

# 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.

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## 1 Documentation

L<sup>A</sup>T<sub>E</sub>X informs the user, when to run L<sup>A</sup>T<sub>E</sub>X 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 pdfTeX provides `\pdfmdfivesum` and `\pdffilesize`. These features are also available in L<sup>A</sup>T<sub>E</sub>X, provided by package `pdftexcmds`. Thus this package `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 `true` turns an option on, `false` disables an option.

**mainaux:** Check the main `..aux` file.

**partaux:** Check the `..aux` files from `\include` files.

**starttoc:** Add the rerun checks in `\@starttoc` that is called by `\tableofcontents`, `\listoffigures`, ...

**index, glossary:** L<sup>A</sup>T<sub>E</sub>X’s original `\makeindex` and `\makeglossary` are redefined to add the rerun checks. The options do not have an effect, if `\makeindex`/`\makeglossary` are already called or if a package or class had redefined or will redefine them.

**aux:** This option turns all previous options on or off. “aux” means auxiliary file.

The default for the options is `false`, because some internals must be redefined to insert the rerun checks. The options can be set in `\usepackage` or the configuration file `rerunfilecheck.cfg`.

`\RerunFileCheckSetup {⟨key value list⟩}`

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

Example for the configuration file:

```
1 ⟨*cfg⟩
2 \ProvidesFile{rerunfilecheck.cfg}[2010/01/25 Default configuration]%
3 \RerunFileCheckSetup{aux}
4 ⟨/cfg⟩
```

## 1.2 Interface for class/package authors

`\RerunFileCheck {⟨file⟩} {⟨file closing action⟩} {⟨rerun warning⟩}`

If you want to add a rerun check, call `\RerunFileCheck` right before an output file is opened for writing. The macro first remembers the current checksum of `⟨file⟩`. The file is checked again right before the end of the job. Macro `\AtVeryEndDocument` of package `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 `⟨file closing action⟩`. 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 `⟨rerun warning⟩` 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

```

5 (*package)
6 \begingroup
7 \catcode123 1 % {
8 \catcode125 2 % }
9 \def\x{\endgroup
10 \expandafter\edef\csname ReFiCh@AtEnd\endcsname{%
11 \catcode35 \the\catcode35\relax
12 \catcode64 \the\catcode64\relax
13 \catcode123 \the\catcode123\relax
14 \catcode125 \the\catcode125\relax
15 }%
16 }%
17 \x
18 \catcode35 6 % #
19 \catcode64 11 % @
20 \catcode123 1 % {
21 \catcode125 2 % }
22 \def\TMP@EnsureCode#1#2{%
23 \edef\ReFiCh@AtEnd{%
24 \ReFiCh@AtEnd
25 \catcode#1 \the\catcode#1\relax
26 }%
27 \catcode#1 #2\relax
28 }
29 \TMP@EnsureCode{39}{12}% '
30 \TMP@EnsureCode{40}{12}% (
31 \TMP@EnsureCode{41}{12}% )
32 \TMP@EnsureCode{42}{12}% *
33 \TMP@EnsureCode{44}{12}% ,
34 \TMP@EnsureCode{46}{12}% .
35 \TMP@EnsureCode{47}{12}% /
36 \TMP@EnsureCode{58}{12}% :
37 \TMP@EnsureCode{59}{12}% ;
38 \TMP@EnsureCode{60}{12}% <
39 \TMP@EnsureCode{61}{12}% =
40 \TMP@EnsureCode{62}{12}% >
41 \TMP@EnsureCode{91}{12}% [
42 \TMP@EnsureCode{93}{12}% ]
43 \TMP@EnsureCode{96}{12}% '
44 \g@addto@macro\ReFiCh@AtEnd{\endinput}

Package identification.
45 \NeedsTeXFormat{LaTeX2e}
46 \ProvidesPackage{rerunfilecheck}%
47 [2010/01/25 v1.3 Rerun checks for auxiliary files (H0)]

```

### 2.1 Options

```

48 \RequirePackage{kvoptions}[2009/07/17]
49 \SetupKeyvalOptions{%
50 family=rerunfilecheck,%
51 prefix=ReFiCh%
52 }

```

\RerunFileCheckSetup

```

53 \newcommand*{\RerunFileCheckSetup}{%
54   \setkeys{rerunfilecheck}%
55 }

56 \DeclareBoolOption{mainaux}
57 \DeclareBoolOption{partaux}
58 \DeclareBoolOption{starttoc}
59 \DeclareBoolOption{index}
60 \DeclareBoolOption{glossary}
61 \define@key{rerunfilecheck}{aux}[true]{%
62   \RerunFileCheckSetup{%
63     mainaux={#1},%
64     partaux={#1},%
65     starttoc={#1},%
66     index={#1},%
67     glossary={#1}%
68   }%
69 }

70 \InputIfFileExists{rerunfilecheck.cfg}{-}{-}
71 \ProcessKeyvalOptions*

```

\ReFiCh@DisableOption

```

72 \def\ReFiCh@DisableOption{%
73   \DisableKeyvalOption[%
74     action=warning,%
75     package=rerunfilecheck%
76   ]{rerunfilecheck}%
77 }

```

## 2.2 Check for checksum feature

```

78 \RequirePackage{infwarerr}[2007/09/09]
79 \RequirePackage{pdftexcmds}[2009/04/10]

80 \begingroup\expandafter\expandafter\expandafter\endgroup
81 \expandafter\ifx\csname pdf@filemdfivesum\endcsname\relax
82   \@PackageInfoNoLine{rerunfilecheck}{%
83     Feature \string\pdfmdfivesum\space is not available\MessageBreak
84     (e.g. pdfTeX or LuaTeX with package ‘pdftexcmds’).\MessageBreak
85     Therefore file contents cannot be checked efficiently\MessageBreak
86     and the loading of the package is aborted%
87   }%
88   \newcommand*{\RerunFileCheck}[3]{}%
89   \renewcommand*{\RerunFileCheckSetup}[1]{}%
90   \expandafter\ReFiCh@AtEnd
91 \fi

```

## 2.3 Standard .aux files

```

92 \ifReFiCh@partaux
93   \let\ReFiCh@org@include\@include
94   \def\@include#1 {%
95     \if@files
96       \RerunFileCheck{#1.aux}{-}{-}%
97     \fi
98     \ReFiCh@org@include{#1} %
99   }%
100 \fi
101 \ifReFiCh@mainaux
102   \AtBeginDocument{%
103     \ReFiCh@mainauxfalse
104   }%

```

```

105 \ifReFiCh@mainaux
106 \AtEndOfPackage{%
107   \RerunFileCheck{\jobname.aux}{-}{-}%
108 }%
109 \else
110   \if@filesw
111     \@PackageWarningNoLine{rerunfilecheck}{%
112       Main aux file check is disabled,\MessageBreak
113       because the file is already opened.\MessageBreak
114       Load the package before \string\begin{document}%
115     }%
116   \fi
117 \fi
118 \fi
119 \ifReFiCh@starttoc
120 \let\ReFiCh@org@starttoc\@starttoc
121 \def\@starttoc#1{%
122   \if@filesw
123     \RerunFileCheck{\jobname.#1}{-}%
124     \@ifundefined{tf@#1}{%
125       }{%
126         \immediate\closeout\csname tf@#1\endcsname
127       }%
128     }{}%
129   \fi
130   \ReFiCh@org@starttoc{#1}%
131 }%
132 \fi
133 \ifReFiCh@index
134 \ifx\makeindex\@empty
135   \@PackageWarningNoLine{rerunfilecheck}{%
136     Option 'index' ignored,\MessageBreak
137     because \string\makeindex\space has already been called%
138   }%
139 \else
140   \def\ReFiCh@temp{%
141     \newwrite\@indexfile
142     \immediate\openout\@indexfile=\jobname.idx %
143     \def\index{%
144       \@bsphack
145       \begingroup
146       \@sanitize
147       \@wrindex
148     }%
149     \typeout{Writing index file \jobname.idx}%
150     \let\makeindex\@empty
151   }%
152   \ifx\ReFiCh@temp\makeindex
153     \def\makeindex{%
154       \newwrite\@indexfile
155       \RerunFileCheck{\jobname.idx}{-}%
156       \immediate\closeout\@indexfile
157     }{%
158       Rerun LaTeX/makeindex to get index right%
159     }%
160     \immediate\openout\@indexfile=\jobname.idx %
161     \def\index{%
162       \@bsphack
163       \begingroup
164       \@sanitize
165       \@wrindex
166     }%

```

```

167         \typeout{Writing index file \jobname.idx}%
168         \let\makeindex\@empty
169     }%
170 \else
171     \@PackageInfoNoLine{rerunfilecheck}{%
172         Option 'index': unsupported version of \string\makeindex
173     }%
174 \fi
175 \fi
176 \fi
177 \ifReFiCh@glossary
178     \ifx\makeglossary\@empty
179         \@PackageWarningNoLine{rerunfilecheck}{%
180             Option 'glossary' ignored,\MessageBreak
181             because \string\makeglossary\space has already been called%
182         }%
183     \else
184         \def\ReFiCh@temp{%
185             \newwrite\@glossaryfile
186             \immediate\openout\@glossaryfile=\jobname.glo %
187             \def\glossary{%
188                 \@bsphack
189                 \begingroup
190                 \@sanitize
191                 \@wrglossary
192             }%
193             \typeout{Writing glossary file \jobname.glo}%
194             \let\makeglossary\@empty
195         }%
196         \ifx\ReFiCh@temp\makeglossary
197             \def\ReFiCh@temp{%
198                 \newwrite\@glossaryfile
199                 \RerunFileCheck{\jobname.glo}{%
200                     \immediate\closeout\@glossaryfile
201                 }{%
202                     Rerun LaTeX/makeindex to get glossary right%
203                 }%
204                 \immediate\openout\@glossaryfile=\jobname.glo %
205                 \def\glossary{%
206                     \@bsphack
207                     \begingroup
208                     \@sanitize
209                     \@wrglossary
210                 }%
211                 \typeout{Writing glossary file \jobname.glo}%
212                 \let\makeglossary\@empty
213             }%
214         \else
215             \@PackageInfoNoLine{rerunfilecheck}{%
216                 Option 'glossary': unsupported version of \string\makeglossary
217             }%
218         \fi
219     \fi
220 \fi
221 \ReFiCh@DisableOption{mainaux}
222 \ReFiCh@DisableOption{partaux}
223 \ReFiCh@DisableOption{starttoc}
224 \ReFiCh@DisableOption{index}
225 \ReFiCh@DisableOption{glossary}
226 \ReFiCh@DisableOption{aux}

```

## 2.4 Rerun check

```

227 \RequirePackage{atveryend}[2009/12/07]
228 \RequirePackage{uniquecounter}[2009/12/18]

\ReFiCh@Checksum

229 \begingroup\expandafter\expandafter\expandafter\endgroup
230 \expandafter\ifx\csname pdf@filesize\endcsname\relax
231   \def\ReFiCh@Checksum{%
232     \pdf@filemdfivesum
233   }%
234 \else
235   \def\ReFiCh@Checksum#1{%
236     \pdf@filemdfivesum{#1}%
237     \ReFiCh@Separator
238     \pdf@filesize{#1}%
239   }%
240 \fi

\ReFiCh@NoFile

241 \def\ReFiCh@Separator{;}

\ReFiCh@NoFile

242 \def\ReFiCh@NoFile{<no file>}

243 \UniqueCounterNew{rerunfilecheck}

\RerunFileCheck

244 \newcommand*\RerunFileCheck{%
245   \UniqueCounterCall{rerunfilecheck}\ReFiCh\RerunFileCheck
246 }

\ReFiCh\RerunFileCheck

247 \def\ReFiCh\RerunFileCheck#1{%
248   \expandafter\ReFiCh@@RerunFileCheck\csname ReFiCh@#1\endcsname
249 }

\ReFiCh@@RerunFileCheck

250 \def\ReFiCh@@RerunFileCheck#1#2#3#4{%
251   \xdef#1{\ReFiCh@Checksum{#2}}%
252   \ifx#1\ReFiCh@Separator
253     \global\let#1\ReFiCh@NoFile
254   \fi
255   \AtVeryEndDocument{%
256     \begingroup
257     #3%
258     \edef\x{\ReFiCh@Checksum{#2}}%
259     \ifx\x\ReFiCh@Separator
260       \let\x\ReFiCh@NoFile
261     \fi
262     \ifx#1\x
263       \@PackageInfoNoLine{rerunfilecheck}{%
264         File ‘#2’ has not changed.\MessageBreak
265         Checksum: \x
266       }%
267     \else
268       \ifnum
269         \ReFiCh@IsAux#2\relax.aux\relax\@nil
270         \ifx#1\ReFiCh@NoFile 1\else 0\fi
271         \ifx\x\ReFiCh@AuxEmptyUnix 1%
272         \else
273         \ifx\x\ReFiCh@AuxEmptyDos 1\fi
274       \fi
275       =111 %

```

```

276 \PackageInfoNoLine{rerunfilecheck}{%
277   File ‘#2’ is empty .aux file.\MessageBreak
278   Before: #1\MessageBreak
279   After: \space\x
280 }%
281 \else
282 \PackageWarningNoLine{rerunfilecheck}{%
283   File ‘#2’ has changed.%
284   \ifx\#4\%
285     \space Rerun%
286   \else
287     \MessageBreak
288     #4%
289   \fi
290 }%
291 \PackageInfoNoLine{rerunfilecheck}{%
292   Checksums for ‘#2’:\MessageBreak
293   Before: #1\MessageBreak
294   After: \space\x
295 }%
296 \fi
297 \fi
298 \endgroup
299 }%
300 }

301 \def\ReFiCh@IsAux#1.aux\relax#2\@nil{%
302   \ifx\hbox#2\hbox
303     0%
304   \else
305     1%
306   \fi
307 }

308 \def\ReFiCh@AuxEmptyUnix{A94A2480D3289E625EEA47CD1B285758;8}%
309 \@onelevel@sanitize\ReFiCh@AuxEmptyUnix

310 \def\ReFiCh@AuxEmptyDos{A62A15ECE803E2EBE94952FCC9933BC0;9}%
311 \@onelevel@sanitize\ReFiCh@AuxEmptyDos

312 \ReFiCh@AtEnd
313 \endpackage

```

## 3 Test

### 3.1 Catcode checks for loading

```

314 \test1\
315 \catcode‘\{=1 %
316 \catcode‘\}=2 %
317 \catcode‘\#=6 %
318 \catcode‘\@=11 %
319 \expandafter\ifx\csname count@\endcsname\relax
320   \countdef\count@=255 %
321 \fi
322 \expandafter\ifx\csname @gobble\endcsname\relax
323   \long\def@gobble#1{%
324 \fi
325 \expandafter\ifx\csname @firstofone\endcsname\relax
326   \long\def@firstofone#1{#1}%
327 \fi
328 \expandafter\ifx\csname loop\endcsname\relax
329   \expandafter@firstofone

```



```

330 \else
331   \expandafter\@gobble
332 \fi
333 {%
334   \def\loop#1\repeat{%
335     \def\body{#1}%
336     \iterate
337   }%
338   \def\iterate{%
339     \body
340     \let\next\iterate
341   \else
342     \let\next\relax
343   \fi
344   \next
345 }%
346 \let\repeat=\fi
347 }%
348 \def\RestoreCatcodes{}
349 \count@=0 %
350 \loop
351   \edef\RestoreCatcodes{%
352     \RestoreCatcodes
353     \catcode\the\count@=\the\catcode\count@\relax
354   }%
355   \ifnum\count@<255 %
356     \advance\count@ 1 %
357   \repeat
358
359 \def\RangeCatcodeInvalid#1#2{%
360   \count@=#1\relax
361   \loop
362     \catcode\count@=15 %
363   \ifnum\count@<#2\relax
364     \advance\count@ 1 %
365   \repeat
366 }
367 \expandafter\ifx\csname LoadCommand\endcsname\relax
368   \def\LoadCommand{\input rerunfilecheck.sty\relax}%
369 \fi
370 \def\Test{%
371   \RangeCatcodeInvalid{0}{47}%
372   \RangeCatcodeInvalid{58}{64}%
373   \RangeCatcodeInvalid{91}{96}%
374   \RangeCatcodeInvalid{123}{255}%
375   \catcode'\@=12 %
376   \catcode'\=0 %
377   \catcode'\{=1 %
378   \catcode'\}=2 %
379   \catcode'\#=6 %
380   \catcode'\[=12 %
381   \catcode'\]=12 %
382   \catcode'\%=14 %
383   \catcode'\ =10 %
384   \catcode13=5 %
385   \LoadCommand
386   \RestoreCatcodes
387 }
388 \Test
389 \csname @@end\endcsname
390 \end
391 </test1>

```

## 4 Installation

### 4.1 Download

**Package.** This package is available on CTAN<sup>1</sup>:

[CTAN:macros/latex/contrib/oberdiek/rerunfilecheck.dtx](#) The source file.

[CTAN:macros/latex/contrib/oberdiek/rerunfilecheck.pdf](#) Documentation.

**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.

[CTAN:install/macros/latex/contrib/oberdiek.tds.zip](#)

TDS refers to the standard “A Directory Structure for T<sub>E</sub>X Files” ([CTAN:tds/tds.pdf](#)). 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):

```
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):

```
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-T<sub>E</sub>X:

```
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):

<code>rerunfilecheck.sty</code>	→ <code>tex/latex/oberdiek/rerunfilecheck.sty</code>
<code>rerunfilecheck.pdf</code>	→ <code>doc/latex/oberdiek/rerunfilecheck.pdf</code>
<code>rerunfilecheck-example.cfg</code>	→ <code>doc/latex/oberdiek/rerunfilecheck-example.cfg</code>
<code>test/rerunfilecheck-test1.tex</code>	→ <code>doc/latex/oberdiek/test/rerunfilecheck-test1.tex</code>
<code>rerunfilecheck.dtx</code>	→ <code>source/latex/oberdiek/rerunfilecheck.dtx</code>

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 T<sub>E</sub>X distribution (teT<sub>E</sub>X, miK<sub>T</sub>E<sub>X</sub>, ...) relies on file name databases, you must refresh these. For example, teT<sub>E</sub>X users run `texhash` or `mktextlsr`.

---

<sup>1</sup><http://ftp.ctan.org/tex-archive/>

## 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 `pdf $\LaTeX$` :

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

## 5 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/*`.

## 6 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; numbers in roman refer to the code lines where the entry is used.

### Symbols

`\#` ..... 317, 379<sub>11</sub>

\%	382	\glossary	187, 205
\@	318, 375		
\@PackageInfoNoLine		<b>H</b>	
.....	82, 171, 215, 263, 276, 291	\hbox	302
\@PackageWarningNoLine		<b>I</b>	
.....	111, 135, 179, 282	\if@files	95, 110, 122
\@bsphack	144, 162, 188, 206	\ifnum	268, 355, 363
\@empty	134, 150, 168, 178, 194, 212	\ifReFiCh@glossary	177
\@firstofone	326, 329	\ifReFiCh@index	133
\@glossaryfile	185, 186, 198, 200, 204	\ifReFiCh@mainaux	101, 105
\@gobble	323, 331	\ifReFiCh@partaux	92
\@ifundefined	124	\ifReFiCh@starttoc	119
\@include	93, 94	\ifx	81, 134, 152, 178, 196, 230, 252, 259, 262, 270, 271, 273, 284, 302, 319, 322, 325, 328, 367
\@indexfile	141, 142, 154, 156, 160	\immediate	126, 142, 156, 160, 186, 200, 204
\@nil	269, 301	\index	143, 161
\@onelevel@sanitize	309, 311	\input	368
\@sanitize	146, 164, 190, 208	\InputIfFileExists	70
\@starttoc	120, 121	\iterate	336, 338, 340
\@wrglossary	191, 209		
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