The 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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*Please report any issues at https://github.com/ho-tex/hopatch/issues
1 Documentation for version 1.4

Starting with this version

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

will use the kernel `package/after/⟨package⟩` hook if a LaTeX format later than 2020/20/01 is detected. This can mean that the hook code is executed earlier than with version 1.3 (but always after the `⟨package⟩`). If `⟨package⟩` is already loaded, the `⟨patch code⟩` is executed immediately. If an older format is detected if will fall back to the code of version 1.3.

2 Documentation for version 1.3

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.

Unfortunately \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 \texttt{\textbackslash 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.

<table>
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<tr>
<th>Macro</th>
<th>Provider</th>
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<tbody>
<tr>
<td>\texttt{\textbackslash AfterPackage}</td>
<td>package <code>scrfile</code> [5]</td>
</tr>
<tr>
<td>\texttt{\textbackslash AtEndOfPackageFile}</td>
<td>package <code>filehook</code> [2]</td>
</tr>
<tr>
<td>\texttt{\textbackslash AtEndPackage}</td>
<td>class <code>memoir</code> [4]</td>
</tr>
</tbody>
</table>

Table 1: After package hooking
Table 2: After begin document hooking

<table>
<thead>
<tr>
<th>Macro</th>
<th>Provider</th>
</tr>
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<tbody>
<tr>
<td>\AtBeginDocument</td>
<td>\LaTeX’s kernel</td>
</tr>
<tr>
<td>\AtEndPreamble</td>
<td>package etoolbox [1]</td>
</tr>
<tr>
<td>\AfterEndPreamble</td>
<td>package etoolbox</td>
</tr>
</tbody>
</table>

2. \AtEndPackage, provided by class memoir [4], and \AfterPackage, provided by package scrlfile [5], are called right after the package file is input before the hook of \LaTeX’s \AtEndOfPackage.

3. \AtEndOfFile, provided by package filehook [2], is called after the package is loaded and after the hook of \LaTeX’s \AtEndOfPackage.

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.

Because of the various locations the patch code is restricted to limitations:

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

- \AfterPackage of package scrlfile and \AtEndPackage of class memoir call the hook before \LaTeX’s \AtEndOfPackage.

3 Implementation

1 (*package)

3.1 v.1.4: New implementation using the \LaTeX kernel hooks

2 \NeedsTeXFormat{LaTeX2e}
3 \ProvidesPackage{hopatch} %
4 [2020-08-01 v1.4 Wrapper for package hooks (HO)]
5 \providecommand\IfFormatAtLeastTF{\@ifl@t\fmtversion}
6 \IfFormatAtLeastTF{2020/10/01}{\input{hopatch-2016-05-16.sty}}
7 \IfFormatAtLeastTF{2020/10/01}{\endinput}
8
9 \newcommand\hopatch@AfterPackage[1]{%
10 \@ifpackageloaded{#1}{%
11 \@firstofone
12 }%
13 \AddToHook{package/after/#1}%
14 }}
15
3.2 Catcodes and package identification

```
\begingroup\catcode61\catcode48\catcode32=10\relax%
\catcode13=5 \linechar=13 %
\catcode123=1 % { }
\catcode125=2 %}
\catcode64=11 % @
\catcode123=1 % { 
\catcode125=2 %}
```

Package identification.

```
\NeedsTeXFormat{LaTeX2e}
\ProvidesPackage{hopatch}[2020-08-01 v1.4 Wrapper for package hooks / legacy code (v1.3) (HO)]
```

3.3 Resources
\PackagePatch\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 % 
} {%
  \def\HOpatch\StepCounter{% 
    \edef\HOpatch\counter{\the\numexpr\HOpatch\counter+\ltx\one\relax
    \} % 
  }% 
}

\HOpatch\list
\def\HOpatch\list{}

\HOpatch\Add
\def\HOpatch\Add{% 
  \ltx\LocalAppendToMacro\HOpatch\list
}

\PackagePatch\AfterPackage
\def\hopatch\AfterPackage#1{% 
  \ltx\ifpackageloaded{#1}{% 
    \ltx\firstofone 
} {% 
  \HOpatch\AfterPackage{#1}% 
} % 
}

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

3.4 Package patching
\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{% %
        \let\HOpatch@OrgIfPackageLoaded\@ifpackageloaded
        \let\HOpatch@OrgIfPackageLater\@ifpackagelater
        \let\HOpatch@OrgIfClassLoaded\@ifclassloaded
        \let\HOpatch@OrgIfClassLater\@ifclasslater
        \let\@ifpackageloaded\ltx@ifpackageloaded
        \let\@ifpackagelater\ltx@ifpackagelater
        \let\@ifclassloaded\ltx@ifclassloaded
        \let\@ifclasslater\ltx@ifclasslater
        \HOpatch@list
        \let\@ifpackageloaded\HOpatch@OrgIfPackageLoaded
        \let\@ifpackagelater\HOpatch@OrgIfPackageLater
        \let\@ifclassloaded\HOpatch@OrgIfClassLoaded
        \let\@ifclasslater\HOpatch@OrgIfClassLater
      }% %
    }% %
  }% %
}{% %
  \HOpatch@AtEnd%
}{% %
  
/(packagefrozen)
4 Installation

4.1 Download

**Package.** This package is available on CTAN\textsuperscript{1}:


4.2 Package installation

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

```
tex hopatch.dtx
```

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

```
hopatch.sty → tex/latex/hopatch/hopatch.sty
hopatch.pdf → doc/latex/hopatch/hopatch.pdf
hopatch.dtx → source/latex/hopatch/hopatch.dtx
```

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

4.3 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 texhash or mktexlsr.

4.4 Some details for the interested

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

plain \TeX: Run docstrip and extract the files.

\LaTeX: Generate the documentation.

If you insist on using \LaTeX for docstrip (really, docstrip does not need \LaTeX), then inform the autodetect routine about your intention:

```
latex \let\install=y\input{hopatch.dtx}
```

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:

```
\PassOptionsToClass{a4paper}{article}
```

An example follows how to generate the documentation with pdff\LaTeX:

\textsuperscript{1}CTAN:pkg/hopatch
5 References


6 History

**[2011/01/30 v1.0]**

- First public version.

**[2011/06/24 v1.1]**

- Fix the use of \AtEndPreamble and \AfterEndPreamble. They are redefined by package etoolbox after their hooks are used and generate an error message then.

**[2012/05/28 v1.2]**

- Fix for use without \(\varepsilon\)-\TeX (thanks Gordon Lee).

**[2016/05/16 v1.3]**

- Documentation updates.

**[2020-08-01 v1.4]**

- Starting with this version the package will use the hooks provided by the \LaTeX{} kernel if the format is newer than 2020/10/01.

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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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