The rerunfilecheck package

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Abstract

The package provides additional rerun warnings if some auxiliary files have changed. It is based on MD5 checksum, provided by pdfTeX.

Contents

1 Documentation 2
  1.1 Options ............................................. 2
  1.2 Interface for class/package authors .......................... 2

2 Implementation 3
  2.1 Options .............................................. 4
  2.2 Check for checksum feature .................................. 4
  2.3 Standard .aux files ........................................ 5
  2.4 Rerun check .............................................. 7

3 Test 9
  3.1 Catcode checks for loading .................................... 9

4 Installation 10
  4.1 Download ............................................. 10
  4.2 Bundle installation ........................................ 11
  4.3 Package installation ....................................... 11
  4.4 Refresh file name databases ................................. 11
  4.5 Some details for the interested ............................. 11

5 Catalogue 12

6 History 12
  [2009/12/10 v1.0] ........................................... 12
  [2009/12/12 v1.1] ........................................... 12
  [2009/12/18 v1.2] ........................................... 12
  [2010/01/25 v1.3] ........................................... 13
  [2010/02/22 v1.4] ........................................... 13
  [2010/03/15 v1.5] ........................................... 13
  [2010/03/16 v1.6] ........................................... 13
  [2011/04/15 v1.7] ........................................... 13

7 Index 13
1 Documentation

\LaTeX{} informs the user, when to run \LaTeX{} again, if the references have changed. It has the old references from the first reading of the .aux files already in memory, thus it compares them with the new version of the .aux file at the end of the document. However this rerun warnings are not given for the table of contents and other data stored in the .aux files or other auxiliary files. Usually many of these data as the table of contents is not keep in memory. If someone wants to detect changes, he has either to keep the data in memory. This does not scale well with huge documents. Or he copies the file before they are changed. Slow I/O operations cost time.

Since version 1.30.0 pdf\TeX{} provides \texttt{\pdfmdfivesum} and \texttt{\pdffilesize}. These features are also available in Lua\TeX{}, provided by package \texttt{pdftexcmds}. Thus this package \texttt{rerunfilecheck} uses these features to detect file changes. This saves the packages from keeping the whole files in memory or in file copies. The drawback are different files with the same size and the same MD5 checksum (seldom, hopefully).

1.1 Options

All options are key value options of boolean type. No option or \texttt{false} turns an option on, \texttt{true} disables an option.

\texttt{mainaux}: Check the main .aux file.

\texttt{partaux}: Check the .aux files from \texttt{\include} files.

\texttt{starttoc}: Add the rerun checks in \texttt{\@starttoc} that is called by \texttt{\tableofcontents, \listoffigures, ...}

\texttt{index, glossary}: \LaTeX{}s original \texttt{\makeindex} and \texttt{\makeglossary} are redefined to add the rerun checks. The options do not have an effect, if \texttt{\makeindex/\makeglossary} are already called or if a package or class had redefined or will redefine them.

\texttt{aux}: This option turns all previous options on or off. “aux” means auxiliary file.

The default for the options is \texttt{false}, because some internals must be redefined to insert the rerun checks. The options can be set in \texttt{\usepackage} or the configuration file \texttt{rerunfilecheck.cfg}. Global options are ignored (since 1.4).

\texttt{\RerunFileCheckSetup {\langle key value list\rangle}}

Options can also be set using \texttt{\RerunFileCheckSetup}. Currently all options are disabled after the package is loaded. Thus \texttt{\RerunFileCheckSetup} makes sense in the configuration file only.

Example for the configuration file:
1 \langle*\cfg\rangle
2 \ProvidesFile{rerunfilecheck.cfg}[2011/04/15 Default configuration]%
3 \RerunFileCheckSetup{aux}
4 \langle/\cfg\rangle

1.2 Interface for class/package authors

\texttt{\RerunFileCheck {\langle file\rangle} {\langle file closing action\rangle} {\langle rerun warning\rangle}}

If you want to add a rerun check, call \texttt{\RerunFileCheck} right before an output file is opened for writing. The macro first remembers the current checksum of \texttt{\langle file\rangle}. The file is checked again right before the end of the job. Macro \texttt{\AtVeryEndDocument} of package \texttt{atveryend} is used to place the check after the
main aux file is closed in \end{document}. Before reading the file again, it must be closed. Provide the code for closing in argument \langle file closing action \rangle. Do not forget \immediate before \openout. Otherwise the closing action would be delayed to the next shipout that never happens (the last page is already shipped out). If the file has changed, \RerunFileCheck informs the user with a warning that the file has changed and says the magic word “Rerun”. If the last argument \langle rerun warning \rangle is not empty, then the rerun sentence is replaced by it. Usually the phrase “to get something right” is added. As example the relevant part of the redefined \makeindex is shown, see package code:

\newwrite\@indexfile
\RerunFileCheck{\jobname.idx}{%
   \immediate\closeout\@indexfile
}{%
   Rerun LaTeX/makeindex to get index right%
}%
\immediate\openout\@indexfile=\jobname.idx %

2 Implementation

\begingroup\catcode61\catcode48\catcode32=10\relax%
\catcode13=5 \^^M
\endlinechar=13 \%
\catcode123=1 \%
\catcode125=2 \%
\catcode61=11 \%
\catcode64=11 \%
\def\x{
\expandafter\edef\csname ReFiCh@AtEnd\endcsname{%
   \endlinechar=\the\endlinechar\relax
   \catcode13=\the\catcode13\relax
   \catcode32=\the\catcode32\relax
   \catcode35=\the\catcode35\relax
   \catcode61=\the\catcode61\relax
   \catcode64=\the\catcode64\relax
   \catcode123=\the\catcode123\relax
   \catcode125=\the\catcode125\relax
}%
\x
\catcode61\catcode48\catcode32=10\relax%
\catcode13=5 \^^M
\endlinechar=13 \%
\catcode35=6 \%
\catcode61=11 \%
\catcode123=1 \%
\catcode125=2 \%
\def\TMP@EnsureCode#1#2{%
   \edef\ReFiCh@AtEnd{%
      \ReFiCh@AtEnd
      \catcode#1=\the\catcode#1\relax
   }%
   \catcode#1=#2\relax
}
\TMP@EnsureCode{39}{12}% '
\TMP@EnsureCode{40}{12}% ( 
\TMP@EnsureCode{41}{12}% )
\TMP@EnsureCode{42}{12}% *
\TMP@EnsureCode{44}{12}% ,
\TMP@EnsureCode{46}{12}% . 
\TMP@EnsureCode{47}{12}% / 
\TMP@EnsureCode{58}{12}:%
Package identification.
\NeedsTeXFormat{LaTeX2e}
\ProvidesPackage{rerunfilecheck}% [2011/04/15 v1.7 Rerun checks for auxiliary files (HO)]

2.1 Options
\RequirePackage{kvoptions}[2010/02/22]
\SetupKeyvalOptions{% family=rerunfilecheck,%
  prefix=ReFiCh@%
}
\RerunFileCheckSetup
\newcommand*{\RerunFileCheckSetup}{%\setkeys{rerunfilecheck}{% mainaux={#1},%
  partaux={#1},%
  starttoc={#1},%
  index={#1},%
  glossary={#1}%%
  }%}
\InputIfFileExists{rerunfilecheck.cfg}{}{}
\ProcessLocalKeyvalOptions*
\ReFiCh@DisableOption
\def\ReFiCh@DisableOption{%\DisableKeyvalOption[%
  action=warning,%
  package=rerunfilecheck%\]{rerunfilecheck}%
\}

2.2 Check for checksum feature
\RequirePackage{infwarerr}[2007/09/09]
\RequirePackage{pdftexcmds}[2009/04/10]
\begingroup\expandafter\expandafter\expandafter\endgroup
\expandafter\ifx\csname pdf@filemdfivesum\endcsname\relax
\@PackageInfoNoLine{rerunfilecheck}{%Feature \string\pdfmdfivesum\space is not available\MessageBreak
(e.g. pdfTeX or LuaTeX with package \stringpdftexcmds\).\MessageBreak
Therefore file contents cannot be checked efficiently\MessageBreak
and the loading of the package is aborted%}
\%
2.3 Standard .aux files

\ifReFiCh@partaux
 \let\ReFiCh@org@include@include
 \def@include#1 {%
 \if@filesw
 \RerunFileCheck{#1.aux}{}{}%
 \fi
 \ReFiCh@org@include{#1} %
}
\fi
\ifReFiCh@mainaux
 \AtBeginDocument{%
 \ReFiCh@mainauxfalse
}
\ifReFiCh@mainaux
 \AtEndOfFilePackage{%
 \RerunFileCheck{\jobname.aux}{}{}%
}
\else
 \if@filesw
 \@PackageWarningNoLine{rerunfilecheck}{%Main aux file check is disabled,% because the file is already opened.%Load the package before \string\begin{document}%}
\fi
\fi
\ifReFiCh@starttoc
 \let\ReFiCh@org@starttoc@starttoc
 \def@starttoc#1{%
 \if@filesw
 \RerunFileCheck{\jobname.#1}{}{%
 \@ifundefined{tf@#1}{%
 \immediate\closeout\csname tf@#1\endcsname
}
\fi
 \ReFiCh@org@starttoc{#1}%
}
\fi
\ifReFiCh@index
 \if\makeindex@empty
 \@PackageWarningNoLine{rerunfilecheck}{%Option `index' ignored,% because \string\makeindex\space has already been called%
}
\else
 \def\ReFiCh@temp{%
 \newwrite@indexfile
 \immediate\openout@indexfile=\jobname.idx %
 \def@index{%
 \@bsphack
 \begingroup
 \@sanitize
 \@wrindex
 \endgroup
 \@esphack
 \immediate\closeout@indexfile
}
\fi
\fi
\typeout{Writing index file \jobname.idx}\let\makeindex\@empty
\if\ReFiCh@temp\makeindex
\def\makeindex{%
\newwrite\@indexfile
\RerunFileCheck{\jobname.idx}{%\immediate\closeout\@indexfile
%%% Rerun LaTeX/makeindex to get index right
\immediate\openout\@indexfile=\jobname.idx %
\def\index{%
\@bsphack
\begingroup
\@sanitize
\@wrindex
\typeout{Writing index file \jobname.idx}\let\makeindex\@empty
}
\else
\PackageInfoNoLine{rerunfilecheck}{%
Option `index': unsupported version of \string\makeindex
}%
\fi
\fi
\if\ReFiCh@glossary
\if\makeglossary\@empty
\@PackageWarningNoLine{rerunfilecheck}{%
Option `glossary' ignored, because \string\makeglossary\space has already been called%
}%
\else
\def\ReFiCh@temp{%
\newwrite\@glossaryfile
\immediate\openout\@glossaryfile=\jobname.glo %
\def\glossary{%
\@bsphack
\begingroup
\@sanitize
\@wrindex
\typeout{Writing glossary file \jobname.glo }\let\makeglossary\@empty
}
\else
\def\ReFiCh@temp{%
\newwrite\@glossaryfile
\immediate\openout\@glossaryfile=\jobname.glo %
\def\glossary{%
\@bsphack
\begingroup
\@sanitize
\@wrindex
\typeout{Writing glossary file \jobname.glo }\let\makeglossary\@empty
}
\else
\def\ReFiCh@temp{%
\newwrite\@glossaryfile
\immediate\openout\@glossaryfile=\jobname.glo %
\def\glossary{%
\@bsphack
\begingroup
\@sanitize
\@wrindex
\typeout{Writing glossary file \jobname.glo }\let\makeglossary\@empty
}
2.4 Rerun check

\RequirePackage{atveryend}[2011/04/15]
\RequirePackage{uniquecounter}[2009/12/18]

\ReFiCh@CheckSum
\begingroup\expandafter\expandafter\expandafter\endgroup
\expandafter\ifx\csname pdf@filesize\endcsname\relax
  \def\ReFiCh@CheckSum{\pdf@filemdfivesum}
\else
  \def\ReFiCh@CheckSum#1{%\pdf@filemdfivesum(#1)\ReFiCh@Separator\pdf@filesize(#1)\}%
\fi
\ReFiCh@NoFile
\def\ReFiCh@NoFile{<no file>}
\UniqueCounterNew{rerunfilecheck}

\RerunFileCheck
\newcommand*{\RerunFileCheck}{\UniqueCounterCall{rerunfilecheck}\ReFiCh@RerunFileCheck}
\ReFiCh@RerunFileCheck
\def\ReFiCh@RerunFileCheck#1{%\ReFiCh@CheckSum%\expandafter\ReFiCh@@RerunFileCheck\csname ReFiCh@#1\endcsname
\ReFiCh@Check
\def\ReFiCh@Check#1#2#3{%\IfFileExists{#3}{%#1#2\edef#2{\ReFiCh@CheckSum{#3}}\ifx#2\ReFiCh@Separator\let#2\ReFiCh@NoFile\fi
\fi
\ReFiCh@Check#1#2#3{%\IfFileExists{#3}{%#1#2\edef#2{\ReFiCh@CheckSum{#3}}\ifx#2\ReFiCh@Separator\let#2\ReFiCh@NoFile\fi
\fi

7
\begin{Verbatim}

\def\ReFiCh@IsAux#1.aux\relax#2\@nil{\ifx\hbox#2\hbox 0\else 1\fi}
\def\ReFiCh@AuxEmptyUnix{A94A2480D3289E625EEA47CD1B285758;8}\@onelevel@sanitize\ReFiCh@AuxEmptyUnix
\def\ReFiCh@AuxEmptyDos{A62A15ECE803E2EBE94952FC9933BC0;9}\@onelevel@sanitize\ReFiCh@AuxEmptyDos
\end{Verbatim}
\section{Test}
\begin{verbatim}
\def\LoadCommand{\RequirePackage{rerunfilecheck}[2011/04/15]}
\end{verbatim}

\subsection{Catcode checks for loading}
\begin{verbatim}
\catcode`\{=1  \%  
\catcode`\}=2  \%  
\catcode`#=6  \%  
\catcode`@=11  \%  
\expandafter\ifx\csname count@\endcsname\relax  
\countdef\count@=255  \%  
\fi  
\expandafter\ifx\csname @gobble\endcsname\relax  
\long\def\@gobble#1{}  \%  
\fi  
\expandafter\ifx\csname @firstofone\endcsname\relax  
\long\def\@firstofone#1{#1}  \%  
\fi  
\expandafter\if\csname loop\endcsname\relax  
\else  
\expandafter\@gobble \fi  
{  
\def\loop#1\repeat{  
\def\body{#1}  
\iterate  
\def\iterate{  
\body  
\let\next\iterate  
\else  
\let\next\relax  
\fi  
\next  
}  
\let\repeat=\fi  
}  
\def\RestoreCatcodes{}  
\count@=0  \%  
\loop  
\edef\RestoreCatcodes{  
\RestoreCatcodes  
\catcode\the\count@=\the\catcode\count@\relax  
}  
\ifnum\count@<255  \relax  
\advance\count@ 1 \%  
\repeat  
\def\RangeCatcodeInvalid#1#2{  
\count@=#1\relax  
\loop  
\catcode\count@=#2\relax  
\ifnum\count@<#2\relax  
\advance\count@ 1 \%  
\repeat  
\end{verbatim}

\repeat
\def\RangeCatcodeCheck#1#2#3{% 
\count@=#1\relax
\loop
\ifnum#3=\catcode\count@
\else
\errmsg{Character \the\count@ space with wrong catcode \the\catcode\count@ space instead of \number#3}%
\fi
\ifnum\count@<#2\relax
\advance\count@ 1 %
\repeat
}
\def\space{ }
\expandafter\ifx\csname LoadCommand\endcsname\relax
\def\LoadCommand{\input rerunfilecheck.sty\relax}%
\fi
\def\Test{%
\RangeCatcodeInvalid{0}{47}%
\RangeCatcodeInvalid{58}{64}%
\RangeCatcodeInvalid{91}{96}%
\RangeCatcodeInvalid{123}{255}%
\catcode`@=12 %
\catcode`\=0 %
\catcode`\%=14 %
\LoadCommand
\RangeCatcodeCheck{0}{36}{15}%
\RangeCatcodeCheck{37}{37}{14}%
\RangeCatcodeCheck{38}{47}{15}%
\RangeCatcodeCheck{48}{57}{12}%
\RangeCatcodeCheck{58}{63}{15}%
\RangeCatcodeCheck{64}{64}{12}%
\RangeCatcodeCheck{65}{90}{11}%
\RangeCatcodeCheck{91}{91}{15}%
\RangeCatcodeCheck{92}{92}{0}%
\RangeCatcodeCheck{93}{96}{15}%
\RangeCatcodeCheck{97}{122}{11}%
\RangeCatcodeCheck{123}{255}{15}%
\RestoreCatcodes
}%
\Test
\csname @@end\endcsname
\end
⟨/𭗍𭖾𭗌𭗍𭟣⟩

4 Installation

4.1 Download

Package. This package is available on CTAN:\footnote{ftp://ftp.ctan.org/tex-archive/}

CTAN:macros/latex/contrib/oberdiek/rerunfilecheck.dtx The source file.

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 docu-
mentation files are generated. The files and directories obey the TDS standard.

**CTAN:install/macros/latex/contrib/oberdiek.tds.zip**

*TDS* refers to the standard “A Directory Structure for TeX Files” ([CTAN:tds/tds.pdf](https://ctan.org/)). Directories with `texmf` in their name are usually organized this way.

### 4.2 Bundle installation

**Unpacking.** Unpack the `oberdiek.tds.zip` in the TDS tree (also known as `texmf` tree) of your choice. Example (linux):

```bash
unzip oberdiek.tds.zip -d ~/texmf
```

**Script installation.** Check the directory `TDS:scripts/oberdiek/` for scripts that need further installation steps. Package `attachfile2` comes with the Perl script `pdfatfi.pl` that should be installed in such a way that it can be called as `pdfatfi`. Example (linux):

```bash
chmod +x scripts/oberdiek/pdfatfi.pl
cp scripts/oberdiek/pdfatfi.pl /usr/local/bin/
```

### 4.3 Package installation

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

```
tex rerunfilecheck.dtx
```

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

- `rerunfilecheck.sty`  
  ```latex
  \rightarrow \text{tex/latex/oberdiek/rerunfilecheck.sty}
  ```
- `rerunfilecheck.pdf`  
  ```latex
  \rightarrow \text{doc/latex/oberdiek/rerunfilecheck.pdf}
  ```
- `rerunfilecheck-example.cfg`  
  ```latex
  \rightarrow \text{doc/latex/oberdiek/rerunfilecheck-example.cfg}
  ```
- `test/rerunfilecheck-test1.tex`  
  ```latex
  \rightarrow \text{doc/latex/oberdiek/test/rerunfilecheck-test1.tex}
  ```
- `rerunfilecheck.dtx`  
  ```latex
  \rightarrow \text{source/latex/oberdiek/rerunfilecheck.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.

### 4.4 Refresh file name databases

If your TeX distribution (teTeX, miktex, ...) relies on file name databases, you must refresh these. For example, teTeX users run `texhash` or `mktexlsr`.

### 4.5 Some details for the interested

**Attached source.** The PDF documentation on CTAN also includes the `.dtx` source file. It can be extracted by AcrobatReader 6 or higher. Another option is `pdftk`, e.g. unpack the file into the current directory:

```
pdftk rerunfilecheck.pdf unpack_files output .
```

**Unpacking with 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{rerunfilecheck.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 pdfTeX:

```
pdflatex rerunfilecheck.dtx
makeindex -s gind.ist rerunfilecheck.idx
pdflatex rerunfilecheck.dtx
makeindex -s gind.ist rerunfilecheck.idx
pdflatex rerunfilecheck.dtx
```

5 Catalogue

The following XML file can be used as source for the \TeX\ Catalogue. The elements `caption` and `description` are imported from the original XML file from the Catalogue. The name of the XML file in the Catalogue is `rerunfilecheck.xml`.

```
<?xml version='1.0' encoding='us-ascii'?>
<!DOCTYPE entry SYSTEM 'catalogue.dtd'>
<entry datestamp='$Date$' modifier='$Author$' id='rerunfilecheck'>
  <name>rerunfilecheck</name>
  <caption>Checksum based rerun checks on auxiliary files.</caption>
  <authorref id='auth:oberdiek'/>
  <copyright owner='Heiko Oberdiek' year='2009-2011'/>
  <license type='lppl1.3'/>
  <version number='1.7'/>
  <description>
    The package provides additional rerun warnings if some
    auxiliary files have changed. It is based on MD5 checksum,
    provided by pdf\TeX.  
    </description>
  <documentation details='Package documentation'
    href='ctan:/macros/latex/contrib/oberdiek/rerunfilecheck.pdf'/>
  <ctan file='true' path='/macros/latex/contrib/oberdiek/rerunfilecheck.dtx'/>
  <miktex location='oberdiek'/>
  <texlive location='oberdiek'/>
  <install path='/macros/latex/contrib/oberdiek/oberdiek.tds.zip'/>
</entry>
```

6 History

[2009/12/10 v1.0]
- The first version.

[2009/12/12 v1.1]
- Short info shortened.

[2009/12/18 v1.2]
- Required date for package `uniquecounter` updated because of bug in this package.
[2010/01/25 v1.3]
• Moved from TDS:*/generic/* to TDS:*/latex/*.

[2010/02/22 v1.4]
• The options of this package are recognized only if they are package options. Global options are ignored. This avoids name clashes with class and other package options (for example, class option ‘index=totoc’).

[2010/03/15 v1.5]
• Call of \pdffivesum is wrapped in \IfFileExists to avoid calls of \mktextex if this feature is enabled. However \IfFileExists has file name limitations.

[2010/03/16 v1.6]
• Reverted to version 1.4 and \IfFileExists wrapper of version 1.5 is removed.

[2011/04/15 v1.7]
• Using \AtEndAfterFileList of package atveryend 2011/04/15 v1.6 instead of \AtVeryEndDocument.

7 Index

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.

Symbols

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Page(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>#</td>
<td>332</td>
</tr>
<tr>
<td>%</td>
<td>408</td>
</tr>
<tr>
<td>@</td>
<td>333, 406</td>
</tr>
<tr>
<td>\PackageInfoNoLine</td>
<td>90, 179, 223, 275, 288, 303</td>
</tr>
<tr>
<td>\PackageWarningNoLine</td>
<td>119, 143, 187, 294</td>
</tr>
<tr>
<td>@bsphack</td>
<td>152, 170, 196, 214</td>
</tr>
<tr>
<td>\empty</td>
<td>142, 158, 176, 186, 202, 220</td>
</tr>
<tr>
<td>@firstofone</td>
<td>341, 344</td>
</tr>
<tr>
<td>@glossaryfile</td>
<td>193, 194, 206, 208, 212</td>
</tr>
<tr>
<td>@gobble</td>
<td>338, 346</td>
</tr>
<tr>
<td>@ifundefined</td>
<td>132</td>
</tr>
<tr>
<td>@include</td>
<td>101, 102</td>
</tr>
<tr>
<td>@indexfile</td>
<td>149, 150, 162, 164, 168</td>
</tr>
<tr>
<td>@nil</td>
<td>281, 313</td>
</tr>
<tr>
<td>@onelevel@sanitize</td>
<td>321, 323</td>
</tr>
<tr>
<td>@sanitize</td>
<td>154, 172, 198, 216</td>
</tr>
<tr>
<td>@starttoc</td>
<td>128, 129</td>
</tr>
<tr>
<td>@urglossary</td>
<td>199, 217</td>
</tr>
<tr>
<td>@urindex</td>
<td>155, 173</td>
</tr>
<tr>
<td>\</td>
<td>296, 407</td>
</tr>
<tr>
<td>\f</td>
<td>330</td>
</tr>
<tr>
<td>}</td>
<td>331</td>
</tr>
<tr>
<td>\advance</td>
<td>371, 379, 394</td>
</tr>
<tr>
<td>\AtBeginDocument</td>
<td>110</td>
</tr>
<tr>
<td>\AtEndAfterFileList</td>
<td>270</td>
</tr>
<tr>
<td>\AtEndOfFile</td>
<td>114</td>
</tr>
<tr>
<td>\begin</td>
<td>122</td>
</tr>
<tr>
<td>\body</td>
<td>350, 354</td>
</tr>
<tr>
<td>\catcode</td>
<td>19, 20, 21, 24, 25, 27, 28, 29, 30, 34, 36, 330, 331, 393, 394</td>
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