1 Introduction

Prior to the 2015 release of L\TeX, essentially no changes had been made to the \LaTeX{} format code for some years, with all improvements being instead added to the package fixltx2e.

While this worked at a technical level it meant that you had to explicitly opt-in to bug fixes and improvements, and the vast majority of documents did not benefit.

As described in \LaTeX{} News 22, a new policy is being implemented in which improvements will now be added to the format by default, and this \texttt{latexrelease} package may be used to ensure stability where needed, either by making a new format use an older definition of some commands, or conversely may be used to supply the new definitions for use with an old format.

The basic use is:

\begin{verbatim}
\RequirePackage[2015/01/01]{latexrelease}
\documentclass{article}
\end{verbatim}

After such a declaration the document will use definitions current in the January 2015 \LaTeX{}, whether the actual format being used is older, or newer than that date. In the former case a copy of \texttt{latexrelease.sty} would need to be made available for use with the older format. This may be used, for example, to share a document between co-workers using different \LaTeX{} releases, or to protect a document from being affected by system updates. As well as the definitions within the format itself, individual packages may use the commands defined here to adjust their definitions to the specified date as described below.

Note that the \texttt{latexrelease} package is intended for use at the start of a \texttt{document}. Package and class code should not include this package as loading a package should not normally globally reset the effective version of \LaTeX{} that is in force, so affecting all other packages used in the document.

\footnote{This file has version number v1.0k, last revised 2018/05/08.}
The bulk of this package, after some initial setup and option handling consists of a series of \IncludeInRelease commands which have been extracted from the main source files of the \LaTeX format. These contain the old and new versions of any commands with modified definitions.

2 Package Options

- \texttt{yyyy/mm/dd} or \texttt{yyyy-nn-dd} The package accepts any possible \LaTeX format date as argument, although dates in the future for which the current release of this package has no information will generate a warning. Dates earlier than 2015 will work but will roll back to some point in 2015 when the method was introduced. \IncludeInRelease command is defined. The \texttt{\requestedLaTeXdate} is set to the normalized date argument so that package rollback defaults to the specified date.

- \texttt{current} This is the default behaviour, it does not change the effective date of the format but does ensure that the \IncludeInRelease command is defined, the \texttt{\requestedLaTeXdate} is reset to 0 so that package rollback does not use the implicit date. \IncludeInRelease command is defined. The \texttt{\requestedLaTeXdate} macro is reset to 0 so that package rollback does not use the implicit date.

- \texttt{latest} sets the effective date of the format to the release date of this file, so in an older format applies all patches currently available. \IncludeInRelease command is defined. The \texttt{\requestedLaTeXdate} macro is reset to 0 so that package rollback does not use the implicit date.

3 Release Specific Code

The \IncludeInRelease mechanism allows the kernel developer to associate code with a specific date to choose different versions of definitions depending on the date specified as an option to the \texttt{latexrelease} package. It is also available for use by package authors (or even in a document if necessary).

```
\IncludeInRelease{\langle code-date \rangle}{\langle format-date \rangle}{\langle label \rangle}{\langle message \rangle}{\langle code \rangle}EndIncludeInRelease
```

- \texttt{\langle code-date \rangle} This date is associated with the \texttt{\langle code \rangle} argument and will be compared to the requested date in the option to the \texttt{latexrelease}.

- \texttt{\langle format-date \rangle} This optional argument can be used to specify a format date with the code in addition to the mandatory \texttt{\langle code-date \rangle} argument. This can be useful for package developers as described below.

- \texttt{\langle label \rangle} The \texttt{\langle label \rangle} argument is an identifier (string) that within a given package must be a unique label for each related set of optional definitions. Per package at most one code block from all the \IncludeInRelease declarations with the same label will be executed.

- \texttt{\langle message \rangle} The \texttt{\langle message \rangle} is an informative string that is used in messages. It has no other function.
\textit{code}: Any \TeX\ code after the \texttt{\IncludeInRelease} arguments up until the and the following \texttt{\EndIncludeInRelease} is to be conditionally included depending on the date of the format as described below.

The \texttt{\IncludeInRelease} declarations with a given label should be in reverse chronological order in the file. The one chosen will depend on this order, the effective format version and the date options, as described below.

If your package \texttt{mypackage} defines a \texttt{\widget} command but has one definition using the features available in the 2015 \LaTeX\ release, and a different definition is required for older formats then you can use:

\begin{verbatim}
\IncludeInRelease{2015/01/01}{\widget}{Widget Definition}
def\widget{new version}\
\EndIncludeInRelease
\IncludeInRelease{0000/00/00}{\widget}{Widget Definition}
def\widget{old version}\
\EndIncludeInRelease
\end{verbatim}

If a document using this package is used with a format with effective release date of 2015/01/01 or later the new code will be used, otherwise the old code will be used. Note the \textit{effective release date} might be the original \LaTeX\ release date as shown at the start of every \LaTeX\ job, or it may be set by the \texttt{latexrelease} package, so for example a document author who wants to ensure the new version is used could use

\begin{verbatim}
\RequirePackage[2015/01/01]{latexrelease}
documentclass{article}
\usepackage{mypackage}
\end{verbatim}

If the document is used with a \LaTeX\ format from 2014 or before, then latexrelease will not have been part of the original distribution, but it may be obtained from a later \LaTeX\ release or from CTAN and distributed with the document, it will make an older \LaTeX\ release act essentially like the 2015 release.

\subsection{Intermediate Package Releases}

The above example works well for testing against the latex format but is not always ideal for controlling code by the release date of the \textit{package}. Suppose \LaTeX\ is not updated but in March you update the \texttt{mypackage} package and modify the definition of \texttt{\widget}. You could code the package as:

\begin{verbatim}
\IncludeInRelease{2015/03/01}{\widget}{Widget Definition}
def\widget{even newer improved March version}\
\EndIncludeInRelease
\IncludeInRelease{2015/01/01}{\widget}{Widget Definition}
def\widget{new version}\
\EndIncludeInRelease
\IncludeInRelease{0000/00/00}{\widget}{Widget Definition}
def\widget{old version}\
\EndIncludeInRelease
\end{verbatim}
This would work and allow a document author to choose a date such as

\RequirePackage[2015/03/01]{latexrelease}
\documentclass{article}
\usepackage{mypackage}

To use the latest version, however it would have disadvantage that until the next release of \LaTeX, by default, if the document does not use \texttt{latexrelease} to specify a date, the new improved code will not be selected as the effective date will be 2015/01/01 and so the first code block will be skipped.

For this reason \texttt{\IncludeInRelease} has an optional argument that specifies an alternative date to use if a date option has not been specified to \texttt{latexrelease}.

\IncludeInRelease{2015/03/01}{2015/01/01}{\widget}{Widget Definition}
\def\widget{even newer improved March version}\
\EndIncludeInRelease

\IncludeInRelease{2015/01/01}{\widget}{Widget Definition}
\def\widget{new version}\
\EndIncludeInRelease

\IncludeInRelease{0000/00/00}{\widget}{Widget Definition}
\def\widget{old version}\
\EndIncludeInRelease

Now, by default on a 2015/01/01 \LaTeX format, the first code block will compare the format date to the optional argument 2015/01/01 and so will execute the even newer improved version. The remaining blocks using the \texttt{\widget} label argument will all then be skipped.

If on the other hand the document requests an explicit release date using \texttt{latexrelease} then this date will be used to decide what code block to include.

3.2 Using \texttt{\IncludeInRelease} in Packages

If \texttt{\IncludeInRelease} is used within a package then all such conditional code needs to be within such declarations, e.g., it is not possible in the above example to have the “current” definition of \texttt{\widget} somewhere in the main code and only the two older definitions inside \texttt{\IncludeInRelease} declarations. If you would do this then one of those \texttt{\IncludeInRelease} declarations would be included overwriting the even newer code in the main part of the package. As a result your package may get fragmented over time with various \texttt{\IncludeInRelease} declarations sprinkled throughout your code or you have to interrupt the reading flow by putting those declarations together but not necessarily in the place where they belong.

To avoid this issue you can use the following coding strategy: place the current \texttt{\widget} definition in the main code where it correctly belongs.

\[\ldots\]

\def\widget {even never improved March version}
\def\@widget{newly added helper command no defined in older releases}
\[\ldots\]

Then, near the end of your package place the following:

\IncludeInRelease{2015/03/01}{2015/01/01}{\widget}{Widget Definition}
This way the empty code block hides the other \IncludeInRelease declarations unless there is an explicit request with a date 2015/01/01 or earlier. Now if you make a further change to \widget in the future you simply copy the current definition into the empty block and add a new empty declaration with todays date and the current format date. This way your main code stays readable and the old versions accumulate at the end of the package.\footnote{Of course there may be some cases in which the old code has to be in a specific place within the package as other code depends on it (e.g., if you \let something to it). In that case you have to place the code variations in the right place in your package rather than accumulating them at the very end.}

The only other “extra effort” necessary when using this approach is that it may be advisable to undo new definitions in the code block for the previous release, e.g., in the above example we undefined \@widget as that isn’t available in the 2015/01/01 release but was defined in the main code. If all your conditional code is within \IncludeInRelease declarations that wouldn’t been necessary as the new code only gets defined if that release is chosen.

4 fixltx2e

As noted above, prior to the 2015 \LaTeX{} release updates to the \LaTeX{} kernel were not made in the format source files but were made available in the \fixltx2e package. That package is no longer needed but we generate a small package from this source that just makes a warning message but otherwise does nothing.

5 Implementation

We require at least a somewhat sane version of \LaTeX{} 2ε. Earlier ones were really quite different from one another.

\begin{enumerate}
  \item (*latexrelease)
  \item \NeedsTeXFormat{LaTeX2e}[1996/06/01]
\end{enumerate}

6 Setup
\DeclareOption{latest}{% 
  \let\requestedpatchdate\latexreleaseversion 
  \AtEndOfPackage{\def\requestedLaTeXdate{0}}}%
\DeclareOption{current}{% 
  \let\requestedpatchdate\fmtversion 
  \AtEndOfPackage{\def\requestedLaTeXdate{0}}}%
\let\requestedpatchdate\fmtversion
\ProcessOptions\relax

Sanity check options, it allows some non-legal dates but always ensures \texttt{requestedLaTeXdate} gets set to a number. Generate an error if there are any non digit tokens remaining after removing the //.
\def\reserved@a{% 
  \edef\requestedLaTeXdate{\the\count@}%
  \reserved@b}
\def\reserved@b#1\{% 
  \def\reserved@b{#1}%
  \ifx\reserved@b\@empty\else 
    \PackageError{latexrelease}{\{Unexpected option \requestedpatchdate\}\% 
    \{The option must be of the form yyyy/mm/dd or yyyy-mm-dd\}\% 
  \fi} 
\afterassignment\reserved@a
\count@\expandafter
\@parse@version\expandafter0\reserved@b//00\@nil\}

less precautions needed for \texttt{fmtversion}
\edef\currentLaTeXdate{% 
  \@parse\expandafter0\texttt{\@parse@version\fmtversion//00\@nil}\}
\ifnum\requestedLaTeXdate\currentLaTeXdate
\PackageWarningNoLine{latexrelease}{Current format date selected, no patches applied} 
\expandafter\endinput\fi
\ifnum\currentLaTeXdate\expandafter\@parse\expandafter0\texttt{\@parse@version\latexreleaseversion//00\@nil}\}
\expandafter\endinput\fi

A newer version of latexrelease should have been distributed with the later format.
\ifndef\currentLaTeXdate 
  >>\expandafter\@parse\expandafter0\texttt{\@parse@version\latexreleaseversion//00\@nil}\}
\PackageWarningNoLine{latexrelease}{The current package is for an older \LaTeX\ format:\MessageBreak 
  La\TeX\ \latexreleaseversion\space\MessageBreak 
  Obtain a newer version of this package!} 
\expandafter\endinput\fi

\ifndef\requestedLaTeXdate 
  >>\expandafter\@parse\expandafter0\texttt{\@parse@version\latexreleaseversion//00\@nil}\}
\PackageWarningNoLine{latexrelease}{The current package is for \LaTeX\ \latexreleaseversion:\MessageBreak 
  It has no patches beyond that date\MessageBreak 
  There may be an updated version\MessageBreak
Update the format version to the requested date.
\let\fmtversion\requestedpatchdate
\let\currentLaTeXdate\requestedLaTeXdate

7 Individual Changes

The code for each change will be inserted at this point, extracted from the kernel source files.
(/latexrelease)

8 fixltx2e

Generate a stub fixltx2e package:
\(\langle \)
\begin{verbatim}
\IncludeInRelease{2015/01/01}{\fixltxe}{Old fixltx2e package}
\NeedsTeXFormat{LaTeX2e}
\PackageWarningNoLine{fixltx2e}{% fixltx2e is not required with releases after 2015\MessageBreak All fixes are now in the LaTeX kernel.\MessageBreak See the latexrelease package for details}
\EndIncludeInRelease
\IncludeInRelease{0000/00/00}{\fixltxe}{Old fixltx2e package}
\def\@outputdblcol{\iftopmark\expandafter\endinput\fi}
\if\firstcolumn
\global\firstcolumnfalse
\global\setbox\@leftcolumn\copy\@outputbox
\splitmaxdepth\maxdimen
\vbadness\maxdimen
\if\unskip\expandafter\unvbox\@outputbox\else\unskip\fi
\if\@empty\let\@setmarks\relax\else\gdef\@setmarks{\let\firstmark\firstcolfirstmark\let\topmark\firstcoltopmark}\fi
\else
\global\firstcolumntrue
\setbox\@outputbox\vbox{\hb@xt\textwidth{\hb@xt\columnwidth{\box\@leftcolumn\hss}\hfil}{\normalcolor\vrule\@width\columnseprule}}\fi
\end{verbatim}
\(\rangle\)
\@flsetnum \@colnum
\ifnum\@colnum>\z@
\@bitor\@currtype\@deferlist
\@testwrongwidth\@currbox
\if@test
\else
\@addtotoporbot
\fi
\fi
\fi
\fi
\if@insert
\else
\@cons\@deferlist\@currbox
\fi
\endgroup
\def\@addtodblcol{%
\begingroup
\@insertfalse
\@setfloattypecounts
\@getfpsbit \tw@
\ifodd\@tempcnta
\@flsetnum \@dbltopnum
\ifnum \@dbltopnum>\z@
\@tempswafalse
\ifdim \@dbltoproom>\ht\@currbox
\@tempswatrue
\else
\ifnum \@fpstype<\sixt@@n
\advance \@dbltoproom \@textmin
\ifdim \@dbltoproom>\ht\@currbox
\@tempswatrue
\fi
\advance \@dbltoproom -\@textmin
\fi
\if@tempswa
\@bitor \@currtype \@deferlist
\@testwrongwidth\@currbox
\if@test
\else
\@tempsdim -\ht\@currbox
\advance\@tempsdim
-\ifx \@dbltoplist\@empty \dbltextfloatsep \else
\dblfloatsep \fi
\global \advance \@dbltoproom \@tempsdim
\global \advance \@colht \@tempsdim
\global \advance \@dbltopnum \m@ne
\@cons \@dbltoplist \@currbox
\@inserttrue
\fi
\fi
\fi
\def\@xtryfc #1{\%\@next\reserved@a\@trylist{}\{}\%\@currtype \count #1\%\divide\@currtype\@xxxii\%\@bitor \@currtype \@failedlist\%\@testfp #1\%\@testwrongwidth #1\%\ifdim \ht #1>\@colht\@testtrue\fi\if@test\@cons\@failedlist #1\%\else\@ytryfc #1\fi}\@ztryfc #1{\%\@tempcnta\count #1\%\divide\@tempcnta\@xxxii\%\@bitor \@tempcnta \@failedlist \@flfail\%\@testfp #1\%\@testwrongwidth #1\%\@tempdimb\@tempdima\%\advance\@tempdimb\ht #1\%\advance\@tempdimb\@fpsep\%\ifdim \@tempdimb >\@colht\@testtrue\fi\if@test\@cons\@flfail #1\%\else\@cons\@flsucceed #1\%\@tempdima\@tempdimb\fi}\def\@{\spacefactor\@m{}\%}
\def\@tempa#1#2{#1#2\relax}
\ifx\setlength\@tempa
\def\setlength#1#2{#1 #2\relax}
\fi
\def\addpenalty#1{%
\ifvmode
\if@minipage
\else
\if@nobreak
\else
\ifdim\lastskip=\z@
\penalty#1\relax
\else
\@tempskipb\lastskip
\begingroup
\advance\@tempskipb
\ifdim\prevdepth>\maxdepth\maxdepth\else
\ifdim\prevdepth=-\@m\p@\z@\else\prevdepth\fi
\fi
\vskip-\@tempskipb
\penalty#1%
\vskip\@tempskipb
\endgroup
\vskip-\@tempskipb
\vskip\@tempskipb
\fi
\fi
\fi
\else
\@noitemerr
\fi}
\def\@fnsymbol#1{%
\ifcase#1\or\TextOrMath\textasteriskcentered\ast\or\
\TextOrMath\textdagger\dagger\or\
\TextOrMath\textdaggerdbl\ddagger\or\
\TextOrMath\textsection\mathsection\or\
\TextOrMath\textparagraph\mathparagraph\or\
\TextOrMath\textbardbl\|\or\
\TextOrMath{{\textasteriskcentered\textasteriskcentered}{**}}\or\
\TextOrMath{{\textdagger\textdagger}{\dagger\dagger}}\or\
\TextOrMath{{\textdaggerdbl\textdaggerdbl}{\ddagger\ddagger}}\else
\@ctrerr\fi
\}}
\begingroup\expandafter\expandafter\expandafter\endgroup
\expandafter\ifx\csname eTeXversion\endcsname\relax
\DeclareRobustCommand\TextOrMath{%
\ifmmode\expandafter\@secondoftwo
\else\expandafter\@firstoftwo\fi}
\protected@edef\TextOrMath#1#2{\TextOrMath{#1}{#2}}
\else
\protected\expandafter\def\csname TextOrMath\space\endcsname{%
\DeclareRobustCommand\TextOrMath{%
\ifmmode\expandafter\@secondoftwo
\else\expandafter\@firstoftwo\fi}
\protected@edef\TextOrMath#1#2{\TextOrMath(#1)(#2)}
\else
\protected\expandafter\def\csname TextOrMath\space\endcsname{%
\DeclareRobustCommand\TextOrMath{%
\ifmmode\expandafter\@secondoftwo
\else\expandafter\@firstoftwo\fi}
}