fprintf(fd, "%sMPFR_CHANGE_SIGN (%s);\n", indent, var1) fi:
 return err:
 else
 if (r=1)
 then fprintf(fd, "%smpfr_set (%s, %s, MPFR_RNDN);\n", indent, var1,
var2):
 else fprintf(fd, "%smpfr_neg (%s, %s, MPFR_RNDN);\n", indent, var1, var2):
 fi:
 fi:

```

```

 return error_counter_on_copy(var1, var2, err):
fi
fi:
Now, r is a rational number different from 1.
p := numer(r): q := denom(r):
if (abs(p)<>1)
then
 fprintf(fd, "%smpfr_mul_si (%s, %s, %d, MPFR_RNDN);\n", indent, var1, var2, p):
 err := error_counter_of_a_multiplication(var1, var2, "", err):
 if(q<>1)
 then
 fprintf(fd, "%smpfr_div_si (%s, %s, %d, MPFR_RNDN);\n", indent, var1, var1, q):
 err := error_counter_of_a_multiplication(var1, var1, "", err):
 fi:
else
 fprintf(fd, "%smpfr_div_si (%s, %s, %d, MPFR_RNDN);\n", indent, var1, var2, p*q):
 err := error_counter_of_a_multiplication(var1, var2, "", err):
fi:
return err:
end proc:

#
generate_multiply_poly is the same as generate_multiply_rational but when r is a rational fraction.
The fraction r must have the form p/q where p and q are polynomials with integer coefficients.
#
 Moreover, the gcd of the coefficients of p must be 1. Idem for q.
The procedure returned a list [m, d, err] where m is the set of indices k such that
a mpfr_mul_sik function is needed and idem for d with mpfr_div_sik.
err is an up-to-date error counter.
generate_multiply_poly := proc(fd, var1, var2, r, error_counter, indent:="")
local p,q,Lp,Lq,n,i,j,var, required_mulsi, required_divsi, err:
err := error_counter:
required_mulsi := {}:
required_divsi := {}:
p := numer(r): q := denom(r):
Lp := my_factors(p): Lq := my_factors(q):
if (Lp[1] <> 1)
 then error "generate_multiply_poly: an integer can be factored out of %1", p:
fi:
if (Lq[1] <> 1)
 then error "generate_multiply_poly: an integer can be factored out of %1", q:
fi:
Lp := Lp[2]: Lq := Lq[2]:
var := var2:
if (nops(Lp) <> 0)
then
 n := 0:

```

```

for i from 1 to nops(Lp) do n := n + Lp[i][2] od:
if (n=1)
then
 fprintf(fd, "%smpfr_mul_si (%s, %s", indent, var1, var):
else

 required_mulsi := { op(required_mulsi), n }:
 fprintf(fd, "%smpfr_mul_si%d (%s, %s", indent, n, var1, var):
fi:
for i from 1 to nops(Lp) do
 for j from 1 to Lp[i][2] do
 fprintf(fd, ", %a", Lp[i][1]):
 od:
od:
fprintf(fd, ", MPFR_RNDN);\n"):
err := set_error_counter(var1, n+find_in_error_counter(var, err) , err):
var := var1:
fi:
if (nops(Lq) <> 0)
then
 n := 0:
 for i from 1 to nops(Lq) do n := n + Lq[i][2] od:
 if (n=1)
 then
 fprintf(fd, "%smpfr_div_si (%s, %s", indent, var1, var):
 else
 required_divsi := { op(required_divsi), n }:
 fprintf(fd, "%smpfr_div_si%d (%s, %s", indent, n, var1, var)
 fi:
 for i from 1 to nops(Lq) do
 for j from 1 to Lq[i][2] do
 fprintf(fd, ", %a", Lq[i][1])
 od:
 od:
 fprintf(fd, ", MPFR_RNDN);\n"):
 err := set_error_counter(var1, n+find_in_error_counter(var, err) , err):
 var := var1:
fi:
if (var1 <> var) then
 fprintf(fd, "%smpfr_set
(%s, %s, MPFR_RNDN);\n", indent, var1, var):
 err := set_error_counter(var1, find_in_error_counter(var, err) , err):
fi:
return [required_mulsi, required_divsi, err]:
end proc:

```

#

```

This function generates the code of a procedure mpfr_mul_uin or mpfr_div_uin
#
generate_muldivsin := proc(op, n)
local i, var:
if ((op <> "mul") and (op <> "div"))
then error "Invalid argument to generate_muldivuin (%1). Must be 'mul' or 'div'", op
fi:
if (whattype(n) <> 'integer')
then error "Invalid argument to generate_muldivuin (%1). Must be an integer.", n
fi:

if (op="mul") then var := "MUL" else var := "DIV" fi:

printf("__MPFR_DECLSPEC void mpfr_div_si%d _MPFR_PROTO((mpfr_ptr, mpfr_srcptr,\n", n):
for i from n to 2 by -2 do
 printf(" long int, long int,\n"):
od:
if (i=1)
then
 printf(" long int, mpfr_rnd_t));\n"):
else
 printf(" mpfr_rnd_t));\n")
fi:

printf("\n\n\n"):
printf("void\n"):
printf("mpfr_%s_si%d (mpfr_ptr y, mpfr_srcptr x,\n", op, n):
for i from n to 2 by -2 do
 printf(" long int v%d, long int v%d,\n", n-i+1, n-i+2):
od:
if (i=1)
then
 printf(" long int v%d, mpfr_rnd_t mode)\n", n):
else
 printf(" mpfr_rnd_t mode)\n")
fi:
printf("{\n"):
printf(" long int acc = v1;\n"):
printf(" mpfr_set (y, x, mode);\n"):
for i from 2 to n do
 printf(" MPFR_ACC_OR_%s (v%d);\n", var, i):
od:
printf(" mpfr_%s_si (y, y, acc, mode);\n", op):
printf("}\n"):
return:
end proc:

```



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```
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```

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Public License instead of this License. But first, please read  
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read("metaMPFR\_common.mpl"):

```
FUNCTION_SERIES := 0;
FUNCTION_SERIES_RATIONAL := %+1;
CONSTANT_SERIES := %+1;
```

```
#####
We can now generate the code
#####
This procedure generate code for a straightforward evaluation of the series
corresponding to a recurrence.
```

```

rec is a recurrence with initial conditions
type can take three values, depending on which series should be evaluated:
FUNCTION_SERIES -> produces code for evaluating sum(a(i)*x^i)
FUNCTION_SERIES_RATIONAL -> produces code for evaluating sum(a(i)*(p/q)^i)
CONSTANT_SERIES -> produces code for evaluating sum(a(i))
name is the name that should be given to the produced procedure.
fofx is an optional parameter. It is the function being implemented.
-> if provided, this argument will be used to (heuristically)
 find the limits
of the function at +/-oo and find its asymptotical behavior.
IMPORTANT NOTE: it must be a function of the variable 'x'.
Moreover, neither _f nor x shall be assigned at the time of
calling the function
#
generateStraightforwardAlgo := proc(rec, aofn, type, name, filename, fofx := _f(x))
local a, b, n, fd, init_cond, nc, d, exponents, formalRec, c, s1, s2, p, q, hardconstant, f0, i0, ri0, i, j, var, var1, var2,
var3, guard_bits, required_mulsi, required_divsi, temp, error_counter, error_in_loop, maxofti, additional_error:

getname(aofn, a, n):

required_mulsi := {};
required_divsi := {};
fd := fopen(filename, WRITE):

We check that we have a recurrence of the form $a(n+d)=r(n)*a(n)$
and we extract its canonical form:
$a(n+d) = c * s1(n)/s1(n+d) * s2(n+d)/s2(n) * p(n)/q(n) * a(n)$
#
formalRec := checkOneTermRecurrence(rec, a(n)):
decomposeOneTermRecurrence(formalRec, c,
s1, s2, p, q):
d := formalRec:-order:

We keep only non-trivial initial conditions
init_cond := removeTrivialConditions(rec, a(n));
nc := nops(init_cond):
exponents := {1, d}:
for i from 1 to nc do
 exponents := { op(exponents), init_cond[i][1] }
od:
exponents := findFixpointOfDifferences(exponents):
exponents := exponents minus {0}:

error_counter := []:

fprintf(fd, "/* Evaluation by a straightforward algorithm */\n"):
fprintf(fd, "/* Code automatically generated by metaMPFR. */\n"):

```



```

fprintf(fd, "static int\n"):
if (type=FUNCTION_SERIES)
 then fprintf(fd, "mpfr_%a (mpfr_ptr res, mpfr_srcptr x, mpfr_rnd_t rnd)\n", name):
elif (type=FUNCTION_SERIES_RATIONAL)
 then fprintf(fd, "mpfr_%a (mpfr_ptr res, int u, int v, mpfr_rnd_t rnd)\n", name):
elif (type=CONSTANT_SERIES)
 then fprintf(fd, "mpfr_%a (mpfr_ptr res, mpfr_rnd_t rnd)\n", name):
fi:
fprintf(fd, "{\n"):

#####
#####
Declarations #####
#####

fprintf(fd, " MPFR_ZIV_DECL (loop);\n"):
fprintf(fd, " MPFR_SAVE_EXPO_DECL (expo);\n"):
fprintf(fd, " mpfr_prec_t wprec; /* working precision */\n"):
fprintf(fd, " mpfr_prec_t prec; /* target precision */\n"):
fprintf(fd, " mpfr_prec_t err; /* used to estimate the evaluation error */\n"):
fprintf(fd, " mpfr_prec_t correctBits; /* estimates the number of correct bits */\n"):
fprintf(fd, " unsigned long int k;\n"):
fprintf(fd, " unsigned long int conditionNumber; /* condition number of the series */\n"):
fprintf(fd, " unsigned assumed_exponent; /* used as a lowerbound of -EXP(f(x)) */\n"):
fprintf(fd, " int r; /* returned ternary value */\n"):
fprintf(fd, " mpfr_t s; /* used to store the partial sum */\n"):

if (whattype(c) = 'fraction') or (whattype(c) = 'integer')
 then hardconstant := 0
 else hardconstant := 1
fi:
if (type=FUNCTION_SERIES) then hardconstant := 1 fi:

if (hardconstant=1)
then
 if (type=CONSTANT_SERIES)
 then fprintf(fd, " mpfr_t x%d; /* used to store %a */\n", d, c):
 elif (type=FUNCTION_SERIES_RATIONAL)
 then fprintf(fd, " mpfr_t x%d; /* used to store %a */\n", d, c*(u/v)^d):
 elif (type=FUNCTION_SERIES)
 then fprintf(fd, " mpfr_t x%d; /* used to store %a */\n", d, c*x^d):
 fi:
fi:

if (type=FUNCTION_SERIES)
then
 fprintf(fd, " mpfr_t tmp;\n"):

```

```

if (nops(exponents)-1 >= 1) then fprintf(fd, " mpfr_t ") fi:
for i from 1 to nops(exponents)-1 do
 fprintf(fd, "x%d", exponents[i]):
 if (i<nops(exponents)-1) then fprintf(fd, ", ") else fprintf(fd, "; /* used to store x^i */") fi
od:
fi:

fprintf(fd, " mpfr_t ");
for i from 1 to nc do
 fprintf(fd, "tip%d", init_cond[i][1]):
 if (i<nc) then fprintf(fd, ", ") else fprintf(fd, "; /* used to store successive values of t_i */") fi:
od:
fprintf(fd, " int ");
for i from 1 to nc do
 fprintf(fd, "test%d", init_cond[i][1]):
 if (i<nc) then fprintf(fd, ", ") else fprintf(fd, ";\n") fi:
od:
fprintf(fd, " int global_test; /* used to test when the sum can be stopped */"):

fprintf(fd, "\n"):
fprintf(fd, " /* Logging */"):
if (type=FUNCTION_SERIES)
 then fprintf(fd, " MPFR_LOG_FUNC ((\\"x[%%#R]=%%R rnd=%%d\\", x, x, rnd), (\\"res[%%#R]=%%R\\", res,
res));\n\n")
elif (type=FUNCTION_SERIES_RATIONAL)
 then fprintf(fd, " MPFR_LOG_FUNC ((\\"x=u/v with u=%%d and v=%%d, rnd=%%d\\", u, v, rnd),
(\\"res[%%#R]=%%R\\", res, res));\n\n")
else fprintf(fd, " MPFR_LOG_FUNC ((\\"rnd=%%d\\", rnd), (\\"res[%%#R]=%%R\\", res, res));\n\n")
fi:

#####
Special cases
#####

if ((type=FUNCTION_SERIES) or (type=FUNCTION_SERIES_RATIONAL))
then
 fprintf(fd, " /* Special cases */"):

 if (type=FUNCTION_SERIES)
 then fprintf(fd, " if (MPFR_UNLIKELY (MPFR_IS_NAN (x)))\n")
 else fprintf(fd, " if (MPFR_UNLIKELY (v==0))\n")
 fi:
 fprintf(fd, " {\n"):
 fprintf(fd, " MPFR_SET_NAN (res);\n"):
 fprintf(fd, " MPFR_RET_NAN;\n"):
 fprintf(fd, " }\n"):

```

```

if (init_cond[1][1] > 0) then f0 := 0 else f0 := init_cond[1][2] fi:
if (type=FUNCTION_SERIES)
 then fprintf(fd, " if (MPFR_UNLIKELY (MPFR_IS_ZERO (x)))\n")
 else fprintf(fd, " if (MPFR_UNLIKELY (u==0))\n")
fi:
if (whattype(f0) = 'integer')
then
 fprintf(fd, " {\n"):
 fprintf(fd, " return mpfr_set_si (res, %a, rnd);\n", f0):
 fprintf(fd, " }\n")
else
 printf("You need to provide a function mpfr_%a0(mpfr_t, mpfr_rnd_t) that evaluates %a with correct
rounding\n",
name, f0):
 fprintf(fd, " {\n"):
 fprintf(fd, " return mpfr_%a0 (res, rnd);\n", name):
 fprintf(fd, " }\n")
fi:

if (type=FUNCTION_SERIES)
then
 fprintf(fd, " if (MPFR_UNLIKELY (MPFR_IS_INF (x)))\n"):
 fprintf(fd, " {\n"):
 for i from -1 to 1 by 2 do # Trick to handle both -oo and +oo
 if (i<0)
 then fprintf(fd, " if (MPFR_IS_NEG (x))\n"):
 else fprintf(fd, " else\n")
 fi:
 fprintf(fd, " {\n"):
 if (i<0) then f0 := "m" else f0 := "p" fi:
 if (fofx <> _f(x))
 then
 f0 := limit(fofx, x=i*infinity):
 if (whattype(f0)='integer')
 then fprintf(fd, " return mpfr_set_si (res, %a, rnd);\n", f0):
 elif (f0 = infinity) or (f0 = -infinity)
 then
 fprintf(fd, " MPFR_SET_INF(res);\n"):
 if (f0>0)
 then fprintf(fd, " MPFR_SET_POS(res);\n")
 else fprintf(fd,
" MPFR_SET_NEG(res);\n")
 fi:
 fprintf(fd, " MPFR_RET(0);\n"):
 else
 if (i<0) then f0 := "m" else f0 := "p" fi:
 fi:
 fi:
 fi:
 fi:

```

```

 if ((f0 = "p") or (f0 = "m"))
 then
 printf("You need to provide a function mpfr_%a%sinf(mpfr_t, mpfr_rnd_t) that evaluates lim(f(x), x=", name,
f0):
 if (f0 = "m") then printf("-") fi:
 printf("inf) with correct rounding.\n"):
 fprintf(fd, " return mpfr_%a%sinf(res, rnd);\n", name, f0)
 fi:
 fprintf(fd, " }\n")
 od:
 fprintf(fd, " }\n")
 fi:
fi:

#####
Precomputations
#####

fprintf(fd, "\n"):
fprintf(fd, " /* Save current exponents range *\n"):
fprintf(fd, " MPFR_SAVE_EXPO_MARK (expo);\n\n"):

if ((type=FUNCTION_SERIES) or (type=FUNCTION_SERIES_RATIONAL)
)
then fprintf(fd, " /* FIXME: special case for large values of |x| ? *\n\n")
fi:

Note : prec is the value such that we will try to compute an approximation
with relative error smaller than 2^(1-prec).
Several things may happen:
1) We do not achieve the intended error: this is because we badly estimated the exponent of the result
2) We achieve the error, but it is not sufficient to decide correct rounding (Ziv's bad case)
Against 1), we can try to make our estimate of the exponent better with any heuristic.
Against 2), we can consider more guard bits. 11 guard bits seem a good value for the beginning
(statistically, we expect to fail in less than 0.1 % of the cases)
wprec is the precision used during the computation, in order to ensure the final relative error 2^(1-prec)
#
fprintf(fd, " /* We begin with 11 guard bits *\n"):
fprintf(fd, " prec = MPFR_PREC(res) + 11;\n"):
fprintf(fd, " MPFR_ZIV_INIT
(loop, prec);\n"):

TODO: the value here can be chosen completely heuristically. We could do something much better
when fofx is known by using asympt(fofx, x, 1). A clean implementation appears to be complex though.
We must catch errors if the development does not exist (e.g. AiryAi(-x));
We must find a separation after which the asymptotic behavior is valid (e.g. x>1)
printf("The code contains a variable assumed_exponent arbitrarily set to 10. You can put any value heuristically

```

chosen. The closer it is to  $-\log_2(|f(x)|)$ , the better it is.\n");

fprintf(fd, " assumed\_exponent = 10; /\* TIP: You can put any value heuristically chosen. The closer it is to  $-\log_2(|f(x)|)$ , the better it is  $*/$ ");

# TODO: find a way of putting a rigorous value here.

# This value *\*must\** be rigorous: the safety of the implementation relies on it.

# Precisely, we need to have  $\sum(|a(i)*x^i|) \leq 2^{\text{conditionNumber}}$

fprintf(fd, " conditionNumber = xxx; /\* FIXME: set a value such that

$\sum(|a(i)*x^i|) \leq 2^{\text{conditionNumber}}$  \*/");

printf("The code contains a variable conditionNumber that you must manually set to a suitable value, in order to ensure that  $\sum_{i=0}^{\infty} |a(i)*x^i| \leq 2^{\text{conditionNumber}}$ ");

fprintf(fd, " wprec = prec + ERRORANALYSISPREC + conditionNumber + assumed\_exponent;");

```
#####
Initialisations
#####
```

if (hardconstant=1)

then

  fprintf(fd, " mpfr\_init (x%d);\n", d):

fi:

if (type = FUNCTION\_SERIES)

then

  fprintf(fd, " mpfr\_init (tmp);\n");

  for i from 1 to nops(exponents)-1 do

    fprintf(fd, " mpfr\_init (x%d);\n", exponents[i])

  od:

fi:

for i from 1 to nc do

  fprintf(fd, " mpfr\_init (tip%d);\n", init\_cond[i][1])

od:

fprintf(fd, " mpfr\_init (s);\n\n");

```
#####
Ziv' loop: setting the precision
#####
#####
```

fprintf(fd, " /\* ZIV' loop \*/");

fprintf(fd, " for (;)\n");

fprintf(fd, " {\n");

fprintf(fd, " MPFR\_LOG\_MSG ((\"Working precision: %d\\n\", wprec, 0));\n\n");

if (hardconstant=1)

then

```

 fprintf(fd, " mpfr_set_prec (x%d, wprec);\n", d):
fi:
if (type = FUNCTION_SERIES)
then
 fprintf(fd, " mpfr_set_prec (tmp, wprec);\n"):
 fprintf(fd, " if(mpfr_get_prec (x) > wprec)\n"):
 fprintf(fd, " mpfr_set_prec (x1, wprec);\n"):
 fprintf(fd, " else\n"):
 fprintf(fd, " mpfr_set_prec (x1, mpfr_get_prec (x));\n"):
 for i from 2 to nops(exponents)-1 do
 fprintf(fd, " mpfr_set_prec (x%d, wprec);\n", exponents[i])
 od:
fi:

for i from 1 to nc do
 fprintf(fd, " mpfr_set_prec (tip%d, wprec);\n", init_cond[i][1])
od:
fprintf(fd, " mpfr_set_prec (s, wprec);\n\n"):

#####
Ziv' loop: initial conditions
#####

fprintf(fd, " mpfr_set_ui (s, 0, MPFR_RNDN);\n"):

if (type = FUNCTION_SERIES)
then
 fprintf(fd, " mpfr_set (x1, x, MPFR_RNDN);\n"):
 error_counter := init_error_counter("x1", error_counter):
 for i from 2 to nops(exponents) do
 fprintf(fd, " mpfr_mul (x%d, x%d, x%d, MPFR_RNDN);\n", exponents[i], exponents[i-1], exponents[i]-
exponents[i-1]):
 var1 := sprintf("x%d", exponents[i]):
 var2 := sprintf("x%d", exponents[i-1]):
 var3 := sprintf("x%d", exponents[i]-exponents[i-1]):
 error_counter := error_counter_of_a_multiplication(var1, var2, var3, error_counter):
 od:
fi:

for i from 1 to nc do
 i0 := init_cond[i][1]:
 ri0 := init_cond[i][2]: # We implement t_{i0} <- ri0
 if (whattype(ri0)='integer') or (whattype(ri0)='fraction')
 then
 if (type = FUNCTION_SERIES) and (i0 <> 0)
 then
 var

```

```

:= sprintf(" mpfr_mul_si (tip%d, x%d, ", i0, i0):
 var1 := sprintf("tip%d", i0):
 var2 := sprintf("x%d", i0):
 error_counter := error_counter_of_a_multiplication(var1, var2, "", error_counter):
else
 var := sprintf(" mpfr_set_si (tip%d, ", i0):
 var1 := sprintf("tip%d", i0):
 error_counter := init_error_counter(var1, error_counter):
fi:
fprintf(fd, "%s%d, MPFR_RNDN);\n", var, numer(ri0)):
if (whattype(ri0)='fraction')
then
 fprintf(fd, " mpfr_div_si (tip%d, tip%d, %d, MPFR_RNDN);\n", i0, i0, denom(ri0)):
 var1 := sprintf("tip%d", i0):
 error_counter := error_counter_of_a_multiplication(var1, var1, "", error_counter):
fi:
else
 printf("You need to provide a function mpfr_%a%d (mpfr_t, mpfr_rnd_t) that evaluates %a with faithful
rounding.\n", name, i0, ri0):
 fprintf(fd, " mpfr_%a%d (tip%d, MPFR_RNDN);\n", name, i0, i0):
 var1 := sprintf("tip%d",
i0):
 error_counter := init_error_counter(var1, error_counter):
 if (type = FUNCTION_SERIES) and (i0 <> 0)
 then
 fprintf(fd, " mpfr_mul (tip%d, tip%d, x%d, MPFR_RNDN);\n", i0, i0, i0):
 var1 := sprintf("tip%d", i0):
 var2 := sprintf("x%d", i0):
 error_counter := error_counter_of_a_multiplication(var1, var1, var2, error_counter):
 fi:
fi:

if (type = FUNCTION_SERIES_RATIONAL) and (i0 <> 0)
then
 var1 := sprintf("tip%d", i0):
 if (i0 = 1)
 then fprintf(fd, " mpfr_mul_si (tip%d, tip%d, ", i0, i0):
 else
 required_mulsi := { op(required_mulsi), i0 }:
 fprintf(fd, " mpfr_mul_si%d (tip%d, tip%d, ", i0, i0, i0):
 fi:
 for j from 1 to i0 do
 fprintf(fd, "u, "):
 error_counter := error_counter_of_a_multiplication(var1, var1, "", error_counter):
 od:
 fprintf(fd, "MPFR_RNDN);\n"):
 if (i0 = 1)
 then fprintf(fd, " mpfr_div_si (tip%d,

```

```

tip%d, ", i0, i0):
 else
 required_divsi := { op(required_divsi), i0 }:
 fprintf(fd, " mpfr_div_si%d (tip%d, tip%d, ", i0, i0, i0):
 fi:
 for j from 1 to i0 do
 fprintf(fd, "v, "):
 error_counter := error_counter_of_a_multiplication(var1, var1, "", error_counter):
 od:
 fprintf(fd, "MPFR_RNDN);\n"):
fi:

fprintf(fd, " mpfr_add (s, s, tip%d, MPFR_RNDN);\n\n", i0):
od:

if (whattype(c) = 'integer') or (whattype(c) = 'fraction')
then
 if (type = FUNCTION_SERIES) and (c = -1)
 then
 fprintf(fd, " MPFR_CHANGE_SIGN (x%d);\n", d):
 elif (type = FUNCTION_SERIES) and (c <> 1)
 then
 fprintf(fd, " mpfr_mul_si (x%d, x%d, %d, MPFR_RNDN);\n", d, d, numer(c)):
 var1 := sprintf("x%d", d):
 error_counter := error_counter_of_a_multiplication(var1, var1, "", error_counter):
 if (whattype(c) = 'fraction')
 then
 fprintf(fd, " mpfr_div_si (x%d, x%d, %d, MPFR_RNDN);\n",
d, d, denom(c)):
 error_counter := error_counter_of_a_multiplication(var1, var1, "", error_counter):
 fi:
 fi:
else
 printf("You need to provide a function mpfr_%a_cste (mpfr_t, mpfr_rnd_t) that evaluates %a with faithful
rounding.\n", name, c):
 if (type = CONSTANT_SERIES)
 then
 fprintf(fd, " mpfr_%a_cste (x%d, MPFR_RNDN);\n", name, d):
 var1 := sprintf("x%d", d):
 error_counter := init_error_counter(var1, error_counter):
 elif (type = FUNCTION_SERIES) then
 fprintf(fd, " mpfr_%a_cste (tmp, MPFR_RNDN);\n", name):
 error_counter := init_error_counter("tmp", error_counter):
 fprintf(fd, " mpfr_mul (x%d, tmp, x%d, MPFR_RNDN);\n", d, d):
 var1 := sprintf("x%d", d):
 error_counter := error_counter_of_a_multiplication(var1, "tmp", var1, error_counter):
 elif (type = FUNCTION_SERIES_RATIONAL) then
 fprintf(fd, " mpfr_%a_cste (x%d, MPFR_RNDN);\n", name, d):

```



```

var1 := sprintf("x%d",
d):
error_counter := init_error_counter(var1, error_counter):
if (d = 1)
then fprintf(fd, " mpfr_mul_si (x%d, x%d, ", d, d):
else
required_mulsi := { op(required_mulsi), d }:
fprintf(fd, " mpfr_mul_si%d (x%d, x%d, ", d, d, d):
fi:
for j from 1 to d do
fprintf(fd, "u, "):
error_counter := error_counter_of_a_multiplication(var1, var1, "", error_counter):
od:
fprintf(fd, "MPFR_RNDN);\n"):
var1 := sprintf("x%d", d):
if (d = 1)
then fprintf(fd, " mpfr_div_si (x%d, x%d, ", d, d):
else
required_divsi := { op(required_divsi), d }:
fprintf(fd, " mpfr_div_si%d (x%d, x%d, ", d, d, d):
fi:
for j from 1 to d do
fprintf(fd, "v, "):
error_counter := error_counter_of_a_multiplication(var1, var1, "", error_counter):
od:
fprintf(fd, "MPFR_RNDN);\n"):
fi:
fi:

#####
#####
Ziv' loop: evaluation of the series #####
#####

fprintf(fd, "\n"):
fprintf(fd, " /* Evaluation of the series */\n"):
fprintf(fd, " k = %d;\n", d):
fprintf(fd, " for (;;)\n"):
fprintf(fd, " {\n"):
if (init_cond[1][1] <> 0) then fprintf(fd, " k += %d;\n", init_cond[1][1]) fi:

for i from 1 to nc do
error_in_loop := 0:
i0 := init_cond[i][1]:
if (hardconstant = 1)
then
fprintf(fd, " mpfr_mul (tip%d, tip%d, x%d, MPFR_RNDN);\n", i0, i0, d):
var1 := sprintf("x%d", d):

```

```

error_in_loop := error_in_loop + 1 + find_in_error_counter(var1, error_counter):
else
var := sprintf("tip%d", i0):
temp := generate_multiply_rational(fd, var, var, c, [[var, error_in_loop]], " "):
error_in_loop := find_in_error_counter(var, temp):
if (type = FUNCTION_SERIES_RATIONAL)
then
if (d=1)
then
fprintf(fd,
" mpfr_mul_si (tip%d, tip%d, u, MPFR_RNDN);\n", i0, i0):
fprintf(fd, " mpfr_div_si (tip%d, tip%d, v, MPFR_RNDN);\n", i0, i0):
error_in_loop := error_in_loop + 2:
else
required_mulsi := { op(required_mulsi), d }:
fprintf(fd, " mpfr_mul_si%d (tip%d, tip%d", d, i0, i0):
for j from 1 to d do fprintf(fd, ", u") od:
fprintf(fd, ", MPFR_RNDN);\n"):
error_in_loop := error_in_loop + d:

required_divsi := { op(required_divsi), d }:
fprintf(fd, " mpfr_div_si%d (tip%d, tip%d", d, i0, i0):
for j from 1 to d do fprintf(fd, ", v") od:
fprintf(fd, ", MPFR_RNDN);\n"):
error_in_loop := error_in_loop + d:
fi
fi
fi:
var := sprintf("tip%d", i0):

temp := generate_multiply_poly(fd, var, var, subs(n=k-d, p/q), [[var, error_in_loop]], " "):
required_mulsi := { op(required_mulsi), op(temp[1]) }:
required_divsi := { op(required_divsi),
op(temp[2]) }:
error_in_loop := find_in_error_counter(var, temp[3]):
temp := generate_multiply_poly(fd, "tmp", var, subs(n=k, s2/s1), [[var, error_in_loop]], " "):
required_mulsi := { op(required_mulsi), op(temp[1]) }:
required_divsi := { op(required_divsi), op(temp[2]) }:

fprintf(fd, " mpfr_add (s, s, tmp, MPFR_RNDN);\n"):

if (i<nc) then fprintf(fd, "\n k += %d;\n", init_cond[i+1][1]-i0)
else fprintf(fd, "\n k += %d;\n", d-i0)
fi:
od:

```

```
#####
```

```

Error analysis
#####

maxofti := 0: # store the maximum of the error counters of the initial conditions
for i from 1 to nc do
 var := sprintf("tip%d", init_cond[i][1]):
 if find_in_error_counter(var, error_counter) > maxofti
 then maxofti := find_in_error_counter(var, error_counter):
 fi:
od:
additional_error
:= find_in_error_counter("tmp", temp[3]) - error_in_loop:

#####
Ziv' loop: stopping criterion for the series
#####

The first neglected term is tk, so the remainder is made by
tk + t(k+d) + t(k+2d).... and the corresponding series
beginning with t(k+1), t(k+2), etc. up to t(k+d-1).
#
We have $t(k_0+d) = c \cdot s_1(k_0)/s_1(k_0+d) \cdot s_2(k_0+d)/s_2(k_0) \cdot p(k_0)/q(k_0) \cdot x^d t(k_0)$
(where $x=u/v$ or $x=1$ in cases of rational series or constant series)
So it suffices that:
forall $k_0 \geq k-d$, $|c \cdot s_1(k_0)/s_1(k_0+d) \cdot s_2(k_0+d)/s_2(k_0) \cdot p(k_0)/q(k_0) \cdot x^d| \leq 1/2$ (1)
#
If this is true, $|tk| = |c \cdot s_1(k-d)/s_1(k) \cdot s_2(k)/s_2(k-d) \cdot p(k-d)/q(k-d) \cdot x^d t(k-d)| \leq t(k-d)/2$
This is also true for larger values of k, so we can bound $|tk + t(k+d) + t(k+2d) + \dots|$ by $|t(k-d)|$.
And the same holds for $|t(k+1) + \dots|$, $|t(k+2) + \dots|$, etc. up to $|t(k+d-1) + \dots|$.
#
global_test depends on k and we must satisfy:
"if (global_test) then (1) holds".
#
the total remainder is bounded by $2 \cdot nc \cdot tk$.

fprintf(fd, " global_test = xxx; /* FIXME: set the value in order to ensure that, whenever global_test is true,
we have: forall $k' \geq k$, $|r(k') \cdot x^d| \leq 1/2$, where r is the fraction such that $a(n)=r(n)a(n-d) \cdot x^n$):
printf("The code contains a variable global_test that you must manually set to a suitable value, in order to ensure
that when global_test is true, the following holds:\n"):
printf(" forall $k' \geq k$, $|r(k') \cdot x^d| \leq 1/2$, where r is the fraction such that $a(n)=r(n)a(n-d) \cdot x^n$):
guard_bits := 1+1+ceil(log[2](nc)):
for i from 1 to nc do
 i0 := init_cond[i][1]:
 fprintf(fd, " test%d = ((!MPFR_IS_ZERO(s))\n", i0):
 fprintf(fd, " && (MPFR_IS_ZERO(tip%d)\n", i0):
 fprintf(fd, " || (MPFR_EXP(tip%d) + (mp_exp_t)prec + %d <= MPFR_EXP(s))\n", i0, guard_bits):

```

```

 fprintf(fd, ")\n");
 fprintf(fd, ");\n");
 od:
 fprintf(fd, " if (");
 for i from 1 to nc do
 fprintf(fd, "test%d && ", init_cond[i][1]);
 od:
 fprintf(fd, "global_test)\n");
 fprintf(fd, " break;\n");
 fprintf(fd, " }\n\n");

#####
Ziv' loop: testing final
#####

 fprintf(fd, " MPFR_LOG_MSG ((\"Truncation rank: %%lu\\n\", k));\n\n");
 fprintf(fd, " err = ERRORANALYSISK + conditionNumber - MPFR_GET_EXP (s);\n\n");
 fprintf(fd, " /* err is the number of bits lost due to the evaluation error */\n");
 fprintf(fd, " /* wprec-(prec+1): number of bits lost due to the approximation error */\n");
 fprintf(fd, " MPFR_LOG_MSG ((\"Roundoff error: %%Pu\\n\", err));\n");
 fprintf(fd, " MPFR_LOG_MSG ((\"Approxim error: %%Pu\\n\", wprec-prec-1));\n\n");
 fprintf(fd, " if (wprec < err+1)\n");
 fprintf(fd, " correct_bits=0;\n");
 fprintf(fd, " else\n");
 fprintf(fd, " {\n");
 fprintf(fd, " if (wprec < err+prec+1)\n");
 fprintf(fd, " correct_bits = wprec - err - 1;\n");
 fprintf(fd, " else\n");
 fprintf(fd, " correct_bits = prec;\n");
 fprintf(fd, " }\n\n");
 fprintf(fd, " if (MPFR_LIKELY (MPFR_CAN_ROUND (s, correct_bits, MPFR_PREC (y), rnd)))\n");
 fprintf(fd, " break;\n\n");

 fprintf(fd, " if (correct_bits == 0)\n");
 fprintf(fd, " {\n");
 fprintf(fd, " assumed_exponent *= 2;\n");
 fprintf(fd, " MPFR_LOG_MSG ((\"Not a single bit correct (assumed_exponent=%%lu\\n\", \n");
 fprintf(fd, " assumed_exponent));\n");
 fprintf(fd, " wprec = prec + ERRORANALYSISK + conditionNumber + assumed_exponent;\n");
 fprintf(fd, " }\n");
 fprintf(fd, " else\n");
 fprintf(fd, " {\n");
 fprintf(fd, " if (correct_bits < prec)\n");
 fprintf(fd, " { /* The precision was badly chosen */\n");
 fprintf(fd, " MPFR_LOG_MSG ((\"Bad assumption on the exponent of %s(x)\", 0));\n", name);
 fprintf(fd, " MPFR_LOG_MSG ((\" (E=%%ld)\", (long) MPFR_GET_EXP (s));\n");

```

```

fprintf(fd, " wprec = prec + err + 1;\n");
fprintf(fd, " }\n");
fprintf(fd, " else\n");
fprintf(fd, " { /* We are really in a bad case of the TMD */\n");
fprintf(fd, " MPFR_ZIV_NEXT (loop, prec);\n\n");

fprintf(fd, " /* We update wprec */\n");
fprintf(fd, " /* We assume that K will not be multiplied by more than 4 */\n");
fprintf(fd, " wprec = prec + ERRORANALYSIS4K + conditionNumber\n");
fprintf(fd, " - MPFR_GET_EXP (s);\n");
fprintf(fd, " }\n");
fprintf(fd, " }\n\n");

fprintf(fd, " } /* End
of ZIV loop */\n\n");
fprintf(fd, " MPFR_ZIV_FREE (loop);\n\n");
fprintf(fd, " r = mpfr_set (res, s, rnd);\n\n");

#####
Clearing everything
#####

fprintf(fd, " mpfr_clear (s);\n");
if (hardconstant=1)
then
 fprintf(fd, " mpfr_clear (x%d);\n", d);
fi:
if (type = FUNCTION_SERIES)
then
 fprintf(fd, " mpfr_clear (tmp);\n");
 for i from 1 to nops(exponents)-1 do
 fprintf(fd, " mpfr_clear (x%d);\n", exponents[i]);
 od:
fi:

for i from 1 to nc do
 fprintf(fd, " mpfr_clear (tip%d);\n", init_cond[i][1]);
od:

fprintf(fd, "\n");
fprintf(fd, " MPFR_SAVE_EXPO_FREE (expo);\n");
fprintf(fd, " return mpfr_check_range (res, r, rnd);\n");
fprintf(fd, "}\n");

fclose(fd);

for i from 1 to nops(required_mulsi) do

```

```

printf("You need to provide a mpfr_mul_si%d function.\n", required_mulsi[i]);
printf("
-> This can be achieved by a call to generate_muldivsin(\"mul\", %d):\n", required_mulsi[i]);
od:
for i from 1 to nops(required_divsi) do
 printf("You need to provide a mpfr_div_si%d function.\n", required_divsi[i]);
 printf(" -> This can be achieved by a call to generate_muldivsin(\"div\", %d):\n", required_divsi[i]);
od:

#####
Error analysis
#####

printf("\n\n");
printf("Before the loop, we have ");
for i from 1 to nc do
 var := sprintf("tip%d", init_cond[i][1]);
 printf("%s { %d}", var, find_in_error_counter(var, error_counter));
 if (i <> nc) then printf(", ") else printf("\n") fi:
od:
printf("Each step of the loop adds another { %d}\n", error_in_loop);
if (additional_error <> 0)
then printf("Moreover, the multiplication by %a adds another { %d} to each term before it is summed.\n", subs(n=k,
s2/s1), additional_error)
fi:
printf("Finally, we have s = sum_(i=0)^(k-1) (ti{ %d + %dk})\n", maxofti + additional_error + 1 - error_in_loop,
error_in_loop);
printf("We bound it by {(k+%d)*2^(%d)}\n", ceil((maxofti + additional_error + 1 - error_in_loop)/error_in_loop),
ceil(log[2](error_in_loop)));

a := ceil((maxofti + additional_error + 1 - error_in_loop)/error_in_loop);
b := ceil(log[2](error_in_loop));

if (a > 0)
then var := sprintf("MPFR_INT_CEIL_LOG2 (prec + %d)", a)
elif (a=0) then var := sprintf("MPFR_INT_CEIL_LOG2 (prec)")
else sprintf("MPFR_INT_CEIL_LOG2 (prec - %d)", -a)
fi:
if (b > 0) then var := sprintf("%s + %d", var, b+2) fi:
var := sprintf("sed -n -i 's/ERRORANALYSISPREC/%s/g;p' %s", var, filename):
system(var):

if (a > 0)
then var := sprintf("MPFR_INT_CEIL_LOG2 (k + %d)", a)
elif (a=0) then var := sprintf("MPFR_INT_CEIL_LOG2 (k)")
else sprintf("MPFR_INT_CEIL_LOG2 (k - %d)", -a)
fi:

```

```

if (b > 0) then var := sprintf("%s
+ %d", var, b+2) fi:
var := sprintf("sed -n -i 's/ERRORANALYSISK/%s/g;p' %s", var, filename):
system(var):

if (a > 0)
then var := sprintf("MPFR_INT_CEIL_LOG2 (k + %d)", a)
elif (a=0) then var := sprintf("MPFR_INT_CEIL_LOG2 (k)")
else sprintf("MPFR_INT_CEIL_LOG2 (k - %d)", -a)
fi:
var := sprintf("%s + %d", var, b+4):
var := sprintf("sed -n -i 's/ERRORANALYSIS4K/%s/g;p' %s", var, filename):
system(var):

end proc:
convert from Gonnet's FPAccuracy data sets to mpfr format
http://www.inf.ethz.ch/personal/gonnet/FPAccuracy/all.tar.Z

1 - cut the lines from (say) C/acos.c, remove the 3rd (eps) field,
replace the commata ',' by spaces, and remove the final '};'
(hint: cut -d" " -f1,2,4,5 /tmp/acos.c > /tmp/acos2.c)
2 - edit the infile and outfile lines below, and run
maple -q < gonnet.mpl

infile := "/tmp/acos2.c":
outfile := "acos":

don't edit below this line

foo := proc(arg_m, val_m, arg_e, val_e, fp)
 fprintf (fp, "53 53 n ", 53);
 to_hex(arg_m, arg_e, fp);
 fprintf (fp, " ");
 # warning: Gonnet stores -val_e
 to_hex(val_m, -val_e, fp);
 fprintf (fp, "\n");
end:

to_hex := proc(m, e, fp)
 if m<0 then fprintf (fp, "-") fi;
 fprintf (fp, "0x%sp%d", convert(abs(m),hex), e);
end:

copyright := proc(fp)
 fprintf (fp, "# This file was generated from the FPAccuracy package\n#
http://www.inf.ethz.ch/personal/gonnet/FPAccuracy/all.tar.Z:\n#
Copyright (C) Gaston H. Gonnet\n# This program is free software; you can redistribute it and/or\n# modify it under
the terms of the GNU General Public License\n# as published by the Free Software Foundation; either version 2\n#

```

of the License, or (at your option) any later version.\n# This program is distributed in the hope that it will be useful,\n# but WITHOUT ANY WARRANTY; without even the implied warranty of\n# MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the\n# GNU General Public License for more details.\n# You should have received a copy of the GNU General Public License\n# along with this program; if not, see <<https://www.gnu.org/licenses/>>.\n")\nend:

fp := fopen (outfile, WRITE):

l := readdata(infile, integer, 4):

copyright(fp):

for e in l do foo(op(e), fp) od:

fclose (fp);

quit;

read ("metaMPFR\_straightforwardAlgo.mpl");

f := AiryAi(x):

deq := holxprtdiffeq(f, y(x)):

rec := diffeqtorec(deq, y(x), a(n)):

name\_of\_function := op(0,f):

name\_of\_file := sprintf("%a.c", name\_of\_function):

printf("\n\n\n/\*\*\*\*\* Implementation de %s \*\*\*\*\*/\n",

name\_of\_file):

generateStraightforwardAlgo(rec, a(n), FUNCTION\_SERIES, name\_of\_function, name\_of\_file, f):

f := erf(x):

deq := holxprtdiffeq(f, y(x)):

rec := diffeqtorec(deq, y(x), a(n)):

name\_of\_function := op(0,f):

name\_of\_file := sprintf("%a.c", name\_of\_function):

printf("\n\n\n/\*\*\*\*\* Implementation de %s \*\*\*\*\*/\n",

name\_of\_file):

generateStraightforwardAlgo(rec, a(n), FUNCTION\_SERIES, name\_of\_function, name\_of\_file, f):

rec := { a(n+1) = -(6\*n+1)\*(6\*n+2)\*(6\*n+3)\*(6\*n+4)\*(6\*n+5)\*(6\*n+6)\*a(n)/(

(n+1)^3\*(3\*n+1)\*(3\*n+2)\*(3\*n+3)\*12288000 ), a(0)=1 }:

name\_of\_function := alpha:

name\_of\_file := sprintf("%a.c", name\_of\_function):

printf("\n\n\n/\*\*\*\*\*

Implementation de %s \*\*\*\*\*/\n", name\_of\_file):

generateStraightforwardAlgo(rec, a(n), CONSTANT\_SERIES, name\_of\_function, name\_of\_file, f):

rec := { a(n+1) = -(6\*n+1)\*a(n)/( (n+1)^3 ), a(0)=1 }:

name\_of\_function := test0a:

name\_of\_file := sprintf("%a.c", name\_of\_function):



```

printf("\n\n\n/***** Implementation de %s *****/\n",
name_of_file);
generateStraightforwardAlgo(rec, a(n), CONSTANT_SERIES, name_of_function, name_of_file, f);

rec := { a(n+1) = -(6*n+1)*a(n)/((n+1)^3), a(0)=Pi }:
name_of_function := test1a:
name_of_file := sprintf("%a.c", name_of_function):
printf("\n\n\n/***** Implementation de %s *****/\n",
name_of_file);
generateStraightforwardAlgo(rec, a(n), CONSTANT_SERIES, name_of_function, name_of_file, f);

rec := { a(n+1) = (1/Pi)*(3*n+1)*a(n)/((n+2)), a(0)=1 }:
name_of_function := test2a:
name_of_file := sprintf("%a.c", name_of_function):
printf("\n\n\n/*****
Implementation de %s *****/\n", name_of_file);
generateStraightforwardAlgo(rec, a(n), CONSTANT_SERIES, name_of_function, name_of_file, f);

rec := { a(n+1) = (1/Pi)*(3*n+1)*a(n)/((n+2)), a(0)=Pi }:
name_of_function := test3a:
name_of_file := sprintf("%a.c", name_of_function):
printf("\n\n\n/***** Implementation de %s *****/\n",
name_of_file);
generateStraightforwardAlgo(rec, a(n), CONSTANT_SERIES, name_of_function, name_of_file, f);

rec := { a(n+2) = -(6*n+1)*a(n)/((n+1)^3), a(0)=1, a(1)=2 }:
name_of_function := test4a:
name_of_file := sprintf("%a.c", name_of_function):
printf("\n\n\n/***** Implementation de %s *****/\n",
name_of_file);
generateStraightforwardAlgo(rec, a(n), CONSTANT_SERIES, name_of_function, name_of_file, f);

rec := { a(n+2) = -(6*n+1)*a(n)/((n+1)^3), a(0)=Pi, a(1)=0 }:
name_of_function := test5a:
name_of_file
:= sprintf("%a.c", name_of_function):
printf("\n\n\n/***** Implementation de %s *****/\n",
name_of_file);
generateStraightforwardAlgo(rec, a(n), CONSTANT_SERIES, name_of_function, name_of_file, f);

rec := { a(n+2) = (1/Pi)*(3*n+1)*a(n)/((n+2)), a(0)=1, a(1)=Pi }:
name_of_function := test6a:
name_of_file := sprintf("%a.c", name_of_function):
printf("\n\n\n/***** Implementation de %s *****/\n",
name_of_file);
generateStraightforwardAlgo(rec, a(n), CONSTANT_SERIES, name_of_function, name_of_file, f);

rec := { a(n+2) = (1/Pi)*(3*n+1)*a(n)/((n+2)), a(0)=Pi, a(1)=0 }:

```

```

name_of_function := test7a:
name_of_file := sprintf("%a.c", name_of_function):
printf("\n\n\n/***** Implementation de %s *****/\n",
name_of_file):
generateStraightforwardAlgo(rec, a(n), CONSTANT_SERIES, name_of_function, name_of_file, f):

rec := { a(n+3) = -(6*n+1)*a(n)/(
(n+1)^3), a(0)=1, a(1)=0, a(2)=0 }:
name_of_function := test8a:
name_of_file := sprintf("%a.c", name_of_function):
printf("\n\n\n/***** Implementation de %s *****/\n",
name_of_file):
generateStraightforwardAlgo(rec, a(n), CONSTANT_SERIES, name_of_function, name_of_file, f):

rec := { a(n+3) = -(6*n+1)*a(n)/((n+1)^3), a(0)=0, a(1)=Pi, a(2)=2 }:
name_of_function := test9a:
name_of_file := sprintf("%a.c", name_of_function):
printf("\n\n\n/***** Implementation de %s *****/\n",
name_of_file):
generateStraightforwardAlgo(rec, a(n), CONSTANT_SERIES, name_of_function, name_of_file, f):

rec := { a(n+3) = (1/Pi)*(3*n+1)*a(n)/((n+2)), a(0)=0, a(1)=0, a(2)=1 }:
name_of_function := test10a:
name_of_file := sprintf("%a.c", name_of_function):
printf("\n\n\n/***** Implementation de %s *****/\n",
name_of_file):
generateStraightforwardAlgo(rec, a(n), CONSTANT_SERIES,
name_of_function, name_of_file, f):

rec := { a(n+7) = (1/Pi)*(3*n+1)*a(n)/((n+2)), a(0)=Pi, a(4)=1, a(6)=2 }:
name_of_function := test11a:
name_of_file := sprintf("%a.c", name_of_function):
printf("\n\n\n/***** Implementation de %s *****/\n",
name_of_file):
generateStraightforwardAlgo(rec, a(n), CONSTANT_SERIES, name_of_function, name_of_file, f):

rec := { a(n+1) = -(6*n+1)*a(n)/((n+1)^3), a(0)=1 }:
name_of_function := test0b:
name_of_file := sprintf("%a.c", name_of_function):
printf("\n\n\n/***** Implementation de %s *****/\n",
name_of_file):
generateStraightforwardAlgo(rec, a(n), FUNCTION_SERIES, name_of_function, name_of_file, f):

rec := { a(n+1) = -(6*n+1)*a(n)/((n+1)^3), a(0)=Pi }:
name_of_function := test1b:
name_of_file := sprintf("%a.c", name_of_function):
printf("\n\n\n/***** Implementation de %s *****/\n",

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```

name_of_file):
generateStraightforwardAlgo(rec,
a(n), FUNCTION_SERIES, name_of_function, name_of_file, f):

rec := { a(n+1) = (1/Pi)*(3*n+1)*a(n)/((n+2)), a(0)=1 }:
name_of_function := test2b:
name_of_file := sprintf("%a.c", name_of_function):
printf("\n\n\n/***** Implementation de %s *****/\n",
name_of_file):
generateStraightforwardAlgo(rec, a(n), FUNCTION_SERIES, name_of_function, name_of_file, f):

rec := { a(n+1) = (1/Pi)*(3*n+1)*a(n)/((n+2)), a(0)=Pi }:
name_of_function := test3b:
name_of_file := sprintf("%a.c", name_of_function):
printf("\n\n\n/***** Implementation de %s *****/\n",
name_of_file):
generateStraightforwardAlgo(rec, a(n), FUNCTION_SERIES, name_of_function, name_of_file, f):

rec := { a(n+2) = -(6*n+1)*a(n)/((n+1)^3), a(0)=1, a(1)=2 }:
name_of_function := test4b:
name_of_file := sprintf("%a.c", name_of_function):
printf("\n\n\n/***** Implementation de %s *****/\n",
name_of_file):
generateStraightforwardAlgo(rec, a(n), FUNCTION_SERIES, name_of_function, name_of_file, f):

rec := { a(n+2) = -(6*n+1)*a(n)/((n+1)^3), a(0)=Pi, a(1)=0 }:
name_of_function := test5b:
name_of_file := sprintf("%a.c", name_of_function):
printf("\n\n\n/***** Implementation de %s *****/\n",
name_of_file):
generateStraightforwardAlgo(rec, a(n), FUNCTION_SERIES, name_of_function, name_of_file, f):

rec := { a(n+2) = (1/Pi)*(3*n+1)*a(n)/((n+2)), a(0)=1, a(1)=Pi }:
name_of_function := test6b:
name_of_file := sprintf("%a.c", name_of_function):
printf("\n\n\n/***** Implementation de %s *****/\n",
name_of_file):
generateStraightforwardAlgo(rec, a(n), FUNCTION_SERIES, name_of_function, name_of_file, f):

rec := { a(n+2) = (1/Pi)*(3*n+1)*a(n)/((n+2)), a(0)=Pi, a(1)=0 }:
name_of_function := test7b:
name_of_file := sprintf("%a.c", name_of_function):
printf("\n\n\n/*****
Implementation de %s *****/\n", name_of_file):
generateStraightforwardAlgo(rec, a(n), FUNCTION_SERIES, name_of_function, name_of_file, f):

rec := { a(n+3) = -(6*n+1)*a(n)/((n+1)^3), a(0)=1, a(1)=0, a(2)=0 }:
name_of_function := test8b:

```

```

name_of_file := sprintf("%a.c", name_of_function):
printf("\n\n\n/***** Implementation de %s *****/\n",
name_of_file):
generateStraightforwardAlgo(rec, a(n), FUNCTION_SERIES, name_of_function, name_of_file, f):

rec := { a(n+3) = -(6*n+1)*a(n)/((n+1)^3), a(0)=0, a(1)=Pi, a(2)=2 }:
name_of_function := test9b:
name_of_file := sprintf("%a.c", name_of_function):
printf("\n\n\n/***** Implementation de %s *****/\n",
name_of_file):
generateStraightforwardAlgo(rec, a(n), FUNCTION_SERIES, name_of_function, name_of_file, f):

rec := { a(n+3) = (1/Pi)*(3*n+1)*a(n)/((n+2)), a(0)=0, a(1)=0, a(2)=1 }:
name_of_function := test10b:
name_of_file
:= sprintf("%a.c", name_of_function):
printf("\n\n\n/***** Implementation de %s *****/\n",
name_of_file):
generateStraightforwardAlgo(rec, a(n), FUNCTION_SERIES, name_of_function, name_of_file, f):

rec := { a(n+7) = (1/Pi)*(3*n+1)*a(n)/((n+2)), a(0)=Pi, a(4)=1, a(6)=2 }:
name_of_function := test11b:
name_of_file := sprintf("%a.c", name_of_function):
printf("\n\n\n/***** Implementation de %s *****/\n",
name_of_file):
generateStraightforwardAlgo(rec, a(n), FUNCTION_SERIES, name_of_function, name_of_file, f):

rec := { a(n+1) = -(6*n+1)*a(n)/((n+1)^3), a(0)=1 }:
name_of_function := test0c:
name_of_file := sprintf("%a.c", name_of_function):
printf("\n\n\n/***** Implementation de %s *****/\n",
name_of_file):
generateStraightforwardAlgo(rec, a(n), FUNCTION_SERIES_RATIONAL, name_of_function, name_of_file, f):

rec := { a(n+1) = -(6*n+1)*a(n)/((n+1)^3
), a(0)=Pi }:
name_of_function := test1c:
name_of_file := sprintf("%a.c", name_of_function):
printf("\n\n\n/***** Implementation de %s *****/\n",
name_of_file):
generateStraightforwardAlgo(rec, a(n), FUNCTION_SERIES_RATIONAL, name_of_function, name_of_file, f):

rec := { a(n+1) = (1/Pi)*(3*n+1)*a(n)/((n+2)), a(0)=1 }:
name_of_function := test2c:
name_of_file := sprintf("%a.c", name_of_function):
printf("\n\n\n/***** Implementation de %s *****/\n",
name_of_file):

```

generateStraightforwardAlgo(rec, a(n), FUNCTION\_SERIES\_RATIONAL, name\_of\_function, name\_of\_file, f):

rec := {  $a(n+1) = (1/\pi) \cdot (3 \cdot n + 1) \cdot a(n) / (n+2)$  },  $a(0) = \pi$  }:

name\_of\_function := test3c:

name\_of\_file := sprintf("%a.c", name\_of\_function):

printf("\n\n\n\*\*\*\*\* Implementation de %s \*\*\*\*\*\n",  
name\_of\_file):

generateStraightforwardAlgo(rec, a(n), FUNCTION\_SERIES\_RATIONAL, name\_of\_function,  
name\_of\_file, f):

rec := {  $a(n+2) = -(6 \cdot n + 1) \cdot a(n) / (n+1)^3$  },  $a(0) = 1$ ,  $a(1) = 2$  }:

name\_of\_function := test4c:

name\_of\_file := sprintf("%a.c", name\_of\_function):

printf("\n\n\n\*\*\*\*\* Implementation de %s \*\*\*\*\*\n",  
name\_of\_file):

generateStraightforwardAlgo(rec, a(n), FUNCTION\_SERIES\_RATIONAL, name\_of\_function, name\_of\_file, f):

rec := {  $a(n+2) = -(6 \cdot n + 1) \cdot a(n) / (n+1)^3$  },  $a(0) = \pi$ ,  $a(1) = 0$  }:

name\_of\_function := test5c:

name\_of\_file := sprintf("%a.c", name\_of\_function):

printf("\n\n\n\*\*\*\*\* Implementation de %s \*\*\*\*\*\n",  
name\_of\_file):

generateStraightforwardAlgo(rec, a(n), FUNCTION\_SERIES\_RATIONAL, name\_of\_function, name\_of\_file, f):

rec := {  $a(n+2) = (1/\pi) \cdot (3 \cdot n + 1) \cdot a(n) / (n+2)$  },  $a(0) = 1$ ,  $a(1) = \pi$  }:

name\_of\_function := test6c:

name\_of\_file := sprintf("%a.c", name\_of\_function):

printf("\n\n\n\*\*\*\*\* Implementation de %s \*\*\*\*\*\n",  
name\_of\_file):

generateStraightforwardAlgo(rec,

a(n), FUNCTION\_SERIES\_RATIONAL, name\_of\_function, name\_of\_file, f):

rec := {  $a(n+2) = (1/\pi) \cdot (3 \cdot n + 1) \cdot a(n) / (n+2)$  },  $a(0) = \pi$ ,  $a(1) = 0$  }:

name\_of\_function := test7c:

name\_of\_file := sprintf("%a.c", name\_of\_function):

printf("\n\n\n\*\*\*\*\* Implementation de %s \*\*\*\*\*\n",  
name\_of\_file):

generateStraightforwardAlgo(rec, a(n), FUNCTION\_SERIES\_RATIONAL, name\_of\_function, name\_of\_file, f):

rec := {  $a(n+3) = -(6 \cdot n + 1) \cdot a(n) / (n+1)^3$  },  $a(0) = 1$ ,  $a(1) = 0$ ,  $a(2) = 0$  }:

name\_of\_function := test8c:

name\_of\_file := sprintf("%a.c", name\_of\_function):

printf("\n\n\n\*\*\*\*\* Implementation de %s \*\*\*\*\*\n",  
name\_of\_file):

generateStraightforwardAlgo(rec, a(n), FUNCTION\_SERIES\_RATIONAL, name\_of\_function, name\_of\_file, f):

rec := {  $a(n+3) = -(6 \cdot n + 1) \cdot a(n) / (n+1)^3$  },  $a(0) = 0$ ,  $a(1) = \pi$ ,  $a(2) = 2$  }:

name\_of\_function := test9c:

```

name_of_file := sprintf("%a.c", name_of_function):
printf("\n\n\n/*****
Implementation de %s *****/\n", name_of_file):
generateStraightforwardAlgo(rec, a(n), FUNCTION_SERIES_RATIONAL, name_of_function, name_of_file, f):

rec := { a(n+3) = (1/Pi)*(3*n+1)*a(n)/(n+2), a(0)=0, a(1)=0, a(2)=1 }:
name_of_function := test10c:
name_of_file := sprintf("%a.c", name_of_function):
printf("\n\n\n/***** Implementation de %s *****/\n",
name_of_file):
generateStraightforwardAlgo(rec, a(n), FUNCTION_SERIES_RATIONAL, name_of_function, name_of_file, f):

rec := { a(n+7) = (1/Pi)*(3*n+1)*a(n)/(n+2), a(0)=Pi, a(4)=1, a(6)=2 }:
name_of_function := test11c:
name_of_file := sprintf("%a.c", name_of_function):
printf("\n\n\n/***** Implementation de %s *****/\n",
name_of_file):
generateStraightforwardAlgo(rec, a(n), FUNCTION_SERIES_RATIONAL, name_of_function, name_of_file, f):

```

# 1.502 perl 5.42.0-r0

## 1.502.1 Available under license :

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```
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```

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```
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under certain conditions; type `show c' for details.
```

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<signature of Moe Ghoul>, 1 April 1989  
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Julian Seward, [jseward@acm.org](mailto:jseward@acm.org)  
bzip2/libbzip2 version 1.0.8 of 13 July 2019

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<signature of Moe Ghoul>, 1 April 1989  
Moe Ghoul, President of Vice

That's all there is to it!  
#!perl

=head1 NAME

copyright.t

=head1 DESCRIPTION

Tests that the latest copyright years in the top-level README file and the C<perl -v> output match each other.

If the test fails, update at least one of README and perl.c so that they match reality.

Optionally you can pass the C<--now> option to check they are at the current year. This isn't checked by default, so that it doesn't fail for people working on older releases. It should be run before making a new release.

=cut

```
use strict;
```

```
use Config;
```

```
BEGIN { require './test.pl' }
```

```
if ($Config{usecrosscompile}) {
```

```
 skip_all("Not all files are available during cross-compilation");
```

```
}
```

```
my ($opt) = @ARGV;
```

```
my $readme_year = readme_year();
```

```
my $v_year = v_year();
```

```
my $gh_readme_year;
```

```
git on windows renders symbolic links as a file containing
```

```
the file linked to
```

```
if (-e "../.github/README.md" && -s "../.github/README.md" > 80)
```

```
{
```

```
 $gh_readme_year = readme_year("../.github/README.md");
```

```
}
```

```
Check that both copyright dates are up-to-date, but
```

```
only if requested, so
```

```
that tests still pass for people intentionally working on older versions:
```

```
if ($opt eq '--now')
```

```
{
```

```
 my $current_year = (gmtime)[5] + 1900;
```

```
 is $v_year, $current_year, 'perl -v copyright includes current year';
```

```
 is $readme_year, $current_year, 'README copyright includes current year';
```

```
 if ($gh_readme_year)
```

```
 {
```

```
 is ($gh_readme_year, $current_year,
```

```
 '../.github/README.md copyright includes current year');
```

```
 }
```



```

}

Otherwise simply check that the two copyright dates match each other:
else
{
is $readme_year, $v_year, 'README and perl -v copyright dates match';
if ($gh_readme_year)
{
is ($gh_readme_year, $v_year,
'.github/README.md and perl -v copyright dates match');
}
}
}

```

```
done_testing;
```

```

sub readme_year
returns the latest copyright year from the top-level README file
{
my $file = shift || "README";

open my $readme, '<', "../$file" or die "Opening $file failed: $!";

The copyright message is the first paragraph:
local $/ = "";
my $copyright_msg = <$readme>;

my ($year) = $copyright_msg =~ /\.*\b(\d{4,})/s
or die "Year not found in $file copyright message '$copyright_msg'";

$year;
}

```

```

sub v_year
returns the latest copyright year shown in perl -v
{

my $output = runperl switches => ['-v'];
my ($year) = $output =~ /copyright 1987.*\b(\d{4,})/i
or die "Copyright statement not found in perl -v output '$output'";

$year;
}

```

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## 1.504 kernel-headers 6.16.12-r0

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Version 2, June 1991

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/\* nicstar.c v0.22 Jawaid Bazyar (bazyar@hypermall.com)

\* nicstar.c, M. Welsh (matt.welsh@cl.cam.ac.uk)

\*

\* Hacked October, 1997 by Jawaid Bazyar, Interlink Advertising Services Inc.

\* <http://www.hypermall.com/>

\* 10/1/97 - commented out CFG\_PHYIE bit - we don't care when the PHY

\* interrupts us (except possibly for removal/insertion of the cable?)

\* 10/4/97 - began heavy inline documentation of the code. Corrected typos

\* and spelling mistakes.

\* 10/5/97 - added code to handle PHY interrupts, disable PHY on

\* loss of link, and correctly re-enable PHY when link is

\* re-established. (put back CFG\_PHYIE)

\*

\* Modified to work with the IDT7721 nicstar -- AAL5 (tested) only.

\*

\* R. D. Rechenmacher <ron@fnal.gov>, Aug. 6, 1997

\*

\* Linux driver for the IDT77201 NICStAR PCI ATM controller.

\* PHY component is expected to be 155 Mbps S/UNI-Lite or IDT 77155;

\* see init\_nicstar() for PHY initialization to change this. This driver

\* expects the Linux ATM stack to support scatter-gather

lists

\* (skb->atm.iovcnt != 0) for Rx skb's passed to vcc->push.

\*

\* Implementing minimal-copy of received data:

\* IDT always receives data into a small buffer, then large buffers

\* as needed. This means that data must always be copied to create

\* the linear buffer needed by most non-ATM protocol stacks (e.g. IP)

\* Fix is simple: make large buffers large enough to hold entire

\* SDU, and leave <small\_buffer\_data> bytes empty at the start. Then

\* copy small buffer contents to head of large buffer.

\* Trick is to avoid fragmenting Linux, due to need for a lot of large

\* buffers. This is done by 2 things:

\* 1) skb->destructor / skb->atm.recycle\_buffer

\* combined, allow nicstar\_free\_rx\_skb to be called to

\* recycle large data buffers

\* 2) skb\_clone of received buffers

\* See nicstar\_free\_rx\_skb and linearize\_buffer for implementation

\* details.

\*

\*

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\*

\* M. Welsh, 6 July 1996

\*

\*

\*/

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### ## Overview

The etcd features fall into three stages, experimental, stable, and unsafe.

### ### Experimental

Any new feature is usually added as an experimental feature. An experimental feature is characterized as below:

- Might be buggy due to a lack of user testing. Enabling the feature may not work as expected.
- Disabled by default when added initially.
- Support for such a feature may be dropped at any time without notice
  - Feature-related issues may be given lower priorities.
  - It can be removed in the next minor or major release without following the feature deprecation policy unless it graduates to a stable future.

### ### Stable

A stable feature is characterized as below:

- Supported as part of the supported releases of etcd.
- - May be enabled by default.
- Discontinuation of support must follow the feature deprecation policy.

### ### Unsafe

Unsafe features are rare and listed under the `Unsafe feature:` section in the etcd usage documentation. By default, they are disabled. They should be used with caution following documentation. An unsafe feature can be removed in the next minor or major release without following the feature deprecation policy.

### ## Development Guidelines

### ### Adding a new feature

Any new enhancements to the etcd are typically added as an experimental feature. The general development requirements are listed below. They can be somewhat flexible depending on the scope of the feature and review discussions and will evolve over time.

- Open an issue
  - It must provide a clear need for the proposed feature.

- It should list development work items as checkboxes. There must be one work item towards future graduation to a stable future.
- Label the issue with `type/feature` and `experimental`.
- Keep the issue open for tracking purposes until a decision is made on graduation.
- Open a Pull Request (PR)
  - Provide unit tests. Integration tests are also recommended as possible.
  - Provide robust e2e test coverage. If the feature being added is complicated or quickly needed, maintainers can decide to go with e2e tests for basic coverage initially and have robust coverage added at a later time before the feature graduation to the stable feature.
  - Provide logs for proper debugging.
  - Provide metrics and benchmarks as needed.
  - The Feature should be disabled by default.
  - Any configuration flags related to the implementation of the feature must be prefixed with `experimental` e.g. `--experimental-feature-name`.
  - Add a CHANGELOG entry.
- At least two maintainers must approve feature requirements and related code changes.

### ### Graduating an Experimental feature to Stable

It is important that experimental features don't get stuck in that stage.

They should be revisited and moved to the stable stage following the graduation steps as described here.

#### #### Locate graduation candidate

Decide if an experimental feature is ready for graduation to the stable stage.

- Find the issue that was used to enable the experimental feature initially. One way to find such issues is to search for issues with `type/feature` and `experimental` labels.
- Fix any known open issues against the feature.
- Make sure the feature was enabled for at least one previous release. Check the PR(s) reference from the issue to see when the feature-related code changes were merged.

#### #### Provide implementation

If an experimental feature is found ready for graduation to the stable stage, open a Pull Request (PR) with the following changes.

- Add robust e2e tests if not already provided.
- Add a new stable feature flag identical to the experimental feature flag but without the `--experimental` prefix.
- Deprecate the experimental feature following the [feature deprecation policy](#Deprecating-a-feature).
- Implementation must ensure that both the graduated and deprecated experimental feature flags work as expected. Note that both these flags will co-exist for the timeframe described in the feature deprecation policy.
- Enable the graduated feature by default if needed.

At least two maintainers must approve the work. Patch releases should not be considered for graduation.

### ### Deprecating a feature

#### #### Experimental

An experimental feature deprecates when it graduates to the stable stage.

- Add a deprecation message in the documentation of the experimental feature with a recommendation to use a

related stable feature. e.g. ``DEPRECATED. Use <feature-name> instead.``

- Add a ``deprecated`` label in the issue that was initially used to enable the experimental feature.

#### #### Stable

As the project evolves, a stable feature may sometimes need to be deprecated and removed. Such a situation should be handled using the steps below:

- Create an issue for tracking

purposes.

- Add a deprecation message in the feature usage documentation before a planned release for feature deprecation. e.g. ``To be deprecated in <release>.``. If a new feature replaces the ``To be deprecated`` feature, then also provide a message saying so. e.g. ``Use <feature-name> instead.``.

- Deprecate the feature in the planned release with a message as part of the feature usage documentation. e.g. ``DEPRECATED``. If a new feature replaces the deprecated feature, then also provide a message saying so. e.g. ``DEPRECATED. Use <feature-name> instead.``.

- Add a ``deprecated`` label in the related issue.

Remove the deprecated feature in the following release. Close any related issue(s). At least two maintainers must approve the work. Patch releases should not be considered for deprecation.

# Set up the local cluster

For testing and development deployments, the quickest and easiest way is to configure a local cluster. For a production deployment, refer to the [clustering][clustering] section.

#### ## Local standalone cluster

##### ### Starting a cluster

Run the following to deploy an etcd cluster as a standalone cluster:

```
...
```

```
$./etcd
```

```
...
```

```
...
```

If the ``etcd`` binary is not present in the current working directory, it might be located either at ``$GOPATH/bin/etcd`` or at ``/usr/local/bin/etcd``. Run the command appropriately.

The running etcd member listens on ``localhost:2379`` for client requests.

##### ### Interacting with the cluster

Use ``etcdctl`` to interact with the running cluster:

1. Store an example key-value pair in the cluster:

```
...
```

```
$./etcdctl put foo bar
```

```
OK
```



```
...
```

If OK is printed, storing the key-value pair is successful.

## 2. Retrieve the value of `foo`:

```
...
```

```
$./etcdctl get foo
```

```
bar
```

```
...
```

If `bar` is returned, interaction with the etcd cluster is working as expected.

## ## Local multi-member cluster

### ### Starting a cluster

A `Procfile` at the base of the etcd git repository is provided to easily configure a local multi-member cluster. To start a multi-member cluster, navigate to the root of the etcd source tree and perform the following:

## 1. Install `goreman` to control Procfile-based applications:

```
...
```

```
$ go install github.com/mattn/goreman@latest
```

```
...
```

The installation will place executables in the \$GOPATH/bin. If \$GOPATH environment variable is not set, the tool will be installed into the \$HOME/go/bin. Make sure that \$PATH is set accordingly in your environment.

## 2. Start a cluster with `goreman` using etcd's stock Procfile:

```
...
```

```
$ goreman -f Procfile start
```

```
...
```

The members start running. They listen on `localhost:2379`, `localhost:22379`, and `localhost:32379` respectively for client requests.

### ### Interacting with the cluster

Use `etcdctl` to interact with the running cluster:

## 1. Print the list of members:

```
...
```

```
$ etcdctl --write-out=table --endpoints=localhost:2379 member list
```

```
...
```

The list of etcd members is displayed as follows:

```
...
+-----+-----+-----+-----+-----+
| ID | STATUS | NAME | PEER ADDRS | CLIENT ADDRS |
+-----+-----+-----+-----+-----+
8211f1d0f64f3269	started	infra1	http://127.0.0.1:2380	http://127.0.0.1:2379
91bc3c398fb3c146	started	infra2	http://127.0.0.1:22380	http://127.0.0.1:22379
fd422379fda50e48	started	infra3	http://127.0.0.1:32380	http://127.0.0.1:32379
+-----+-----+-----+-----+-----+
...
```

2. Store an example key-value pair in the cluster:

```
...
$ etcdctl put foo bar
OK
...
```

If OK is printed, storing the key-value pair is successful.

```
###
Testing fault tolerance
```

To exercise etcd's fault tolerance, kill a member and attempt to retrieve the key.

1. Identify the process name of the member to be stopped.

The ``Procfile`` lists the properties of the multi-member cluster. For example, consider the member with the process name, ``etcd2``.

2. Stop the member:

```
...
kill etcd2
$ goreman run stop etcd2
...
```

3. Store a key:

```
...
$ etcdctl put key hello
OK
...
```

4. Retrieve the key that is stored in the previous step:

```
...
```

```
$ etcdctl get key
hello
...
```

5. Retrieve a key from the stopped member:

```
...
$ etcdctl --endpoints=localhost:22379 get key
...
```

The command should display an error caused by connection failure:

```
...
2017/06/18 23:07:35 grpc: Conn.resetTransport failed to create client transport: connection error: desc =
"transport: dial tcp 127.0.0.1:22379: getsockopt: connection refused"; Reconnecting to "localhost:22379"
Error: grpc:
timed out trying to connect
...
```

6. Restart the stopped member:

```
...
$ goreman run restart etcd2
...
```

7. Get the key from the restarted member:

```
...
$ etcdctl --endpoints=localhost:22379 get key
hello
...
```

Restarting the member re-establishes the connection. `etcdctl` will now be able to retrieve the key successfully. To learn more about interacting with etcd, read [\[interacting with etcd section\]](#)[\[interacting\]](#).

[\[clustering\]](#): <https://etcd.io/docs/latest/op-guide/clustering/>

[\[interacting\]](#): [https://etcd.io/docs/latest/dev-guide/interacting\\_v3/](https://etcd.io/docs/latest/dev-guide/interacting_v3/)

# Branch management

## Guide

- \* New development occurs on the [\[main branch\]](#)[\[main\]](#).
- \* The main branch should always have a green build!
- \* Backwards-compatible bug fixes should target the main branch and subsequently be ported to stable branches.
- \* Once the main branch is ready for release, it will be tagged and become the new stable branch.

The etcd team has adopted a *\*rolling release model\** and supports two stable versions of etcd.

### Main branch

The ``main`` branch is our development branch. All new features land here first.

To try new and experimental features, pull ``main`` and play with it. Note that ``main`` may not be stable because new features may introduce bugs.

Before the release of the next stable version, feature PRs will be frozen. A [release manager](./release.md#release-management) will be assigned to the major/minor version and will lead the etcd community in testing, bug-fix, and documentation of the release for one to two weeks.

### ### Stable branches

All branches with the prefix ``release-`` are considered `_stable_` branches.

After every minor release ([semver.org](https://semver.org/)), we will have a new stable branch for that release, managed by a [patch release manager](./release.md#release-management). We will keep fixing the backward-compatible bugs for the latest two stable releases. A `_patch_` release to each supported release branch, incorporating any bug fixes, will be once every two weeks, given any patches.

[main]: <https://github.com/etcd-io/etcd/tree/main>  
# Issue triage guidelines

### ## Purpose

Speed up issue management.

The ``etcd`` issues are listed at <https://github.com/etcd-io/etcd/issues> and are identified with labels. For example, an issue that is identified as a bug will be set to the label ``type/bug``.

The etcd project uses labels to indicate common attributes such as ``area``, ``type``, and ``priority`` of incoming issues.

New issues will often start without any labels, but typically ``etcd`` maintainers, reviewers, and members will add labels by following these triage guidelines. The detailed list of labels can be found at <https://github.com/etcd-io/etcd/labels>.

### ## Scope

This document serves as the primary guidelines for triaging incoming issues in ``etcd``.

All contributors are encouraged and welcome to help manage issues which will help reduce the burden on project maintainers, though the work and responsibilities discussed in this document are created with ``etcd`` project reviewers and members in mind as these individuals will have triage access to the etcd project which is a requirement for actions like applying labels or closing issues.

Refer to [etcd community membership](https://github.com/etcd-io/etcd/blob/main/Documentation/contributor-guide/community-membership.md) for guidance on becoming an etcd project member or reviewer.

## ## Step 1 - Find an issue to triage

To get started you can use the following recommended issue searches to identify issues that are in need of triage:

- \* [Issues that have no labels](https://github.com/etcd-io/etcd/issues?q=is%3Aissue+is%3Aopen+sort%3Aupdated+no%3Alabel)
- \* [Issues created recently](https://github.com/etcd-io/etcd/issues?q=is%3Aissue+is%3Aopen+)
- \* [Issues not assigned but linked pr](https://github.com/etcd-io/etcd/issues?q=is%3Aopen+is%3Aissue+no%3Aassignee+linked%3Apr)
- \* [Issues with no comments](https://github.com/etcd-io/etcd/issues?q=is%3Aopen+is%3Aissue+comments%3A0+)
- \* [Issues with help wanted](https://github.com/etcd-io/etcd/issues?q=is%3Aopen+is%3Aissue+label%3A%22help+wanted%22+)

## ##

### Step 2 - Check the issue is valid

Before we start adding labels or trying to work out a priority, our first triage step needs to be working out if the issue actually belongs to the etcd project and is not a duplicate.

#### ### Issues that don't belong to etcd

Sometimes issues are reported that belong to other projects that `etcd` use. For example, `grpc` or `golang` issues. Such issues should be addressed by asking the reporter to open issues in the appropriate other projects.

These issues can generally be closed unless a maintainer and issue reporter see a need to keep it open for tracking purposes. If you have triage permissions please close it, alternatively mention the @etcd-io/members group to request a member with triage access to close the issue.

#### ### Duplicate issues

If an issue is a duplicate, add a comment stating so along with a reference for the original issue and if you have triage permissions please close it, alternatively mention the @etcd-io/members group to request a member with triage access close the issue.

## ## Step 3 - Apply the appropriate type of label

Adding a `type` label to an issue helps create visibility on the health of the project and helps contributors identify potential priorities, i.e. addressing existing bugs or test flakes before implementing new features.

#### ### Support requests

As a general rule, the focus for etcd support is to address common themes in a broad way that helps all users, i.e. through channels like known issues, frequently asked questions, and high-quality documentation. To make the best use of project members time we should avoid providing 1:1 support if a broad approach is available.

Some people mistakenly use our GitHub bug report or feature request templates to file support requests. Usually, they are asking for help operating or configuring some aspect of etcd. Support requests for etcd should instead be raised as [discussions](https://github.com/etcd-io/etcd/discussions).

## Common

types of support requests are:

1. Questions about configuring or operating existing well-documented etcd features, for example, <<https://github.com/etcd-io/etcd/issues/15945>>. Note - If an existing feature is not well documented please apply the `area/documentation` label and propose documentation improvements that would prevent future users from stumbling on the problem again.
2. Bug reports or questions about unsupported versions of etcd, for example <<https://github.com/etcd-io/etcd/issues/15796>>. When responding to these issues please refer to our [supported versions documentation](<https://etcd.io/docs/latest/op-guide/versioning>) and encourage the reporter to upgrade to a recent patch release of a supported version as soon as possible. We should limit the effort supporting users that do not make the effort to run a supported version of etcd or ensure their version is patched.
3. Bug reports that do not provide a complete list of steps to reproduce the issue and/or contributors are not able to reproduce the issue, for example, <<https://github.com/etcd-io/etcd/issues/15740>>. We should limit the effort we put into reproducing issues ourselves and motivate users to provide the necessary information to accept the bug report.
4. General questions that are filed using feature request or bug report issue templates, for example, <<https://github.com/etcd-io/etcd/issues/15914>>. Note - These types of requests may surface good additions to our [frequently asked questions](<https://etcd.io/docs/v3.5/faq>).

If you identify that an issue is a support request please:

1. Add the `type/support` or `type/question` label.
2. Add the following comment to inform the issue creator that discussions should be used instead and that this issue will be converted to a discussion.

> Thank you for your question, this support issue will be moved to our [Discussion Forums](<https://github.com/etcd-io/etcd/discussions>).

>

> We are trying to consolidate the channels to which questions for help/support are posted so that we can improve our efficiency in responding to your requests, and make it easier for you to find answers to frequently asked questions and how to address common use cases.

>

> We regularly see messages posted in multiple forums, with the full response thread only in one place or, worse, spread across multiple forums. Also, the large volume of support issues on GitHub is making it difficult for us to use issues to identify real bugs.

>

> Members of the etcd community use Discussion Forums to field support requests. Before posting a new question, please search these for answers to similar questions, and also familiarize yourself with:

>

> 1. [user documentation](<https://etcd.io/docs/latest>)

> 2. [frequently asked questions](<https://etcd.io/docs/v3.5/faq>)

>

> Again, thanks for using etcd and raising this question.

>

> The etcd team

3. Finally, click `Convert to discussion` on the right-hand panel, selecting the appropriate discussion category.

### ### Bug reports

If an issue has been raised as a bug it should already have the `type/bug` label, however, if this is missing for an issue you determine to be a bug please add the label manually.

The next step is to validate if the issue is indeed a bug. If not, add a comment with the findings and close the trivial issue. For non-trivial issues, wait to hear back from the issue reporter and see if there is any objection. If the issue reporter does not reply in 30 days, close the issue.

If the problem can not be reproduced or requires more information, leave a comment for the issue reporter as soon as possible while the issue is fresh for the issue reporter.

### ### Feature requests

New feature requests should be created via the etcd feature request template and in theory already have the `type/feature` label, however, if this is missing for an issue you determine to be a feature please add the label manually.

### ### Test flakes

#### Test flakes

are a specific type of bug that the etcd project tracks separately as these are a priority to address. These should be created via the test flake template and in theory already have the `type/flake` label, however, if this is missing for an issue you determine to be related to a flaking test please add the label manually.

## ## Step 4 - Define the areas impacted

Adding an `area` label to an issue helps create visibility on which areas of the etcd project require attention and helps contributors find issues to work on relating to their particular skills or knowledge of the etcd codebase.

If an issue crosses multiple domains please add additional `area` labels to reflect that.

Below is a brief summary of the area labels in active use by the etcd project along with any notes on their use:

| Label          | Notes                                                       |
|----------------|-------------------------------------------------------------|
| ---            | ---                                                         |
| area/external  | Tracking label for issues raised that are external to etcd. |
| area/community |                                                             |
| area/raft      |                                                             |
| area/clientv3  |                                                             |

|                         |                                                                                                                                                                                                               |  |
|-------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|
| area/performance        |                                                                                                                                                                                                               |  |
| area/security           |                                                                                                                                                                                                               |  |
| area/tls                |                                                                                                                                                                                                               |  |
| area/auth               |                                                                                                                                                                                                               |  |
| area/etcdctl            |                                                                                                                                                                                                               |  |
| area/etcdutl            |                                                                                                                                                                                                               |  |
| area/contrib            | Not to be confused with `area/community` this label is specifically used for issues relating to community-maintained scripts or files in the `contrib/` directory which aren't part of the core etcd project. |  |
| area/documentation      |                                                                                                                                                                                                               |  |
| area/tooling            | Generally used in relation to the third party / external utilities or tools that are used in various stages of the etcd build, test, or release process, for example, tooling to create sboms.                |  |
| area/testing            |                                                                                                                                                                                                               |  |
| area/robustness-testing |                                                                                                                                                                                                               |  |

## ## Step 5 - Prioritise the issue

If an issue lacks a priority label it has not been formally prioritized yet.

Adding a `priority` label helps the etcd project understand what is important and should be worked on now, and conversely, what is not as important and is on the project backlog.

| Priority label                    | What it means                                                                                                                                                                                                                                                                                                                                       | Examples |
|-----------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|
| ---                               | ---                                                                                                                                                                                                                                                                                                                                                 | ---      |
| `priority/critical-urgent`        | Maintainers are responsible for making sure that these issues (in their area) are being actively worked on i.e., drop what you're doing. The stuff is burning. These should be fixed before the next release.   user-visible critical bugs in core features <br> broken builds on tier1 supported platforms <br> tests and critical security issues |          |
| `priority/important-soon`         | Must be staffed and worked on either currently or very soon ideally in time for the next release.                                                                                                                                                                                                                                                   |          |
| `priority/important-longterm`     | Important over the long term, but may not be currently staffed and/or may require multiple releases to complete.                                                                                                                                                                                                                                    |          |
| `priority/backlog`                | General agreement that this is a nice-to-have, but no one's available to work on it anytime soon. Community contributions would be most welcome in the meantime, though it might take a while to get them reviewed if reviewers are fully occupied with higher-priority issues for example, immediately before a release.                           |          |
| `priority/awaiting-more-evidence` | Possibly useful, but not yet enough support to actually get it done.   Mostly placeholders for potentially good ideas, so that they don't get completely forgotten, and can be referenced or deduped every time they come up                                                                                                                        |          |

## ## Step 6 - Support new contributors

As part of the `etcd` triage process once the `kind` and `area` have been determined, please consider if the issue would be suitable for a less experienced contributor. The `good first issue` label is a subset of the `help wanted` label, indicating that members have committed to providing extra assistance for new contributors. All `good first issue` items also have the `help wanted` label.

### ### Help wanted



Items marked with the `help wanted` label need to ensure that they meet these criteria:

\* **Low Barrier to Entry** - It should be easy for new contributors.

\* **Clear** - The task is agreed upon and does not require further discussions in the community.

\* **Goldilocks priority** - The priority

should not be so high that a core contributor should do it, but not too low that it isn't useful enough for a core contributor to spend time reviewing it, answering questions, helping get it into a release, etc.

### ### Good first issue

Items marked with `good first issue` are intended for first-time contributors. It indicates that members will keep an eye out for these pull requests and shepherd it through our processes.

New contributors should not be left to find an approver, ping for reviews, decipher test commands, or identify that their build failed due to a flake. It is important to make new contributors feel welcome and valued. We should assure them that they will have an extra level of help with their first contribution.

After a contributor has successfully completed one or two `good first issue` items, they should be ready to move on to `help wanted` items.

\* **No Barrier to Entry** - The task is something that a new contributor can tackle without advanced setup or domain knowledge.

\*

\* **Solution Explained** - The recommended solution is clearly described in the issue.

\* **Gives Examples** - Link to examples of similar implementations so new contributors have a reference guide for their changes.

\* **Identifies Relevant Code** - The relevant code and tests to be changed should be linked in the issue.

\* **Ready to Test** - There should be existing tests that can be modified, or existing test cases fit to be copied. If the area of code doesn't have tests, before labeling the issue, add a test fixture. This prep often makes a great help wanted task!

### ## Step 7 - Follow up

Once initial triage has been completed, issues need to be re-evaluated over time to ensure they don't become stale incorrectly.

### ### Track important issues

If an issue is at risk of being closed by the stale bot in the future, but is an important issue for the etcd project, then please apply the `stage/tracked` label and remove any `stale` labels that exist. This will ensure the project does not lose sight of the issue.

### ### Close incomplete issues

Issues that lack enough information from the issue reporter should be closed if the issue reporter does not provide information in 30 days. Issues can always be re-opened at a later date if new information is provided.

### ### Check for incomplete work

If an issue owned by a developer has no pull request created in 30 days, contact the issue owner and kindly ask about the status of their work, or to release ownership on the issue if needed.

### # PR management

## ## Purpose

Speed up PR management.

The `etcd` PRs are listed at <https://github.com/etcd-io/etcd/pulls>

A PR can have various labels, milestones, reviewers, etc. The detailed list of labels can be found at <https://github.com/kubernetes/kubernetes/labels>

Following are a few example searches on PR for convenience:

- \* [Open PRS for milestone etcd-v3.6](<https://github.com/etcd-io/etcd/pulls?utf8=%E2%9C%93&q=is%3Apr+is%3Aopen+milestone%3Aetcd-v3.6>)
- \* [PRs under investigation](<https://github.com/etcd-io/etcd/labels/Investigating>)

## ## Scope

These guidelines serve as a primary document for managing PRs in `etcd`. Everyone is welcome to help manage PRs but the work and responsibilities discussed in this document are created with `etcd` maintainers and active contributors in mind.

### ## Ensure tests are run

The etcd project use Kubernetes Prow and GitHub Actions to run tests. To ensure all required tests run if a pull request is ready for testing and still has the `needs-ok-to-test` label then please comment on the pull request `/ok-to-test`.

### ## Handle inactive PRs

Poke PR owner if review comments are not addressed in 15 days. If the PR owner does not reply in 90 days, update the PR with a new commit if possible. If not, inactive PR should be closed after 180 days.

### ## Poke reviewer if needed

Reviewers are responsive in a timely fashion, but considering everyone is busy, give them some time after requesting a review if a quick response is not provided. If the response is not provided in 10 days, feel free to contact them via adding a comment in the PR or sending an email or message on Slack.

### ## Verify important labels are in place

Make sure that appropriate reviewers are added to the PR. Also, make sure that a milestone is identified. If any of these or other important labels are missing, add them. If a correct label cannot be decided, leave a comment for the maintainers to do so as needed.

# Roadmap

etcd uses GitHub milestones to track all tasks in each major or minor release. The `roadmap.md` file only records the most important tasks for each release. The list is based on the current maintainer capacity that may shift over time. Proposed milestones are what we think we can deliver with the people we have. If we have more support on the important stuff, we could pick up more items from the backlog. Note that etcd will continue to mainly focus on technical debt over the next few major or minor releases.

Each item has an assigned priority. Refer to [priority definitions](https://github.com/etcd-io/etcd/blob/main/Documentation/contributor-guide/triage\_issues.md#step-5---prioritise-the-issue).

## v3.6.0

For a full list of tasks in `v3.6.0`, please see [milestone etcd-v3.6](https://github.com/etcd-io/etcd/milestone/38).

| Title                                                                                | Priority                    | Status      | Note                                                                                                         |
|--------------------------------------------------------------------------------------|-----------------------------|-------------|--------------------------------------------------------------------------------------------------------------|
| [Support downgrade](https://github.com/etcd-io/etcd/issues/11716)                    | priority/important-soon     | In progress | etcd will support downgrade starting from 3.6.0. But it will also support offline downgrade from 3.5 to 3.4. |
| [StoreV2 deprecation](https://github.com/etcd-io/etcd/issues/12913)                  | priority/important-soon     | In progress | This task will be covered in both 3.6 and 3.7.                                                               |
| [Release raft 3.6.0](https://github.com/etcd-io/raft/issues/89)                      | priority/important-soon     | Not started | etcd 3.6.0 will depends on raft 3.6.0                                                                        |
| [Release bbolt 1.4.0](https://github.com/etcd-io/bbolt/issues/553)                   | priority/important-soon     | Not started | etcd 3.6.0 will depends on bbolt 1.4.0                                                                       |
| [Support /livez and /readyz endpoints](https://github.com/etcd-io/etcd/issues/16007) | priority/important-longterm | In progress | It provides clearer APIs, and can also work around the stalled writes issue                                  |
| [Bump gRPC](https://github.com/etcd-io/etcd/issues/16290)                            | priority/important-longterm | Completed   | It isn't guaranteed to be resolved in 3.6, and might be postponed to 3.7 depending on the effort and risk.   |
| [Deprecate grpc-gateway or bump it](https://github.com/etcd-io/etcd/issues/14499)    | priority/important-longterm | Completed   | It isn't guaranteed to be resolved in 3.6, and might be postponed to 3.7 depending on the effort and risk.   |
| [bbolt: Add logger into bbolt](https://github.com/etcd-io/bbolt/issues/509)          | priority/important-longterm | Completed   | It's important to diagnose bbolt issues                                                                      |

|                                                                                                                   |                             |             |                                                              |
|-------------------------------------------------------------------------------------------------------------------|-----------------------------|-------------|--------------------------------------------------------------|
| [bbolt: Add surgery commands](https://github.com/etcd-io/bbolt/issues/370)                                        | priority/important-longterm | Completed   | Surgery commands are important for fixing corrupted db files |
| [Evaluate and (Graduate or deprecate/remove) experimental features](https://github.com/etcd-io/etcd/issues/16292) | priority/backlog            | Not started | This task will be covered in both 3.6 and 3.7.               |

## ## v3.7.0

For a full list of tasks in `v3.7.0`, please see [milestone etcd-v3.7](https://github.com/etcd-io/etcd/milestone/39).

| Title                                                                                                             | Priority | Note                                                                              |
|-------------------------------------------------------------------------------------------------------------------|----------|-----------------------------------------------------------------------------------|
| [StoreV2 deprecation](https://github.com/etcd-io/etcd/issues/12913)                                               | P0       | Finish the remaining tasks 3.7.                                                   |
| [Refactor lease: Lease might be revoked by mistake by old leader](https://github.com/etcd-io/etcd/issues/15247)   | P1       | to be investigated & discussed                                                    |
| [Integrate raft's new feature (async write) into etcd](https://github.com/etcd-io/etcd/issues/16291)              | P1       | It should improve the performance                                                 |
| [bbolt: Support customizing the bbolt rebalance threshold](https://github.com/etcd-io/bbolt/issues/422)           | P2       | It may get rid of etcd's defragmentation. Both bbolt and etcd need to be changed. |
| [Evaluate and (graduate or deprecate/remove) experimental features](https://github.com/etcd-io/etcd/issues/16292) | P2       | Finish the remaining tasks 3.7.                                                   |

## ## Backlog (future releases)

| Title                                                                                                    | Priority | Note |
|----------------------------------------------------------------------------------------------------------|----------|------|
| [Remove the dependency on grpc-go's experimental API](https://github.com/etcd-io/etcd/issues/15145)      |          |      |
| [Protobuf: cleanup both golang/protobuf and gogo/protobuf](https://github.com/etcd-io/etcd/issues/14533) |          |      |
| [Proposals should include a merkle root](https://github.com/etcd-io/etcd/issues/13839)                   |          |      |
| [Add Distributed Tracing using OpenTelemetry](https://github.com/etcd-io/etcd/issues/12460)              |          |      |
| [Support CA rotation](https://github.com/etcd-io/etcd/issues/11555)                                      |          |      |
| [bbolt: Migrate all commands to cobra style commands](https://github.com/etcd-io/bbolt/issues/472)       |          |      |
| [raft: enhance the configuration change validation](https://github.com/etcd-io/raft/issues/80)           |          |      |

## # Release

The guide talks about how to release a new version of etcd.

The procedure includes some manual steps for sanity checking, but it can probably be further scripted. Please keep this document up-to-date if making changes to the release process.

## ## Release management

The following pool of release candidates manages the release of each etcd major/minor version as well as manages patches

to each stable release branch. They are responsible for communicating the timelines and status of each release and for ensuring the stability of the release branch.

- Benjamin Wang [[@ahrtr](https://github.com/ahrtr)](<https://github.com/ahrtr>)
- James Blair [[@jmhbnz](https://github.com/jmhbnz)](<https://github.com/jmhbnz>)
- Marek Siarkowicz [[@serathius](https://github.com/serathius)](<https://github.com/serathius>)
- Sahdev Zala [[@spzala](https://github.com/spzala)](<https://github.com/spzala>)
- Wenjia Zhang [[@wenjiaswe](https://github.com/wenjiaswe)](<https://github.com/wenjiaswe>)

All release version numbers follow the format of [semantic versioning 2.0.0](<http://semver.org/>).

### ### Major, minor version release, or its pre-release

- Ensure the relevant [milestone](<https://github.com/etcd-io/etcd/milestones>) on GitHub is complete. All referenced issues should be closed or moved elsewhere.
- Ensure the latest [upgrade documentation](<https://etcd.io/docs/next/upgrades>) is available.
- Bump [hardcoded MinClusterVerion in the repository](<https://github.com/etcd-io/etcd/blob/v3.4.15/version/version.go#L29>), if necessary.
- Add feature capability maps for the new version, if necessary.

### ### Patch version release

- To request a backport, developers submit cherry-pick PRs targeting the release branch. The commits should not include merge commits. The commits should be restricted to bug fixes and security patches.
- The cherrypick PRs should target the appropriate release branch (`base:release-<major>-<minor>`). The k8s infra cherry pick robot `/cherrypick <branch>` PR chatops command may be used to automatically generate cherrypick PRs.
- The release patch manager reviews the cherrypick PRs. Please discuss carefully what is backported to the patch release. Each patch release should be strictly better than its predecessor.
- The release patch manager will cherry-pick these commits starting from the oldest one into stable branch.

## ## Write a release note

- Write an introduction for the new release. For example, what major bug we fix, what new features we introduce, or what performance improvement we make.
- Put `[GH XXXX]` at the head of the change line to reference the Pull Request that introduces the change. Moreover, add a link on it to jump to the Pull Request.
- Find PRs with the `release-note` label and explain them in the `NEWS` file, as a straightforward summary of changes for end-users.

## ## Patch release criteria

The etcd project aims to release a new patch version if any of the following conditions are met:

- Fixed one or more major CVEs ( $\geq 7.5$ ).
- Fixed one or more critical bugs.
- Fixed three or more major bugs.
- Fixed five or more minor bugs.

## ## Release guide

### ### Prerequisites

There are some

prerequisites, which should be done before the release process. These are one-time operations, which don't need to be executed before releasing each version.

1. Generate a GPG key and add it to your GitHub account. Refer to the links on [settings](https://github.com/settings/keys).
2. Ensure you have a Linux machine, on which the git, Golang, and docker have been installed.
  - Ensure the Golang version matches the version defined in `.go-version`` file.
  - Ensure non-privileged users can run docker commands, refer to the [Linux postinstall](https://docs.docker.com/engine/install/linux-postinstall/).
  - Ensure there is at least 5GB of free space on your Linux machine.
3. Install gsutil, refer to [gsutil\_install](https://cloud.google.com/storage/docs/gsutil\_install). When asked about cloud project to use, pick ``etcd-development``.
4. Authenticate the image registry, refer to [Authentication methods](https://cloud.google.com/container-registry/docs/advanced-authentication).
  - ``gcloud auth login``
  - ``gcloud auth configure-docker``
5. Install gh, refer to [GitHub's documentation](https://github.com/cli/cli#installation). Ensure that running ``gh auth login`` succeeds for the GitHub account you use to contribute to etcd, and that ``gh auth status`` has a clean exit and doesn't show any issues.

### ### Release steps

1. Raise an issue to publish the release plan, e.g. [issues/17350](https://github.com/etcd-io/etcd/issues/17350).
2. Raise a ``kubernetes/org`` pull request to temporarily elevate permissions for the GitHub release team.
3. Once permissions are elevated, temporarily relax [branch protections](https://github.com/etcd-io/etcd/settings/branches) to allow pushing changes directly to ``release-*`` branches in GitHub.
4. Verify you can pass the authentication to the image registries,
  - ``docker login gcr.io``
  - ``docker login quay.io``
  - If the release person doesn't have access to 1password, one of the owners (@ahrtr, @ivanvc, @jmhbznz, @serathius) needs to share the password with them per [this guide](https://support.1password.com/share-items/). See rough steps below,
    - [Sign in](https://team-etcd.1password.com/home) to your account on 1password.com.
    - Click ``Your Vault Items`` on the right side.
    - Select ``Password of quay.io``.

- Click `Share` on the top right, and set expiration as `1 hour` and only available to the release person using his/her email.
  - Click `Copy Link` then send the link to the release person via slack or email.
5. Clone the etcd repository and checkout the target branch,
    - `git clone --branch release-3.X git@github.com:etcd-io/etcd.git`
  6. Run the release script under the repository's root directory, replacing `\${VERSION}` with a value without the `v` prefix, i.e. `3.5.13`.
    - `DRY\_RUN=false ./scripts/release.sh \${VERSION}`
    - **NOTE:** When doing a pre-release (i.e., a version from the main branch, 3.6.0-alpha.2), you will need to explicitly set the branch to main:

```

...
DRY_RUN=false BRANCH=main ./scripts/release.sh ${VERSION}
...

```

It generates all release binaries under the directory `/tmp/etcd-release-\${VERSION}/etcd/release/` and images. Binaries are pushed to the Google Cloud bucket under project `etcd-development`, and images are pushed to `quay.io` and `gcr.io`.

7. Publish the release page on GitHub
  - Open the **draft** release URL shown by the release script
  - Click the pen button at the top right to edit the release
  - Review that it looks correct, reviewing that the bottom checkboxes are checked depending on the release version (v3.4 no checkboxes, v3.5 has the set as latest release checkbox checked, v3.6 has the set as pre-release checkbox checked)
  - Then, publish the release
8. Announce to the etcd-dev googlegroup

Follow the format of previous release emails sent to etcd-dev@googlegroups.com, see an example below. After sending out the email, ask one of the mailing list maintainers to approve the email from the pending list. Additionally, label the release email as `Release`.

```

```text
Hello,

etcd v3.4.30 is now public!

https://github.com/etcd-io/etcd/releases/tag/v3.4.30

Thanks to everyone who contributed to the release!

etcd team
...

```

9. Update the changelog to reflect the correct release date.
10. Paste the release link to the issue raised in Step 1 and close the issue.
11. Restore standard branch protection settings and raise a follow-up `kubernetes/org` pull request to return to least privilege permissions.
12. Create a new stable branch through `git push origin release-\${VERSION\_MAJOR}.\${VERSION\_MINOR}` if

this is a new major or minor stable release.

13. Re-generate a new password for quay.io if needed (e.g. shared to a contributor who isn't in the release team, and we should rotate the password at least once every 3 months).

Release known issues

1. Timeouts pushing binaries - If binaries fail to fully upload to Google Cloud storage, the script must be re-run using the same command. Any artifacts that are already pushed will be overwritten to ensure they are correct. The storage bucket does not use object versioning so incorrect files cannot remain.
2. Timeouts pushing images - It is rare, although possible for connection timeouts to occur when publishing etcd release images to `quay.io` or `gcr.io`. If this occurs, it is known to be safe to rerun the release script command appending the `--no-upload` flag, and image uploads will gracefully resume.
3. GPG vs SSH signing - The release scripts assume that git tags will be signed with a GPG key. Since 2022 GitHub has supported [signing commits and tags using ssh](https://github.blog/changelog/2022-08-23-ssh-commit-verification-now-supported). Until further release script updates are completed you will need to disable this feature in your `~/.gitconfig` and revert to signing via GPG to perform etcd releases.

Golang modules

The etcd project (since version 3.5) is organized into multiple [golang modules](https://golang.org/ref/mod) hosted in a [single repository](https://golang.org/ref/mod#vcs-dir).

![modules graph](modules.svg)

There are the following modules:

- **go.etcd.io/etcd/api/v3** - contains API definitions (like protos & proto-generated libraries) that defines communication protocol between etcd clients and servers.
- **go.etcd.io/etcd/pkg/v3** - a collection of utility packages used by etcd without being specific to etcd itself. A package belongs here only if it could possibly be moved out into its own repository in the future. Please avoid adding here code that has a lot of dependencies on its own, as they automatically become dependencies of the client library (that we want to keep lightweight).
- **go.etcd.io/etcd/client/v3** - client library used to contact etcd over the network (grpc). Recommended for all new usage of etcd.
- **go.etcd.io/raft/v3**
 - implementation of distributed consensus protocol. Should have no etcd specific code. Hosted in a separate repository: <https://github.com/etcd-io/raft>.
- **go.etcd.io/etcd/server/v3** - etcd implementation.
The code in this package is internal to etcd and should not be consumed

by external projects. The package layout and API can change within the minor versions.

- **go.etcd.io/etcd/etcdctl/v3** - a command line tool to access and manage etcd.

- **go.etcd.io/etcd/tests/v3** - a module that contains all integration tests of etcd.

Notice: All unit tests (fast and not requiring cross-module dependencies) should be kept in the local modules of the code under the test.

- **go.etcd.io/bbolt** - implementation of persistent b-tree.

Hosted in a separate repository: <https://github.com/etcd-io/bbolt>.

Operations

1. All etcd modules should be released in the same versions, e.g.

`go.etcd.io/etcd/client/v3@v3.5.10` must depend on `go.etcd.io/etcd/api/v3@v3.5.10`.`

The consistent updating of versions can be performed using:

```
```shell script
% DRY_RUN=false TARGET_VERSION="v3.5.10" ./scripts/release_mod.sh update_versions
```
```

2. The released modules should be tagged according to <https://golang.org/ref/mod#vcs-version> rules, i.e. each module should get its own tag.

The tagging can be performed using:

```
```shell script
% DRY_RUN=false REMOTE_REPO="origin" ./scripts/release_mod.sh push_mod_tags
```
```

3. All etcd modules should depend on the same versions of underlying dependencies.

This can be verified using:

```
```shell script
% PASSES="dep" ./test.sh
```
```

4. The go.mod files must not contain dependencies not being used and must conform to `go mod tidy` format.

This is being verified by:

```
```
% PASSES="mod_tidy" ./test.sh
```
```

5. To trigger actions across all modules (e.g. auto-format all files), please use/expand the following script:

```
```shell script
% ./scripts/fix.sh
```
```

###

Future

As a North Star, we would like to evaluate etcd modules towards the following model:

![modules graph](modules-future.svg)

This assumes:

- Splitting etcdmigrate/etcdadm out of etcdctl binary.
Thanks to this etcdctl would become clearly a command-line wrapper around network client API, while etcdmigrate/etcdadm would support direct physical operations on the etcd storage files.
- Splitting etcd-proxy out of ./etcd binary, as it contains more experimental code so carries additional risk & dependencies.
- Deprecation of support for v2 protocol.

Reporting bugs

If any part of the etcd project has bugs or documentation mistakes, please let us know by [opening an issue][etcd-issue]. We treat bugs and mistakes very seriously and believe no issue is too small. Before creating a bug report, please check that an issue reporting the same problem does not already exist.

To make the bug report accurate and easy to understand, please try to create bug reports that are:

- Specific. Include as many details as possible: which version, what environment, what configuration, etc. If the bug is related to running the etcd server, please attach the etcd log (the starting log with the etcd configuration is especially important).
- Reproducible. Include the steps to reproduce the problem. We understand some issues might be hard to reproduce, please include the steps that might lead to the problem. If possible, please attach the affected etcd data dir and stack trace to the bug report.
- Isolated. Please try to isolate and reproduce the bug with minimum dependencies. It would significantly slow down the speed to fix a bug if too many dependencies are involved in a bug report. Debugging external systems that rely on etcd is out of scope, but we are happy to provide guidance in the right direction or help with using etcd itself.
- Unique. Do not duplicate existing bug reports.
- Scoped. One bug per report. Do not follow up with another bug inside one report.

It may be worthwhile to read [Elika Etemads article on filing good bug reports][filing-good-bugs] before creating a bug report.

We might ask for further information to locate a bug. A duplicated bug report will be closed.

Frequently asked questions

How to get a stack trace

```
``` bash
$ kill -QUIT $PID
```
```

How to get the etcd version

```
``` bash
$ etcd --version
```
```

How to get etcd configuration and log when it runs as systemd service etcd2.service

```
``` bash
$ sudo systemctl cat etcd2
$ sudo journalctl -u etcd2
```
```

Due to an upstream systemd bug, journald may miss the last few log lines when its processes exit. If journalctl says etcd stopped without a fatal or panic message, try `sudo journalctl -f -t etcd2` to get the full log.

[etcd-issue]: <https://github.com/etcd-io/etcd/issues/new>
[filing-good-bugs]: <http://fantasai.inkedblade.net/style/talks/filing-good-bugs/>
Community membership

This doc outlines the various responsibilities of contributor roles in etcd.

Role	Responsibilities	Requirements	Defined by
Member	Active contributor in the community	Sponsored by 2 reviewers and multiple contributions	etcd GitHub org member
Reviewer	Review contributions from other members	History of review and authorship	[OWNERS] file reviewer entry
Maintainer	Set direction and priorities for the project	Demonstrated responsibility and excellent technical judgement	[OWNERS] file approver entry

New contributors

New contributors should be welcomed to the community by existing members, helped with PR workflow, and directed to relevant documentation and communication channels.

Established community members

Established community members are expected to demonstrate their adherence to the principles in this document, familiarity with project organization, roles, policies, procedures, conventions, etc., and technical and/or writing ability. Role-specific expectations, responsibilities, and requirements are enumerated below.

Member

Members are continuously active contributors to the community. They can have issues and PRs assigned to them. Members are expected to remain active contributors to the community.

****Defined by:**** Member of the etcd GitHub organization.

Requirements

- Enabled [two-factor authentication] on their GitHub account
- Have made multiple contributions to the project or community. Contribution may include, but is not limited to:
 - Authoring or reviewing PRs on GitHub. At least one PR must be ****merged****.
 - Filing or commenting on issues on

GitHub

- Contributing to community discussions (e.g. meetings, Slack, email discussion forums, Stack Overflow)
- Subscribed to [etcd-dev@googlegroups.com](https://groups.google.com/g/etcd-dev)
- Have read the [contributor guide]
- Sponsored by two active maintainers or reviewers.
 - Sponsors must be from multiple member companies to demonstrate integration across the community.
 - With no objections from other maintainers
- Open a [membership nomination] issue against the `kubernetes/org` repo
 - Ensure your sponsors are @mentioned on the issue
 - Make sure that the list of contributions included is representative of your work on the project.
- Members can be removed by a supermajority of the maintainers or can resign by notifying the maintainers.

Responsibilities and privileges

- Responsive to issues and PRs assigned to them
- Granted "triage access" to etcd project
- Active owner of code they have contributed (unless ownership is explicitly transferred)
 - Code is well-tested
 - Tests consistently pass
 - Addresses bugs or issues discovered after code is accepted

****Note:**** Members who frequently contribute code are expected to proactively perform code reviews and work towards becoming a **reviewer**.

Reviewers

Reviewers are contributors who have demonstrated greater skill in reviewing the code from other contributors. They are knowledgeable about both the codebase and software engineering principles. Their LGTM counts towards merging a code change into the project. A reviewer is generally on the ladder towards maintainership.

****Defined by:**** **reviewers** entry in the [OWNERS] file.

Requirements

- member for at least 3 months.
- Primary reviewer for at least 5 PRs to the codebase.
- Reviewed or contributed at least 20 substantial PRs to the codebase.
- Knowledgeable about the codebase.
- Sponsored by two active maintainers.
 - Sponsors must be from multiple member companies to demonstrate integration across the community.
 - With no objections from other maintainers
- Reviewers can be removed by a supermajority of the maintainers or can resign by notifying the maintainers.

Responsibilities and privileges

- Code reviewer status may be a precondition to accepting large code contributions
- Responsible for project quality control via code reviews
 - Focus on code quality and correctness, including testing and factoring
 - May also review for more holistic issues, but not a requirement
- Expected to be responsive to review requests
- Assigned PRs to review related to area of expertise
- Assigned test bugs related to area of expertise
- Granted "triage access" to etcd project

Maintainers

Maintainers are first and foremost contributors who have shown they are committed to the long-term success of a project. Maintainership is about building trust with the current maintainers and being a person that they can depend on to make decisions in the best interest of the project in a consistent manner.

****Defined by:**** **approvers** entry in the [OWNERS] file.

Requirements

- Deep understanding of the technical goals and direction of the project
- Deep understanding of the technical domain of the project
- Sustained contributions to design and direction by doing all of:
 - Authoring and reviewing proposals

- Initiating, contributing, and resolving discussions (emails, GitHub issues, meetings)
- Identifying subtle or complex issues in the designs and implementation of PRs
- Directly contributed to the project through implementation and/or review
- Sponsored by two active maintainers and elected by supermajority
 - Sponsors must be from multiple member companies to demonstrate integration across the community.
- To become a maintainer send an email with your candidacy to etcd-maintainers-private@googlegroups.com
 - Ensure your sponsors are @mentioned in the email
 - Include a list of contributions representative of your work on the project.
-

Existing maintainers vote will privately and respond to the email with either acceptance or feedback for suggested improvement.

- With your membership approved you are expected to:
 - Open a PR and add an entry to the [OWNERS] file
 - Subscribe to etcd-maintainers@googlegroups.com and etcd-maintainers-private@googlegroups.com
 - Request to join [etcd-maintainer teams of etcd organization of GitHub](<https://github.com/orgs/etcd-io/teams/maintainers-etcd>)
 - Request to join the private slack channel for etcd maintainers on [kubernetes slack](<http://slack.kubernetes.io/>)
 - Request access to etcd-development GCP project where we publish releases
 - Request access to passwords shared between maintainers

Responsibilities and privileges

- Make and approve technical design decisions
- Set technical direction and priorities
- Define milestones and releases
- Mentor and guide reviewers, and contributors to the project.
- Participate when called upon in the [security disclosure and release process]
- Ensure the continued health of the project
 - Adequate test coverage to confidently release
 - Tests are passing reliably (i.e. not flaky) and are fixed when they fail
- Ensure a healthy process for discussion and decision-making is in place.
- Work with other maintainers to maintain the project's overall health and success holistically

Retiring

Life priorities, interests, and passions can change. Maintainers can retire and move to [emeritus maintainers]. If a maintainer needs to step down, they should inform other maintainers and, if possible, help find someone to pick up the related work. At the very least, ensure the related work can be continued. Afterward, they can remove themselves from the list of existing maintainers.

If a maintainer has not been performing their duties for 12 months, they can be removed by other maintainers. In that case, the inactive maintainer will be first notified via an email. If the situation doesn't improve, they will be removed.

If an emeritus maintainer wants to regain an active role, they can do so by renewing their contributions. Active maintainers should welcome such a move.

Retiring other maintainers or regaining the status should require the approval of at least two active maintainers.

Acknowledgements

Contributor roles and responsibilities were written based on [Kubernetes community membership]

[OWNERS]: /OWNERS

[contributor guide]: /CONTRIBUTING.md

[membership nomination]: <https://github.com/kubernetes/org/issues/new?assignees=&labels=area%2Fgithub-membership&projects=&template=membership.yml&title=REQUEST%3A+New+membership+for+%3Cyour-GH-handle%3E>

[Kubernetes community membership]: <https://github.com/kubernetes/community/blob/master/community-membership.md>

[emeritus maintainers]: /README.md#etcd-emeritus-maintainers

[security disclosure and release process]: /security/README.md

[two-factor authentication]: <https://docs.github.com/en/authentication/securing-your-account-with-two-factor-authentication-2fa/about-two-factor-authentication>

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Logging Conventions

etcd uses the [zap][zap] library for logging application output categorized into *levels*. A log message's level is determined according to these conventions:

* Debug: Everything is still fine, but even common operations may be logged, and less helpful but more quantity of notices. Usually not used in production.

* Examples:

* Send a normal message to a remote peer

* Write a log entry to disk

* Info: Normal, working log information, everything is fine, but helpful notices for auditing or common operations. Should rather not be logged more frequently than once per a few seconds in a normal server's operation.

* Examples:

- * Startup configuration
- * Start to do a snapshot

* Warning: (Hopefully) Temporary conditions that may cause errors, but may work fine. A replica disappearing (that may reconnect) is a warning.

* Examples:

- * Failure to send a raft message to a remote peer
- * Failure to receive heartbeat message within the configured election timeout

* Error: Data has been lost, a request has failed for a bad reason, or a required resource has been lost.

* Examples:

- * Failure to allocate disk space for WAL

* Panic: Unrecoverable or unexpected error situation that requires stopping execution.

* Examples:

- * Failure to create the database

* Fatal: Unrecoverable or unexpected error situation that requires immediate exit. Mostly used in the test.

* Examples:

- * Failure to find the data directory
- * Failure to run a test function

[zap]: <https://github.com/uber-go/zap>

Dependency management

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Main branch

The dependabot is enabled & [configured](<https://github.com/etcd-io/etcd/blob/main/.github/dependabot.yml>) to manage dependencies for etcd `main` branch. But dependabot doesn't work well for multi-module repository like `etcd`,

see [dependabot-core/issues/6678](https://github.com/dependabot/dependabot-core/issues/6678).

Usually, human intervention is required

each time when dependabot automatically opens some PRs to bump dependencies.

Please see the guidance below.

Dependencies used in workflows

The PRs that automatically bump dependencies (see examples below) used in workflows are fine and can be approved & merged directly as long as all checks are successful.

- [build(deps): bump github/codeql-action from 2.2.11 to 2.2.12](https://github.com/etcd-io/etcd/pull/15736)
- [build(deps): bump actions/checkout from 3.5.0 to 3.5.2](https://github.com/etcd-io/etcd/pull/15735)
- [build(deps): bump ossf/scorecard-action from 2.1.2 to 2.1.3](https://github.com/etcd-io/etcd/pull/15607)

Bumping order

When multiple etcd modules depend on the same package, please bump the package version for all the modules in the correct order. The rule is simple:

if module A depends on module B, then bump the dependency for module B before module A. If the two modules do not depend on each other, then

it doesn't matter to bump which module first. For

example, multiple modules depend on `github.com/spf13/cobra`, so we need to bump the dependency in the following order,

- go.etcd.io/etcd/pkg/v3
- go.etcd.io/etcd/server/v3
- go.etcd.io/etcd/etcdctl/v3
- go.etcd.io/etcd/etcdutl/v3
- go.etcd.io/etcd/tests/v3
- go.etcd.io/etcd/v3
- go.etcd.io/etcd/tools/v3

For more details about etcd Golang modules, please check <<https://etcd.io/docs/next/dev-internal/modules>>

Note the module `go.etcd.io/etcd/tools/v3` doesn't depend on any other modules, nor by any other modules, so it doesn't matter when to bump dependencies for it.

Steps to bump a dependency

Use the `github.com/spf13/cobra` as an example, follow the steps below to bump it from 1.6.1 to 1.7.0 for module `go.etcd.io/etcd/etcdctl/v3`,

```
```bash
cd ${ETCD_ROOT_DIR}/etcdctl
go get github.com/spf13/cobra@v1.7.0
go mod tidy
cd ..
./scripts/fix.sh
```
```

Execute the same steps for all other modules. When you finish bumping the dependency for all modules, then commit the change,

```
```bash
git
add .
git commit --signoff -m "dependency: bump github.com/spf13/cobra from 1.6.1 to 1.7.0"
```
```

Please close the related PRs which were automatically opened by dependabot.

When you bump multiple dependencies in one PR, it's recommended to create a separate commit for each dependency. But it isn't a must; for example, you can get all dependencies bumping for the module `go.etcd.io/etcd/tools/v3` included in one commit.

Troubleshooting

In an event of bumping the version of protoc, protoc plugins or grpc-gateway, it might change `*.proto` file which can result in the following error:

```
```bash
[0;31mFAIL: 'genproto' FAILED at Wed Jul 31 07:09:08 UTC 2024
make: *** [Makefile:134: verify-genproto] Error 255
```
```

To fix the above error, run the following script from the root of etcd repository:

```
```bash
./scripts/genproto.sh
```
```

Indirect dependencies

Usually, we don't bump a dependency if all modules just indirectly depend on it, such as `github.com/go-logr/logr`.

If

an indirect dependency (e.g. `D1`) causes any CVE or bugs that affect etcd, usually the module (e.g. `M1`, not part of etcd, but used by etcd) which depends on it should bump the dependency (`D1`), and then etcd just needs to bump `M1`. However, if the module (`M1`) somehow doesn't bump the problematic dependency, then etcd can still bump it (`D1`) directly following the same steps above. But as a long-term solution, etcd should try to remove the dependency on such module (`M1`) that lack maintenance.

For mixed cases, in which some modules directly while others indirectly depend on a dependency, we have multiple options,

- Bump the dependency for all modules, no matter it's direct or indirect dependency.
- Bump the dependency only for modules that directly depend on it.

We should try to follow the first way, and temporarily fall back to the second one if we run into any issue on the first way. Eventually we should fix the issue and ensure all modules depend on the same version of the dependency.

Known incompatible dependency updates

arduino/setup-protoc

Please refer to [build(deps): bump arduino/setup-protoc from 1.3.0 to 2.0.0](https://github.com/etcd-io/etcd/pull/16016)

Rotation worksheet

The dependabot scheduling interval is weekly; it means dependabot will automatically raise a bunch of PRs per week.

Usually, human intervention is required each time. We have a [rotation worksheet](https://docs.google.com/spreadsheets/d/1jodHIO7Dk2VWTs1IRnfMFaRktS9IH8XRyifOnPdSY8I/edit#gid=1394774387),

and everyone is welcome to participate; you just need to register your name in the worksheet.

Stable branches

Usually, we don't proactively bump dependencies for stable releases unless there are any CVEs or bugs that affect etcd.

If we have to do it, then follow the same guidance above. Note that there is no `./scripts/fix.sh` in release-3.4, so no need to execute it for 3.4.

Golang versions

The etcd project aims to maintain a development branch that is on the latest [Go version](https://go.dev/dl), ideally, this will align with the Go version in use for Kubernetes project development. For an example of how to update etcd to a new minor release of Go refer to issue <https://github.com/etcd-io/etcd/issues/16393> and the linked pull requests.

Suggested steps for performing a minor version upgrade for the etcd development branch:

1. Carefully review new Go version release notes and potentially related blog posts for any deprecations, performance impacts, or other considerations.
2. Create a GitHub issue to signal intent to upgrade and invite discussion, for example, <https://github.com/etcd-io/etcd/issues/16393>.
3. Complete the upgrade locally in your development environment by editing `.go-version` and running `make fix`.
4. Run performance benchmarks locally to compare before and after.

5. Raise a pull request for the changes, for example, <<https://github.com/etcd-io/etcd/pull/16394>>.

Stable etcd release branches will be maintained to stay on the latest patch release of a supported Go version. Upgrading minor versions will be completed before the minor version in use currently is no longer supported. Refer to the [Go release policy](<https://go.dev/doc/devel/release>).

For an example of how to update etcd to a new patch release of Go refer to issue <<https://github.com/etcd-io/etcd/issues/16343>> and the linked pull requests.

References:

- <<https://github.com/kubernetes/sig-release/blob/master/release-engineering/handbooks/go.md>>

Core dependencies mappings

[bbolt](<https://github.com/etcd-io/bbolt>) and [raft](<https://github.com/etcd-io/raft>) are two core dependencies of etcd.

Both etcd 3.4.x and 3.5.x depend on bbolt 1.3.x, and etcd 3.6.x (`main` branch) depends on bbolt 1.4.x.

raft is included in the etcd repository for release-3.4 and release-3.5 branches, so etcd 3.4.x and 3.5.x do not depend on any external raft module. We moved raft into [a separate repository](<https://github.com/etcd-io/raft>) starting from 3.6 (`main` branch), and the first raft release will be v3.6.0, so etcd 3.6.x will depend on raft 3.6.x.

Please see the table below:

etcd versions	bbolt versions	raft versions
3.4.x	v1.3.x	N/A
3.5.x	v1.3.x	N/A
3.6.x	v1.4.x	v3.6.x

1.508 commons-fileupload 10.1.49

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```

```
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jQuery UI v1.13.2

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1.510 tomcat-servlet-api 6.0

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Manifest-Version: 1.0
Created-By: Apache Maven Bundle Plugin
Build-Jdk-Spec: 11
Bnd-LastModified: 1652339954197
Build-Jdk: 11.0.2
Built-By: jenkins
Bundle-Description: Jakarta Servlet 6.0
Bundle-DocURL: <https://www.eclipse.org>
Bundle-License: <http://www.eclipse.org/legal/epl-2.0>, <https://www.gnu.org/software/classpath/license.html>
Bundle-ManifestVersion: 2
Bundle-Name: Jakarta Servlet
Bundle-SymbolicName: jakarta.servlet-api
Bundle-Vendor: Eclipse Foundation
Bundle-Version: 6.0.0
Export-Package: jakarta.servlet;uses:="jakarta.servlet.annotation,jakarta.servlet.descriptor";version="6.0.0",jakarta.servlet.annotation;uses:="jakarta.servlet";version="6.0.0",jakarta.servlet.descriptor;version="6.0.0",jakarta.servlet.http;uses:="jakarta.servlet";version="6.0.0",jakarta.servlet.resources;version="6.0.0"
Extension-Name: jakarta.servlet
Implementation-Vendor: Eclipse Foundation
Implementation-Vendor-Id: org.eclipse
Implementation-Version: 6.0.0
Import-Package: jakarta.servlet,jakarta.servlet.annotation,jakarta.servlet.descriptor
Require-Capability: osgi.ee;filter:="(&(osgi.ee=JavaSE)(version=11))"
Specification-Vendor: Eclipse Foundation
Specification-Version: 6.0
Tool: Bnd-5.1.1.202006162103

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- * /jakarta-servlet-api-6-0-0-5-jar/jakarta/servlet/LocalStrings_fr.properties
- * /jakarta-servlet-api-6-0-0-5-jar/jakarta/servlet/http/LocalStrings.properties
- * /jakarta-servlet-api-6-0-0-5-jar/jakarta/servlet/LocalStrings.properties
- * /jakarta-servlet-api-6-0-0-5-jar/jakarta/servlet/LocalStrings_ja.properties
- * /jakarta-servlet-api-6-0-0-5-jar/jakarta/servlet/http/LocalStrings_ja.properties
- * /jakarta-servlet-api-6-0-0-5-jar/jakarta/servlet/http/LocalStrings_fr.properties
- * /jakarta-servlet-api-6-0-0-5-jar/jakarta/servlet/http/LocalStrings_es.properties

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CONFIDENTIAL flag will indicate that the use of SSL is

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Found in path(s):

- * /jakarta-servlet-api-6-0-0-5-jar/jakarta/servlet/resources/web-app_2_5.xsd
- * /jakarta-servlet-api-6-0-0-5-jar/jakarta/servlet/resources/jsp_2_3.xsd
- * /jakarta-servlet-api-6-0-0-5-jar/jakarta/servlet/resources/j2ee_web_services_1_1.xsd
- *
- /jakarta-servlet-api-6-0-0-5-jar/jakarta/servlet/resources/javaee_web_services_client_1_2.xsd
- * /jakarta-servlet-api-6-0-0-5-jar/jakarta/servlet/resources/web-app_4_0.xsd
- * /jakarta-servlet-api-6-0-0-5-jar/jakarta/servlet/resources/web-fragment_3_0.xsd
- * /jakarta-servlet-api-6-0-0-5-jar/jakarta/servlet/resources/jsp_2_2.xsd
- * /jakarta-servlet-api-6-0-0-5-jar/jakarta/servlet/resources/web-jsptaglibrary_2_1.xsd
- * /jakarta-servlet-api-6-0-0-5-jar/jakarta/servlet/resources/j2ee_web_services_client_1_1.xsd
- * /jakarta-servlet-api-6-0-0-5-jar/jakarta/servlet/resources/web-app_2_4.xsd
- * /jakarta-servlet-api-6-0-0-5-jar/jakarta/servlet/resources/javaee_5.xsd
- * /jakarta-servlet-api-6-0-0-5-jar/jakarta/servlet/resources/web-common_4_0.xsd
- * /jakarta-servlet-api-6-0-0-5-jar/jakarta/servlet/resources/web-app_3_1.xsd
- * /jakarta-servlet-api-6-0-0-5-jar/jakarta/servlet/resources/javaee_7.xsd
- * /jakarta-servlet-api-6-0-0-5-jar/jakarta/servlet/resources/web-jsptaglibrary_2_0.xsd
- *
- /jakarta-servlet-api-6-0-0-5-jar/jakarta/servlet/resources/javaee_web_services_client_1_3.xsd
- * /jakarta-servlet-api-6-0-0-5-jar/jakarta/servlet/resources/javaee_web_services_1_2.xsd
- * /jakarta-servlet-api-6-0-0-5-jar/jakarta/servlet/resources/javaee_web_services_client_1_4.xsd
- * /jakarta-servlet-api-6-0-0-5-jar/jakarta/servlet/resources/jsp_2_0.xsd
- * /jakarta-servlet-api-6-0-0-5-jar/jakarta/servlet/resources/web-fragment_3_1.xsd
- * /jakarta-servlet-api-6-0-0-5-jar/jakarta/servlet/resources/web-fragment_4_0.xsd
- * /jakarta-servlet-api-6-0-0-5-jar/jakarta/servlet/resources/javaee_6.xsd
- * /jakarta-servlet-api-6-0-0-5-jar/jakarta/servlet/resources/j2ee_1_4.xsd
- * /jakarta-servlet-api-6-0-0-5-jar/jakarta/servlet/resources/javaee_8.xsd
- * /jakarta-servlet-api-6-0-0-5-jar/jakarta/servlet/resources/jsp_2_1.xsd
- * /jakarta-servlet-api-6-0-0-5-jar/jakarta/servlet/resources/javaee_web_services_1_4.xsd
- * /jakarta-servlet-api-6-0-0-5-jar/jakarta/servlet/resources/javaee_web_services_1_3.xsd

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/jakarta-servlet-api-6-0-0-5-jar/jakarta/servlet/resources/web-common_3_0.xsd

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* /jakarta-servlet-api-6-0-0-5-jar/jakarta/servlet/http/package.html

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* /jakarta-servlet-api-6-0-0-5-jar/jakarta/servlet/resources/jakartaee_10.xsd

* /jakarta-servlet-api-6-0-0-5-jar/jakarta/servlet/resources/web-fragment_6_0.xsd

* /jakarta-servlet-api-6-0-0-5-jar/jakarta/servlet/resources/web-jsptaglibrary_3_1.xsd

* /jakarta-servlet-api-6-0-0-5-jar/jakarta/servlet/resources/jsp_3_1.xsd

* /jakarta-servlet-api-6-0-0-5-jar/jakarta/servlet/resources/jakartaee_web_services_2_0.xsd

* /jakarta-servlet-api-6-0-0-5-jar/jakarta/servlet/resources/jakartaee_web_services_client_2_0.xsd

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* /jakarta-servlet-api-6-0-0-5-jar/jakarta/servlet/resources/web-jsptaglibrary_1_1.dtd
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1.511 tomcat-embed-el 10.1.49

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- javaee_web_services_client_1_2.xsd
- javaee_6.xsd
- javaee_web_services_1_3.xsd
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- jsp_2_2.xsd
- web-app_3_0.xsd
- web-common_3_0.xsd
- web-fragment_3_0.xsd
- javaee_7.xsd
- javaee_web_services_1_4.xsd
- javaee_web_services_client_1_4.xsd
- jsp_2_3.xsd
- web-app_3_1.xsd
- web-common_3_1.xsd
- web-fragment_3_1.xsd
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- javaee_5.xsd
- javaee_web_services_1_2.xsd
- javaee_web_services_client_1_2.xsd
- javaee_6.xsd
- javaee_web_services_1_3.xsd
- javaee_web_services_client_1_3.xsd
- web-app_3_0.xsd
- web-common_3_0.xsd
- web-fragment_3_0.xsd

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- javaee_6.xsd
- javaee_web_services_1_3.xsd
- javaee_web_services_client_1_3.xsd
- jsp_2_2.xsd
- web-app_3_0.xsd
- web-common_3_0.xsd
- web-fragment_3_0.xsd
- javaee_7.xsd
- javaee_web_services_1_4.xsd
- javaee_web_services_client_1_4.xsd
- jsp_2_3.xsd
- web-app_3_1.xsd
- web-common_3_1.xsd
- web-fragment_3_1.xsd
- javaee_8.xsd
- web-app_4_0.xsd
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org.apache.tomcat.util.json.JSONParser.jj is

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- jakartaee_10.xsd
- jakarta_web-services_2_0.xsd
- jakarta_web-services_client_2_0.xsd
- jsp_3_0.xsd
- jsp_3_1.xsd
- web-app_5_0.xsd
- web-app_6_0.xsd
- web-commonn_5_0.xsd
- web-commonn_6_0.xsd

- web-fragment_5_0.xsd
- web-fragment_6_0.xsd
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- web-jsptaglibrary_3_0.xsd
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zero-allocation-hashing

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jar/io/grpc/util/GracefulSwitchLoadBalancer.java/*
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jar/io/grpc/util/HealthProducerHelper.java/*
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jar/io/grpc/util/MultiChildLoadBalancer.java/*
/opt/cola/permits/2862228895_1768806150.4498715/0/grpc-util-1-76-0-sources-
jar/io/grpc/util/MutableHandlerRegistry.java/*
/opt/cola/permits/2862228895_1768806150.4498715/0/grpc-util-1-76-0-sources-
jar/io/grpc/util/OutlierDetectionLoadBalancer.java/*
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jar/io/grpc/util/OutlierDetectionLoadBalancerProvider.java/*
/opt/cola/permits/2862228895_1768806150.4498715/0/grpc-util-1-76-0-sources-
jar/io/grpc/util/RoundRobinLoadBalancer.java/*
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jar/io/grpc/util/SecretRoundRobinLoadBalancerProvider.java/*
/opt/cola/permits/2862228895_1768806150.4498715/0/grpc-util-1-76-0-sources-
jar/io/grpc/util/TransmitStatusRuntimeExceptionInterceptor.java/*
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protoc-gen-validate

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1.521 grpc-api 1.76.0

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```
ServerSocketsList /opt/cola/permits/2862259241_1768805484.1901298/0/grpc-api-1-76-0-  
jar/io/grpc/InternalChannelz.class(Lio/grpc/InternalChannelz$ServerSocketsList;  
/opt/cola/permits/2862259241_1768805484.1901298/0/grpc-api-1-76-0-  
jar/io/grpc/InternalChannelz.class*io/grpc/InternalChannelz$ServerSocketsList
```

Found in path(s):

* /grpc-api-1-76-0-jar/io/grpc/InternalChannelz.class

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```
/opt/cola/permits/2862259241_1768805484.1901298/0/grpc-api-1-76-0-  
jar/io/grpc/InternalChannelz$ChannelTrace.class numEventsLogged  
/opt/cola/permits/2862259241_1768805484.1901298/0/grpc-api-1-76-0-  
jar/io/grpc/InternalChannelz$ChannelTrace$Builder.class numEventsLogged  
/opt/cola/permits/2862259241_1768805484.1901298/0/grpc-api-1-76-0-  
jar/io/grpc/InternalChannelz$ChannelTrace$Builder.class setNumEventsLogged  
/opt/cola/permits/2862259241_1768805484.1901298/0/grpc-api-1-76-0-  
jar/io/grpc/InternalChannelz$ServerSocketsList.class ServerSocketsList  
/opt/cola/permits/2862259241_1768805484.1901298/0/grpc-api-1-76-0-  
jar/io/grpc/InternalChannelz$ServerSocketsList.class,Lio/grpc/InternalChannelz$ServerSocketsList;  
/opt/cola/permits/2862259241_1768805484.1901298/0/grpc-api-1-76-0-  
jar/io/grpc/InternalChannelz$ServerSocketsList.class*io/grpc/InternalChannelz$ServerSocketsList
```

Found in path(s):

*

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zero-allocation-hashing

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cw_ztp_license_device.proto

ZtpLicenseDevice

Field	Type	Label	Description
deviceSerialNumber	[string](#string)		

Scalar Value Types

.proto Type	Notes	C++	Java	Python	Go	C#	PHP	Ruby
double		double	double	float	float64	double	float	Float
float		float	float	float	float32	float	float	Float
int32	Uses variable-length encoding. Inefficient for encoding negative numbers if your field is likely to have negative values, use sint32 instead.	int32	int	int	int32	int	integer	Bignum or Fixnum (as required)
int64	Uses variable-length encoding. Inefficient for encoding negative numbers if your field is likely to have negative values, use sint64 instead.	int64	long	int/long	int64	long	integer/string	Bignum
uint32	Uses variable-length encoding.	uint32	int	int/long	uint32	uint	integer	Bignum or Fixnum (as required)
uint64	Uses variable-length encoding.	uint64	long	int/long	uint64	ulong	integer/string	Bignum or Fixnum (as required)
sint32	Uses variable-length encoding. Signed int value. These more efficiently encode negative numbers than regular int32s.	int32	int	int	int32	int	integer	Bignum or Fixnum (as required)
sint64	Uses variable-length encoding. Signed int value. These more efficiently encode negative numbers than regular int64s.	int64	long	int/long	int64	long	integer/string	Bignum

| [fixed32](#) | Always four bytes. More efficient than uint32 if values are often greater than 2²⁸.
 | uint32 | int | int | uint32 | uint | integer | Bignum or Fixnum (as required) |
 | [fixed64](#) | Always eight bytes. More efficient than uint64 if values are often greater than 2⁵⁶.
uint64	long	int/long	uint64	ulong	integer/string	Bignum		
[sfixed32](#)	Always four bytes.	int32	int	int	int32	int	integer	Bignum or Fixnum (as required)
[sfixed64](#)	Always eight bytes.	int64	long	int/long	int64	long	integer/string	Bignum
[bool](#)	bool	bool	boolean	boolean	bool	bool	boolean	TrueClass/FalseClass
[string](#)	string	A string must always contain UTF-8 encoded or 7-bit ASCII text.						
string	String	str/unicode	string	string	string	String (UTF-8)		
[bytes](#)	bytes	May contain any arbitrary sequence of bytes.	string	ByteString	str	[]byte		
 ByteString | string | String (ASCII-8BIT) |
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cw_ztp_license_device_v2.proto

[cwztpsvc-ZtpLicenseDeviceV2](#)

ZtpLicenseDeviceV2

Field	Type	Label	Description
-----	----	-----	-----
uuid	[string](#string)		
serialNumber	[string](#string)	repeated	
locationId	[string](#string)		

Scalar Value Types

```
| .proto Type | Notes | C++ | Java | Python | Go | C# | PHP | Ruby |
| ----- | ---- | --- | ---- | ----- | -- | -- | --- | ---- |
| <a name="double" /> double | | double | double | float | float64 | double | float | Float |
| <a name="float" /> float | | float | float | float | float32 | float | float |
Float |
| <a name="int32" /> int32 | Uses variable-length encoding. Inefficient for encoding negative numbers if your field
is likely to have negative values, use sint32 instead. | int32 | int | int | int32 | int | integer | Bignum or Fixnum (as
required) |
| <a name="int64" /> int64 | Uses variable-length encoding. Inefficient for encoding negative numbers if your field
is likely to have negative values, use sint64 instead. | int64 | long | int/long | int64 | long | integer/string | Bignum |
| <a name="uint32" /> uint32 | Uses variable-length encoding. | uint32 | int | int/long | uint32 | uint | integer | Bignum
or Fixnum (as required) |
| <a name="uint64" /> uint64 | Uses variable-length encoding. | uint64 | long | int/long | uint64 | ulong | integer/string
| Bignum or Fixnum (as required) |
| <a name="sint32" /> sint32 | Uses variable-length encoding. Signed int value. These more efficiently encode
negative numbers than regular int32s. | int32 | int | int | int32 | int | integer
| Bignum or Fixnum (as required) |
| <a name="sint64" /> sint64 | Uses variable-length encoding. Signed int value. These more efficiently encode
negative numbers than regular int64s. | int64 | long | int/long | int64 | long | integer/string | Bignum |
| <a name="fixed32" /> fixed32 | Always four bytes. More efficient than uint32 if values are often greater than 2^28.
| uint32 | int | int | uint32 | uint | integer | Bignum or Fixnum (as required) |
| <a name="fixed64" /> fixed64 | Always eight bytes. More efficient than uint64 if values are often greater than
2^56. | uint64 | long | int/long | uint64 | ulong | integer/string | Bignum |
| <a name="sfixed32" /> sfixed32 | Always four bytes. | int32 | int | int | int32 | int | integer | Bignum or Fixnum (as
required) |
| <a name="sfixed64" /> sfixed64 | Always eight bytes. | int64 | long | int/long | int64 | long | integer/string | Bignum |
| <a name="bool" /> bool | | bool | boolean | boolean | bool | bool | boolean | TrueClass/FalseClass
|
| <a name="string" /> string | A string must always contain UTF-8 encoded or 7-bit ASCII text. | string | String |
str/unicode | string | string | string | String (UTF-8) |
| <a name="bytes" /> bytes | May contain any arbitrary sequence of bytes. | string | ByteString | str | []byte |
ByteString | string | String (ASCII-8BIT) |
// Code generated by protoc-gen-go. DO NOT EDIT.
// source: cw_ztp_license.proto

package cwztpsvc
```

```

import (
    fmt "fmt"
    proto "github.com/golang/protobuf/proto"
    _ "google.golang.org/genproto/googleapis/api/annotations"
    math "math"
)

// Reference imports to suppress errors if they are not otherwise used.
var _ = proto.Marshal
var _ = fmt.Errorf
var _ = math.Inf

// This is a compile-time assertion to ensure that this generated file
// is compatible with the proto package it is being compiled against.
// A compilation error at this line likely means your copy of the
// proto package needs to be updated.
const _ = proto.ProtoPackageIsVersion3 // please upgrade the proto package

type ZtpLicense struct {
    Id          int32   `protobuf:"varint,1,opt,name=id,proto3" json:"id,omitempty"`
    Status       string  `protobuf:"bytes,2,opt,name=status,proto3" json:"status,omitempty"`
    IsLabEnabled bool    `protobuf:"varint,3,opt,name=isLabEnabled,proto3" json:"isLabEnabled,omitempty"`
    LastUpdated  int64   `protobuf:"varint,4,opt,name=lastUpdated,proto3" json:"lastUpdated,omitempty"`
    XXX_NoUnkeyedLiteral struct{} `json:"-" gorm:"-"`
    XXX_unrecognized []byte  `json:"-" gorm:"-"`
    XXX_sizecache  int32   `json:"-" gorm:"-"`
}

func (m *ZtpLicense) Reset()      { *m = ZtpLicense{} }
func (m *ZtpLicense) String() string { return proto.CompactTextString(m) }
func (*ZtpLicense) ProtoMessage() {}
func (*ZtpLicense) Descriptor() ([]byte, []int) {
    return fileDescriptor_4e24d0294ce39e81, []int{0}
}

func (m *ZtpLicense) XXX_Unmarshal(b []byte) error {
    return xxx_messageInfo_ZtpLicense.Unmarshal(m, b)
}
func (m *ZtpLicense) XXX_Marshal(b []byte, deterministic bool) ([]byte, error) {
    return xxx_messageInfo_ZtpLicense.Marshal(b, m, deterministic)
}
func (m *ZtpLicense) XXX_Merge(src proto.Message) {
    xxx_messageInfo_ZtpLicense.Merge(m, src)
}
func (m *ZtpLicense) XXX_Size() int {
    return xxx_messageInfo_ZtpLicense.Size(m)
}

```

```

}
func (m *ZtpLicense)
XXX_DiscardUnknown() {
xxx_messageInfo_ZtpLicense.DiscardUnknown(m)
}

var xxx_messageInfo_ZtpLicense proto.InternalMessageInfo

func (m *ZtpLicense) GetId() int32 {
if m != nil {
return m.Id
}
return 0
}

func (m *ZtpLicense) GetStatus() string {
if m != nil {
return m.Status
}
return ""
}

func (m *ZtpLicense) GetIsLabEnabled() bool {
if m != nil {
return m.IsLabEnabled
}
return false
}

func (m *ZtpLicense) GetLastUpdated() int64 {
if m != nil {
return m.LastUpdated
}
return 0
}

func init() {
proto.RegisterType((*ZtpLicense)(nil), "cwztpsvc.ZtpLicense")
}

func init() {
proto.RegisterFile("cw_ztp_license.proto", fileDescriptor_4e24d0294ce39e81)
}

var fileDescriptor_4e24d0294ce39e81 = []byte{
// 241 bytes of a gzipped FileDescriptorProto
0x1f, 0x8b, 0x08, 0x00, 0x00, 0x00, 0x00, 0x00, 0x02, 0xff, 0x54, 0x8f, 0x4d, 0x4b, 0x03, 0x31,
0x10, 0x86, 0x49, 0xab, 0xa5, 0x46, 0x11, 0x0c, 0x22, 0x8b, 0x88, 0x84, 0x9e, 0xf6, 0xe2, 0x06,

```

```

0xe9, 0x3f, 0x58,
0xf1, 0x56, 0x68, 0x09, 0x8a, 0xd0, 0x4b, 0xc9, 0x17, 0x69, 0x20, 0xcd, 0x84,
0x66, 0x6a, 0x61, 0x7f, 0xbd, 0xb4, 0xdb, 0xa2, 0x1e, 0xe7, 0x9d, 0x79, 0x1f, 0x9e, 0xa1, 0xf7,
0x66, 0xbf, 0xea, 0x30, 0xaf, 0x62, 0x30, 0x2e, 0x15, 0xd7, 0xe4, 0x2d, 0x20, 0xb0, 0xb1, 0xd9,
0x77, 0x98, 0xcb, 0xb7, 0x79, 0x7c, 0xf2, 0x00, 0x3e, 0x3a, 0xa1, 0x72, 0x10, 0x2a, 0x25, 0x40,
0x85, 0x01, 0x52, 0xe9, 0xef, 0x26, 0x1d, 0xa5, 0x4b, 0xcc, 0xb3, 0xbe, 0xcb, 0x6e, 0xe9, 0x20,
0xd8, 0x8a, 0x70, 0x52, 0x5f, 0xca, 0x41, 0xb0, 0xec, 0x81, 0x8e, 0x0a, 0x2a, 0xdc, 0x95, 0x6a,
0xc0, 0x49, 0x7d, 0x25, 0x4f, 0x13, 0x9b, 0xd0, 0x9b, 0x50, 0x66, 0x4a, 0xbf, 0x27, 0xa5, 0xa3,
0xb3, 0xd5, 0x90, 0x93, 0x7a, 0x2c, 0xff, 0x65, 0x8c, 0xd3, 0xeb, 0xa8, 0x0a, 0x7e, 0x66, 0xab,
0xd0, 0xd9, 0xea, 0x82, 0x93, 0x7a, 0x28, 0xff, 0x46, 0xed, 0x9a, 0x3e, 0x1b, 0xd8, 0x34, 0x26,
0x14, 0x03, 0xcd, 0x16, 0x34, 0x60, 0x2f, 0xd5, 0x9c, 0xdd, 0xdb, 0xbb, 0xb7, 0xaf, 0x5f, 0xbb,
0xc5, 0x61, 0xb7, 0x20, 0xcb, 0x57, 0x1f, 0x70,
0xbd, 0xd3, 0xd3, 0x53, 0xd1, 0xc0, 0x46, 0xc8,
0x79, 0x3b, 0xff, 0x10, 0x47, 0xc4, 0xcb, 0xe1, 0x4f, 0x0f, 0x51, 0x25, 0x2f, 0xce, 0x1c, 0x3d,
0x3a, 0x72, 0xa7, 0x3f, 0x01, 0x00, 0x00, 0xff, 0xff, 0xf4, 0xb4, 0x37, 0x45, 0x2c, 0x01, 0x00,
0x00,
}

```

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cw_ztp_license.proto

ZtpLicense

Field	Type	Label	Description
id	[int32](#int32)		
status	[string](#string)		
lastUpdated	[int64](#int64)		

Scalar Value Types

.proto Type	Notes	C++	Java	Python	Go	C#	PHP	Ruby
 double		double	double	float	float64	double	float	Float
 float		float	float	float	float32	float	float	Float
 int32	Uses variable-length encoding. Inefficient for encoding							
negative numbers if your field is likely to have negative values, use sint32 instead.	int32	int	int	int32	int			
integer	Bignum or Fixnum (as required)							
 int64	Uses variable-length encoding. Inefficient for encoding negative numbers if your field							
is likely to have negative values, use sint64 instead.	int64	long	int/long	int64	long	integer/string	Bignum	
 uint32	Uses variable-length encoding.	uint32	int	int/long	uint32	uint	integer	Bignum
or Fixnum (as required)								
 uint64	Uses variable-length encoding.	uint64	long	int/long	uint64	ulong	integer/string	
Bignum or Fixnum (as required)								
 sint32	Uses variable-length encoding. Signed int value. These more efficiently encode							
negative numbers than regular int32s.	int32	int	int	int32	int	integer	Bignum or Fixnum (as required)	
 sint64	Uses variable-length encoding.							
Signed int value. These more efficiently encode negative numbers than regular int64s.	int64	long	int/long	int64				
long	integer/string	Bignum						
 fixed32	Always four bytes. More efficient than uint32 if values are often greater than 2²⁸.							
uint32	int	int	uint32	uint	integer	Bignum or Fixnum (as required)		
 fixed64	Always eight bytes. More efficient than uint64 if values are often greater than							
2⁵⁶.	uint64	long	int/long	uint64	ulong	integer/string	Bignum	
 sfixed32	Always four bytes.	int32	int	int	int32	int	integer	Bignum or Fixnum (as
required)								
 sfixed64	Always eight bytes.	int64	long	int/long	int64	long	integer/string	Bignum
 bool		bool	boolean	boolean	bool	bool	boolean	TrueClass/FalseClass
 string	A string must always contain UTF-8 encoded or 7-bit ASCII							
text.	string	String	str/unicode	string	string	string	String (UTF-8)	
 bytes	May contain any arbitrary sequence of bytes.	string	ByteString	str	[]byte			
ByteString | string | String (ASCII-8BIT) |
{
"swagger": "2.0",


```

"info": {
  "title": "proto/cw_ztp_license_device.proto",
  "version": "version not set"
},
"consumes": [
  "application/json"
],
"produces": [
  "application/json"
],
"paths": {},
"definitions": {
  "protobufAny": {
    "type": "object",
    "properties": {
      "type_url": {
        "type": "string"
      },
      "value": {
        "type": "string",
        "format": "byte"
      }
    }
  },
  "runtimeError": {
    "type": "object",
    "properties": {
      "error": {
        "type": "string"
      },
      "code": {
        "type": "integer",
        "format": "int32"
      },
      "message": {
        "type": "string"
      },
      "details": {
        "type": "array",
        "items": {
          "$ref": "#/definitions/protobufAny"
        }
      }
    }
  }
}
}
}

```

```

// Code generated by protoc-gen-go. DO NOT EDIT.
// source: cw_ztp_license_device_v2.proto

package cwztpsvc

import (
    fmt "fmt"
    proto "github.com/golang/protobuf/proto"
    math "math"
)

// Reference imports to suppress errors if they are not otherwise used.
var _ = proto.Marshal
var _ = fmt.Errorf
var _ = math.Inf

// This is a compile-time assertion to ensure that this generated file
// is compatible with the proto package it is being compiled against.
// A compilation error at this line likely means your copy of the
// proto package needs to be updated.
const _ = proto.ProtoPackageIsVersion3 // please upgrade the proto package

type ZtpLicenseDeviceV2 struct {
    UUID          string   `protobuf:"bytes,1,opt,name=uuid,proto3" json:"uuid,omitempty"`
    SerialNumber   []string `protobuf:"bytes,2,rep,name=serialNumber,proto3" json:"serialNumber,omitempty"`
    LocationId     string   `protobuf:"bytes,3,opt,name=locationId,proto3" json:"locationId,omitempty"`
    XXX_NoUnkeyedLiteral
    struct{}      `json:"- " gorm:"- "`
    XXX_unrecognized []byte  `json:"- " gorm:"- "`
    XXX_sizecache  int32   `json:"- " gorm:"- "`
}

func (m *ZtpLicenseDeviceV2) Reset()      { *m = ZtpLicenseDeviceV2{} }
func (m *ZtpLicenseDeviceV2) String() string { return proto.CompactTextString(m) }
func (*ZtpLicenseDeviceV2) ProtoMessage() {}
func (*ZtpLicenseDeviceV2) Descriptor() ([]byte, []int) {
    return fileDescriptor_187379be6b6c9b7c, []int{0}
}

func (m *ZtpLicenseDeviceV2) XXX_Unmarshal(b []byte) error {
    return xxx_messageInfo_ZtpLicenseDeviceV2.Unmarshal(m, b)
}
func (m *ZtpLicenseDeviceV2) XXX_Marshal(b []byte, deterministic bool) ([]byte, error) {
    return xxx_messageInfo_ZtpLicenseDeviceV2.Marshal(b, m, deterministic)
}
func (m *ZtpLicenseDeviceV2) XXX_Merge(src proto.Message) {
    xxx_messageInfo_ZtpLicenseDeviceV2.Merge(m, src)
}

```

```

func (m *ZtpLicenseDeviceV2) XXX_Size() int {
    return xxx_messageInfo_ZtpLicenseDeviceV2.Size(m)
}
func (m *ZtpLicenseDeviceV2) XXX_DiscardUnknown()
{
    xxx_messageInfo_ZtpLicenseDeviceV2.DiscardUnknown(m)
}

var xxx_messageInfo_ZtpLicenseDeviceV2 proto.InternalMessageInfo

func (m *ZtpLicenseDeviceV2) GetUuid() string {
    if m != nil {
        return m.Uuid
    }
    return ""
}

func (m *ZtpLicenseDeviceV2) GetSerialNumber() []string {
    if m != nil {
        return m.SerialNumber
    }
    return nil
}

func (m *ZtpLicenseDeviceV2) GetLocationId() string {
    if m != nil {
        return m.LocationId
    }
    return ""
}

func init() {
    proto.RegisterType((*ZtpLicenseDeviceV2)(nil), "cwztpsvc.ZtpLicenseDeviceV2")
}

func init() {
    proto.RegisterFile("cw_ztp_license_device_v2.proto", fileDescriptor_187379be6b6c9b7c)
}

var fileDescriptor_187379be6b6c9b7c = []byte{
    // 219 bytes of a gzipped FileDescriptorProto
    0x1f, 0x8b, 0x08, 0x00, 0x00, 0x00, 0x00, 0x00, 0x02, 0xff, 0x64, 0x8e, 0x4f, 0x4b, 0xc3, 0x40,
    0x10, 0x47, 0x89, 0x15, 0xb1, 0x8b, 0xa7, 0x3d, 0xc5, 0x4b, 0x28, 0x3d, 0xf5, 0x62, 0x16, 0xdb,
    0x6f, 0x10, 0xbd, 0x08, 0x62, 0x4b, 0x10, 0x85, 0x5e, 0x96, 0xdd,
    0xc9, 0x12, 0x07, 0x36, 0x99,
    0x65, 0xff, 0xa4, 0xd0, 0x4f, 0x2f, 0x6e, 0x2d, 0x28, 0xbd, 0x0d, 0x3f, 0xde, 0x3c, 0x1e, 0xab,
    0xe0, 0x20, 0x8f, 0xd1, 0x49, 0x8b, 0x60, 0xc6, 0x60, 0x64, 0x67, 0x26, 0x04, 0x23, 0xa7, 0x75,
    0xed, 0x3c, 0x45, 0xe2, 0xb7, 0x70, 0x38, 0x46, 0x17, 0x26, 0x58, 0x5a, 0xc6, 0xf7, 0xd1, 0xbd,

```

0x9e, 0xb8, 0xe7, 0x8c, 0x7d, 0xac, 0x39, 0x67, 0xd7, 0x29, 0x61, 0x57, 0x16, 0x8b, 0x62, 0x35,
0x6f, 0xf3, 0xcd, 0x97, 0xec, 0x2e, 0x18, 0x8f, 0xca, 0xbe, 0xa5, 0x41, 0x1b, 0x5f, 0x5e, 0x2d,
0x66, 0xab, 0x79, 0xfb, 0x6f, 0xe3, 0x15, 0x63, 0x96, 0x40, 0x45, 0xa4, 0xf1, 0xa5, 0x2b, 0x67,
0xf9, 0xfb, 0xcf, 0xd2, 0x38, 0x56, 0x01, 0x0d, 0x35, 0x60, 0x00, 0xaa, 0x3d, 0x69, 0x8a, 0xa7,
0xa0, 0xfa, 0xdc, 0xd3, 0xdc, 0x3f, 0x7d, 0x5e, 0xf6, 0xec, 0x7e, 0x98, 0x5d, 0xb1, 0x7f, 0xec,
0x31, 0x7e, 0x25, 0xbd, 0xf9, 0x15, 0x00, 0x0d, 0xa2, 0xdd, 0x36, 0xdb, 0x77, 0x91, 0x55, 0x0f,
0xca, 0xa1, 0xe8, 0xc9, 0xaa, 0xb1, 0x17, 0x67, 0x9f, 0xbe, 0xc9, 0xfe, 0xcd, 0x77, 0x00, 0x00,
0x00,
0xff, 0xff, 0x66, 0x8d, 0x49, 0xba, 0x12, 0x01, 0x00, 0x00,
}

UNRECOGNIZED LICENSE; MD5 sum: 592ce646d353b65bfd4198cf8cb1377d

```
{
  "swagger": "2.0",
  "info": {
    "title": "proto/cw_ztp_license_device_v2.proto",
    "version": "version not set"
  },
  "consumes": [
    "application/json"
  ],
  "produces": [
    "application/json"
  ],
  "paths": {},
  "definitions": {
    "protobufAny": {
      "type": "object",
      "properties": {
        "type_url": {
          "type": "string"
        },
        "value": {
          "type": "string",
          "format": "byte"
        }
      }
    },
    "runtimeError": {
      "type": "object",
      "properties": {
        "error": {
          "type": "string"
        },
        "code": {
          "type": "integer",
          "format": "int32"
        },
        "message": {
```

```

    "type": "string"
  },
  "details": {
    "type": "array",
    "items": {
      "$ref": "#/definitions/protobufAny"
    }
  }
}
}
}
}
{
  "swagger": "2.0",
  "info": {
    "title": "proto/cw_ztp_license.proto",
    "version": "version not set"
  },
  "consumes": [
    "application/json"
  ],
  "produces": [
    "application/json"
  ],
  "paths": {},
  "definitions": {
    "protobufAny": {
      "type": "object",
      "properties": {
        "type_url": {
          "type": "string"
        }
      },
      "value": {
        "type": "string",
        "format": "byte"
      }
    }
  },
  "runtimeError": {
    "type": "object",
    "properties": {
      "error": {
        "type": "string"
      }
    },
    "code": {
      "type": "integer",
      "format": "int32"
    }
  },

```

```

    "message": {
      "type": "string"
    },
    "details": {
      "type": "array",
      "items": {
        "$ref": "#/definitions/protobufAny"
      }
    }
  }
}
}
}

// Code generated by protoc-gen-go. DO NOT EDIT.
// source: cw_ztp_license_device.proto

package cwztpsvc

import (
    fmt "fmt"
    proto "github.com/golang/protobuf/proto"
    _ "google.golang.org/genproto/googleapis/api/annotations"
    math "math"
)

// Reference imports to suppress errors if they are not otherwise used.
var _ = proto.Marshal
var _ = fmt.Errorf
var _ = math.Inf

// This is a compile-time assertion to ensure that this generated file
// is compatible with the proto package it is being compiled against.
// A compilation error at this line likely means your copy of the
// proto package needs to be updated.
const _ = proto.ProtoPackageIsVersion3 // please upgrade the proto package

type ZtpLicenseDevice struct {
    DeviceSerialNumber string `protobuf:"bytes,1,opt,name=deviceSerialNumber,proto3"
json:"deviceSerialNumber,omitempty"`
    XXX_NoUnkeyedLiteral struct{} `json:"-" gorm:"-"`
    XXX_unrecognized []byte `json:"-" gorm:"-"`
    XXX_sizecache int32 `json:"-" gorm:"-"`
}

func
    (m *ZtpLicenseDevice) Reset() { *m = ZtpLicenseDevice{} }
func (m *ZtpLicenseDevice) String() string { return proto.CompactTextString(m) }
func (*ZtpLicenseDevice) ProtoMessage() {}

```

```

func (*ZtpLicenseDevice) Descriptor() ([]byte, []int) {
    return fileDescriptor_4637a3ce942b5232, []int{0}
}

func (m *ZtpLicenseDevice) XXX_Unmarshal(b []byte) error {
    return xxx_messageInfo_ZtpLicenseDevice.Unmarshal(m, b)
}
func (m *ZtpLicenseDevice) XXX_Marshal(b []byte, deterministic bool) ([]byte, error) {
    return xxx_messageInfo_ZtpLicenseDevice.Marshal(b, m, deterministic)
}
func (m *ZtpLicenseDevice) XXX_Merge(src proto.Message) {
    xxx_messageInfo_ZtpLicenseDevice.Merge(m, src)
}
func (m *ZtpLicenseDevice) XXX_Size() int {
    return xxx_messageInfo_ZtpLicenseDevice.Size(m)
}
func (m *ZtpLicenseDevice) XXX_DiscardUnknown() {
    xxx_messageInfo_ZtpLicenseDevice.DiscardUnknown(m)
}

var xxx_messageInfo_ZtpLicenseDevice proto.InternalMessageInfo

func (m *ZtpLicenseDevice) GetDeviceSerialNumber()
string {
    if m != nil {
        return m.DeviceSerialNumber
    }
    return ""
}

func init() {
    proto.RegisterType((*ZtpLicenseDevice)(nil), "cwztpsvc.ZtpLicenseDevice")
}

func init() {
    proto.RegisterFile("cw_ztp_license_device.proto", fileDescriptor_4637a3ce942b5232)
}

var fileDescriptor_4637a3ce942b5232 = []byte{
    // 201 bytes of a gzipped FileDescriptorProto
    0x1f, 0x8b, 0x08, 0x00, 0x00, 0x00, 0x00, 0x02, 0xff, 0x6c, 0xce, 0x31, 0x4b, 0xc7, 0x30,
    0x10, 0x05, 0x70, 0xba, 0x88, 0x66, 0x92, 0x2e, 0x8a, 0x8a, 0x88, 0x93, 0x8b, 0x09, 0xf2, 0xff,
    0x06, 0xd1, 0x51, 0xfc, 0x97, 0x2a, 0x08, 0x5d, 0x4a, 0x72, 0x86, 0x18, 0x48, 0x73, 0x21, 0xb9,
    0xb6, 0xd0, 0x4f, 0x2f, 0x6d, 0xec, 0x22, 0xce, 0xf7, 0xee, 0xf7, 0x1e, 0xbb, 0x86, 0xb9, 0x5f,
    0x28, 0xf6, 0xde, 0x81, 0x09, 0xd9, 0xf4, 0x5f, 0x66, 0x72, 0x60, 0x78, 0x4c, 0x48, 0x58, 0x9f,
    0xc2, 0xbc, 0x50, 0xcc, 0x13, 0x5c, 0xdd, 0x58, 0x44, 0xeb, 0x8d, 0x50, 0xd1, 0x09, 0x15, 0x02,
    0x92, 0x22, 0x87, 0x21, 0x97, 0xdc, 0xbd, 0x64,

```

```
0xe7, 0x1d, 0xc5, 0xd7, 0x42, 0xbc, 0x6c, 0x42,  
0xcd, 0x59, 0x5d, 0xac, 0x77, 0x93, 0x9c, 0xf2, 0x6f, 0xe3, 0xa0, 0x4d, 0xba, 0xac, 0xee, 0xaa,  
0x87, 0xb3, 0xf6, 0x9f, 0x8b, 0x0c, 0xec, 0x16, 0x70, 0xe0, 0xe0, 0x32, 0x20, 0x4f, 0xa8, 0x91,  
0x0a, 0xce, 0xf7, 0x0d, 0xf2, 0xe2, 0xf9, 0xf3, 0x6f, 0x4b, 0xb3, 0x26, 0x9a, 0xaa, 0x7b, 0xb2,  
0x8e, 0xbe, 0x47, 0x7d, 0xf8, 0x7d, 0x07, 0x1c, 0x44, 0x7b, 0x94, 0xc7, 0x0f, 0xb1, 0x41, 0x8f,  
0xeb, 0x6a, 0x8b, 0x5e, 0x05, 0x2b, 0x76, 0x4d, 0x9f, 0x6c, 0xfa, 0xe1, 0x27, 0x00, 0x00, 0xff,  
0xff, 0xe7, 0xa2, 0x96, 0xc2, 0x01, 0x01, 0x00, 0x00,  
}
```

1.525 robot-infra-utils 1.0.2- 0.20260112120652-53e304ab3cfa

1.525.1 Available under license :

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Version 2.1, February 1999

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If such an object file uses only numerical parameters, data

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