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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 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
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2.4	2.3	2004	PSF	yes
2.4.1	2.4	2005	PSF	yes
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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
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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.

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

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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:

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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!)

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Classifier: Intended Audience :: Developers

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1.5 lua 5.4.8

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```
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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/*
```

Found in path(s):

*

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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

1.6 libffi 3.5.2

1.6.1 Available under license :

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1.7 openssl 3.5.4

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<one line to give the program's name and a brief idea of what it does.>
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commands you use may be called something other than `show w' and `show
c'; they could even be mouse-clicks or menu items--whatever suits your
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school, if any, to sign a "copyright disclaimer" for the program, if
necessary. Here a sample; alter
the names:

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<signature of Ty Coon>, 1 April 1989
Ty Coon, President of Vice

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1.8 libffi 3.5.2-r0

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1.9 pygments 2.19.2

1.9.1 Available under license :

```
---input---
!%$^*_--__._+++===-crazy-symbol

---tokens---
!%$^*_--__._+++===-crazy-symbol' Name.Variable
'\n'      Text.Whitespace
'# Step 1 of 3: from Hakaru to Maple LO (linear operator)\n' Comment.Single

'\n'      Text.Whitespace

'toLO'     Name
''         Text.Whitespace
':='       Operator
''         Text.Whitespace
'module'   Keyword
'()'       Punctuation
'\n '      Text.Whitespace
'export'   Keyword
'\n '      Text.Whitespace
'ModuleApply' Name
''         Text.Whitespace
':='       Operator
''         Text.Whitespace
'proc'     Keyword
'('        Punctuation
'm'        Name
';'        Operator
''         Text.Whitespace
```

'\$' Operator
')' Punctuation
'\n ' Text.Whitespace
'local' Keyword
'' Text.Whitespace
'h' Name
';' Punctuation
'\n ' Text.Whitespace
'h' Name
'' Text.Whitespace
':=' Operator
'' Text.Whitespace
'gensym' Name
'(' Punctuation
'''' Punctuation
'h' Name
'''' Punctuation
');' Punctuation
'\n
' ' Text.Whitespace
'_Env_HakaruSolve' Name
'' Text.Whitespace
':=' Operator
'' Text.Whitespace
'false' Name
';' Punctuation
'\n ' Text.Whitespace
'LO' Name
'(' Punctuation
'h' Name
';' Operator
'' Text.Whitespace
'integrate' Name
'(' Punctuation
'm' Name
';' Operator
'' Text.Whitespace
'h' Name
';' Operator
'' Text.Whitespace
'[]))' Punctuation
'\n ' Text.Whitespace
'end' Keyword
'' Text.Whitespace
'proc' Keyword
';' Punctuation
'\n\n ' Text.Whitespace
'export' Keyword

```

'\n '    Text.Whitespace
'integrate' Name
''       Text.Whitespace
':='     Operator
''       Text.Whitespace
'proc'   Keyword
'('      Punctuation
'm'      Name
';'      Operator
''       Text.Whitespace
'h'
    Name
';'      Operator
''       Text.Whitespace
'loops'  Name
''       Text.Whitespace
'::'     Operator
''       Text.Whitespace
'list'   Name
'('      Punctuation
'name'   Name
''       Text.Whitespace
'='      Operator
''       Text.Whitespace
'range'  Name
')'      Punctuation
''       Text.Whitespace
':='     Operator
''       Text.Whitespace
'['      Punctuation
';'      Operator
''       Text.Whitespace
'$'      Operator
')'      Punctuation
'\n '    Text.Whitespace
'local'  Keyword
''       Text.Whitespace
'x'      Name
';'      Operator
''       Text.Whitespace
'n'      Name
';'      Operator
''       Text.Whitespace
'i'      Name
';'      Operator
''       Text.Whitespace
'res'    Name
';'      Operator

```

```

''      Text.Whitespace
'l'      Name
','      Operator
''      Text.Whitespace
'br'
      Name
','      Operator
''      Text.Whitespace
'm0'      Name
';'      Punctuation
'\n\n ' Text.Whitespace
'if'      Keyword
''      Text.Whitespace
'm'      Name
''      Text.Whitespace
'::'      Operator
''      Text.Whitespace
'known_continuous' Name
''      Text.Whitespace
'then'     Keyword
'\n ' Text.Whitespace
'integrate_known' Name
'('      Punctuation
'Int'     Name
','      Operator
''      Text.Whitespace
'Ints'    Name
','      Operator
''      Text.Whitespace
''''      Punctuation
'xx'      Name
''''      Punctuation
','      Operator
''      Text.Whitespace
'm'      Name
','      Operator
''      Text.Whitespace
'h'      Name
','      Operator
''      Text.Whitespace
'loops'   Name
')'      Punctuation
'\n ' Text.Whitespace
'elif'     Keyword
''      Text.Whitespace
'm'
      Name
''      Text.Whitespace

```

```

'::'      Operator
''        Text.Whitespace
'known_discrete' Name
''        Text.Whitespace
'then'     Keyword
'\n      ' Text.Whitespace
'integrate_known' Name
'('        Punctuation
'Sum'      Name
','        Operator
''        Text.Whitespace
'Sums'     Name
','        Operator
''        Text.Whitespace
''''       Punctuation
'kk'      Name
''''       Punctuation
','        Operator
''        Text.Whitespace
'm'       Name
','        Operator
''        Text.Whitespace
'h'       Name
','        Operator
''        Text.Whitespace
'loops'   Name
')'        Punctuation
'\n      ' Text.Whitespace
'elif'     Keyword
''        Text.Whitespace
'm'       Name
''        Text.Whitespace
'::'      Operator
''        Text.Whitespace
''''       Punctuation
'Ret'     Name
'('        Punctuation
'anything' Name
')'
Punctuation
''''       Punctuation
''        Text.Whitespace
'then'     Keyword
'\n      ' Text.Whitespace
'applyintegrand' Name
'('        Punctuation
'h'       Name
','        Operator

```

```

''      Text.Whitespace
'mk_ary'  Name
'('      Punctuation
'op'     Name.Builtin
'('      Punctuation
'1'      Literal.Number.Integer
','      Operator
'm'      Name
')'      Punctuation
','      Operator
''      Text.Whitespace
'loops'  Name
'))'     Punctuation
'\n  '   Text.Whitespace
'elif'   Keyword
''      Text.Whitespace
'm'      Name
''      Text.Whitespace
'::'     Operator
''      Text.Whitespace
''''     Punctuation
'Bind'   Name
'('      Punctuation
'anything' Name
','      Operator
''      Text.Whitespace
'name'   Name
','      Operator
''      Text.Whitespace
'anything' Name
')'      Punctuation
''''
Punctuation
''      Text.Whitespace
'then'  Keyword
'\n  '   Text.Whitespace
'res'   Name
''      Text.Whitespace
':='    Operator
''      Text.Whitespace
'eval'  Name.Builtin
'('      Punctuation
'op'     Name.Builtin
'('      Punctuation
'3'      Literal.Number.Integer
','      Operator
'm'      Name
')'      Punctuation

```



```

','      Operator
''       Text.Whitespace
'op'     Name.Builtin
'('      Punctuation
'2'      Literal.Number.Integer
','      Operator
'm'      Name
')'      Punctuation
''       Text.Whitespace
'='      Operator
''       Text.Whitespace
'mk_idx'  Name
'('      Punctuation
'op'     Name.Builtin
'('      Punctuation
'2'      Literal.Number.Integer
','      Operator
'm'      Name
')'      Punctuation
','      Operator
''       Text.Whitespace
'loops'   Name
'))';'    Punctuation
'\n
    '     Text.Whitespace
'res'     Name
''        Text.Whitespace
':='      Operator
''        Text.Whitespace
'eval'    Name.Builtin
'('       Punctuation
'Integrand' Name
'('       Punctuation
'op'      Name.Builtin
'('       Punctuation
'2'       Literal.Number.Integer
','       Operator
'm'       Name
')'       Punctuation
','       Operator
''        Text.Whitespace
''''      Punctuation
'integrate' Name
''''      Punctuation
'('       Punctuation
'res'     Name
','       Operator
''        Text.Whitespace

```

'x'	Name
','	Operator
' '	Text.Whitespace
'loops'	Name
'))'	Punctuation
','	Operator
' '	Text.Whitespace
'x'	Name
'='	Operator
'h'	Name
);'	Punctuation
'\n '	Text.Whitespace
'integrate'	Name
'('	Punctuation
'op'	Name.Builtin
'('	Punctuation
'1'	
	Literal.Number.Integer
','	Operator
'm'	Name
)'	Punctuation
','	Operator
' '	Text.Whitespace
'res'	Name
','	Operator
' '	Text.Whitespace
'loops'	Name
);'	Punctuation
'\n '	Text.Whitespace
'elif'	Keyword
' '	Text.Whitespace
'm'	Name
' '	Text.Whitespace
::'	Operator
' '	Text.Whitespace
""	Punctuation
'specfunc'	Name
'('	Punctuation
'Msum'	Name
)'	Punctuation
""	Punctuation
' '	Text.Whitespace
'and'	Keyword
' '	Text.Whitespace
'('	Punctuation
'nops'	Name.Builtin
'('	Punctuation
'loops'	Name

')'	Punctuation
' '	Text.Whitespace
' ='	Operator
' '	Text.Whitespace
' 0'	Literal.Number.Integer
' '	Text.Whitespace
' or'	Keyword
' '	Text.Whitespace
' nops'	
	Name.Builtin
' ('	Punctuation
' m'	Name
')'	Punctuation
' '	Text.Whitespace
' ='	Operator
' '	Text.Whitespace
' 1'	Literal.Number.Integer
')'	Punctuation
' '	Text.Whitespace
' then'	Keyword
' \n '	Text.Whitespace
' ^ + ^'	Name
' ('	Punctuation
' op'	Name.Builtin
' ('	Punctuation
' map'	Name.Builtin
' ('	Punctuation
' integrate'	Name
' ;'	Operator
' '	Text.Whitespace
' ['	Punctuation
' op'	Name.Builtin
' ('	Punctuation
' m'	Name
')]'	Punctuation
' ;'	Operator
' '	Text.Whitespace
' h'	Name
' ;'	Operator
' '	Text.Whitespace
' loops'	Name
')))'	Punctuation
' \n '	Text.Whitespace
' elif'	Keyword
' '	Text.Whitespace
' m'	Name
' '	Text.Whitespace
' ::'	Operator

```

'
'      Text.Whitespace
""      Punctuation
'Weight'  Name
'('      Punctuation
'anything' Name
';'      Operator
''      Text.Whitespace
'anything' Name
')'      Punctuation
""      Punctuation
''      Text.Whitespace
'then'    Keyword
'\n  '    Text.Whitespace
'foldl'   Name
'('      Punctuation
'product' Name
';'      Operator
''      Text.Whitespace
'op'      Name.Builtin
'('      Punctuation
'1'      Literal.Number.Integer
';'      Operator
'm'      Name
')'      Punctuation
';'      Operator
''      Text.Whitespace
'op'      Name.Builtin
'('      Punctuation
'loops'   Name
'))'      Punctuation
''      Text.Whitespace
'*'      Operator
''      Text.Whitespace
'integrate' Name
'('      Punctuation
'op'      Name.Builtin
'('      Punctuation
'2'      Literal.Number.Integer
';'      Operator
'm'
      Name
')'      Punctuation
';'      Operator
''      Text.Whitespace
'h'      Name
';'      Operator
''      Text.Whitespace

```

'loops' Name
 ')' Punctuation
 '\n ' Text.Whitespace
 'elif' Keyword
 ' ' Text.Whitespace
 'm' Name
 ' ' Text.Whitespace
 '::' Operator
 ' ' Text.Whitespace
 't_pw_or_part' Name
 ' ' Text.Whitespace
 'then' Keyword
 '\n ' Text.Whitespace
 'Partition' Name
 ':' Operator
 '-' Operator
 'AppPartOrPw' Name
 '\n ' Text.Whitespace
 '(' Punctuation
 ' ' Text.Whitespace
 'proc' Keyword
 '(' Punctuation
 'p' Name
 ')' Punctuation
 '\n ' Text.Whitespace
 'if' Keyword
 ' ' Text.Whitespace
 'not' Keyword
 ' ' Text.Whitespace
 'Partition' Name
 ':' Operator
 '-' Operator
 'ConditionsDepend'
 Name
 '(' Punctuation
 'p' Name
 ';' Operator
 ' ' Text.Whitespace
 'lhs' Name.Builtin
 '~' Operator
 '(' Punctuation
 'loops' Name
 '))' Punctuation
 ' ' Text.Whitespace
 'then' Keyword
 '\n ' Text.Whitespace
 'Partition' Name
 ':' Operator

'-'	Operator
'Pmap'	Name
'('	Punctuation
'z'	Name
'->'	Operator
'integrate'	Name
'('	Punctuation
'z'	Name
','	Operator
'h'	Name
','	Operator
'loops'	Name
)'	Punctuation
','	Operator
'p'	Name
)'	Punctuation
'\n	' Text.Whitespace
'end'	Keyword
' '	Text.Whitespace
'if'	Keyword
','	Punctuation
'\n	' Text.Whitespace
'end'	Keyword
' '	Text.Whitespace
'proc'	Keyword
'\n	'
	Text.Whitespace
','	Operator
' '	Text.Whitespace
'm'	Name
','	Operator
' '	Text.Whitespace
'['	Punctuation
''''	Punctuation
'no_split_disj'	Name
''''	Punctuation
'));	Punctuation
'\n '	Text.Whitespace
'elif'	Keyword
' '	Text.Whitespace
'm'	Name
' '	Text.Whitespace
'::'	Operator
' '	Text.Whitespace
't_case'	Name
' '	Text.Whitespace
'and'	Keyword
' '	Text.Whitespace

'not' Keyword
 '' Text.Whitespace
 'depends' Name
 '(' Punctuation
 'op' Name.Builtin
 '(' Punctuation
 '1' Literal.Number.Integer
 ';' Operator
 'm' Name
 ')' Punctuation
 ';' Operator
 '' Text.Whitespace
 'map' Name.Builtin
 '(' Punctuation
 'lhs' Name.Builtin
 ';' Operator
 '' Text.Whitespace
 'loops'
 Name
 '))' Punctuation
 '' Text.Whitespace
 'then' Keyword
 '\n ' Text.Whitespace
 'subsop' Name.Builtin
 '(' Punctuation
 '2' Literal.Number.Integer
 '=' Operator
 'map' Name.Builtin
 '(' Punctuation
 'proc' Keyword
 '(' Punctuation
 'b' Name
 '' Text.Whitespace
 '::' Operator
 '' Text.Whitespace
 'Branch' Name
 '(' Punctuation
 'anything' Name
 ';' Operator
 '' Text.Whitespace
 'anything' Name
 '))' Punctuation
 '\n ' Text.Whitespace
 'eval' Name.Builtin
 '(' Punctuation
 'subsop' Name.Builtin
 '(' Punctuation
 '2' Literal.Number.Integer

```

'='      Operator
''''     Punctuation
'integrate' Name
''''     Punctuation
'('      Punctuation
'op'     Name.Builtin
'('      Punctuation
'2'      Literal.Number.Integer
','
    Operator
'b'      Name
')'      Punctuation
','      Operator
''       Text.Whitespace
'x'      Name
','      Operator
''       Text.Whitespace
'loops'  Name
')'      Punctuation
','      Operator
'b'      Name
')'      Punctuation
','      Operator
''       Text.Whitespace
'x'      Name
'='      Operator
'h'      Name
')'      Punctuation
'\n      ' Text.Whitespace
'end'     Keyword
''        Text.Whitespace
'proc'    Keyword
','      Operator
'\n      ' Text.Whitespace
'op'     Name.Builtin
'('      Punctuation
'2'      Literal.Number.Integer
','      Operator
'm'      Name
'))'     Punctuation
','      Operator
'\n      ' Text.Whitespace
'm'      Name
');'     Punctuation
'\n      ' Text.Whitespace
'elif'    Keyword
''        Text.Whitespace
'm'      Name

```



```

''      Text.Whitespace
'::'
Operator
''      Text.Whitespace
''''    Punctuation
'LO'    Name
'('     Punctuation
'name'  Name
';'     Operator
''      Text.Whitespace
'anything' Name
')'     Punctuation
''''    Punctuation
''      Text.Whitespace
'then'  Keyword
'\n '   Text.Whitespace
'eval'  Name.Builtin
'('     Punctuation
'op'    Name.Builtin
'('     Punctuation
'2'     Literal.Number.Integer
';'     Operator
'm'     Name
')'     Punctuation
';'     Operator
''      Text.Whitespace
'op'    Name.Builtin
'('     Punctuation
'1'     Literal.Number.Integer
';'     Operator
'm'     Name
')'     Punctuation
''      Text.Whitespace
'='     Operator
''      Text.Whitespace
'h'     Name
')'     Punctuation
'\n '   Text.Whitespace
'elif'  Keyword
''      Text.Whitespace
'm'
Name
''      Text.Whitespace
'::'    Operator
''      Text.Whitespace
''''    Punctuation
'Plate' Name
'('     Punctuation

```

```

'nonnegint' Name
',' Operator
'' Text.Whitespace
'name' Name
',' Operator
'' Text.Whitespace
'anything' Name
')' Punctuation
'''' Punctuation
'' Text.Whitespace
'then' Keyword
'\n ' Text.Whitespace
'# Unroll Plate when the bound is known. We unroll Plate here (instead\n' Comment.Single

' ' Text.Whitespace
'# of unrolling Ints in reduce, for example) because we have no other\n' Comment.Single

' ' Text.Whitespace
"# way to integrate certain Plates, namely those whose bodies' control\n" Comment.Single

' ' Text.Whitespace
'# flows depend on the index.\n' Comment.Single

' ' Text.Whitespace
'x' Name
'' Text.Whitespace
':=' Operator
'' Text.Whitespace
'mk_sym'
    Name
'(' Punctuation
'''' Punctuation
'pp' Name
'''' Punctuation
',' Operator
'' Text.Whitespace
'h' Name
');' Punctuation
'\n ' Text.Whitespace
'x' Name
'' Text.Whitespace
':=' Operator
'' Text.Whitespace
'[' Punctuation
'seq' Name.Builtin
'(' Punctuation
'cat' Name.Builtin
'(' Punctuation

```

'x'	Name
','	Operator
'i'	Name
')	Punctuation
','	Operator
' '	Text.Whitespace
'i'	Name
'='	Operator
'0'	Literal.Number.Integer
'..'	Punctuation
'op'	Name.Builtin
'('	Punctuation
'1'	Literal.Number.Integer
','	Operator
'm'	Name
')	Punctuation
'-'	Operator
'1'	Literal.Number.Integer
']);'	Punctuation
'\n'	Text.Whitespace
'if'	Keyword
' '	Text.Whitespace
'op'	Name.Builtin
'('	Punctuation
'1'	Literal.Number.Integer
','	Operator
'm'	Name
')	Punctuation
' '	Text.Whitespace
'='	Operator
' '	Text.Whitespace
'0'	Literal.Number.Integer
' '	Text.Whitespace
'then'	Keyword
'\n'	Text.Whitespace
'res'	Name
' '	Text.Whitespace
':='	Operator
' '	Text.Whitespace
'undefined'	Name
','	Punctuation
'\n'	Text.Whitespace
'else'	Keyword
'\n'	Text.Whitespace
'if'	Keyword
' '	Text.Whitespace
'op'	Name.Builtin

```

'('      Punctuation
'1'      Literal.Number.Integer
','      Operator
'm'      Name
')'      Punctuation
''       Text.Whitespace
'='      Operator
''       Text.Whitespace
'1'      Literal.Number.Integer
''       Text.Whitespace
'then'
    Keyword
'\n'     ' Text.Whitespace
'res'    Name
''       Text.Whitespace
':='     Operator
''       Text.Whitespace
'op'     Name.Builtin
'('      Punctuation
'1'      Literal.Number.Integer
','      Operator
'x'      Name
');'     Punctuation
'\n'     ' Text.Whitespace
'else'   Keyword
'\n'     ' Text.Whitespace
'res'    Name
''       Text.Whitespace
':='     Operator
''       Text.Whitespace
'idx'    Name
'('      Punctuation
'x'      Name
','      Operator
'op'     Name.Builtin
'('      Punctuation
'2'      Literal.Number.Integer
','      Operator
'm'      Name
'));'    Punctuation
'\n'     Text.Whitespace

'#       res := piecewise(seq(op([op(2,m)=i-1, op(i,x)]), i=2..op(1,m)),\n' Comment.Single

'#       op(1,x));\n' Comment.Single

'      ' Text.Whitespace
'end'    Keyword

```

```

''      Text.Whitespace
'if'
    Keyword
';'      Punctuation
'\n'    ' Text.Whitespace
'res'    Name
''      Text.Whitespace
':='     Operator
''      Text.Whitespace
'mk_idx' Name
'('      Punctuation
'res'    Name
';'      Punctuation
''      Text.Whitespace
'loops'  Name
');'     Punctuation
'\n'    ' Text.Whitespace
'end'     Keyword
''      Text.Whitespace
'if'      Keyword
';'      Punctuation
'\n'    ' Text.Whitespace
'res'    Name
''      Text.Whitespace
':='     Operator
''      Text.Whitespace
'applyintegrand' Name
'('      Punctuation
'h'      Name
';'      Punctuation
''      Text.Whitespace
'mk_ary'  Name
'('      Punctuation
''''     Punctuation
'ary'    Name
''''     Punctuation
'('      Punctuation
'op'     Name.Builtin
'('      Punctuation
'1'      Literal.Number.Integer
';'      Punctuation
'm'      Name
')'
    Punctuation
';'      Operator
''      Text.Whitespace
'op'     Name.Builtin
'('      Punctuation

```

'2'	Literal.Number.Integer
','	Operator
'm'	Name
)'	Punctuation
','	Operator
''	Text.Whitespace
'res'	Name
)'	Punctuation
','	Operator
''	Text.Whitespace
'loops'	Name
'));	Punctuation
'\n'	Text.Whitespace
'for'	Keyword
''	Text.Whitespace
'i'	Name
''	Text.Whitespace
'from'	Keyword
''	Text.Whitespace
'op'	Name.Builtin
('	Punctuation
'1'	Literal.Number.Integer
','	Operator
'm'	Name
)'	Punctuation
''	Text.Whitespace
'to'	Keyword
''	Text.Whitespace
'1'	Literal.Number.Integer
''	Text.Whitespace
'by'	Keyword
''	Text.Whitespace
'-'	Operator
'1'	Literal.Number.Integer
''	Text.Whitespace
'do'	Keyword
'\n'	Text.Whitespace
'res'	Name
''	Text.Whitespace
':='	Operator
''	Text.Whitespace
'integrate'	Name
('	Punctuation
'eval'	Name.Builtin
('	Punctuation
'op'	Name.Builtin
('	Punctuation

'3'	Literal.Number.Integer
','	Operator
'm'	Name
)'	Punctuation
','	Operator
' '	Text.Whitespace
'op'	Name.Builtin
('	Punctuation
'2'	Literal.Number.Integer
','	Operator
'm'	Name
)'	Punctuation
'='	Operator
'i'	Name
'-'	Operator
'1'	Literal.Number.Integer
)'	Punctuation
','	Operator
'\n	' Text.Whitespace
'Integrand'	Name
('	Punctuation
'op'	Name.Builtin
('	Punctuation
'i'	Name
','	
	Operator
'x'	Name
)'	Punctuation
','	Operator
' '	Text.Whitespace
'res'	Name
)'	Punctuation
','	Operator
' '	Text.Whitespace
'loops'	Name
);'	Punctuation
'\n	' Text.Whitespace
'end'	Keyword
' '	Text.Whitespace
'do'	Keyword
','	Punctuation
'\n	' Text.Whitespace
'res'	Name
'\n	' Text.Whitespace
'elif'	Keyword
' '	Text.Whitespace
'm'	Name
' '	Text.Whitespace

```

'::'      Operator
' '       Text.Whitespace
''''      Punctuation
'Plate'   Name
'('       Punctuation
'anything' Name
','       Operator
' '       Text.Whitespace
'name'    Name
','       Operator
' '       Text.Whitespace
'anything' Name
')'       Punctuation
''''      Punctuation
' '       Text.Whitespace
'then'    Keyword
'\n      ' Text.Whitespace
'integrate'
    Name
'('       Punctuation
'op'      Name.Builtin
'('       Punctuation
'3'       Literal.Number.Integer
','       Operator
'm'       Name
')'       Punctuation
','       Operator
' '       Text.Whitespace
'h'       Name
','       Operator
' '       Text.Whitespace
'['       Punctuation
'op'      Name.Builtin
'('       Punctuation
'2'       Literal.Number.Integer
','       Operator
'm'       Name
')'       Punctuation
'='       Operator
'0'       Literal.Number.Integer
'..'      Punctuation
'op'      Name.Builtin
'('       Punctuation
'1'       Literal.Number.Integer
','       Operator
'm'       Name
')'       Punctuation
'-'       Operator

```



```

'1'      Literal.Number.Integer
','      Operator
''       Text.Whitespace
'op'     Name.Builtin
'('      Punctuation
'loops'  Name
')])'    Punctuation
'\n '    Text.Whitespace
'elif'   Keyword
        Keyword
''       Text.Whitespace
'm'      Name
''       Text.Whitespace
'::'     Operator
''       Text.Whitespace
''''     Punctuation
'Context' Name
'('      Punctuation
'anything' Name
','      Operator
''       Text.Whitespace
'anything' Name
')'      Punctuation
''''     Punctuation
''       Text.Whitespace
'then'   Keyword
'\n '    Text.Whitespace
'applyop' Name
'('      Punctuation
'integrate' Name
','      Operator
''       Text.Whitespace
'2'      Literal.Number.Integer
','      Operator
''       Text.Whitespace
'm'      Name
','      Operator
''       Text.Whitespace
'h'      Name
','      Operator
''       Text.Whitespace
'loops'  Name
')'      Punctuation
'\n '    Text.Whitespace
'elif'   Keyword
''       Text.Whitespace
'h'      Name
''       Text.Whitespace

```

```

'::'      Operator
''
    Text.Whitespace
'appliable' Name
''      Text.Whitespace
'then'    Keyword
'\n '    Text.Whitespace
'x'       Name
''      Text.Whitespace
':='      Operator
''      Text.Whitespace
'gensym'  Name
'('       Punctuation
''''      Punctuation
'xa'      Name
''''      Punctuation
');'      Punctuation
'\n '    Text.Whitespace
''''      Punctuation
'integrate' Name
''''      Punctuation
'('       Punctuation
'm'       Name
','       Operator
''      Text.Whitespace
'Integrand' Name
'('       Punctuation
'x'       Name
','       Operator
''      Text.Whitespace
'h'       Name
'('       Punctuation
'x'       Name
'))'      Punctuation
','       Operator
''      Text.Whitespace
'loops'   Name
')'       Punctuation
'\n '    Text.Whitespace
'else'    Keyword
'\n '    Text.Whitespace
''''      Punctuation
'procname' Name
'(_'      Punctuation
'passed'  Name
')'       Punctuation
''''      Punctuation

```

'\n ' Text.Whitespace
 'end' Keyword
 '' Text.Whitespace
 'if' Keyword
 '\n ' Text.Whitespace
 'end' Keyword
 '' Text.Whitespace
 'proc' Keyword
 ';' Punctuation
 '\n\n\n ' Text.Whitespace
 'local' Keyword
 '\n ' Text.Whitespace
 'integrate_known' Name
 '' Text.Whitespace
 ':= ' Operator
 '' Text.Whitespace
 'proc' Keyword
 '(' Punctuation
 'make' Name
 ';' Operator
 '' Text.Whitespace
 'makes' Name
 ';' Operator
 '' Text.Whitespace
 'var' Name
 ';' Operator
 '' Text.Whitespace
 'm' Name
 ';' Operator
 '' Text.Whitespace
 'h' Name
 ';' Operator
 '' Text.Whitespace
 'loops' Name
 '' Text.Whitespace
 '::' Operator
 '
 ' Text.Whitespace
 'list' Name
 '(' Punctuation
 'name' Name
 '=' Operator
 'range' Name
 ')' Punctuation
 ';' Operator
 '' Text.Whitespace
 '\$' Operator
 ')' Punctuation

```

'\n '   Text.Whitespace
'local'  Keyword
''       Text.Whitespace
'x'      Name
','      Operator
''       Text.Whitespace
'dens'   Name
','      Operator
''       Text.Whitespace
'bds'    Name
';'      Punctuation
'\n '   Text.Whitespace
'x'      Name
''       Text.Whitespace
':='     Operator
''       Text.Whitespace
'mk_sym' Name
'('      Punctuation
'var'    Name
','      Operator
''       Text.Whitespace
'h'      Name
');'     Punctuation
'\n '   Text.Whitespace
'dens'   Name
''       Text.Whitespace
':='     Operator
''       Text.Whitespace
'density' Name
'['      Punctuation
'op'
      Name.Builtin
'('      Punctuation
'0'      Literal.Number.Integer
','      Operator
'm'      Name
')'      Punctuation
'op'     Name.Builtin
'('      Punctuation
'm'      Name
'));'    Punctuation
'\n '   Text.Whitespace
'bds'    Name
''       Text.Whitespace
':='     Operator
''       Text.Whitespace
'bounds' Name
'['      Punctuation

```

'op'	Name.Builtin
'('	Punctuation
'0'	Literal.Number.Integer
','	Operator
'm'	Name
')]('	Punctuation
'op'	Name.Builtin
'('	Punctuation
'm'	Name
'))';	Punctuation
'\n '	Text.Whitespace
'if'	Keyword
''	Text.Whitespace
'loops'	Name
''	Text.Whitespace
'='	Operator
''	Text.Whitespace
'[]'	Punctuation
''	Text.Whitespace
'then'	Keyword
'\n '	Text.Whitespace
'make'	Name
'('	Punctuation
'dens'	Name
'('	Punctuation
'x'	Name
')	Punctuation
''	Text.Whitespace
'*'	Operator
''	Text.Whitespace
'applyintegrand'	Name
'('	Punctuation
'h'	Name
','	Operator
''	Text.Whitespace
'x'	Name
')	Punctuation
','	Operator
''	Text.Whitespace
'x'	Name
''	Text.Whitespace
'='	Operator
''	Text.Whitespace
'bds'	Name
'))';	Punctuation
'\n '	Text.Whitespace
'else'	Keyword

```

'\n      ' Text.Whitespace
'makes'   Name
'('       Punctuation
'foldl'   Name
'('       Punctuation
'product' Name
';'       Operator
''        Text.Whitespace
'dens'    Name
'('       Punctuation
'mk_idx'  Name
'('       Punctuation
'x'       Name
';'       Operator
'loops'   Name
'))'      Punctuation
';'
      Operator
''        Text.Whitespace
'op'      Name.Builtin
'('       Punctuation
'loops'   Name
'))'      Punctuation
'\n      ' Text.Whitespace
'*'       Operator
''        Text.Whitespace
'applyintegrand' Name
'('       Punctuation
'h'       Name
';'       Operator
''        Text.Whitespace
'x'       Name
')'       Punctuation
';'       Operator
'\n      ' Text.Whitespace
'x'       Name
';'       Operator
''        Text.Whitespace
'bds'     Name
';'       Operator
''        Text.Whitespace
'loops'   Name
')'       Punctuation
'\n      ' Text.Whitespace
'end'     Keyword
''        Text.Whitespace
'if'      Keyword
';'       Punctuation

```

```

'\n '    Text.Whitespace
'end'    Keyword
''       Text.Whitespace
'proc'   Keyword
';'      Punctuation
'\n'     Text.Whitespace

'end'    Keyword
''       Text.Whitespace
'module' Keyword
';'
        Punctuation
''       Text.Whitespace
'#toLO\n' Comment.Single
# Teach Maple (through depends and eval) about our new binding forms.
# forall bind from 1st arg to 2nd arg.
# Ints,Sums,ints,sums bind from 2nd arg to 1st arg, and also from each element
#   of the 4th arg to the other elements on the left and to the 3rd arg.

`depends/forall` := proc(bvar, pred, x, $)
  depends(pred, x minus convert(bvar, 'set'))
end proc:

`depends/Ints` := proc(body, bvar, rng, loops, x, y, $)
  local xx, i;
  if nargs = 5 then
    xx := x; # y is unused and x lists the variables to look for
  else
    xx := y; # x is some KB and y lists the variables to look for
    if depends(x, y) then return true end if;
  end if;
  # don't remove bvar from xx!
  if depends(body, xx minus {bvar}) then return true end if;
  for i from nops(loops) to 1 by -1 do
    if depends(op([i,2],loops), xx) then return true end if;
    xx := xx minus {op([i,1],loops)};
  end do;
  depends(rng, xx)
end proc:

`depends/Sums` := eval(`depends/Ints`):
`depends/ints` := eval(`depends/Ints`):
`depends/sums`
:= eval(`depends/Ints`):

`eval/forall` := proc(e, eqs, $)
  local bvar, pred;
  bvar, pred := op(e);
  eval(op(0,e), eqs)(BindingTools:-generic_evalat(bvar, pred, eqs))

```

end proc:

```
`eval/Ints` := proc(e, eqs, $)
local body, bvar, rng, loops, n, i;
body, bvar, rng, loops := op(1..4, e);
bvar, body := BindingTools:-generic_evalat(bvar, body, eqs);
eval(op(0,e), eqs)(body, bvar,
    BindingTools:-generic_evalatstar(rng, loops, eqs),
    op(5..-1,e))
end proc:
```

```
`eval/Sums` := eval(`eval/Ints`):
`eval/ints` := eval(`eval/Ints`):
`eval/sums` := eval(`eval/Ints`):
```

```
`eval/Int` := proc(e, eqs, $)
local body, bound, bvar;
body, bound := op(1..2, e);
if bound :: name then
    bound, body := BindingTools:-generic_evalat(bound, body, eqs);
elif bound :: `=` then
    bvar := lhs(bound);
    bvar, body := BindingTools:-generic_evalat(bvar, body, eqs);
    bound := bvar = eval(rhs(bound), eqs);
else
    body, bound := BindingTools:-generic_evalatstar(body,
bound, eqs);
end if;
eval(op(0,e), eqs)(body, bound, op(eval([op(3..-1,e)], eqs)))
end proc:
`eval/Sum` := eval(`eval/Int`):
`eval/Product` := eval(`eval/Int`):
`eval/int` := eval(`eval/Int`):
`eval/sum` := eval(`eval/Int`):
`eval/product` := eval(`eval/Int`):
```

#####

```
Loop := module ()
option package;
local intssums, enter_pieewise, wrap,
    t_peel, do_peel, do_split, do_graft, do_rebase_lower, do_rebase_upper,
    Binder, Stmt, t_binder, t_stmt, t_exp,
    ModuleLoad;
export
    # These first few are smart constructors (for themselves):
    ints, sums,
    # while these are "proper functions"
    mk_HArray, genLoop, unproducts, unproduct,
```



```

    peel, split, graft, rebase_lower, rebase_upper, Print;
# these names are not assigned (and should not be). But they are
# used as global names, so document that here.
global Ints, Sums, csgn, sum, signum;
uses Hakaru, KB, Utilities;

t_binder := 'Binder(identical(product, Product, sum, Sum), t_kb)';
t_stmt  := 'Stmt(anything, list, list)';
t_exp   := '{ Stmt(identical(exp), [], []),
              Stmt(identical(`^`), [anything], []) }';

ints := proc() intssums('ints', 'int', _passed) end proc;
sums := proc() intssums('sums', 'sum', _passed) end proc;

Print := proc(kind::identical(Ints,Sums,ints,sums),e,v::name,r0::range,rs::list(name=range),$)
  local k;
  k := StringTools[Capitalize](StringTools[Chop](convert(kind,string)));
  k := parse(cat("`print'",eval(k),"`"));
  eval(k)(e,v[op(rs)]=r0);
end proc;

intssums := proc(makes::name, make::name,
                 e::anything, x::name, rr::range, ll::list(name=range),
                 kb::t_kb:=empty, $)
  local t, r, l, kb2, w0, pp, i;
  t := `if`(make=int, HReal(open_bounds(rr)), HInt(closed_bounds(rr)));
  r, l, kb2 := genLoop(rr, ll, kb, 'Integrand'(x,e));
  w0, pp := unproducts(e, x, l,
  kb2);
  if depends(w0, x) then
    'makes(e, x, rr, ll)'
  else
    pp := 'make'(pp, x=r);
    for i in l do pp := 'product'(pp, i) end do;
    NewSLO:-simplify_factor_assuming(w0 * pp, kb);
  end if
end proc;

mk_HArray := proc(t::t_type, loops::list(name=range), $)
  local res, i;
  res := t;
  for i in loops do res := HArray(res) end do;
  res
end proc;

genLoop := proc(e, loops::list(name=range), kb::t_kb)
  local kb1, rng, ind, do_subst, i;
  kb1 := kb;

```

```

rng := table();
ind := table();
do_subst := e -> foldl(((e,eq) -> eval(e, op([lhs(eq),1],loops)=rhs(eq))),
    e, entries(ind, 'pairs'));
for i from nops(loops) to 1 by -1 do
    rng[i] := do_subst(op([i,2],loops));
    ind[i], kb1 := genType(op([i,1],loops), HInt(closed_bounds(rng[i])),
        kb1, _rest);
end do;
do_subst(e, zip(`=`, [entries(ind, 'nolist')],
    [entries(rng, 'nolist')]), kb1
end
proc;

unproducts := proc(w, x::name, loops::list(name=range), kb::t_kb, $)
    local w0, pp, j, w1, w2, loop;
    w0 := 1;
    pp := w;
    for j from nops(loops) to 1 by -1 do
        w1, pp := op(unproduct(pp, x, op(j,loops), [], `*`, kb, kb));
        # separate out each of the factors in w1, as they might have different
        # variable dependencies, which can be exploited by other routines
        w2 := convert(w1, 'list', `*`);
        for loop in [op(j+1..-1, loops)] do
            w2 := map((w -> product(eval(w, x=idx(x,lhs(loop))), loop)), w2);
        end do;
        w0 := w0 * `*`(op(w2));
        # w0 := w0 * foldl(product, w1, op(j+1..-1, loops));
    end do;
    # Rewrite ... * piecewise(i<=kk-1, xs^2, 1)
    # to ... * xs ^ (2*piecewise(i<=kk-1, 1))
    # because the latter is easier to integrate and recognize with respect to xs
    pp := for_poly(pp, # TODO: move this rewrite into eval_factor (then remove for_poly)?
        proc (p)
            local n, s, r;
            if p :: 'And(specfunc(piecewise),
anyfunc(freeof(x), anything, 1))' then
                n := indets(op(1,p),name);
                if op(2,p) :: {'exp(anything)', '^'('freeof(n)',anything')} then
                    s, r := selectremove(depends, convert(op([2,-1],p),'list',`*`), n);
                    subsop(-1 = `*`(piecewise(op(1,p), `*`(op(s))), op(r)), op(2,p))
                else
                    s, r := selectremove(depends, convert(op(2,p),'list',`*`), n);
                    `*`(op(r) ^ piecewise(op(1,p), 1)
                        * `if`(nops(s) > 0, piecewise(op(1,p), `*`(op(s)), 1), 1)
                    end if
                else
                    p
                end
            end
        end
    end

```

```

    end if
  end proc);
w0, pp
end proc;

# Find [w1,pp] so that
# wrap(heap,w,mode,kb1,kb0)
# = w1*product(eval(pp,var=idx(var,lhs(loop))),loop)
# making w1 depend on var as little as possible.
# The flag "mode" should be '+' if "heap" contains an entry of the form
# t_exp, or '*' otherwise.
unproduct := proc(w, var::name, loop::(name=range),
    heap::list, mode::identical('*', '+'),
    kb1::t_kb, kb0::t_kb, $)
  local ind, res, dummy, kb, kbThen, i, w1, pp, s, r, x;
  if not depends(w, var) then
    return [wrap(heap, w, mode, kb1, kb0), 1]
  end if;
  # The '..' (indices) of all occurrences of 'idx(var,...)'
  ind := map2(op, 2, indets(w, 'idx(identical(var), anything)'));
  if nops(ind) = 1 then
    ind := op(ind);
    # Make sure ind contains no bound variables before lifting it!
    # So, check that "extract using indets" and "rename using eval" commute.
    s := indets(ind, 'name');
    s := map(proc(x,$) local y; if depends(ind,x), x=y, NULL) end proc, s);
    if indets(eval(w, s), 'idx(identical(var), anything)')
        = {idx(var, eval(ind, s))} then
      # use kb as a local context, and 'solve' for the innermost bound var
      # used in ind.
      kb := assert(lhs(loop)=ind, kb1); # BUG! bijectivity assumed!
      # if the assertion makes the KB false, it isn't needed(?)
      ASSERT(type(kb, t_kb),
        sprintf("assert(%a,%a) produced a false KB!\n", lhs(loop)=ind,kb1)):
      res := subs(idx(var,ind) = idx(var,lhs(loop)), w);
      res := wrap(heap, res, mode, kb, kb0);
      res := subs(idx(var,lhs(loop))=dummy, res);
      if not depends(res, var) then
        return [1, subs(dummy=var, res)]
      end if
    end if
  end if;
  # distribute the unproduct over each part
  if w :: mode then
    res := map(unproduct, if mode='*', list_of_mul(w), [op(w)]),
      var, loop, heap, mode, kb1, kb0);
    return ['*(op(map2(op,1,res))), '*'(op(map2(op,2,res)))]
  end if;

```

```

# for piecewise, just map right in (using KB for context tracking)
if w :: 'specfunc(piecewise)' then
  kb := kb1;
  for i from 1 to nops(w) do
    if i :: even then
      kbThen := assert( op(i-1,w) , kb);
      # accumulate the rest, regardless
      kb    := assert(Not(op(i-1,w)), kb);

      # if kbThen
is invalid, deal appropriately
      if not type(kbThen,t_kb) then next end if;

      w1[i], pp[i] := op(unproduct(op(i,w),var,loop,heap,mode,kbThen,kb0));
      # if kb is inconsistent, we're done
      if not type(kb,t_kb) then break end if;
    elif i = nops(w) then
      if not type(kb,t_kb) then next end if;
      w1[i], pp[i] := op(unproduct(op(i,w),var,loop,heap,mode,kb ,kb0))
    end if
  end do;
  return [ `*(entries(w1,'nolist')), `*(entries(pp,'nolist')) ]
end if;
if mode = `*` then
  if w :: (anything^freeof(var)) then
    return unproduct(op(1,w), var, loop,
      [op(heap), Stmt(`^`, [], [op(2,w)]), `*`, kb1, kb0)
  elif w :: exp(anything) then
    return unproduct(op(1,w), var, loop,
      [op(heap), Stmt(exp, [], []), `+`, kb1, kb0)
  elif w :: (freeof(var)^anything) then
    return unproduct(op(2,w), var, loop,
      [op(heap), Stmt(`^`,
[op(1,w)], []), `+`, kb1, kb0)
    end if
  end if;
if mode = `+` and w :: `*` then
  s, r := selectremove(depends, w, var);
  if s :: `*` then
    # Nonlinear %1 (time to reread kiselyov-lifted?)
  else
    return unproduct(s, var, loop,
      [op(heap), Stmt(`*`, [], [r]), `+`, kb1, kb0)
    end if
  end if;
if w :: And(specfunc(`if`(mode = `*`, {product, Product}, {sum, Sum})),
  anyfunc(anything, name=range(freeof(var)))) then
  x, kb := genType(op([2,1],w), HInt(closed_bounds(op([2,2],w))), kb1,

```

```

        w, var, loop, heap);
    return unproduct(eval(op(1,w), op([2,1],w)=x), var, loop,
        [op(heap), Binder(op(0,w), kb1)], mode, kb, kb0)
end if;
if mode = `*` and w :: '{`+`, specfunc({sum, Sum})}' then
    # Maybe this w is one of those big sums involving products that are
    # always equal to 1, left behind by the density of Categorical
    w1 := graft(split(peel(w)));
    w1 := combine(rebase_upper(w1));
    w1 := combine(rebase_lower(w1));
    return [wrap(heap, w1, mode, kb1, kb0), 1]
end if;
return [wrap(heap, w, mode, kb1, kb0), 1]
end proc;

enter_pieewise := proc(ee, kb0::t_kb, mode::identical(`*`,`+`), $)
    local e, kb, mo;
    e := ee;
    kb := kb0;
    mo := mode();
    while e :: 'specfunc(pieewise)' and nops(e) = 3 do
        if op(3,e) = mo then
            kb := assert(op(1,e), kb);
            e := op(2,e);
        elif op(2,e) = mo then
            kb := assert(Not(op(1,e)), kb);
            e := op(3,e);
        else
            break;
        end if;
    end do;
    ASSERT(type(kb,t_kb), "enter_pieewise: KB of pieewise conditions is not valid, so the input pieewise must
not be valid.");
    e, kb
end proc;

# heap is a list of t_binder and t_stmt
# one invariant to maintain:
# wrap(heap, mode(a,b)) = wrap(heap,a) * wrap(heap,b)

# Also, a t_binder is a Product/product/Sum/sum.
# And, a t_stmt is a 1-hole
context of a (multiplicative) AST,
# used for [a ^ hole, hole ^ b, exp(hole), c * hole].

wrap := proc(heap::list, e1, mode1::identical(`*`,`+`),
    kb1::t_kb, kb0::t_kb, $)
    local e, kb, mode, i, entry, rest, var, new_rng, make, logmake,

```

```

    dom_spec, w, wPow, wExp, arrrgs;
e  := e1;
kb  := kb1;
mode := mode1;
for i from nops(heap) to 1 by -1 do
    entry := op(i,heap);
    if entry :: t_binder then
        if not (op(1,entry) in `if`(mode=`+`, {sum,Sum},
                                {product,Product})) then
            print("Warning: heap mode inconsistency", heap, mode1)
        end if;
        e, kb := enter_pieewise(e, kb, mode);
        rest := kb_subtract(kb, op(2,entry));
        new_rng, rest := selectremove(type, rest,
            {[identical(genType), name, specfunc(HInt)],
             [identical(genLet), name, anything]});
        if not (new_rng :: [list]) then
            error "kb_subtract should return exactly
one gen*"
        end if;
        new_rng := op(new_rng);
        var := op(2,new_rng);
        if op(1,new_rng) = genType then
            make := op(1,entry);
            new_rng := range_of_HInt(op(3,new_rng));
        else # op(1,new_rng) = genLet
            make := eval;
            new_rng := op(3,new_rng);
        end if;
        dom_spec, rest := selectremove(depends,
            map(proc(a:=[identical(assert),anything],$) op(2,a) end proc, rest),
            var);

# Like e := make(pieewise(And(op(dom_spec)), e, mode()), var=new_rng);
# but try to simplify by pushing the make and the pieewise into e
(e, w) := selectremove(depends, convert(e, 'list', `*`), var);
w := `*`(op(w));
if mode = `*` then
    (wPow, e) := selectremove(type, e, `^`('freeof'(var), 'anything'));
    (wExp, e) := selectremove(type, e, 'exp(anything)');
    wExp := `+`(op(map2(op, 1, wExp)));
    wExp := expand(wExp, op(indets(wExp, function)));
    logmake := proc(t)
        local s, r;
        s, r := selectremove(depends, convert(t, 'list', `*`), var);
        `*`(op(r),
            `if`(make=eval,eval,Sum)
            (pieewise_And(dom_spec, `*`(op(s)), 0), var=new_rng));
    end proc;
end if;

```

```

end proc;
w := `( `if (w = 1, 1, w ^ logmake(1))
    , op(map((f -> op(1,f) ^ logmake(op(2,f))), wPow))
    , `if (wExp = 0, 1, exp(maptype(`+,logmake,wExp)))) );
end if;
e := w * make(piecewise_And(dom_spec, `(op(e)), mode(), var=new_rng);

# `rest' originally comes from `entry', and this reinserts it after some
# processing. The original KB was valid, so this one should also be valid.
kb := foldr(assert, op(2,entry), op(rest));
ASSERT(type(kb,t_kb), "Loop/wrap{t_binder}: rebuilding kb produced contradiction");

elif entry :: t_stmt then
    # We evaluate arrgs first, in case op(1,stmt) is an operation (such
as
    # piecewise) that looks ahead at how many arguments it is passed before
    # they are evaluated.
    arrgs := op(op(2,entry)), e, op(op(3,entry));
    e := op(1,entry)(arrgs);
    if entry :: t_exp then
        if mode <> `+` then
            print("Warning: heap mode inconsistency?", heap, mode1)
        end if;
        mode := `*`;
    end if
    else error "Malformed heap entry %1", entry end if
end do;
if mode <> `*` then
    print("Warning: heap mode inconsistency??", heap, mode1)
end if;
e, kb := enter_piecewise(e, kb, mode);
rest := kb_subtract(kb, kb0);
rest := map(proc(a:[identical(assert),anything],$) op(2,a) end proc, rest);
(wExp, e) := selectremove(type, convert(e, 'list', `*`), 'exp(anything)');
wExp := `(op(map2(op, 1, wExp)));
wExp := expand(wExp, op(indets(wExp, function)));
logmake := (t -> t * piecewise_And(rest,1,0));
`(wExp = 0, 1, exp(maptype(`+,logmake,wExp)))

    * piecewise_And(rest, `(op(e)),1);
end proc;

# Rewrite product(...piecewise(i+42=lo+42,th,el)...,i=lo..hi)
# to eval(...th...,i=lo)*product(...el...,i=lo+1..hi)
t_peel := 'And(specfunc({sum,Sum,product,Product}),
    anyfunc(anything, name=range));
peel := proc(e, $)
    subsindets(e, t_peel, do_peel);

```

```

end proc;
do_peel := proc(e, $)
    local make, body, x, r, cond, line, test, x0, r0, cond0, here, rest;
    if not (e :: t_peel) then return e end if;
    if op(0,e) in '{sum ,Sum }' then make := `+`;
    elif op(0,e) in '{product,Product}' then make := `*`; end if;
    body, r := op(e);
    x, r := op(r);
    for cond in indets(body, '{`= `(algebraic),`<`,`<=`}') do
        line := `-(op(cond));
        if 1 <> degree(line, x) then next end if;
        if cond :: `=` then
            cond0 := true;
            if Testzero(eval(line, x=lhs(r))) then
                x0 := lhs(r); r0 := applyop(`+`, 1, r, 1);
            elif Testzero(eval(line, x=rhs(r))) then
                x0 := rhs(r); r0 := applyop(`-`, 2, r, 1);
            else next end if;
        else
            test := proc(x0, x1, $)
                local res;
                res := evalb(not op(0,cond)(eval(line, x=x1), 0));
                `if` (res in '{true,false}'
                    and evalb(op(0,cond)(eval(line, x=x0), 0)) = res,
                    res,
                    FAIL)
            end proc;
            cond0 := test(lhs(r), lhs(r)+1);
            if cond0 <> FAIL then
                x0 := lhs(r); r0 := applyop(`+`, 1, r, 1);
            else
                cond0 := test(rhs(r), rhs(r)-1);
                if cond0 <> FAIL then
                    x0 := rhs(r); r0 := applyop(`-`, 2, r, 1);
                else next end if;
            end if;
        end if;
        here := subs(cond = cond0, body);
        rest := subs(cond = evalb(not cond0), body);
        return make(eval(here, x=x0), do_peel(eval(subsop(1=rest, [2,2]=r0, e))));
    end do;
    return e;
end proc;

# Expand sum(a*(b-c),q) to sum(a*b,q)-sum(a*c,q)
split := proc(e, $)
    subsindets(e, 'And(specfunc({sum,Sum})),

```



```

        anyfunc(And(`*`,Not(`*(Not(`+`)))),name=anything))',
    do_split);
end proc;
do_split := proc(e, $)
    local terms, x;
    terms := convert(expand(op(1,e), op(indets(op(1,e), function))),
        'list', `+`);
    x := op([2,1],e);
    `+`(op(map(proc(term, $)
        local s, r;
        s, r := selectremove(depends, convert(term, 'list', `*`), x);
        `*`(op(r), subsop(1=`*(op(s)),e))
    end proc, terms)))
end proc;

# Simplify f(lo-1)*product(f(i),i=lo..hi) to product(f(i),i=lo-1..hi)
graft := proc(e, $)
    subsindets(e, 'Or(And(`*`,Not(`*(Not(specfunc({product,Product}))))),
        And(`+`,Not(`+(Not(specfunc({sum ,Sum }))))))',
        do_graft);
end proc;
do_graft := proc(e, $)
    local produce, factors, i, j;
    produce := `if` (e::`*`, '{product,Product}',
        '{sum ,Sum }');
    factors := sort(convert(e,'list'),

        key = (factor -> -numboccur(factor,produce)));
    for i from nops(factors) to 2 by -1 do
        for j from i-1 to 1 by -1 do
            if op(j,factors) :: 'And'('specfunc'(produce),
                'anyfunc(anything,name=range)') then
                if Testzero(op(i,factors) - eval(op([j,1],factors),
                    op([j,2,1],factors)=op([j,2,2,1],factors)-1)) then
                    factors := subsop(i=NULL,applyop(`-`,[j,2,2,1],factors,1));
                    break
                elif Testzero(op(i,factors) - eval(op([j,1],factors),
                    op([j,2,1],factors)=op([j,2,2,2],factors)+1)) then
                    factors := subsop(i=NULL,applyop(`+`,[j,2,2,2],factors,1));
                    break
                end if
            end if
        end do
    end do;
    op(0,e)(op(factors))
end proc;

# Normalize sum(f(i),i=2..hi) to sum(f(i+2),i=0..hi-2)

```

```

rebase_lower := proc(e, $)
  subsindets(e, 'And(specfunc({sum,Sum,product,Product})),
    anyfunc(anything,

      name=Not({0,SymbolicInfinity,undefined})..anything)),
    do_rebase_lower);
end proc;
do_rebase_lower := proc(e, $)
  subsop([2,2,1]=0,
    applyop(`^`,
      [2,2,2],
      applyop(eval, 1, e, op([2,1],e)=op([2,1],e)+op([2,2,1],e)),
      op([2,2,1],e)))
end proc;

# Normalize sum(f(i),i=lo..2) to sum(f(i+2),i=lo-2..0)
rebase_upper := proc(e, $)
  subsindets(e, 'And(specfunc({sum,Sum,product,Product})),
    anyfunc(anything,
      name=anything..Not({0,SymbolicInfinity,undefined}))),
    do_rebase_upper);
end proc;
do_rebase_upper := proc(e, $)
  subsop([2,2,2]=0,
    applyop(`^`,
      [2,2,1],
      applyop(eval, 1, e, op([2,1],e)=op([2,1],e)+op([2,2,2],e)),
      op([2,2,2],e)))
end proc;

ModuleLoad := proc($)
  # Override csgn to work a little bit harder on piecewise and sum
  # (to get rid
of csgn(1/2+1/2*sum(piecewise(...,1,0),...))
  # produced by int on a Gaussian mixture model)
  unprotect(csgn);
  csgn := overload([
    # Handle if the csgn of a piecewise doesn't depend on which branch
    proc(a :: specfunc(piecewise), $)
      option overload;
      local r, i;
      r := {seq('if'(i::even or i=nops(a), csgn(op(i,a)), NULL),
        i=1..nops(a))};
      if nops(r)=1 then return op(r) end if;
      if not assigned(_Envsignum0) then
        r := r minus {0};
        if nops(r)=1 then return op(r) end if;
      end if;

```

```

    error "invalid input: cannot csgn %1", a;
end proc,
# Handle if the csgn of a sum doesn't depend on the bound variable
proc(a :: And(specfunc({sum, Sum})), anyfunc(anything, name=range)), $)
    option overload;
    local r;
    r := csgn(op(1,a));
    if not depends(r,op([2,1],a)) then
        return signum(op([2,2,2],a)+1-op([2,2,1],a)) * r
    end if;
    error
"invalid input: cannot csgn %1", a;
end proc,
csgn]);
protect(csgn);

# Do the same to signum.
unprotect(signum);
signum := overload([
# Handle if the signum of a piecewise doesn't depend on which branch
proc(a :: specfunc(piecewise), $)
    option overload;
    local r, i;
    r := {seq('if'(i::even or i=nops(a), signum(op(i,a)), NULL),
        i=1..nops(a))};
    if nops(r)=1 then return op(r) end if;
    if not assigned(_Envsignum0) then
        r := r minus {0};
        if nops(r)=1 then return op(r) end if;
    end if;
    error "invalid input: cannot signum %1", a;
end proc,
# Handle if the signum of a sum doesn't depend on the bound variable
proc(a :: And(specfunc({sum, Sum})), anyfunc(anything, name=range)), $)
    option overload;
    local r;
    r := signum(op(1,a));
    if not depends(r,op([2,1],a)) then
        return signum(op([2,2,2],a)+1-op([2,2,1],a))
* r
    end if;
    error "invalid input: cannot signum %1", a;
end proc,
signum]);
protect(signum);

# Override sum to fail faster
unprotect(sum);

```

```

sum := overload([
  proc(f :: Not({`+`,`+`^integer}),
    k :: name=And(range,Not(range(rational))), $)
    option overload;
    if not (`-(op(rhs(k))) :: 'rational')
      and not (subsindets(f, 'anything^integer', f->op(1,f))
        :: '{`+`,`+`,And(`*`,`+`,Not(`*`(Not(`+`))))}')
      and depends(indets(f, '{specfunc(idx), specindex(idx)}'), op(1,k))
    then
      'procname(_passed)'
    else
      error "invalid input: cannot fast-fail sum(%1, %2)", _passed
    end if
  end proc,
  sum]);
protect(sum);

:-`print/Ints` := curry(thismodule:-Print,Ints);
:-`print/Sums` := curry(thismodule:-Print,Sums);
:-`print/ints` := curry(thismodule:-Print,ints);
:-`print/sums` := curry(thismodule:-Print,sums);

end proc;
ModuleLoad():
end
module; # Loop
'# New ports collection makefile for:  python25\n' Comment

'# Date created:      3 July 2003\n' Comment

'# Whom:              Hye-Shik Chang <perky@FreeBSD.org>\n' Comment

'#\n'      Comment

'# $FreeBSD: ports/lang/python25/Makefile,v 1.145 2007/10/03 23:22:04 edwin Exp $\n' Comment

'\n'      Text.Whitespace

'PORTNAME'   Name.Variable
'='          Operator
'\t'        Text.Whitespace
'python25'   Text
'\n'        Text.Whitespace

'PORTVERSION' Name.Variable
'='          Operator
'\t'        Text.Whitespace
'2'         Literal.Number

```

```

'.5.1'      Text
'\n'        Text.Whitespace

'CATEGORIES' Name.Variable
'='         Operator
'\t'        Text.Whitespace
'lang'      Text
''          Text.Whitespace
'python'    Text
''          Text.Whitespace
'ipv6'      Text
'\n'        Text.Whitespace

'MASTER_SITES' Name.Variable
'='         Operator
'\t'        Text.Whitespace
'${'        Literal.String.Interpol
'PYTHON_MASTER_SITES' Name.Variable
'}'         Literal.String.Interpol
'\n'        Text.Whitespace

'MASTER_SITE_SUBDIR' Name.Variable
'='         Operator
'\t'        Text.Whitespace
'${'        Literal.String.Interpol
'PYTHON_MASTER_SITE_SUBDIR' Name.Variable
'}'         Literal.String.Interpol
'\n'        Text.Whitespace

'DISTFILES'  Name.Variable
'='         Operator
'\t'        Text.Whitespace
'${'        Literal.String.Interpol
'PYTHON_DISTFILE' Name.Variable
'}'         Literal.String.Interpol
'\n'        Text.Whitespace

'\n'        Text.Whitespace

'MAINTAINER' Name.Variable
'='         Operator
'\t'        Text.Whitespace
'python@FreeBSD.org' Text
'\n'        Text.Whitespace

'COMMENT'    Name.Variable
'?='        Operator

```

```

\t'      Text.Whitespace
'An'      Text
''        Text.Whitespace
'interpreted' Text
''        Text.Whitespace
'object-oriented' Text
''        Text.Whitespace
'programming' Text
''        Text.Whitespace
'language' Text
'\n'
      Text.Whitespace

'\n'      Text.Whitespace

'DIST_SUBDIR' Name.Variable
'='       Operator
\t'       Text.Whitespace
'python'   Text
'\n'       Text.Whitespace

'WRKSR'    Name.Variable
'='       Operator
\t\t'     Text.Whitespace
'${'       Literal.String.Interpol
'PYTHON_WRKSR' Name.Variable
'}'        Literal.String.Interpol
'/portbld.static' Text
'\n'       Text.Whitespace

'PATCH_WRKSR' Name.Variable
'='       Operator
\t'       Text.Whitespace
'${'       Literal.String.Interpol
'PYTHON_WRKSR' Name.Variable
'}'        Literal.String.Interpol
'\n'       Text.Whitespace

'GNU_CONFIGURE' Name.Variable
'='       Operator
\t'       Text.Whitespace
'yes'      Text
'\n'       Text.Whitespace

'CONFIGURE_TARGET' Name.Variable
'='       Operator
\t'       Text.Whitespace
'--build' Text

```

'=' Operator
 '\${' Literal.String.Interpol
 'MACHINE_ARCH' Name.Variable
 '}' Literal.String.Interpol
 '-portbld-freebsd'
 Text
 '\${' Literal.String.Interpol
 'OSREL' Name.Variable
 '}' Literal.String.Interpol
 '\n' Text.Whitespace

 'CONFIGURE_SCRIPT' Name.Variable
 '=' Operator
 '\t' Text.Whitespace
 '../configure' Text
 ' ' Text.Whitespace
 '# must be relative\n' Comment.Single

 'CONFIGURE_ENV' Name.Variable
 '=' Operator
 '\t' Text.Whitespace
 'OPT' Name.Variable
 '=' Operator
 '"' Literal.String.Double
 '\${' Literal.String.Interpol
 'CFLAGS' Name.Variable
 '}' Literal.String.Interpol
 '"' Literal.String.Double
 ' ' Text.Whitespace
 'SVNVERSION' Name.Variable
 '=' Operator
 '"echo freebsd"' Literal.String.Double
 '\n' Text.Whitespace

 'MAKE_ENV' Name.Variable
 '=' Operator
 '\t' Text.Whitespace
 'VPATH' Name.Variable
 '=' Operator
 '"' Literal.String.Double
 '\${' Literal.String.Interpol
 'PYTHON_WKSRSC'
 Name.Variable
 '}' Literal.String.Interpol
 '"' Literal.String.Double
 '\n' Text.Whitespace

 'INSTALLS_SHLIB' Name.Variable

```

'='      Operator
'\t'     Text.Whitespace
'yes'    Text
'\n'     Text.Whitespace

'INSTALL_TARGET' Name.Variable
'='      Operator
'\t'     Text.Whitespace
'altinstall' Text
'\n'     Text.Whitespace

'MAN1'    Name.Variable
'='      Operator
'\t\t'   Text.Whitespace
'${'      Literal.String.Interpol
'PYTHON_VERSION' Name.Variable
'}'       Literal.String.Interpol
'.1'      Text
'\n'      Text.Whitespace

'\n'      Text.Whitespace

'USE_PYTHON' Name.Variable
'='      Operator
'\t'     Text.Whitespace
'yes'    Text
'\n'     Text.Whitespace

'PYTHON_VERSION' Name.Variable
'='      Operator
'\t'     Text.Whitespace
'python2.5' Text
'\n'     Text.Whitespace

'PYTHON_NO_DEPENDS' Name.Variable
'='
      Operator
'\t'     Text.Whitespace
'yes'    Text
'\n'     Text.Whitespace

'\n'      Text.Whitespace

'SHARED_WKSRRC' Name.Variable
'='      Operator
'\t'     Text.Whitespace
'${'      Literal.String.Interpol
'PYTHON_WKSRRC' Name.Variable

```


'}' Literal.String.Interpol
 '/portbld.shared' Text
 '\n' Text.Whitespace

 'PLIST' Name.Variable
 '=' Operator
 '\t\t' Text.Whitespace
 '\${' Literal.String.Interpol
 'WRKDIR' Name.Variable
 '}' Literal.String.Interpol
 '/PLIST' Text
 '\n' Text.Whitespace

 'PLIST_TEMPLATE' Name.Variable
 '?=' Operator
 '\${' Literal.String.Interpol
 'PKGDIR' Name.Variable
 '}' Literal.String.Interpol
 '/pkg-plist' Text
 '\n' Text.Whitespace

 'PLIST_SUB' Name.Variable
 '=' Operator
 '\t' Text.Whitespace
 'PYVER' Name.Variable
 '=' Operator
 '\${' Literal.String.Interpol
 'PYTHON_VERSION' Name.Variable
 ':'
 Punctuation
 'S' Name.Variable
 '/python/' Punctuation
 '}' Literal.String.Interpol
 '' Text.Whitespace
 '\\n' Literal.String.Escape

 '\t\t' Text.Whitespace
 'PYVER_WITHPAT' Name.Variable
 '=' Operator
 '\${' Literal.String.Interpol
 'PORTVERSION' Name.Variable
 ':' Punctuation
 'S' Name.Variable
 '/.c/c/' Punctuation
 '}' Literal.String.Interpol
 '\n' Text.Whitespace

 'DEMODIR' Name.Variable

'=' Operator
'\t' Text.Whitespace
'\${' Literal.String.Interpol
'PREFIX' Name.Variable
'}' Literal.String.Interpol
'/share/examples/' Text
'\${' Literal.String.Interpol
'PYTHON_VERSION' Name.Variable
'}' Literal.String.Interpol
'\n' Text.Whitespace

'TOOLS DIR' Name.Variable
'=' Operator
'\t' Text.Whitespace
'\${' Literal.String.Interpol
'PREFIX' Name.Variable
'}'
Literal.String.Interpol
'/share/' Text
'\${' Literal.String.Interpol
'PYTHON_VERSION' Name.Variable
'}' Literal.String.Interpol
'\n' Text.Whitespace

'\n' Text.Whitespace

'BIN_SCRIPTS' Name.Variable
'=' Operator
'\t' Text.Whitespace
'idle' Text
' ' Text.Whitespace
'pydoc' Text
' ' Text.Whitespace
'python' Text
' ' Text.Whitespace
'python-shared' Text
' ' Text.Whitespace
'smtpd.py' Text
' ' Text.Whitespace
'python-config' Text
' ' Text.Whitespace
'\\n' Literal.String.Escape

'\t\t' Text.Whitespace
'python-shared-config' Text
'\n' Text.Whitespace

'BINLINKS_SUB' Name.Variable

```

'='      Operator
'\t'     Text.Whitespace
'-e'     Text
''       Text.Whitespace
"s,smtpd,smtpd${PYTHON_VER}," Literal.String.Single
''       Text.Whitespace
'\\n'    Literal.String.Escape

'\t\t'   Text.Whitespace
'-e'     Text
        Text
''       Text.Whitespace
"s,(idle|pydoc|python-shared|python),\1${PYTHON_VER}," Literal.String.Single
'\n\n'   Text.Whitespace

'OPTIONS' Name.Variable
'='      Operator
'\t'     Text.Whitespace
'THREADS' Text
''       Text.Whitespace
"Enable thread support" Literal.String.Double
''       Text.Whitespace
'on'     Text
''       Text.Whitespace
'\\n'    Literal.String.Escape

'\t\t'   Text.Whitespace
'HUGE_STACK_SIZE' Text
''       Text.Whitespace
"Use a larger thread stack" Literal.String.Double
''       Text.Whitespace
'off'    Text
''       Text.Whitespace
'\\n'    Literal.String.Escape

'\t\t'   Text.Whitespace
'UCS4'    Text
''       Text.Whitespace
"Use UCS4 for unicode support" Literal.String.Double
''       Text.Whitespace
'on'     Text
''       Text.Whitespace
'\\n'    Literal.String.Escape

'\t\t'   Text.Whitespace
'PYMALLOC'
        Text
''       Text.Whitespace

```

```

""Use python\'s internal malloc"" Literal.String.Double
' '      Text.Whitespace
'on'     Text
' '      Text.Whitespace
'\\n'    Literal.String.Escape

'\t\t'   Text.Whitespace
'IPV6'   Text
' '      Text.Whitespace
""Enable IPv6 support"" Literal.String.Double
' '      Text.Whitespace
'on'     Text
' '      Text.Whitespace
'\\n'    Literal.String.Escape

'\t\t'   Text.Whitespace
'FPECTL' Text
' '      Text.Whitespace
""Enable floating point exception handling"" Literal.String.Double
' '      Text.Whitespace
'off'    Text
'\n\n'   Text.Whitespace

'.include <bsd.port.pre.mk>\n' Comment.Preproc

'\n'     Text.Whitespace

'.if ${PYTHON_VERSION} == ${PYTHON_DEFAULT_VERSION}\n' Comment.Preproc

'MLINKS' Name.Variable
'='      Operator
'\t\t'   Text.Whitespace
'${'     Literal.String.Interpol
'PYTHON_VERSION' Name.Variable
'}'      Literal.String.Interpol
'.1'
      Text
' '      Text.Whitespace
'python.1' Text
'\n'     Text.Whitespace

'PLIST_SUB' Name.Variable
'+='     Operator
'\t'     Text.Whitespace
'IF_DEFAULT' Name.Variable
'='      Operator
''''     Literal.String.Double
'\n'     Text.Whitespace

```

```

'.else\n'    Comment.Preproc

'PLIST_SUB' Name.Variable
'+='        Operator
'\t'        Text.Whitespace
'IF_DEFAULT' Name.Variable
'='          Operator
'"@comment "' Literal.String.Double
'\n'        Text.Whitespace

'.endif\n'   Comment.Preproc

'\n'        Text.Whitespace

'# workaround for a bug in base curses.h.\n' Comment

'CFLAGS'     Name.Variable
'+='          Operator
'\t'          Text.Whitespace
'-D__wchar_t' Text
'='           Operator
'wchar_t'     Text
'\n'          Text.Whitespace

'\n'          Text.Whitespace

'.if !defined(WITHOUT_THREADS)\n' Comment.Preproc

'CONFIGURE_ARGS' Name.Variable
'+='            Operator
'\t'            Text.Whitespace
'--with-threads'
Text
'\n'            Text.Whitespace

'CFLAGS'       Name.Variable
'+='           Operator
'\t\t'         Text.Whitespace
'${'           Literal.String.Interpol
'PTHREAD_CFLAGS' Name.Variable
'}'            Literal.String.Interpol
'\n'           Text.Whitespace

'.if defined(WITHOUT_HUGE_STACK_SIZE)\n' Comment.Preproc

'CFLAGS'       Name.Variable
'+='           Operator

```

```

'\t\t'    Text.Whitespace
'-DTHREAD_STACK_SIZE' Text
'='       Operator
'0x20000' Text
'\n'      Text.Whitespace

'.else\n'  Comment.Preproc

'CFLAGS'   Name.Variable
'+='       Operator
'\t\t'    Text.Whitespace
'-DTHREAD_STACK_SIZE' Text
'='       Operator
'0x100000' Text
'\n'      Text.Whitespace

'.endif # defined(WITHOUT_HUGE_STACK_SIZE)\n' Comment.Preproc

'CONFIGURE_ENV' Name.Variable
'+='       Operator
'\t\t'    Text.Whitespace
'LDFLAGS'  Name.Variable
'='       Operator
""         Literal.String.Double
'${'      Literal.String.Interpol
'PTHREAD_LIBS'
Name.Variable
'}'       Literal.String.Interpol
''        Literal.String.Double
'${'      Literal.String.Interpol
'LDFLAGS'  Name.Variable
'}'       Literal.String.Interpol
""         Literal.String.Double
'\n'      Text.Whitespace

'.else\n'  Comment.Preproc

'CONFIGURE_ARGS' Name.Variable
'+='       Operator
'\t'       Text.Whitespace
'--without-threads' Text
'\n'      Text.Whitespace

'.if defined(LDFLAGS)\n' Comment.Preproc

'CONFIGURE_ENV' Name.Variable
'+='       Operator
'\t\t'    Text.Whitespace

```

```

'LDFLAGS' Name.Variable
'='      Operator
'''      Literal.String.Double
'${'     Literal.String.Interpol
'LDFLAGS' Name.Variable
'}'      Literal.String.Interpol
'''      Literal.String.Double
'\n'     Text.Whitespace

'.endif # defined(LDFLAGS)\n' Comment.Preproc

'.endif # !defined(WITHOUT_THREADS)\n' Comment.Preproc

'\n'     Text.Whitespace

'.if !defined(WITHOUT_UCS4) && !defined(WITH_UCS2)\n'
Comment.Preproc

'CONFIGURE_ARGS' Name.Variable
'+='     Operator
'\t'     Text.Whitespace
'--enable-unicode' Text
'='      Operator
'ucs4'   Text
'\n'     Text.Whitespace

'.endif\n' Comment.Preproc

'\n'     Text.Whitespace

'.if defined(WITHOUT_PYMALLOC)\n' Comment.Preproc

'CONFIGURE_ARGS' Name.Variable
'+='     Operator
'      ' Text.Whitespace
'--without-pymalloc' Text
'\n'     Text.Whitespace

'.endif\n' Comment.Preproc

'\n'     Text.Whitespace

'.if ${ARCH} == i386\n' Comment.Preproc

'PLIST_SUB' Name.Variable
'+='     Operator
'\t'     Text.Whitespace
'X86_ONLY' Name.Variable

```

```

'='      Operator
''''     Literal.String.Double
'\n'     Text.Whitespace

'.else\n'  Comment.Preproc

'PLIST_SUB' Name.Variable
'+='      Operator
'\t'      Text.Whitespace
'X86_ONLY' Name.Variable
'='       Operator
'''@comment ''' Literal.String.Double
'\n'      Text.Whitespace

'.endif\n'
    Comment.Preproc

'.if ${ARCH} == amd64 || ${ARCH} == ia64 || ${ARCH} == sparc64 || ${ARCH} == alpha\n' Comment.Preproc

'PLIST_SUB' Name.Variable
'+='      Operator
' '       Text.Whitespace
'32BIT_ONLY' Name.Variable
'='       Operator
'''@comment ''' Literal.String.Double
'\n'      Text.Whitespace

'.else\n'  Comment.Preproc

'PLIST_SUB' Name.Variable
'+='      Operator
' '       Text.Whitespace
'32BIT_ONLY' Name.Variable
'='       Operator
''''     Literal.String.Double
'\n'      Text.Whitespace

'.endif\n'  Comment.Preproc

'.if ${ARCH} == sparc64\n' Comment.Preproc

'CFLAGS'  Name.Variable
'+='      Operator
' '       Text.Whitespace
'-DPYTHON_DEFAULT_RECURSION_LIMIT' Text
'='       Operator
'900'     Literal.Number
'\n'      Text.Whitespace

```



```

'.endif\n'    Comment.Preproc

'\n'         Text.Whitespace

'.if !exists(/usr/bin/ypcat) # the world with NO_NIS\n' Comment.Preproc

'PLIST_SUB'  Name.Variable
'+='         Operator
'\t'         Text.Whitespace
'NO_NIS'     Name.Variable
'='          Operator
'"@comment"' Literal.String.Double
'\n'         Text.Whitespace

'.else\n'     Comment.Preproc

'PLIST_SUB'  Name.Variable
'+='         Operator
'\t'         Text.Whitespace
'NO_NIS'     Name.Variable
'='          Operator
'"'"'        Literal.String.Double
'\n'         Text.Whitespace

'.endif\n'    Comment.Preproc

'\n'         Text.Whitespace

'.if !defined(WITHOUT_IPV6)\n' Comment.Preproc

'CONFIGURE_ARGS' Name.Variable
'+='         Operator
' '          Text.Whitespace
'--enable-ipv6' Text
'\n'         Text.Whitespace

'.else\n'     Comment.Preproc

'CONFIGURE_ARGS' Name.Variable
'+='         Operator
' '          Text.Whitespace
'--disable-ipv6' Text
'\n'         Text.Whitespace

'.endif\n'    Comment.Preproc

```

```

'\n'      Text.Whitespace

'.if defined(WITH_FPECTL)\n' Comment.Preproc

'CONFIGURE_ARGS' Name.Variable
'+='      Operator
' '       Text.Whitespace
'--with-fpectl'
Text
'\n'      Text.Whitespace

'.endif\n' Comment.Preproc

'\n'      Text.Whitespace

'.if ${OSVERSION} >= 700000\n' Comment.Preproc

'PLATFORMS' Name.Variable
'='       Operator
'plat-freebsd4' Text
' '       Text.Whitespace
'plat-freebsd5' Text
' '       Text.Whitespace
'plat-freebsd6' Text
'\n'      Text.Whitespace

'.elif ${OSVERSION} >= 600000\n' Comment.Preproc

'PLATFORMS' Name.Variable
'='       Operator
'plat-freebsd4' Text
' '       Text.Whitespace
'plat-freebsd5' Text
' '       Text.Whitespace
'plat-freebsd7' Text
'\n'      Text.Whitespace

'.else\n' Comment.Preproc

'PLATFORMS' Name.Variable
'='       Operator
'plat-freebsd4' Text
' '       Text.Whitespace
'plat-freebsd6' Text
' '       Text.Whitespace
'plat-freebsd7' Text
'\n'      Text.Whitespace

```

```

'.endif\n'    Comment.Preproc

'\n'         Text.Whitespace

'pre-patch'  Name.Function
':'          Operator
'\n'         Text.Whitespace

'\t'
    Text.Whitespace
'${'         Literal.String.Interpol
'MKDIR'      Name.Variable
'}'          Literal.String.Interpol
''           Text.Whitespace
'${'         Literal.String.Interpol
'WRKSRC'     Name.Variable
'}'          Literal.String.Interpol
''           Text.Whitespace
'${'         Literal.String.Interpol
'SHARED_WRKSRC' Name.Variable
'}'          Literal.String.Interpol
'/Modules'   Text
'\n\t'       Text.Whitespace
'${'         Literal.String.Interpol
'SED'        Name.Variable
'}'          Literal.String.Interpol
''           Text.Whitespace
'-e'         Text
''           Text.Whitespace
'"1s,^.*$$,#!${PREFIX}/bin/${PYTHON_VERSION},"' Literal.String.Single
''           Text.Whitespace
'\\n'        Literal.String.Escape

'\t\t'       Text.Whitespace
'${'         Literal.String.Interpol
'PATCH_WRKSRC' Name.Variable
'}'          Literal.String.Interpol
'/Tools/scripts/pydoc' Text
''           Text.Whitespace
'>'         Text
''

    Text.Whitespace
'${'         Literal.String.Interpol
'WRKDIR'     Name.Variable
'}'          Literal.String.Interpol
'/pydoc2.5'  Text
'\n\t'       Text.Whitespace
'${'         Literal.String.Interpol

```

```

'SED'      Name.Variable
'}'        Literal.String.Interpol
''         Text.Whitespace
'-e'       Text
''         Text.Whitespace
'''1s,^.*$$,#!${PREFIX}/bin/${PYTHON_VERSION},''' Literal.String.Single
''         Text.Whitespace
'\\n'      Literal.String.Escape

'\t\t'     Text.Whitespace
'${'       Literal.String.Interpol
'PATCH_WKSRC' Name.Variable
'}'        Literal.String.Interpol
'/Tools/scripts/idle' Text
''         Text.Whitespace
'>'        Text
''         Text.Whitespace
'${'       Literal.String.Interpol
'WRKDIR'   Name.Variable
'}'        Literal.String.Interpol
'/idle2.5' Text
'\n\t'     Text.Whitespace
'${'       Literal.String.Interpol
'SED'      Name.Variable
'}'        Literal.String.Interpol
''         Text.Whitespace
'-e'       Text
''         Text.Whitespace
'''1s,^.*$$,#!${PREFIX}/bin/${PYTHON_VERSION},''' Literal.String.Single
''         Text.Whitespace
'\\n'      Literal.String.Escape

'\t\t'     Text.Whitespace
'${'       Literal.String.Interpol
'PATCH_WKSRC' Name.Variable
'}'        Literal.String.Interpol
'/Lib/smtpd.py' Text
''         Text.Whitespace
'>'        Text
''         Text.Whitespace
'${'       Literal.String.Interpol
'WRKDIR'   Name.Variable
'}'        Literal.String.Interpol
'/smtpd2.5.py' Text
'\n\t'     Text.Whitespace
'${'       Literal.String.Interpol
'REINPLACE_CMD' Name.Variable

```

```

'}'      Literal.String.Interpol
''       Text.Whitespace
'-e'     Text
''       Text.Whitespace
'\\n'    Literal.String.Escape

'\t\t'   Text.Whitespace
"s,/usr/doc/python-docs-,{PREFIX}/share/doc/python,g" Literal.String.Single
''       Text.Whitespace
'\\n'    Literal.String.Escape

'\t\t'
    Text.Whitespace
'${'     Literal.String.Interpol
'PATCH_WKRSRC' Name.Variable
'}'      Literal.String.Interpol
'/Lib/pydoc.py' Text
'\n\t'   Text.Whitespace
'${'     Literal.String.Interpol
'REINPLACE_CMD' Name.Variable
'}'      Literal.String.Interpol
''       Text.Whitespace
'-e'     Text
''       Text.Whitespace
'\\n'    Literal.String.Escape

'\t\t'   Text.Whitespace
's|^\\( *prefixes = .*\\)\\]$$|\\1, "${X11BASE}"|g" Literal.String.Single
''       Text.Whitespace
'\\n'    Literal.String.Escape

'\t\t'   Text.Whitespace
'${'     Literal.String.Interpol
'PATCH_WKRSRC' Name.Variable
'}'      Literal.String.Interpol
'/Lib/site.py' Text
'\n\t'   Text.Whitespace
'${'     Literal.String.Interpol
'REINPLACE_CMD' Name.Variable
'}'      Literal.String.Interpol
''       Text.Whitespace
'-e'     Text
''       Text.Whitespace
'\\n'    Literal.String.Escape

'\t\t'
    Text.Whitespace
"s|^\\t\\(\\.\\.ASDLGEN.*\\)$$|t${TRUE}|g" Literal.String.Single

```

```

''      Text.Whitespace
'\\n'   Literal.String.Escape

'\t\t'  Text.Whitespace
'${'    Literal.String.Interpol
'PATCH_WKRSRC' Name.Variable
'}'     Literal.String.Interpol
'/Makefile.pre.in' Text
'\n\n\t' Text.Whitespace
'${'    Literal.String.Interpol
'REINPLACE_CMD' Name.Variable
'}'     Literal.String.Interpol
''      Text.Whitespace
'-e'    Text
''      Text.Whitespace
'\\n'   Literal.String.Escape

'\t\t'  Text.Whitespace
"'s|*\\(\\.INSTALL_SCRIPT.*\\)python-config$$|#port \\1|'" Literal.String.Single
''      Text.Whitespace
'\\n'   Literal.String.Escape

'\t\t'  Text.Whitespace
'${'    Literal.String.Interpol
'PATCH_WKRSRC' Name.Variable
'}'     Literal.String.Interpol
'/Makefile.pre.in' Text
'\n\n\t' Text.Whitespace
'${'    Literal.String.Interpol
'SED'   Name.Variable
'}'
    Literal.String.Interpol
''      Text.Whitespace
'-e'    Text
''      Text.Whitespace
"'s|^#!.*#!${PREFIX}/bin/${PYTHON_VERSION}|'" Literal.String.Single
''      Text.Whitespace
'\\n'   Literal.String.Escape

'\t\t'  Text.Whitespace
'${'    Literal.String.Interpol
'PATCH_WKRSRC' Name.Variable
'}'     Literal.String.Interpol
'/Misc/python-config.in' Text
''      Text.Whitespace
'>'    Text
''      Text.Whitespace
'${'    Literal.String.Interpol

```

```

'WRKDIR'    Name.Variable
'}'         Literal.String.Interpol
 '/'        Text
'${'        Literal.String.Interpol
'PYTHON_VERSION' Name.Variable
'}'         Literal.String.Interpol
'-config'   Text
'\n\t'      Text.Whitespace
'${'        Literal.String.Interpol
'SED'       Name.Variable
'}'         Literal.String.Interpol
''          Text.Whitespace
'-e'        Text
''          Text.Whitespace
'''s|^#!.*|#!${PREFIX}/bin/${PYTHON_VERSION:S/thon/thon-shared/}|'''
Literal.String.Single
''          Text.Whitespace
'\\n'       Literal.String.Escape

'\t\t'      Text.Whitespace
'${'        Literal.String.Interpol
'PATCH_WKSRC' Name.Variable
'}'         Literal.String.Interpol
'/Misc/python-config.in' Text
''          Text.Whitespace
'>'        Text
''          Text.Whitespace
'${'        Literal.String.Interpol
'WRKDIR'    Name.Variable
'}'         Literal.String.Interpol
 '/'        Text
'${'        Literal.String.Interpol
'PYTHON_VERSION' Name.Variable
':'         Punctuation
'S'         Name.Variable
'/thon/thon-shared/' Punctuation
'}'         Literal.String.Interpol
'-config'   Text
'\n\n'      Text.Whitespace

'.if defined(WITH_FPECTL) && ${ARCH} == i386\n' Comment.Preproc

'\t'        Text.Whitespace
'${'        Literal.String.Interpol
'MKDIR'     Name.Variable
'}'         Literal.String.Interpol
''          Text.Whitespace
'${'        Literal.String.Interpol

```

```

'WRKSRC'    Name.Variable
'}'
    Literal.String.Interpol
'/Modules'  Text
'\n\t'     Text.Whitespace
'${'       Literal.String.Interpol
'ECHO'     Name.Variable
'}'        Literal.String.Interpol
''         Text.Whitespace
"'fpectl fpectlmodule.c'" Literal.String.Double
''         Text.Whitespace
'>>'      Text
''         Text.Whitespace
'${'       Literal.String.Interpol
'WRKSRC'   Name.Variable
'}'        Literal.String.Interpol
'/Modules/Setup.dist' Text
'\n'      Text.Whitespace

'.endif\n' Comment.Preproc

'\n'      Text.Whitespace

'post-configure' Name.Function
':'       Operator
'\n'      Text.Whitespace

'\t'      Text.Whitespace
'${'      Literal.String.Interpol
'TAR'     Name.Variable
'}'       Literal.String.Interpol
''        Text.Whitespace
'-C'      Text
''        Text.Whitespace
'${'      Literal.String.Interpol
'WRKSRC'  Name.Variable
'}'       Literal.String.Interpol
''        Text.Whitespace
'-cf'
    Text
''        Text.Whitespace
'-'       Text
''        Text.Whitespace
':'       Text
''        Text.Whitespace
'|'       Punctuation
''        Text.Whitespace
'${'      Literal.String.Interpol

```



```

'TAR'      Name.Variable
'}'        Literal.String.Interpol
''         Text.Whitespace
'-C'       Text
''         Text.Whitespace
'${'       Literal.String.Interpol
'SHARED_WKSRC' Name.Variable
'}'        Literal.String.Interpol
''         Text.Whitespace
'-xf'      Text
''         Text.Whitespace
'-'        Text
'\n\t'     Text.Whitespace
'${'       Literal.String.Interpol
'LN'       Name.Variable
'}'        Literal.String.Interpol
''         Text.Whitespace
'-sf'      Text
''         Text.Whitespace
'${'       Literal.String.Interpol
'PYTHON_WKSRC' Name.Variable
'}'        Literal.String.Interpol
'/Lib'     Text
''         Text.Whitespace
'${'       Literal.String.Interpol
'WRKSRC'
    Name.Variable
'}'        Literal.String.Interpol
'/Lib'     Text
'\n\t'     Text.Whitespace
'${'       Literal.String.Interpol
'SED'      Name.Variable
'}'        Literal.String.Interpol
''         Text.Whitespace
'-e'       Text
''         Text.Whitespace
"s,^\\(LDLIBRARY=\\).*$$,\\1libpython$$$(VERSION).so," Literal.String.Single
''         Text.Whitespace
'\\n'      Literal.String.Escape

'\t\t'     Text.Whitespace
'-e'       Text
''         Text.Whitespace
"s,^\\(BLDLIBRARY=\\).*$$,\\1-L. -lpython$$$(VERSION)," Literal.String.Single
''         Text.Whitespace
'\\n'      Literal.String.Escape

'\t\t'     Text.Whitespace

```

```

'-e'      Text
''        Text.Whitespace
"s,^\\(CFLAGSFORSHARED=\\).*$$,\\1$$$(CCSHARED)," Literal.String.Single
''        Text.Whitespace
'\\n'     Literal.String.Escape

't\t'     Text.Whitespace
'-e'      Text
''        Text.Whitespace
"s,^\\(Makefile Modules/config.c:.*)\\)Makefile.pre,\\1,"
Literal.String.Single
''        Text.Whitespace
'\\n'     Literal.String.Escape

't\t'     Text.Whitespace
'-e'      Text
''        Text.Whitespace
"s,^\\((BUILDPYTHON)\\:.*\\).(LIBRARY),\\1," Literal.String.Single
''        Text.Whitespace
'\\n'     Literal.String.Escape

't\t'     Text.Whitespace
'-e'      Text
''        Text.Whitespace
"s,^\\((BUILDPYTHON):.*\\).(LIBRARY),\\1," Literal.String.Single
''        Text.Whitespace
'\\n'     Literal.String.Escape

't\t'     Text.Whitespace
'-e'      Text
''        Text.Whitespace
"s,^\\((BUILDPYTHON):.*\\).(LIBRARY),\\1," Literal.String.Single
''        Text.Whitespace
'\\n'     Literal.String.Escape

't\t'     Text.Whitespace
'${'      Literal.String.Interpol
'WRKSR'   Name.Variable
'}'       Literal.String.Interpol
'/Makefile' Text
''        Text.Whitespace
'>'      Text
''        Text.Whitespace
'${'      Literal.String.Interpol
'SHARED_WRKSR' Name.Variable
'}'       Literal.String.Interpol
'/Makefile' Text
'\n\n'    Text.Whitespace

'pre-build' Name.Function
':'       Operator
'\n'      Text.Whitespace

't'       Text.Whitespace

```

'cd' Name.Builtin
 '' Text.Whitespace
 '\${' Literal.String.Interpol
 'SHARED_WKSRC' Name.Variable
 '}' Literal.String.Interpol
 ';' Punctuation
 '' Text.Whitespace
 '\\n' Literal.String.Escape

'\t' Text.Whitespace
 '\${' Literal.String.Interpol
 'SETENV' Name.Variable
 '}' Literal.String.Interpol
 '' Text.Whitespace
 '\${' Literal.String.Interpol
 'MAKE_ENV' Name.Variable
 '}' Literal.String.Interpol
 '' Text.Whitespace
 '\${' Literal.String.Interpol
 'MAKE' Name.Variable
 '}' Literal.String.Interpol
 '' Text.Whitespace
 'lib' Text
 '\${' Literal.String.Interpol
 'PYTHON_VERSION' Name.Variable
 '}' Literal.String.Interpol
 '.so' Text
 '' Text.Whitespace
 'python' Text
 ';' Punctuation
 '' Text.Whitespace
 '\\n' Literal.String.Escape

'\t' Text.Whitespace
 '\${' Literal.String.Interpol
 'LN' Name.Variable
 '}' Literal.String.Interpol
 '' Text.Whitespace
 '-f' Text
 '' Text.Whitespace
 'lib' Text
 '\${' Literal.String.Interpol
 'PYTHON_VERSION' Name.Variable
 '}' Literal.String.Interpol
 '.so' Text
 '' Text.Whitespace
 'lib' Text

```

'${'      Literal.String.Interpol
'PYTHON_VERSION' Name.Variable
'}'       Literal.String.Interpol
'.so.1'   Text
';'       Punctuation
''        Text.Whitespace
'\\n'     Literal.String.Escape

'\t'      Text.Whitespace
'${'      Literal.String.Interpol
'LN'      Name.Variable
'}'       Literal.String.Interpol
''        Text.Whitespace
'-f'      Text
''        Text.Whitespace
'python'  Text
''        Text.Whitespace
'${'      Literal.String.Interpol
'PYTHON_VERSION' Name.Variable
':'       Punctuation
'S'       Name.Variable
'/thon/thon-shared/' Punctuation
'}'       Literal.String.Interpol
'\n\n'    Text.Whitespace

'pre-su-install' Name.Function
':'       Operator
'\n'      Text.Whitespace

'.for platform in ${PLATFORMS}\n' Comment.Preproc

'\t'      Text.Whitespace
'${'      Literal.String.Interpol
'MKDIR'   Name.Variable
'}'       Literal.String.Interpol
''        Text.Whitespace
'${'      Literal.String.Interpol
'PYTHONPREFIX_LIBDIR' Name.Variable
'}'       Literal.String.Interpol
'/'       Text
'${'      Literal.String.Interpol
'platform' Name.Variable
'}'       Literal.String.Interpol
'\n'      Text.Whitespace

'.for file in IN.py regen\n' Comment.Preproc

```

'\t' Text.Whitespace
 '\${' Literal.String.Interpol
 'INSTALL_DATA' Name.Variable
 '}' Literal.String.Interpol
 '' Text.Whitespace
 '\${' Literal.String.Interpol
 'WRKSRC' Name.Variable
 '}'
 Literal.String.Interpol
 '/Lib/' Text
 '\${' Literal.String.Interpol
 'platform' Name.Variable
 '}' Literal.String.Interpol
 '/' Text
 '\${' Literal.String.Interpol
 'file' Name.Variable
 '}' Literal.String.Interpol
 '' Text.Whitespace
 '\\n' Literal.String.Escape

 '\t\t' Text.Whitespace
 '\${' Literal.String.Interpol
 'PYTHONPREFIX_LIBDIR' Name.Variable
 '}' Literal.String.Interpol
 '/' Text
 '\${' Literal.String.Interpol
 'platform' Name.Variable
 '}' Literal.String.Interpol
 '/' Text
 '\n' Text.Whitespace

 '.endfor\n' Comment.Preproc

 '.endfor\n' Comment.Preproc

 '\n' Text.Whitespace

 'pre-install' Name.Function
 ':' Operator
 '\n' Text.Whitespace

 '\t' Text.Whitespace
 '\${' Literal.String.Interpol
 'CAT' Name.Variable
 '}' Literal.String.Interpol
 '' Text.Whitespace
 '\${'

```

    Literal.String.Interpol
'PLIST_TEMPLATE' Name.Variable
'}'      Literal.String.Interpol
''       Text.Whitespace
'|'      Punctuation
''       Text.Whitespace
'${'     Literal.String.Interpol
'AWK'    Name.Variable
'}'      Literal.String.Interpol
''       Text.Whitespace
'\{ print $$0; } \\n\\t/LIBDIR.*\\.py$$/ && !\\/bad/ { print $$0 "o"; print $$0 "c"; }\' Literal.String.Single
'\t'     Text.Whitespace
'>'     Text
''       Text.Whitespace
'${'     Literal.String.Interpol
'PLIST'   Name.Variable
'}'      Literal.String.Interpol
'\n\n'   Text.Whitespace

```

```

"\t@# if openssl 0.9.8 is detected, _sha{256,512} module won't be installed\n" Comment

```

```

'\t'     Text.Whitespace
'('      Operator
'['      Operator
''       Text.Whitespace
'-f'     Text
''       Text.Whitespace
'${'     Literal.String.Interpol
'WRKSRC'  Name.Variable
'}'      Literal.String.Interpol
'/without_own_sha'
Text
''       Text.Whitespace
']'      Operator
''       Text.Whitespace
'&&'     Operator
''       Text.Whitespace
'\\n'    Literal.String.Escape

'\t\t'   Text.Whitespace
'${'     Literal.String.Interpol
'GREP'    Name.Variable
'}'      Literal.String.Interpol
''       Text.Whitespace
'-v'     Text
''       Text.Whitespace
"'lib-dynload/_sha'" Literal.String.Single
''       Text.Whitespace

```

```

'${'      Literal.String.Interpol
'PLIST'    Name.Variable
'}'       Literal.String.Interpol
''        Text.Whitespace
'>'       Text
''        Text.Whitespace
'${'      Literal.String.Interpol
'PLIST'    Name.Variable
'}'       Literal.String.Interpol
'.tmp'     Text
''        Text.Whitespace
'&&'      Operator
''        Text.Whitespace
'\\n'     Literal.String.Escape

'\t\t'    Text.Whitespace
'${'      Literal.String.Interpol
'CAT'     Name.Variable
'}'
          Literal.String.Interpol
''        Text.Whitespace
'${'      Literal.String.Interpol
'PLIST'    Name.Variable
'}'       Literal.String.Interpol
'.tmp'     Text
''        Text.Whitespace
'>'       Text
''        Text.Whitespace
'${'      Literal.String.Interpol
'PLIST'    Name.Variable
'}'       Literal.String.Interpol
')'        Operator
''        Text.Whitespace
'|"       Operator
''        Text.Whitespace
'${'      Literal.String.Interpol
'TRUE'     Name.Variable
'}'       Literal.String.Interpol
'\n\n'    Text.Whitespace

'post-install' Name.Function
':'        Operator
'\n'      Text.Whitespace

'\t@# install config providers\n' Comment

'\t'      Text.Whitespace
'${'      Literal.String.Interpol

```

```

'INSTALL_SCRIPT' Name.Variable
'}'      Literal.String.Interpol
''       Text.Whitespace
'${'     Literal.String.Interpol
'WRKDIR'  Name.Variable
'}'      Literal.String.Interpol
'/'
    Text
'${'     Literal.String.Interpol
'PYTHON_VERSION' Name.Variable
'}'      Literal.String.Interpol
'-config' Text
''       Text.Whitespace
'${'     Literal.String.Interpol
'PREFIX'  Name.Variable
'}'      Literal.String.Interpol
'/bin'    Text
'\n\t'   Text.Whitespace
'${'     Literal.String.Interpol
'INSTALL_SCRIPT' Name.Variable
'}'      Literal.String.Interpol
''       Text.Whitespace
'${'     Literal.String.Interpol
'WRKDIR'  Name.Variable
'}'      Literal.String.Interpol
'/'       Text
'${'     Literal.String.Interpol
'PYTHON_VERSION' Name.Variable
':'      Punctuation
'S'      Name.Variable
'/thon/thon-shared/' Punctuation
'}'      Literal.String.Interpol
'-config' Text
''       Text.Whitespace
'${'     Literal.String.Interpol
'PREFIX'  Name.Variable
'}'      Literal.String.Interpol
'/bin'    Text
'\n\n'   Text.Whitespace

\t@#
shared version of executable and library\n' Comment

\t'      Text.Whitespace
'${'     Literal.String.Interpol
'INSTALL_PROGRAM' Name.Variable
'}'      Literal.String.Interpol
''       Text.Whitespace

```


'\${' Literal.String.Interpol
 'SHARED_WKSR' Name.Variable
 '}' Literal.String.Interpol
 '/lib' Text
 '\${' Literal.String.Interpol
 'PYTHON_VERSION' Name.Variable
 '}' Literal.String.Interpol
 '.so.1' Text
 '' Text.Whitespace
 '\\n' Literal.String.Escape

'\t\t' Text.Whitespace
 '\${' Literal.String.Interpol
 'PREFIX' Name.Variable
 '}' Literal.String.Interpol
 '/lib' Text
 '\n\t' Text.Whitespace
 'cd' Name.Builtin
 '' Text.Whitespace
 '\${' Literal.String.Interpol
 'PREFIX' Name.Variable
 '}' Literal.String.Interpol
 '/lib' Text
 ';' Punctuation
 '' Text.Whitespace
 '\${' Literal.String.Interpol
 'LN'

 Name.Variable
 '}' Literal.String.Interpol
 '' Text.Whitespace
 '-sf' Text
 '' Text.Whitespace
 'lib' Text
 '\${' Literal.String.Interpol
 'PYTHON_VERSION' Name.Variable
 '}' Literal.String.Interpol
 '.so.1' Text
 '' Text.Whitespace
 '\\n' Literal.String.Escape

'\t\t' Text.Whitespace
 'lib' Text
 '\${' Literal.String.Interpol
 'PYTHON_VERSION' Name.Variable
 '}' Literal.String.Interpol
 '.so' Text
 '\n\t' Text.Whitespace
 '\${' Literal.String.Interpol

'LN' Name.Variable
 '}' Literal.String.Interpol
 '' Text.Whitespace
 '-sf' Text
 '' Text.Whitespace
 '\${' Literal.String.Interpol
 'PREFIX' Name.Variable
 '}' Literal.String.Interpol
 '/lib/lib' Text
 '\${' Literal.String.Interpol
 'PYTHON_VERSION' Name.Variable
 '}' Literal.String.Interpol
 '.so' Text
 ''
 Text.Whitespace
 '\${' Literal.String.Interpol
 'PYTHONPREFIX_LIBDIR' Name.Variable
 '}' Literal.String.Interpol
 '/config' Text
 '\n\t' Text.Whitespace
 '\${' Literal.String.Interpol
 'INSTALL_PROGRAM' Name.Variable
 '}' Literal.String.Interpol
 '' Text.Whitespace
 '\\n' Literal.String.Escape

 '\t\t' Text.Whitespace
 '\${' Literal.String.Interpol
 'SHARED_WKSRRC' Name.Variable
 '}' Literal.String.Interpol
 '/' Text
 '\${' Literal.String.Interpol
 'PYTHON_VERSION' Name.Variable
 ':' Punctuation
 'S' Name.Variable
 '/thon/thon-shared/' Punctuation
 '}' Literal.String.Interpol
 '' Text.Whitespace
 '\\n' Literal.String.Escape

 '\t\t' Text.Whitespace
 '\${' Literal.String.Interpol
 'PREFIX' Name.Variable
 '}' Literal.String.Interpol
 '/bin' Text
 '\n\n' Text.Whitespace

 '\t@# additional files installing by ports\n'

Comment

```
'\t'      Text.Whitespace
'${'      Literal.String.Interpol
'INSTALL_SCRIPT' Name.Variable
'}'       Literal.String.Interpol
''        Text.Whitespace
'${'      Literal.String.Interpol
'WRKDIR'   Name.Variable
'}'       Literal.String.Interpol
'/pydoc2.5' Text
''        Text.Whitespace
'${'      Literal.String.Interpol
'WRKDIR'   Name.Variable
'}'       Literal.String.Interpol
'/idle2.5' Text
''        Text.Whitespace
'\\n'      Literal.String.Escape

'\t\t'    Text.Whitespace
'${'      Literal.String.Interpol
'WRKDIR'   Name.Variable
'}'       Literal.String.Interpol
'/smtpd2.5.py' Text
''        Text.Whitespace
'${'      Literal.String.Interpol
'PREFIX'   Name.Variable
'}'       Literal.String.Interpol
'/bin'     Text
'\n\t'    Text.Whitespace
'@'        Text
'${'      Literal.String.Interpol
'MKDIR'    Name.Variable
'}'       Literal.String.Interpol
''        Text.Whitespace
'${'
    Literal.String.Interpol
'MANPREFIX' Name.Variable
'}'       Literal.String.Interpol
'/man/man1' Text
'\n\t'    Text.Whitespace
'${'      Literal.String.Interpol
'INSTALL_MAN' Name.Variable
'}'       Literal.String.Interpol
''        Text.Whitespace
'${'      Literal.String.Interpol
'PYTHON_WKSRC' Name.Variable
'}'       Literal.String.Interpol
```

```

'/Misc/python.man' Text
''      Text.Whitespace
'\\n'   Literal.String.Escape

'\t\t'  Text.Whitespace
'${'    Literal.String.Interpol
'MANPREFIX' Name.Variable
'}'     Literal.String.Interpol
'/man/man1/' Text
'${'    Literal.String.Interpol
'PYTHON_VERSION' Name.Variable
'}'     Literal.String.Interpol
'.1'    Text
'\n\n'  Text.Whitespace

'.if ${PYTHON_VERSION} == ${PYTHON_DEFAULT_VERSION}\n' Comment.Preproc

'\t'    Text.Whitespace
'for'   Keyword
''      Text.Whitespace
'f'     Text
''      Text.Whitespace
'in'
      Keyword
''      Text.Whitespace
'${'    Literal.String.Interpol
'BIN_SCRIPTS' Name.Variable
'}'     Literal.String.Interpol
';'     Punctuation
''      Text.Whitespace
'do'    Keyword
''      Text.Whitespace
'\\n'   Literal.String.Escape

'\t\t'  Text.Whitespace
'TARGET' Name.Variable
'='     Operator
''      Literal.String.Backtick
'${'    Literal.String.Interpol
'ECHO_CMD' Name.Variable
'}'     Literal.String.Interpol
''      Text.Whitespace
'$$'    Name.Variable
'f'     Text
''      Text.Whitespace
'|'     Punctuation
''      Text.Whitespace
'${'    Literal.String.Interpol

```

'SED'	Name.Variable
'}'	Literal.String.Interpol
' '	Text.Whitespace
'-E'	Text
' '	Text.Whitespace
'\${'	Literal.String.Interpol
'BINLINKS_SUB'	Name.Variable
'}'	Literal.String.Interpol
'`'	Literal.String.Backtick
';	Punctuation
' '	Text.Whitespace
'\\n'	Literal.String.Escape
'\t'	Text.Whitespace
'cd'	Name.Builtin
' '	Text.Whitespace
'\${'	Literal.String.Interpol
'PREFIX'	Name.Variable
'}'	Literal.String.Interpol
'/bin'	Text
' '	Text.Whitespace
'&&'	Operator
' '	Text.Whitespace
'\${'	Literal.String.Interpol
'LN'	Name.Variable
'}'	Literal.String.Interpol
' '	Text.Whitespace
'-f'	Text
' '	Text.Whitespace
'\$\$'	Name.Variable
'TARGET'	Text
' '	Text.Whitespace
'\$\$'	Name.Variable
'f'	Text
';	Punctuation
' '	Text.Whitespace
'\\n'	Literal.String.Escape
'\t'	Text.Whitespace
'done'	Keyword
'\n'	Text.Whitespace
'endif\n'	Comment.Preproc
'\n'	Text.Whitespace
'if !defined(NOPORTDOCS)\n'	Comment.Preproc

```

\t'      Text.Whitespace
'@'      Text
'${'     Literal.String.Interpol
'MKDIR'   Name.Variable
'}'      Literal.String.Interpol
''       Text.Whitespace
'${'     Literal.String.Interpol
'TOOLSDIR' Name.Variable
'}'      Literal.String.Interpol
'\n\t'   Text.Whitespace
'@cd'     Text
''       Text.Whitespace
'${'     Literal.String.Interpol
'PYTHON_WKSRC' Name.Variable
'}'      Literal.String.Interpol
';'      Punctuation
''       Text.Whitespace
'${'     Literal.String.Interpol
'TAR'     Name.Variable
'}'      Literal.String.Interpol
''       Text.Whitespace
'-cf'     Text
''       Text.Whitespace
'-'       Text
''       Text.Whitespace
'Tools'   Text
''       Text.Whitespace
'|'       Punctuation
''       Text.Whitespace
'\\n'     Literal.String.Escape

'\t\t'   Text.Whitespace
'('       Operator
'cd'     Name.Builtin
''       Text.Whitespace
'${'     Literal.String.Interpol
'TOOLSDIR' Name.Variable
'}'      Literal.String.Interpol
';'      Punctuation
''       Text.Whitespace
'${'     Literal.String.Interpol
'TAR'     Name.Variable
'}'      Literal.String.Interpol
''       Text.Whitespace
'-xf'     Text

```

```

''      Text.Whitespace
'-'      Text
')'      Operator
'\n\t'   Text.Whitespace
'@'      Text
'${'     Literal.String.Interpol
'MKDIR'   Name.Variable
'}'      Literal.String.Interpol
''      Text.Whitespace
'${'     Literal.String.Interpol
'DEMODIR' Name.Variable
'}'      Literal.String.Interpol
'\n\t'   Text.Whitespace
'@cd'     Text
''      Text.Whitespace
'${'     Literal.String.Interpol
'PYTHON_WKSRC' Name.Variable
'}'      Literal.String.Interpol
'/Demo'   Text
';'      Punctuation
''      Text.Whitespace
'${'     Literal.String.Interpol
'TAR'     Name.Variable
'}'
        Literal.String.Interpol
''      Text.Whitespace
'-cf'     Text
''      Text.Whitespace
'-'      Text
''      Text.Whitespace
'*'      Text
''      Text.Whitespace
'|'      Punctuation
''      Text.Whitespace
'\\n'     Literal.String.Escape

'\t\t'   Text.Whitespace
'('      Operator
'cd'     Name.Builtin
''      Text.Whitespace
'${'     Literal.String.Interpol
'DEMODIR' Name.Variable
'}'      Literal.String.Interpol
';'      Punctuation
''      Text.Whitespace
'${'     Literal.String.Interpol
'TAR'     Name.Variable
'}'      Literal.String.Interpol

```

```

''      Text.Whitespace
'-xf'   Text
''      Text.Whitespace
'-'     Text
')'     Operator
'\n'    Text.Whitespace

'.endif\n' Comment.Preproc

'\n\t'  Text.Whitespace
'@'     Text
'${'    Literal.String.Interpol
'CAT'   Name.Variable
'}'
    Literal.String.Interpol
''      Text.Whitespace
'${'    Literal.String.Interpol
'PKGMESSAGE' Name.Variable
'}'     Literal.String.Interpol
'\n\n'  Text.Whitespace

'.include <bsd.port.post.mk>\n' Comment.Preproc
# Step 1 of 3: from Hakaru to Maple LO (linear operator)

toLO := module()
export
ModuleApply := proc(m, $)
    local h;
    h := gensym('h');
    _Env_HakaruSolve := false;
    LO(h, integrate(m, h, []))
end proc;

export
integrate := proc(m, h, loops :: list(name = range) := [], $)
    local x, n, i, res, l, br, m0;

    if m :: known_continuous then
        integrate_known(Int, Ints, 'xx', m, h, loops)
    elif m :: known_discrete then
        integrate_known(Sum, Sums, 'kk', m, h, loops)
    elif m :: 'Ret(anything)' then
        applyintegrand(h, mk_ary(op(1,m), loops))
    elif m :: 'Bind(anything, name, anything)' then
        res := eval(op(3,m), op(2,m) = mk_idx(op(2,m), loops));
        res := eval(Integrand(op(2,m), 'integrate'(res, x, loops)), x=h);
        integrate(op(1,m), res, loops);
    elif m :: 'specfunc(Msum)' and (nops(loops) = 0 or nops(m) = 1) then

```



```

    `+`(op(map(integrate, [op(m)], h, loops)))
  elif m :: 'Weight(anything, anything)' then
    foldl(product,
op(1,m), op(loops)) * integrate(op(2,m), h, loops)
  elif m :: t_pw_or_part then
    Partition:-AppPartOrPw
      ( proc(p)
        if not Partition:-ConditionsDepend(p, lhs~(loops)) then
          Partition:-Pmap(z->integrate(z,h,loops),p)
        end if;
      end proc
    , m, ['no_split_disj']);
  elif m :: t_case and not depends(op(1,m), map(lhs, loops)) then
    subsop(2:=map(proc(b :: Branch(anything, anything))
      eval(subsop(2='integrate'(op(2,b), x, loops),b), x=h)
    end proc,
    op(2,m)),
    m);
  elif m :: 'LO(name, anything)' then
    eval(op(2,m), op(1,m) = h)
  elif m :: 'Plate(nonnegint, name, anything)' then
    # Unroll Plate when the bound is known. We unroll Plate here (instead
    # of unrolling Ints in reduce, for example) because we have no other
    # way to integrate certain Plates, namely those whose
bodies' control
    # flows depend on the index.
    x := mk_sym('pp', h);
    x := [seq(cat(x,i), i=0..op(1,m)-1)];
    if op(1,m) = 0 then
      res := undefined;
    else
      if op(1,m) = 1 then
        res := op(1,x);
      else
        res := idx(x,op(2,m));
      #   res := piecewise(seq(op([op(2,m)=i-1, op(i,x)]), i=2..op(1,m)),
      #   op(1,x));
    end if;
    res := mk_idx(res, loops);
  end if;
  res := applyintegrand(h, mk_ary('ary'(op(1,m), op(2,m), res), loops));
  for i from op(1,m) to 1 by -1 do
    res := integrate(eval(op(3,m), op(2,m)=i-1),
      Integrand(op(i,x), res), loops);
  end do;
  res
  elif m :: 'Plate(anything, name, anything)' then
    integrate(op(3,m), h, [op(2,m)=0..op(1,m)-1, op(loops)])

```

```

elif m :: 'Context(anything, anything)' then
  applyop(integrate, 2, m, h, loops)
elif h :: applicable then
  x := gensym('xa');
  'integrate'(m, Integrant(x,
h(x)), loops)
else
  'procname(_passed)'
end if
end proc;

local
integrate_known := proc(make, makes, var, m, h, loops :: list(name=range), $)
  local x, dens, bds;
  x := mk_sym(var, h);
  dens := density[op(0,m)](op(m));
  bds := bounds[op(0,m)](op(m));
  if loops = [] then
    make(dens(x) * applyintegrand(h, x), x = bds);
  else
    makes(foldl(product, dens(mk_idx(x,loops)), op(loops))
      * applyintegrand(h, x),
      x, bds, loops)
  end if;
end proc;
end module; #toLO
'# Teach Maple (through depends and eval) about our new binding forms.\n' Comment.Single

'# forall bind from 1st arg to 2nd arg.\n' Comment.Single

'# Ints,Sums,ints,sums bind from 2nd arg to 1st arg, and also from each element\n' Comment.Single

'# of the 4th arg to the other elements on the left and to the 3rd arg.\n' Comment.Single

'\n'      Text.Whitespace

`depends/forall` Name
' '      Text.Whitespace
':='     Operator
' '      Text.Whitespace
'proc'   Keyword
'('      Punctuation
'bvar'   Name
';'      Operator
' '      Text.Whitespace
'pred'   Name
';'      Operator

```

```

''      Text.Whitespace
'x'     Name
';'     Operator
''      Text.Whitespace
'$'     Operator
')'     Punctuation
'\n '   Text.Whitespace
'depends' Name
'('     Punctuation
'pred'  Name
';'     Operator
''      Text.Whitespace
'x'     Name
''      Text.Whitespace
'minus'
Keyword
''      Text.Whitespace
'convert' Name.Builtin
'('     Punctuation
'bvar'  Name
';'     Operator
''      Text.Whitespace
''''    Punctuation
'set'   Name
''''    Punctuation
'))'    Punctuation
'\n'    Text.Whitespace

'end'   Keyword
''      Text.Whitespace
'proc'  Keyword
':'     Operator
'\n\n'  Text.Whitespace

`depends/Ints` Name
''      Text.Whitespace
':='    Operator
''      Text.Whitespace
'proc'  Keyword
'('     Punctuation
'body'  Name
';'     Operator
''      Text.Whitespace
'bvar'  Name
';'     Operator
''      Text.Whitespace
'rng'   Name
';'     Operator

```

```

''      Text.Whitespace
'loops' Name
';'     Operator
''      Text.Whitespace
'x'     Name
';'     Operator
''      Text.Whitespace
'y'     Name
';'     Operator
''      Text.Whitespace
'$'
      Operator
')'     Punctuation
'\n '   Text.Whitespace
'local' Keyword
''      Text.Whitespace
'xx'    Name
';'     Operator
''      Text.Whitespace
'i'     Name
';'     Punctuation
'\n '   Text.Whitespace
'if'    Keyword
''      Text.Whitespace
'nargs' Name
''      Text.Whitespace
'='     Operator
''      Text.Whitespace
'5'     Literal.Number.Integer
''      Text.Whitespace
'then'  Keyword
'\n '   Text.Whitespace
'xx'    Name
''      Text.Whitespace
':='    Operator
''      Text.Whitespace
'x'     Name
';'     Punctuation
''      Text.Whitespace
'# y is unused and x lists the variables to look for\n' Comment.Single

```

```

' '      Text.Whitespace
'else'   Keyword
'\n '   Text.Whitespace
'xx'    Name
''      Text.Whitespace
':='    Operator
''      Text.Whitespace

```

```
'y'
    Name
';'      Punctuation
''       Text.Whitespace
'# x is some KB and y lists the variables to look for\n' Comment.Single
```

```
' '      Text.Whitespace
'if'     Keyword
''       Text.Whitespace
'depends' Name
'('      Punctuation
'x'      Name
';'      Operator
''       Text.Whitespace
'y'      Name
')'      Punctuation
''       Text.Whitespace
'then'   Keyword
''       Text.Whitespace
'return' Keyword
''       Text.Whitespace
'true'   Name
''       Text.Whitespace
'end'    Keyword
''       Text.Whitespace
'if'     Keyword
';'      Punctuation
'\n '    Text.Whitespace
'end'    Keyword
''       Text.Whitespace
'if'     Keyword
';'      Punctuation
'\n '    Text.Whitespace
"# don't remove bvar from xx!\n" Comment.Single
```

```
' '      Text.Whitespace
'if'     Keyword
''       Text.Whitespace
'depends' Name
'('      Punctuation
'body'
    Name
';'      Operator
''       Text.Whitespace
'xx'     Name
''       Text.Whitespace
'minus'  Keyword
''       Text.Whitespace
```

'{'	Punctuation
'bvar'	Name
'})'	Punctuation
' '	Text.Whitespace
'then'	Keyword
' '	Text.Whitespace
'return'	Keyword
' '	Text.Whitespace
'true'	Name
' '	Text.Whitespace
'end'	Keyword
' '	Text.Whitespace
'if'	Keyword
','	Punctuation
'\n '	Text.Whitespace
'for'	Keyword
' '	Text.Whitespace
'i'	Name
' '	Text.Whitespace
'from'	Keyword
' '	Text.Whitespace
'nops'	Name.Builtin
'('	Punctuation
'loops'	Name
)'	Punctuation
' '	Text.Whitespace
'to'	Keyword
' '	Text.Whitespace
'1'	Literal.Number.Integer
' '	Text.Whitespace
'by'	Keyword
' '	Text.Whitespace
'_'	
	Operator
'1'	Literal.Number.Integer
' '	Text.Whitespace
'do'	Keyword
'\n '	Text.Whitespace
'if'	Keyword
' '	Text.Whitespace
'depends'	Name
'('	Punctuation
'op'	Name.Builtin
'(['	Punctuation
'i'	Name
','	Operator
'2'	Literal.Number.Integer
']'	Punctuation

'	Operator
'loops'	Name
)'	Punctuation
'	Operator
' '	Text.Whitespace
'xx'	Name
)'	Punctuation
' '	Text.Whitespace
'then'	Keyword
' '	Text.Whitespace
'return'	Keyword
' '	Text.Whitespace
'true'	Name
' '	Text.Whitespace
'end'	Keyword
' '	Text.Whitespace
'if'	Keyword
;	Punctuation
'\n '	Text.Whitespace
'xx'	Name
' '	Text.Whitespace
':='	Operator
' '	Text.Whitespace
'xx'	
	Name
' '	Text.Whitespace
'minus'	Keyword
' '	Text.Whitespace
'{'	Punctuation
'op'	Name.Builtin
'(['	Punctuation
'i'	Name
;	Operator
'1'	Literal.Number.Integer
']'	Punctuation
;	Operator
'loops'	Name
')}';'	Punctuation
'\n '	Text.Whitespace
'end'	Keyword
' '	Text.Whitespace
'do'	Keyword
;	Punctuation
'\n '	Text.Whitespace
'depends'	Name
'('	Punctuation
'rng'	Name
;	Operator

' ' Text.Whitespace
'xx' Name
)' Punctuation
'\n' Text.Whitespace

'end' Keyword
' ' Text.Whitespace
'proc' Keyword
'.' Operator
'\n' Text.Whitespace

`depends/Sums` Name
' ' Text.Whitespace
':= ' Operator
' ' Text.Whitespace
'eval' Name.Builtin
'(' Punctuation
`depends/Ints` Name
)'
Punctuation
'.' Operator
'\n' Text.Whitespace

`depends/ints` Name
' ' Text.Whitespace
':= ' Operator
' ' Text.Whitespace
'eval' Name.Builtin
'(' Punctuation
`depends/Ints` Name
)' Punctuation
'.' Operator
'\n' Text.Whitespace

`depends/sums` Name
' ' Text.Whitespace
':= ' Operator
' ' Text.Whitespace
'eval' Name.Builtin
'(' Punctuation
`depends/Ints` Name
)' Punctuation
'.' Operator
'\n\n' Text.Whitespace

`eval/forall` Name
' ' Text.Whitespace
':= ' Operator


```

''      Text.Whitespace
'proc'  Keyword
'('      Punctuation
'e'      Name
';'      Operator
''      Text.Whitespace
'eqs'   Name
';'      Operator
''      Text.Whitespace
'$'      Operator
')'      Punctuation
'\n '   Text.Whitespace
'local'  Keyword
'
'      Text.Whitespace
'bvar'   Name
';'      Operator
''      Text.Whitespace
'pred'   Name
';'      Punctuation
'\n '   Text.Whitespace
'bvar'   Name
';'      Operator
''      Text.Whitespace
'pred'   Name
''      Text.Whitespace
':='     Operator
''      Text.Whitespace
'op'     Name.Builtin
'('      Punctuation
'e'      Name
');'     Punctuation
'\n '   Text.Whitespace
'eval'   Name.Builtin
'('      Punctuation
'op'     Name.Builtin
'('      Punctuation
'0'      Literal.Number.Integer
';'      Operator
'e'      Name
')'      Punctuation
';'      Operator
''      Text.Whitespace
'eqs'   Name
')('     Punctuation
'BindingTools' Name
':'      Operator
'-'      Operator

```

'generic_evalat' Name
 '(' Punctuation
 'bvar' Name
 ';' Operator
 '' Text.Whitespace
 'pred' Name
 ';' Operator
 '' Text.Whitespace
 'eqs' Name
 '))' Punctuation
 '\n' Text.Whitespace

 'end' Keyword
 '' Text.Whitespace
 'proc' Keyword
 ':' Operator
 '\n\n' Text.Whitespace

`eval/Ints` Name
 '' Text.Whitespace
 ':=' Operator
 '' Text.Whitespace
 'proc' Keyword
 '(' Punctuation
 'e' Name
 ';' Operator
 '' Text.Whitespace
 'eqs' Name
 ';' Operator
 '' Text.Whitespace
 '\$' Operator
 ')' Punctuation
 '\n ' Text.Whitespace
 'local' Keyword
 '' Text.Whitespace
 'body' Name
 ';' Operator
 '' Text.Whitespace
 'bvar' Name
 ';' Operator
 '' Text.Whitespace
 'rng' Name
 ';' Operator
 '' Text.Whitespace
 'loops' Name
 ';' Operator
 '' Text.Whitespace

```

'n'      Name
','      Operator
'
'      Text.Whitespace
'i'      Name
';'      Punctuation
'\n '    Text.Whitespace
'body'   Name
','      Operator
''       Text.Whitespace
'bvar'   Name
','      Operator
''       Text.Whitespace
'rng'    Name
','      Operator
''       Text.Whitespace
'loops'  Name
''       Text.Whitespace
':='     Operator
''       Text.Whitespace
'op'     Name.Builtin
'('      Punctuation
'1'      Literal.Number.Integer
'..'     Punctuation
'4'      Literal.Number.Integer
','      Operator
''       Text.Whitespace
'e'      Name
');'     Punctuation
'\n '    Text.Whitespace
'bvar'   Name
','      Operator
''       Text.Whitespace
'body'   Name
''       Text.Whitespace
':='     Operator
''       Text.Whitespace
'BindingTools' Name
':'      Operator
'-'      Operator
'generic_evalat' Name
'('      Punctuation
'bvar'
    Name
','      Operator
''       Text.Whitespace
'body'   Name
','      Operator

```

```

''      Text.Whitespace
'eqs'   Name
');'    Punctuation
'\n '   Text.Whitespace
'eval'  Name.Builtin
'('     Punctuation
'op'    Name.Builtin
'('     Punctuation
'0'     Literal.Number.Integer
','     Operator
'e'     Name
')'     Punctuation
','     Operator
''      Text.Whitespace
'eqs'   Name
')('    Punctuation
'body'  Name
','     Operator
''      Text.Whitespace
'bvar'  Name
','     Operator
'\n      ' Text.Whitespace
'BindingTools' Name
':'     Operator
'-'     Operator
'generic_evalatstar' Name
'('     Punctuation
'rng'   Name
','     Operator
''      Text.Whitespace
'loops' Name
','     Operator
''      Text.Whitespace
'eqs'   Name
')'     Punctuation
','
Operator
'\n      ' Text.Whitespace
'op'    Name.Builtin
'('     Punctuation
'5'     Literal.Number.Integer
'..'    Punctuation
'-'     Operator
'1'     Literal.Number.Integer
','     Operator
'e'     Name
'))'    Punctuation
'\n'    Text.Whitespace

```

'end' Keyword
 '' Text.Whitespace
 'proc' Keyword
 ':' Operator
 '\n' Text.Whitespace

`eval/Sums` Name
 '' Text.Whitespace
 ':= ' Operator
 '' Text.Whitespace
 'eval' Name.Builtin
 '(' Punctuation
 `eval/Ints` Name
 ')' Punctuation
 ':' Operator
 '\n' Text.Whitespace

`eval/ints` Name
 '' Text.Whitespace
 ':= ' Operator
 '' Text.Whitespace
 'eval' Name.Builtin
 '(' Punctuation
 `eval/Ints` Name
 ')' Punctuation
 ':' Operator
 '\n' Text.Whitespace

`eval/sums` Name
 '' Text.Whitespace
 ':= ' Operator
 '' Text.Whitespace
 'eval' Name.Builtin
 '(' Punctuation
 `eval/Ints` Name
 ')' Punctuation
 ':' Operator
 '\n\n' Text.Whitespace

`eval/Int` Name
 '' Text.Whitespace
 ':= ' Operator
 '' Text.Whitespace
 'proc' Keyword
 '(' Punctuation
 'e' Name

'	Operator
' '	Text.Whitespace
'eqs'	Name
'	Operator
' '	Text.Whitespace
'\$'	Operator
)'	Punctuation
'\n '	Text.Whitespace
'local'	Keyword
' '	Text.Whitespace
'body'	Name
'	Operator
' '	Text.Whitespace
'bound'	Name
'	Operator
' '	Text.Whitespace
'bvar'	Name
';	Punctuation
'\n '	Text.Whitespace
'body'	Name
'	Operator
' '	Text.Whitespace
'bound'	Name
' '	Text.Whitespace
':='	Operator
,	
'	Text.Whitespace
'op'	Name.Builtin
('	Punctuation
'1'	Literal.Number.Integer
'..'	Punctuation
'2'	Literal.Number.Integer
'	Operator
' '	Text.Whitespace
'e'	Name
);'	Punctuation
'\n '	Text.Whitespace
'if'	Keyword
' '	Text.Whitespace
'bound'	Name
' '	Text.Whitespace
'::'	Operator
' '	Text.Whitespace
'name'	Name
' '	Text.Whitespace
'then'	Keyword
'\n '	Text.Whitespace
'bound'	Name

```

','      Operator
''       Text.Whitespace
'body'   Name
''       Text.Whitespace
':='     Operator
''       Text.Whitespace
'BindingTools' Name
':'      Operator
'-'      Operator
'generic_evalat' Name
'('      Punctuation
'bound'   Name
','      Operator
''       Text.Whitespace
'body'   Name
','      Operator
''       Text.Whitespace
'eqs'
    Name
');'     Punctuation
'\n '    Text.Whitespace
'elif'    Keyword
''       Text.Whitespace
'bound'   Name
''       Text.Whitespace
 '::'    Operator
''       Text.Whitespace
'^='     Name
''       Text.Whitespace
'then'    Keyword
'\n '    Text.Whitespace
'bvar'    Name
''       Text.Whitespace
':='     Operator
''       Text.Whitespace
'lhs'     Name.Builtin
'('      Punctuation
'bound'   Name
');'     Punctuation
'\n '    Text.Whitespace
'bvar'    Name
','      Operator
''       Text.Whitespace
'body'   Name
''       Text.Whitespace
':='     Operator
''       Text.Whitespace
'BindingTools' Name

```

```

':'      Operator
'-'      Operator
'generic_evalat' Name
'('      Punctuation
'bvar'   Name
','      Operator
''       Text.Whitespace
'body'   Name
','      Operator
''       Text.Whitespace
'eqs'
      Name
');'     Punctuation
'\n '    Text.Whitespace
'bound'  Name
''       Text.Whitespace
':='     Operator
''       Text.Whitespace
'bvar'   Name
''       Text.Whitespace
'='      Operator
''       Text.Whitespace
'eval'   Name.Builtin
'('      Punctuation
'rhs'    Name.Builtin
'('      Punctuation
'bound'  Name
')'      Punctuation
','      Operator
''       Text.Whitespace
'eqs'    Name
');'     Punctuation
'\n '    Text.Whitespace
'else'   Keyword
'\n '    Text.Whitespace
'body'   Name
','      Operator
''       Text.Whitespace
'bound'  Name
''       Text.Whitespace
':='     Operator
''       Text.Whitespace
'BindingTools' Name
':'      Operator
'-'      Operator
'generic_evalatstar' Name
'('      Punctuation
'body'   Name

```



```

','      Operator
''      Text.Whitespace
'bound'  Name
','
      Operator
''      Text.Whitespace
'eqs'    Name
');'     Punctuation
'\n '    Text.Whitespace
'end'    Keyword
''      Text.Whitespace
'if'     Keyword
','      Punctuation
'\n '    Text.Whitespace
'eval'   Name.Builtin
'('      Punctuation
'op'     Name.Builtin
'('      Punctuation
'0'      Literal.Number.Integer
','      Operator
'e'      Name
')'      Punctuation
','      Operator
''      Text.Whitespace
'eqs'    Name
')('     Punctuation
'body'   Name
','      Operator
''      Text.Whitespace
'bound'  Name
','      Operator
''      Text.Whitespace
'op'     Name.Builtin
'('      Punctuation
'eval'   Name.Builtin
'(['     Punctuation
'op'     Name.Builtin
'('      Punctuation
'3'      Literal.Number.Integer
'..'     Punctuation
'-'      Operator
'1'      Literal.Number.Integer
','      Operator
'e'
      Name
')]'     Punctuation
','      Operator
''      Text.Whitespace

```

'eqs'	Name
'))'	Punctuation
'\n'	Text.Whitespace

'end'	Keyword
' '	Text.Whitespace
'proc'	Keyword
':'	Operator
'\n'	Text.Whitespace

`eval/Sum`	Name
' '	Text.Whitespace
':='	Operator
' '	Text.Whitespace
'eval'	Name.Builtin
('	Punctuation
`eval/Int`	Name
)'	Punctuation
':'	Operator
'\n'	Text.Whitespace

`eval/Product`	Name
' '	Text.Whitespace
':='	Operator
' '	Text.Whitespace
'eval'	Name.Builtin
('	Punctuation
`eval/Int`	Name
)'	Punctuation
':'	Operator
'\n'	Text.Whitespace

`eval/int`	Name
' '	Text.Whitespace
':='	Operator
' '	Text.Whitespace
'eval'	Name.Builtin
('	Punctuation
`eval/Int`	Name
)'	Punctuation
	Punctuation
':'	Operator
'\n'	Text.Whitespace

`eval/sum`	Name
' '	Text.Whitespace
':='	Operator
' '	Text.Whitespace

```

'eval'    Name.Builtin
'('       Punctuation
'`eval/Int`' Name
')'       Punctuation
':'       Operator
'\n'      Text.Whitespace

'`eval/product`' Name
''        Text.Whitespace
':='      Operator
''        Text.Whitespace
'eval'    Name.Builtin
'('       Punctuation
'`eval/Int`' Name
')'       Punctuation
':'       Operator
'\n\n'    Text.Whitespace

#####\n' Comment.Single

'\n'      Text.Whitespace

'Loop'    Name
''        Text.Whitespace
':='      Operator
''        Text.Whitespace
'module'   Keyword
''        Text.Whitespace
'()'      Punctuation
'\n '     Text.Whitespace
'option'   Keyword
''        Text.Whitespace
'package'  Name
';'
    Punctuation
'\n '     Text.Whitespace
'local'    Keyword
''        Text.Whitespace
'intssums' Name
';'       Operator
''        Text.Whitespace
'enter_pieewise' Name
';'       Operator
''        Text.Whitespace
'wrap'     Name
';'       Operator
'\n '     Text.Whitespace
't_peel'   Name

```

```

';      Operator
''      Text.Whitespace
'do_peel'  Name
';      Operator
''      Text.Whitespace
'do_split' Name
';      Operator
''      Text.Whitespace
'do_graft' Name
';      Operator
''      Text.Whitespace
'do_rebase_lower' Name
';      Operator
''      Text.Whitespace
'do_rebase_upper' Name
';      Operator
'\n    ' Text.Whitespace
'Binder'  Name
';      Operator
''      Text.Whitespace
'Stmt'    Name
';      Operator
''      Text.Whitespace
't_binder' Name
';      Operator
''      Text.Whitespace
't_stmt'   Name
''
      Operator
''      Text.Whitespace
't_exp'    Name
';      Operator
'\n    ' Text.Whitespace
'ModuleLoad' Name
';      Punctuation
'\n    ' Text.Whitespace
'export'    Keyword
'\n    ' Text.Whitespace
'# These first few are smart constructors (for themselves):\n' Comment.Single

'    ' Text.Whitespace
'ints'    Name
';      Operator
''      Text.Whitespace
'sums'    Name
';      Operator
'\n    ' Text.Whitespace
'# while these are "proper functions"\n' Comment.Single

```

```

'      ' Text.Whitespace
'mk_HArray' Name
','      Operator
''      Text.Whitespace
'genLoop' Name
','      Operator
''      Text.Whitespace
'unproducts' Name
','      Operator
''      Text.Whitespace
'unproduct' Name
','      Operator
'\n      ' Text.Whitespace
'peel' Name
','      Operator
''      Text.Whitespace
'split' Name
','      Operator
''

    Text.Whitespace
'graft' Name
','      Operator
''      Text.Whitespace
'rebase_lower' Name
','      Operator
''      Text.Whitespace
'rebase_upper' Name
','      Operator
''      Text.Whitespace
'Print' Name
','      Punctuation
'\n ' Text.Whitespace
'# these names are not assigned (and should not be). But they are\n' Comment.Single

' '      Text.Whitespace
'# used as global names, so document that here.\n' Comment.Single

' '      Text.Whitespace
'global' Keyword
''      Text.Whitespace
'Ints' Name
','      Operator
''      Text.Whitespace
'Sums' Name
','      Operator
''      Text.Whitespace
'csgn' Name

```

```

','      Operator
''       Text.Whitespace
'sum'    Name
','      Operator
''       Text.Whitespace
'signum' Name
','      Punctuation
'\n '    Text.Whitespace
'uses'   Keyword
''       Text.Whitespace
'Hakaru'
      Name
','      Operator
''       Text.Whitespace
'KB'     Name
','      Operator
''       Text.Whitespace
'Utilities' Name
','      Punctuation
'\n\n '  Text.Whitespace
't_binder' Name
''       Text.Whitespace
':='     Operator
''       Text.Whitespace
''''     Punctuation
'Binder' Name
'('      Punctuation
'identical' Name
'('      Punctuation
'product' Name
','      Operator
''       Text.Whitespace
'Product' Name
','      Operator
''       Text.Whitespace
'sum'    Name
','      Operator
''       Text.Whitespace
'Sum'    Name
')'      Punctuation
','      Operator
''       Text.Whitespace
't_kb'   Name
')'      Punctuation
''''     Punctuation
','      Punctuation
'\n '    Text.Whitespace
't_stmt' Name

```

```

' '      Text.Whitespace
':='     Operator
' '      Text.Whitespace
""""     Punctuation
'Stmt'
    Name
'('      Punctuation
'anything' Name
','      Operator
' '      Text.Whitespace
'list'   Name
','      Operator
' '      Text.Whitespace
'list'   Name
')'      Punctuation
""""     Punctuation
';'      Punctuation
'\n '    Text.Whitespace
't_exp'  Name
' '      Text.Whitespace
':='     Operator
' '      Text.Whitespace
""""     Punctuation
'{'      Punctuation
'Stmt'   Name
'('      Punctuation
'identical' Name
'('      Punctuation
'exp'    Name
')'      Punctuation
','      Operator
' '      Text.Whitespace
'['      Punctuation
','      Operator
' '      Text.Whitespace
'[]'     Punctuation
','      Operator
' '      Text.Whitespace
'[]'     Punctuation
','      Operator
'\n      ' Text.Whitespace
'Stmt'   Name
'('      Punctuation
'identical' Name
'('      Punctuation
'^^'     Name
')'      Punctuation
','      Operator
' '      Text.Whitespace
'['

```

	Punctuation
'anything'	Name
']'	Punctuation
','	Operator
' '	Text.Whitespace
'[]})'	Punctuation
''''	Punctuation
';'	Punctuation
'\n\n '	Text.Whitespace
'ints'	Name
' '	Text.Whitespace
':='	Operator
' '	Text.Whitespace
'proc'	Keyword
'()'	Punctuation
' '	Text.Whitespace
'intssums'	Name
'('	Punctuation
''''	Punctuation
'ints'	Name
''''	Punctuation
','	Operator
' '	Text.Whitespace
''''	Punctuation
'int'	Name
''''	Punctuation
','	Operator
' '	Text.Whitespace
'_passed'	Name
')'	Punctuation
' '	Text.Whitespace
'end'	Keyword
' '	Text.Whitespace
'proc'	Keyword
','	Punctuation
'\n '	Text.Whitespace
'sums'	Name
' '	Text.Whitespace
':='	Operator
' '	
	Text.Whitespace
'proc'	Keyword
'()'	Punctuation
' '	Text.Whitespace
'intssums'	Name
'('	Punctuation
''''	Punctuation
'sums'	Name

"""	Punctuation
','	Operator
' '	Text.Whitespace
"""	Punctuation
'sum'	Name
"""	Punctuation
','	Operator
' '	Text.Whitespace
'_passed'	Name
)'	Punctuation
' '	Text.Whitespace
'end'	Keyword
' '	Text.Whitespace
'proc'	Keyword
','	Punctuation
'\n\n '	Text.Whitespace
'Print'	Name
' '	Text.Whitespace
':='	Operator
' '	Text.Whitespace
'proc'	Keyword
('	Punctuation
'kind'	Name
::'	Operator
'identical'	Name
('	Punctuation
'Ints'	Name
','	Operator
'Sums'	Name
','	Operator
'ints'	Name
','	Operator
'sums'	Name
)'	Punctuation
','	
	Operator
'e'	Name
','	Operator
'v'	Name
::'	Operator
'name'	Name
','	Operator
'r0'	Name
::'	Operator
'range'	Name
','	Operator
'rs'	Name
::'	Operator

'list' Name
 '(' Punctuation
 'name' Name
 '=' Operator
 'range' Name
 ')' Punctuation
 ';' Operator
 '\$' Operator
 ')' Punctuation
 '\n ' Text.Whitespace
 'local' Keyword
 '' Text.Whitespace
 'k' Name
 ';' Punctuation
 '\n ' Text.Whitespace
 'k' Name
 '' Text.Whitespace
 ':= ' Operator
 '' Text.Whitespace
 'StringTools' Name
 '[' Punctuation
 'Capitalize' Name
 ']' Punctuation
 'StringTools' Name
 '[' Punctuation
 'Chop' Name
 ']' Punctuation
 'convert' Name.Builtin
 '(' Punctuation
 'kind' Name
 ';' Operator
 'string' Name
 ')))';' Punctuation
 '\n ' Text.Whitespace
 'k' Name
 '' Text.Whitespace
 ':= ' Operator
 '' Text.Whitespace
 'parse' Name.Builtin
 '(' Punctuation
 'cat' Name.Builtin
 '(' Punctuation
 '"`print/""' Literal.String
 ';' Operator
 'eval' Name.Builtin
 '(' Punctuation
 'k' Name

)'	Punctuation
','	Operator
""	Literal.String
));'	Punctuation
\n '	Text.Whitespace
'eval'	Name.Builtin
('	Punctuation
'k'	Name
')(	Punctuation
'e'	Name
','	Operator
'v'	Name
['	Punctuation
'op'	Name.Builtin
('	Punctuation
'rs'	Name
'))'	Punctuation
'='	Operator
'r0'	Name
);'	Punctuation
\n '	Text.Whitespace
'end'	Keyword
' '	Text.Whitespace
'proc'	Keyword
','	Punctuation
\n\n '	Text.Whitespace
'intssums'	Name
' '	Text.Whitespace
':='	Operator
' '	Text.Whitespace
'proc'	Keyword
('	Punctuation
'makes'	Name
::'	Operator
'name'	Name
','	Operator
' '	Text.Whitespace
'make'	Name
::'	Operator
'name'	Name
','	Operator
\n '	Text.Whitespace
'e'	Name
::'	Operator
'anything'	Name
','	Operator
' '	Text.Whitespace

'x'	Name
'::'	Operator
'name'	Name
','	Operator
''	Text.Whitespace
'rr'	Name
'::'	Operator
'range'	Name
','	Operator
''	Text.Whitespace
'll'	Name
'::'	Operator
'list'	Name
'('	Punctuation
'name'	Name
'='	Operator
'range'	Name
)'	Punctuation
','	Operator
'\n	
	' Text.Whitespace
'kb'	Name
'::'	Operator
't_kb'	Name
':='	Operator
'empty'	Name
','	Operator
''	Text.Whitespace
'\$'	Operator
)'	Punctuation
'\n '	Text.Whitespace
'local'	Keyword
''	Text.Whitespace
't'	Name
','	Operator
''	Text.Whitespace
'r'	Name
','	Operator
''	Text.Whitespace
'l'	Name
','	Operator
''	Text.Whitespace
'kb2'	Name
','	Operator
''	Text.Whitespace
'w0'	Name
','	Operator
''	Text.Whitespace

'pp' Name
 ';' Operator
 '' Text.Whitespace
 'i' Name
 ';' Punctuation
 '\n ' Text.Whitespace
 't' Name
 '' Text.Whitespace
 ':-=' Operator
 '' Text.Whitespace
 '~if~' Name
 '(' Punctuation
 'make' Name
 '=='
 Operator
 'int' Name
 ';' Operator
 '' Text.Whitespace
 'HReal' Name
 '(' Punctuation
 'open_bounds' Name
 '(' Punctuation
 'rr' Name
 '))' Punctuation
 ';' Operator
 '' Text.Whitespace
 'HInt' Name
 '(' Punctuation
 'closed_bounds' Name
 '(' Punctuation
 'rr' Name
 ')))';' Punctuation
 '\n ' Text.Whitespace
 'r' Name
 ';' Operator
 '' Text.Whitespace
 'l' Name
 ';' Operator
 '' Text.Whitespace
 'kb2' Name
 '' Text.Whitespace
 ':-=' Operator
 '' Text.Whitespace
 'genLoop' Name
 '(' Punctuation
 'rr' Name
 ';' Operator
 '' Text.Whitespace

```

'II'      Name
','       Operator
''        Text.Whitespace
'kb'      Name
','       Operator
''        Text.Whitespace
''''      Punctuation
'Integrand' Name
''''
        Punctuation
'('       Punctuation
'x'       Name
','       Operator
'e'       Name
'));'     Punctuation
'\n '     Text.Whitespace
'w0'      Name
','       Operator
''        Text.Whitespace
'pp'      Name
''        Text.Whitespace
':='      Operator
''        Text.Whitespace
'unproducts' Name
'('       Punctuation
'e'       Name
','       Operator
''        Text.Whitespace
'x'       Name
','       Operator
''        Text.Whitespace
'I'       Name
','       Operator
''        Text.Whitespace
'kb2'     Name
');'      Punctuation
'\n '     Text.Whitespace
'if'      Keyword
''        Text.Whitespace
'depends' Name
'('       Punctuation
'w0'      Name
','       Operator
''        Text.Whitespace
'x'       Name
')'       Punctuation
''        Text.Whitespace
'then'    Keyword

```

```

'\n'      Text.Whitespace
''''      Punctuation
'makes'
    Name
'('       Punctuation
'e'       Name
','       Operator
''        Text.Whitespace
'x'       Name
','       Operator
''        Text.Whitespace
'rr'      Name
','       Operator
''        Text.Whitespace
'll'      Name
')'       Punctuation
''''      Punctuation
'\n'      Text.Whitespace
'else'    Keyword
'\n'      Text.Whitespace
'pp'      Name
''        Text.Whitespace
':='      Operator
''        Text.Whitespace
''''      Punctuation
'make'    Name
''''      Punctuation
'('       Punctuation
'pp'      Name
','       Operator
''        Text.Whitespace
'x'       Name
'='       Operator
'r'       Name
');'      Punctuation
'\n'      Text.Whitespace
'for'     Keyword
''        Text.Whitespace
'i'       Name
''        Text.Whitespace
'in'      Keyword
''        Text.Whitespace
'l'       Name
''        Text.Whitespace
'do'
    Keyword
''        Text.Whitespace
'pp'      Name

```

```

''      Text.Whitespace
':='    Operator
''      Text.Whitespace
''''    Punctuation
'product' Name
''''    Punctuation
'('     Punctuation
'pp'    Name
';'     Operator
''      Text.Whitespace
'i'     Name
')'     Punctuation
''      Text.Whitespace
'end'   Keyword
''      Text.Whitespace
'do'    Keyword
';'     Punctuation
'\n    ' Text.Whitespace
'NewSLO' Name
':'     Operator
'-'     Operator
'simplify_factor_assuming' Name
'('     Punctuation
'w0'    Name
''      Text.Whitespace
'*'     Operator
''      Text.Whitespace
'pp'    Name
';'     Operator
''      Text.Whitespace
'kb'    Name
');'    Punctuation
'\n    ' Text.Whitespace
'end'   Keyword
''      Text.Whitespace
'if'    Keyword
'\n    ' Text.Whitespace
'end'   Keyword
        Keyword
''      Text.Whitespace
'proc'  Keyword
';'     Punctuation
'\n\n  ' Text.Whitespace
'mk_HArray' Name
''      Text.Whitespace
':='    Operator
''      Text.Whitespace
'proc'  Keyword

```


'('	Punctuation
't'	Name
::'	Operator
't_type'	Name
','	Operator
' '	Text.Whitespace
'loops'	Name
::'	Operator
'list'	Name
'('	Punctuation
'name'	Name
'='	Operator
'range'	Name
)'	Punctuation
','	Operator
' '	Text.Whitespace
'\$'	Operator
)'	Punctuation
'\n '	Text.Whitespace
'local'	Keyword
' '	Text.Whitespace
'res'	Name
','	Operator
' '	Text.Whitespace
'i'	Name
','	Punctuation
'\n '	Text.Whitespace
'res'	Name
' '	Text.Whitespace
':='	Operator
' '	Text.Whitespace
't'	Name
','	Punctuation
'\n '	Text.Whitespace
'for'	Keyword
' '	Text.Whitespace
'i'	Name
' '	Text.Whitespace
'in'	Keyword
' '	Text.Whitespace
'loops'	Name
' '	Text.Whitespace
'do'	Keyword
' '	Text.Whitespace
'res'	Name
' '	Text.Whitespace
':='	Operator

```

''      Text.Whitespace
'HArray'  Name
'('      Punctuation
'res'     Name
')'      Punctuation
''      Text.Whitespace
'end'     Keyword
''      Text.Whitespace
'do'      Keyword
';'      Punctuation
'\n '    Text.Whitespace
'res'     Name
'\n '    Text.Whitespace
'end'     Keyword
''      Text.Whitespace
'proc'    Keyword
';'      Punctuation
'\n\n '  Text.Whitespace
'genLoop' Name
''      Text.Whitespace
':='     Operator
''      Text.Whitespace
'proc'    Keyword
'('
      Punctuation
'e'      Name
';'      Operator
''      Text.Whitespace
'loops'   Name
'::'     Operator
'list'    Name
'('      Punctuation
'name'    Name
'='      Operator
'range'   Name
')'      Punctuation
';'      Operator
''      Text.Whitespace
'kb'      Name
'::'     Operator
't_kb'    Name
')'      Punctuation
'\n '    Text.Whitespace
'local'   Keyword
''      Text.Whitespace
'kb1'     Name
';'      Operator
''      Text.Whitespace

```

'rng'	Name
','	Operator
''	Text.Whitespace
'ind'	Name
','	Operator
''	Text.Whitespace
'do_subst'	Name
','	Operator
''	Text.Whitespace
'i'	Name
','	Punctuation
'\n '	Text.Whitespace
'kb1'	Name
''	Text.Whitespace
':='	Operator
''	Text.Whitespace
'kb'	Name
','	Punctuation
'\n	
'	Text.Whitespace
'rng'	Name
''	Text.Whitespace
':='	Operator
''	Text.Whitespace
'table'	Name.Builtin
'():'	Punctuation
'\n '	Text.Whitespace
'ind'	Name
''	Text.Whitespace
':='	Operator
''	Text.Whitespace
'table'	Name.Builtin
'():'	Punctuation
'\n '	Text.Whitespace
'do_subst'	Name
''	Text.Whitespace
':='	Operator
''	Text.Whitespace
'e'	Name
''	Text.Whitespace
'->'	Operator
''	Text.Whitespace
'foldl'	Name
'(((	Punctuation
'e'	Name
','	Operator
'eq'	Name
)'	Punctuation

```

''      Text.Whitespace
'>'    Operator
''      Text.Whitespace
'eval'  Name.Builtin
'('     Punctuation
'e'     Name
';'     Operator
''      Text.Whitespace
'op'    Name.Builtin
'(['    Punctuation
'lhs'
        Name.Builtin
'('     Punctuation
'eq'    Name
')'     Punctuation
';'     Operator
'1'     Literal.Number.Integer
']'     Punctuation
';'     Operator
'loops' Name
')'     Punctuation
'='     Operator
'rhs'   Name.Builtin
'('     Punctuation
'eq'    Name
')))'   Punctuation
';'     Operator
'\n'    ' Text.Whitespace
'e'     Name
';'     Operator
''      Text.Whitespace
'entries' Name.Builtin
'('     Punctuation
'ind'   Name
';'     Operator
''      Text.Whitespace
''''    Punctuation
'pairs' Name
''''    Punctuation
'));'   Punctuation
'\n '   Text.Whitespace
'for'   Keyword
''      Text.Whitespace
'i'     Name
''      Text.Whitespace
'from'  Keyword
''      Text.Whitespace
'nops'  Name.Builtin

```

```

'('      Punctuation
'loops'  Name
')'
    Punctuation
''       Text.Whitespace
'to'     Keyword
''       Text.Whitespace
'1'      Literal.Number.Integer
''       Text.Whitespace
'by'     Keyword
''       Text.Whitespace
'-'      Operator
'1'      Literal.Number.Integer
''       Text.Whitespace
'do'     Keyword
'\n'    ' Text.Whitespace
'rng'    Name
'['      Punctuation
'i'      Name
']'      Punctuation
''       Text.Whitespace
':='     Operator
''       Text.Whitespace
'do_subst' Name
'('      Punctuation
'op'     Name.Builtin
'(['     Punctuation
'i'      Name
','      Operator
'2'      Literal.Number.Integer
']'      Punctuation
','      Operator
'loops'  Name
')):'    Punctuation
'\n'    ' Text.Whitespace
'ind'    Name
'['      Punctuation
'i'      Name
']'      Punctuation
','      Operator
''       Text.Whitespace
'kb1'    Name
''
    Text.Whitespace
':='     Operator
''       Text.Whitespace
'genType' Name
'('      Punctuation

```

'op'	Name.Builtin
'(['	Punctuation
'i'	Name
','	Operator
'1'	Literal.Number.Integer
']'	Punctuation
','	Operator
'loops'	Name
')'	Punctuation
','	Operator
''	Text.Whitespace
'HInt'	Name
'('	Punctuation
'closed_bounds'	Name
'('	Punctuation
'rng'	Name
'['	Punctuation
'i'	Name
'))'	Punctuation
','	Operator
'\n	' Text.Whitespace
'kb1'	Name
','	Operator
''	Text.Whitespace
'_rest'	Name
);'	Punctuation
'\n '	Text.Whitespace
'end'	Keyword
''	Text.Whitespace
'do'	Keyword
','	Punctuation
'\n '	Text.Whitespace
'do_subst'	Name
'('	Punctuation
'e'	Name
)'	Punctuation
','	Operator
''	Text.Whitespace
'zip'	Name
'('	Punctuation
'`=``	Name
','	Operator
''	Text.Whitespace
'['	Punctuation
'entries'	Name.Builtin
'('	Punctuation
'ind'	Name

```

','      Operator
''       Text.Whitespace
''''     Punctuation
'nolist' Name
''''     Punctuation
')]'     Punctuation
','      Operator
'\n      ' Text.Whitespace
'['      Punctuation
'entries' Name.Builtin
'('      Punctuation
'rng'    Name
','      Operator
''       Text.Whitespace
''''     Punctuation
'nolist' Name
''''     Punctuation
'))]'    Punctuation
','      Operator
''       Text.Whitespace
'kb1'    Name
'\n '    Text.Whitespace
'end'    Keyword
''       Text.Whitespace
'proc'   Keyword
','      Punctuation
'\n\n '  Text.Whitespace
'unproducts'
  Name
''       Text.Whitespace
':='     Operator
''       Text.Whitespace
'proc'   Keyword
'('      Punctuation
'w'      Name
','      Operator
''       Text.Whitespace
'x'      Name
'::'     Operator
'name'   Name
','      Operator
''       Text.Whitespace
'loops'  Name
'::'     Operator
'list'   Name
'('      Punctuation
'name'   Name
'='      Operator

```

'range'	Name
')	Punctuation
','	Operator
''	Text.Whitespace
'kb'	Name
'::'	Operator
't_kb'	Name
','	Operator
''	Text.Whitespace
'\$'	Operator
')	Punctuation
'\n '	Text.Whitespace
'local'	Keyword
''	Text.Whitespace
'w0'	Name
','	Operator
''	Text.Whitespace
'pp'	Name
','	Operator
''	Text.Whitespace
'j'	Name
','	Operator
''	Text.Whitespace
'w1'	Name
','	Operator
''	Text.Whitespace
'w2'	Name
','	Operator
''	Text.Whitespace
'loop'	Name
','	Punctuation
'\n '	Text.Whitespace
'w0'	Name
''	Text.Whitespace
':='	Operator
''	Text.Whitespace
'1'	Literal.Number.Integer
','	Punctuation
'\n '	Text.Whitespace
'pp'	Name
''	Text.Whitespace
':='	Operator
''	Text.Whitespace
'w'	Name
','	Punctuation
'\n '	Text.Whitespace
'for'	Keyword


```

''      Text.Whitespace
'j'     Name
''      Text.Whitespace
'from'   Keyword
''      Text.Whitespace
'nops'   Name.Builtin
'('      Punctuation
'loops'  Name
')'      Punctuation
''      Text.Whitespace
'to'     Keyword
''      Text.Whitespace
'1'      Literal.Number.Integer
''      Text.Whitespace
'by'
        Keyword
''      Text.Whitespace
'-'      Operator
'1'      Literal.Number.Integer
''      Text.Whitespace
'do'     Keyword
'\n'    '  Text.Whitespace
'w1'     Name
','      Operator
''      Text.Whitespace
'pp'     Name
''      Text.Whitespace
':='     Operator
''      Text.Whitespace
'op'     Name.Builtin
'('      Punctuation
'unproduct' Name
'('      Punctuation
'pp'     Name
','      Operator
''      Text.Whitespace
'x'      Name
','      Operator
''      Text.Whitespace
'op'     Name.Builtin
'('      Punctuation
'j'      Name
','      Operator
'loops'  Name
')'      Punctuation
','      Operator
''      Text.Whitespace
'['      Punctuation

```

```

','      Operator
''       Text.Whitespace
'^*`'   Name
','      Operator
''       Text.Whitespace
'kb'    Name
','      Operator
'
'        Text.Whitespace
'kb'    Name
'));'    Punctuation
'\n    ' Text.Whitespace
'# separate out each of the factors in w1, as they might have different\n' Comment.Single

'    '   Text.Whitespace
'# variable dependencies, which can be exploited by other routines\n' Comment.Single

'    '   Text.Whitespace
'w2'    Name
''       Text.Whitespace
':='     Operator
''       Text.Whitespace
'convert' Name.Builtin
'('      Punctuation
'w1'     Name
','      Operator
''       Text.Whitespace
''''     Punctuation
'list'   Name
''''     Punctuation
','      Operator
''       Text.Whitespace
''''     Punctuation
'^*`'   Name
''''     Punctuation
'));'    Punctuation
'\n    ' Text.Whitespace
'for'    Keyword
''       Text.Whitespace
'loop'   Name
''       Text.Whitespace
'in'     Keyword
''       Text.Whitespace
'['      Punctuation
'op'
Name.Builtin
'('      Punctuation
'j'      Name

```

'+'	Operator
'1'	Literal.Number.Integer
'..'	Punctuation
'-'	Operator
'1'	Literal.Number.Integer
','	Operator
''	Text.Whitespace
'loops'	Name
'])'	Punctuation
''	Text.Whitespace
'do'	Keyword
'\n'	Text.Whitespace
'w2'	Name
''	Text.Whitespace
':='	Operator
''	Text.Whitespace
'map'	Name.Builtin
'('	Punctuation
'w'	Name
''	Text.Whitespace
'->'	Operator
''	Text.Whitespace
'product'	Name
'('	Punctuation
'eval'	Name.Builtin
'('	Punctuation
'w'	Name
','	Operator
''	Text.Whitespace
'x'	Name
'='	Operator
'idx'	Name
'('	Punctuation
'x'	Name
','	Operator
'lhs'	Name.Builtin
'('	Punctuation
'loop'	Name
'))'	Punctuation
','	Operator
''	Text.Whitespace
'loop'	Name
'))'	Punctuation
','	Operator
''	Text.Whitespace
'w2'	Name
');'	Punctuation

```

'\n'      Text.Whitespace
'end'     Keyword
''        Text.Whitespace
'do'      Keyword
';'       Punctuation
'\n'      Text.Whitespace
'w0'      Name
''        Text.Whitespace
':='      Operator
''        Text.Whitespace
'w0'      Name
''        Text.Whitespace
'*'       Operator
''        Text.Whitespace
'^*'      Name
'('       Punctuation
'op'      Name.Builtin
'('       Punctuation
'w2'      Name
'));'     Punctuation
'\n'      Text.Whitespace
'# w0 := w0 * foldl(product, w1, op(j+1..-1, loops));\n' Comment.Single

' '       Text.Whitespace
'end'     Keyword
''        Text.Whitespace
'do'      Keyword
';'       Punctuation
'\n'      Text.Whitespace
Text.Whitespace
'# Rewrite ... * piecewise(i<=kk-1, xs^2, 1)\n' Comment.Single

' '       Text.Whitespace
'# to ... * xs ^ (2*piecewise(i<=kk-1, 1))\n' Comment.Single

' '       Text.Whitespace
'# because the latter is easier to integrate and recognize with respect to xs\n' Comment.Single

' '       Text.Whitespace
'pp'      Name
''        Text.Whitespace
':='      Operator
''        Text.Whitespace
'for_poly' Name
'('       Punctuation
'pp'      Name
';'       Operator
''        Text.Whitespace

```

'# TODO: move this rewrite into eval_factor (then remove for_poly?)?\n' Comment.Single

```
' ' Text.Whitespace
'proc' Keyword
'' Text.Whitespace
'(' Punctuation
'p' Name
')' Punctuation
'\n ' Text.Whitespace
'local' Keyword
'' Text.Whitespace
'n' Name
';' Operator
'' Text.Whitespace
's' Name
';' Operator
''

Text.Whitespace
'r' Name
';' Punctuation
'\n ' Text.Whitespace
'if' Keyword
'' Text.Whitespace
'p' Name
'' Text.Whitespace
'::' Operator
'' Text.Whitespace
'""' Punctuation
'And' Name
'(' Punctuation
'specfunc' Name
'(' Punctuation
'piecewise' Name.Builtin
')' Punctuation
';' Operator
'' Text.Whitespace
'anyfunc' Name
'(' Punctuation
'freeof' Name
'(' Punctuation
'x' Name
')' Punctuation
';' Operator
'' Text.Whitespace
'anything' Name
';' Operator
'' Text.Whitespace
'1' Literal.Number.Integer
```

'))'	Punctuation
''''	Punctuation
' '	Text.Whitespace
'then'	Keyword
'\n	' Text.Whitespace
'n'	Name
' '	Text.Whitespace
':='	Operator
' '	Text.Whitespace
'indets'	
	Name.Builtin
'('	Punctuation
'op'	Name.Builtin
'('	Punctuation
'1'	Literal.Number.Integer
','	Operator
'p'	Name
)'	Punctuation
','	Operator
'name'	Name
);'	Punctuation
'\n	' Text.Whitespace
'if'	Keyword
' '	Text.Whitespace
'op'	Name.Builtin
'('	Punctuation
'2'	Literal.Number.Integer
','	Operator
'p'	Name
)'	Punctuation
' '	Text.Whitespace
::'	Operator
' '	Text.Whitespace
'{'	Punctuation
''''	Punctuation
'exp'	Name
'('	Punctuation
'anything'	Name
)'	Punctuation
''''	Punctuation
','	Operator
' '	Text.Whitespace
''''	Punctuation
'^`'	Name
''''	Punctuation
'('	Punctuation
''''	Punctuation
'freeof'	Name

```

"""      Punctuation
'('
      Punctuation
'n'      Name
')'      Punctuation
','      Operator
"""      Punctuation
'anything' Name
"""      Punctuation
')}}'    Punctuation
' '      Text.Whitespace
'then'    Keyword
'\n'     ' Text.Whitespace
's'      Name
','      Operator
' '      Text.Whitespace
'r'      Name
' '      Text.Whitespace
':='     Operator
' '      Text.Whitespace
'selectremove' Name.Builtin
'('      Punctuation
'depends' Name
','      Operator
' '      Text.Whitespace
'convert' Name.Builtin
'('      Punctuation
'op'     Name.Builtin
'(['     Punctuation
'2'      Literal.Number.Integer
','      Operator
'-'      Operator
'1'      Literal.Number.Integer
']'      Punctuation
','      Operator
'p'      Name
')'      Punctuation
','      Operator
"""      Punctuation
'list'   Name
"""      Punctuation
','
      Operator
"""      Punctuation
'^*`'    Name
"""      Punctuation
')'      Punctuation
','      Operator

```

'' Text.Whitespace
 'n' Name
 ');' Punctuation
 '\n' ' Text.Whitespace
 'subsop' Name.Builtin
 '(' Punctuation
 '-' Operator
 '1' Literal.Number.Integer
 '' Text.Whitespace
 '==' Operator
 '' Text.Whitespace
 '*`' Name
 '(' Punctuation
 'piecewise' Name.Builtin
 '(' Punctuation
 'op' Name.Builtin
 '(' Punctuation
 '1' Literal.Number.Integer
 ';' Operator
 'p' Name
 ')' Punctuation
 ';' Operator
 '' Text.Whitespace
 '*`' Name
 '(' Punctuation
 'op' Name.Builtin
 '(' Punctuation
 's' Name
 ')))' Punctuation
 ';' Operator
 '' Text.Whitespace
 'op' Name.Builtin
 '(' Punctuation
 'r'
 Name
 '))' Punctuation
 ';' Operator
 '' Text.Whitespace
 'op' Name.Builtin
 '(' Punctuation
 '2' Literal.Number.Integer
 ';' Operator
 'p' Name
 '))' Punctuation
 '\n' ' Text.Whitespace
 'else' Keyword
 '\n' ' Text.Whitespace
 's' Name


```

','      Operator
''       Text.Whitespace
'r'      Name
''       Text.Whitespace
':='     Operator
''       Text.Whitespace
'selectremove' Name.Builtin
'('      Punctuation
'depends' Name
','      Operator
''       Text.Whitespace
'convert' Name.Builtin
'('      Punctuation
'op'     Name.Builtin
'('      Punctuation
'2'      Literal.Number.Integer
','      Operator
'p'      Name
')'      Punctuation
','      Operator
''''     Punctuation
'list'   Name
''''     Punctuation
','      Operator
''''     Punctuation
'^*`'
      Name
''''     Punctuation
')'      Punctuation
','      Operator
''       Text.Whitespace
'n'      Name
');'     Punctuation
'\n      ' Text.Whitespace
'^*`'     Name
'('      Punctuation
'op'     Name.Builtin
'('      Punctuation
'r'      Name
'))'     Punctuation
''       Text.Whitespace
'^'      Operator
''       Text.Whitespace
'piecewise' Name.Builtin
'('      Punctuation
'op'     Name.Builtin
'('      Punctuation
'1'      Literal.Number.Integer

```

```

','      Operator
'p'      Name
')'      Punctuation
','      Operator
''       Text.Whitespace
'1'      Literal.Number.Integer
')'      Punctuation
'\n      ' Text.Whitespace
'*'      Operator
''       Text.Whitespace
'`if`'   Name
'('      Punctuation
'nops'   Name.Builtin
'('      Punctuation
's'      Name
')'      Punctuation
''       Text.Whitespace
'>'

Operator
''       Text.Whitespace
'0'      Literal.Number.Integer
','      Operator
''       Text.Whitespace
'piecewise' Name.Builtin
'('      Punctuation
'op'     Name.Builtin
'('      Punctuation
'1'      Literal.Number.Integer
','      Operator
'p'      Name
')'      Punctuation
','      Operator
''       Text.Whitespace
'*`'     Name
'('      Punctuation
'op'     Name.Builtin
'('      Punctuation
's'      Name
'))'     Punctuation
','      Operator
''       Text.Whitespace
'1'      Literal.Number.Integer
')'      Punctuation
','      Operator
''       Text.Whitespace
'1'      Literal.Number.Integer
')'      Punctuation
'\n      ' Text.Whitespace

```

```

'end'      Keyword
' '        Text.Whitespace
'if'       Keyword
'\n'      ' Text.Whitespace
'else'     Keyword
'\n'      ' Text.Whitespace
'p'        Name
'\n
' '        Text.Whitespace
'end'      Keyword
' '        Text.Whitespace
'if'       Keyword
'\n'      ' Text.Whitespace
'end'      Keyword
' '        Text.Whitespace
'proc'     Keyword
');'       Punctuation
'\n'      ' Text.Whitespace
'w0'       Name
';'        Operator
' '        Text.Whitespace
'pp'       Name
'\n'      ' Text.Whitespace
'end'      Keyword
' '        Text.Whitespace
'proc'     Keyword
';'        Punctuation
'\n\n'    ' Text.Whitespace
'# Find [w1,pp] so that\n' Comment.Single

' '        Text.Whitespace
'# wrap(heap,w,mode,kb1,kb0)\n' Comment.Single

' '        Text.Whitespace
'# = w1*product(eval(pp,var=idx(var,lhs(loop))),loop)\n' Comment.Single

' '        Text.Whitespace
'# making w1 depend on var as little as possible.\n' Comment.Single

' '        Text.Whitespace
'# The flag "mode" should be `+` if "heap" contains an entry of the form\n' Comment.Single

' '        Text.Whitespace
'# t_exp,
or `*` otherwise.\n' Comment.Single

' '        Text.Whitespace
'unproduct' Name

```

```

''      Text.Whitespace
':='    Operator
''      Text.Whitespace
'proc'  Keyword
'('     Punctuation
'w'     Name
';'     Operator
''      Text.Whitespace
'var'   Name
'::'    Operator
'name'  Name
';'     Operator
''      Text.Whitespace
'loop'  Name
'::'    Operator
'('     Punctuation
'name'  Name
'='     Operator
'range' Name
')'     Punctuation
';'     Operator
'\n'    ' Text.Whitespace
'heap'  Name
'::'    Operator
'list'  Name
';'     Operator
''      Text.Whitespace
'mode'  Name
'::'    Operator
'identical' Name
'('     Punctuation
'^*`'   Name
';'     Operator
'^+`'   Name
')'     Punctuation
';'     Operator
'\n'    ' Text.Whitespace
'kb1'   Name
'::'
      Operator
't_kb'  Name
';'     Operator
''      Text.Whitespace
'kb0'   Name
'::'    Operator
't_kb'  Name
';'     Operator
''      Text.Whitespace

```

'\$'	Operator
')	Punctuation
'\n '	Text.Whitespace
'local'	Keyword
''	Text.Whitespace
'ind'	Name
','	Operator
''	Text.Whitespace
'res'	Name
','	Operator
''	Text.Whitespace
'dummy'	Name
','	Operator
''	Text.Whitespace
'kb'	Name
','	Operator
''	Text.Whitespace
'kbThen'	Name
','	Operator
''	Text.Whitespace
'i'	Name
','	Operator
''	Text.Whitespace
'w1'	Name
','	Operator
''	Text.Whitespace
'pp'	Name
','	Operator
''	Text.Whitespace
's'	Name
','	Operator
''	Text.Whitespace
'r'	Name
','	
	Operator
''	Text.Whitespace
'x'	Name
','	Punctuation
'\n '	Text.Whitespace
'if'	Keyword
''	Text.Whitespace
'not'	Keyword
''	Text.Whitespace
'depends'	Name
('	Punctuation
'w'	Name
','	Operator
''	Text.Whitespace

```

'var'      Name
')'        Punctuation
''         Text.Whitespace
'then'     Keyword
'\n      ' Text.Whitespace
'return'   Keyword
''         Text.Whitespace
'['        Punctuation
'wrap'     Name
'('        Punctuation
'heap'     Name
','        Operator
''         Text.Whitespace
'w'        Name
','        Operator
''         Text.Whitespace
'mode'     Name
','        Operator
''         Text.Whitespace
'kb1'      Name
','        Operator
''         Text.Whitespace
'kb0'      Name
')'        Punctuation
','        Operator
''         Text.Whitespace
'1'        Literal.Number.Integer
']'
           Punctuation
'\n      ' Text.Whitespace
'end'      Keyword
''         Text.Whitespace
'if'       Keyword
';'        Punctuation
'\n      ' Text.Whitespace
"# The `.` (indices) of all occurrences of `idx(var,..)`\n" Comment.Single

' '        Text.Whitespace
'ind'      Name
''         Text.Whitespace
':='       Operator
''         Text.Whitespace
'map2'     Name
'('        Punctuation
'op'       Name.Builtin
','        Operator
''         Text.Whitespace
'2'        Literal.Number.Integer

```

```

','      Operator
''       Text.Whitespace
'indets' Name.Builtin
'('      Punctuation
'w'      Name
','      Operator
''       Text.Whitespace
""       Punctuation
'idx'    Name
'('      Punctuation
'identical' Name
'('      Punctuation
'var'    Name
')'      Punctuation
','      Operator
''       Text.Whitespace
'anything' Name
')'
    Punctuation
""       Punctuation
'));'    Punctuation
'\n  '   Text.Whitespace
'if'     Keyword
''       Text.Whitespace
'nops'   Name.Builtin
'('      Punctuation
'ind'    Name
')'      Punctuation
''       Text.Whitespace
'='      Operator
''       Text.Whitespace
'1'      Literal.Number.Integer
''       Text.Whitespace
'then'   Keyword
'\n  '   Text.Whitespace
'ind'    Name
''       Text.Whitespace
':='     Operator
''       Text.Whitespace
'op'     Name.Builtin
'('      Punctuation
'ind'    Name
'));'    Punctuation
'\n  '   Text.Whitespace
'# Make sure ind contains no bound variables before lifting it!\n' Comment.Single

'  '     Text.Whitespace
'# So, check that "extract using indets" and "rename using eval" commute.\n' Comment.Single

```

' ' Text.Whitespace
 's' Name
 ' ' Text.Whitespace
 ':= ' Operator
 ' '
 Text.Whitespace
 'indets' Name.Builtin
 '(' Punctuation
 'ind' Name
 ';' Operator
 ' ' Text.Whitespace
 '""' Punctuation
 'name' Name
 '""' Punctuation
 ');' Punctuation
 '\n ' Text.Whitespace
 's' Name
 ' ' Text.Whitespace
 ':= ' Operator
 ' ' Text.Whitespace
 'map' Name.Builtin
 '(' Punctuation
 'proc' Keyword
 '(' Punctuation
 'x' Name
 ';' Operator
 '\$' Operator
 ')' Punctuation
 ' ' Text.Whitespace
 'local' Keyword
 ' ' Text.Whitespace
 'y' Name
 ';' Punctuation
 ' ' Text.Whitespace
 '`if`' Name
 '(' Punctuation
 'depends' Name
 '(' Punctuation
 'ind' Name
 ';' Operator
 'x' Name
 ')' Punctuation
 ';' Operator
 ' ' Text.Whitespace
 'x' Name
 '= ' Operator
 'y'

	Name
' '	Operator
' '	Text.Whitespace
'NULL'	Name
)'	Punctuation
' '	Text.Whitespace
'end'	Keyword
' '	Text.Whitespace
'proc'	Keyword
' '	Operator
' '	Text.Whitespace
's'	Name
);'	Punctuation
'\n ' '	Text.Whitespace
'if'	Keyword
' '	Text.Whitespace
'indets'	Name.Builtin
'('	Punctuation
'eval'	Name.Builtin
'('	Punctuation
'w'	Name
' '	Operator
' '	Text.Whitespace
's'	Name
)'	Punctuation
' '	Operator
' '	Text.Whitespace
""	Punctuation
'idx'	Name
'('	Punctuation
'identical'	Name
'('	Punctuation
'var'	Name
)'	Punctuation
' '	Operator
' '	Text.Whitespace
'anything'	Name
)'	Punctuation
""	Punctuation
)'	Punctuation
'\n ' '	Text.Whitespace
'='	Operator
' '	Text.Whitespace
'{'	Punctuation
'idx'	Name
'('	Punctuation
'var'	Name

```

','      Operator
''       Text.Whitespace
'eval'   Name.Builtin
'('      Punctuation
'ind'    Name
','      Operator
''       Text.Whitespace
's'      Name
'))}'    Punctuation
''       Text.Whitespace
'then'   Keyword
'\n'     Text.Whitespace
"# use kb as a local context, and 'solve' for the innermost bound var\n" Comment.Single

```

```

'      ' Text.Whitespace
'# used in ind.\n' Comment.Single

```

```

'      ' Text.Whitespace
'kb'    Name
' '     Text.Whitespace
':='    Operator
''      Text.Whitespace
'assert' Name
'('     Punctuation
'lhs'   Name.Builtin
'('     Punctuation
'loop'  Name
')'     Punctuation
'='     Operator
'ind'   Name
','     Operator
''      Text.Whitespace
'kb1'
      Name
');'    Punctuation
''      Text.Whitespace
'# BUG! bijectivity assumed!\n' Comment.Single

```

```

'      ' Text.Whitespace
"# if the assertion makes the KB false, it isn't needed(?)\n" Comment.Single

```

```

'      ' Text.Whitespace
'ASSERT' Name.Builtin
'('     Punctuation
'type'  Name.Builtin
'('     Punctuation
'kb'    Name
','     Operator

```

```

''      Text.Whitespace
't_kb'   Name
')'      Punctuation
','      Operator
'\n'     ' Text.Whitespace
'sprintf' Name
'('      Punctuation
"assert(%a,%a) produced a false KB!\n" Literal.String
','      Operator
''      Text.Whitespace
'lhs'    Name.Builtin
'('      Punctuation
'loop'   Name
')'      Punctuation
'='      Operator
'ind'    Name
','      Operator
'kb1'    Name
'))'     Punctuation
':'      Operator
'\n'     ' Text.Whitespace
'res'    Name
''      Text.Whitespace
':='
        Operator
''      Text.Whitespace
'subs'   Name.Builtin
'('      Punctuation
'idx'    Name
'('      Punctuation
'var'    Name
','      Operator
'ind'    Name
')'      Punctuation
''      Text.Whitespace
'='      Operator
''      Text.Whitespace
'idx'    Name
'('      Punctuation
'var'    Name
','      Operator
'lhs'    Name.Builtin
'('      Punctuation
'loop'   Name
'))'     Punctuation
','      Operator
''      Text.Whitespace
'w'      Name

```

```

');'      Punctuation
'\n      ' Text.Whitespace
'res'     Name
''        Text.Whitespace
':='      Operator
''        Text.Whitespace
'wrap'    Name
'('       Punctuation
'heap'    Name
','       Operator
''        Text.Whitespace
'res'     Name
','       Operator
''        Text.Whitespace
'mode'    Name
','       Operator
''        Text.Whitespace
'kb'
    Name
','       Operator
''        Text.Whitespace
'kb0'     Name
');'      Punctuation
'\n      ' Text.Whitespace
'res'     Name
''        Text.Whitespace
':='      Operator
''        Text.Whitespace
'subs'    Name.Builtin
'('       Punctuation
'idx'     Name
'('       Punctuation
'var'     Name
','       Operator
'lhs'     Name.Builtin
'('       Punctuation
'loop'    Name
'))'      Punctuation
'='       Operator
'dummy'   Name
','       Operator
''        Text.Whitespace
'res'     Name
');'      Punctuation
'\n      ' Text.Whitespace
'if'      Keyword
''        Text.Whitespace
'not'     Keyword

```

```

''      Text.Whitespace
'depends'  Name
'('      Punctuation
'res'     Name
','      Operator
''      Text.Whitespace
'var'     Name
')'      Punctuation
''      Text.Whitespace
'then'    Keyword
'\n      ' Text.Whitespace
'return'
        Keyword
''      Text.Whitespace
'['      Punctuation
'1'      Literal.Number.Integer
','      Operator
''      Text.Whitespace
'subs'    Name.Builtin
'('      Punctuation
'dummy'   Name
'='      Operator
'var'     Name
','      Operator
''      Text.Whitespace
'res'     Name
')]'     Punctuation
'\n      ' Text.Whitespace
'end'     Keyword
''      Text.Whitespace
'if'     Keyword
'\n      ' Text.Whitespace
'end'     Keyword
''      Text.Whitespace
'if'     Keyword
'\n      ' Text.Whitespace
'end'     Keyword
''      Text.Whitespace
'if'     Keyword
'\n      ' Text.Whitespace
'end'     Keyword
''      Text.Whitespace
';'      Punctuation
'\n      ' Text.Whitespace
'# distribute the unproduct over each part\n' Comment.Single

' '      Text.Whitespace
'if'     Keyword
''      Text.Whitespace
'w'      Name
''      Text.Whitespace

```

```

'::'      Operator
''        Text.Whitespace
'mode'
    Name
''        Text.Whitespace
'then'    Keyword
'\n'     ' Text.Whitespace
'res'     Name
''        Text.Whitespace
':='      Operator
''        Text.Whitespace
'map'     Name.Builtin
'('       Punctuation
'unproduct' Name
';'       Operator
''        Text.Whitespace
'`if`'    Name
'('       Punctuation
'mode'    Name
'='       Operator
'^*`'     Name
';'       Operator
''        Text.Whitespace
'list_of_mul' Name
'('       Punctuation
'w'       Name
')'       Punctuation
';'       Operator
''        Text.Whitespace
'['       Punctuation
'op'      Name.Builtin
'('       Punctuation
'w'       Name
')])'     Punctuation
';'       Operator
'\n'      ' Text.Whitespace
'var'     Name
';'       Operator
''        Text.Whitespace
'loop'    Name
';'       Operator
''        Text.Whitespace
'heap'    Name
';'       Operator
''
    Text.Whitespace
'mode'    Name
';'       Operator

```

```

''      Text.Whitespace
'kb1'   Name
';'     Operator
''      Text.Whitespace
'kb0'   Name
');'    Punctuation
'\n    ' Text.Whitespace
'return' Keyword
''      Text.Whitespace
'['     Punctuation
'^*`'   Name
'('     Punctuation
'op'    Name.Builtin
'('     Punctuation
'map2'  Name
'('     Punctuation
'op'    Name.Builtin
';'     Operator
'1'     Literal.Number.Integer
';'     Operator
'res'   Name
')))'   Punctuation
';'     Operator
''      Text.Whitespace
'^*`'   Name
'('     Punctuation
'op'    Name.Builtin
'('     Punctuation
'map2'  Name
'('     Punctuation
'op'    Name.Builtin
';'     Operator
'2'     Literal.Number.Integer
';'     Operator
'res'   Name
')))]'  Punctuation
'\n    ' Text.Whitespace
'end'   Keyword
        Keyword
''      Text.Whitespace
'if'    Keyword
';'     Punctuation
'\n    ' Text.Whitespace
'# for piecewise, just map right in (using KB for context tracking)\n' Comment.Single

'  '    Text.Whitespace
'if'    Keyword
''      Text.Whitespace

```

'w'	Name
' '	Text.Whitespace
'::'	Operator
' '	Text.Whitespace
''''	Punctuation
'specfunc'	Name
'('	Punctuation
'piecewise'	Name.Builtin
')'	Punctuation
''''	Punctuation
' '	Text.Whitespace
'then'	Keyword
'\n'	Text.Whitespace
'kb'	Name
' '	Text.Whitespace
':='	Operator
' '	Text.Whitespace
'kb1'	Name
','	Punctuation
'\n'	Text.Whitespace
'for'	Keyword
' '	Text.Whitespace
'i'	Name
' '	Text.Whitespace
'from'	Keyword
' '	Text.Whitespace
'1'	Literal.Number.Integer
,	
' '	Text.Whitespace
'to'	Keyword
' '	Text.Whitespace
'nops'	Name.Builtin
'('	Punctuation
'w'	Name
')'	Punctuation
' '	Text.Whitespace
'do'	Keyword
'\n'	Text.Whitespace
'if'	Keyword
' '	Text.Whitespace
'i'	Name
' '	Text.Whitespace
'::'	Operator
' '	Text.Whitespace
'even'	Name
' '	Text.Whitespace
'then'	Keyword
'\n'	Text.Whitespace


```

'kbThen'    Name
' '         Text.Whitespace
':='        Operator
' '         Text.Whitespace
'assert'    Name
'('         Punctuation
' '         Text.Whitespace
'op'        Name.Builtin
'('         Punctuation
'i'         Name
'-'         Operator
'1'         Literal.Number.Integer
','         Operator
'w'         Name
')'         Punctuation
' '         Text.Whitespace
','         Operator
' '         Text.Whitespace
'kb'        Name
');'        Punctuation
           Punctuation
'\n'        ' Text.Whitespace
'# accumulate the rest, regardless\n' Comment.Single

' '         ' Text.Whitespace
'kb'        Name
' '         Text.Whitespace
':='        Operator
' '         Text.Whitespace
'assert'    Name
'('         Punctuation
'Not'       Name
'('         Punctuation
'op'        Name.Builtin
'('         Punctuation
'i'         Name
'-'         Operator
'1'         Literal.Number.Integer
','         Operator
'w'         Name
'))'        Punctuation
','         Operator
' '         Text.Whitespace
'kb'        Name
');'        Punctuation
'\n\n'      ' Text.Whitespace
'# if kbThen is invalid, deal appropriately\n' Comment.Single

```

```

'      ' Text.Whitespace
'if'    Keyword
''      Text.Whitespace
'not'   Keyword
''      Text.Whitespace
'type'  Name.Builtin
'('     Punctuation
'kbThen' Name
';'     Operator
't_kb'  Name
')'     Punctuation
''

      Text.Whitespace
'then'  Keyword
''      Text.Whitespace
'next'  Keyword
''      Text.Whitespace
'end'   Keyword
''      Text.Whitespace
'if'    Keyword
';'     Punctuation
'\n\n'  ' Text.Whitespace
'w1'    Name
'['     Punctuation
'i'     Name
']'     Punctuation
';'     Operator
''      Text.Whitespace
'pp'    Name
'['     Punctuation
'i'     Name
']'     Punctuation
''      Text.Whitespace
':='    Operator
''      Text.Whitespace
'op'    Name.Builtin
'('     Punctuation
'unproduct' Name
'('     Punctuation
'op'    Name.Builtin
'('     Punctuation
'i'     Name
';'     Operator
'w'     Name
')'     Punctuation
';'     Operator
'var'   Name
';'     Operator

```

```

'loop'    Name
','       Operator
'heap'    Name
','       Operator
'mode'    Name
','       Operator
'kbThen'
    Name
','       Operator
'kb0'     Name
'));'     Punctuation
'\n'      ' Text.Whitespace
"# if kb is inconsistent, we're done\n" Comment.Single

```

```

'      ' Text.Whitespace
'if'    Keyword
''      Text.Whitespace
'not'   Keyword
''      Text.Whitespace
'type'   Name.Builtin
'('     Punctuation
'kb'     Name
','     Operator
't_kb'   Name
')'     Punctuation
''      Text.Whitespace
'then'   Keyword
''      Text.Whitespace
'break'  Keyword
''      Text.Whitespace
'end'    Keyword
''      Text.Whitespace
'if'     Keyword
';'     Punctuation
'\n'    ' Text.Whitespace
'elif'   Keyword
''      Text.Whitespace
'i'      Name
''      Text.Whitespace
'='      Operator
''      Text.Whitespace
'nops'   Name.Builtin
'('     Punctuation
'w'     Name
')'     Punctuation
''      Text.Whitespace
'then'

```

	Keyword
'\n	' Text.Whitespace
'if'	Keyword
' '	Text.Whitespace
'not'	Keyword
' '	Text.Whitespace
'type'	Name.Builtin
'('	Punctuation
'kb'	Name
','	Operator
't_kb'	Name
')'	Punctuation
' '	Text.Whitespace
'then'	Keyword
' '	Text.Whitespace
'next'	Keyword
' '	Text.Whitespace
'end'	Keyword
' '	Text.Whitespace
'if'	Keyword
','	Punctuation
'\n	' Text.Whitespace
'w1'	Name
'['	Punctuation
'i'	Name
']'	Punctuation
','	Operator
' '	Text.Whitespace
'pp'	Name
'['	Punctuation
'i'	Name
']'	Punctuation
' '	Text.Whitespace
':='	Operator
' '	Text.Whitespace
'op'	Name.Builtin
'('	Punctuation
'unproduct'	Name
'('	Punctuation
'op'	Name.Builtin
'('	Punctuation
'i'	Name
','	Operator
'w'	Name
')'	Punctuation
','	Operator
'var'	Name

```

','      Operator
'loop'   Name
','      Operator
'heap'   Name
','      Operator
'mode'   Name
','      Operator
'kb'     Name
' '      Text.Whitespace
','      Operator
'kb0'    Name
'))'     Punctuation
'\n'     Text.Whitespace
'end'     Keyword
' '      Text.Whitespace
'if'     Keyword
'\n'     Text.Whitespace
'end'     Keyword
' '      Text.Whitespace
'do'     Keyword
';'      Punctuation
'\n'     Text.Whitespace
'return'  Keyword
' '      Text.Whitespace
'['      Punctuation
'`*`'    Name
'('      Punctuation
'entries' Name.Builtin
'('      Punctuation
'w1'     Name
','      Operator
''''     Punctuation
'nolist' Name
''''     Punctuation
'))'     Punctuation
','
      Operator
' '      Text.Whitespace
'`*`'    Name
'('      Punctuation
'entries' Name.Builtin
'('      Punctuation
'pp'     Name
','      Operator
''''     Punctuation
'nolist' Name
''''     Punctuation
'))]'    Punctuation

```

```

'\n ' Text.Whitespace
'end' Keyword
'' Text.Whitespace
'if' Keyword
';' Punctuation
'\n ' Text.Whitespace
'if' Keyword
'' Text.Whitespace
'mode' Name
'' Text.Whitespace
'=' Operator
'' Text.Whitespace
'*`' Name
'' Text.Whitespace
'then' Keyword
'\n ' Text.Whitespace
'if' Keyword
'' Text.Whitespace
'w' Name
'' Text.Whitespace
'::' Operator
'' Text.Whitespace
'(' Punctuation
'anything' Name
'^' Operator
'freeof' Name
'(' Punctuation
'var' Name
'))'
    Punctuation
'' Text.Whitespace
'then' Keyword
'\n ' Text.Whitespace
'return' Keyword
'' Text.Whitespace
'unproduct' Name
'(' Punctuation
'op' Name.Builtin
'(' Punctuation
'1' Literal.Number.Integer
';' Operator
'w' Name
')' Punctuation
';' Operator
'' Text.Whitespace
'var' Name
';' Operator
'' Text.Whitespace

```

'loop'	Name
','	Operator
'\n'	Text.Whitespace
'['	Punctuation
'op'	Name.Builtin
'('	Punctuation
'heap'	Name
')'	Punctuation
','	Operator
''	Text.Whitespace
'stmt'	Name
'('	Punctuation
'^'	Name
','	Operator
''	Text.Whitespace
'[]'	Punctuation
','	Operator
''	Text.Whitespace
'['	Punctuation
'op'	Name.Builtin
'('	Punctuation
	Punctuation
'2'	Literal.Number.Integer
','	Operator
'w'	Name
')])'	Punctuation
','	Operator
''	Text.Whitespace
'*'	Name
','	Operator
''	Text.Whitespace
'kb1'	Name
','	Operator
''	Text.Whitespace
'kb0'	Name
')'	Punctuation
'\n'	Text.Whitespace
'elif'	Keyword
''	Text.Whitespace
'w'	Name
''	Text.Whitespace
'::'	Operator
''	Text.Whitespace
'exp'	Name
'('	Punctuation
'anything'	Name
')'	Punctuation
''	Text.Whitespace

'then' Keyword
 '\n ' Text.Whitespace
 'return' Keyword
 '' Text.Whitespace
 'unproduct' Name
 '(' Punctuation
 'op' Name.Builtin
 '(' Punctuation
 '1' Literal.Number.Integer
 ';' Operator
 'w' Name
 ')' Punctuation
 ';' Operator
 ,
 ' Text.Whitespace
 'var' Name
 ';' Operator
 '' Text.Whitespace
 'loop' Name
 ';' Operator
 '\n ' Text.Whitespace
 '[' Punctuation
 'op' Name.Builtin
 '(' Punctuation
 'heap' Name
 ')' Punctuation
 ';' Operator
 '' Text.Whitespace
 'Stmt' Name
 '(' Punctuation
 'exp' Name
 ';' Operator
 '' Text.Whitespace
 '[' Punctuation
 ';' Operator
 '' Text.Whitespace
 '[])]' Punctuation
 ';' Operator
 '' Text.Whitespace
 '^+`' Name
 ';' Operator
 '' Text.Whitespace
 'kb1' Name
 ';' Operator
 '' Text.Whitespace
 'kb0' Name
 ')' Punctuation
 '\n ' Text.Whitespace


```

'elif'      Keyword
''          Text.Whitespace
'w'         Name
''          Text.Whitespace
'::'        Operator
''
    Text.Whitespace
'('         Punctuation
'freeof'    Name
'('         Punctuation
'var'       Name
')^'        Punctuation
'anything'  Name
')'         Punctuation
''          Text.Whitespace
'then'      Keyword
'\n'        Text.Whitespace
'return'    Keyword
''          Text.Whitespace
'unproduct' Name
'('         Punctuation
'op'        Name.Builtin
'('         Punctuation
'2'         Literal.Number.Integer
','         Operator
'w'         Name
')'         Punctuation
','         Operator
''          Text.Whitespace
'var'       Name
','         Operator
''          Text.Whitespace
'loop'      Name
','         Operator
'\n'        Text.Whitespace
 '['        Punctuation
'op'        Name.Builtin
'('         Punctuation
'heap'      Name
')'         Punctuation
','         Operator
''          Text.Whitespace
'Stmt'      Name
'('         Punctuation
'^^'        Name
','         Operator
''

```

```

Text.Whitespace
'['      Punctuation
'op'     Name.Builtin
'('      Punctuation
'1'      Literal.Number.Integer
','      Operator
'w'      Name
')]'     Punctuation
','      Operator
''       Text.Whitespace
'[]]'    Punctuation
','      Operator
''       Text.Whitespace
'^+`'    Name
','      Operator
''       Text.Whitespace
'kb1'    Name
','      Operator
''       Text.Whitespace
'kb0'    Name
')'      Punctuation
'\n '    Text.Whitespace
'end'    Keyword
''       Text.Whitespace
'if'     Keyword
'\n '    Text.Whitespace
'end'    Keyword
''       Text.Whitespace
'if'     Keyword
','      Punctuation
'\n '    Text.Whitespace
'if'     Keyword
''       Text.Whitespace
'mode'   Name
''       Text.Whitespace
'='      Operator
''       Text.Whitespace
'^+`'    Name
''       Text.Whitespace
'and'
Keyword
''       Text.Whitespace
'w'      Name
''       Text.Whitespace
'::'     Operator
''       Text.Whitespace
'^*`'    Name
''       Text.Whitespace

```

```

'then'      Keyword
'\n      ' Text.Whitespace
's'         Name
','         Operator
''          Text.Whitespace
'r'         Name
''          Text.Whitespace
':='        Operator
''          Text.Whitespace
'selectremove' Name.Builtin
'('         Punctuation
'depends'   Name
','         Operator
''          Text.Whitespace
'w'         Name
','         Operator
''          Text.Whitespace
'var'       Name
');'        Punctuation
'\n      ' Text.Whitespace
'if'        Keyword
''          Text.Whitespace
's'         Name
''          Text.Whitespace
'::'        Operator
''          Text.Whitespace
'`*'        Name
''          Text.Whitespace
'then'      Keyword
'\n      ' Text.Whitespace
'# Nonlinear %1 (time to reread kiselyov-lifted?)\n'
Comment.Single

'      ' Text.Whitespace
'else'      Keyword
'\n      ' Text.Whitespace
'return'    Keyword
''          Text.Whitespace
'unproduct' Name
'('         Punctuation
's'         Name
','         Operator
''          Text.Whitespace
'var'       Name
','         Operator
''          Text.Whitespace
'loop'      Name
','         Operator

```

'\n	Text.Whitespace
'['	Punctuation
'op'	Name.Builtin
'('	Punctuation
'heap'	Name
')'	Punctuation
','	Operator
''	Text.Whitespace
'Stmt'	Name
'('	Punctuation
'*'	Name
','	Operator
''	Text.Whitespace
'['	Punctuation
','	Operator
''	Text.Whitespace
'['	Punctuation
'r'	Name
'))'	Punctuation
','	Operator
''	Text.Whitespace
'+'	Name
','	Operator
''	Text.Whitespace
'kb1'	Name
','	Operator
''	Text.Whitespace
'kb0'	Name
')'	Punctuation
'\n	Text.Whitespace
'end'	Keyword
''	Text.Whitespace
'if'	Keyword
'\n	Text.Whitespace
'end'	Keyword
''	Text.Whitespace
'if'	Keyword
','	Punctuation
'\n	Text.Whitespace
'if'	Keyword
''	Text.Whitespace
'w'	Name
''	Text.Whitespace
::'	Operator
''	Text.Whitespace
'And'	Name
'('	Punctuation

'specfunc' Name
 '(' Punctuation
 'if' Name
 '(' Punctuation
 'mode' Name
 '' Text.Whitespace
 '=' Operator
 '' Text.Whitespace
 '*`' Name
 ';' Operator
 '' Text.Whitespace
 '{' Punctuation
 'product' Name
 ';' Operator
 '' Text.Whitespace
 'Product' Name
 '}' Punctuation
 ';' Operator
 '' Text.Whitespace
 '{' Punctuation
 'sum' Name
 ';' Operator
 '' Text.Whitespace
 'Sum' Name
 ')))' Punctuation
 ';' Operator
 '\n' Text.Whitespace
 'anyfunc' Name
 '(' Punctuation
 'anything' Name
 ';' Operator
 '' Text.Whitespace
 'name' Name
 '=' Operator
 'range' Name
 '(' Punctuation
 'freeof' Name
 '(' Punctuation
 'var' Name
 ')))))' Punctuation
 '' Text.Whitespace
 'then' Keyword
 '\n' Text.Whitespace
 'x' Name
 ';' Operator
 '' Text.Whitespace
 'kb' Name

```

''      Text.Whitespace
':='    Operator
''      Text.Whitespace
'genType'  Name
'('      Punctuation
'op'      Name.Builtin
'(['     Punctuation
'2'      Literal.Number.Integer
';'      Operator
'1'      Literal.Number.Integer
']'
        Punctuation
';'      Operator
'w'      Name
')'      Punctuation
';'      Operator
''      Text.Whitespace
'HInt'    Name
'('      Punctuation
'closed_bounds' Name
'('      Punctuation
'op'      Name.Builtin
'(['     Punctuation
'2'      Literal.Number.Integer
';'      Operator
'2'      Literal.Number.Integer
']'      Punctuation
';'      Operator
'w'      Name
')))'    Punctuation
';'      Operator
''      Text.Whitespace
'kb1'     Name
';'      Operator
'\n      ' Text.Whitespace
'w'      Name
';'      Operator
''      Text.Whitespace
'var'     Name
';'      Operator
''      Text.Whitespace
'loop'    Name
';'      Operator
''      Text.Whitespace
'heap'    Name
');'      Punctuation
'\n      ' Text.Whitespace
'return'   Keyword

```

```

''      Text.Whitespace
'unproduct' Name
'('      Punctuation
'eval'
      Name.Builtin
'('      Punctuation
'op'      Name.Builtin
'('      Punctuation
'1'      Literal.Number.Integer
','      Operator
'w'      Name
')'      Punctuation
','      Operator
''      Text.Whitespace
'op'      Name.Builtin
'['      Punctuation
'2'      Literal.Number.Integer
','      Operator
'1'      Literal.Number.Integer
']'      Punctuation
','      Operator
'w'      Name
')'      Punctuation
'='      Operator
'x'      Name
')'      Punctuation
','      Operator
''      Text.Whitespace
'var'      Name
','      Operator
''      Text.Whitespace
'loop'      Name
','      Operator
'\n          ' Text.Whitespace
'['      Punctuation
'op'      Name.Builtin
'('      Punctuation
'heap'      Name
')'      Punctuation
','      Operator
''      Text.Whitespace
'Binder'      Name
'('      Punctuation
'op'
      Name.Builtin
'('      Punctuation
'0'      Literal.Number.Integer
','      Operator

```

'w'	Name
)'	Punctuation
;	Operator
' '	Text.Whitespace
'kb1'	Name
)']	Punctuation
;	Operator
' '	Text.Whitespace
'mode'	Name
;	Operator
' '	Text.Whitespace
'kb'	Name
;	Operator
' '	Text.Whitespace
'kb0'	Name
)'	Punctuation
'\n '	Text.Whitespace
'end'	Keyword
' '	Text.Whitespace
'if'	Keyword
;	Punctuation
'\n '	Text.Whitespace
'if'	Keyword
' '	Text.Whitespace
'mode'	Name
' '	Text.Whitespace
'='	Operator
' '	Text.Whitespace
'*~'	Name
' '	Text.Whitespace
'and'	Keyword
' '	Text.Whitespace
'w'	Name
' '	Text.Whitespace
'::'	Operator
' '	
	Text.Whitespace
''''	Punctuation
'{'	Punctuation
'^+~'	Name
;	Operator
' '	Text.Whitespace
'specfunc'	Name
'{'	Punctuation
'sum'	Name
;	Operator
' '	Text.Whitespace
'Sum'	Name


```

'}}}'      Punctuation
''''       Punctuation
''         Text.Whitespace
'then'     Keyword
'\n      ' Text.Whitespace
'# Maybe this w is one of those big sums involving products that are\n' Comment.Single

'  '      Text.Whitespace
'# always equal to 1, left behind by the density of Categorical\n' Comment.Single

'  '      Text.Whitespace
'w1'      Name
''        Text.Whitespace
':='      Operator
''        Text.Whitespace
'graft'   Name
'('       Punctuation
'split'   Name
'('       Punctuation
'peel'    Name
'('       Punctuation
'w'       Name
')));'    Punctuation
'\n      ' Text.Whitespace
'w1'      Name
''        Text.Whitespace
':='
          Operator
''        Text.Whitespace
'combine' Name
'('       Punctuation
'rebase_upper' Name
'('       Punctuation
'w1'      Name
')));'    Punctuation
'\n      ' Text.Whitespace
'w1'      Name
''        Text.Whitespace
':='      Operator
''        Text.Whitespace
'combine' Name
'('       Punctuation
'rebase_lower' Name
'('       Punctuation
'w1'      Name
')));'    Punctuation
'\n      ' Text.Whitespace
'return'   Keyword

```

```

''      Text.Whitespace
 '['      Punctuation
 'wrap'   Name
 '('      Punctuation
 'heap'   Name
 ';'      Operator
 ''      Text.Whitespace
 'w1'     Name
 ';'      Operator
 ''      Text.Whitespace
 'mode'   Name
 ';'      Operator
 ''      Text.Whitespace
 'kb1'    Name
 ';'      Operator
 ''      Text.Whitespace
 'kb0'    Name
 ')'      Punctuation
 ';'      Operator
 ''      Text.Whitespace
 '1'
         Literal.Number.Integer
 ']'      Punctuation
 '\n '    Text.Whitespace
 'end'    Keyword
 ''      Text.Whitespace
 'if'     Keyword
 ';'      Punctuation
 '\n '    Text.Whitespace
 'return' Keyword
 ''      Text.Whitespace
 '['      Punctuation
 'wrap'   Name
 '('      Punctuation
 'heap'   Name
 ';'      Operator
 ''      Text.Whitespace
 'w'      Name
 ';'      Operator
 ''      Text.Whitespace
 'mode'   Name
 ';'      Operator
 ''      Text.Whitespace
 'kb1'    Name
 ';'      Operator
 ''      Text.Whitespace
 'kb0'    Name
 ')'      Punctuation

```

'	Operator
' '	Text.Whitespace
'1'	Literal.Number.Integer
']'	Punctuation
'\n '	Text.Whitespace
'end'	Keyword
' '	Text.Whitespace
'proc'	Keyword
','	Punctuation
'\n\n '	Text.Whitespace
'enter_pieewise'	Name
' '	Text.Whitespace
':='	Operator
' '	Text.Whitespace
'proc'	Keyword
'('	Punctuation
'ee'	Name
','	Operator
' '	Text.Whitespace
'kb0'	Name
::'	Operator
't_kb'	Name
','	Operator
' '	Text.Whitespace
'mode'	Name
::'	Operator
'identical'	Name
'('	Punctuation
'*`'	Name
','	Operator
'+'`'	Name
')'	Punctuation
','	Operator
' '	Text.Whitespace
'\$'	Operator
')'	Punctuation
'\n '	Text.Whitespace
'local'	Keyword
' '	Text.Whitespace
'e'	Name
','	Operator
' '	Text.Whitespace
'kb'	Name
','	Operator
' '	Text.Whitespace
'mo'	Name
','	Punctuation

```

'\n'      Text.Whitespace
'e'       Name
' '       Text.Whitespace
':='      Operator
' '       Text.Whitespace
'ee'      Name
';'
Punctuation
'\n'      Text.Whitespace
'kb'      Name
' '       Text.Whitespace
':='      Operator
' '       Text.Whitespace
'kb0'     Name
';'       Punctuation
'\n'      Text.Whitespace
'mo'      Name
' '       Text.Whitespace
':='      Operator
' '       Text.Whitespace
'mode'    Name
'();'     Punctuation
'\n'      Text.Whitespace
'while'    Keyword
' '       Text.Whitespace
'e'       Name
' '       Text.Whitespace
'::'      Operator
' '       Text.Whitespace
'""'      Punctuation
'specfunc' Name
'('       Punctuation
'piecewise' Name.Builtin
')'       Punctuation
'""'      Punctuation
' '       Text.Whitespace
'and'     Keyword
' '       Text.Whitespace
'nops'    Name.Builtin
'('       Punctuation
'e'       Name
')'       Punctuation
' '       Text.Whitespace
'='       Operator
' '       Text.Whitespace
'3'       Literal.Number.Integer
'

```

```

'      Text.Whitespace
'do'    Keyword
'\n'   ' Text.Whitespace
'if'    Keyword
''      Text.Whitespace
'op'    Name.Builtin
'('     Punctuation
'3'     Literal.Number.Integer
';'     Operator
'e'     Name
')'     Punctuation
''      Text.Whitespace
'='     Operator
''      Text.Whitespace
'mo'    Name
''      Text.Whitespace
'then'  Keyword
'\n'   ' Text.Whitespace
'kb'    Name
''      Text.Whitespace
':='    Operator
''      Text.Whitespace
'assert' Name
'('     Punctuation
'op'    Name.Builtin
'('     Punctuation
'1'     Literal.Number.Integer
';'     Operator
'e'     Name
')'     Punctuation
';'     Operator
''      Text.Whitespace
'kb'    Name
');'    Punctuation
'\n'   ' Text.Whitespace
'e'     Name
''      Text.Whitespace
':='    Operator
''
      Text.Whitespace
'op'    Name.Builtin
'('     Punctuation
'2'     Literal.Number.Integer
';'     Operator
'e'     Name
');'    Punctuation
'\n'   ' Text.Whitespace
'elif'  Keyword

```

```

''      Text.Whitespace
'op'    Name.Builtin
'('     Punctuation
'2'     Literal.Number.Integer
';'     Operator
'e'     Name
')'     Punctuation
''      Text.Whitespace
'='     Operator
''      Text.Whitespace
'mo'    Name
''      Text.Whitespace
'then'   Keyword
'\n'    ' Text.Whitespace
'kb'    Name
''      Text.Whitespace
':='    Operator
''      Text.Whitespace
'assert' Name
'('     Punctuation
'Not'   Name
'('     Punctuation
'op'    Name.Builtin
'('     Punctuation
'1'     Literal.Number.Integer
';'     Operator
'e'     Name
'))'    Punctuation
';'     Operator
''      Text.Whitespace
'kb'
      Name
');'    Punctuation
'\n'    ' Text.Whitespace
'e'     Name
''      Text.Whitespace
':='    Operator
''      Text.Whitespace
'op'    Name.Builtin
'('     Punctuation
'3'     Literal.Number.Integer
';'     Operator
'e'     Name
');'    Punctuation
'\n'    ' Text.Whitespace
'else'   Keyword
'\n'    ' Text.Whitespace
'break'  Keyword

```

```

';'      Punctuation
'\n  '   Text.Whitespace
'end'    Keyword
' '      Text.Whitespace
'if'     Keyword
';'      Punctuation
'\n  '   Text.Whitespace
'end'    Keyword
' '      Text.Whitespace
'do'     Keyword
';'      Punctuation
'\n  '   Text.Whitespace
'ASSERT' Name.Builtin
'('      Punctuation
'type'   Name.Builtin
'('      Punctuation
'kb'     Name
';'      Operator
't_kb'   Name
')'      Punctuation
';'      Operator
' '      Text.Whitespace
'''enter_pieewise:
  KB of pieewise conditions is not valid, so the input pieewise must not be valid.''' Literal.String
');'     Punctuation
'\n  '   Text.Whitespace
'e'      Name
';'      Operator
' '      Text.Whitespace
'kb'     Name
'\n  '   Text.Whitespace
'end'    Keyword
' '      Text.Whitespace
'proc'   Keyword
';'      Punctuation
'\n\n  ' Text.Whitespace
'# heap is a list of t_binder and t_stmt\n' Comment.Single

' '      Text.Whitespace
'# one invariant to maintain:\n' Comment.Single

' '      Text.Whitespace
'# wrap(heap, mode(a,b)) = wrap(heap,a) * wrap(heap,b)\n' Comment.Single

'\n  '   Text.Whitespace
'# Also, a t_binder is a Product/product/Sum/sum.\n' Comment.Single

' '      Text.Whitespace

```

'# And, a t_stmt is a 1-hole context of a (multiplicative) AST,\n' Comment.Single

' ' Text.Whitespace

'# used for [a ^ hole, hole ^ b, exp(hole), c * hole].\n' Comment.Single

\n

' Text.Whitespace

'wrap' Name

' ' Text.Whitespace

':=' Operator

' ' Text.Whitespace

'proc' Keyword

(' Punctuation

'heap' Name

::' Operator

'list' Name

',' Operator

' ' Text.Whitespace

'e1' Name

',' Operator

' ' Text.Whitespace

'mode1' Name

::' Operator

'identical' Name

(' Punctuation

^*^' Name

',' Operator

^+^' Name

)' Punctuation

',' Operator

\n ' Text.Whitespace

'kb1' Name

::' Operator

't_kb' Name

',' Operator

' ' Text.Whitespace

'kb0' Name

::' Operator

't_kb' Name

',' Operator

' ' Text.Whitespace

'\$' Operator

)' Punctuation

\n ' Text.Whitespace

'local' Keyword

' ' Text.Whitespace

'e' Name

',' Operator


```

'
'      Text.Whitespace
'kb'   Name
','    Operator
''     Text.Whitespace
'mode'  Name
','    Operator
''     Text.Whitespace
'i'     Name
','    Operator
''     Text.Whitespace
'entry' Name
','    Operator
''     Text.Whitespace
'rest'  Name
','    Operator
''     Text.Whitespace
'var'   Name
','    Operator
''     Text.Whitespace
'new_rng' Name
','    Operator
''     Text.Whitespace
'make'   Name
','    Operator
''     Text.Whitespace
'logmake' Name
','    Operator
'\n      ' Text.Whitespace
'dom_spec' Name
','    Operator
''     Text.Whitespace
'w'      Name
','    Operator
''     Text.Whitespace
'wPow'   Name
','    Operator
''     Text.Whitespace
'wExp'   Name
','    Operator
''     Text.Whitespace
'arrrgs' Name
';'     Punctuation
'\n
'      Text.Whitespace
'e'     Name
' '     Text.Whitespace
':='    Operator

```

```

''      Text.Whitespace
'e1'    Name
';'     Punctuation
'\n  '  Text.Whitespace
'kb'    Name
'  '    Text.Whitespace
':='    Operator
''      Text.Whitespace
'kb1'   Name
';'     Punctuation
'\n  '  Text.Whitespace
'mode'  Name
''      Text.Whitespace
':='    Operator
''      Text.Whitespace
'mode1' Name
';'     Punctuation
'\n  '  Text.Whitespace
'for'   Keyword
''      Text.Whitespace
'i'     Name
''      Text.Whitespace
'from'  Keyword
''      Text.Whitespace
'nops'  Name.Builtin
'('     Punctuation
'heap'  Name
')'     Punctuation
''      Text.Whitespace
'to'    Keyword
''      Text.Whitespace
'1'     Literal.Number.Integer
''      Text.Whitespace
'by'    Keyword
''
      Text.Whitespace
'-'     Operator
'1'     Literal.Number.Integer
''      Text.Whitespace
'do'    Keyword
'\n  '  Text.Whitespace
'entry' Name
''      Text.Whitespace
':='    Operator
''      Text.Whitespace
'op'    Name.Builtin
'('     Punctuation
'i'     Name

```

```

','      Operator
'heap'   Name
');'     Punctuation
'\n      ' Text.Whitespace
'if'     Keyword
''       Text.Whitespace
'entry'  Name
''       Text.Whitespace
'::'     Operator
''       Text.Whitespace
't_binder' Name
''       Text.Whitespace
'then'   Keyword
'\n      ' Text.Whitespace
'if'     Keyword
''       Text.Whitespace
'not'    Keyword
''       Text.Whitespace
'('      Punctuation
'op'     Name.Builtin
'('      Punctuation
'1'      Literal.Number.Integer
','      Operator
'entry'  Name
')'      Punctuation
''       Text.Whitespace
'in'
        Keyword
''       Text.Whitespace
'`if`'   Name
'('      Punctuation
'mode'   Name
'='      Operator
'^+`'    Name
','      Operator
''       Text.Whitespace
'{'      Punctuation
'sum'    Name
','      Operator
'Sum'    Name
'}'      Punctuation
','      Operator
'\n      ' Text.Whitespace
'{'      Punctuation
'product' Name
','      Operator
'Product' Name
'}}))'   Punctuation

```

```

''      Text.Whitespace
'then'   Keyword
'\n'     ' Text.Whitespace
'print'   Name.Builtin
'('       Punctuation
'''Warning: heap mode inconsistency''' Literal.String
';'       Operator
''       Text.Whitespace
'heap'    Name
';'       Operator
''       Text.Whitespace
'mode1'   Name
')'       Punctuation
'\n'     ' Text.Whitespace
'end'     Keyword
''       Text.Whitespace
'if'      Keyword
';'       Punctuation
          Punctuation
'\n'     ' Text.Whitespace
'e'       Name
';'       Operator
''       Text.Whitespace
'kb'      Name
''       Text.Whitespace
':='      Operator
''       Text.Whitespace
'enter_pieewise' Name
'('       Punctuation
'e'       Name
';'       Operator
''       Text.Whitespace
'kb'      Name
';'       Operator
''       Text.Whitespace
'mode'    Name
');'      Punctuation
'\n'     ' Text.Whitespace
'rest'    Name
''       Text.Whitespace
':='      Operator
''       Text.Whitespace
'kb_subtract' Name
'('       Punctuation
'kb'      Name
';'       Operator
''       Text.Whitespace
'op'      Name.Builtin

```

```

'('      Punctuation
'2'      Literal.Number.Integer
','      Operator
'entry'   Name
'));'    Punctuation
'\n      ' Text.Whitespace
'new_rng' Name
','      Operator
''       Text.Whitespace
'rest'    Name
''
        Text.Whitespace
':='     Operator
''       Text.Whitespace
'selectremove' Name.Builtin
'('      Punctuation
'type'    Name.Builtin
','      Operator
''       Text.Whitespace
'rest'    Name
','      Operator
'\n      ' Text.Whitespace
'{'      Punctuation
'identical' Name
'('      Punctuation
'genType' Name
')'      Punctuation
','      Operator
''       Text.Whitespace
'name'    Name
','      Operator
''       Text.Whitespace
'specfunc' Name
'('      Punctuation
'HInt'    Name
')]'     Punctuation
','      Operator
'\n      ' Text.Whitespace
'['      Punctuation
'identical' Name
'('      Punctuation
'genLet'  Name
')'      Punctuation
','      Operator
''       Text.Whitespace
'name'    Name
','      Operator
''       Text.Whitespace

```

```

'anything' Name
'}});' Punctuation
'\n ' Text.Whitespace
'if'
Keyword
' ' Text.Whitespace
'not' Keyword
' ' Text.Whitespace
'(' Punctuation
'new_rng' Name
' ' Text.Whitespace
'::' Operator
' ' Text.Whitespace
'[' Punctuation
'list' Name
'])' Punctuation
' ' Text.Whitespace
'then' Keyword
'\n ' Text.Whitespace
'error' Keyword
' ' Text.Whitespace
'''kb_subtract should return exactly one gen*''' Literal.String
'\n ' Text.Whitespace
'end' Keyword
' ' Text.Whitespace
'if' Keyword
';' Punctuation
'\n ' Text.Whitespace
'new_rng' Name
' ' Text.Whitespace
':=' Operator
' ' Text.Whitespace
'op' Name.Builtin
'(' Punctuation
'new_rng' Name
');' Punctuation
'\n ' Text.Whitespace
'var' Name
' ' Text.Whitespace
':=' Operator
' ' Text.Whitespace
'op' Name.Builtin
'('
Punctuation
'2' Literal.Number.Integer
';' Operator
'new_rng' Name
');' Punctuation

```

```

'\n'      ' Text.Whitespace
'if'      Keyword
''        Text.Whitespace
'op'      Name.Builtin
'('       Punctuation
'1'       Literal.Number.Integer
','       Operator
'new_rng' Name
')'       Punctuation
''        Text.Whitespace
'='       Operator
''        Text.Whitespace
'genType' Name
''        Text.Whitespace
'then'    Keyword
'\n'      ' Text.Whitespace
'make'    Name
' '       Text.Whitespace
':='     Operator
''        Text.Whitespace
'op'      Name.Builtin
'('       Punctuation
'1'       Literal.Number.Integer
','       Operator
'entry'   Name
');'      Punctuation
'\n'      ' Text.Whitespace
'new_rng' Name
''        Text.Whitespace
':='     Operator
''        Text.Whitespace
'range_of_HInt' Name
'('       Punctuation
'op'      Name.Builtin
'('       Punctuation
'3'       Literal.Number.Integer
','       Operator
'new_rng' Name
'));'     Punctuation
'\n'      ' Text.Whitespace
'else'    Keyword
''        Text.Whitespace
'# op(1,new_rng) = genLet\n' Comment.Single

' '       Text.Whitespace
'make'    Name
' '       Text.Whitespace

```

```

':='      Operator
''        Text.Whitespace
'eval'    Name.Builtin
';'       Punctuation
'\n'      ' Text.Whitespace
'new_rng'  Name
''        Text.Whitespace
':='      Operator
''        Text.Whitespace
'op'      Name.Builtin
'('       Punctuation
'3'       Literal.Number.Integer
';'       Operator
'new_rng'  Name
');'      Punctuation
'\n'      ' Text.Whitespace
'end'     Keyword
''        Text.Whitespace
'if'      Keyword
';'       Punctuation
'\n'      ' Text.Whitespace
'dom_spec' Name
';'       Operator
''        Text.Whitespace
'rest'
    Name
''        Text.Whitespace
':='      Operator
''        Text.Whitespace
'selectremove' Name.Builtin
'('       Punctuation
'depends'  Name
';'       Operator
'\n'      ' Text.Whitespace
'map'      Name.Builtin
'('       Punctuation
'proc'     Keyword
'('       Punctuation
'a'        Name
'::'       Operator
'['        Punctuation
'identical' Name
'('       Punctuation
'assert'   Name
')'        Punctuation
';'       Operator
'anything' Name
']'        Punctuation

```



```

','      Operator
'$'      Operator
')'      Punctuation
''       Text.Whitespace
'op'     Name.Builtin
'('      Punctuation
'2'      Literal.Number.Integer
','      Operator
'a'      Name
')'      Punctuation
''       Text.Whitespace
'end'    Keyword
''       Text.Whitespace
'proc'   Keyword
','      Operator
''       Text.Whitespace
'rest'   Name
')'
Punctuation
','      Operator
'\n'     ' Text.Whitespace
'var'    Name
');'     Punctuation
'\n\n'   ' Text.Whitespace
'# Like e := make(pieewise(And(op(dom_spec)), e, mode()), var=new_rng);\n' Comment.Single

'      ' Text.Whitespace
'# but try to simplify by pushing the make and the pieewise into e\n' Comment.Single

'      ' Text.Whitespace
'('      Punctuation
'e'      Name
','      Operator
''       Text.Whitespace
'w'      Name
')'      Punctuation
''       Text.Whitespace
':='     Operator
''       Text.Whitespace
'selectremove' Name.Builtin
'('      Punctuation
'depends' Name
','      Operator
''       Text.Whitespace
'convert' Name.Builtin
'('      Punctuation
'e'      Name
','      Operator

```

```

''      Text.Whitespace
"""     Punctuation
'list'  Name
"""     Punctuation
','     Operator
''      Text.Whitespace
'*`'    Name
')'
Punctuation
','     Operator
''      Text.Whitespace
'var'   Name
');'    Punctuation
'\n'    ' Text.Whitespace
'w'     Name
''      Text.Whitespace
':='    Operator
''      Text.Whitespace
'*`'    Name
'('     Punctuation
'op'    Name.Builtin
'('     Punctuation
'w'     Name
'));'   Punctuation
'\n'    ' Text.Whitespace
'if'    Keyword
''      Text.Whitespace
'mode'  Name
''      Text.Whitespace
'='     Operator
''      Text.Whitespace
'*`'    Name
''      Text.Whitespace
'then'  Keyword
'\n'    ' Text.Whitespace
'('     Punctuation
'wPow'  Name
','     Operator
''      Text.Whitespace
'e'     Name
')'     Punctuation
''      Text.Whitespace
':='    Operator
''      Text.Whitespace
'selectremove' Name.Builtin
'('     Punctuation
'type'  Name.Builtin
','

```

	Operator
' '	Text.Whitespace
'e'	Name
','	Operator
' '	Text.Whitespace
"""	Punctuation
'^\'	Name
"""	Punctuation
'('	Punctuation
"""	Punctuation
'freeof'	Name
"""	Punctuation
'('	Punctuation
'var'	Name
)'	Punctuation
','	Operator
' '	Text.Whitespace
"""	Punctuation
'anything'	Name
"""	Punctuation
'))';	Punctuation
'\n	' Text.Whitespace
'('	Punctuation
'wExp'	Name
','	Operator
' '	Text.Whitespace
'e'	Name
)'	Punctuation
' '	Text.Whitespace
':='	Operator
' '	Text.Whitespace
'selectremove'	Name.Builtin
'('	Punctuation
'type'	Name.Builtin
','	Operator
' '	Text.Whitespace
'e'	Name
','	Operator
' '	Text.Whitespace
"""	Punctuation
'exp'	
	Name
'('	Punctuation
'anything'	Name
)'	Punctuation
"""	Punctuation
'))';	Punctuation
'\n	' Text.Whitespace

```

'wExp'    Name
''        Text.Whitespace
':='      Operator
''        Text.Whitespace
'^+`'     Name
'('       Punctuation
'op'      Name.Builtin
'('       Punctuation
'map2'    Name
'('       Punctuation
'op'      Name.Builtin
','       Operator
''        Text.Whitespace
'1'       Literal.Number.Integer
','       Operator
''        Text.Whitespace
'wExp'    Name
')));'    Punctuation
'\n'      ' Text.Whitespace
'wExp'    Name
''        Text.Whitespace
':='      Operator
''        Text.Whitespace
'expand'  Name.Builtin
'('       Punctuation
'wExp'    Name
','       Operator
''        Text.Whitespace
'op'      Name.Builtin
'('       Punctuation
'indets'  Name.Builtin
'('       Punctuation
'wExp'
    Name
','       Operator
''        Text.Whitespace
'function' Name
')));'    Punctuation
'\n'      ' Text.Whitespace
'logmake' Name
''        Text.Whitespace
':='      Operator
''        Text.Whitespace
'proc'    Keyword
'('       Punctuation
't'       Name
')'       Punctuation
'\n'      ' Text.Whitespace

```

```

'local'    Keyword
''         Text.Whitespace
's'        Name
','        Operator
''         Text.Whitespace
'r'        Name
';'        Punctuation
'\n'       ' Text.Whitespace
's'        Name
','        Operator
''         Text.Whitespace
'r'        Name
''         Text.Whitespace
':='       Operator
''         Text.Whitespace
'selectremove' Name.Builtin
'('        Punctuation
'depends'  Name
','        Operator
''         Text.Whitespace
'convert'  Name.Builtin
'('        Punctuation
't'        Name
','        Operator
''         Text.Whitespace
""""
Punctuation
'list'     Name
""""       Punctuation
','        Operator
''         Text.Whitespace
'~*'       Name
')'        Punctuation
','        Operator
''         Text.Whitespace
'var'      Name
');'       Punctuation
'\n'       ' Text.Whitespace
'~*'       Name
'('        Punctuation
'op'       Name.Builtin
'('        Punctuation
'r'        Name
')'        Punctuation
','        Operator
'\n'       ' Text.Whitespace
'if'       Name
'('        Punctuation

```

'make' Name
 '=' Operator
 'eval' Name.Builtin
 ';' Operator
 'eval' Name.Builtin
 ';' Operator
 'Sum' Name
 ')' Punctuation
 '\n' ' Text.Whitespace
 '(' Punctuation
 'piecewise_And' Name
 '(' Punctuation
 'dom_spec' Name
 ';' Operator
 '' Text.Whitespace
 '~*' Name
 '(' Punctuation
 'op' Name.Builtin
 '('
 Punctuation
 's' Name
 '))' Punctuation
 ';' Operator
 '' Text.Whitespace
 '0' Literal.Number.Integer
 ')' Punctuation
 ';' Operator
 '' Text.Whitespace
 'var' Name
 '=' Operator
 'new_rng' Name
 '));' Punctuation
 '\n' ' Text.Whitespace
 'end' Keyword
 '' Text.Whitespace
 'proc' Keyword
 ';' Punctuation
 '\n' ' Text.Whitespace
 'w' Name
 '' Text.Whitespace
 ':=' Operator
 '' Text.Whitespace
 '~*' Name
 '(' Punctuation
 '' Text.Whitespace
 '~if' Name
 '(' Punctuation
 'w' Name

```

''      Text.Whitespace
'='     Operator
''      Text.Whitespace
'1'     Literal.Number.Integer
','     Operator
''      Text.Whitespace
'1'     Literal.Number.Integer
','     Operator
''      Text.Whitespace
'w'     Name
'
'      Text.Whitespace
'^'     Operator
''      Text.Whitespace
'logmake' Name
'('     Punctuation
'1'     Literal.Number.Integer
'))'    Punctuation
'\n'    ' Text.Whitespace
','     Operator
''      Text.Whitespace
'op'    Name.Builtin
'('     Punctuation
'map'   Name.Builtin
'(('    Punctuation
'f'     Name
''      Text.Whitespace
'-'>'   Operator
''      Text.Whitespace
'op'    Name.Builtin
'('     Punctuation
'1'     Literal.Number.Integer
','     Operator
'f'     Name
')'     Punctuation
''      Text.Whitespace
'^'     Operator
''      Text.Whitespace
'logmake' Name
'('     Punctuation
'op'    Name.Builtin
'('     Punctuation
'2'     Literal.Number.Integer
','     Operator
'f'     Name
')))'   Punctuation
','     Operator
''      Text.Whitespace

```

```

'wPow'
    Name
'))'    Punctuation
'\n'    ' Text.Whitespace
','     Operator
''      Text.Whitespace
'if'    Name
'('     Punctuation
'wExp'  Name
''      Text.Whitespace
'='     Operator
''      Text.Whitespace
'0'     Literal.Number.Integer
','     Operator
''      Text.Whitespace
'1'     Literal.Number.Integer
','     Operator
''      Text.Whitespace
'exp'   Name
'('     Punctuation
'maptype' Name
'('     Punctuation
'+`'    Name
','     Operator
'logmake' Name
','     Operator
'wExp'  Name
')))'   Punctuation
''      Text.Whitespace
');'    Punctuation
'\n'    ' Text.Whitespace
'end'   Keyword
''      Text.Whitespace
'if'    Keyword
';'     Punctuation
'\n'    ' Text.Whitespace
'e'     Name
''      Text.Whitespace
':='    Operator
''      Text.Whitespace
'w'
    Name
''      Text.Whitespace
'*'     Operator
''      Text.Whitespace
'make'  Name
'('     Punctuation
'piecewise_And' Name

```



```

'('      Punctuation
'dom_spec' Name
','      Operator
''       Text.Whitespace
'*`'     Name
'('      Punctuation
'op'     Name.Builtin
'('      Punctuation
'e'      Name
'))'     Punctuation
','      Operator
''       Text.Whitespace
'mode'   Name
'()'     Punctuation
','      Operator
''       Text.Whitespace
'var'    Name
'='      Operator
'new_rng' Name
');'     Punctuation
'\n\n'   Text.Whitespace
"# `rest' originally comes from `entry', and this reinserts it after some\n" Comment.Single

'      ' Text.Whitespace
'# processing. The original KB was valid, so this one should also be valid.\n' Comment.Single

'      ' Text.Whitespace
'kb'    Name
''      Text.Whitespace
':='    Operator
''

    Text.Whitespace
'foldr' Name
'('      Punctuation
'assert' Name
','      Operator
''       Text.Whitespace
'op'     Name.Builtin
'('      Punctuation
'2'      Literal.Number.Integer
','      Operator
'entry'  Name
')'      Punctuation
','      Operator
''       Text.Whitespace
'op'     Name.Builtin
'('      Punctuation
'rest'   Name

```

```

'));'      Punctuation
'\n      ' Text.Whitespace
'ASSERT'   Name.Builtin
'('        Punctuation
'type'     Name.Builtin
'('        Punctuation
'kb'       Name
','        Operator
't_kb'     Name
')'        Punctuation
','        Operator
''         Text.Whitespace
'"Loop/wrap{t_binder}: rebuilding kb produced contradiction"' Literal.String
'));'      Punctuation
'\n\n      ' Text.Whitespace
'elif'     Keyword
''         Text.Whitespace
'entry'    Name
''         Text.Whitespace
'::'       Operator
''         Text.Whitespace
't_stmt'   Name
          Name
''         Text.Whitespace
'then'     Keyword
'\n      ' Text.Whitespace
'# We evaluate arrrgs first, in case op(1,stmt) is an operation (such as\n' Comment.Single

'      '   Text.Whitespace
'# piecewise) that looks ahead at how many arguments it is passed before\n' Comment.Single

'      '   Text.Whitespace
'# they are evaluated.\n' Comment.Single

'      '   Text.Whitespace
'arrrgs'   Name
''         Text.Whitespace
':='       Operator
''         Text.Whitespace
'op'       Name.Builtin
'('        Punctuation
'op'       Name.Builtin
'('        Punctuation
'2'        Literal.Number.Integer
','        Operator
'entry'    Name
'))'       Punctuation
','        Operator

```

```

''      Text.Whitespace
'e'     Name
';'     Operator
''      Text.Whitespace
'op'    Name.Builtin
'('     Punctuation
'op'    Name.Builtin
'('     Punctuation
'3'     Literal.Number.Integer
','
        Operator
'entry'  Name
'));'   Punctuation
'\n'    ' Text.Whitespace
'e'     Name
' '     Text.Whitespace
':='    Operator
''      Text.Whitespace
'op'    Name.Builtin
'('     Punctuation
'1'     Literal.Number.Integer
','     Operator
'entry'  Name
')('    Punctuation
'arrgs'  Name
'));'   Punctuation
'\n'    ' Text.Whitespace
'if'    Keyword
''      Text.Whitespace
'entry'  Name
''      Text.Whitespace
'::'    Operator
''      Text.Whitespace
't_exp'  Name
''      Text.Whitespace
'then'   Keyword
'\n'    ' Text.Whitespace
'if'    Keyword
''      Text.Whitespace
'mode'   Name
''      Text.Whitespace
'<>'    Operator
''      Text.Whitespace
'^+`'   Name
''      Text.Whitespace
'then'   Keyword
'\n'    ' Text.Whitespace
'print'  Name.Builtin

```

```

'('      Punctuation
""Warning:
heap mode inconsistency?"" Literal.String
','      Operator
''       Text.Whitespace
'heap'   Name
','      Operator
''       Text.Whitespace
'mode1'  Name
')'      Punctuation
'\n'     ' Text.Whitespace
'end'    Keyword
''       Text.Whitespace
'if'     Keyword
','      Punctuation
'\n'     ' Text.Whitespace
'mode'   Name
''       Text.Whitespace
':='     Operator
''       Text.Whitespace
'*~'     Name
','      Punctuation
'\n'     ' Text.Whitespace
'end'    Keyword
''       Text.Whitespace
'if'     Keyword
'\n'     ' Text.Whitespace
'else'   Keyword
''       Text.Whitespace
'error'  Keyword
''       Text.Whitespace
""Malformed heap entry %1"" Literal.String
','      Operator
''       Text.Whitespace
'entry'  Name
''       Text.Whitespace
'end'    Keyword
''       Text.Whitespace
'if'     Keyword
'\n'
' '      Text.Whitespace
'end'    Keyword
''       Text.Whitespace
'do'     Keyword
','      Punctuation
'\n'     ' Text.Whitespace
'if'     Keyword
''       Text.Whitespace

```

```

'mode'      Name
''          Text.Whitespace
'<>'       Operator
''          Text.Whitespace
'*`'       Name
''          Text.Whitespace
'then'      Keyword
'\n '      Text.Whitespace
'print'     Name.Builtin
'('         Punctuation
'''Warning: heap mode inconsistency??''' Literal.String
','         Operator
''          Text.Whitespace
'heap'      Name
','         Operator
''          Text.Whitespace
'mode1'     Name
')'         Punctuation
'\n '      Text.Whitespace
'end'       Keyword
''          Text.Whitespace
'if'        Keyword
','         Punctuation
'\n '      Text.Whitespace
'e'         Name
','         Operator
''          Text.Whitespace
'kb'        Name
''          Text.Whitespace
':='        Operator
''
    Text.Whitespace
'enter_pieewise' Name
'('         Punctuation
'e'         Name
','         Operator
''          Text.Whitespace
'kb'        Name
','         Operator
''          Text.Whitespace
'mode'      Name
');'        Punctuation
'\n '      Text.Whitespace
'rest'      Name
''          Text.Whitespace
':='        Operator
''          Text.Whitespace
'kb_subtract' Name

```

'(' Punctuation
 'kb' Name
 ';' Operator
 '' Text.Whitespace
 'kb0' Name
 ');' Punctuation
 '\n ' Text.Whitespace
 'rest' Name
 '' Text.Whitespace
 ':= ' Operator
 '' Text.Whitespace
 'map' Name.Builtin
 '(' Punctuation
 'proc' Keyword
 '(' Punctuation
 'a' Name
 '::' Operator
 '[' Punctuation
 'identical' Name
 '(' Punctuation
 'assert' Name
 ')' Punctuation
 ';' Operator
 'anything' Name
 ']' Punctuation
 ';' Operator
 '\$' Operator
 ')' Punctuation
 '' Text.Whitespace
 'op' Name.Builtin
 '(' Punctuation
 '2' Literal.Number.Integer
 ';' Operator
 'a' Name
 ')' Punctuation
 '' Text.Whitespace
 'end' Keyword
 '' Text.Whitespace
 'proc' Keyword
 ';' Operator
 '' Text.Whitespace
 'rest' Name
 ');' Punctuation
 '\n ' Text.Whitespace
 '(' Punctuation
 'wExp' Name
 ';' Operator

```

''      Text.Whitespace
'e'     Name
')'     Punctuation
''      Text.Whitespace
':='    Operator
''      Text.Whitespace
'selectremove' Name.Builtin
'('     Punctuation
'type'   Name.Builtin
','     Operator
''      Text.Whitespace
'convert' Name.Builtin
'('     Punctuation
'e'     Name
','     Operator
''      Text.Whitespace
"""
    Punctuation
'list'   Name
"""     Punctuation
','     Operator
''      Text.Whitespace
'^*`'    Name
')'     Punctuation
','     Operator
''      Text.Whitespace
"""     Punctuation
'exp'    Name
'('     Punctuation
'anything' Name
')'     Punctuation
"""     Punctuation
');'     Punctuation
'\n '    Text.Whitespace
'wExp'   Name
''      Text.Whitespace
':='    Operator
''      Text.Whitespace
'^+`'    Name
'('     Punctuation
'op'     Name.Builtin
'('     Punctuation
'map2'   Name
'('     Punctuation
'op'     Name.Builtin
','     Operator
''      Text.Whitespace
'1'     Literal.Number.Integer

```

```

','      Operator
''       Text.Whitespace
'wExp'   Name
')));'   Punctuation
'\n  '   Text.Whitespace
'wExp'   Name
''       Text.Whitespace
':='     Operator
''       Text.Whitespace
'expand'
        Name.Builtin
'('      Punctuation
'wExp'   Name
','      Operator
''       Text.Whitespace
'op'     Name.Builtin
'('      Punctuation
'indets' Name.Builtin
'('      Punctuation
'wExp'   Name
','      Operator
''       Text.Whitespace
'function' Name
')));'   Punctuation
'\n  '   Text.Whitespace
'logmake' Name
''       Text.Whitespace
':='     Operator
''       Text.Whitespace
'('      Punctuation
't'      Name
''       Text.Whitespace
'>'     Operator
''       Text.Whitespace
't'      Name
''       Text.Whitespace
'*'      Operator
''       Text.Whitespace
'piecewise_And' Name
'('      Punctuation
'rest'   Name
','      Operator
'1'      Literal.Number.Integer
','      Operator
'0'      Literal.Number.Integer
')));'   Punctuation
'\n  '   Text.Whitespace
'if'     Name

```



```

'('      Punctuation
'wExp'
    Name
' '      Text.Whitespace
'='      Operator
' '      Text.Whitespace
'0'      Literal.Number.Integer
','      Operator
' '      Text.Whitespace
'1'      Literal.Number.Integer
','      Operator
' '      Text.Whitespace
'exp'    Name
'('      Punctuation
'maptype' Name
'('      Punctuation
'^+`'    Name
','      Operator
'logmake' Name
','      Operator
'wExp'   Name
')))'    Punctuation
'\n '    Text.Whitespace
'*'      Operator
' '      Text.Whitespace
'piecewise_And' Name
'('      Punctuation
'rest'   Name
','      Operator
'^*`'    Name
'('      Punctuation
'op'     Name.Builtin
'('      Punctuation
'e'      Name
'))'     Punctuation
','      Operator
'1'      Literal.Number.Integer
');'     Punctuation
'\n '    Text.Whitespace
'end'    Keyword
' '      Text.Whitespace
'proc'   Keyword
';'
    Punctuation
'\n\n '  Text.Whitespace
'# Rewrite product(...piecewise(i+42=lo+42,th,el)...,i=lo..hi)\n' Comment.Single

' '      Text.Whitespace

```

to eval(...th...,i=lo)*product(...el...,i=lo+1..hi)\n' Comment.Single

' ' Text.Whitespace
't_peel' Name
' ' Text.Whitespace
':= ' Operator
' ' Text.Whitespace
"" Punctuation
'And' Name
'(' Punctuation
'specfunc' Name
'{' Punctuation
'sum' Name
' ' Operator
'Sum' Name
' ' Operator
'product' Name
' ' Operator
'Product' Name
'})' Punctuation
' ' Operator
'\n ' Text.Whitespace
'anyfunc' Name
'(' Punctuation
'anything' Name
' ' Operator
' ' Text.Whitespace
'name' Name
'=' Operator
'range' Name
'))' Punctuation
"" Punctuation
' ' Punctuation
'\n ' Text.Whitespace
'peel'
Name
' ' Text.Whitespace
':= ' Operator
' ' Text.Whitespace
'proc' Keyword
'(' Punctuation
'e' Name
' ' Operator
' ' Text.Whitespace
'\$' Operator
' ' Punctuation
'\n ' Text.Whitespace
'subsindets' Name.Builtin

'(' Punctuation
 'e' Name
 ';' Operator
 '' Text.Whitespace
 't_peel' Name
 ';' Operator
 '' Text.Whitespace
 'do_peel' Name
 ');' Punctuation
 '\n ' Text.Whitespace
 'end' Keyword
 '' Text.Whitespace
 'proc' Keyword
 ';' Punctuation
 '\n ' Text.Whitespace
 'do_peel' Name
 '' Text.Whitespace
 ':=' Operator
 '' Text.Whitespace
 'proc' Keyword
 '(' Punctuation
 'e' Name
 ';' Operator
 '' Text.Whitespace
 '\$' Operator
 ')' Punctuation
 '\n ' Text.Whitespace
 'local' Keyword
 '' Text.Whitespace
 'make' Name
 ';' Operator
 '' Text.Whitespace
 'body' Name
 ';' Operator
 '' Text.Whitespace
 'x' Name
 ';' Operator
 '' Text.Whitespace
 'r' Name
 ';' Operator
 '' Text.Whitespace
 'cond' Name
 ';' Operator
 '' Text.Whitespace
 'line' Name
 ';' Operator
 '' Text.Whitespace

'test'	Name
','	Operator
' '	Text.Whitespace
'x0'	Name
','	Operator
' '	Text.Whitespace
'r0'	Name
','	Operator
' '	Text.Whitespace
'cond0'	Name
','	Operator
' '	Text.Whitespace
'here'	Name
','	Operator
' '	Text.Whitespace
'rest'	Name
','	Punctuation
'\n '	Text.Whitespace
'if'	Keyword
' '	Text.Whitespace
'not'	Keyword
' '	Text.Whitespace
'('	Punctuation
'e'	Name
' '	Text.Whitespace
'::'	Operator
' '	Text.Whitespace
't_peel'	Name
')	Punctuation
' '	Text.Whitespace
'then'	Keyword
' '	Text.Whitespace
'return'	Keyword
' '	Text.Whitespace
'e'	Name
' '	Text.Whitespace
'end'	Keyword
' '	Text.Whitespace
'if'	Keyword
','	Punctuation
'\n '	Text.Whitespace
'if'	Keyword
' '	Text.Whitespace
'op'	Name.Builtin
'('	Punctuation
'0'	Literal.Number.Integer
','	Operator

'e'	Name
)'	Punctuation
' '	Text.Whitespace
'in'	Keyword
' '	Text.Whitespace
''''	Punctuation
'{'	Punctuation
'sum'	Name
' '	Text.Whitespace
','	Operator
'Sum'	Name
' '	Text.Whitespace
'}'	Punctuation
''''	Punctuation
' '	Text.Whitespace
'then'	Keyword
' '	Text.Whitespace
'make'	Name
' '	Text.Whitespace
':='	Operator
' '	Text.Whitespace
'+'`	Name
','	Punctuation
'\n '	Text.Whitespace
'elif'	Keyword
' '	Text.Whitespace
'op'	Name.Builtin
'('	Punctuation
'0'	Literal.Number.Integer
','	Operator
'e'	Name
)'	Punctuation
' '	Text.Whitespace
'in'	Keyword
' '	Text.Whitespace
''''	Punctuation
'{'	Punctuation
'product'	Name
','	Operator
'Product'	Name
'}'	Punctuation
''''	Punctuation
' '	Text.Whitespace
'then'	Keyword
' '	Text.Whitespace
'make'	Name
' '	Text.Whitespace

```

':='      Operator
' '       Text.Whitespace
'^*`'     Name
';'       Punctuation
' '
Text.Whitespace
'end'     Keyword
' '       Text.Whitespace
'if'      Keyword
';'       Punctuation
'\n '     Text.Whitespace
'body'    Name
';'       Operator
' '       Text.Whitespace
'r'       Name
' '       Text.Whitespace
':='      Operator
' '       Text.Whitespace
'op'      Name.Builtin
'('       Punctuation
'e'       Name
');'      Punctuation
'\n '     Text.Whitespace
'x'       Name
';'       Operator
' '       Text.Whitespace
'r'       Name
' ' '     Text.Whitespace
':='      Operator
' '       Text.Whitespace
'op'      Name.Builtin
'('       Punctuation
'r'       Name
');'      Punctuation
'\n '     Text.Whitespace
'for'     Keyword
' '       Text.Whitespace
'cond'    Name
' '       Text.Whitespace
'in'      Keyword
' '       Text.Whitespace
'indets'  Name.Builtin
'('       Punctuation
'body'    Name
';'       Operator
'
'
Text.Whitespace
'""'      Punctuation

```

'{'	Punctuation
'`=``	Name
'('	Punctuation
'algebraic'	Name
')'	Punctuation
','	Operator
'<`'	Name
','	Operator
'<=``	Name
'}'	Punctuation
''''	Punctuation
)'	Punctuation
''	Text.Whitespace
'do'	Keyword
'\n'	Text.Whitespace
'line'	Name
''	Text.Whitespace
':='	Operator
''	Text.Whitespace
'_`'	Name
'('	Punctuation
'op'	Name.Builtin
'('	Punctuation
'cond'	Name
'))';'	Punctuation
'\n'	Text.Whitespace
'if'	Keyword
''	Text.Whitespace
'1'	Literal.Number.Integer
''	Text.Whitespace
'<>'	Operator
''	Text.Whitespace
'degree'	Name.Builtin
'('	Punctuation
'line'	Name
','	Operator
''	Text.Whitespace
'x'	Name
)'	Punctuation
''	Text.Whitespace
'then'	Keyword
''	Text.Whitespace
'next'	Keyword
''	Text.Whitespace
'end'	Keyword
''	Text.Whitespace
'if'	Keyword

```

';'      Punctuation
'\n    ' Text.Whitespace
'if'     Keyword
' '      Text.Whitespace
'cond'   Name
' '      Text.Whitespace
'::'     Operator
' '      Text.Whitespace
'\='     Name
' '      Text.Whitespace
'then'   Keyword
'\n    ' Text.Whitespace
'cond0'  Name
' '      Text.Whitespace
':='     Operator
' '      Text.Whitespace
'true'   Name
';'      Punctuation
'\n    ' Text.Whitespace
'if'     Keyword
' '      Text.Whitespace
'Testzero' Name
'('      Punctuation
'eval'   Name.Builtin
'('      Punctuation
'line'   Name
';'      Operator
' '      Text.Whitespace
'x'      Name
'='      Operator
'lhs'
      Name.Builtin
'('      Punctuation
'r'      Name
')))'    Punctuation
' '      Text.Whitespace
'then'   Keyword
'\n    ' Text.Whitespace
'x0'     Name
' '      Text.Whitespace
':='     Operator
' '      Text.Whitespace
'lhs'    Name.Builtin
'('      Punctuation
'r'      Name
');'     Punctuation
' '      Text.Whitespace
'r0'     Name

```



```

''      Text.Whitespace
':='    Operator
''      Text.Whitespace
'applyop'  Name
'('      Punctuation
'^+`'     Name
','      Operator
''      Text.Whitespace
'1'      Literal.Number.Integer
','      Operator
''      Text.Whitespace
'r'      Name
','      Operator
''      Text.Whitespace
'1'      Literal.Number.Integer
');'     Punctuation
'\n'     ' Text.Whitespace
'elif'    Keyword
''      Text.Whitespace
'Testzero' Name
'('      Punctuation
'eval'    Name.Builtin
'('
Punctuation
'line'    Name
','      Operator
''      Text.Whitespace
'x'      Name
'='      Operator
'rhs'     Name.Builtin
'('      Punctuation
'r'      Name
')))'    Punctuation
''      Text.Whitespace
'then'    Keyword
'\n'     ' Text.Whitespace
'x0'     Name
''      Text.Whitespace
':='     Operator
''      Text.Whitespace
'rhs'     Name.Builtin
'('      Punctuation
'r'      Name
');'     Punctuation
''      Text.Whitespace
'r0'     Name
''      Text.Whitespace
':='     Operator

```

```

''      Text.Whitespace
'applyop'  Name
'('      Punctuation
'^_`'     Name
','      Operator
''      Text.Whitespace
'2'      Literal.Number.Integer
','      Operator
''      Text.Whitespace
'r'      Name
','      Operator
''      Text.Whitespace
'1'      Literal.Number.Integer
');'     Punctuation
'\n
      ' Text.Whitespace
'else'    Keyword
''      Text.Whitespace
'next'    Keyword
''      Text.Whitespace
'end'     Keyword
''      Text.Whitespace
'if'      Keyword
','      Punctuation
'\n      ' Text.Whitespace
'else'    Keyword
'\n      ' Text.Whitespace
'test'    Name
''      Text.Whitespace
':='      Operator
''      Text.Whitespace
'proc'    Keyword
'('      Punctuation
'x0'      Name
','      Operator
''      Text.Whitespace
'x1'      Name
','      Operator
''      Text.Whitespace
'$'       Operator
')'       Punctuation
'\n      ' Text.Whitespace
'local'   Keyword
''      Text.Whitespace
'res'     Name
','      Punctuation
'\n      ' Text.Whitespace
'res'     Name

```

```

''      Text.Whitespace
':='    Operator
''      Text.Whitespace
'evalb' Name.Builtin
'('     Punctuation
'not'   Keyword
''
    Text.Whitespace
'op'    Name.Builtin
'('     Punctuation
'0'     Literal.Number.Integer
','     Operator
'cond'  Name
')('    Punctuation
'eval'  Name.Builtin
'('     Punctuation
'line'  Name
','     Operator
''      Text.Whitespace
'x'     Name
'='     Operator
'x1'    Name
')'     Punctuation
','     Operator
''      Text.Whitespace
'0'     Literal.Number.Integer
'));'   Punctuation
'\n'    ' Text.Whitespace
'`if`'  Name
'('     Punctuation
'res'   Name
''      Text.Whitespace
'in'    Keyword
''      Text.Whitespace
'"""'   Punctuation
'{'     Punctuation
'true'  Name
','     Operator
'false' Name
'}'     Punctuation
'"""'   Punctuation
'\n'    ' Text.Whitespace
'and'   Keyword
''      Text.Whitespace
'evalb' Name.Builtin
'('     Punctuation
'op'

```

```

    Name.Builtin
'('      Punctuation
'0'      Literal.Number.Integer
','      Operator
'cond'   Name
')('     Punctuation
'eval'   Name.Builtin
'('      Punctuation
'line'   Name
','      Operator
''       Text.Whitespace
'x'      Name
'='      Operator
'x0'     Name
')'      Punctuation
','      Operator
''       Text.Whitespace
'0'      Literal.Number.Integer
'))'    Punctuation
''       Text.Whitespace
'='      Operator
''       Text.Whitespace
'res'    Name
','      Operator
'\n      ' Text.Whitespace
'res'    Name
','      Operator
'\n      ' Text.Whitespace
'FAIL'   Name
')'      Punctuation
'\n      ' Text.Whitespace
'end'    Keyword
''       Text.Whitespace
'proc'   Keyword
';'      Punctuation
'\n      ' Text.Whitespace
'cond0'  Name
''       Text.Whitespace
':='     Operator
''

```

```

    Text.Whitespace
'test'   Name
'('      Punctuation
'lhs'    Name.Builtin
'('      Punctuation
'r'      Name
')'      Punctuation
','      Operator

```

```

''      Text.Whitespace
'lhs'   Name.Builtin
'('     Punctuation
'r'     Name
')'     Punctuation
'+'     Operator
'1'     Literal.Number.Integer
');'    Punctuation
'\n'    ' Text.Whitespace
'if'    Keyword
''      Text.Whitespace
'cond0' Name
''      Text.Whitespace
'<>'   Operator
''      Text.Whitespace
'FAIL'  Name
''      Text.Whitespace
'then'  Keyword
'\n'    ' Text.Whitespace
'x0'    Name
''      Text.Whitespace
':='    Operator
''      Text.Whitespace
'lhs'   Name.Builtin
'('     Punctuation
'r'     Name
');'    Punctuation
''      Text.Whitespace
'r0'    Name
''      Text.Whitespace
':='    Operator
''

      Text.Whitespace
'applyop' Name
'('     Punctuation
'^+`'   Name
';'     Operator
''      Text.Whitespace
'1'     Literal.Number.Integer
';'     Operator
''      Text.Whitespace
'r'     Name
';'     Operator
''      Text.Whitespace
'1'     Literal.Number.Integer
');'    Punctuation
'\n'    ' Text.Whitespace
'else'  Keyword

```

```

'\n      ' Text.Whitespace
'cond0'   Name
''        Text.Whitespace
':='      Operator
''        Text.Whitespace
'test'    Name
'('       Punctuation
'rhs'     Name.Builtin
'('       Punctuation
'r'       Name
')'       Punctuation
','       Operator
''        Text.Whitespace
'rhs'     Name.Builtin
'('       Punctuation
'r'       Name
')'       Punctuation
'-'       Operator
'1'       Literal.Number.Integer
');'      Punctuation
'\n      ' Text.Whitespace
'if'      Keyword
''        Text.Whitespace
'cond0'
    Name
''        Text.Whitespace
'<>'      Operator
''        Text.Whitespace
'FAIL'    Name
''        Text.Whitespace
'then'    Keyword
'\n      ' Text.Whitespace
'x0'      Name
''        Text.Whitespace
':='      Operator
''        Text.Whitespace
'rhs'     Name.Builtin
'('       Punctuation
'r'       Name
');'      Punctuation
''        Text.Whitespace
'r0'      Name
''        Text.Whitespace
':='      Operator
''        Text.Whitespace
'applyop' Name
'('       Punctuation
'^_`'     Name

```

```

','      Operator
''       Text.Whitespace
'2'      Literal.Number.Integer
','      Operator
''       Text.Whitespace
'r'      Name
','      Operator
''       Text.Whitespace
'1'      Literal.Number.Integer
');'     Punctuation
'\n'     ' Text.Whitespace
'else'   Keyword
''       Text.Whitespace
'next'   Keyword
''
        Text.Whitespace
'end'    Keyword
''       Text.Whitespace
'if'     Keyword
','      Punctuation
'\n'     ' Text.Whitespace
'end'    Keyword
''       Text.Whitespace
'if'     Keyword
','      Punctuation
'\n'     ' Text.Whitespace
'end'    Keyword
''       Text.Whitespace
'if'     Keyword
','      Punctuation
'\n'     ' Text.Whitespace
'end'    Keyword
''       Text.Whitespace
'if'     Keyword
','      Punctuation
'\n'     ' Text.Whitespace
'here'   Name
''       Text.Whitespace
':='     Operator
''       Text.Whitespace
'subs'   Name.Builtin
'('      Punctuation
'cond'   Name
''       Text.Whitespace
'='      Operator
'        ' Text.Whitespace
'cond0'  Name
''       Text.Whitespace
','      Operator
''       Text.Whitespace
'body'   Name
');'     Punctuation
'\n'     ' Text.Whitespace

```

```

'rest'    Name
''        Text.Whitespace
':='      Operator
''        Text.Whitespace
'subs'    Name.Builtin
'('       Punctuation
'cond'
    Name
''        Text.Whitespace
'='       Operator
''        Text.Whitespace
'evalb'   Name.Builtin
'('       Punctuation
'not'     Keyword
''        Text.Whitespace
'cond0'   Name
')'       Punctuation
','       Operator
''        Text.Whitespace
'body'    Name
');'      Punctuation
'\n      ' Text.Whitespace
'return'   Keyword
''        Text.Whitespace
'make'     Name
'('       Punctuation
'eval'     Name.Builtin
'('       Punctuation
'here'     Name
','       Operator
''        Text.Whitespace
'x'        Name
'='       Operator
'x0'       Name
')'       Punctuation
','       Operator
''        Text.Whitespace
'do_peel'  Name
'('       Punctuation
'eval'     Name.Builtin
'('       Punctuation
'subsop'   Name.Builtin
'('       Punctuation
'1'        Literal.Number.Integer
'='       Operator
'rest'     Name
','       Operator
'

```



```

'      Text.Whitespace
 '['      Punctuation
 '2'      Literal.Number.Integer
 ';'      Operator
 '2'      Literal.Number.Integer
 ']'      Punctuation
 '='      Operator
 'r0'     Name
 ';'      Operator
 ''       Text.Whitespace
 'e'      Name
 '))));'  Punctuation
 '\n '    Text.Whitespace
 'end'     Keyword
 ''       Text.Whitespace
 'do'      Keyword
 ';'      Punctuation
 '\n '    Text.Whitespace
 'return'  Keyword
 ''       Text.Whitespace
 'e'      Name
 ';'      Punctuation
 '\n '    Text.Whitespace
 'end'     Keyword
 ''       Text.Whitespace
 'proc'    Keyword
 ';'      Punctuation
 '\n\n '  Text.Whitespace
 '# Expand sum(a*(b-c),q) to sum(a*b,q)-sum(a*c,q)\n' Comment.Single

```

```

''       Text.Whitespace
'split'   Name
''       Text.Whitespace
':='      Operator
''       Text.Whitespace
'proc'    Keyword
'('       Punctuation
'e'       Name
Name
';'       Operator
''       Text.Whitespace
'$'       Operator
')'       Punctuation
'\n '    Text.Whitespace
'subsindets' Name.Builtin
'('       Punctuation
'e'       Name
';'       Operator

```

```

''      Text.Whitespace
""      Punctuation
'And'   Name
'('     Punctuation
'specfunc' Name
'{'     Punctuation
'sum'   Name
','     Operator
'Sum'   Name
'})'    Punctuation
';'     Operator
'\n'    ' Text.Whitespace
'anyfunc' Name
'('     Punctuation
'And'   Name
'('     Punctuation
'^*`'   Name
','     Operator
'Not'   Name
'('     Punctuation
'^*`'   Name
'('     Punctuation
'Not'   Name
'('     Punctuation
'^+`'   Name
'))))'  Punctuation
';'     Operator
'name'  Name
'='     Operator
'anything' Name
'))'    Punctuation
""      Punctuation
','     Operator
'\n'
      ' Text.Whitespace
'do_split' Name
');'    Punctuation
'\n '   Text.Whitespace
'end'   Keyword
''      Text.Whitespace
'proc'  Keyword
';'     Punctuation
'\n '   Text.Whitespace
'do_split' Name
''      Text.Whitespace
':='    Operator
''      Text.Whitespace
'proc'  Keyword

```

'(' Punctuation
 'e' Name
 ';' Operator
 '' Text.Whitespace
 '\$' Operator
 ')' Punctuation
 '\n ' Text.Whitespace
 'local' Keyword
 '' Text.Whitespace
 'terms' Name
 ';' Operator
 '' Text.Whitespace
 'x' Name
 ';' Punctuation
 '\n ' Text.Whitespace
 'terms' Name
 '' Text.Whitespace
 ':=' Operator
 '' Text.Whitespace
 'convert' Name.Builtin
 '(' Punctuation
 'expand' Name.Builtin
 '(' Punctuation
 'op' Name.Builtin
 '(' Punctuation
 '1'
 Literal.Number.Integer
 ';' Operator
 'e' Name
 ')' Punctuation
 ';' Operator
 '' Text.Whitespace
 'op' Name.Builtin
 '(' Punctuation
 'indets' Name.Builtin
 '(' Punctuation
 'op' Name.Builtin
 '(' Punctuation
 '1' Literal.Number.Integer
 ';' Operator
 'e' Name
 ')' Punctuation
 ';' Operator
 '' Text.Whitespace
 'function' Name
 ')))' Punctuation
 ';' Operator
 '\n ' Text.Whitespace

"""	Punctuation
'list'	Name
"""	Punctuation
','	Operator
' '	Text.Whitespace
'`+`'	Name
');'	Punctuation
'\n '	Text.Whitespace
'x'	Name
' '	Text.Whitespace
':='	Operator
' '	Text.Whitespace
'op'	Name.Builtin
'(['	Punctuation
'2'	Literal.Number.Integer
','	Operator
'1'	Literal.Number.Integer
	Literal.Number.Integer
']'	Punctuation
','	Operator
'e'	Name
');'	Punctuation
'\n '	Text.Whitespace
'`+`'	Name
'('	Punctuation
'op'	Name.Builtin
'('	Punctuation
'map'	Name.Builtin
'('	Punctuation
'proc'	Keyword
'('	Punctuation
'term'	Name
','	Operator
' '	Text.Whitespace
'\$'	Operator
')	Punctuation
'\n '	Text.Whitespace
'local'	Keyword
' '	Text.Whitespace
's'	Name
','	Operator
' '	Text.Whitespace
'r'	Name
','	Punctuation
'\n '	Text.Whitespace
's'	Name
','	Operator
' '	Text.Whitespace

```

'r'      Name
' '      Text.Whitespace
':='     Operator
' '      Text.Whitespace
'selectremove' Name.Builtin
'('      Punctuation
'depends' Name
','      Operator
''
    Text.Whitespace
'convert' Name.Builtin
'('      Punctuation
'term'   Name
','      Operator
' '      Text.Whitespace
''''     Punctuation
'list'   Name
''''     Punctuation
','      Operator
' '      Text.Whitespace
'^*`'    Name
')'      Punctuation
','      Operator
' '      Text.Whitespace
'x'      Name
');'     Punctuation
'\n'    ' Text.Whitespace
'^*`'    Name
'('      Punctuation
'op'     Name.Builtin
'('      Punctuation
'r'      Name
')'      Punctuation
','      Operator
' '      Text.Whitespace
'subsop' Name.Builtin
'('      Punctuation
'1'      Literal.Number.Integer
'='      Operator
'^*`'    Name
'('      Punctuation
'op'     Name.Builtin
'('      Punctuation
's'      Name
'))'     Punctuation
','      Operator
'e'      Name
'))'     Punctuation

```

```

'\n '    Text.Whitespace
'end'
    Keyword
''        Text.Whitespace
'proc'    Keyword
';'       Operator
''        Text.Whitespace
'terms'   Name
')))'    Punctuation
'\n '    Text.Whitespace
'end'     Keyword
''        Text.Whitespace
'proc'    Keyword
';'       Punctuation
'\n\n '   Text.Whitespace
'# Simplify f(lo-1)*product(f(i),i=lo..hi) to product(f(i),i=lo-1..hi)\n' Comment.Single

' '       Text.Whitespace
'graft'   Name
''        Text.Whitespace
':='      Operator
''        Text.Whitespace
'proc'    Keyword
'('       Punctuation
'e'       Name
';'       Operator
''        Text.Whitespace
'$'       Operator
')'       Punctuation
'\n '    Text.Whitespace
'subsindets' Name.Builtin
'('       Punctuation
'e'       Name
';'       Operator
''        Text.Whitespace
''''      Punctuation
'Or'      Name
'('       Punctuation
'And'     Name
'('       Punctuation
'^*`'     Name
','       Operator
'Not'     Name
'('       Punctuation
'^*`'     Name
'('       Punctuation
'Not'     Name

```

```

'('      Punctuation
'specfunc' Name
'({'      Punctuation
'product' Name
';'      Operator
'Product' Name
'})'))))' Punctuation
';'      Operator
'\n      ' Text.Whitespace
'And'     Name
'('      Punctuation
'^+`'     Name
';'      Operator
'Not'     Name
'('      Punctuation
'^+`'     Name
'('      Punctuation
'Not'     Name
'('      Punctuation
'specfunc' Name
'({'      Punctuation
'sum'     Name
' '       Text.Whitespace
';'      Operator
'Sum'     Name
' '       Text.Whitespace
'})'))))' Punctuation
'""'      Punctuation
';'      Operator
'\n      ' Text.Whitespace
'do_graft' Name
');'      Punctuation
'\n '     Text.Whitespace
'end'     Keyword
' '       Text.Whitespace
'proc'
Keyword
';'      Punctuation
'\n '     Text.Whitespace
'do_graft' Name
' '       Text.Whitespace
':='     Operator
' '       Text.Whitespace
'proc'    Keyword
'('      Punctuation
'e'      Name
';'      Operator
' '       Text.Whitespace

```

'\$' Operator
')' Punctuation
'\n ' Text.Whitespace
'local' Keyword
'' Text.Whitespace
'produce' Name
';' Operator
'' Text.Whitespace
'factors' Name
';' Operator
'' Text.Whitespace
'i' Name
';' Operator
'' Text.Whitespace
'j' Name
';' Punctuation
'\n ' Text.Whitespace
'produce' Name
'' Text.Whitespace
':=' Operator
'' Text.Whitespace
'`if`' Name
'(' Punctuation
'e' Name
'::' Operator
'`\*`' Name
';' Operator
'' Text.Whitespace
'''' Punctuation
'{' Punctuation
'''' Punctuation
'product' Name
';' Operator
'Product' Name
'}' Punctuation
'''' Punctuation
';' Operator
'\n ' Text.Whitespace
'''' Punctuation
'{' Punctuation
'sum' Name
' ' Text.Whitespace
';' Operator
'Sum' Name
' ' Text.Whitespace
'}' Punctuation
'''' Punctuation
');' Punctuation


```

'\n ' Text.Whitespace
'factors' Name
'' Text.Whitespace
':=' Operator
'' Text.Whitespace
'sort' Name.Builtin
'(' Punctuation
'convert' Name.Builtin
'(' Punctuation
'e' Name
',' Operator
'''' Punctuation
'list' Name
'''' Punctuation
')' Punctuation
',' Operator
'\n ' Text.Whitespace
'key' Name
'' Text.Whitespace
'=' Operator
'' Text.Whitespace
'('
Punctuation
'factor' Name
'' Text.Whitespace
'>' Operator
'' Text.Whitespace
'-' Operator
'numboccur' Name.Builtin
'(' Punctuation
'factor' Name
',' Operator
'produce' Name
')));' Punctuation
'\n ' Text.Whitespace
'for' Keyword
'' Text.Whitespace
'i' Name
'' Text.Whitespace
'from' Keyword
'' Text.Whitespace
'nops' Name.Builtin
'(' Punctuation
'factors' Name
')' Punctuation
'' Text.Whitespace
'to' Keyword
'' Text.Whitespace

```

```

'2'      Literal.Number.Integer
' '      Text.Whitespace
'by'     Keyword
' '      Text.Whitespace
'-'      Operator
'1'      Literal.Number.Integer
' '      Text.Whitespace
'do'     Keyword
'\n'     Text.Whitespace
'for'    Keyword
' '      Text.Whitespace
'j'      Name
' '      Text.Whitespace
'from'   Keyword
' '      Text.Whitespace
'i'      Name
'-'      Operator
'1'      Literal.Number.Integer
' '      Text.Whitespace
'to'     Keyword
' '      Text.Whitespace
'1'      Literal.Number.Integer
' '      Text.Whitespace
'by'     Keyword
' '      Text.Whitespace
'-'      Operator
'1'      Literal.Number.Integer
' '      Text.Whitespace
'do'     Keyword
'\n'     Text.Whitespace
'if'     Keyword
' '      Text.Whitespace
'op'     Name.Builtin
'('      Punctuation
'j'      Name
','      Operator
'factors' Name
')'      Punctuation
' '      Text.Whitespace
'::'     Operator
' '      Text.Whitespace
'""'     Punctuation
'And'    Name
'""'     Punctuation
'('      Punctuation
'""'     Punctuation
'specfunc' Name

```

```

""      Punctuation
'('      Punctuation
'produce'  Name
')'      Punctuation
','      Operator
      Operator
'\n      ' Text.Whitespace
""      Punctuation
'anyfunc' Name
'('      Punctuation
'anything' Name
','      Operator
'name'    Name
'='      Operator
'range'   Name
')'      Punctuation
""      Punctuation
')'      Punctuation
' '      Text.Whitespace
'then'    Keyword
'\n      ' Text.Whitespace
'if'      Keyword
' '      Text.Whitespace
'Testzero' Name
'('      Punctuation
'op'      Name.Builtin
'('      Punctuation
'i'       Name
','      Operator
'factors' Name
')'      Punctuation
' '      Text.Whitespace
'-'      Operator
' '      Text.Whitespace
'eval'    Name.Builtin
'('      Punctuation
'op'      Name.Builtin
'(['     Punctuation
'j'       Name
','      Operator
'1'       Literal.Number.Integer
']'       Punctuation
','      Operator
'factors' Name
')'
      Punctuation
','      Operator
'\n      ' Text.Whitespace

```

```

'op'      Name.Builtin
'(['      Punctuation
']'       Name
','       Operator
'2'       Literal.Number.Integer
','       Operator
'1'       Literal.Number.Integer
']'       Punctuation
','       Operator
'factors' Name
')'       Punctuation
'='       Operator
'op'      Name.Builtin
'(['      Punctuation
']'       Name
','       Operator
'2'       Literal.Number.Integer
','       Operator
'2'       Literal.Number.Integer
','       Operator
'1'       Literal.Number.Integer
']'       Punctuation
','       Operator
'factors' Name
')'       Punctuation
'-'       Operator
'1'       Literal.Number.Integer
'))'     Punctuation
''       Text.Whitespace
'then'    Keyword
'\n      ' Text.Whitespace
'factors' Name
''       Text.Whitespace
':='      Operator
''       Text.Whitespace
'subsop'
      Name.Builtin
'('       Punctuation
'i'       Name
'='       Operator
'NULL'    Name
','       Operator
'applyop' Name
'('       Punctuation
'^-`'     Name
','       Operator
'['       Punctuation
']'       Name

```

```

','      Operator
'2'      Literal.Number.Integer
','      Operator
'2'      Literal.Number.Integer
','      Operator
'1'      Literal.Number.Integer
']'      Punctuation
','      Operator
'factors' Name
','      Operator
'1'      Literal.Number.Integer
'));'    Punctuation
'\n      ' Text.Whitespace
'break'   Keyword
'\n      ' Text.Whitespace
'elif'    Keyword
''        Text.Whitespace
'Testzero' Name
'('       Punctuation
'op'      Name.Builtin
'('       Punctuation
'i'       Name
','      Operator
'factors' Name
')'       Punctuation
''        Text.Whitespace
'-'       Operator
''        Text.Whitespace
'eval'
      Name.Builtin
'('       Punctuation
'op'      Name.Builtin
'(['     Punctuation
'j'       Name
','      Operator
'1'       Literal.Number.Integer
']'       Punctuation
','      Operator
'factors' Name
')'       Punctuation
','      Operator
'\n      ' Text.Whitespace
'op'      Name.Builtin
'(['     Punctuation
'j'       Name
','      Operator
'2'       Literal.Number.Integer
','      Operator

```

```

'1'      Literal.Number.Integer
']'      Punctuation
','      Operator
'factors' Name
')'      Punctuation
'='      Operator
'op'     Name.Builtin
'(['     Punctuation
']'      Name
','      Operator
'2'      Literal.Number.Integer
','      Operator
'2'      Literal.Number.Integer
','      Operator
'2'      Literal.Number.Integer
']'      Punctuation
','      Operator
'factors' Name
')'      Punctuation
'+'      Operator
'1'      Literal.Number.Integer
'))'     Punctuation
''       Text.Whitespace
'then'   Keyword
'\n      ' Text.Whitespace
'factors' Name
''       Text.Whitespace
':='     Operator
''       Text.Whitespace
'subsop' Name.Builtin
'('      Punctuation
'i'      Name
'='      Operator
'NULL'   Name
','      Operator
'applyop' Name
'('      Punctuation
'^+`'    Name
','      Operator
'['      Punctuation
']'      Name
','      Operator
'2'      Literal.Number.Integer
','      Operator
'2'      Literal.Number.Integer
','      Operator
'2'      Literal.Number.Integer

```

```

']'      Punctuation
','      Operator
'factors' Name
','      Operator
'1'      Literal.Number.Integer
'));'    Punctuation
'\n      ' Text.Whitespace
'break'   Keyword
'\n      ' Text.Whitespace
'end'     Keyword
''
    Text.Whitespace
'if'      Keyword
'\n      ' Text.Whitespace
'end'     Keyword
''      Text.Whitespace
'if'      Keyword
'\n      ' Text.Whitespace
'end'     Keyword
''      Text.Whitespace
'do'      Keyword
'\n      ' Text.Whitespace
'end'     Keyword
''      Text.Whitespace
'do'      Keyword
';'      Punctuation
'\n      ' Text.Whitespace
'op'      Name.Builtin
'('       Punctuation
'0'      Literal.Number.Integer
','      Operator
'e'      Name
')('      Punctuation
'op'      Name.Builtin
'('       Punctuation
'factors' Name
'))'      Punctuation
'\n      ' Text.Whitespace
'end'     Keyword
''      Text.Whitespace
'proc'    Keyword
';'      Punctuation
'\n\n    ' Text.Whitespace
'# Normalize sum(f(i),i=2..hi) to sum(f(i+2),i=0..hi-2)\n' Comment.Single

' '      Text.Whitespace
'rebase_lower' Name
''      Text.Whitespace

```

```

':='      Operator
','
'        Text.Whitespace
'proc'    Keyword
'('       Punctuation
'e'       Name
';'       Operator
''        Text.Whitespace
'$'       Operator
')'       Punctuation
'\n '     Text.Whitespace
'subsindets' Name.Builtin
'('       Punctuation
'e'       Name
';'       Operator
''        Text.Whitespace
''''      Punctuation
'And'     Name
'('       Punctuation
'specfunc' Name
'{'       Punctuation
'sum'     Name
';'       Operator
'Sum'     Name
';'       Operator
'product' Name
';'       Operator
'Product' Name
'}}'      Punctuation
';'       Operator
'\n      ' Text.Whitespace
'anyfunc' Name
'('       Punctuation
'anything' Name
';'       Operator
'\n      ' Text.Whitespace
'name'    Name
'='       Operator
'Not'     Name
'{'       Punctuation
'0'       Literal.Number.Integer
';'       Operator
'SymbolicInfinity'
Name
';'       Operator
'undefined' Name
'}}'      Punctuation
'..'     Operator

```


'anything' Name
 '))' Punctuation
 '"""' Punctuation
 ';' Operator
 '\n' Text.Whitespace
 'do_rebase_lower' Name
 ');' Punctuation
 '\n ' Text.Whitespace
 'end' Keyword
 '' Text.Whitespace
 'proc' Keyword
 ';' Punctuation
 '\n ' Text.Whitespace
 'do_rebase_lower' Name
 '' Text.Whitespace
 ':=' Operator
 '' Text.Whitespace
 'proc' Keyword
 '(' Punctuation
 'e' Name
 ';' Operator
 '' Text.Whitespace
 '\$' Operator
 ')' Punctuation
 '\n ' Text.Whitespace
 'subsop' Name.Builtin
 '([' Punctuation
 '2' Literal.Number.Integer
 ';' Operator
 '2' Literal.Number.Integer
 ';' Operator
 '1' Literal.Number.Integer
 ']' Punctuation
 '=='
 Operator
 '0' Literal.Number.Integer
 ';' Operator
 '\n' Text.Whitespace
 'applyop' Name
 '(' Punctuation
 '^_`' Name
 ';' Operator
 '\n' Text.Whitespace
 '[' Punctuation
 '2' Literal.Number.Integer
 ';' Operator
 '2' Literal.Number.Integer
 ';' Operator

```

'2'      Literal.Number.Integer
']'      Punctuation
','      Operator
'\n'     ' Text.Whitespace
'applyop' Name
'('      Punctuation
'eval'   Name.Builtin
','      Operator
''       Text.Whitespace
'1'      Literal.Number.Integer
','      Operator
''       Text.Whitespace
'e'      Name
','      Operator
''       Text.Whitespace
'op'     Name.Builtin
'(['     Punctuation
'2'      Literal.Number.Integer
','      Operator
'1'      Literal.Number.Integer
']'      Punctuation
','      Operator
'e'      Name
      Name
')'      Punctuation
'='      Operator
'op'     Name.Builtin
'(['     Punctuation
'2'      Literal.Number.Integer
','      Operator
'1'      Literal.Number.Integer
']'      Punctuation
','      Operator
'e'      Name
')'      Punctuation
'+'      Operator
'op'     Name.Builtin
'(['     Punctuation
'2'      Literal.Number.Integer
','      Operator
'2'      Literal.Number.Integer
','      Operator
'1'      Literal.Number.Integer
']'      Punctuation
','      Operator
'e'      Name
'))'     Punctuation
','      Operator

```

```

'\n      ' Text.Whitespace
'op'      Name.Builtin
'(['      Punctuation
'2'       Literal.Number.Integer
';'       Operator
'2'       Literal.Number.Integer
';'       Operator
'1'       Literal.Number.Integer
']'       Punctuation
';'       Operator
'e'       Name
')))'     Punctuation
'\n
 '       Text.Whitespace
'end'     Keyword
''        Text.Whitespace
'proc'    Keyword
';'       Punctuation
'\n\n '   Text.Whitespace
'# Normalize sum(f(i),i=lo..2) to sum(f(i+2),i=lo-2..0)\n' Comment.Single

' '       Text.Whitespace
'rebase_upper' Name
''        Text.Whitespace
':='      Operator
''        Text.Whitespace
'proc'    Keyword
'('       Punctuation
'e'       Name
';'       Operator
''        Text.Whitespace
'$'       Operator
')'       Punctuation
'\n '     Text.Whitespace
'subsindets' Name.Builtin
'('       Punctuation
'e'       Name
';'       Operator
''        Text.Whitespace
''''      Punctuation
'And'     Name
'('       Punctuation
'specfunc' Name
'{'       Punctuation
'sum'     Name
';'       Operator
'Sum'     Name
';'       Operator

```

'product' Name
 ',' Operator
 'Product' Name
 '})' Punctuation
 ',' Operator
 '\n
 ' Text.Whitespace
 'anyfunc' Name
 '(' Punctuation
 'anything' Name
 ',' Operator
 '\n ' Text.Whitespace
 'name' Name
 '==' Operator
 'anything' Name
 '..' Operator
 'Not' Name
 '({' Punctuation
 '0' Literal.Number.Integer
 ',' Operator
 'SymbolicInfinity' Name
 ',' Operator
 'undefined' Name
 '}}))' Punctuation
 '""" Punctuation
 ',' Operator
 '\n ' Text.Whitespace
 'do_rebase_upper' Name
 ');' Punctuation
 '\n ' Text.Whitespace
 'end' Keyword
 '' Text.Whitespace
 'proc' Keyword
 ';' Punctuation
 '\n ' Text.Whitespace
 'do_rebase_upper' Name
 '' Text.Whitespace
 ':=' Operator
 '' Text.Whitespace
 'proc' Keyword
 '(' Punctuation
 'e' Name
 ',' Operator
 '' Text.Whitespace
 '\$' Operator
 ')' Punctuation
 '\n ' Text.Whitespace

```

'subsop'   Name.Builtin
'(['      Punctuation
'2'        Literal.Number.Integer
','        Operator
'2'        Literal.Number.Integer
','        Operator
'2'        Literal.Number.Integer
']'        Punctuation
'='        Operator
'0'        Literal.Number.Integer
','        Operator
'\n'       ' Text.Whitespace
'applyop'  Name
'('        Punctuation
'~`'       Name
','        Operator
'\n'       ' Text.Whitespace
'['        Punctuation
'2'        Literal.Number.Integer
','        Operator
'2'        Literal.Number.Integer
','        Operator
'1'        Literal.Number.Integer
']'        Punctuation
','        Operator
'\n'       ' Text.Whitespace
'applyop'  Name
'('        Punctuation
'eval'     Name.Builtin
','        Operator
''         Text.Whitespace
'1'        Literal.Number.Integer
','        Operator
''         Text.Whitespace
'e'        Name
','        Operator
''         Text.Whitespace
'op'       Name.Builtin
'(['      Punctuation
'2'        Literal.Number.Integer
','        Operator
'1'        Literal.Number.Integer
']'        Punctuation
','        Operator
'e'        Name
')'        Punctuation
'='        Operator

```

```

'op'      Name.Builtin
'(['      Punctuation
'2'       Literal.Number.Integer
','       Operator
'1'       Literal.Number.Integer
']'       Punctuation
','       Operator
'e'       Name
')'       Punctuation
'+'       Operator
'op'      Name.Builtin
'(['      Punctuation
'2'       Literal.Number.Integer
','       Operator
'2'       Literal.Number.Integer
','       Operator
'2'       Literal.Number.Integer
']'       Punctuation
','       Operator
'e'       Name
'))'      Punctuation
','       Operator
'\n      ' Text.Whitespace
'op'
Name.Builtin
'(['      Punctuation
'2'       Literal.Number.Integer
','       Operator
'2'       Literal.Number.Integer
','       Operator
'2'       Literal.Number.Integer
']'       Punctuation
','       Operator
'e'       Name
')))'     Punctuation
'\n '     Text.Whitespace
'end'     Keyword
' '       Text.Whitespace
'proc'    Keyword
';'       Punctuation
'\n\n '   Text.Whitespace
'ModuleLoad' Name
' '       Text.Whitespace
':='      Operator
' '       Text.Whitespace
'proc'    Keyword
'('$)'    Punctuation
'\n '     Text.Whitespace

```

```

'# Override csgn to work a little bit harder on piecewise and sum\n' Comment.Single

' ' Text.Whitespace
'# (to get rid of csgn(1/2+1/2*sum(piecewise(...,1,0),...))\n' Comment.Single

' ' Text.Whitespace
'# produced by int on a Gaussian mixture model)\n' Comment.Single

' ' Text.Whitespace
'unprotect' Name
'(' Punctuation
'csgn'
    Name
');' Punctuation
'\n ' Text.Whitespace
'csgn' Name
'' Text.Whitespace
':=' Operator
'' Text.Whitespace
'overload' Name
'([' Punctuation
'\n ' Text.Whitespace
"# Handle if the csgn of a piecewise doesn't depend on which branch\n" Comment.Single

' ' Text.Whitespace
'proc' Keyword
'(' Punctuation
'a' Name
'' Text.Whitespace
'::' Operator
'' Text.Whitespace
'specfunc' Name
'(' Punctuation
'piecewise' Name.Builtin
')' Punctuation
';' Operator
'' Text.Whitespace
'$' Operator
')' Punctuation
'\n ' Text.Whitespace
'option' Keyword
'' Text.Whitespace
'overload' Name
';' Punctuation
'\n ' Text.Whitespace
'local' Keyword
'' Text.Whitespace
'r' Name

```

```

','      Operator
''       Text.Whitespace
'i'
      Name
','      Punctuation
'\n'    ' Text.Whitespace
'r'      Name
''       Text.Whitespace
':='     Operator
''       Text.Whitespace
'{'      Punctuation
'seq'    Name.Builtin
'('      Punctuation
'`if`'   Name
'('      Punctuation
'i'      Name
'::'     Operator
'even'   Name
''       Text.Whitespace
'or'     Keyword
''       Text.Whitespace
'i'      Name
'='      Operator
'nops'   Name.Builtin
'('      Punctuation
'a'      Name
')'      Punctuation
','      Operator
''       Text.Whitespace
'csgn'   Name
'('      Punctuation
'op'     Name.Builtin
'('      Punctuation
'i'      Name
','      Operator
'a'      Name
'))'     Punctuation
','      Operator
''       Text.Whitespace
'NULL'   Name
')'      Punctuation
','      Operator
'\n'     ' Text.Whitespace
'i'
      Name
'='      Operator
'1'      Literal.Number.Integer
'..'     Punctuation

```



```

'nops'    Name.Builtin
'('       Punctuation
'a'       Name
'))};'    Punctuation
'\n'      ' Text.Whitespace
'if'      Keyword
''        Text.Whitespace
'nops'    Name.Builtin
'('       Punctuation
'r'       Name
')'       Punctuation
'='       Operator
'1'       Literal.Number.Integer
''        Text.Whitespace
'then'    Keyword
''        Text.Whitespace
'return'  Keyword
''        Text.Whitespace
'op'      Name.Builtin
'('       Punctuation
'r'       Name
')'       Punctuation
''        Text.Whitespace
'end'     Keyword
''        Text.Whitespace
'if'      Keyword
';'       Punctuation
'\n'      ' Text.Whitespace
'if'      Keyword
''        Text.Whitespace
'not'     Keyword
''        Text.Whitespace
'assigned' Name.Builtin
'(_'      Punctuation
'Envsignum0' Name
')'
          Punctuation
''        Text.Whitespace
'then'    Keyword
'\n'      ' Text.Whitespace
'r'       Name
''        Text.Whitespace
':='      Operator
''        Text.Whitespace
'r'       Name
''        Text.Whitespace
'minus'   Keyword
''        Text.Whitespace

```

```

'{'      Punctuation
'0'      Literal.Number.Integer
'};'     Punctuation
'\n'     ' Text.Whitespace
'if'     Keyword
''       Text.Whitespace
'nops'   Name.Builtin
'('      Punctuation
'r'      Name
')'      Punctuation
'='      Operator
'1'      Literal.Number.Integer
''       Text.Whitespace
'then'   Keyword
''       Text.Whitespace
'return' Keyword
''       Text.Whitespace
'op'     Name.Builtin
'('      Punctuation
'r'      Name
')'      Punctuation
''       Text.Whitespace
'end'    Keyword
''       Text.Whitespace
'if'     Keyword
';'      Punctuation
'\n'
' '      ' Text.Whitespace
'end'    Keyword
''       Text.Whitespace
'if'     Keyword
';'      Punctuation
'\n'    ' Text.Whitespace
'error'  Keyword
''       Text.Whitespace
"invalid input: cannot csgn %1" Literal.String
';'      Operator
''       Text.Whitespace
'a'      Name
';'      Punctuation
'\n'    ' Text.Whitespace
'end'    Keyword
''       Text.Whitespace
'proc'   Keyword
';'      Operator
'\n'    ' Text.Whitespace
"# Handle if the csgn of a sum doesn't depend on the bound variable\n" Comment.Single

```

' ' Text.Whitespace
 'proc' Keyword
 '(' Punctuation
 'a' Name
 '' Text.Whitespace
 '::' Operator
 '' Text.Whitespace
 'And' Name
 '(' Punctuation
 'specfunc' Name
 '({' Punctuation
 'sum' Name
 ';' Operator
 '' Text.Whitespace
 'Sum' Name
 '})' Punctuation
 ';' Operator
 '' Text.Whitespace
 'anyfunc' Name
 '(' Punctuation
 'anything' Name
 ';' Operator
 '' Text.Whitespace
 'name' Name
 '=' Operator
 'range' Name
 '))' Punctuation
 ';' Operator
 '' Text.Whitespace
 '\$' Operator
 ')' Punctuation
 '\n ' Text.Whitespace
 'option' Keyword
 '' Text.Whitespace
 'overload' Name
 ';' Punctuation
 '\n ' Text.Whitespace
 'local' Keyword
 '' Text.Whitespace
 'r' Name
 ';' Punctuation
 '\n ' Text.Whitespace
 'r' Name
 '' Text.Whitespace
 ':=' Operator
 '' Text.Whitespace
 'csgn' Name

```

'('      Punctuation
'op'     Name.Builtin
'('      Punctuation
'1'      Literal.Number.Integer
','      Operator
'a'      Name
'));'    Punctuation
'\n'     ' Text.Whitespace
'if'     Keyword
''
        Text.Whitespace
'not'    Keyword
''       Text.Whitespace
'depends' Name
'('      Punctuation
'r'      Name
','      Operator
'op'     Name.Builtin
'(['     Punctuation
'2'      Literal.Number.Integer
','      Operator
'1'      Literal.Number.Integer
']'      Punctuation
','      Operator
'a'      Name
'))'     Punctuation
''       Text.Whitespace
'then'   Keyword
'\n'     ' Text.Whitespace
'return' Keyword
''       Text.Whitespace
'signum' Name
'('      Punctuation
'op'     Name.Builtin
'(['     Punctuation
'2'      Literal.Number.Integer
','      Operator
'2'      Literal.Number.Integer
','      Operator
'2'      Literal.Number.Integer
']'      Punctuation
','      Operator
'a'      Name
')'      Punctuation
'+'      Operator
'1'      Literal.Number.Integer
'-'      Operator
'op'     Name.Builtin

```

```

'('
    Punctuation
'2'    Literal.Number.Integer
','    Operator
'2'    Literal.Number.Integer
','    Operator
'1'    Literal.Number.Integer
']'    Punctuation
','    Operator
'a'    Name
'))'   Punctuation
' '    Text.Whitespace
'*'    Operator
' '    Text.Whitespace
'r'    Name
'\n '  Text.Whitespace
'end'   Keyword
' '    Text.Whitespace
'if'    Keyword
';'     Punctuation
'\n '  Text.Whitespace
'error' Keyword
' '    Text.Whitespace
'''invalid input: cannot csgn %1''' Literal.String
','     Operator
' '    Text.Whitespace
'a'     Name
';'     Punctuation
'\n '  Text.Whitespace
'end'   Keyword
' '    Text.Whitespace
'proc'  Keyword
','     Operator
'\n '  Text.Whitespace
'csgn'  Name
']);'   Punctuation
'\n '  Text.Whitespace
'protect' Name
'('
    Punctuation
'csgn'  Name
');'    Punctuation
'\n\n ' Text.Whitespace
'# Do the same to signum.\n' Comment.Single

' '    Text.Whitespace
'unprotect' Name
'('    Punctuation

```

```

'signum'   Name
');'       Punctuation
'\n   '    Text.Whitespace
'signum'   Name
' '        Text.Whitespace
':='       Operator
' '        Text.Whitespace
'overload' Name
'(['      Punctuation
'\n   '    Text.Whitespace
"# Handle if the signum of a piecewise doesn't depend on which branch\n" Comment.Single

```

```

' '        Text.Whitespace
'proc'     Keyword
'('        Punctuation
'a'        Name
' '        Text.Whitespace
'::'       Operator
' '        Text.Whitespace
'specfunc' Name
'('        Punctuation
'piecewise' Name.Builtin
')'        Punctuation
';'        Operator
' '        Text.Whitespace
'$'        Operator
')'        Punctuation
'\n   '    Text.Whitespace
'option'   Keyword
' '

```

```

Text.Whitespace
'overload' Name
';'        Punctuation
'\n   '    Text.Whitespace
'local'    Keyword
' '        Text.Whitespace
'r'        Name
';'        Operator
' '        Text.Whitespace
'i'        Name
';'        Punctuation
'\n   '    Text.Whitespace
'r'        Name
' '        Text.Whitespace
':='       Operator
' '        Text.Whitespace
'{'        Punctuation
'seq'      Name.Builtin

```

'(' Punctuation
 '~if' Name
 '(' Punctuation
 'i' Name
 '::' Operator
 'even' Name
 '' Text.Whitespace
 'or' Keyword
 '' Text.Whitespace
 'i' Name
 '=' Operator
 'nops' Name.Builtin
 '(' Punctuation
 'a' Name
 ')' Punctuation
 ';' Operator
 '' Text.Whitespace
 'signum' Name
 '(' Punctuation
 'op' Name.Builtin
 '(' Punctuation
 'i' Name
 ';' Operator
 'a'
 Name
 '))' Punctuation
 ';' Operator
 '' Text.Whitespace
 'NULL' Name
 ')' Punctuation
 ';' Operator
 '\n ' Text.Whitespace
 'i' Name
 '=' Operator
 '1' Literal.Number.Integer
 '..' Punctuation
 'nops' Name.Builtin
 '(' Punctuation
 'a' Name
 '))};' Punctuation
 '\n ' Text.Whitespace
 'if' Keyword
 '' Text.Whitespace
 'nops' Name.Builtin
 '(' Punctuation
 'r' Name
 ')' Punctuation
 '=' Operator

```

'1'      Literal.Number.Integer
''       Text.Whitespace
'then'   Keyword
''       Text.Whitespace
'return' Keyword
''       Text.Whitespace
'op'     Name.Builtin
'('      Punctuation
'r'      Name
')'      Punctuation
''       Text.Whitespace
'end'    Keyword
''       Text.Whitespace
'if'     Keyword
';'      Punctuation
'\n'
' '      Text.Whitespace
'if'     Keyword
''       Text.Whitespace
'not'    Keyword
''       Text.Whitespace
'assigned' Name.Builtin
'(_'     Punctuation
'Envsignum0' Name
')'      Punctuation
''       Text.Whitespace
'then'   Keyword
'\n'    ' Text.Whitespace
'r'      Name
''       Text.Whitespace
':='     Operator
''       Text.Whitespace
'r'      Name
''       Text.Whitespace
'minus'  Keyword
''       Text.Whitespace
'{'      Punctuation
'0'      Literal.Number.Integer
'};'     Punctuation
'\n'    ' Text.Whitespace
'if'     Keyword
''       Text.Whitespace
'nops'   Name.Builtin
'('      Punctuation
'r'      Name
')'      Punctuation
'='      Operator
'1'      Literal.Number.Integer

```



```

''      Text.Whitespace
'then'   Keyword
''      Text.Whitespace
'return' Keyword
''      Text.Whitespace
'op'     Name.Builtin
'('
    Punctuation
'r'      Name
')'      Punctuation
''      Text.Whitespace
'end'    Keyword
''      Text.Whitespace
'if'     Keyword
';'      Punctuation
'\n'    ' Text.Whitespace
'end'    Keyword
''      Text.Whitespace
'if'     Keyword
';'      Punctuation
'\n'    ' Text.Whitespace
'error'  Keyword
''      Text.Whitespace
'''invalid input: cannot signum %1''' Literal.String
';'      Operator
''      Text.Whitespace
'a'      Name
';'      Punctuation
'\n'    ' Text.Whitespace
'end'    Keyword
''      Text.Whitespace
'proc'   Keyword
';'      Operator
'\n'    ' Text.Whitespace
"# Handle if the signum of a sum doesn't depend on the bound variable\n" Comment.Single

' '      Text.Whitespace
'proc'   Keyword
'('      Punctuation
'a'      Name
''      Text.Whitespace
'::'     Operator
''      Text.Whitespace
'And'
    Name
'('      Punctuation
'specfunc' Name
'{'      Punctuation

```

'sum' Name
 ';' Operator
 ' ' Text.Whitespace
 'Sum' Name
 '})' Punctuation
 ';' Operator
 ' ' Text.Whitespace
 'anyfunc' Name
 '(' Punctuation
 'anything' Name
 ';' Operator
 ' ' Text.Whitespace
 'name' Name
 '==' Operator
 'range' Name
 '))' Punctuation
 ';' Operator
 ' ' Text.Whitespace
 '\$' Operator
 ')' Punctuation
 '\n ' Text.Whitespace
 'option' Keyword
 ' ' Text.Whitespace
 'overload' Name
 ';' Punctuation
 '\n ' Text.Whitespace
 'local' Keyword
 ' ' Text.Whitespace
 'r' Name
 ';' Punctuation
 '\n ' Text.Whitespace
 'r' Name
 ' ' Text.Whitespace
 ':=' Operator
 ' ' Text.Whitespace
 'signum' Name
 '(' Punctuation
 'op'
 Name.Builtin
 '(' Punctuation
 '1' Literal.Number.Integer
 ';' Operator
 'a' Name
 '));' Punctuation
 '\n ' Text.Whitespace
 'if' Keyword
 ' ' Text.Whitespace
 'not' Keyword

```

''      Text.Whitespace
'depends'  Name
'('      Punctuation
'r'      Name
','      Operator
'op'     Name.Builtin
'(['     Punctuation
'2'      Literal.Number.Integer
','      Operator
'1'      Literal.Number.Integer
']'      Punctuation
','      Operator
'a'      Name
'))'     Punctuation
''      Text.Whitespace
'then'    Keyword
'\n'     ' Text.Whitespace
'return'  Keyword
''      Text.Whitespace
'signum'  Name
'('      Punctuation
'op'     Name.Builtin
'(['     Punctuation
'2'      Literal.Number.Integer
','      Operator
'2'      Literal.Number.Integer
','      Operator
'2'      Literal.Number.Integer
']'      Punctuation
Punctuation
','      Operator
'a'      Name
')'      Punctuation
'+'      Operator
'1'      Literal.Number.Integer
'-'      Operator
'op'     Name.Builtin
'(['     Punctuation
'2'      Literal.Number.Integer
','      Operator
'2'      Literal.Number.Integer
','      Operator
'1'      Literal.Number.Integer
']'      Punctuation
','      Operator
'a'      Name
'))'     Punctuation
''      Text.Whitespace

```

```

'*'      Operator
' '      Text.Whitespace
'r'      Name
'\n'    ' Text.Whitespace
'end'    Keyword
' '      Text.Whitespace
'if'     Keyword
';'      Punctuation
'\n'    ' Text.Whitespace
'error'  Keyword
' '      Text.Whitespace
'"invalid input: cannot signum %1"' Literal.String
','      Operator
' '      Text.Whitespace
'a'      Name
';'      Punctuation
'\n'    ' Text.Whitespace
'end'    Keyword
'
'      Text.Whitespace
'proc'   Keyword
','      Operator
'\n'    ' Text.Whitespace
'signum' Name
']);'    Punctuation
'\n'    ' Text.Whitespace
'protect' Name
'('      Punctuation
'signum' Name
');'     Punctuation
'\n\n'   ' Text.Whitespace
'# Override sum to fail faster\n' Comment.Single

' '      Text.Whitespace
'unprotect' Name
'('      Punctuation
'sum'    Name
');'     Punctuation
'\n'    ' Text.Whitespace
'sum'    Name
' '      Text.Whitespace
':='     Operator
' '      Text.Whitespace
'overload' Name
'(['     Punctuation
'\n'    ' Text.Whitespace
'proc'   Keyword
'('      Punctuation

```

'f' Name
 '' Text.Whitespace
 '::' Operator
 '' Text.Whitespace
 'Not' Name
 '{' Punctuation
 '~+' Name
 ';' Operator
 '~+' Name
 '^' Operator
 'integer' Name
 '})' Punctuation
 ','
 Operator
 '\n ' Text.Whitespace
 'k' Name
 '' Text.Whitespace
 '::' Operator
 '' Text.Whitespace
 'name' Name
 '=' Operator
 'And' Name
 '(' Punctuation
 'range' Name
 ';' Operator
 'Not' Name
 '(' Punctuation
 'range' Name
 '(' Punctuation
 'rational' Name
 ')))' Punctuation
 ';' Operator
 '' Text.Whitespace
 '\$' Operator
 ')' Punctuation
 '\n ' Text.Whitespace
 'option' Keyword
 '' Text.Whitespace
 'overload' Name
 ';' Punctuation
 '\n ' Text.Whitespace
 'if' Keyword
 '' Text.Whitespace
 'not' Keyword
 '' Text.Whitespace
 '(' Punctuation
 '~-' Name
 '(' Punctuation

'op' Name.Builtin
 '(' Punctuation
 'rhs' Name.Builtin
 '(' Punctuation
 'k' Name
 ')))'
 Punctuation
 ' ' Text.Whitespace
 '::' Operator
 ' ' Text.Whitespace
 '''' Punctuation
 'rational' Name
 '''' Punctuation
 ')' Punctuation
 '\n' ' Text.Whitespace
 'and' Keyword
 ' ' Text.Whitespace
 'not' Keyword
 ' ' Text.Whitespace
 '(' Punctuation
 'subsindets' Name.Builtin
 '(' Punctuation
 'f' Name
 ';' Operator
 ' ' Text.Whitespace
 '''' Punctuation
 'anything' Name
 '^' Operator
 'integer' Name
 '''' Punctuation
 ';' Operator
 ' ' Text.Whitespace
 'f' Name
 '->' Operator
 'op' Name.Builtin
 '(' Punctuation
 '1' Literal.Number.Integer
 ';' Operator
 'f' Name
 '))' Punctuation
 '\n' ' Text.Whitespace
 '::' Operator
 ' ' Text.Whitespace
 '''' Punctuation
 '{' Punctuation
 '^+`'
 Name
 ';' Operator

'And'	Name
'('	Punctuation
'*'	Name
','	Operator
'Not'	Name
'('	Punctuation
'*'	Name
'('	Punctuation
'Not'	Name
'('	Punctuation
'+'	Name
'))))'	Punctuation
''''	Punctuation
')	Punctuation
'\n	' Text.Whitespace
'and'	Keyword
' '	Text.Whitespace
'depends'	Name
'('	Punctuation
'indets'	Name.Builtin
'('	Punctuation
'f'	Name
','	Operator
' '	Text.Whitespace
''''	Punctuation
'{'	Punctuation
'specfunc'	Name
'('	Punctuation
'idx'	Name
')	Punctuation
','	Operator
' '	Text.Whitespace
'specindex'	Name
'('	Punctuation
'idx'	Name
'))'	Punctuation
''''	Punctuation
')	Punctuation
','	Operator
' '	Text.Whitespace
'op'	
	Name.Builtin
'('	Punctuation
'1'	Literal.Number.Integer
','	Operator
'k'	Name
'))'	Punctuation
'\n	' Text.Whitespace

'then' Keyword
 '\n' ' Text.Whitespace
 '""" Punctuation
 'procname' Name
 '(_' Punctuation
 'passed' Name
 ')' Punctuation
 '""" Punctuation
 '\n' ' Text.Whitespace
 'else' Keyword
 '\n' ' Text.Whitespace
 'error' Keyword
 '' Text.Whitespace
 '"invalid input: cannot fast-fail sum(%1, %2)'" Literal.String
 ';' Operator
 '' Text.Whitespace
 '_passed' Name
 '\n' ' Text.Whitespace
 'end' Keyword
 '' Text.Whitespace
 'if' Keyword
 '\n' ' Text.Whitespace
 'end' Keyword
 '' Text.Whitespace
 'proc' Keyword
 ';' Operator
 '\n' ' Text.Whitespace
 'sum' Name
 ']);' Punctuation
 '\n' ' Text.Whitespace
 'protect' Name
 '('
 Punctuation
 'sum' Name
 ');' Punctuation
 '\n\n' ' Text.Whitespace
 ':' Operator
 '-' Operator
 `print/Ints` Name
 '' Text.Whitespace
 ':=' Operator
 '' Text.Whitespace
 'curry' Name
 '(' Punctuation
 'thismodule' Name
 ':' Operator
 '-' Operator
 'Print' Name


```

','      Operator
'Ints'   Name
');'     Punctuation
'\n  '   Text.Whitespace
':'      Operator
'-'      Operator
`print/Sums` Name
''       Text.Whitespace
':='     Operator
''       Text.Whitespace
'curry'  Name
'('      Punctuation
'thismodule' Name
':'      Operator
'-'      Operator
'Print'  Name
','      Operator
'Sums'   Name
');'     Punctuation
'\n  '   Text.Whitespace
':'      Operator
'-'      Operator
`print/ints` Name
''       Text.Whitespace
':='     Operator
''       Text.Whitespace
'curry'
      Name
'('      Punctuation
'thismodule' Name
':'      Operator
'-'      Operator
'Print'  Name
','      Operator
'ints'   Name
');'     Punctuation
'\n  '   Text.Whitespace
':'      Operator
'-'      Operator
`print/sums` Name
''       Text.Whitespace
':='     Operator
''       Text.Whitespace
'curry'  Name
'('      Punctuation
'thismodule' Name
':'      Operator
'-'      Operator

```

```

'Print'    Name
','        Operator
'sums'     Name
');'       Punctuation
'\n\n '    Text.Whitespace
'end'      Keyword
' '        Text.Whitespace
'proc'     Keyword
';'        Punctuation
'\n '      Text.Whitespace
'ModuleLoad' Name
'()'       Punctuation
':'        Operator
'\n'       Text.Whitespace

'end'      Keyword
' '        Text.Whitespace
'module'   Keyword
';'        Punctuation
' '        Text.Whitespace
'# Loop\n' Comment.Single
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```

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1.10 typeguard 4.3.0

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1.11 pyperclip 1.11.0

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1.12 prometheus-client 4.0.10

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1.13 pyparsing 3.2.5

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1.15 pax-utils 1.3.8-r2

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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
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1.17 durationpy 0.10

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1.19 python3-pycache-pyc0 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
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
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1.20 openapi-pydantic 0.5.1

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1.22 frozenlist 1.8.0

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1.23 jeepney 0.9.0

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1.24 more-itertools 10.3.0

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1.25 python-json-logger 4.0.0

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1.27 kubernetes 34.1.0

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1.28 rich-rst 1.3.2

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1.29 zlib 1.3.1-r2

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1.30 jaraco-functools 4.0.1

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1.31 platformdirs 4.3.6

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1.32 propcache 0.4.1

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1.33 pyc 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.

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1.34 jaraco.classes 3.4.0

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1.36 pyasn1-modules 0.4.2

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ASN.1 library for Python

[![PyPI](https://img.shields.io/pypi/v/pyasn1.svg?maxAge=2592000)](https://pypi.python.org/pypi/pyasn1)
[![Python Versions](https://img.shields.io/pypi/pyversions/pyasn1.svg)](https://pypi.python.org/pypi/pyasn1/)
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Status](https://img.shields.io/codecov/c/github/etingof/pyasn1.svg)](https://codecov.io/github/etingof/pyasn1)
[![GitHub license](https://img.shields.io/badge/license-BSD-blue.svg)](https://raw.githubusercontent.com/etingof/pyasn1/master/LICENSE.txt)

This is a free and open source implementation of ASN.1 types and codecs as a Python package. It has been first written to support particular protocol (SNMP) but then generalized to be suitable for a wide range of protocols based on

[ASN.1 specification](https://www.itu.int/rec/dologin_pub.asp?lang=e&id=T-REC-X.208-198811-W!!PDF-E&type=items).

Features

*

Generic implementation of ASN.1 types (X.208)

* Standards compliant BER/CER/DER codecs

* Dumps/loads ASN.1 structures from Python types

* 100% Python, works with Python 2.4 up to Python 3.6

* MT-safe

* Contributed ASN.1 compiler [Asn1ate](<https://github.com/kimgr/asn1ate>)

Why using pyasn1

ASN.1 solves the data serialisation problem. This solution was designed long ago by the wise Ancients. Back then, they did not have the luxury of wasting bits. That is why ASN.1 is designed to serialise data structures of unbounded complexity into something compact and efficient when it comes to processing the data.

That probably explains why many network protocols and file formats still rely on the 30+ years old technology. Including a number of high-profile Internet protocols and file formats.

Quite a number of books cover the topic of ASN.1.

[Communication between heterogeneous systems](<http://www.oss.com/asn1/dubuisson.html>)

by

Olivier Dubuisson is one of those high quality books freely available on the Internet.

The pyasn1 package is designed to help Python programmers tackling network protocols and file formats at the comfort of their Python prompt. The tool struggles to capture all aspects of a rather complicated ASN.1 system and to represent it on the Python terms.

How to use pyasn1

With pyasn1 you can build Python objects from ASN.1 data structures. For example, the following ASN.1 data structure:

```
```bash
Record ::= SEQUENCE {
 id INTEGER,
 room [0] INTEGER OPTIONAL,
 house [1] INTEGER DEFAULT 0
}
```

```
...
```

Could be expressed in pyasn1 like this:

```
```python
class Record(Sequence):
    componentType = NamedTypes(
        NamedType('id', Integer()),
        OptionalNamedType(
            'room', Integer().subtype(
                implicitTag=Tag(tagClassContext, tagFormatSimple, 0)
            )
        ),
        DefaultedNamedType(
            'house', Integer(0).subtype(
                implicitTag=Tag(tagClassContext, tagFormatSimple, 1)
            )
        )
    )
```
```

It is in the spirit of ASN.1 to take abstract data description and turn it into a programming language specific form. Once you have your ASN.1 data structure expressed in Python, you can use it along the lines of similar Python type (e.g. ASN.1 `SET` is similar to Python `dict`, `SET OF` to `list`):

```
```python
>>> record = Record()
>>> record['id'] = 123
>>> record['room'] = 321
>>> str(record)
Record:
id=123
room=321
>>>
```
```

Part of the power of ASN.1 comes from its serialisation features. You can serialise your data structure and send it over the network.

```
```python
>>> from pyasn1.codec.der.encoder import encode
>>> substrate = encode(record)
>>> hexdump(substrate)
00000: 30 07 02 01 7B 80 02 01 41
```
```

Conversely, you can turn serialised ASN.1 content, as received from network or read from a file, into a Python object which you can introspect, modify, encode and send back.

```
```python
>>> from pyasn1.codec.der.decoder import decode
>>> received_record, rest_of_substrate = decode(substrate, asn1Spec=Record())
>>>
>>> for field in received_record:
>>>     print('{} is {}'.format(field, received_record[field]))
id is 123
room is 321
house is 0
>>>
>>> record == received_record
True
>>> received_record.update(room=123)
>>> substrate = encode(received_record)
>>> hexdump(substrate)
00000: 30 06 02 01 7B 80 01 7B
```
```

The pyasn1 classes struggle to emulate their Python prototypes (e.g. int, list, dict etc.). But ASN.1 types exhibit more complicated behaviour. To make life easier for a Pythonista, they can turn their pyasn1 classes into Python built-ins:

```
```python
>>> from pyasn1.codec.native.encoder import encode
>>> encode(record)
{'id': 123, 'room': 321, 'house': 0}
```
```

Or vice-versa -- you can initialize an ASN.1 structure from a tree of Python objects:

```
```python
>>> from pyasn1.codec.native.decoder import decode
>>> record =
    decode({'id': 123, 'room': 321, 'house': 0}, asn1Spec=Record())
>>> str(record)
Record:
id=123
room=321
>>>
```
```



With ASN.1 design, serialisation codecs are decoupled from data objects, so you could turn every single ASN.1 object into many different serialised forms. As of this moment, pyasn1 supports BER, DER, CER and Python built-ins codecs. The extremely compact PER encoding is expected to be introduced in the upcoming pyasn1 release.

More information on pyasn1 APIs can be found in the [documentation](<http://snmplabs.com/pyasn1/>), compiled ASN.1 modules for different protocols and file formats could be found in the pyasn1-modules [repo](<https://github.com/etingof/pyasn1-modules>).

How to get pyasn1

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The pyasn1 package is distributed under terms and conditions of 2-clause BSD [license](<http://snmplabs.com/pyasn1/license.html>). Source code is freely available as a GitHub [repo](<https://github.com/etingof/pyasn1>).

You could `pip install pyasn1` or download it from [PyPI](<https://pypi.python.org/pypi/pyasn1>).

If something does not work as expected, [open an issue](<https://github.com/etingof/pyasn1/issues>) at GitHub or post your question [on Stack Overflow](<http://stackoverflow.com/questions/ask>) or try browsing pyasn1 [mailing list archives](<https://sourceforge.net/p/pyasn1/mailman/pyasn1-users/>).

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ASN.1 library for Python

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Abstract Syntax Notation One (ASN.1

<[<http://en.wikipedia.org/wiki/Abstract\\_Syntax\\_Notation\\_1x>](http://en.wikipedia.org/wiki/Abstract_Syntax_Notation_1x)>`\_) is a technology for exchanging structured data in a universally understood, hardware agnostic way. Many industrial, security and telephony applications heavily rely on ASN.1.

The `pyasn1` <<https://pypi.python.org/pypi/pyasn1/>>`\_ library implements ASN.1 support in pure-Python.

What is ASN.1

-----

ASN.1 is a large, arguably over-engineered and extremely old data modelling and serialisation tool. It is probably among the first serialisation protocols in the history of computer science and technology.

ASN.1 started its life over 30 years ago as a serialisation mechanism for the first electronic mail (known as X.400). Later on it was split off the e-mail application and became a stand-alone tech still being actively supported by its designers and widely used in industry and technology.

Since then ASN.1 is sort of haunted by its relations with the OSI model -- the first, unsuccessful, version of the Internet. You can read many interesting

`discussions <<https://news.ycombinator.com/item?id=8871453>>`\_ on that topic.

In the following years, generations of software engineers tackled the serialisation problem many times. We can see that in Google's `ProtoBuffers <<https://developers.google.com/protocol-buffers/>>`\_

or `FlatBuffers <<https://google.github.io/flatbuffers/>>`\_, for example.

Interestingly, many new takes on binary protocol design do not depart far from ASN.1 from technical perspective. It's more of a matter of striking a balance between processing overhead, wire format overhead and human readability.

Looking at what ASN.1 has to offer, it has three loosely coupled parts:

- \* Data types: the standard introduces a collection of basic data types (integers, bits, strings, arrays and records) that can be used for describing arbitrarily complex, nested data structures.
- \* Serialisation protocols: the above data structures could be converted into a series of octets for storage or transmission over the wire as well as recovered back into their structured form. The system is fully agnostic to hardware architectures differences.
- \* Schema language: ASN.1 data structures could be described in terms of a schema language for ASN.1 compiler to turn it into platform-specific implementation.

#### ASN.1 applications

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Being an old and generally successful standard, ASN.1 is widely adopted for many uses. To give you an example, these technologies use ASN.1 for their data exchange needs:

- \* Signaling standards for the public switched telephone network (SS7 family)
- \* Network management standards (SNMP, CMIP)
- \* Directory standards (X.500 family, LDAP)
- \* Public Key Infrastructure standards (X.509, etc.)
- \* PBX control (CSTA)
- \* IP-based Videoconferencing (H.323 family)
- \* Biometrics (BIP, CBEFF, ACBio)
- \* Intelligent transportation (SAE J2735)
- \* Cellular telephony (GSM, GPRS/EDGE, UMTS, LTE)

#### ASN.1 gotchas

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Apparently, ASN.1 is hard to implement properly. Quality open-source ASN.1 tools are rare, but ad-hoc implementations are numerous. Judging from the ``statistics <http://cve.mitre.org/cgi-bin/cvekey.cgi?keyword=ASN.1>`_` on discovered security vulnerabilities, many people have implemented ASN.1 parsers and oftentimes fell victim to its edge cases.

On the bright side, ASN.1 has been around for a long time, it is well understood and security reviewed.

## Documentation

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```
.. toctree::
 :maxdepth: 2
```

/pyasn1/contents

## Use case

-----

```
.. toctree::
 :maxdepth: 2
```

/example-use-case

## Download & Install

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```
.. toctree::
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```

/download

## Changes

-----

All changes and release history is maintained in changelog. There you could also download the latest unreleased pyasn1 tarball containing the latest fixes and improvements.

```
.. toctree::
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```

/changelog

## License

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The PyASN1 software is distributed under 2-clause BSD License.

```
.. toctree::
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```

/license

Getting help

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Please, file your `issues` <<https://github.com/etingof/pyasn1/issues>>`\_`  
and `PRs` <<https://github.com/etingof/pyasn1/pulls>>`\_` at GitHub.  
Alternatively, you could ask for help at  
`Stack Overflow` <<http://stackoverflow.com/questions/tagged/pyasn1>>`\_`  
or search  
`pyasn1-users` <<https://lists.sourceforge.net/lists/listinfo/pyasn1-users>>`\_`  
mailing list archive.

Books on ASN.1

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The pyasn1 implementation is largely based on reading up the following awesome books:

- \* `ASN.1 - Communication between heterogeneous systems` <<http://www.oss.com/asn1/dubuisson.html>>`\_` by Olivier Dubuisson
- \* `ASN.1 Complete` <<http://www.oss.com/asn1/resources/books-whitepapers-pubs/larmouth-asn1-book.pdf>>`\_` by Prof John Larmouth

Here you can get the official standards which is hard to read:

- \* `ITU standards` <<http://www.itu.int/ITU-T/studygroups/com17/languages/X.680-X.693-0207w.zip>>`\_`

On the other end of the readability spectrum, here is a quick and sweet write up:

- \* `A Layman's Guide to a Subset of ASN.1, BER, and DER` <<ftp://ftp.rsasecurity.com/pub/pkcs/ascii/layman.asc>>`\_` by Burton S. Kaliski

If you are working with ASN.1, we'd highly recommend reading a proper book on the subject.

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- \* /pyasn1-0-4-2-1-tar-gz/pyasn1-0.4.2/pyasn1/type/base.py
- \* /pyasn1-0-4-2-1-tar-gz/pyasn1-0.4.2/tests/compat/\_\_main\_\_.py
- \* /pyasn1-0-4-2-1-tar-gz/pyasn1-0.4.2/pyasn1/codec/cer/decoder.py
- \* /pyasn1-0-4-2-1-tar-gz/pyasn1-0.4.2/pyasn1/type/error.py
- \* /pyasn1-0-4-2-1-tar-gz/pyasn1-0.4.2/tests/base.py
- \* /pyasn1-0-4-2-1-tar-gz/pyasn1-0.4.2/tests/codec/cer/test\_decoder.py
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- \* /pyasn1-0-4-2-1-tar-gz/pyasn1-0.4.2/pyasn1/type/constraint.py
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- \* /pyasn1-0-4-2-1-tar-gz/pyasn1-0.4.2/pyasn1/compat/dateandtime.py
- \* /pyasn1-0-4-2-1-tar-gz/pyasn1-0.4.2/pyasn1/codec/cer/encoder.py
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- \* /pyasn1-0-4-2-1-tar-gz/pyasn1-0.4.2/tests/test\_debug.py
- \* /pyasn1-0-4-2-1-tar-gz/pyasn1-0.4.2/pyasn1/compat/octet.py
- \* /pyasn1-0-4-2-1-tar-gz/pyasn1-0.4.2/pyasn1/type/namedtype.py
- \* /pyasn1-0-4-2-1-tar-gz/pyasn1-0.4.2/tests/codec/der/test\_decoder.py
- \* /pyasn1-0-4-2-1-tar-gz/pyasn1-0.4.2/tests/type/test\_constraint.py
- \* /pyasn1-0-4-2-1-tar-gz/pyasn1-0.4.2/tests/codec/native/test\_decoder.py
- \* /pyasn1-0-4-2-1-tar-gz/pyasn1-0.4.2/pyasn1/compat/binary.py
- \* /pyasn1-0-4-2-1-tar-gz/pyasn1-0.4.2/tests/type/\_\_main\_\_.py
- \* /pyasn1-0-4-2-1-tar-gz/pyasn1-0.4.2/tests/type/test\_opentype.py
- \* /pyasn1-0-4-2-1-tar-gz/pyasn1-0.4.2/pyasn1/compat/integer.py
- \* /pyasn1-0-4-2-1-tar-gz/pyasn1-0.4.2/pyasn1/compat/string.py
- \* /pyasn1-0-4-2-1-tar-gz/pyasn1-0.4.2/tests/type/test\_useful.py
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- \* /pyasn1-0-4-2-1-tar-gz/pyasn1-0.4.2/tests/codec/der/\_\_main\_\_.py
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- \* /pyasn1-0-4-2-1-tar-gz/pyasn1-0.4.2/pyasn1/debug.py
- \* /pyasn1-0-4-2-1-tar-gz/pyasn1-0.4.2/pyasn1/codec/native/encoder.py
- \* /pyasn1-0-4-2-1-tar-gz/pyasn1-0.4.2/tests/codec/der/test\_encoder.py
- \* /pyasn1-0-4-2-1-tar-gz/pyasn1-0.4.2/tests/type/test\_tag.py

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* /pyasn1-0-4-2-1-tar-gz/pyasn1-0.4.2/tests/codec/ber/__main__.py
* /pyasn1-0-4-2-1-tar-gz/pyasn1-0.4.2/pyasn1/error.py
* /pyasn1-0-4-2-1-tar-gz/pyasn1-0.4.2/tests/codec/ber/test_decoder.py
* /pyasn1-0-4-2-1-tar-gz/pyasn1-0.4.2/pyasn1/codec/der/decoder.py
* /pyasn1-0-4-2-1-tar-gz/pyasn1-0.4.2/setup.py
* /pyasn1-0-4-2-1-tar-gz/pyasn1-0.4.2/tests/codec/ber/test_encoder.py
* /pyasn1-0-4-2-1-tar-gz/pyasn1-0.4.2/tests/codec/native/test_encoder.py
* /pyasn1-0-4-2-1-tar-gz/pyasn1-0.4.2/tests/codec/__main__.py
```

## 1.37 zipp 3.19.2

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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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|----------------|--------------|-----------|------------|---------------------|
| 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                 |
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## 1.43 shellingham 1.5.4

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## 1.44 bzip2 1.0.8-r6

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Julian Seward, jseward@acm.org  
bzip2/libbzip2 version 1.0.8 of 13 July 2019

-----

## 1.45 python-dateutil 2.9.0.post0

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-----  
dateutil - Extensions to the standard Python datetime module.

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# 1.46 musl 1.2.5-r21

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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 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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# 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; \
 (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 { \
 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)

```

```

} 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
#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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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
"

```

## 1.47 jaraco.collections 5.1.0

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## 1.48 wheel 0.45.1

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## 1.49 idna 3.11

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## 1.52 my-test-package 1.0

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## 1.53 jaraco-classes 3.4.0

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# 1.54 pyproject-hooks 1.2.0

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# 1.55 charset-normalizer 3.4.4

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## 1.56 visual-studio-runtime 2010

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ca-bundle.crt -- Bundle of CA Root Certificates

Certificate data from Mozilla as of: Thu Nov 3 19:04:19 2011#

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 \$

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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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| 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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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.

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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                 |
| 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 |     |
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| 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 |
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| 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 |
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| 2.7   | 2.6   | 2010      | 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 of the PSF.

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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                 |
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| 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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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.

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- \* Alex Grnholm
- \* Alice Bevan-McGregor
- \* Arfrever Frehtes Taifersar Arahesis
- \* Christophe Combelles
- \* Daniel Stutzbach
- \* Daniel Holth
- \* Hanno Schlichting
- \* Jannis Leidel
- \* Jason R. Coombs
- \* Jim Fulton
- \* Jonathan Lange
- \* Justin Azoff
- \* Lennart Regebro
- \* Marc Abramowitz
- \* Martin von Lwis
- \* Noufal Ibrahim
- \* Pete Hollobon
- \* Philip Jenvey
- \* Reinout van Rees
- \* Robert Myers
- \* Stefan H. Holek
- \* Tarek Ziad
- \* Toshio Kuratomi

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# 1.57 python-pip 25.1.1

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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 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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#### 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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### 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

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All

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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  |            |                     |
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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     |
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| PSF            |           |           |            | yes     |

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immerrr again  
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## 1.62 python-certifi 2025.01.31



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(which makes passes at compilers) written  
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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 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 \
 --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="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
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>

/\* \$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(QEUEDEDEBUG)
#define QEUEDEDEBUG_LIST_INSERT_HEAD(head, elm, field) \
if ((head)->lh_first && \
 (head)->lh_first->field.le_prev != &(head)->lh_first) \
 QEUEDEDEBUG_ABORT("LIST_INSERT_HEAD %p %s:%d", (head), \
 __FILE__, __LINE__);
#define QEUEDEDEBUG_LIST_OP(elm, field) \
if ((elm)->field.le_next && \
 (elm)->field.le_next->field.le_prev != \
 &(elm)->field.le_next) \
 QEUEDEDEBUG_ABORT("LIST_* forw %p %s:%d", (elm), \
 __FILE__, __LINE__); \
if (*(elm)->field.le_prev != (elm)) \
 QEUEDEDEBUG_ABORT("LIST_* back %p %s:%d", (elm), \
 __FILE__, __LINE__);
#define QEUEDEDEBUG_LIST_POSTREMOVE(elm, field) \
(elm)->field.le_next = (void *)1L; \
(elm)->field.le_prev = (void *)1L;
#else
#define QEUEDEDEBUG_LIST_INSERT_HEAD(head, elm, field)
#define QEUEDEDEBUG_LIST_OP(elm, field)
#define QEUEDEDEBUG_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 { \
 QEUEDEDEBUG_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 { \
 QEUEDEDEBUG_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.
 */
#ifdef 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 { \
 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; \
 QUEUEDEBDEBUG_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(QEUEDEBUG)
#define QEUEDEBUG_CIRCLEQ_HEAD(head, field) \
if ((head)->cqh_first != CIRCLEQ_ENDC(head) && \
 (head)->cqh_first->field.cqe_prev != CIRCLEQ_ENDC(head)) \
 QEUEDEBUG_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)) \
 QEUEDEBUG_ABORT("CIRCLEQ head back %p %s:%d", (head), \
 __FILE__, __LINE__);
#define QEUEDEBUG_CIRCLEQ_ELM(head, elm, field) \
if ((elm)->field.cqe_next == CIRCLEQ_ENDC(head)) { \
 if ((head)->cqh_last != (elm)) \
 QEUEDEBUG_ABORT("CIRCLEQ \
elm last %p %s:%d", \
 (elm), __FILE__, __LINE__); \
} else { \
 if ((elm)->field.cqe_next->field.cqe_prev != (elm)) \
 QEUEDEBUG_ABORT("CIRCLEQ elm forw %p %s:%d", \
 (elm), __FILE__, __LINE__); \
} \
if ((elm)->field.cqe_prev == CIRCLEQ_ENDC(head)) { \
 if ((head)->cqh_first != (elm)) \
 QEUEDEBUG_ABORT("CIRCLEQ elm first %p %s:%d", \
 (elm), __FILE__, __LINE__); \
} else { \
 if ((elm)->field.cqe_prev->field.cqe_next != (elm)) \
 QEUEDEBUG_ABORT("CIRCLEQ elm prev %p %s:%d", \
 (elm), __FILE__, __LINE__); \
}
#define QEUEDEBUG_CIRCLEQ_POSTREMOVE(elm, field) \
(elm)->field.cqe_next = (void *)1L; \
(elm)->field.cqe_prev = (void *)1L;
#else
#define QEUEDEBUG_CIRCLEQ_HEAD(head, field)
#define QEUEDEBUG_CIRCLEQ_ELM(head, elm, field)
#define QEUEDEBUG_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); \
} while (/*CONSTCOND*/0)

```



```

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) (__launder_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
"

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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))

```

```

#end if /* _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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```

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```
Contributor: Dhruvin Gandhi <contact@dhruvin>
Maintainer: Patrycja Rosa <alpine@ptrcnll.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
"
```

# 1.72 websocket-client 1.9.0

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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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#### 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.

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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                      |
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Python was created in the early 1990s by Guido van Rossum at Stichting  
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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  
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| Release        | Derived<br>from | Year      | Owner      | GPL-<br>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 |
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## 1.75 oauthlib 3.3.1

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## 1.77 truststore 0.10.0

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## 1.79 diskcache 5.6.3



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TAR mangling utility for .APK packages

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\*

## 1.81 rich 14.0.0

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## 1.82 autocommand 2.2.2

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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 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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## 1.85 requests-oauthlib 2.0.0

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## 1.88 tomli 2.0.1

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## 1.89 python-setuptools 80.9.0

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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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## 1.90 tomli 2.2.1

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## 1.93 httpx-sse 0.4.3

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## 1.94 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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| 1.6            | 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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distlib has started off using some of the code from distutil2.

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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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| 1.6            | 1.5.2        | 2000      | CNRI       | no                  |
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| 2.0.1          | 2.0+1.6.1    | 2001      | PSF        | yes                 |
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| 2.1.3          | 2.1.2        | 2002      | PSF        | yes                 |
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<<https://www.gnu.org/licenses/>>.

Also add information on how to contact you by electronic and paper mail.

If the program is interactive, make it output a short notice like this when it starts in an interactive mode:

Gnomovision version 69, Copyright (C) year name of author  
Gnomovision comes with ABSOLUTELY NO WARRANTY; for details  
type `show w'. This is free software, and you are welcome  
to redistribute it under certain conditions; type `show c'  
for details.

The hypothetical commands `show w' and `show c' should show the appropriate parts of the General Public License.  
Of course, the commands you use may be called something other than `show w' and `show c'; they could even be  
mouse-clicks or menu items--whatever suits your program.

You should also get your employer (if you work as a programmer) or your school, if any, to sign a "copyright  
disclaimer" for the program, if necessary. Here is a sample; alter the names:

Yoyodyne, Inc., hereby disclaims all copyright  
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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this is what you want to do, use the GNU Lesser General Public License instead of this 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"
buildid="srcdir/license-list-data-$pkgver"
subpackages="$pkgname-list"
```

```
_types="html json rdfla rdft rdfturtle rdffxml 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
"
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 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 { \
 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_ */
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() {
 gp517 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: 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-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" \
.dists/*.whl
}

sha512sums="
f46dd4cf524b3962115fe26f5545bfdd6767275b482724af51e7ca07da79244969a3bfc5d2fd5b95bc0f19d1b95a26a8f3
ab36c676e56ec302178d7166588066
license_expression-30.4.4.tar.gz
"
```

## 1.115 musl-utils 1.2.5-r21

### 1.115.1 Available under license :

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Version 2, June 1991

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in the program `Gnomovision'

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# Maintainer: Kevin Daudt <[kdaudt@alpinelinux.org](mailto: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
#_pkgrel is used by apkbuidl-cpan to find modules at MetaCpan
_pkgrel=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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```

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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(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)

```

```

} 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)

```

```

} 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 { \
 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; \
 QUEUEDEBDEBUG_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 { \
 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); \
} while (/*CONSTCOND*/0)

```

```

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) (__lauder_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
"

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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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```

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```
Contributor: Dhruvin Gandhi <contact@dhruvin>
Maintainer: Patrycja Rosa <alpine@ptrcnll.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
```

```
"
```

# 1.116 cpp 15.2.0-r2

## 1.116.1 Available under license :

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Version 3.1, 31 March 2009

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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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```

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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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# 1.122 regex-syntax 0.8.5

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## 1.127 num-bigint 0.4.6

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# 1.129 lexical-parse-float 1.0.5

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#### ## `write-floats, not(compact)`

`lexical-write-float/src/algorithm.rs` is a direct port of the reference C++ implementation of Dragonbox, found [here](https://github.com/jk-jeon/dragonbox/).

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#### ## `write-floats, compact`

`lexical-write-float/src/compact.rs` is a direct port of a C++ implementation of the Grisu algorithm, found [here](https://github.com/night-shift/fpconv/).

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#### ## `write-floats, radix`

`lexical-write-float/src/radix.rs` is adapted from the V8 implementation found [here](). This code (used if both the `parse-floats` and `radix` features are enabled) is subject to a [3-clause BSD license](https://github.com/v8/v8/blob/f80bfeaf0792652bfbcb1f174d5a7b8ab8bc0cbbd/LICENSE.v8), shown in the [V8 License](#v8-license) section below.

#### ## `parse-floats, compact`

`lexical-parse-float/src/bellerophon.rs` is loosely based off the Golang implementation, found

[here](https://github.com/golang/go/blob/b10849fbb97a2244c086991b4623ae9f32c212d0/src/strconv/extfloat.go).

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## 1.131 pem 3.0.5

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## 1.132 num-integer 0.1.46

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## 1.133 asn1 0.22.0

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## 1.134 smallvec 1.15.1

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## 1.136 hex 0.4.3

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## 1.137 serde\_json 1.0.145

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# 1.139 speedate 0.17.0

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## 1.140 icu\_collections 1.5.0

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## 1.141 percent-encoding 2.3.2

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//! FreeBSD and NetBSD xattr support.

```
use libc::{c_int, c_void, size_t, EPERM};
use std::ffi::{CString, OsStr, OsString};
use std::io;
use std::mem;
use std::os::unix::ffi::{OsStrExt, OsStringExt};
use std::os::unix::io::{AsRawFd, BorrowedFd};
use std::path::Path;
use std::ptr;

use libc::{
```

```

 extattr_delete_fd, extattr_delete_file, extattr_delete_link, extattr_get_fd, extattr_get_file,
 extattr_get_link, extattr_list_fd, extattr_list_file, extattr_list_link, extattr_set_fd,
 extattr_set_file, extattr_set_link, EXTATTR_NAMESPACE_SYSTEM, EXTATTR_NAMESPACE_USER,
};

use crate::util::allocate_loop;

pub const ENOATTR: i32 = libc::ENOATTR;
pub const ERANGE: i32 = libc::ERANGE;

const EXTATTR_NAMESPACE_USER_STRING: &str = "user";
const EXTATTR_NAMESPACE_SYSTEM_STRING: &str = "system";
const EXTATTR_NAMESPACE_NAMES: [&str; 3] = [
 "empty",
 EXTATTR_NAMESPACE_USER_STRING,
 EXTATTR_NAMESPACE_SYSTEM_STRING,
];

fn path_to_c(path: &Path) -> io::Result<CString> {
 match CString::new(path.as_os_str().as_bytes())
 {
 Ok(name) => Ok(name),
 Err(_) => Err(io::Error::new(io::ErrorKind::NotFound, "file not found")),
 }
}

#[inline]
fn slice_parts(buf: &mut [u8]) -> (*mut c_void, size_t) {
 if buf.is_empty() {
 (ptr::null_mut(), 0)
 } else {
 (buf.as_mut_ptr().cast(), buf.len() as size_t)
 }
}

/// An iterator over a set of extended attributes names.
#[derive(Default)]
pub struct XAttrs {
 user_attrs: Box<[u8]>,
 system_attrs: Box<[u8]>,
 offset: usize,
}

impl Clone for XAttrs {
 fn clone(&self) -> Self {
 XAttrs {
 user_attrs: Vec::from(&*self.user_attrs).into_boxed_slice(),
 system_attrs: Vec::from(&*self.system_attrs).into_boxed_slice(),
 }
 }
}

```

```

 offset: self.offset,
 }
}

fn clone_from(&mut self, other: &XAttrs) {
 self.offset = other.offset;

 let mut data = mem::replace(&mut self.user_attrs, Box::new([])).into_vec();
 data.extend(other.user_attrs.iter().cloned());
 self.user_attrs = data.into_boxed_slice();

 data = mem::replace(&mut self.system_attrs, Box::new([])).into_vec();
 data.extend(other.system_attrs.iter().cloned());
 self.system_attrs = data.into_boxed_slice();
}

}

impl Iterator for XAttrs {
 type Item = OsString;
 fn next(&mut self) -> Option<OsString> {
 if self.user_attrs.is_empty() && self.system_attrs.is_empty() {
 return None;
 }

 if self.offset == self.user_attrs.len() + self.system_attrs.len() {
 return None;
 }

 let data = if self.offset < self.system_attrs.len() {
 &self.system_attrs[self.offset..]
 } else {
 &self.user_attrs[self.offset - self.system_attrs.len()..]
 };

 let siz = data[0] as usize;

 self.offset += siz + 1;
 if self.offset < self.system_attrs.len() {
 Some(prefix_namespace(
 OsStr::from_bytes(&data[1..siz
+ 1])),
 EXTATTR_NAMESPACE_SYSTEM,
))
 } else {
 Some(prefix_namespace(
 OsStr::from_bytes(&data[1..siz + 1]),
 EXTATTR_NAMESPACE_USER,
))
 }
 }
}

```

```

 }
}

fn size_hint(&self) -> (usize, Option<usize>) {
 if self.user_attrs.len() + self.system_attrs.len() == self.offset {
 (0, Some(0))
 } else {
 (1, None)
 }
}
}
}

// This could use libc::extattr_string_to_namespace, but it's awkward because
// that requires nul-terminated strings, which Rust's std is loathe to provide.
fn name_to_ns(name: &OsStr) -> io::Result<(c_int, CString)> {
 let mut groups = name.as_bytes().splitn(2, |&b| b == b'.').take(2);
 let nsname = match groups.next() {
 Some(s) => s,
 None => {
 return Err(io::Error::new(
 io::ErrorKind::InvalidInput,
 "couldn't find namespace",
))
 }
 };
};

let propname
= match groups.next() {
 Some(s) => s,
 None => {
 return Err(io::Error::new(
 io::ErrorKind::InvalidInput,
 "couldn't find attribute",
))
 }
};

let ns_int = match EXTATTR_NAMESPACE_NAMES
 .iter()
 .position(|&s| s.as_bytes() == nsname)
{
 Some(i) => i,
 None => {
 return Err(io::Error::new(
 io::ErrorKind::InvalidInput,
 "no matching namespace",
))
 }
}

```

```

};

Ok((ns_int as c_int, CString::new(propname?))
}

fn prefix_namespace(attr: &OsStr, ns: c_int) -> OsString {
 let nsname = EXTATTR_NAMESPACE_NAMES[ns as usize];
 let mut v = Vec::with_capacity(nsname.as_bytes().len() + attr.as_bytes().len() + 1);
 v.extend(nsname.as_bytes());
 v.extend("." as_bytes());
 v.extend(attr.as_bytes());
 OsString::from_vec(v)
}

fn cvt(res: libc::ssize_t) -> io::Result<usize> {
 if res < 0 {
 Err(io::Error::last_os_error())
 } else {
 Ok(res as usize)
 }
}

pub fn get_fd(fd: BorrowedFd<'_,>, name: &OsStr) -> io::Result<Vec<u8>> {
 let (ns, name) = name_to_ns(name)?;
 unsafe {
 allocate_loop(|buf| {
 let (ptr, len) = slice_parts(buf);
 cvt(extattr_get_fd(fd.as_raw_fd(), ns, name.as_ptr(), ptr, len))
 })
 }
}

pub fn set_fd(fd: BorrowedFd<'_,>, name: &OsStr, value: &[u8]) -> io::Result<()> {
 let (ns, name) = name_to_ns(name)?;
 let ret = unsafe {
 extattr_set_fd(
 fd.as_raw_fd(),
 ns,
 name.as_ptr(),
 value.as_ptr() as *const c_void,
 value.len() as size_t,
)
 };
 if ret == -1 {
 Err(io::Error::last_os_error())
 } else {
 Ok(())
 }
}

```

```

}

pub fn remove_fd(fd: BorrowedFd<'_>, name: &OsStr) -> io::Result<()> {
 let (ns, name) = name_to_ns(name)?;
 let ret = unsafe { extattr_delete_fd(fd.as_raw_fd(), ns, name.as_ptr()) };

 if ret != 0 {
 Err(io::Error::last_os_error())
 } else {
 Ok(())
 }
}

pub fn list_fd(fd: BorrowedFd<'_>) -> io::Result<XAttrs> {
 let sysvec = unsafe {
 let res = allocate_loop(|buf| {
 let (ptr, len) = slice_parts(buf);
 cvt(extattr_list_fd(
 fd.as_raw_fd(),
 EXTATTR_NAMESPACE_SYSTEM,
 ptr,
 len,
))
 });
 // On FreeBSD, system attributes require root privileges to view. However,
 // to mimic the behavior of listxattr in linux and osx, we need to query
 // them anyway and return empty results if we get EPERM
 match res {
 Ok(v) => v,
 Err(err) => {
 if err.raw_os_error() == Some(EPERM) {
 Vec::new()
 } else {
 return Err(err);
 }
 }
 }
 };

 let uservec = unsafe {
 let res = allocate_loop(|buf|
 {
 let (ptr, len) = slice_parts(buf);
 cvt(extattr_list_fd(
 fd.as_raw_fd(),
 EXTATTR_NAMESPACE_USER,
 ptr,
 len,

```

```

))
 });
 match res {
 Ok(v) => v,
 Err(err) => return Err(err),
 }
};

Ok(XAttrs {
 system_attrs: sysvec.into_boxed_slice(),
 user_attrs: uservec.into_boxed_slice(),
 offset: 0,
})
}

pub fn get_path(path: &Path, name: &OsStr, deref: bool) -> io::Result<Vec<u8>> {
 let (ns, name) = name_to_ns(name)?;
 let path = path_to_c(path)?;
 let extattr_get_func = if deref {
 extattr_get_file
 } else {
 extattr_get_link
 };
 unsafe {
 allocate_loop(|buf| {
 let (ptr, len) = slice_parts(buf);
 cvt(extattr_get_func(path.as_ptr(), ns, name.as_ptr(), ptr, len))
 })
 }
}

pub fn set_path(path: &Path, name: &OsStr, value: &[u8], deref: bool) -> io::Result<()>
{
 let (ns, name) = name_to_ns(name)?;
 let path = path_to_c(path)?;
 let extattr_set_func = if deref {
 extattr_set_file
 } else {
 extattr_set_link
 };
 let ret = unsafe {
 extattr_set_func(
 path.as_ptr(),
 ns,
 name.as_ptr(),
 value.as_ptr() as *const c_void,
 value.len() as size_t,
)
 }
}

```

```

};
if ret == -1 {
 Err(io::Error::last_os_error())
} else {
 Ok(())
}
}

pub fn remove_path(path: &Path, name: &OsStr, deref: bool) -> io::Result<()> {
 let (ns, name) = name_to_ns(name)?;
 let path = path_to_c(path)?;
 let extattr_delete_func = if deref {
 extattr_delete_file
 } else {
 extattr_delete_link
 };
 let ret = unsafe { extattr_delete_func(path.as_ptr(), ns, name.as_ptr()) };
 if ret != 0 {
 Err(io::Error::last_os_error())
 } else {
 Ok(())
 }
}

pub fn list_path(path: &Path, deref: bool) -> io::Result<XAttrs>
{
 let path = path_to_c(path)?;
 let extattr_list_func = if deref {
 extattr_list_file
 } else {
 extattr_list_link
 };
 let sysvec = unsafe {
 let res = allocate_loop(|buf| {
 let (ptr, len) = slice_parts(buf);
 cvt(extattr_list_func(
 path.as_ptr(),
 EXTATTR_NAMESPACE_SYSTEM,
 ptr,
 len,
))
 });
 // On FreeBSD, system attributes require root privileges to view. However,
 // to mimic the behavior of listxattr in linux and osx, we need to query
 // them anyway and return empty results if we get EPERM
 match res {
 Ok(v) => v,
 Err(err) => {

```



```

 if err.raw_os_error() == Some(EPERM) {
 Vec::new()
 } else {
 return Err(err);
 }
 }
}

};

let uservec = unsafe {
 let res = allocate_loop(|buf|
{
 let (ptr, len) = slice_parts(buf);
 cvt(extattr_list_func(
 path.as_ptr(),
 EXTATTR_NAMESPACE_USER,
 ptr,
 len,
))
});
 match res {
 Ok(v) => v,
 Err(err) => return Err(err),
 }
};

Ok(XAttrs {
 system_attrs: sysvec.into_boxed_slice(),
 user_attrs: uservec.into_boxed_slice(),
 offset: 0,
})
}
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```

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ii. erlaubt ausdrcklich das Lizenzieren von ihr unterstellten Abwandlungen unter vorliegender Lizenz, unter einer anderen rechtsordnungsspezifisch angepassten Creative-Commons-Lizenz mit denselben Lizenzelementen, wie sie die vorliegende Lizenz aufweist, oder unter der entsprechenden Creative-Commons-Unported-Lizenz.

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b. Abwandlungen des Schutzgegenstandes anzufertigen, einschließlich Übersetzungen unter Nutzung jedweder Medien, sofern deutlich erkennbar gemacht wird, dass es sich um Abwandlungen handelt;

c. den Schutzgegenstand, allein oder in Sammelwerke aufgenommen, öffentlich zu zeigen und zu verbreiten;

d. Abwandlungen des Schutzgegenstandes zu veröffentlichen, öffentlich zu zeigen und zu verbreiten.

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4.c) aufgezählten Hinweise entfernen.

b. Sie dürfen eine Abwandlung ausschließlich unter den Bedingungen

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ii. einer späteren Version dieser Lizenz mit denselben Lizenzelementen,

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## 7.

Erlöschen

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```
//! This file contains the BSD APIs available in Haiku. It corresponds to the
//! header files in `headers/compatibility/bsd`.
//!
//! Note that Haiku's BSD compatibility is a combination of system APIs and
//! utility libraries. There should only be system APIs in `libc`. When you are
//! trying to determine whether something should be included in this file, the
//! best indicator is whether it also exists in the BSD-specific definitions in
//! this libc crate.
```

```
use crate::prelude::*;
```

```
// stringlist.h (utility library)
// Note: this is kept because it was previously introduced
pub type StringList = _stringlist;
```

```
s! {
 // stringlist.h (utility library)
 // Note: this is kept because it was previously introduced
 pub struct _stringlist {
 pub sl_str: *mut *mut c_char,
 pub sl_max: size_t,
 pub sl_cur: size_t,
 }
}
```

```
// sys/event.h
pub struct kevent {
 pub ident: crate::uintptr_t,
 pub filter: c_short,
 pub flags: c_ushort,
```

```
 pub fflags: c_uint,
 pub data: i64,
 pub udata: *mut c_void,
 pub ext: [u64; 4],
}
```

```
// sys/link_elf.h
pub struct dl_phdr_info {
 pub dlpi_addr: crate::Elf_Addr,
 pub dlpi_name: *const c_char,
 pub dlpi_phdr: *const crate::Elf_Phdr,
 pub dlpi_phnum: crate::Elf_Half,
}
}
```

```
// sys/event.h
pub const EVFILT_READ: i16 = -1;
pub const EVFILT_WRITE: i16 = -2;
```

```

pub const EVFILT_PROC: i16 = -5;
pub const EV_ADD: u16 = 0x0001;
pub const EV_DELETE: u16 = 0x0002;
pub const EV_ONESHOT: u16 = 0x0010;
pub const EV_CLEAR: u16 = 0x0020;
pub const EV_EOF: u16 = 0x8000;
pub const EV_ERROR: u16 = 0x4000;
pub const NOTE_EXIT: u32 = 0x80000000;

// sys/ioccom.h
pub const IOC_VOID: c_ulong = 0x20000000;
pub const IOC_OUT: c_ulong = 0x40000000;
pub const IOC_IN: c_ulong = 0x80000000;
pub const IOC_INOUT: c_ulong = IOC_IN | IOC_OUT;
pub const IOC_DIRMASK: c_ulong = 0xe0000000;

#[link(name = "bsd")]
extern "C" {
 // stdlib.h
 pub fn daemon(nochdir:
c_int, noclose: c_int) -> c_int;
 pub fn getprogname() -> *const c_char;
 pub fn setprogname(progname: *const c_char);
 pub fn arc4random() -> u32;
 pub fn arc4random_uniform(upper_bound: u32) -> u32;
 pub fn arc4random_buf(buf: *mut c_void, n: size_t);
 pub fn mkstemp(template: *mut c_char, suffixlen: c_int) -> c_int;
 pub fn strtonum(
 nptr: *const c_char,
 minval: c_longlong,
 maxval: c_longlong,
 errstr: *mut *const c_char,
) -> c_longlong;

 // pty.h
 pub fn openpty(
 amaster: *mut c_int,
 aslave: *mut c_int,
 name: *mut c_char,
 term: *mut crate::termios,
 winp: *mut crate::winsize,
) -> c_int;
 pub fn login_tty(_fd: c_int) -> c_int;
 pub fn forkpty(
 amaster: *mut c_int,
 name: *mut c_char,
 term: *mut crate::termios,
 winp: *mut crate::winsize,

```



```

) -> crate::pid_t;

// string.h
pub fn strsep(string: *mut *mut c_char, delimiters:
*const c_char) -> *mut c_char;
pub fn explicit_bzero(buf: *mut c_void, len: size_t);

// stringlist.h (utility library)
// Note: this is kept because it was previously introduced
pub fn sl_init() -> *mut StringList;
pub fn sl_add(sl: *mut StringList, n: *mut c_char) -> c_int;
pub fn sl_free(sl: *mut StringList, i: c_int);
pub fn sl_find(sl: *mut StringList, n: *mut c_char) -> *mut c_char;

// sys/event.h
pub fn kqueue() -> c_int;
pub fn kevent(
 kq: c_int,
 changelist: *const kevent,
 nchanges: c_int,
 eventlist: *mut kevent,
 nevents: c_int,
 timeout: *const crate::timespec,
) -> c_int;

// sys/link_elf.h
pub fn dl_iterate_phdr(
 callback: Option<
 unsafe extern "C" fn(info: *mut dl_phdr_info, size: usize, data: *mut c_void) -> c_int,
 >,
 data: *mut c_void,
) -> c_int;

// sys/time.h
pub fn lutimes(file: *const c_char, times: *const crate::timeval)
-> c_int;

// sys/uio.h
pub fn preadv(
 fd: c_int,
 iov: *const crate::iovec,
 iovcnt: c_int,
 offset: crate::off_t,
) -> ssize_t;
pub fn pwritev(
 fd: c_int,
 iov: *const crate::iovec,
 iovcnt: c_int,

```

```

 offset: crate::off_t,
) -> ssize_t;

// sys/wait.h
pub fn wait4(
 pid: crate::pid_t,
 status: *mut c_int,
 options: c_int,
 rusage: *mut crate::rusage,
) -> crate::pid_t;
}
=====

```

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"#

r#" 2.1

1

- a.
- b.
- c.
- d.
- e.
- f.

2

304918241924202102

3

7b

- a.
- b.
- c.
- d.
- e.
- f.
- g.

4

5

34

- a.
- b.
- c. URIUniform Resource Identifier
- d. URI
- e.
- f.
- g.
- h.
- i.
- j. 1234URIURIURI5
- k.

6

7

- a. 1249
- b. a
- c. ab

8

- a.
- b.
- c.
- d.

9

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#![ `ioctl` opcode behavior for BSD platforms.

use super::{Direction, Opcode};

```
pub(super) const fn compose_opcode(
 dir: Direction,
 group: Opcode,
 num: Opcode,
 size: Opcode,
) -> Opcode {
 let dir = match dir {
 Direction::None => NONE,
 Direction::Read => READ,
 Direction::Write => WRITE,
 Direction::ReadWrite => READ | WRITE,
```

```

};

dir | num | (group << 8) | ((size & IOCPARAM_MASK) << 16)
}

// `IOC_VOID`
pub const NONE: Opcode = 0x2000_0000;
// `IOC_OUT` (out is from the perspective of the kernel)
pub const READ: Opcode = 0x4000_0000;
// `IOC_IN` (in is from the perspective of the kernel)
pub const WRITE: Opcode = 0x8000_0000;
pub const IOCPARAM_MASK: Opcode = 0x1FFF;
r#"Copyright (C) 2002 Naval Research Laboratory (NRL/CCS)

```

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#![`ioctl` opcode behavior for BSD platforms.

```
use super::{Direction, RawOpcode};
```

```
pub(super) const fn compose_opcode(
 dir: Direction,
 group: RawOpcode,
 num: RawOpcode,
 size: RawOpcode,
) -> RawOpcode {
 let dir = match dir {
 Direction::None => NONE,
 Direction::Read => READ,
 Direction::Write => WRITE,
 Direction::ReadWrite => READ | WRITE,
 };

 dir | num | (group << 8) | ((size & IOCPARAM_MASK) << 16)
}
```

```
// `IOC_VOID`
pub const NONE: RawOpcode = 0x2000_0000;
// `IOC_OUT` (out is from the perspective of the kernel)
pub const READ: RawOpcode = 0x4000_0000;
// `IOC_IN` (in is from the perspective of the kernel)
pub const WRITE: RawOpcode = 0x8000_0000;
pub const IOCPARAM_MASK: RawOpcode = 0x1FFF;
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```

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By Shawn Hargreaves, 18 October 1998.

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## END OF TERMS AND CONDITIONS

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## Contrat

L'Oeuvre (telle que définie ci-dessous) est mise à disposition selon les termes du présent contrat appelé Contrat Public Creative Commons (dénommé ici CPCC ou Contrat). L'Oeuvre est protégée par le droit de la propriété littéraire et artistique (droit d'auteur, droits voisins, droits des producteurs de bases de données) ou toute autre loi applicable. Toute utilisation de l'Oeuvre autrement qu'explicitement autorisée selon ce Contrat ou le droit applicable est interdite.

L'exercice sur l'Oeuvre de tout droit proposé par le présent contrat vaut acceptation de celui-ci. Selon les termes et les obligations du présent contrat, la partie Offrante propose à la partie Acceptante l'exercice de certains droits présents ci-après, et l'Acceptant en approuve les termes et conditions d'utilisation.

### 1. Définitions

a. Oeuvre : oeuvre de l'esprit protégeable par le droit de la propriété littéraire et artistique ou toute loi applicable et qui est mise à disposition selon les termes du présent Contrat.

b. Oeuvre dite Collective : une oeuvre dans laquelle l'oeuvre, dans sa forme intégrale et non modifiée, est assemblée en un ensemble collectif avec d'autres contributions qui constituent en elles-mêmes des oeuvres séparées et indépendantes. Constituent notamment des Oeuvres dites Collectives les publications périodiques, les anthologies ou les encyclopédies. Aux termes de la présente autorisation, une oeuvre qui constitue une Oeuvre dite Collective ne sera pas considérée comme une Oeuvre dite Drive (telle que définie ci-après).

c. Oeuvre dite Drive : une oeuvre créée soit à partir de l'Oeuvre seule, soit à partir de l'Oeuvre et d'autres oeuvres préexistantes. Constituent notamment des Oeuvres dites Drives les traductions, les arrangements musicaux, les adaptations théâtrales, littéraires ou cinématographiques, les enregistrements sonores, les reproductions par un art ou un procédé quelconque, les résumés, ou toute autre forme sous laquelle l'Oeuvre puisse être remaniée, modifiée, transformée ou adaptée, l'exception d'une oeuvre qui constitue une Oeuvre dite Collective. Une Oeuvre dite Collective ne sera pas considérée comme une Oeuvre dite Drive aux termes du présent Contrat. Dans le cas où l'Oeuvre serait une composition musicale ou un enregistrement sonore, la synchronisation de l'oeuvre avec une image animée sera considérée comme une Oeuvre dite Drive pour les propos de ce Contrat.

d. Auteur original : la ou les personnes physiques qui ont créé l'Oeuvre.

e. Offrant : la ou les personne(s) physique(s) ou morale(s) qui proposent la mise à disposition de l'Oeuvre selon les termes du présent Contrat.

f. Acceptant : la personne physique ou morale qui accepte le présent contrat et exerce des droits sans en avoir violé les termes au préalable ou qui a reçu l'autorisation expresse de l'Offrant d'exercer des droits dans le cadre du présent contrat malgré une précédente violation de ce contrat.

g. Options du Contrat : les attributs spécifiques du Contrat tels qu'ils ont été choisis par l'Offrant et indiqués dans le

titre de ce Contrat : Paternité - Pas d'Utilisation Commerciale - Partage Des Conditions Initiales A l'Identique.

2. Exceptions aux droits exclusifs. Aucune disposition de ce contrat n'a pour intention de réduire, limiter ou restreindre les prérogatives issues des exceptions aux droits, de l'usage des droits ou d'autres limitations aux droits exclusifs des ayants droit selon le droit de la propriété littéraire et artistique ou les autres lois applicables.

3. Autorisation. Soumis aux termes et conditions définies dans cette autorisation, et ceci pendant toute la durée de protection de l'Œuvre par le droit de la propriété littéraire et artistique ou le droit applicable, l'Offrant accorde l'Acceptant l'autorisation mondiale d'exercer titre gratuit et non exclusif les droits suivants :

a. reproduire l'Œuvre, incorporer l'Œuvre dans une ou plusieurs Œuvres dites Collectives et reproduire l'Œuvre telle qu'elle incorpore dans lesdites Œuvres dites Collectives;

b. créer et reproduire des Œuvres dites Dérivées;

c. distribuer des exemplaires ou enregistrements, présenter, représenter ou communiquer l'Œuvre au public par tout procédé technique, y compris incorporer dans des Œuvres Collectives;

d. distribuer des exemplaires ou phonogrammes, présenter, représenter ou communiquer au public des Œuvres dites Dérivées par tout procédé technique;

e. lorsque l'Œuvre est une base de données, extraire et utiliser des parties substantielles de l'Œuvre.

Les droits mentionnés ci-dessus peuvent être exercés sur tous les supports, médias, procédés techniques et formats. Les droits ci-dessus incluent le droit d'effectuer les modifications nécessaires techniquement à l'exercice des droits dans d'autres formats et procédés techniques. L'exercice de tous les droits qui ne sont pas expressément autorisés par l'Offrant ou dont il n'aurait pas la gestion demeure réservé, notamment les mécanismes de gestion collective obligatoire applicables décrits à l'article 4(e).

4. Restrictions. L'autorisation accordée par l'article 3 est expressément assujettie et limitée par le respect des restrictions suivantes :

a. L'Acceptant peut reproduire, distribuer, représenter ou communiquer au public l'Œuvre y compris par voie numérique uniquement selon les termes de ce Contrat. L'Acceptant doit inclure une copie ou l'adresse Internet (Identifiant Uniforme de Ressource) du présent Contrat toute reproduction ou enregistrement de l'Œuvre que l'Acceptant distribue, représente ou communique au public y compris par voie numérique. L'Acceptant ne peut pas offrir ou imposer de conditions d'utilisation de l'Œuvre qui altèrent ou restreignent les termes du présent Contrat ou l'exercice des droits qui y sont accordés au bénéficiaire. L'Acceptant ne peut pas céder de droits sur l'Œuvre. L'Acceptant doit conserver intactes toutes les informations qui renvoient ce Contrat et l'exonération de responsabilité. L'Acceptant ne peut pas reproduire, distribuer, représenter ou communiquer au public l'Œuvre, y compris par voie numérique, en utilisant une mesure technique de contrôle d'accès ou de contrôle d'utilisation qui serait contradictoire avec les termes de cet Accord contractuel. Les mentions ci-dessus s'appliquent à l'Œuvre telle qu'elle incorpore dans une Œuvre dite Collective, mais, en dehors de l'Œuvre en elle-même, ne soumettent pas l'Œuvre dite Collective, aux termes du présent Contrat. Si l'Acceptant

cre une Oeuvre dite Collective, la demande de tout Offrant, il devra, dans la mesure du possible, retirer de l'Oeuvre dite Collective toute référence au dit Offrant, comme demandé. Si l'Acceptant cre une Oeuvre dite Collective, la demande de tout Auteur, il devra, dans la mesure du possible, retirer de l'Oeuvre dite Collective toute référence au dit Auteur, comme demandé. Si l'Acceptant cre une Oeuvre dite Drive, la demande de tout Offrant, il devra, dans la mesure du possible, retirer de l'Oeuvre dite Drive toute référence au dit Offrant, comme demandé. Si l'Acceptant cre une Oeuvre dite Drive, la demande de tout Auteur, il devra, dans la mesure du possible, retirer de l'Oeuvre dite Drive toute référence au dit Auteur, comme demandé.

b. L'Acceptant peut reproduire, distribuer, représenter ou communiquer au public une Oeuvre dite Drive y compris par voie numérique uniquement sous les termes de ce Contrat, ou d'une version ultérieure de ce Contrat comprenant les mêmes Options du Contrat que le présent Contrat, ou un Contrat Creative Commons iCommons comprenant les mêmes Options du Contrat que le présent Contrat (par exemple Paternité - Pas d'Utilisation Commerciale - Partage Des Conditions Initiales A l'Identique 2.0 Japon). L'Acceptant doit inclure une copie ou l'adresse Internet (Identifiant Uniforme de Ressource) du présent Contrat, ou d'un autre Contrat tel que décrit la phrase précédente, toute reproduction ou enregistrement de l'Oeuvre dite Drive que l'Acceptant distribue, représente ou communique au public y compris par voie numérique. L'Acceptant ne peut pas offrir ou imposer de conditions d'utilisation sur l'Oeuvre dite Drive qui altèrent ou restreignent les termes du présent Contrat ou l'exercice des droits qui y sont accordés au bénéficiaire, et doit conserver intactes toutes les informations qui renvoient ce Contrat et l'avertissement sur les garanties. L'Acceptant ne peut pas reproduire, distribuer, représenter ou communiquer au public y compris par voie numérique l'Oeuvre dite Drive en utilisant une mesure technique de contrôle d'accès ou de contrôle d'utilisation qui serait contradictoire avec les termes de cet Accord contractuel. Les mentions ci-dessus s'appliquent l'Oeuvre dite Drive telle qu'incorpore dans une Oeuvre dite Collective, mais, en dehors de l'Oeuvre dite Drive en elle-même, ne soumettent pas l'Oeuvre Collective, aux termes du présent Contrat.

c. L'Acceptant ne peut exercer aucun des droits conférés par l'article 3 avec l'intention ou l'objectif d'obtenir un profit commercial ou une compensation financière personnelle. L'change de l'Oeuvre avec d'autres Oeuvres protégées par le droit de la propriété littéraire et artistique par le partage électronique de fichiers, ou par tout autre moyen, n'est pas considéré comme un change avec l'intention ou l'objectif d'un profit commercial ou d'une compensation financière personnelle, dans la mesure où aucun paiement ou compensation financière n'intervient en relation avec l'change d'Oeuvres protégées.

d. Si l'Acceptant reproduit, distribue, représente ou communique au public, y compris par voie numérique, l'Oeuvre ou toute Oeuvre dite Drive ou toute Oeuvre dite Collective, il doit conserver intactes toutes les informations sur le régime des droits et en attribuer la paternité à l'Auteur Original, de manière raisonnable au regard du médium ou du moyen utilisé. Il doit communiquer le nom de l'Auteur Original ou son éventuel pseudonyme s'il est indiqué ; le titre de l'Oeuvre Originale s'il est indiqué ; dans la mesure du possible, l'adresse Internet ou l'Identifiant Uniforme de Ressource (URI), s'il existe, spécifié par l'Offrant comme associé à l'Oeuvre, moins que cette adresse ne renvoie pas aux informations légales (paternité et conditions d'utilisation de l'Oeuvre). Dans le cas d'une Oeuvre dite Drive, il doit indiquer les éléments identifiant l'utilisation de l'Oeuvre dans l'Oeuvre dite Drive par exemple Traduction anglaise de l'Oeuvre par l'Auteur Original ou Scénario basé sur l'Oeuvre par l'Auteur Original.

Ces obligations d'attribution de paternité doivent être exécutées de manière raisonnable. Cependant, dans le cas d'une Oeuvre dite Drive ou d'une Oeuvre dite Collective, ces informations doivent, au minimum, apparaître de la même manière aussi visible que celles auxquelles apparaissent les informations de même nature.

e. Dans le cas où une utilisation de l'Oeuvre serait soumise à un régime légal de gestion collective obligatoire, l'Offrant se réserve le droit exclusif de collecter ces redevances par l'intermédiaire de la société de perception et de répartition des



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## 5. Garantie et exonration de responsabilit

a. En mettant l'Oeuvre la disposition du public selon les termes de ce Contrat, l'Offrant dclare de bonne foi qu' sa connaissance et dans les limites d'une enquete raisonnable :

i. L'Offrant a obtenu tous les droits sur l'Oeuvre ncessaires pour pouvoir autoriser l'exercice des droits accords par le prsent Contrat, et permettre la jouissance paisible et l'exercice licite de ces droits, ceci sans que l'Acceptant n'ait aucune obligation de verser de rmunration ou tout autre paiement ou droits, dans la limite des mcanismes de gestion collective obligatoire applicables dcrits l'article 4(e);

ii. L'Oeuvre n'est constitutive ni d'une violation des droits de tiers, notamment du droit de la propriit littraire et artistique, du droit des marques, du droit de l'information, du droit civil ou de tout autre droit, ni de diffamation, de violation de la vie prive ou de tout autre prjudice dlictuel l'gard de toute tierce partie.

b. A l'exception des situations expressment mentionnes dans le prsent Contrat ou dans un autre accord crit, ou exiges par la loi applicable, l'Oeuvre est mise disposition en l'tat sans garantie d'aucune sorte, qu'elle soit expresse ou tacite, y compris l'gard du contenu ou de l'exactitude de l'Oeuvre.

6. Limitation de responsabilit. A l'exception des garanties d'ordre public imposes par la loi applicable et des rparations imposes par le rgime de la responsabilit vis--vis d'un tiers en raison de la violation des garanties prvues par l'article 5 du prsent contrat, l'Offrant ne sera en aucun cas tenu responsable vis--vis de l'Acceptant, sur la base d'aucune thorie lgale ni en raison d'aucun prjudice direct, indirect, matriel ou moral, rsultant de l'excution du prsent Contrat ou de l'utilisation de l'Oeuvre, y compris dans l'hypothse o l'Offrant avait connaissance de la possible existence d'un tel prjudice.

## 7. Rsiliation

a. Tout manquement aux termes du contrat par l'Acceptant entrane la rsiliation automatique du Contrat et la fin des droits qui en dcoulent. Cependant, le contrat conserve ses effets envers les personnes physiques ou morales qui ont eu de la part de l'Acceptant, en excution du prsent contrat, la mise disposition d'Oeuvres dites Drives, ou d'Oeuvres dites Collectives, ceci tant qu'elles respectent pleinement leurs obligations. Les sections 1, 2, 5, 6 et 7 du contrat continuent s'appliquer aprs la rsiliation de celui-ci.

b. Dans les limites indiques ci-dessus, le prsent Contrat s'applique pendant toute la dure de protection de l'Oeuvre selon le droit applicable. Nanmoins, l'Offrant se rserve tout moment le droit d'exploiter l'Oeuvre sous des conditions contractuelles diffrentes, ou d'en cesser la diffusion; cependant, le recours cette option ne doit pas conduire retirer les effets du prsent Contrat (ou de tout contrat qui a t ou doit tre accord selon les termes de ce Contrat), et ce Contrat continuera s'appliquer dans tous ses effets jusqu' ce que sa rsiliation intervienne dans les conditions dcrites ci-dessus.

## 8. Divers

a. A chaque reproduction ou communication au public par voie numérique de l'Oeuvre ou d'une Oeuvre dite Collective par l'Acceptant, l'Offrant propose au bénéficiaire une offre de mise à disposition de l'Oeuvre dans des termes et conditions identiques à ceux accordés à la partie Acceptante dans le présent Contrat.

b. A chaque reproduction ou communication au public par voie numérique d'une Oeuvre dite Drive par l'Acceptant, l'Offrant propose au bénéficiaire une offre de mise à disposition du bénéficiaire de l'Oeuvre originale dans des termes et conditions identiques à ceux accordés à la partie Acceptante dans le présent Contrat.

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#### Uniform-Resource-Identifier

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b. Sie dürfen eine Bearbeitung ausschließlich unter den Bedingungen

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Fraunhofer Institute for Integrated Circuits IIS  
Attention: Audio and Multimedia Departments - FDK AAC LL  
Am Wolfsmantel 33  
91058 Erlangen, Germany

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d. 'Maker' de natuurlijke persoon/personen of rechtspersoon/personen die het oorspronkelijke werk gemaakt heeft/hebben. Voor de toepassing van deze Licentie wordt onder de Maker mede verstaan de uitvoerende kunstenaar, film- en fonogramproducent en omroeporganisaties in de zin van de Wet op de naburige rechten en de producent van een databank in de zin van de Databankenwet.

e. 'Werk' het auteursrechtelijk beschermde werk dat volgens de voorwaarden van deze Licentie wordt aangeboden. Voor de toepassing van deze Licentie wordt onder het Werk mede verstaan het fonogram, de eerste vastlegging van een film en het (omroep)programma in de zin van de Wet op de naburige rechten en de databank in de zin van de Databankenwet, voor zover dit fonogram, deze eerste vastlegging van een film, dit (omroep)programma en deze databank beschermd wordt krachtens de toepasselijke wet in de jurisdictie van de Gebruiker.

f. 'Gebruiker' de natuurlijke persoon of rechtspersoon die rechten ingevolge deze Licentie uitoefent en die de voorwaarden van deze Licentie met betrekking tot het Werk niet eerder geschonden heeft, of die van de Licentiegever uitdrukkelijke toestemming gekregen heeft om rechten ingevolge deze Licentie uit te oefenen ondanks een eerdere schending.

2.

Beperkingen van de uitsluitende rechten. Niets in deze Licentie strekt ertoe om de rechten te beperken die voortvloeien uit de beperkingen en uitputting van de uitsluitende rechten van de rechthebbende krachtens het auteursrecht, de naburige rechten, het databankenrecht of enige andere toepasselijke rechten.

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b. het maken en reproduceren van Afgeleide werken met dien verstande dat met betrekking tot het Afgeleide werk, met inbegrip van welke vertaling in welk medium dan ook, duidelijk wordt gemaakt

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c. het verspreiden van exemplaren van het Werk, het in het openbaar tonen, op- en uitvoeren en het on-line beschikbaar stellen van het Werk, afzonderlijk en als deel van een Verzamelwerk;

d. het verspreiden van exemplaren van Afgeleide werken, het in het openbaar te tonen, op- en uitvoeren en het on-line beschikbaar stellen van Afgeleide werken;

e. het opvragen en hergebruiken van het Werk;

f. Volledigheidshalve dient te worden vermeld dat:

i. Niet voor afstand vatbare heffingsregelingen. in het geval van niet voor afstand vatbare heffingsregelingen (bijvoorbeeld met betrekking tot thuiskopien) de Licentiegever zich het recht voorbehoudt om dergelijke heffingen te innen

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ii. Voor afstand vatbare heffingsregeling. in het geval van voor afstand vatbare heffingsregelingen (bijvoorbeeld met betrekking tot leenrechten) de Licentiegever afstand doet van het recht om dergelijke heffingen te innen bij zowel commercieel als niet-commercieel gebruik van het Werk;

iii. Collectief rechtenbeheer. de Licentiegever afstand doet van het recht om vergoedingen te innen (zelfstandig of, indien de Licentiegever lid is van een auteursrechtenorganisatie, door middel van die organisatie) bij zowel commercieel als niet-commercieel gebruik van het Werk.

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uitdrukkelijk verleende rechten zijn hierbij voorbehouden aan de Licentiegever, met inbegrip van maar niet beperkt tot de rechten die in artikel 4(d) worden genoemd. Voor zover de Licentiegever op basis van het nationale recht ter implementatie van de Europese Databankenrichtlijn over uitsluitende rechten beschikt doet de Licentiegever afstand van deze rechten.

4. Beperkingen. De in artikel 3 verleende Licentie is uitdrukkelijk gebonden aan de volgende beperkingen:

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voorzieningen waardoor de voorwaarden van deze Licentie dan wel de mogelijkheid van de ontvangers van het Werk om de rechten krachtens deze Licentie uit te oefenen worden beperkt. Het voorgaande is tevens van toepassing op het Werk dat deel uitmaakt van een Verzamelwerk, maar dat houdt niet in dat het Verzamelwerk, afgezien van het Werk zelf, gebonden is aan de voorwaarden van deze Licentie. Indien de Gebruiker een Verzamelwerk maakt, dient deze, op verzoek

van welke Licentiegever ook, de op grond van artikel 4(b) vereiste naamsvermelding uit het Verzamelwerk te verwijderen, voor zover praktisch mogelijk, conform het verzoek. Indien de Gebruiker een Afgeleid werk maakt, dient hij, op verzoek van welke Licentiegever ook, de op grond van artikel 4(b) vereiste naamsvermelding uit het Afgeleide werk te verwijderen, voorzover praktisch mogelijk, conform het verzoek.

b. Indien de Gebruiker het Werk, Afgeleide Werken of Verzamelwerken verspreidt, in het openbaar toont, op- of uitvoert of on-line beschikbaar stelt, dient de Gebruiker, tenzij er sprake is van een verzoek als vermeld in lid 4(a), alle auteursrechtvermeldingen met betrekking tot het Werk te laten staan. Tevens dient de Gebruiker, op een wijze die redelijk is in verhouding tot het gebruikte medium, de naam te vermelden van (i) de Maker (of zijn/haar pseudoniem indien van toepassing) indien deze wordt vermeld; en/of (ii) van (een) andere partij(en) (b.v. sponsor, uitgeverij, tijdschrift)

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Volledigheidshalve dient te worden vermeld dat de Gebruiker uitsluitend gebruik mag maken van de naamsvermelding op de in dit artikel omschreven wijze teneinde te voldoen aan de naamsvermeldingsverplichting en, door gebruikmaking van zijn rechten krachtens deze Licentie, is het de Gebruiker niet toegestaan om op enigerlei wijze de indruk te wekken dat er sprake is van enig verband met, sponsorschap van of goedkeuring van de (toepasselijke) Maker, Licentiegever c.q. Naamsvermeldingsgerechtigden van de Gebruiker of diens gebruik van het Werk, zonder de afzonderlijke, uitdrukkelijke, voorafgaande, schriftelijke toestemming van de Maker, Licentiegever c.q. Naamsvermeldingsgerechtigden.

c. Volledigheidshalve dient te worden vermeld, dat de hierboven vermelde beperkingen (lid 4(a) en lid 4(b)) niet van toepassing zijn op die onderdelen van het Werk die geacht worden te vallen onder de definitie van het 'Werk' zoals vermeld in deze Licentie uitsluitend omdat zij voldoen aan de criteria van het sui generis databankenrecht krachtens het nationale recht ter implementatie van de Europese Databankenrichtlijn.

d. De in artikel 3 verleende rechten moeten worden uitgeoefend met inachtneming van het morele recht van de Maker (en/of de uitvoerende kunstenaar) om zich te verzetten tegen elke misvorming, vermindering of andere aantasting van het werk, welke nadeel zou kunnen toebrengen aan de eer of de naam van de Maker (en/of de uitvoerende kunstenaar) of aan zijn waarde in deze hoedanigheid, indien en voor zover de Maker (en/of de uitvoerende kunstenaar) op grond van een op hem van toepassing zijnde wettelijke bepaling geen afstand kan doen van dat morele recht.



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TENZIJ ANDERS SCHRIFTELIJK IS OVEREENGEKOMEN DOOR DE PARTIJEN, STELT DE LICENTIEGEEVER HET WERK BESCHIKBAAR OP 'AS-IS' BASIS, ZONDER ENIGE GARANTIE, HETZIJ DIRECT, INDIRECT OF ANDERSZINS, MET BETREKKING TOT HET WERK, MET INBEGRIJ VAN, MAAR NIET BEPERKT TOT GARANTIES MET BETREKKING TOT DE EIGENDOMSTITEL, DE VERKOOPBAARHEID, DE GESCHIKTHEID VOOR BEPAALDE DOELEINDEN, MOGELIJKE INBREUK, DE AFWEZIGHEID VAN LATENTE OF ANDERE TEKORTKOMINGEN, DE JUISTHEID OF DE AAN- OF AFWEZIGHEID VAN FOUTEN, ONGEACHT DE OPSPOORBAARHEID DAARVAN, INDIEN EN VOORZOVER DE WET NIET ANDERS BEPAALT.

## 6. Beperking van de aansprakelijkheid.

DE LICENTIEGEEVER AANVAARDT GEEN ENKELE AANSPRAKELIJKHEID JEGENS DE GEBRUIKER VOOR ENIGE BIJZONDERE OF INCIDENTELE SCHADE OF GEVOLGSCHADE VOORTVLOEIEND UIT DEZE LICENTIE OF HET GEBRUIK VAN HET WERK, ZELFS NIET INDIEN DE LICENTIEGEEVER OP DE HOOGTE IS GESTELD VAN HET RISICO VAN DERGELIJKE SCHADE, INDIEN EN VOORZOVER DE WET NIET ANDERS BEPAALT.

## 7. Beindiging

a. Deze Licentie en de daarin verleende rechten vervallen automatisch op het moment dat de Gebruiker in strijd handelt met de voorwaarden van deze Licentie. De licenties van natuurlijke personen of rechtspersonen die Verzamelwerken hebben ontvangen van de Gebruiker krachtens deze Licentie blijven echter in stand zolang dergelijke natuurlijke personen of rechtspersonen zich houden aan de voorwaarden van die licenties. Na de beindiging van deze Licentie blijven artikelen 1, 2, 5, 6, 7 en 8 onverminderd van kracht.

b. Met inachtneming van de hierboven vermelde voorwaarden wordt de Licentie verleend voor de duur van de toepasselijke intellectuele eigendomsrechten op het Werk. De Licentiegever behoudt zich desalniettemin te allen tijde het recht voor om het Werk volgens gewijzigde licentievoorwaarden te verspreiden of om het Werk niet langer te verspreiden; met dien verstande dat een dergelijk besluit niet de intrekking van deze Licentie (of enig andere licentie die volgens de voorwaarden van deze Licentie (verplicht) is verleend) tot gevolg heeft, en deze Licentie onverminderd van kracht blijft tenzij zij op de in lid a omschreven wijze wordt beindigd.

## 8. Diversen

a. Elke keer dat de Gebruiker het Werk of een Verzamelwerk verspreidt of on-line beschikbaar stelt, biedt de Licentiegever de ontvanger een licentie op het Werk aan volgens de algemene voorwaarden van deze Licentie.

b. Elke keer dat de Gebruiker een Afgeleid werk verspreidt of on-line beschikbaar stelt, biedt de Licentiegever de ontvanger een licentie op het oorspronkelijke werk aan volgens de algemene voorwaarden van deze Licentie.

c. Indien enige bepaling van deze Licentie nietig of niet rechtens afdwingbaar is, zullen de overige voorwaarden van deze Licentie volledig van kracht blijven. De nietige of niet-afdwingbare bepaling zal, zonder tussenkomst van

de partijen, worden vervangen door een geldige en afdwingbare bepaling waarbij het doel en de strekking van de oorspronkelijke bepaling zoveel mogelijk in acht worden genomen.

d. Een verklaring van afstand van in deze Licentie verleende rechten of een wijziging van de voorwaarden van deze Licentie dient schriftelijk te geschieden en getekend te zijn door de partij die verantwoordelijk is voor de verklaring van afstand respectievelijk de partij wiens toestemming voor de wijziging is vereist.

f. Deze Licentie bevat de volledige overeenkomst tussen de partijen met betrekking tot het in licentie gegeven Werk. Er zijn geen andere afspraken gemaakt met betrekking tot het Werk. De Licentiegever is niet gebonden aan enige aanvullende bepalingen die worden vermeld in mededelingen van de Gebruiker. Deze licentie kan uitsluitend worden gewijzigd met de wederzijdse, schriftelijke instemming van de Licentiegever en de Gebruiker.

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```
/// The datatype used for the ioctl number
```

```
#[doc(hidden)]
```

```
#[cfg(not(solarish))]
```

```
pub type ioctl_num_type = ::libc::c_ulong;
```

```
#[doc(hidden)]
```

```
#[cfg(solarish)]
```

```
pub type ioctl_num_type = ::libc::c_int;
```

```
/// The datatype used for the 3rd argument
```

```
#[doc(hidden)]
```

```
pub type ioctl_param_type = ::libc::c_int;
```

```
mod consts {
```

```
 use crate::sys::ioctl::ioctl_num_type;
```

```
 #[doc(hidden)]
```

```
 pub const VOID: ioctl_num_type = 0x2000_0000;
```

```
 #[doc(hidden)]
```

```
 pub const OUT: ioctl_num_type = 0x4000_0000;
```

```
 #[doc(hidden)]
```

```
 #[allow(overflowing_literals)]
```

```
 pub const IN: ioctl_num_type = 0x8000_0000;
```

```
 #[doc(hidden)]
```

```
 pub const INOUT: ioctl_num_type = IN | OUT;
```

```
 #[doc(hidden)]
```

```
 pub const IOCPARM_MASK: ioctl_num_type = 0x1fff;
```

```
}
```

```
pub use self::consts::*;
```

```
#[macro_export]
```

```
#[doc(hidden)]
```

```
macro_rules! ioc {
```

```
 ($inout:expr, $group:expr, $num:expr, $len:expr) => {
```

```
 $inout
```

```
 | (($len as $crate::sys::ioctl::ioctl_num_type
```

```
 & $crate::sys::ioctl::IOCPARM_MASK)
```

```

 << 16)
 | (($group as $crate::sys::ioctl::ioctl_num_type) << 8)
 | ($num as $crate::sys::ioctl::ioctl_num_type)
};
}

/// Generate an ioctl request code for a command that passes no data.
///
/// This is equivalent to the `_IO()` macro exposed by the C ioctl API.
///
/// You should only use this macro directly if the `ioctl` you're working
/// with is "bad" and you cannot use `ioctl_none!()` directly.
///
/// # Example
///
/// ```
/// # [macro_use] extern crate nix;
/// const KVMIO: u8 = 0xAE;
/// ioctl_write_int_bad!(kvm_create_vm, request_code_none!(KVMIO, 0x03));
/// # fn main() {}
/// ```
#[macro_export(local_inner_macros)]
macro_rules! request_code_none {
 ($g:expr, $n:expr) => {
 ioc!($crate::sys::ioctl::VOID, $g, $n, 0)
 };
}

/// Generate an ioctl request code for a command that passes an integer
///
/// This is equivalent to the `_IOWINT()` macro exposed by the C ioctl API.
///
/// You should only use this macro directly if the
/// `ioctl` you're working
/// with is "bad" and you cannot use `ioctl_write_int!()` directly.
#[macro_export(local_inner_macros)]
macro_rules! request_code_write_int {
 ($g:expr, $n:expr) => {
 ioc!(
 $crate::sys::ioctl::VOID,
 $g,
 $n,
 ::std::mem::size_of::<$crate::libc::c_int>()
)
 };
}

```

```

/// Generate an ioctl request code for a command that reads.
///
/// This is equivalent to the `_IOR()` macro exposed by the C ioctl API.
///
/// You should only use this macro directly if the `ioctl` you're working
/// with is "bad" and you cannot use `ioctl_read!()` directly.
///
/// The read/write direction is relative to userland, so this
/// command would be userland is reading and the kernel is
/// writing.
#[macro_export(local_inner_macros)]
macro_rules! request_code_read {
 ($g:expr, $n:expr, $len:expr) => {
 ioc!($crate::sys::ioctl::OUT, $g, $n, $len)
 };
}

```

```

/// Generate an ioctl request code for a command that writes.
///
/// This is equivalent to the `_IOW()` macro exposed by the C ioctl API.
///
/// You should only use this macro directly if the `ioctl` you're working
/// with is "bad" and you cannot use `ioctl_write!()` directly.
///
/// The read/write direction is relative to userland, so this
/// command would be userland is writing and the kernel is
/// reading.
#[macro_export(local_inner_macros)]
macro_rules! request_code_write {
 ($g:expr, $n:expr, $len:expr) => {
 ioc!($crate::sys::ioctl::IN, $g, $n, $len)
 };
}

```

```

/// Generate an ioctl request code for a command that reads and writes.
///
/// This is equivalent to the `_IOWR()` macro exposed by the C ioctl API.
///
/// You should only use this macro directly if the `ioctl` you're working
/// with is "bad" and you cannot use `ioctl_readwrite!()` directly.
#[macro_export(local_inner_macros)]
macro_rules! request_code_readwrite {
 ($g:expr, $n:expr, $len:expr) => {
 ioc!($crate::sys::ioctl::INOUT, $g, $n, $len)
 };
}

```



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"#

use crate::errno::Errno;

use crate::sys::signal::Signal;

use crate::unistd::Pid;

use crate::Result;

use cfg\_if::cfg\_if;

use libc::{self, c\_int};

use std::ptr;

pub type RequestType = c\_int;

cfg\_if! {

if #[cfg(any(freebsdlike, apple\_targets, target\_os = "openbsd"))] {

#[doc(hidden)]

pub type AddressType = \*mut ::libc::c\_char;

} else {

#[doc(hidden)]

pub type AddressType = \*mut ::libc::c\_void;

}

}

libc\_enum! {

#[repr(i32)]

/// Ptrace Request enum defining the action to be taken.

#[non\_exhaustive]

pub enum Request {

PT\_TRACE\_ME,

PT\_READ\_I,

PT\_READ\_D,

#[cfg(apple\_targets)]

PT\_READ\_U,

PT\_WRITE\_I,

PT\_WRITE\_D,

#[cfg(apple\_targets)]

PT\_WRITE\_U,

PT\_CONTINUE,

PT\_KILL,

#[cfg(any(any(freebsdlike, apple\_targets),

```

 all(target_os = "openbsd", target_arch = "x86_64"),
 all(target_os = "netbsd", any(target_arch = "x86_64",
 target_arch = "powerpc")))]

 PT_STEP,
 PT_ATTACH,
 PT_DETACH,
 #[cfg(apple_targets)]
 PT_SIGEXC,
 #[cfg(apple_targets)]
 PT_THUPDATE,
 #[cfg(apple_targets)]
 PT_ATTACHEXC
}
}

unsafe fn ptrace_other(
 request: Request,
 pid: Pid,
 addr: AddressType,
 data: c_int,
) -> Result<c_int> {
 unsafe {
 Errno::result(libc::ptrace(
 request as RequestType,
 libc::pid_t::from(pid),
 addr,
 data,
))
 .map(|_| 0)
 }
}

/// Sets the process as traceable, as with `ptrace(PT_TRACEME, ...)`
///
/// Indicates that this process is to be traced by its parent.
/// This is the only ptrace request to be issued by the tracee.
pub fn traceme() -> Result<()> {
 unsafe {
 ptrace_other(Request::PT_TRACE_ME, Pid::from_raw(0), ptr::null_mut(), 0)
 .map(drop)
 }
}

/// Attach to a running
process, as with `ptrace(PT_ATTACH, ...)`
///
/// Attaches to the process specified by `pid`, making it a tracee of the calling process.
pub fn attach(pid: Pid) -> Result<()> {

```

```

unsafe {
 ptrace_other(Request::PT_ATTACH, pid, ptr::null_mut(), 0).map(drop)
}
}

/// Detaches the current running process, as with `ptrace(PT_DETACH, ...)`
///
/// Detaches from the process specified by `pid` allowing it to run freely, optionally delivering a
/// signal specified by `sig`.
pub fn detach<T: Into<Option<Signal>>>(pid: Pid, sig: T) -> Result<()> {
 let data = match sig.into() {
 Some(s) => s as c_int,
 None => 0,
 };
 unsafe {
 ptrace_other(Request::PT_DETACH, pid, ptr::null_mut(), data).map(drop)
 }
}

/// Restart the stopped tracee process, as with `ptrace(PTRACE_CONT, ...)`
///
/// Continues the execution of the process with PID `pid`, optionally
/// delivering a signal specified by `sig`.
pub fn cont<T: Into<Option<Signal>>>(pid: Pid, sig: T)
-> Result<()> {
 let data = match sig.into() {
 Some(s) => s as c_int,
 None => 0,
 };
 unsafe {
 // Ignore the useless return value
 ptrace_other(Request::PT_CONTINUE, pid, 1 as AddressType, data)
 .map(drop)
 }
}

/// Issues a kill request as with `ptrace(PT_KILL, ...)`
///
/// This request is equivalent to `ptrace(PT_CONTINUE, ..., SIGKILL);`
pub fn kill(pid: Pid) -> Result<()> {
 unsafe {
 ptrace_other(Request::PT_KILL, pid, 0 as AddressType, 0).map(drop)
 }
}

/// Move the stopped tracee process forward by a single step as with
/// `ptrace(PT_STEP, ...)`
///

```

```

/// Advances the execution of the process with PID `pid` by a single step optionally delivering a
/// signal specified by `sig`.
///
/// # Example
/// ```rust
/// use nix::sys::ptrace::step;
/// use nix::unistd::Pid;
/// use nix::sys::signal::Signal;
/// use nix::sys::wait::*;
/// // If a process changes state to the stopped state because of a SIGUSR1
/// // signal,
/// this will step the process forward and forward the user
/// // signal to the stopped process
/// match waitpid(Pid::from_raw(-1), None) {
/// Ok(WaitStatus::Stopped(pid, Signal::SIGUSR1)) => {
/// let _ = step(pid, Signal::SIGUSR1);
/// }
/// _ => {},
/// }
/// ```
#[cfg(any(
 any(freebsdlike, apple_targets),
 all(target_os = "openbsd", target_arch = "x86_64"),
 all(
 target_os = "netbsd",
 any(target_arch = "x86_64", target_arch = "powerpc")
)
))]
pub fn step<T: Into<Option<Signal>>>(pid: Pid, sig: T) -> Result<> {
 let data = match sig.into() {
 Some(s) => s as c_int,
 None => 0,
 };
 unsafe {
 ptrace_other(Request::PT_STEP, pid, ptr::null_mut(), data).map(drop)
 }
}

/// Reads a word from a processes memory at the given address
/// Technically, ptrace doesn't dereference the pointer. It passes it directly
/// to the kernel.
#[allow(clippy::not_unsafe_ptr_arg_deref)]
pub fn read(pid: Pid, addr: AddressType)
-> Result<c_int> {
 unsafe {
 // Traditionally there was a difference between reading data or
 // instruction memory but not in modern systems.
 ptrace_other(Request::PT_READ_D, pid, addr, 0)
 }
}

```



```

 }
}

/// Writes a word into the processes memory at the given address
// Technically, ptrace doesn't dereference the pointer. It passes it directly
// to the kernel.
#[allow(clippy::not_unsafe_ptr_arg_deref)]
pub fn write(pid: Pid, addr: AddressType, data: c_int) -> Result<> {
 unsafe { ptrace_other(Request::PT_WRITE_D, pid, addr, data).map(drop) }
}

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```

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Version 1.0 - 22 November 2005

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Version 1.1 - 26 February 2007

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# 1.146 jiter 0.11.1

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## 1.147 pydantic\_core 2.41.5

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## 1.148 ca-certificates 20251003-r0

### 1.148.1 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
#_pkgrel is used by apkbuidl-cpan to find modules at MetaCpan
_pkgrel=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"
```

```
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(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 (0)

```

```

 } \
} 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); \
} while (/*CONSTCOND*/0)

```

```

(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; \
} while (0)

```



```

(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 { \
 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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a copy of this software and associated documentation files (the

```

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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); \
} while (/*CONSTCOND*/ 0)

```

```

 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
"
```

# 1.149 click 8.3.1

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```
```{literalinclude} ../LICENSE.txt
---
language: text
---
```

...

1.150 rpds 1.2.0

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1.151 keyring 25.7.0

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1.153 secretstorage 3.5.0

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1.154 pydantic 2.12.5

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1.155 rpds-py 0.30.0

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1.156 pyo3 0.27.2

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1.157 pyo3-ffi 0.27.2

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1.158 alpine-baselayout 3.7.1-r8

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```
# Automatically generated by apkbuild-cpan, template 1
# Contributor: Francesco Colista <francesco.colista@gmail.com>
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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"

```

```
_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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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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Hwaci

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Charlotte, NC 28269

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Contributor: Fabian Affolter <fabian@affolter-engineering.ch>

Maintainer: Fabian Affolter <fabian@affolter-engineering.ch>

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="bab1bfaeed3a525ac3c7da12b1f2ec338c204cc69b72d05cd39560e528faff5d586c3b1be9570f4a977a7e2417b586e543bfba12abce256b2023c8c4993eeb90
    flake8-copyright-0.2.0.tar.gz"
mini_sendmail - accept email on behalf of real sendmail

```

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SUCH DAMAGE.

1.159 ncurses 6.5_p20251123-r0

1.159.1 Available under license :

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

Upstream-Name: ncurses

Upstream-Contact: Thomas E. Dickey <dickey@invisible-island.net>

Source: <https://invisible-island.net/ncurses/ncurses.html>

Files: *

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Files: aclocal.m4 package

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Files: doc/html/NCURSES-Programming-HOWTO.html

Copyright: 2001 by Pradeep Padala

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Modification Variant

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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Files: test/terminal.xbm

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Comment: vile: txtmode file-encoding=utf-8

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

Upstream-Name: AdaCurses

Upstream-Contact: Thomas E. Dickey <dickey@invisible-island.net>

Source: <https://invisible-island.net/ncurses/Ada95.html>

Files: *

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Files: install-sh

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Comment: vile: txtmode file-encoding=utf-8

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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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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

1.160 py-key-value-ai0 0.3.0

1.160.1 Available under license :

UNRECOGNIZED LICENSE; MD5 sum: 15d3b4055efa11ead6e6d5864a713588

1.161 py-key-value-shared 0.3.0

1.161.1 Available under license :

UNRECOGNIZED LICENSE; MD5 sum: 8e19141b7c258dca38f187ed88c2ccfa

1.162 ca-certificates-bundle 20251003-r0

1.162.1 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 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 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)

#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@ptrcnll.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
"

```

1.163 alpine-baselayout-data 3.7.1-r8

1.163.1 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"

```

```
_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="8a632a6a4da59e5e8c02ec2f5a57e36d182b325b46513765425e5f171ff9ae326af1b133725beba28f7e76654309e001aee9bace727b5b4c8589405256a3c020 libart_lgpl-2.3.21.tar.bz2"

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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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Maintainer: Fabian Affolter <fabian@affolter-engineering.ch>

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="bab1bfaeed3a525ac3c7da12b1f2ec338c204cc69b72d05cd39560e528faff5d586c3b1be9570f4a977a7e  
2417b586e543bfba12abce256b2023c8c4993eeb90  
flake8-copyright-0.2.0.tar.gz"  
mini_sendmail - accept email on behalf of real sendmail
```

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1.164 libncursesw 6.5_p20251123-r0

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1.165 bridgeutils 1.7.1

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1.167 libstdc++ 15.2.0-r2

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Version 3.1, 31 March 2009

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```
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   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 "_"   
    GNU GENERAL PUBLIC LICENSE   
    Version 2, June 1991
```

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Julian Seward, jseward@bzip.org
bzip2/libbzip2 version 1.0.6 of 6 September 2010

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```

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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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1.168 libgcc 15.2.0-r2

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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 2, June 1991
```

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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

#endif /* __VTV_H__ */

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1.169 libpanelw 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>

Files: *

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Comment:

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Files: aclocal.m4 package

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Files: doc/html/NCURSES-Programming-HOWTO.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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Files: test/terminal.xbm

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Comment: vile: txtmode file-encoding=utf-8
Format: <http://www.debian.org/doc/packaging-manuals/copyright-format/1.0/>
Upstream-Name: AdaCurses
Upstream-Contact: Thomas E. Dickey <dickey@invisible-island.net>
Source: <https://invisible-island.net/ncurses/Ada95.html>

Files: *

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-- vile:txtmode fc=72

-- \$Id: COPYING,v 1.14 2025/01/04 10:53:46 tom Exp \$

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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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1.170 py3-pip 25.1.1-r1

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Packager: bdist_wheel
Root-Is-Purelib: true
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- * Christophe Combelles
- * Daniel Stutzbach
- * Daniel Holth
- * Hanno Schlichting
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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
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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	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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2.3.3	2.3.2	2002-2003	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
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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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Root-Is-Purelib: true

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1.171 py3-setuptools 80.9.0-r2

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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
```

Please avoid changing it manually.

You can report issues or suggest changes directly to `validate-pyproject`
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- `fastjsonschema\_exceptions.py`:
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```
`fastjsonschema`
=====
```

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`validate-pyproject`

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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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1.173 lupa 2.6

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Lupa

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Lua

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1.174 luajit 2.1.1760617492

1.174.1 Available under license :

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1.175 luajit 2.0.1753364325

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1.176 beartype 0.22.9

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1.177 busybox 1.37.0-r30

1.177.1 Available under license :

```
# 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 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
}
```



```

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"
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

```

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Version 3, 29 June 2007

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```
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```

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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
"

#!/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
"
# Contributor: Sören Tempel <soeren+alpine@soeren-tempel.net>
# Contributor: Leonardo Arena <malrd@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/utls/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
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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)

#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 sentinal 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
"
(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

"

1.178 ssl-client 1.37.0-r30

1.178.1 Available under license :

```
# 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 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_PERLLLOCAL=1
    make
}

check() {
    export CFLAGS=$(perl -MConfig -E 'say $Config{ccflags}')
    make test
}

package() {
    make DESTDIR="$pkgdir" install
}

```

}

sha512sums="

d0032d41c7c0468ed1c6d8f57b885f6cb97a5039d754c8cb60b2067daedaf53bd15fb6561a3d0f828df16dfa5417f663b8065ba65f4fea16dc9262728b3b6b85

BSD-Resource-1.2911.tar.gz

"

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Version 3, 29 June 2007

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<<https://www.gnu.org/licenses/why-not-lgpl.html>>.
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
"
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
"

```



```
# 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/utls/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 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(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)

```

```

} \
} 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 { \
    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; \
    QUEUEDEBDEBUG_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); \
    QUEUEDEBDEBUG_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 \
    INSTALLED_DIRS=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
"

```

1.179 tre 0.8.0-r2

1.179.1 Available under license :

```

# 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"
buildidir="$srcdir/license-list-data-$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 "$buildidir"/$type "$subpkgdir"/usr/share/spdx/
}

list() {
    pkgdesc="$pkgdesc (licence list)"
    mkdir -p "$subpkgdir"/usr/share/spdx
    local i; for i in "$buildidir"/text/*.txt;
    do
        local license=${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
"

```

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Version 3, 29 June 2007

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```
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```

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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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```

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# 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/utls/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
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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
"
(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(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
"

```

1.180 docutils 0.22.4

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 Version 3, 29 June 2007

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Also add information on how to contact you by electronic and paper mail.

If the program does terminal interaction, make it output a short notice like this when it starts in an interactive mode:

```
<program> Copyright (C) <year> <name of author>  
This program comes with ABSOLUTELY NO WARRANTY; for details type `show w'.  
This is free software, and you are welcome to redistribute it  
under certain conditions; type `show c' for details.
```

The hypothetical commands `show w' and `show c' should show the appropriate parts of the General Public License. Of course, your program's commands might be different; for a GUI interface, you would use an "about box".

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1.181 importlib-metadata 8.7.1

1.181.1 Available under license :

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1.182 jaraco-functools 4.4.0

1.182.1 Available under license :

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1.183 dotenv 0.9.9

1.183.1 Available under license :

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1.184 python-certifi 2026.1.4

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3.1 SCOPE AND RESTRICTIONS.

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The term of this Agreement begins on the Effective Date and will remain in effect until all Subscription Licenses (and Maintenance and Support Terms, if applicable) expire or until this Agreement is otherwise terminated in accordance with the terms

hereof, whichever occurs first (the Term). If either party commits a material breach of this Agreement, and such breach has not been cured within 30 days after receipt of written notice thereof, the non-breaching party may terminate this Agreement, except that AppDynamics may immediately terminate this Agreement and/or End Users license to the Software upon End Users breach of Section 1.2(c). Either party may also terminate this Agreement upon written notice if the other party suspends payment of its debts or experiences any other insolvency or bankruptcy-type event. Upon expiration or termination of this Agreement for any reason: (a) with respect to Subscription Licenses, all rights granted to End User shall terminate and End User shall destroy any copies of the Software and Documentation within End Users possession and control; (b) with respect to perpetual licenses, these will survive termination of this Agreement unless AppDynamics terminates the Agreement for End Users breach of this Agreement in which case all rights granted to End User shall terminate and End User shall destroy any copies of the Software and Documentation within End Users possession and control; and (c) each Receiving Party

will destroy the Disclosing Partys Confidential Information in the Receiving Partys possession or control. All fees that have accrued as of such expiration or termination, and Sections 1.2, 1.3, 1.4, 2, 3, 4, 5, 6.2 and 8 through 12, will survive any expiration or termination hereof.

6. WARRANTIES.

6.1 LIMITED WARRANTY.

AppDynamics warrants that during the first 30 days following the date the Software is purchased, the Software will, in all material respects, conform to the functionality described in the then-current Documentation for the applicable Software version. AppDynamics sole and exclusive obligation, and End Users sole and exclusive remedy, for a breach of this warranty shall be that AppDynamics shall be required to repair or replace the Software to conform in all material respects to the Documentation, and if AppDynamics is unable to materially restore such functionality within 30 days from the date of written notice of such breach, End User may terminate the license to the affected Software upon written notice and AppDynamics shall promptly provide a pro-rata refund of the Software license fees (or Maintenance and Support Fees, for perpetual licenses) that have been paid in advance for the remainder of the License Term for the applicable Software (beginning on the date of termination). End User must notify AppDynamics in accordance with Section 12 of any warranty breaches within such warranty period, and End User must have installed and configured the Software in accordance with the Documentation to be eligible for the foregoing remedy.

6.2 WARRANTY DISCLAIMER.

Except as expressly provided in this Section 6.1, all software, documentation, maintenance and support and services are provided as is and AppDynamics and its suppliers expressly disclaim any and all other representations and warranties, either express, implied, statutory, or otherwise with respect thereto. AppDynamics expressly disclaims any warranty as to the accuracy or completeness of any information or data accessed or used in connection with the software, documentation, maintenance and support, or services or that the software will be compatible or work with any end user or third party software or hardware. Each party acknowledges that, in entering into this Agreement, it has not relied on, and shall have no right or remedy in respect of, any statement, representation, assurance or warranty (whether made negligently or innocently) other than as expressly set out in this Agreement. The Software is not fault-tolerant and is not designed or intended for use in hazardous environments, including without limitation, in the operation of aircraft or other modes of human mass transportation, nuclear or chemical facilities, life support systems, implantable medical equipment, motor vehicles or weaponry systems, or any other application in which failure of the Software could lead to death or serious bodily injury of a person, or to severe physical or environmental damage (each, a High Risk Use). AppDynamics expressly disclaims any express or implied warranty or representation of fitness for High Risk Use. AppDynamics shall not be liable to End User for any loss, damage or harm suffered by End User that is directly or indirectly caused by End Users unauthorized use of the Software to process Prohibited Data.

7. INDEMNIFICATION.

7.1 BY APPDYNAMICS.

Subject to Section 7.2 and End Users compliance with Section 7.4, AppDynamics agrees at its expense to defend End User against (or, at AppDynamics option, settle), any third party claim to the extent such claim alleges that the Software infringes or misappropriates any patent, copyright, trademark or trade secret of a third party, and AppDynamics shall pay all costs and damages finally awarded against

End User by a court of competent jurisdiction as a result of any such claim. If the use of the Software is, or in AppDynamics sole opinion is likely to become, subject to such a claim, AppDynamics, at its option and expense, may (a) replace the applicable Software with functionally equivalent non-infringing technology, (b) obtain a license for End Users continued use of the applicable Software, or (c) terminate the license and provide a pro-rata refund of the Software license fees (or Maintenance and Support Fees, for perpetual licenses) that have been paid in advance for the remainder of the License Term for the applicable Software (beginning on the date of termination). The foregoing indemnification obligation of AppDynamics will not apply: (a) if the Software is modified by End User or its agent; (b) if the Software is combined with other non-AppDynamics products, applications, or processes, but solely to the extent the alleged infringement is caused by such combination; or (c) to any unauthorized use of the Software. The foregoing shall be End Users sole remedy with respect to any claim of infringement of third party intellectual property rights.

7.2 BY END USER.

Subject to AppDynamics compliance with Section 7.3, End User agrees to defend, at its expense, AppDynamics and its affiliates, its suppliers and its resellers against any third party claim to the extent such claim arises from or is made in connection with End Users breach of Section 1 or End Users negligence or willful misconduct, and End User shall pay all costs and damages finally awarded against AppDynamics by a court of competent jurisdiction as a result of any such claim.

7.3 INDEMNIFICATION REQUIREMENTS.

The following are conditions to any claim for indemnification under this Section 7. The indemnified party must promptly provide the indemnifying party with notice of any claim that the indemnified party believes is within the scope of the obligation to indemnify, provided, that the failure to provide such notice shall not relieve the indemnifying party of its obligations under this Section 7, except to the extent that such failure materially prejudices the indemnifying partys defense of such claim. The indemnified party may, at its own expense, assist in the defense if it so chooses, but the indemnifying party shall control the defense and all negotiations related to the settlement of any such claim. Any such settlement intended to bind either party shall not be final without the other partys written consent, which consent shall not be unreasonably withheld, conditioned or delayed; provided that, End Users consent shall not be required when AppDynamics is the indemnifying party if the settlement involves only the payment of money by AppDynamics.

8. LIMITATION OF LIABILITY.

8.1 Subject to Section 8.3, in no event shall either party be liable for any indirect, incidental, special, punitive or consequential damages, including damages for loss of revenues or profits, loss of use, business interruption, or loss of data, whether in an action in contract or tort (including negligence), even if the other party has been advised of the possibility of such damages.

8.2 Subject to Section 8.1 and 8.3, neither partys liability for any damages (whether for breach of contract, misrepresentations, negligence, strict liability, other torts or otherwise) under this agreement shall exceed an amount equal to 100% of the total fees paid (plus Fees payable) to AppDynamics during the 12 months immediately preceding the claim giving rise to such damages. This limitation of liability is aggregate and not per incident. If End User has made an upfront payment of Fees for the entire License Term, the 100% cap shall be calculated by using 12 times the pro rata monthly fee of the fees paid upfront. These limitations shall apply notwithstanding any failure of essential purpose of any remedy.

8.3 Nothing in this Agreement will limit or exclude either party's liability for: (a) any other matter which by law may not be excluded or limited; (b) in the case of End User, for (1) breach of Section 1.2 (c); and (2) payment of the Fees.

9. FORCE MAJEURE.

Except for payment obligations, neither party hereto will be liable for defaults or delays due to acts of God or the public enemy, acts or demands of any government or governmental agency, fires, earthquakes, floods, other natural disasters, accidents, or other unforeseeable causes beyond its reasonable control and not due to its fault or negligence.

10. DATA COLLECTION.

10.1 Subject to AppDynamics compliance with data protection laws applicable to it, End User acknowledges that AppDynamics may collect information generated by instrumentation and logging systems created through the use and operation of the Software which AppDynamics may use for its internal business purposes. If End User provides AppDynamics with any personally identifiable information (PII), End User represents and warrants that such information

has been collected in accordance with the provisions of all applicable data protection legislation and that End User has all right and consents necessary to provide such PII to AppDynamics.

10.2 If End User is subject to Regulation 2016/679 of the European Parliament and of the Council on the protection of natural persons with regard to the processing of personal data and on the free movement of such data, and repealing Directive 95/46/EC (General Data Protection Regulation), the terms of Exhibit C shall apply.

11. US GOVERNMENT MATTERS.

As defined in FAR section 2.101, the Software and Documentation are commercial items and according to DFAR section 252.227 7014(a)(1) and (5) are deemed to be commercial computer software and commercial computer software documentation. Consistent with DFAR section 227.7202 and FAR section 12.212, any use modification, reproduction, release, performance, display, or disclosure of such commercial software or commercial software documentation by the

U.S. Government will be governed solely by the terms of this Agreement and will be prohibited except to the extent expressly permitted by the terms of this Agreement.

12. MISCELLANEOUS.

This Agreement shall be governed by and construed under the laws of the State of California, U.S.A. Failure by either Party to exercise any of its rights under, or to enforce any provision of, this Agreement will not be deemed a waiver or forfeiture of such rights or ability to enforce such provision. If any provision of this Agreement is held by a court of competent jurisdiction to be illegal, invalid or unenforceable, such provision will be amended to achieve as nearly as possible the same economic effect of the original provision and the remainder of this Agreement will remain in full force and effect. This Agreement and its exhibits, together with the Order Form(s) and any statements of work incorporating this Agreement, if applicable, represent the entire agreement between the parties and supersede

any previous or contemporaneous oral or written agreements or communications regarding the subject matter of this Agreement. The person signing or otherwise accepting this Agreement for each party represents that s/he is duly authorized by all necessary and appropriate corporate action to enter this Agreement. Any modification to this

Agreement must be in writing and signed by a duly authorized signatory of both parties and no previous, contemporaneous or future oral statements will be deemed to modify this Agreement. Neither the Uniform Commercial Code (UCC) nor the Uniform Computer Information Transactions Act (UCITA) will apply to this Agreement. This Agreement shall control over additional or different terms of any purchase order, confirmation, invoice, statement of work or similar document (other than an AppDynamics Order Form, which will take precedence), even if accepted in writing by both parties, and waivers and amendments to this Agreement shall be effective only if made

by non-pre-printed agreements clearly understood by both parties to be an amendment or waiver to this Agreement. For purposes of this Agreement, including means including without limitation. The rights and remedies of the parties hereunder will be deemed cumulative and not exclusive of any other right or remedy conferred by this Agreement or by law or equity. No joint venture, partnership, employment, or agency relationship exists between the parties as a result of this Agreement or use of the Software. AppDynamics reserves the right to perform its obligations from locations and/or through use of affiliates and subcontractors, worldwide, provided that AppDynamics will be responsible for such parties. End User may not assign this Agreement without the prior written approval of AppDynamics and any purported assignment in violation of this section shall be void; AppDynamics may assign, transfer or subcontract this Agreement in whole or in part. Upon any assignment of this Agreement by End

User that is approved by AppDynamics, any licenses that contain an unlimited aspect will, with respect to End User or the successor entity, as applicable, be capped at the number of authorized Software units in use immediately prior to such assignment. End User agrees that AppDynamics may refer to End User by its trade name and logo, and may briefly describe End Users business, in AppDynamics marketing materials and website. AppDynamics may give notice to End User by electronic mail to End Users email address on record in End Users account information, or by letter sent by nationally recognized overnight delivery service to End Users address on record in End Users account information. End User may give notice to AppDynamics at any time by letter sent by nationally recognized overnight delivery service or first class postage prepaid mail to AppDynamics at the following address or such other address as may be notified to End User from time to time: AppDynamics, 303 Second Street, North Tower, 8th Floor, San Francisco, CA 94107, Attn: Legal Department. Notice under this Agreement shall be deemed given: (a) when received, if personally delivered; (b) when receipt is electronically confirmed, if transmitted by email; (c) the next business day after it is sent, if sent by first class postage prepaid post; (d) five business days following postage if sent by pre-paid mail; and (e) upon receipt, if sent by certified or registered mail, return receipt requested.

EXHIBIT A

ENTERPRISE SUPPORT

GENERAL REQUIREMENTS.

AppDynamics will provide access to a ticketing system that will be available 24 hours per day, seven days per week. The ticketing system will be maintained by qualified support specialists, who shall provide technical support regarding the Software.

ERROR CLASSIFICATION.

Any reported errors are classified in the following manner, in each case when caused by the Software:

Error Classification Criteria

=====

Urgent	End User production application is down or there is a major malfunction, resulting in a business revenue loss and impacting the End User application functionality for a majority of users.
High	Critical loss of End User application functionality or performance, impacting the application functionality for a high number of users.
Normal	Moderate loss of End User application functionality or performance, impacting multiple users.
Low	Minor loss of End User application functionality or product feature in question.

ERROR DEFINITION.

An error means a reproducible malfunction in the Software that is reported by End User through AppDynamics ticketing system that prevents the Software from performing in accordance with the operating specifications described in the then-current Documentation.

AUTHORIZED SUPPORT CONTACTS.

Maintenance and Support will be provided to End Users designated support contacts.

END USERS OBLIGATION TO ASSIST.

If End User reports a purported error in the Software to AppDynamics, AppDynamics ticketing system will request the following minimum information:

- A general description of the operating environment
- A list of all hardware components, operating systems and networks
- A reproducible test case
- Any log files, trace and systems files

End Users failure to provide this information may prevent or significantly delay AppDynamics ability to identify and fix the reported error. AppDynamics time to respond to any error will begin when AppDynamics has received all requested information from the End User and is able to reproduce the error.

ERROR RESOLUTION.

If AppDynamics determines there is an error in the Software, AppDynamics may, at its sole option, repair that error in the version of the Software that End User is currently using or instruct End User to install a newer version of the Software with that error repaired. AppDynamics reserves the right to provide End User with a workaround in lieu of fixing an error.

MAINTENANCE. Provided End User is current on Fees AppDynamics will make available to End User updates and upgrades to the Software that it, in its sole discretion, makes generally commercially available to all customers.

RESPONSE TIME. AppDynamics shall respond to error tickets in accordance with the tables set forth below. AppDynamics will use reasonable means to repair the error and keep End User informed of progress. AppDynamics makes no representations as to when a full resolution of the error may be made.

Error	Initial Response	Manager Escalation	VP Escalation	Email Status Updates
=====	=====	=====	=====	=====
Urgent	1 Hour	1 Business Day	1 Week	Daily
High	6 Hours	1 Week	2 Weeks	Weekly
Normal				
	1 Business Day	Quarterly Review	None	None
Low	2 Business Days	Semi-Annual Review	None	None

MAINTENANCE AND SUPPORT POLICY: The Maintenance and Support policy is as follows:

AppDynamics provides Maintenance and Support for each version of the Software for a period of 12 months after the generally available release of the next major version of the Software (a major release is a change in the first number to the right of the decimal point). For example, if version 4.1 is released on January 1, 2015, then AppDynamics will provide Maintenance and Support for version 4.0 until January 1, 2016. AppDynamics does not provide Maintenance or Support for any customized software (or components thereof).

For third party software or technology used by End User with the Software but not included with the Software (a Platform, such as Java Virtual Machines), AppDynamics will follow the end-of-life (EOL) support timeline announced by the third party vendor of such Platform. AppDynamics will stop providing Maintenance and Support for an EOLd Platform version when the Platform vendor stops providing maintenance and support for that Platform version.

EXHIBIT B AVAILABILITY

The terms set forth in this Exhibit B apply only if End User has purchased access to the online software-as-a-service (SaaS) version of the Software, as indicated on the Order Form.

AVAILABILITY.

AppDynamics will provide Availability (as defined below) of 99.5% (the Availability SLA), excluding situations identified as Exclusions below. For purposes of the Availability SLA, the AppDynamics network extends to, includes and terminates at the data center located router that provides the outside interface of each of AppDynamics WAN connections to its backbone providers (the AppDynamics Network). A report on the actual Availability is located at <https://status.appdynamics.com>. The Controller is the central repository and analytics engine where all performance data

is stored, baselined, and analyzed.

Exclusions means any outage that results from any of the following:

- a. Any Maintenance performed by AppDynamics during AppDynamics standard Maintenance windows. AppDynamics will notify End User within 48 hours of any standard Maintenance and within 24 hours for other non-standard emergency Maintenance (collectively referred to herein as Scheduled Maintenance).
- b. End Users information content or application programming, or the acts or omissions of End User or its agents, including, without limitation, the following:
 1. End Users use of any programs not supplied by AppDynamics;
 2. End Users failure to provide AppDynamics with reasonable prior written notice of any significant deployments of new nodes or change in configurations resulting in greater than 30% change in a one week period or greater than 50% change in a month in the number of key objects collected; or
 3. End Users failure to upgrade AppDynamics application server and machine software agents (the Agents) to a supported version (i.e. that has not been end of life'd by AppDynamics)
- c. Failures of the Internet backbone itself and the network by which End User connects to the Internet backbone or any other network unavailability outside of the AppDynamics Network, such as misconfigurations, proxies or firewalls.
- d. Any problems resulting from End User combining or merging the Software with any hardware or software not supplied by AppDynamics or not identified by AppDynamics in the Documentation as being compatible with the Software.
- e. End Users or any third party's use of the Software in an unauthorized or unlawful manner.

Remedies for Excessive Downtime:

If Availability falls below the Availability SLA in a given calendar quarter, AppDynamics will pay End User a service credit (Service Credit) as follows, corresponding to the actual Availability during the applicable calendar quarter (on pro-rated basis): if the Availability is 99.5% or greater, End User is entitled to receive no credits; if the Availability is 97.0% - 99.49%, then End User is entitled to receive Service Credits equal to five percent of the fees for the applicable calendar quarter; if the Availability is 95.0% - 96.9%, then End User is entitled to receive Service Credits equal to ten percent of the fees for the applicable calendar quarter; and if the Availability is less than 95.0%, then End User is entitled to receive Service Credits equal to twenty percent of the fees for the applicable calendar quarter. To receive Service Credits, End User must submit a written request to AppDynamics (to legal@appdynamics.com) within 15 days after the end of the quarter in which failure to meet Availability occurred, or End User's right to receive the relevant Service Credits will be waived. Such Service Credit will be issued as a credit against any fees owed by End User for the calendar quarter of the License Term after the request for a Service Credit, or, if End User does not owe any additional fees, then AppDynamics will pay End User the amount of the applicable Service Credit within 30 days after the end of the calendar month in which End User has requested the Service Credit. The remedies stated in this section are End User's sole and exclusive remedies and AppDynamics' sole and exclusive obligations for service interruption or unavailability.

Availability is measured by the following formula: $(n - y) * 100 / n$

(1) n is the total number of minutes in the given calendar quarter minus the Exclusions (as defined above); and y is the total number of minutes in the given calendar quarter that the Controller is not accessible by End User (as determined by AppDynamics tools).

(2) Specifically excluded from n and y in this calculation are the Exclusions.

EXHIBIT C

DATA PROTECTION

This Exhibit shall apply to the processing of any personal data (each as defined below) by AppDynamics in the course of providing the SaaS (as defined below) version of the Software and/or support to the End User.

Data Protection

The terms of this Exhibit apply only if: (i) End User is subject to Data Protection Law (as defined below); and (ii) End User has purchased access to the online software-as-a-service (SaaS) version of the Software, as indicated on the Order Form,

1. DEFINITIONS.

In this Exhibit, the following terms shall have the following meanings:

"controller", "processor", "data subject", "personal data" and "processing" (and "process") shall have the meanings given in the Data Protection Law;

"Data Protection Law" shall mean Regulation 2016/679 of the European Parliament and of the Council on the protection of natural persons with regard to the processing of personal data and on the free movement of such data, and repealing Directive 95/46/EC (General Data Protection Regulation); and

Standard Contractual Clauses shall mean the terms at <https://trust.appdynamics.com/privacy/dataprotectionclauses> which form part of this Exhibit pursuant the European Commission Decision C(2010)593 of 5 February 2010.

2. RELATIONSHIP OF THE PARTIES.

End User (the controller) appoints AppDynamics as a processor to process the personal data described in Annex A (the "Data"). Each party shall comply with the obligations that apply to it under Data Protection Law.

3. PURPOSE LIMITATION.

AppDynamics shall process the Data as a processor as necessary to perform its obligations under this Agreement and strictly in accordance with the documented instructions of the End User (the "Permitted Purpose"), except where otherwise required by any law. Taking into account the nature of the processing and the Software, AppDynamics shall promptly, after becoming aware, inform End User if in AppDynamics opinion an instruction from or on behalf of End User infringes Data Protection Law.

4. INTERNATIONAL TRANSFERS.

Where End Users Controller is hosted on AppDynamics EU based SaaS platform, AppDynamics shall not transfer the Data (nor permit the Data to be transferred)

outside of the European Economic Area ("EEA") unless (i) it has first obtained the End User's prior written consent; and (ii) it takes measures to ensure the transfer is in compliance with Data Protection Law; and (iii) for the purposes of providing Support. The Standard Contractual Clauses will apply only to personal data that is transferred outside the EEA, either directly or via onward transfer, to any country not recognised by the European Commission as providing an adequate level of protection for personal data (as described in the Data Protection Laws). The Standard Contractual Clauses will not apply if AppDynamics has adopted an alternative recognised compliance standard for the lawful transfer of personal data (as defined in the Data Protection Laws) outside the EEA.

5. CONFIDENTIALITY OF PROCESSING.

AppDynamics shall ensure that any person that it authorises to process the Data (including AppDynamics' staff, agents and subcontractors) (an "Authorised Person") shall be subject to a duty of confidentiality (whether a contractual duty or a statutory duty).

6. SECURITY.

The processor shall implement appropriate controls, including technical, organisational, and other measures, designed to protect the Data (i) from accidental or unlawful destruction, and (ii) loss, alteration, unauthorised disclosure of, or access to the Data (a "Security Incident").

7. SUBCONTRACTING.

AppDynamics shall not subcontract any processing of the Data to a third-party subcontractor without the prior written consent of the End User. Notwithstanding this, the End User consents to AppDynamics engaging third-party subcontractors to process the Data provided that: (i) AppDynamics provides at least 7 days' notice prior to the addition or removal of any subcontractor (including details of the processing it performs or will perform and the location of the subcontractor), which may be given by posting details of such addition or removal at the following URL: <https://trust.appdynamics.com/privacy/subprocessors>;

(ii) AppDynamics imposes data protection terms on any subcontractor it appoints that protect the Data to the same standard provided for by this paragraph; and (iii) AppDynamics remains fully liable for any breach of this paragraph that is caused by its subcontractor. A list of approved subcontractors and subcontractor locations as at the date of this Agreement is at <https://trust.appdynamics.com/privacy/subprocessors>. If the End User refuses to consent to AppDynamics' appointment of a third-party subcontractor on reasonable grounds relating to the protection of the Data, then End User may terminate this Agreement by giving no less than 30 days written notice.

8. DATA SUBJECTS' RIGHTS.

AppDynamics shall provide reasonable assistance to the End User (at the End User's expense) to enable the End User to respond to any request from a data subject to exercise any of its rights under Data Protection Law (including its rights of access, correction, objection, erasure and data portability, as applicable).

9. DATA PROTECTION IMPACT ASSESSMENT.

If the End User reasonably believes that AppDynamics' processing of the Data will result in a high risk to the data protection rights and freedoms of data subjects, it shall promptly inform AppDynamics and AppDynamics shall, if requested by the End User, provide the End User with reasonable information to enable the End User to conduct a data protection impact assessment (taking into account the nature of the processing and the information available to

AppDynamics).

10. SECURITY INCIDENTS.

Upon becoming aware of a confirmed Security Incident, AppDynamics shall inform the End User without undue delay and shall provide all such timely information and cooperation as the End User may reasonably require in order for the End User to fulfil its data breach reporting obligations under (and in accordance with the timescales required by) Data Protection Law. AppDynamics shall further take such measures and actions as it considers necessary to remedy or mitigate the effects of the Security Incident and shall keep the End User informed in connection with the Security Incident.

11. DELETION OF DATA.

AppDynamics will effectively destroy all relevant Data along with any medium or document containing said Data within 14 days from receiving a written request from End User. Upon termination or expiry of this Agreement, AppDynamics will effectively destroy all Data within the time periods stated in the Licence Entitlements and Restrictions for the relevant version of the Software as set out at <https://docs.appdynamics.com/display/PAA/Product+Announcements+and+Alerts+Home>. AppDynamics shall send the End User written confirmation thereof on written request.

12. RETURN OF DATA.

AppDynamics provides End User with access to its Data in industry standard formats including CSV, XML, and JSON via REST API. End User may use the AppDynamics APIs to export its Data from the Software at any time. For more information, please see <https://docs.appdynamics.com>.

13. END USER AUDIT.

AppDynamics engages a qualified and independent third-party auditor to conduct semi-annual SOC 2 Type II audits in order to evaluate the adequacy of AppDynamics information security program. Each such audit results in the generation of an audit report (Report), which shall be AppDynamics Confidential Information. During the Licence Term, AppDynamics shall: (i) maintain SOC 2 Type II certification (or other industry-recognized successor certification); (ii) at End Users written request, not more than once per calendar year, provide End User with the then-current Report; and (iii) at End Users expense, promptly (taking into account the nature of the request and to the extent reasonably feasible from a technical perspective) comply with any request of End User for information (including any books and/or records) relating to the Software and/or Services as necessary for End User to enable it to comply with Data

Protection Law or any request from a regulator. End User agrees that any audit and inspection rights it may have under Data Protection Law shall be satisfied by the obligations in this paragraph 13.

14. FURTHER SECURITY INFORMATION.

At End Users expense, AppDynamics shall further provide detailed written responses (on a confidential basis) to all reasonable requests for information made by End User, including responses to information security and audit questionnaires, that are necessary to confirm AppDynamics compliance with this Agreement.

15. REGULATOR AUDITS.

If a regulator wishes to carry out any audit or inspection of AppDynamics or its activities under this Agreement, End User shall provide AppDynamics at least 30 days advance notice of any audit, except where the regulator has given less notice to End User or AppDynamics. AppDynamics shall provide access for any audit or investigation by regulator(s) or law enforcement agent(s) as they require.

ANNEX A TO EXHIBIT C

SUBJECT

MATTER OF PROCESSING

The extraction, collection, storage and analysis of Data generated by, and through, the use of End Users software applications.

Further information about what processing of Data each Software product can be used for can be found at www.appdynamics.com/product and in the Documentation.

DURATION OF PROCESSING

For the Licence Term of the SaaS Software licence.

NATURE AND PURPOSE OF PROCESSING

The Data will be processed by AppDynamics SaaS Software platform in order to improve the efficiency and functioning of monitored website(s), software and/or server(s) of End User.

The Software enables the End User to:

- a. Measure and track response time, load, error rate, slow rate, and stalls for application transactions.
- b. Auto-discover and map application tiers and services, and see the relationships between them.
- c. Learn "normal" performance behavior and "normal" code execution paths for application transactions and application services over time so that anomalies can be detected automatically.
- d. Follow the flow of application transactions across tiers and services (even in a highly distributed environment) to allow the identification of bottlenecks.
- e. Identify the root cause of errors in applications.
- f. View reports and obtain visibility into application performance for understanding the service levels of such applications.
- g. View operational dashboards to help information technology teams understand the health and performance of application environments.
- h. View agile release comparisons so that developers understand the business impact of application releases, for the purpose of identifying regression and learning from production deployments.

In the course of monitoring End Users website(s), software and/or server(s), AppDynamics will necessarily ingest and process the Data described above in this Annex A for the purpose of providing the Software and its functions.

TYPE OF PERSONAL DATA AND CATEGORIES OF PERSONAL DATA

Depending

on the End Users configuration of the Software the following types and categories of personal data that might be collected are:

Personal details

Included in this category are classes of data which identify the data subject and their personal characteristics.

Examples are names, addresses, job title, employer, contact details, age, sex, date of birth, physical descriptions, identifiers issued by public bodies, e.g. NI number.

Family, lifestyle and social circumstances

Included in this category are any matters relating to the family of the data subject and the data subjects lifestyle and social circumstances. Examples are details about current marriage and partnerships and marital history, details of family and other household members, habits, housing, travel details, leisure activities, membership of charitable or voluntary organisations.

Education and training details

Included in this category are any matters which relate to the education and any professional training of the data subject. Examples are academic records, qualifications, skills, training records, professional expertise, student and pupil records.

Employment details

Included in this category are any matters relating to the employment of the data subject. Examples are employment and career history, recruitment and termination details, attendance record, health and safety records, performance appraisals, training records, security records.

Financial details

Included in this category are any matters relating to the financial affairs of the data subject. Examples are income, salary, assets and investments, payments, creditworthiness, loans, benefits, grants, insurance details, pension information.

Goods or services provided

Included in this category are classes of data relating to goods and services which have been provided. Examples are details of the goods or services supplied, licences issued, agreements and contracts.

IT information

Included in this category is any information relating to an individuals use of technology or software including IP addresses, any information about the computing or mobile device a person is using, location data gathered from such devices, usernames and passwords, social media handles.

CATEGORIES OF DATA SUBJECTS

Customers and/or employees of End User depending on whether End User uses the Software to monitor customer and/or employee facing software applications.

AppDynamics Proprietary and Confidential * Revision 2019.09

Apache License
Version 2.0, January 2004

TERMS AND CONDITIONS FOR USE, REPRODUCTION, AND DISTRIBUTION

1. Definitions.

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

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<https://hg.mozilla.org/mozilla-central/file/tip/security/nss/lib/ckfw/builtins/certdata.txt>

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1.186 fastmcp 2.14.2

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1.187 anyio 4.12.1

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1.188 jsonschema 4.26.0

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1.189 websockets 16.0

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1.190 jaraco-context 6.1.0

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1.191 prometheus-client 0.24.1

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1.192 sqlite 3.51.2-r0

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1.193 pyasn1 0.6.2

1.193.1 Available under license :

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Revision 0.6.2, released 16-01-2026

- CVE-2026-23490 (GHSA-63vm-454h-vhhq): Fixed continuation octet limits in OID/RELATIVE-OID decoder (thanks to tsigouris007)
- Added support for Python 3.14
[pr #97](<https://github.com/pyasn1/pyasn1/pull/97>)
- Added SECURITY.md policy
- Fixed unit tests failing due to missing code
[issue #91](<https://github.com/pyasn1/pyasn1/issues/91>)
[pr #92](<https://github.com/pyasn1/pyasn1/pull/92>)
- Migrated to pyproject.toml packaging
[pr #90](<https://github.com/pyasn1/pyasn1/pull/90>)

Revision 0.6.1, released 10-09-2024

- Added support for Python 3.13 and updated GitHub Actions
[pr #73](<https://github.com/pyasn1/pyasn1/pull/73/>)
- Removed Python 2 support and related code
[pr #62](<https://github.com/pyasn1/pyasn1/pull/62/>)
[pr #61](<https://github.com/pyasn1/pyasn1/pull/61/>)
[pr #60](<https://github.com/pyasn1/pyasn1/pull/60/>)
-
- Improved error handling and consistency
[pr #71](<https://github.com/pyasn1/pyasn1/pull/71/>)

- [pr #70](https://github.com/pyasn1/pyasn1/pull/70/)
- Runtime deprecation of `tagMap` and `typeMap` aliases
- [pr #72](https://github.com/pyasn1/pyasn1/pull/72/)
- Fixed duplicated and missing declarations
- [pr #64](https://github.com/pyasn1/pyasn1/pull/64/)
- Cleaned documentation and comments
- [pr #63](https://github.com/pyasn1/pyasn1/pull/63/)
- Removed bdist_wheel universal flag from setup.cfg
- [pr #69](https://github.com/pyasn1/pyasn1/pull/69/)

Revision 0.6.0, released 26-03-2024

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- Added support for previously missing `RELATIVE-OID` construct
 - [pr #48](https://github.com/pyasn1/pyasn1/pull/48/)
 - Updated link to Layman's Guide
 - Now it provides a link to links to a formatted PDF version of the paper, at a stable domain (researchgate), using https
 - [pr #50](https://github.com/pyasn1/pyasn1/pull/50/)
 - Removed
 - support for EOL Python 2.7, 3.6, 3.7
 - [pr #56](https://github.com/pyasn1/pyasn1/pull/56/)

Revision 0.5.1, released 20-11-2023

-
- Added support for PyPy 3.10 and Python 3.12
 - [pr #32](https://github.com/pyasn1/pyasn1/pull/32/)
 - Updated RTD configuration to include a dummy index.rst redirecting to contents.html, ensuring compatibility with third-party documentation and search indexes.
 - [pr #47](https://github.com/pyasn1/pyasn1/pull/47/)
 - Fixed the API breakage with `decoder.decode(substrateFun=...)`.

A `substrateFun` passed to `decoder.decode()` can now be either v0.4 Non-Streaming or v0.5 Streaming. `pyasn1` will detect and handle both cases transparently.

A `substrateFun` passed to one of the new streaming decoders is still expected to be v0.5 Streaming only.

- [pr #30](https://github.com/pyasn1/pyasn1/pull/30/)
- [pr #39](https://github.com/pyasn1/pyasn1/pull/39/)

Revision 0.5.0, released 19-04-2023

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- Change `RealEncoder.supportIndefLenMode`` type to a boolean
[pr #21](https://github.com/pyasn1/pyasn1/pull/21/)
- Fix CI for py39 test environment
[pr #25](https://github.com/pyasn1/pyasn1/pull/25/)
- Replace all `snmplabs.com` links
[issue #4](https://github.com/pyasn1/pyasn1/issues/4)
- Use correct SPDX identifier for the license
[pr #16](https://github.com/pyasn1/pyasn1/pull/16)
- Re-add ```tagMap``` and ```typeMap``` module level attributes to all encoder and decoder modules. They are aliases for ```TAG_MAP``` and ```TYPE_MAP```, [issue #9](https://github.com/pyasn1/pyasn1/issues/9).
- Restore API for passing for ```tagMap``` and ```typeMap``` arguments to ```Encoder``` and ```Decoder``` classes by name and position, [issue #12](https://github.com/pyasn1/pyasn1/issues/12).
- Re-add ```tagMap``` and ```typeMap``` module level attributes to all encoder and decoder modules. They are aliases for ```TAG_MAP``` and ```TYPE_MAP```, [issue #9](https://github.com/pyasn1/pyasn1/issues/9).
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- Restore API for passing for ```tagMap``` and ```typeMap``` arguments to ```Encoder``` and ```Decoder``` classes by name and position,
- Make BER/CER/DER decoders streaming and suspendible

The goal of this change is to make the decoder yielding on input data starvation and resuming from where it stopped whenever the caller decides to try again (hopefully making sure that some more input becomes available).

This change makes it possible for the decoder to operate on streams of data (meaning that the entire DER blob might not be immediately available on input).

On top of that, the decoder yields partially reconstructed ASN.1 object on input starvation making it possible for the caller to inspect what has been decoded so far and possibly consume partial ASN.1 data.

All these new feature are natively available through ```StreamingDecoder``` class. Previously published API is implemented as a thin wrapper on top of that ensuring backward compatibility.

- Added support for Python 3.8, 3.9, 3.10, 3.11
- Removed support for EOL Pythons 2.4, 2.5, 2.6, 3.2, 3.3, 3.4, 3.5
- Added support for PyPy 3.7, 3.8, 3.9
- Modernized packaging and testing. `pyasn1` now uses ```setup.cfg```, ```pyproject.toml```, [build](https://pypi.org/project/build/), and GitHub Actions.
- PyPI package ownership for `pyasn1`` and `pyasn1-module`` has been transfered to *Christian Heimes* and *Simon Pichugin* in

[PyPI support ticket #2090](https://github.com/pypa/pypi-support/issues/2090).

- The upstream repositories for `pyasn1` and `pyasn1-modules` are now in the GitHub organization <https://github.com/pyasn1/>.

Revision 0.4.8, released 16-11-2019

- Added ability of combining `SingleValueConstraint` and `PermittedAlphabetConstraint` objects into one for proper modeling `FROM ... EXCEPT ...` ASN.1 clause.

Revision 0.4.7, released 01-09-2019

- Added `isInconsistent` property to all constructed types. This property conceptually replaces `verifySizeSpec` method to serve a more general purpose e.g. ensuring all required fields are in a good shape. By default this check invokes subtype constraints verification and is run by codecs on value de/serialisation.
- Deprecate `subtypeSpec` attributes and keyword argument. It is now recommended to pass `ValueSizeConstraint`, as well as all other constraints, to `subtypeSpec`.
- Fixed a design bug in a way of how the items assigned to constructed types are verified. Now if `Asn1Type`-based object is assigned, its compatibility is verified based on having all tags and constraint objects as the type in field definition. When a bare Python value is assigned, then field type object is cloned and initialized with the bare value (constraints verification would run at this moment).
- Added `WithComponentsConstraint` along with related `ComponentPresentConstraint` and `ComponentAbsentConstraint` classes to be used with `Sequence`/`Set` types representing `SET ... WITH COMPONENTS ...` like ASN.1 constructs.

Revision 0.4.6, released 31-07-2019

- Added previously missing `SET OF ANY` construct encoding/decoding support.
- Added `omitEmptyOptionals` option which is respected by `Sequence` and `Set` encoders. When `omitEmptyOptionals` is set to `True`, empty initialized optional components are not encoded. Default is `False`.
- New elements to `SequenceOf`/`SetOf` objects can now be added at any position - the requirement for the new elements to reside at the end of the existing ones (i.e. `s[len(s)] = 123`) is removed.
- List-like slicing support added to `SequenceOf`/`SetOf` objects.
- Removed default initializer from `SequenceOf`/`SetOf` types to ensure consistent behaviour with the rest of ASN.1 types. Before this change,

`SequenceOf`/`SetOf` instances immediately become value objects behaving like an empty list. With this change, `SequenceOf`/`SetOf` objects remain schema objects unless a component is added or `.clear()` is called.

This change can potentially cause incompatibilities with existing pyasn1 objects which assume `SequenceOf`/`SetOf` instances are value objects right upon instantiation.

The behaviour of `Sequence`/`Set` types depends on the `componentType` initializer: if on `componentType` is given, the behaviour is the same as `SequenceOf`/`SetOf` have. If `componentType` is given, but neither optional nor defaulted components are present, the created instance remains schema object, If, however, either optional or defaulted component is present, the created instance immediately becomes a value object.

- Added `.reset()` method to all constructed types to turn value object into a schema object.
- Added `PyAsn1UnicodeDecodeError`/`PyAsn1UnicodeDecodeError` exceptions to help the caller treating unicode errors happening internally to pyasn1 at the upper layers.
- Added support for subseconds CER/DER encoding edge cases in `GeneralizedTime` codec.
- Fixed 3-digit fractional seconds value CER/DER encoding of `GeneralizedTime`.
- Fixed `AnyDecoder` to accept possible `TagMap` as `asn1Spec` to make dumping raw value operational

Revision 0.4.5, released 29-12-2018

- Debug logging refactored for more efficiency when disabled and for more functionality when in use. Specifically, the global LOG object can easily be used from any function/method, not just from codec main loop as it used to be.
- More debug logging added to BER family of codecs to ease encoding problems troubleshooting.
- Copyright notice extended to the year 2019
- Fixed defaulted constructed SEQUENCE component initialization.

Revision 0.4.4, released 26-07-2018

- Fixed native encoder type map to include all ASN.1 types rather than just ambiguous ones
- Fixed crash in `.prettyPrint` of `Sequence` and `Set` occurring at

OPTIONAL components

Revision 0.4.3, released 23-05-2018

- Copyright notice extended to the year 2018
- Fixed GeneralizedTime.asDateTime to perform milliseconds conversion correctly

Revision 0.4.2, released 23-11-2017

- Fixed explicit tag splitting in chunked encoding mode at OctetString and BitString encoders

Revision 0.4.1, released 23-11-2017

- ANY DEFINED BY clause support implemented
- Encoders refactored to take either a value (as ASN.1 object) or a Python value plus ASN.1 schema
- BitString decoder optimised for better performance when running on constructed encoding
- Constructed types' .getComponentBy*() methods accept the `default` parameter to return instead if schema object is to be returned
- Constructed types' .getComponentBy*() methods accept the `instantiate` parameter to disable automatic inner component instantiation
- The ASN.1 types' `\_\_repr\_\_` implementation reworked for better readability at the cost of not being `eval`-compliant
- Most ASN.1 types' `\_\_str\_\_` magic methods (except for OctetString and character types) reworked to call `.prettyPrint()` rather than `.prettyPrint` calling `\_\_str\_\_` as it was before. The intention is to eventually deprecate `.prettyPrint()` in favor of `str()`. The other related change is that `str()` of enumerations and boolean types will return string label instead of number.
- Fixed Choice.clear() to fully reset internal state of the object
- Sphinx documentation rearranged, simplified and reworded
- The `isValue` singleton is now the only way to indicate ASN.1 schema as opposed to ASN.1 schema instance. The legacy `None` initializer support has been removed.
- Changed `Null` object initialization behaviour: previous default value `("")` is not set anymore. Thus `Null()` call produces a ASN.1 schema object, while `Null("")` - value object.
- Migrated all docs and references from SourceForge
- Imports PEP8'ed
- Fixed ASN.1 encoder not to omit empty substrate produced for inner

component if the inner component belongs to the simple class (as opposed to constructed class)

- Fixed CER/DER encoders to respect tagged CHOICE when ordering SET components
- Fixed ASN.1 types not to interfere with the Pickle protocol
- Fixed Sequence/SequenceOf types decoding heuristics in schema-less decoding mode

Revision 0.3.7, released 04-10-2017

- Fixed ASN.1 time types pickling/deepcopy'ing

Revision 0.3.6, released 21-09-2017

- End-of-octets encoding optimized at ASN.1 encoders
- The `__getitem__`/`__setitem__` behavior of Set/Sequence and SetOf/SequenceOf objects aligned with the canonical Mapping and Sequence protocols in part
- Fixed crash in ASN.1 encoder when encoding an explicitly tagged component of a Sequence

Revision 0.3.5, released 16-09-2017

- Codecs signatures unified and pass the options kwargs through the call chain
- Explicit tag encoding optimized to avoid unnecessary copying
- End-of-octets sentinel encoding optimized
- Refactored ASN.1 codecs properties to silently enforce proper length and chunk size encoding modes
- Fixed DER encoder to always produce primitive encoding
- Fixed crash at SequenceOf native decoder
- Fixed `Real.prettyPrint()` to fail gracefully on overflow
- Fixed a couple of crashes when debug mode is enabled

Revision 0.3.4, released 07-09-2017

- Fixed Native encoder to handle SEQUENCE/SET objects without the `componentType` property
- Added missing component-less SEQUENCE/SET objects dict duck-typing support
- Fixed unnecessary duplicate tags detection at `NamesType.tagMap`
- Fixed crash at SEQUENCE and SEQUENCE OF CER encoder when running in schemaless mode
- Fixed Character types instantiation from `OctetString` type -- double unicode decoding may have scrambled

the data

Revision 0.3.3, released 27-08-2017

- Improved ASN.1 types instantiation performance
- Improved BER/CER/DER decoder performance by not unconditionally casting substrate into str/bytes.
- Fixed exponential index size growth bug when building ambiguous NamedTypes tree
- Fixed constructed types decoding failure at BER codec if running in schema-less mode
- Fixed crash on prettyPrint'ing a SEQUENCE with no defined components
- Fixed SetOf ordering at CER/DER encoder
- Fixed crash on conditional binascii module import
- Fix to TagSet hash value build

Revision 0.3.2, released 04-08-2017

- Fixed SequenceOf/SetOf types initialization syntax to remain backward compatible with pyasn1 0.2.*
- Rectified thread safety issues by moving lazy, run-time computation into object initializer.
- Fixed .isValue property to return True for empty SetOf/SequenceOf objects
- Fixed GeneralizedTime/UTCTime CER/DER codecs to actually get invoked
- Fixed DER/CER encoders handling optional SEQUENCE/SET fields containing nested SEQUENCE/SET with optional fields.
- Fixed crash in SequenceOf/SetOf pretty printing and decoding (in some cases)
- Fixed documentation markup issues.

Revision 0.3.1, released 26-07-2017

- ASN.1 types __init__(), .clone() and .subtype() signatures refactored into keyword arguments to simplify their signatures.
- ASN.1 types initialization refactored to minimize the use of relatively expensive isNoValue() call
- Lazily pre-populate list of values of Sequence/Set/Choice types
- NamedTypes comparison made more efficient
- More efficient constraints computation and code clean up
- The __getitem__() implementation of some ASN.1 types & tag object refactored for better performance
- BER/CER/DER value encoders refactored to produce either tuple of bytes or octet-stream depending on what is more optimal

- Reduced the frequency of expensive `isinstance()` calls
- Tag-related classes optimized, refactored into properties and documented.
- The NamedValues implementation refactored to mimic Python dict, its use in ASN.1 types refactored into properties and better documented.
WARNING: this change introduces a deviation from original API.
- NamedType family of classes overhauled, optimized and documented.
- The `componentType` attribute of constructed ASN.1 types turned read-only on instances.
- Sequence/Set DER/CER/DER decoder optimized to skip the case of reordered components handling when not necessary.
- Tags and constraints-related getter methods refactored into read-only instance attributes.
- The `.hasValue()` method refactored into `.isValue` property. All ASN.1 objects now support them, not just scalars.
- The `Real.{isInfinity, isPlusInfinity, isMinusInfinity}` methods refactored into properties and renamed into `IsInf`, `IsPlusInf` and `isMinusInf`
- The end-of-octets type refactored to ensure it is a singleton.

Codecs

changed to rely on that for better performance.

- Codecs lookup made more efficient at BER/CER/DER decoder main loop by assigning `typeId` to every ASN.1 type, not just ambiguous ones.
- The `.getComponent*()` methods of constructed ASN.1 types changed to lazily instantiate underlying type rather than return `None`.
This should simplify its API as initialization like `X[0][1] = 2` becomes possible.

WARNING: this change introduces a deviation from the original API.

- The `.setComponent*()` methods of SetOf/SequenceOf types changed not to allow uninitialized "holes" inside the sequences of their components.
They now behave similarly to Python lists.

WARNING: this change introduces a deviation from the original API.

- Default and optional components en/decoding of Constructed type refactored towards better efficiency and more control.
- OctetsString and Any decoder optimized to avoid creating ASN.1 objects for chunks of substrate. Instead they now join substrate chunks together and create ASN.1 object from it just once.
- The GeneralizedTime and UTCTime types now support to/from Python datetime object conversion.
- Unit tests added for the `compat` sub-package.
- Fixed BitString named bits initialization bug.
- Fixed non-functional tag cache (when running Python 2) at DER decoder.
- Fixed chunked encoding restriction on DER encoder.
- Fixed SET components ordering at DER encoder.
- Fixed BIT STRING & OCTET STRING encoding to be always non-chunked (e.g. primitive) at DER encoder
- Fixed `compat.integer.from_bytes()` behaviour on empty input.

Revision 0.2.3, released 25-02-2017

- Improved SEQUENCE/SET/CHOICE decoding performance by maintaining a single shared NamedType object for all instances of SEQUENCE/SET object.
- Improved INTEGER encoding/decoding by switching to Python's built-in integer serialisation functions.
- Improved BitString performance by rebasing it onto Python int type and leveraging fast Integer serialisation functions.
- BitString type usability improved in many ways: for example bitshifting and numeric operation on BitString is now possible.
- Minor ObjectIdentifier type performance optimization.
- ASN.1 character types refactored to keep unicode contents internally (rather than serialised octet stream) and duck-type it directly.
- ASN.1 OctetString initialized from a Python object performs bytes() on it when running on Python 3 (used to do str() which is probably less logical).
- Missing support for NoValue.__sizeof__ added.
- Added checks to make sure SEQUENCE/SET components being assigned match the prototypes.
- Setter methods for constructed types consistently accept matchTags and matchConstraints flags to control the strictness of inner components compatibility verification. Previously, these checks were tied to verifyConstraints flag, now they are all independent.
- General documentation improvements here and there.
- Fix to __reversed__() magic to make it returning an iterator.
- Test suite simplified and unified.
- The __all__ variable added to most of the Python modules.
- The "test" directory renamed into "tests" not to collide with the "test" module.

Revision 0.2.2, released 07-02-2017

- FIX TO A SECURITY WEAKNESS: define length only decoders could have successfully processed indefinite length serialisation.
- FIX TO A SECURITY WEAKNESS: canonical decoders (CER/DER) may have successfully consumed non-canonical variations of (otherwise valid) serialisation.
- Broken Enumerated subtyping fixed.

Revision 0.2.1, released 05-02-2017

- FIX TO A SECURITY WEAKNESS: BER decoder improperly cached long tags.
- New "native" codec implemented to transform pyasn1 types to Python built-in types and back.
- Switched to new-style classes.

- Sphinx documentation added.

- BitString improvements:

- * simple string of binary digits is now supported

- as initializer

- * default str() yields string of binary digits (used to yield str(tuple()))

- * binValue and hexValue initializers added

- * .asNumbers(), .asOctets() and asInteger() representation added

- Components of constructed ASN.1 types can now be populated with uninitialized ASN.1 objects by assigning either noValue sentinel or setupComponent() function return in addition to now-legacy None sentinel. This should improve code readability.

- NoValue class improved to become a singleton and catch more kinds of access to it.

- Compatibility wrappers str2octs() and oct2strs() fixed to run over iso-8859-1 encoding.

- Integer changed to emit Real instance if division produces a float.

- True division operation now supported by Integer type.

- The __contains__(), __reverse__() methods implemented for container types

- Iterator protocol support implemented for all container types.

Warning, warning, warning: this change may potentially affect backward compatibility when:

- * user class overrides __getitem__() without overriding __iter__()

- * when user code iterates over SEQUENCE object to get its components (now keys will be yielded)

- Almost complete Python list and dict protocols added to SequenceOf/SetOf and Sequence/Set respectively

- Fix to divmod operation implementation in Integer type.

- Fix to IntegerDecoder's precomputed value map on Python 3.

- Fix to base ASN.1 types to run in "unicode_literals" mode.

- Fix to composite constraints "+" operands ordering (AbstractConstraintSet.__radd__)

- Fix to constraints merge in .subtype() -- on merge existing constraints are expanded to accommodate new constraints, not the other way round. When existing constraints are wrapped in ConstraintsIntersection composite, additional constraints being added on subtyping effectively further narrow the set of allowed values, which aligns well with the notion of subtyping.

- Fix to NamedTypes methods to handle .getTagMap() returning None

- Fix

- to Set/Sequence.setDefaultComponents() to return self

- Copyright notice added to non-trivial source code files.

- Author's email changed, copyright extended to 2017

Revision 0.1.9, released 28-09-2015

- Wheel distribution format now supported.
- Extensions added to text files, CVS attic flushed.
- Fix to make uninitialized pyasn1 objects failing properly on hash().
- Fix to ObjectIdentifier initialization from unicode string.
- Fix to CER/DER Boolean decoder - fail on non single-octet payload.

Revision 0.1.8, released 22-06-2015

- ObjectIdentifier codec fixed to work properly with arc 0 and arc 2 values.
- Explicit limit on ObjectIdentifier arc value size removed.
- Unicode initializer support added to OctetString type and derivatives.
- New prettyPrintType() abstract method implemented to base pyasn1 types to facilitate encoding errors analysis.
- The __str__() method implemented to Tag, TagSet and TagMap classes to ease encoding errors troubleshooting.
- easing encoding errors
- Fix to SEQUENCE and SET types to give them their private componentTypes collection (which is a NamedTypes object) so that they won't collide in a MT execution environment.
- Missing T61String,ISO646String character types and ObjectDescriptor useful type added.
- Distribute is gone, switched to setuptools completely.
- Missing NamedValues.__repr__() added.
- The base.NoValue() class, that indicates uninitialized ASN.1 object, made public.
- The base.NoValue() class instances now support __repr__() what makes possible to perform repr() on uninitialized pyasn1 types objects.
- When comparing ASN.1 types, by-tag and/or by-constraints matching can now be performed with the isSuperTypeOf()/isSameTypeWith() optional flags.
- Constructed types now verify their consistency by invoking isSameTypeWith(matchTags=True, matchConstraints=False) and isSuperTypeOf(matchTags=False, matchConstraints=True) for each of their components rather than isSuperTypeOf() as it used to be. Constraints check could be enforced to isSameTypeWith() with the strictConstraints=True constructed classes attribute.
- Constructed types can now be initialized with new .setComponents() method which accepts both var-args and keyword-args. Default repr() modified to reflect this change.
- NamedTypes() and NamedValues() made comparable.
- Test coverage extended to cover pyasn1 types __repr__() function.
- The abs(Integer()) & abs(Real()) operation now returns respective pyasn1 type, not a Python type.
- More Python magic methods implementations added to Integer & Real classes (e.g. __pos__, __neg__, __round__, __floor__, __ceil__, __trunc__)

- The Integer.__invert__ Python magic method implemented.
 - The OctetString.__int__() and .__float__() magic methods implemented.
 - Handle the case of null writer at Debug printer.
 - BitString encoder/decoder performance improved.
 - Built-in debugging is now based on Python logging module.
 - Fix to NamedType.__repr__() to work properly.
 - Fixes to __repr__() implementation of many built-in ASN.1 types to take into account all of their initializers such as tagSet, subtypeSpec etc.
 - String typed float initializer to REAL type now supported.
 - Float typed mantissa initializer to REAL type for base 2 added.
 - Encoding bases 8 and 16 support for REAL type binary encoder added.
 - More strict CER/DER encoders added for GeneralizedTime and UTCTime types.
 - Asn1Item.hasValue() added to easily distinguish initialized ASN.1 objects from uninitialized ones (e.g. pure types).
 - Fix to REAL type binary decoder to handle different bases and scale factor.
 - Fix to TagSet.repr() to include [obsolete] baseTag information.
 - Fix to broken REAL type decoding handling.
 - Fix to BitString and OctetString decoders dealing with constructed encoding -- it used to be possible to embed other types in substrate.
 - DER codec hardened not to tolerate indefinite length encoding/decoding.
 - Fix to end-of-octest sentinel handling:
- + require strict two-zeros sentinel encoding
 - + recognize EOO sentinel only when explicitly requested by caller of the decoder via allowEoo=True parameter (warning: API change)

Revision 0.1.7

- License updated to vanilla BSD 2-Clause to ease package use (<https://opensource.org/licenses/BSD-2-Clause>).
- Test suite made discoverable by unittest/unittest2 discovery feature.
- Fix to decoder working on indefinite length substrate -- end-of-octets marker is now detected by both tag and value. Otherwise zero values may interfere with end-of-octets marker.
- Fix to decoder to fail in cases where tagFormat indicates inappropriate format for the type (e.g. BOOLEAN is always PRIMITIVE, SET is always CONSTRUCTED and OCTET STRING is either of the two)
- Fix to REAL type encoder to force primitive encoding form encoding.
- Fix to CHOICE decoder to handle explicitly tagged, indefinite length mode encoding
-
- Fix to REAL type decoder to handle negative REAL values correctly. Test case added.

Revision 0.1.6

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- The compact (valueless) way of encoding zero INTEGERS introduced in 0.1.5 seems to fail miserably as the world is filled with broken BER decoders. So we had to back off the *encoder* for a while. There's still the IntegerEncoder.supportCompactZero flag which enables compact encoding form whenever it evaluates to True.
 - Report package version on debugging code initialization.

Revision 0.1.5

- Documentation updated and split into chapters to better match web-site contents.
- Make prettyPrint() working for non-initialized pyasn1 data objects. It used to throw an exception.
- Fix to encoder to produce empty-payload INTEGER values for zeros
- Fix to decoder to support empty-payload INTEGER and REAL values
- Fix to unit test suites imports to be able to run each from their current directory

Revision 0.1.4

- Built-in codec debugging facility added
- Added some more checks to ObjectIdentifier BER encoder catching possible 2^8 overflow condition by two leading sub-OIDs
- Implementations overriding the AbstractDecoder.valueDecoder method changed to return the rest of substrate behind the item being processed rather than the unprocessed substrate within the item (which is usually empty).
- Decoder's recursiveFlag feature generalized as a user callback function which is passed an uninitialized object recovered from substrate and its uninterpreted payload.
- Catch inappropriate substrate type passed to decoder.
- Expose tagMap/typeMap/Decoder objects at DER decoder to uniform API.
- Obsolete __init__.MajorVersionId replaced with __init__.__version__ which is now in-sync with distutils.
- Package classifiers updated.
- The __init__.py's made non-empty (rumors are that they may be optimized out by package managers).
- Bail out gracefully whenever Python version is older than 2.4.
- Fix to Real codec exponent encoding (should be in 2's complement form), some more test cases added.
- Fix in Boolean truth testing built-in methods
- Fix to substrate underrun error handling at ObjectIdentifier BER decoder

- Fix to BER Boolean decoder that allows other pre-computed values besides 0 and 1
- Fix to leading 0x80 octet handling in DER/CER/DER ObjectIdentifier decoder.
See <https://www.esat.kuleuven.be/cosic/publications/article-1432.pdf>

Revision 0.1.3

- Include class name into asn1 value constraint violation exception.
- Fix to OctetString.prettyOut() method that loses leading zero when building hex string.

Revision 0.1.2

- Fix to __long__() to actually return longs on py2k
- Fix to OctetString.__str__() workings of a non-initialized object.
- Fix to quote initializer of OctetString.__repr__()
- Minor fix towards ObjectIdentifier.prettyIn() reliability
- ObjectIdentifier.__str__() is aliased to prettyPrint()
- Explicit repr() calls replaced with '%r'

Revision 0.1.1

- Hex/bin string initializer to OctetString object reworked (in a backward-incompatible manner)
- Fixed float() infinity compatibility issue (affects 2.5 and earlier)
- Fixed a bug/typo at Boolean CER encoder.
- Major overhaul for Python 2.4 -- 3.2 compatibility:
 - + get rid of old-style types
 - + drop string module usage
 - + switch to rich comparison
 - + drop explicit long integer type use
 - + map()/filter() replaced with list comprehension
 - + apply() replaced with '*/*/*args
 - + switched to use 'key' sort() callback function
 - + support both __nonzero__() and __bool__() methods
 - + modified not to use py3k-incompatible exception syntax
 - + getslice() operator fully replaced with getitem()
 - + dictionary operations made 2K/3K compatible
 - + base type for encoding substrate and OctetString-based types is now 'bytes' when running py3k and 'str' otherwise
 - + OctetString and derivatives now unicode compliant.
 - + OctetString now supports two python-neutral getters: asOcts() & asInts()
 - + print OctetString content in hex whenever it is not printable otherwise

- + in test suite, implicit relative import replaced with the absolute one
- + in test suite, string constants replaced with numerics

Revision 0.0.13

- Fix to base10 normalization function that loops on `univ.Real(0)`

Revision 0.0.13b

- ASN.1 Real type is now supported properly.
- Objects of Constructed types now support `__setitem__()`
- Set/Sequence objects can now be addressed by their field names (string index) and position (integer index).
- Typo fix to `ber.SetDecoder` code that prevented with schema decoding operation.
- Fix to explicitly tagged items decoding support.
- Fix to `OctetString.prettyPrint()` to better handle non-printable content.
- Fix to `repr()` workings of Choice objects.

Revision 0.0.13a

- Major codec re-design.
- Documentation significantly improved.
- ASN.1 Any type is now supported.
- All example ASN.1 modules moved to separate `pyasn1-modules` package.
- Fix to initial sub-OID overflow condition detection an encoder.
- BitString initialization value verification improved.
- The `Set/Sequence.getNameByPosition()` method implemented.
- Fix to proper behaviour of `PermittedAlphabetConstraint` object.
- Fix to improper Boolean substrate handling at CER/DER decoders.
- Changes towards performance improvement:
 - + all `dict.has_key()` & `dict.get()` invocations replaced with modern syntax (this breaks compatibility with Python 2.1 and older).
 - + tag and tagset caches introduced to decoder
 - + decoder code improved to prevent unnecessary `pyasn1` objects creation
 - + allow disabling components verification when setting components to structured types, this is used by decoder whilst running with schema mode.
 - + BER decoder for integer values now looks up a small set of pre-computed substrate values to save on decoding.
 - + a few pre-computed values configured to `ObjectIdentifier` BER encoder.
 - + `ChoiceDecoder` split-off `SequenceOf` one to save on unnecessary checks.

- + replace slow `hasattr()/getattr()` calls with `isinstance()` introspection.
- + track the number of initialized components of Constructed types to save on default/optional components initialization.
- + added a shortcut `ObjectIdentifier.asTuple()` to be used instead of `__getitem__()` in hotspots.
- + use `Tag.asTuple()` and pure integers at tag encoder.
- + introduce and use in decoder the `baseTagSet` attribute of the built-in ASN.1 types.

Revision 0.0.12a

- The individual tag/length/value processing methods of `encoder.AbstractItemEncoder` renamed (leading underscore stripped) to promote overloading in cases where partial substrate processing is required.
- The `ocsp.py`, `ldap.py` example scripts added.
- Fix to `univ.ObjectIdentifier` input value handler to disallow negative sub-IDs.

Revision 0.0.11a

- Decoder can now treat values of unknown types as opaque `OctetString`.
- Fix to `Set/SetOf` type decoder to handle uninitialized scalar `SetOf` components correctly.

Revision 0.0.10a

- API versioning mechanics retired (`pyasn1.v1` -> `pyasn1`) what makes it possible to zip-import `pyasn1` sources (used by `egg` and `py2exe`).

Revision 0.0.9a

- Allow any non-zero values in Boolean type BER decoder, as it's in accordance with the standard.

Revision 0.0.8a

- `Integer.__index__()` now supported (for Python 2.5+).
- Fix to empty value encoding in `BitString` encoder, test case added.
- Fix to `SequenceOf` decoder that prevents it skipping possible Choice typed inner component.
- `Choice.getName()` method added for getting currently set component

name.

- OctetsString.prettyPrint() does a single str() against its value eliminating an extra quotes.

Revision 0.0.7a

- Large tags (>31) now supported by codecs.
- Fix to encoder to properly handle explicitly tagged untagged items.
- All possible value lengths (up to 256^{126}) now supported by encoders.
- Fix to Tag class constructor to prevent negative IDs.

Revision 0.0.6a

- Make use of setuptools.
- Constraints derivation verification (isSuperTypeOf()/isSubTypeOf()) fixed.
- Fix to constraints comparison logic -- can't cmp() hash values as it may cause false positives due to hash conflicts.

Revision 0.0.5a

- Integer BER codec reworked fixing negative values encoding bug.
- clone() and subtype() methods of Constructed ASN.1 classes now accept optional cloneValueFlag flag which controls original value inheritance. The default is *not* to inherit original value for performance reasons (this may affect backward compatibility). Performance penalty may be huge on deeply nested Constructed objects re-creation.
- Base ASN.1 types (pyasn1.type.univ.*) do not have default values anymore. They remain uninitialized acting as ASN.1 types. In this model, initialized ASN.1 types represent either types with default value installed or a type instance.
- Decoders' prototypes are now class instances rather than classes. This is to simplify initial value installation to decoder's prototype value.
- Bugfix to BitString BER decoder (trailing bits not regarded).
- Bugfix to Constraints use as mapping keys.
- Bugfix to Integer & BitString clone() methods
- Bugfix to the way to distinguish Set from SetOf at CER/DER SetOfEncoder
- Adjustments to make it running on Python 1.5.
- In tests, substrate constants converted from hex escaped literals into octals to overcome indefinite hex width issue occurring in young Python.
- Minor performance optimization of TagSet.isSuperTagSetOf() method
- examples/sshkey.py added

Revision 0.0.4a

- * Asn1Type.prettyPrinter() -> *.prettyPrint()

Revision 0.0.3a

- * Simple ASN1 objects now hash to their Python value and don't depend upon tag/constraints/etc.
- * prettyIn & prettyOut methods of SimpleAsn1Object become public
- * many syntax fixes

Revision 0.0.2a

- * ConstraintsIntersection.isSuperTypeOf() and ConstraintsIntersection.hasConstraint() implemented
- * Bugfix to NamedValues initialization code
- * +/- operators added to NamedValues objects
- * Integer.__abs__() & Integer.subtype() added
- * ObjectIdentifier.prettyOut() fixes
- * Allow subclass components at SequenceAndSetBase
- * AbstractConstraint.__cmp__() dropped
- * error.Asn1Error replaced with error.PyAsn1Error

Revision 0.0.1a

- * Initial public alpha release

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- * /pyasn1-0-6-2-tar-gz/pyasn1-0.6.2/CHANGES.rst

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Found
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1.194 starlette 0.52.1

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1.196 py3-parsing 3.2.5-r0

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1.197 xz 5.8.2-r0

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1.198 xz-libs 5.8.2-r0

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=====

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1.199 pycparser 3.0

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The list is sorted in increasing alphabetic order by first name.

- * Andreas Klckner
- * Andrew de los Reyes
- * Benoît Pradelle
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- * Even Wiik Thomassen
- * Greg Smith
- * Jaroslav Franek
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necessary. Here a sample; alter
the names:

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<signature of Ty Coon>, 1 April 1989
Ty Coon, President of Vice

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1.206 alpine-release 3.23.3-r0

1.206.1 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"
buildid="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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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 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(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*/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 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)

```

```

} 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); \
} while (/*CONSTCOND*/0)

```

```

(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; \
    QUEUEDEBDEBUG_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); \
    QUEUEDEBDEBUG_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; \
    } \
} while (/*CONSTCOND*/0)

```

```

    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 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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```

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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@ptrcnll.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
"
```

1.207 alpine-base 3.23.3-r0

1.207.1 Available under license :

pkgname=alpine-base
pkgver=3.23.3
pkgrel=0
pkgdesc="Meta package for minimal alpine base"
url="https://alpinelinux.org"
arch="noarch"
license="MIT"
(The MIT License)

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1.208 openssl 3.5.5-r0

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1.209 mcp 1.26.0

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1.210 pyjwt 2.11.0

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Contributors

The following people have contributed to the development of Rich:

<!-- Add your name below, sort alphabetically by surname. Link to GitHub profile / your home page. -->

- [Patrick Arminio](https://github.com/patrick91)
- [Gregory Beauregard](https://github.com/GBeauregard/pyffstream)
- [Artur Borecki](https://github.com/pufereq)
- [Pedro Aaron](https://github.com/paaaron)
- [Robin Bowes](https://github.com/yo61)
- [Dennis Brakhane](https://github.com/brakhane)
- [Darren Burns](https://github.com/darrenburns)
- [Ceyda Cinarel](https://github.com/cceyda)

- [Jim Crist-Harif](https://github.com/jcrist)
- [Ed Davis](https://github.com/davised)
- [Pete Davison](https://github.com/pd93)
- [James Estevez](https://github.com/jstvz)
- [Jonathan Eunice](https://github.com/jonathan-3play)
- [Aryaz Eghbali](https://github.com/AryazE)
- [Oleksis Fraga](https://github.com/oleksis)
- [Andy Gimblett](https://github.com/gimbo)
- [Kai Giokas](https://github.com/kaisforza)
- [Tom Gooding](https://github.com/TomJGooding)
-
- [Micha Grny](https://github.com/mgorny)
- [Nok Lam Chan](https://github.com/noklam)
- [Leron Gray](https://github.com/daddycocoaman)
- [Andre Hora](https://github.com/andrehora)
- [Kenneth Hoste](https://github.com/boegel)
- [Lanqing Huang](https://github.com/lqhuang)
- [Finn Hughes](https://github.com/finnhughes)
- [Logan Hunt](https://github.com/dosisod)
- [JP Hutchins](https://github.com/JPhutchins)
- [Ionite](https://github.com/ionite34)
- [Daniel Jkel](https://github.com/kigstn)
- [Josh Karpel](https://github.com/JoshKarpel)
- [Pouya Karazmayer](https://github.com/AttackThwarter)
- [Jan Katins](https://github.com/jankatins)
- [Hugo van Kemenade](https://github.com/hugovk)
- [Andrew Kettmann](https://github.com/akettmann)
- [Alexander Krasnikov](https://github.com/askras)
- [Martin Larralde](https://github.com/althonos)
- [Hedy Li](https://github.com/hedythedev)
- [Henry Mai](https://github.com/tanducmai)
- [Luka Mamukashvili](https://github.com/UltraStudioLTD)
-
- [Alexander Mancevice](https://github.com/amancevice)
- [Will McGugan](https://github.com/willmcgugan)
- [Paul McGuire](https://github.com/ptmcg)
- [Antony Milne](https://github.com/AntonyMilneQB)
- [Michael Milton](https://github.com/multimeric)
- [Martina Oefelein](https://github.com/oefe)
- [Joel Ostblom](https://github.com/joelostblom)
- [Nathan Page](https://github.com/nathanrpage97)
- [Dave Pearson](https://github.com/davep/)
- [Avi Perl](https://github.com/avi-perl)
- [Laurent Peuch](https://github.com/psycojoker)
- [Ronny Pfannschmidt](https://github.com/RonnyPfannschmidt/)
- [Olivier Philippon](https://github.com/DrBenton)
- [Kylian Point](https://github.com/p0lux)
- [Kyle Pollina](https://github.com/kylepollina)

- [Sebastin Ramrez](https://github.com/tiangolo)
- [Grant Ramsay](https://github.com/seapagan)
- [Felipe Guedes](https://github.com/guedesfelipe)
- [Min RK](https://github.com/minrk)
- [Clment Robert](https://github.com/neutrinoceros)
- [Brian Rutledge](https://github.com/bhrutledge)
-
[Tushar Sadhwani](https://github.com/tusharsadhwani)
- [Luca Salvarani](https://github.com/LukeSavefrogs)
- [Paul Sanders](https://github.com/sanders41)
- [Louis Sautier](https://github.com/sbraz)
- [Tim Savage](https://github.com/timsavage)
- [Ryan Sharafuddin](https://github.com/RyanSharafuddin)
- [Anthony Shaw](https://github.com/tonybaloney)
- [Damian Shaw](https://github.com/notatallshaw)
- [Nicolas Simonds](https://github.com/0xDEC0DE)
- [Aaron Stephens](https://github.com/aaronst)
- [Karolina Surma](https://github.com/befeleme)
- [Gabriele N. Tornetta](https://github.com/p403n1x87)
- [Nils Vu](https://github.com/nilsvu)
- [Arian Mollik Wasi](https://github.com/wasi-master)
- [Jan van Wijk](https://github.com/jdvanwijk)
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- [za](https://github.com/za)
- [Motahhar Mokfi](https://github.com/motahhar)
- [Tomer Shalev](https://github.com/tomers)
- [Serkan UYSAL](https://github.com/uysalserkan)
-
[Tomer Yogev](https://github.com/TomerYogev)
- [Zhe Huang](https://github.com/onlyacat)
- [Adrian Zuber](https://github.com/xadrianzetx)
- [Ke Sun](https://github.com/ksun212)
- [Qiming Xu](https://github.com/xqm32)
- [James Addison](https://github.com/jayaddison)
- [Pierro](https://github.com/xpierroz)
- [Bernhard Wagner](https://github.com/bwagner)
- [Aaron Beaudoin](https://github.com/AaronBeaudoin)
- [Sam Woodward](https://github.com/PyWoody)
- [L. Yeung](https://github.com/lewis-yeung)
- [chthollyphile](https://github.com/chthollyphile)
- [Jonathan Helmus](https://github.com/jjhelmus)
- [Brandon Capener](https://github.com/bcapener)
- [Alex Zheng](https://github.com/alexzheng111)
- [Sebastian Speitel](https://github.com/SebastianSpeitel)
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