The \textbf{hopatch} package

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Abstract

This package provides a wrapper to various package hooks provided by other packages or classes, but does not define own hooks.

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1 Documentation

Sometimes I want to add code right after a package has been loaded. Examples are bug fixes, adaptations, or added features as needed by package hyperref, for instance.

Unhappily \LaTeX{} does not provide this kind of hook. \texttt{\textbackslash AtEndOfPackage} can be used inside the package only, because \LaTeX{} clears the hook right before it loads the package.
However, there are already many packages and classes that provide hooks that are executed after the package is loaded, see table 1.

Package hopatch can be used without the packages of table 1. But for an early executing right after a package is loaded, one of the following class or packages should be loaded before using \hopatch\AfterPackage:

- package filehook
- package scrfile
- class memoir

Therefore I skip writing a new package for hooking into \LaTeX’s package management and use this package to provide a wrapper to patch a package after it is loaded.

\hopatch\AfterPackage{⟨package⟩}{⟨patch code⟩}

If the package is already loaded, the ⟨patch code⟩ is executed immediately. Otherwise the ⟨patch code⟩ is stored in a command and tried at later locations until the package is available.

The patch is tried in the following order:

1. If the package is already loaded, the patch is applied immediately. Further locations are not tried.
2. \AtEndPackage, provided by class memoir [4], and \AfterPackage, provided by package scrfile [5], are called right after the package file is input before the hook of \LaTeX’s \AtEndOfFile.
3. \AtEndOfFile, provided by package filehook [2], is called after the package is loaded and after the hook of \LaTeX’s \AtEndOfFile.
4. \AtEndPreamble, provided by package etoolbox [1], is called at the beginning of \begin{document} before the hook of \LaTeX’s \AtBeginDocument.
5. \AtBeginDocument, provided by \LaTeX.
6. \AfterEndDocument, provided by package etoolbox [1], is called at the very end of \begin{document}. Preamble commands are already forbidden there.

*Please report any issues at https://github.com/ho-tex/oberdiek/issues
Because of the various locations the patch code is restricted to limitations:

- **Preamble commands**, see \texttt{\LaTeX}'s \texttt{\@onlypreamble} throw an error if used after \texttt{\begin{document}}. This is already the case for \texttt{\AfterEndDocument}. Therefore preamble commands are forbidden in the patching code. There are four exceptions \texttt{\@ifpackageloaded}, \texttt{\@ifclassloaded}, \texttt{\@ifpackagelater} and \texttt{\@ifclasslater}. They are redefined during \texttt{\AfterEndDocument} using the counterparts of package \texttt{ltxcmds} [3].

- \texttt{\AfterPackage} of package \texttt{scrlfile} and \texttt{\AtEndPackage} of class \texttt{memoir} call the hook before \texttt{\LaTeX}'s \texttt{\AtEndOfPackage}.

### 2 Implementation

1 (*package*)

#### 2.1 Catcodes and package identification

2 \begingroup\catcode61\catcode48\catcode32=10\relax%
3 \catcode13=5 % ^^M
4 \endlinechar=13 %
5 \catcode123=1 % {
6 \catcode125=2 % }
7 \catcode64=11 % @
8 \def\x{\endgroup
9 \expandafter\edef\csname HOpatch@AtEnd\endcsname{%
10 \endlinechar=\the\endlinechar\relax
11 \catcode13=\the\catcode13\relax
12 \catcode32=\the\catcode32\relax
13 \catcode35=\the\catcode35\relax
14 \catcode61=\the\catcode61\relax
15 \catcode64=\the\catcode64\relax
16 \catcode123=\the\catcode123\relax
17 \catcode125=\the\catcode125\relax
18 %}
19 %
20 \x\catcode61\catcode48\catcode32=10\relax%
21 \catcode13=5 % ^^M
22 \endlinechar=13 %
23 \catcode35=6 % #
24 \catcode64=11 % @
25 \catcode123=1 % {
26 \catcode125=2 % }
27 \def\TMP@EnsureCode#1#2{%
28 \edef\HOpatch@AtEnd{
29 \HOpatch@AtEnd
30 \catcode#1=\the\catcode#1\relax
31 }%\relax
32 }%\relax
33 \TMP@EnsureCode{40}{12}% (\endgroup
34 \TMP@EnsureCode{41}{12}% )
35 \TMP@EnsureCode{43}{12}% +
36 \TMP@EnsureCode{46}{12}% .
37 \TMP@EnsureCode{47}{12}% /
38 \TMP@EnsureCode{91}{12}% [\endgroup
39 \TMP@EnsureCode{93}{12}% ]
40 \edef\HOpatch@AtEnd{\HOpatch@AtEnd\noexpand\endinput}
2.2 Resources

\begingroup\expandafter\expandafter\expandafter\endgroup
\expandafter\ifx\csname RequirePackage\endcsname\relax
\def\TMP@RequirePackage#1[#2]{\begingroup\expandafter\expandafter\expandafter\endgroup\expandafter\ifx\csname ver@#1.sty\endcsname\relax\input #1.sty\relax\fi}
\TMP@RequirePackage{ltxcmds}[2010/12/12]\fi
\HOpatch@counter
\def\HOpatch@counter{0}\%
\HOpatch@StepCounter
\ltx@ifundefined{numexpr}{\def\HOpatch@StepCounter{\begingroup\count@\HOpatch@counter\relax\advance\count@\ltx@one\relax\edef\x{\endgroup\noexpand\def\noexpand\HOpatch@counter{\the\count@}%%%\x\fi}}{\def\HOpatch@StepCounter{\edef\HOpatch@counter{\the\numexpr\HOpatch@counter+\ltx@one\relax}%%%\x}}%
\HOpatch@list
\def\HOpatch@list{}\%
\HOpatch@Add
\ltx@LocalAppendToMacro\HOpatch@list
\HOpatch@AfterPackage
\def\HOpatch@AfterPackage#1{%\ltx@ifpackageloaded#1{%\ltx@firstofone\}%%%\HOpatch@AfterPackage#1%}%

2.3 Package patching

hopatch@AfterPackage
\HOpatch@AfterPackage

\def\HOpatch@AfterPackage#1{%
  \edef\HOpatch@temp{#1}%
  \HOpatch@StepCounter
  \expandafter\HOpatch@@AfterPackage
  \csname HOpatch@\HOpatch@counter\endcsname{%
    \HOpatch@temp%
  }%
}

\HOpatch@@AfterPackage

\def\HOpatch@@AfterPackage#1#2#3{%
  \begingroup
    \toks@{#3}%
    \xdef\HOpatch@gtemp{%
      \noexpand\ltx@ifpackageloaded{#2}{%
        \noexpand\let\noexpand#1\noexpand\relax
        \the\toks@
      }%
    }%
  \endgroup
  \let#1\HOpatch@gtemp
  \HOpatch@Add#1%
  \HOpatch@Try{AfterPackage}{#2}#1%
  \HOpatch@Try{AtEndPackage}{#2}#1%
  \HOpatch@Try{AtEndOfPackageFile}{#2}#1%
}

\HOpatch@Try

\def\HOpatch@Try#1#2#3{%
  \ltx@ifundefined{#1}{}{%
    \csname #1\endcsname{#2}{#3}%
  }%
}

\AtBeginDocument{\HOpatch@list}
\ltx@ifundefined{AtEndPreamble}{}{%
  \ltx@ifundefined{@endpreamblehook}{}{%
    \AtEndPreamble{\HOpatch@list}%
  }%
}
\ltx@ifundefined{AfterEndPreamble}{}{%
  \ltx@ifundefined{@afterendpreamblehook}{}{%
    \AfterEndPreamble{\HOpatch@list}%
  }%
}

\HOpatch@list
\let\@ifpackageloaded\HOpatch@OrgIfPackageLoaded
\let\@ifpackagelater\HOpatch@OrgIfPackageLater
\let\@ifclassloaded\HOpatch@OrgIfClassLoaded
\let\@ifclasslater\HOpatch@OrgIfClassLater
\HOpatch@list
\let\@ifpackageloaded\ltx@ifpackageloaded
\let\@ifpackagelater\ltx@ifpackagelater
\let\@ifclassloaded\ltx@ifclassloaded
\let\@ifclasslater\ltx@ifclasslater
\HOpatch@list
\HOpatch@OrgIfPackageLoaded
\HOpatch@OrgIfPackageLater
\HOpatch@OrgIfClassLoaded
\HOpatch@OrgIfClassLater
\HOpatch@list
\HOpatch@OrgIfPackageLoaded
\HOpatch@OrgIfPackageLater
\HOpatch@OrgIfClassLoaded
\HOpatch@OrgIfClassLater
3 Installation

3.1 Download

Package. This package is available on CTAN:\footnote{CTAN:pkg/hopatch}

\begin{center}
\texttt{CTAN:macros/latex/contrib/oberdiek/hopatch.dtx} The source file. \\
\texttt{CTAN:macros/latex/contrib/oberdiek/hopatch.pdf} Documentation.
\end{center}

Bundle. All the packages of the bundle ‘oberdiek’ are also available in a TDS compliant ZIP archive. There the packages are already unpacked and the documentation files are generated. The files and directories obey the TDS standard.

\begin{center}
\texttt{CTAN:install/macros/latex/contrib/oberdiek.tds.zip} \\
TDS refers to the standard “A Directory Structure for \TeX\ Files” (CTAN:pkg/tds). Directories with \texttt{texmf} in their name are usually organized this way.
\end{center}

3.2 Bundle installation

Unpacking. Unpack the \texttt{oberdiek.tds.zip} in the TDS tree (also known as \texttt{texmf} tree) of your choice. Example (linux):

\begin{center}
\texttt{unzip oberdiek.tds.zip -d \simtexmf}
\end{center}

3.3 Package installation

Unpacking. The \texttt{.dtx} file is a self-extracting \texttt{docstrip} archive. The files are extracted by running the \texttt{.dtx} through plain \TeX: 

\begin{center}
\texttt{tex hopatch.dtx}
\end{center}

TDS. Now the different files must be moved into the different directories in your installation TDS tree (also known as \texttt{texmf} tree):

\begin{center}
\texttt{hopatch.sty} → \texttt{tex/latex/oberdiek/hopatch.sty} \\
\texttt{hopatch.pdf} → \texttt{doc/latex/oberdiek/hopatch.pdf} \\
\texttt{hopatch.dtx} → \texttt{source/latex/oberdiek/hopatch.dtx}
\end{center}

If you have a \texttt{docstrip.cfg} that configures and enables \texttt{docstrip}’s TDS installing feature, then some files can already be in the right place, see the documentation of \texttt{docstrip}.

3.4 Refresh file name databases

If your \TeX\ distribution (\TeX\ Live, MiK\TeX, ...) relies on file name databases, you must refresh these. For example, \TeX\ Live users run \texttt{texhash} or \texttt{mktexlsr}.
3.5 Some details for the interested

Unpacking with \LaTeX. The .dtx chooses its action depending on the format:

\begin{itemize}
  \item \TeX: Run \texttt{docstrip} and extract the files.
  \item \LaTeX: Generate the documentation.
\end{itemize}

If you insist on using \LaTeX for \texttt{docstrip} (really, \texttt{docstrip} does not need \LaTeX), then inform the autodetect routine about your intention:
\begin{verbatim}
l\texttt{latex \let\install=y\input{hopatch.dtx}}
\end{verbatim}

Do not forget to quote the argument according to the demands of your shell.

Generating the documentation. You can use both the .dtx or the .drv to generate the documentation. The process can be configured by the configuration file ltxdoc.cfg. For instance, put this line into this file, if you want to have A4 as paper format:
\begin{verbatim}
\PassOptionsToClass{a4paper}{article}
\end{verbatim}

An example follows how to generate the documentation with pdf\LaTeX:
\begin{verbatim}
\texttt{pdflatex hopatch.dtx}
\texttt{makeindex -s gind.ist hopatch.idx}
\texttt{pdflatex hopatch.dtx}
\texttt{makeindex -s gind.ist hopatch.idx}
\texttt{pdflatex hopatch.dtx}
\end{verbatim}

4 References

[1] Philipp Lehman: The etoolbox Package 2011-01-03. CTAN:pkg/etoolbox

5 History

[2011/01/30 v1.0]
\begin{itemize}
  \item First public version.
\end{itemize}

[2011/06/24 v1.1]
\begin{itemize}
  \item Fix the use of \texttt{\textbackslash AtEndPreamble} and \texttt{\textbackslash AfterEndPreamble}. They are redefined by package etoolbox after their hooks are used and generate an error message then.
\end{itemize}

[2012/05/28 v1.2]
\begin{itemize}
  \item Fix for use without \TeX (thanks Gordon Lee).
\end{itemize}
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Numbers written in italic refer to the page where the corresponding entry is described; numbers underlined refer to the code line of the definition; plain numbers refer to the code lines where the entry is used.

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