

The atveryend package

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Abstract

This \LaTeX package provides two hooks for `\end{document}` that are executed after the hook of `\AtEndDocument`. `\AfterLastShipout` can be used for code that is to be executed right after the last `\clearpage` before the `.aux` file is closed. `\AtVeryEndDocument` is used for code after closing and final reading of the `.aux` file.

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1 Documentation

There are packages (e.g. `hyperref` [4], `lastpage` [6]) that want to call code after the typesetting is done, for example to remember the last page number. `LATEX` provides the hook `\AtEndDocument` (clsguide [1]). There are packages that use this hook to do their job for typesetting pages (e.g. `endfloat` emits the floats here [2]). Also a user might provide additional code in `\AtEndDocument`. Therefore packages have to call `\clearpage` in `\AtEndDocument` to get after the last shipout page. But this is not too reliable, because the right timing is important between packages that want or have to do things before the last page is output and packages that only work properly if they can reach the point after the last shipout.

Therefore the task of this package is to provide additional hooks for `\end{document}`. All hooks are called after the hook of `\AtEndDocument`.

`\BeforeClearDocument {<code>}`

The code is called before the final `\clearpage` in `\enddocument`. However it is unknown, whether the last page is already shipped out or if this will be triggered by the final `\clearpage`.

`\AfterLastShipout {<code>}`

The code is called after the final `\clearpage` of `\enddocument` before the main `.aux` file is closed. This is the right place to remember the last page in the `.aux` file, for instance.

`\AtVeryEndDocument {<code>}`

The code is called after the `.aux` file is closed and read in again. It is the place for final checks, rerun hints, final messages.

1.1 Related work

Package `scrfile`: Markus Kohm has written package `scrfile` (part of KOMA-Script [5]) that provides hooks `\BeforeClosingMainAux` and `\AfterReadingMainAux`. They have the same function as the hooks of this package. In fact this package uses them, if they are available.

Class `revtex4-1`: This class calls `\clear@document` in `\enddocument` that wraps the final call of `\clearpage`. Thus it can be used as hook to call stuff after that `\clearpage`. This is also done by this package.

Package `etoolbox`: It provides `\AfterEndDocument`, a hook right before `\deadcycles` or `\@@end` [3].

This package tries to combine as many approaches as possible:

- It looks for a known `\enddocument` and redefines it.
- Hooks that are provided by others are used (package `scrfile` or class `revtex4-1`).
- It redefines `\@checkend` and `\@dofilelist` to insert the hooks similar to `packagescrfile`.
- The hook execution is wrapped in a macro that is redefined by its first call to prevent calling the hook more than once.

2 Implementation

```

1 (*package)
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 AtVeryEnd@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\AtVeryEnd@AtEnd{%
29     \AtVeryEnd@AtEnd
30     \catcode#1=\the\catcode#1\relax
31   }%
32   \catcode#1=#2\relax
33 }
34 \TMP@EnsureCode{9}{10}% (tab)
35 \TMP@EnsureCode{39}{12}% '
36 \TMP@EnsureCode{40}{12}% (
37 \TMP@EnsureCode{41}{12}% )
38 \TMP@EnsureCode{42}{12}% *
39 \TMP@EnsureCode{45}{12}% -
40 \TMP@EnsureCode{46}{12}% .
41 \TMP@EnsureCode{47}{12}% /
42 \TMP@EnsureCode{62}{12}% >
43 \TMP@EnsureCode{91}{12}% [
44 \TMP@EnsureCode{93}{12}% ]
45 \TMP@EnsureCode{96}{12}% `
46 \edef\AtVeryEnd@AtEnd{\AtVeryEnd@AtEnd\noexpand\endinput}

Package identification.
47 \NeedsTeXFormat{LaTeX2e}
48 \ProvidesPackage{atveryend}%

```

2.1 Hooks

ryEnd@BeforeClearDocumentHook

```
50 \let\AtVeryEnd@BeforeClearDocumentHook\@empty
```

tVeryEnd@AfterLastShipoutHook

```
51 \let\AtVeryEnd@AfterLastShipoutHook\@empty
```

VeryEnd@AtVeryEndDocumentHook

```
52 \let\AtVeryEnd@AtVeryEndDocumentHook\@empty
```

\BeforeClearDocument

```
53 \newcommand*{\BeforeClearDocument}{%
54   \g@addto@macro\AtVeryEnd@BeforeClearDocumentHook
55 }
```

\AfterLastShipout

```
56 \newcommand*{\AfterLastShipout}{%
57   \g@addto@macro\AtVeryEnd@AfterLastShipoutHook
58 }
```

\AtVeryEndDocument

```
59 \newcommand*{\AtVeryEndDocument}{%
60   \g@addto@macro\AtVeryEnd@AtVeryEndDocumentHook
61 }
```

\Call@BeforeClearDocument

```
62 \newcommand*{\Call@BeforeClearDocument}{%
63   \let\BeforeClearDocument\@firstofone
64   \ifx\AtVeryEnd@BeforeClearDocumentHook\@empty
65     \PackageInfo{atveryend}{Empty hook 'BeforeClearDocument'}%
66   \else
67     \PackageInfo{atveryend}{Executing hook 'BeforeClearDocument'}%
68     \AtVeryEnd@BeforeClearDocumentHook
69   \fi
70   \global\let\AtVeryEnd@BeforeClearDocumentHook\@undefined
71   \global\let\Call@BeforeClearDocument\relax
72 }
```

\Call@AfterLastShipout

```
73 \newcommand*{\Call@AfterLastShipout}{%
74   \let\AfterLastShipout\@firstofone
75   \ifx\AtVeryEnd@AfterLastShipoutHook\@empty
76     \PackageInfo{atveryend}{Empty hook 'AfterLastShipout'}%
77   \else
78     \PackageInfo{atveryend}{Executing hook 'AfterLastShipout'}%
79     \AtVeryEnd@AfterLastShipoutHook
80   \fi
81   \global\let\AtVeryEnd@AfterLastShipoutHook\@undefined
82   \global\let\Call@AfterLastShipout\relax
83 }
```

\Call@AtVeryEndDocument

```
84 \newcommand*{\Call@AtVeryEndDocument}{%
85   \let\AtVeryEndDocument\@firstofone
86   \ifx\AtVeryEnd@AtVeryEndDocumentHook\@empty
87     \PackageInfo{atveryend}{Empty hook 'AtVeryEndDocument'}%
88   \else
89     \PackageInfo{atveryend}{Executing hook 'AtVeryEndDocument'}%
```

```

90   \AtVeryEnd@AtVeryEndDocumentHook
91 \fi
92 \global\let\AtVeryEnd@AtVeryEndDocumentHook\undefined
93 \global\let\Call@AtVeryEndDocument\relax
94 }

```

2.2 Redefining \enddocument

This approach looks for known versions of `\enddocument` and redefines it. Class `seminar` and package `slidesec` are not checked, because there would be too much combinations to check.

2.2.1 L^AT_EX kernel

`\AtVeryEnd@test@standard`

```

95 \def\AtVeryEnd@test@standard{%
96   \let\AtEndDocument\@firstofone
97   \@enddocumenthook
98   \@checkend{document}%
99   \clearpage
100  \begingroup
101    \if@filesw
102      \immediate\closeout\@mainaux
103      \let\@setckpt\@gobbletwo
104      \let\@newl@bel\@testdef
105      \@tempswafalse
106      \makeatletter
107      \input\jobname.aux %
108    \fi
109    \@dofilelist
110    \ifdim \font@submax >\fontsubfuzz\relax
111      \@font@warning{Size substitutions with differences\MessageBreak
112        up to \font@submax\space have occurred.\@gobbletwo}%
113    \fi
114    \@defaultsubs
115    \@refundefined
116    \if@filesw
117      \ifx \@multiplelabels \relax
118        \if@tempswa
119          \@latex@warning@no@line{Label(s) may have changed. %
120            Rerun to get cross-references right}%
121        \fi
122      \else
123        \@multiplelabels
124      \fi
125    \fi
126  \endgroup
127  \deadcycles\z@
128  \@@end
129 }

```

`tVeryEnd@enddocument@standard`

```

130 \def\AtVeryEnd@enddocument@standard{%
131   \let\AtEndDocument\@firstofone
132   \@enddocumenthook
133   \@checkend{document}%
134   \Call@BeforeClearDocument
135   \clearpage
136   \Call@AfterLastShipout
137   \begingroup
138     \if@filesw
139       \immediate\closeout\@mainaux

```

```

140      \let\@setckpt\@gobbletwo
141      \let\@newl@bel\@testdef
142      \@tempswafalse
143      \makeatletter
144      \input\jobname.aux %
145      \fi
146      \Call@AtVeryEndDocument
147      \@dofilelist
148      \ifdim \font@submax >\fontsubfuzz\relax
149          \@font@warning{Size substitutions with differences\MessageBreak
150                          up to \font@submax\space have occurred.\@gobbletwo}%
151      \fi
152      \@defaultsubs
153      \@refundefined
154      \if@filesw
155          \ifx \@multiplelabels \relax
156              \if@tempswa
157                  \@latex@warning@no@line{Label(s) may have changed. %
158                                          Rerun to get cross-references right}%
159              \fi
160          \else
161              \@multiplelabels
162          \fi
163      \fi
164      \endgroup
165      \deadcycles\z@
166      \@@end
167 }

```

2.2.2 Package booklet, file 2up.tex

\AtVeryEnd@test@booklet

```

168 \expandafter\def\expandafter\AtVeryEnd@test@booklet\expandafter{%
169     \expandafter\twoclearpage
170     \AtVeryEnd@test@standard
171 }

```

AtVeryEnd@enddocument@booklet

```

172 \expandafter\def\expandafter\AtVeryEnd@enddocument@booklet\expandafter{%
173     \expandafter\twoclearpage
174     \AtVeryEnd@enddocument@standard
175 }

```

2.2.3 Class dinbrief

\AtVeryEnd@test@dinbrief

```

176 \def\AtVeryEnd@test@dinbrief{%
177     \@checkend{document} %
178     \newpage
179     \begingroup
180         \if@filesw
181             \ifnum\c@labelgen>0 %
182                 \immediate\closeout\@mainlbl
183                 \makeatletter
184                 \input \jobname@lbl\relax
185                 \clearpage
186             \fi
187             \immediate\closeout\@mainaux
188         \fi
189     \endgroup
190     \deadcycles\z@
191     \@@end

```

192 }

tVeryEnd@enddocument@dinbrief

```
193 \def\AtVeryEnd@enddocument@dinbrief{%
194   \@checkend{document}%
195   \Call@BeforeClearDocument
196   \newpage
197   \Call@AfterLastShipout
198   \begingroup
199     \if@filesw
200       \ifnum\c@labelgen>\z@
201         \immediate\closeout\@mainlbl
202         \makeatletter
203         \input \jobname@lbl\relax
204         \clearpage
205       \fi
206       \immediate\closeout\@mainaux
207     \fi
208     \Call@AtVeryEndDocument
209   \endgroup
210   \deadcycles\z@
211   \@@end
212 }
```

2.2.4 Class combine

\AtVeryEnd@test@combine

```
213 \def\AtVeryEnd@test@combine{%
214   \@enddocumenthook
215   \@checkend{document}%
216   \clearpage
217   \begingroup
218     \if@filesw
219       \immediate\closeout\@mainaux
220       \immediate\closeout\@partaux
221       \let\@setckpt\@gobbletwo
222       \let\@newl@bel\@testdef
223       \@tempwafalse
224       \makeatletter \input\c@lmainauxfile %% change here
225     \fi
226     \c@lenddoca %% a replacement
227     \@refundefined
228   \endgroup
229   \deadcycles\z@
230   \@@end
231 }
```

AtVeryEnd@enddocument@combine

```
232 \def\AtVeryEnd@enddocument@combine{%
233   \@enddocumenthook
234   \@checkend{document}%
235   \Call@BeforeClearDocument
236   \clearpage
237   \Call@AfterLastShipout
238   \begingroup
239     \if@filesw
240       \immediate\closeout\@mainaux
241       \immediate\closeout\@partaux
242       \let\@setckpt\@gobbletwo
243       \let\@newl@bel\@testdef
244       \@tempwafalse
245       \makeatletter \input\c@lmainauxfile %% change here
```

```

246 \fi
247 \Call@AtVeryEndDocument
248 \c@lenddoca %% a replacement
249 \@refundefined
250 \endgroup
251 \deadcycles\z@
252 \@@end
253 }

```

2.2.5 Class jpsj2

\AtVeryEnd@test@jpsj

```

254 \def\AtVeryEnd@test@jpsj{%
255 \if@lastpagebalancing
256 \global\let\@outputdblcol=\balancing@outputdblcol
257 \fi
258 \@checkend{document}%
259 \clearpage
260 \begingroup
261 \if@filesw
262 \immediate\closeout\@mainaux
263 \def\global\@namedef##1##2{%
264 \def\newlabel{\@testdef r}%
265 \def\bibcite{\@testdef b}%
266 \@tempswafalse
267 \makeatletter
268 \input \jobname.aux %
269 \if@tempswa
270 \@warning{%
271 Label(s) may have changed. %
272 Rerun to get cross-references right%
273 }%
274 \fi
275 \fi
276 \endgroup
277 \deadcycles\z@
278 \@@end
279 }

```

\AtVeryEnd@enddocument@jpsj

```

280 \def\AtVeryEnd@enddocument@jpsj{%
281 \if@lastpagebalancing
282 \global\let\@outputdblcol=\balancing@outputdblcol
283 \fi
284 \@checkend{document}%
285 \Call@BeforeClearDocument
286 \clearpage
287 \Call@AfterLastShipout
288 \begingroup
289 \if@filesw
290 \immediate\closeout\@mainaux
291 \def\global\@namedef##1##2{%
292 \def\newlabel{\@testdef r}%
293 \def\bibcite{\@testdef b}%
294 \@tempswafalse
295 \makeatletter
296 \input \jobname.aux %
297 \if@tempswa
298 \@warning{%
299 Label(s) may have changed. %
300 Rerun to get cross-references right%
301 }%

```



```

302     \fi
303     \fi
304     \Call@AtVeryEndDocument
305 \endgroup
306 \deadcycles\z@
307 \@@end
308 }

```

2.2.6 Testing and redefining

\AtVeryEnd@Test

```

309 \def\AtVeryEnd@Test#1#2{%
310   \expandafter\ifx\csname AtVeryEnd@test@#2\endcsname#1%
311     \expandafter\let\expandafter#1%
312       \csname AtVeryEnd@enddocument@#2\endcsname
313   \begingroup
314     \let\on@line\@empty
315     \PackageInfo{atveryend}{%
316       \string#1 detected (#2)%
317     }%
318   \endgroup
319   \expandafter\AtVeryEnd@SkipToNil
320 \fi
321 }

```

\AtVeryEnd@SkipToNil

```

322 \def\AtVeryEnd@SkipToNil#1\@nil{}

```

\AtVeryEnd@RedefEndDocument

```

323 \def\AtVeryEnd@RedefEndDocument#1{%
324   \ifx#1\@undefined
325   \else
326     \AtVeryEnd@Test#1{standard}%
327     \AtVeryEnd@Test#1{booklet}%
328     \AtVeryEnd@Test#1{dinbrief}%
329     \AtVeryEnd@Test#1{combine}%
330     \AtVeryEnd@Test#1{jpsj}%
331     \AtVeryEnd@SkipToNil
332   \@nil
333 \fi
334 }

335 \AtVeryEnd@RedefEndDocument\enddocument
336 \AtVeryEnd@RedefEndDocument\AP@enddocument % afterpage.sty
337 \AtVeryEnd@RedefEndDocument\hyper@back@cite@enddocument % htx-bc.sty
338 \AtVeryEnd@RedefEndDocument\hyper@enddocument % hyper.sty
339 \AtVeryEnd@RedefEndDocument\hyper@fn@enddocument % hyper.sty
340 \AtVeryEnd@RedefEndDocument\cweb@save@enddocument % cweb.cls
341 \AtVeryEnd@RedefEndDocument\prev@enddocument % flushend.sty
342 \AtVeryEnd@RedefEndDocument\endorigdocument % gaceta.cls
343 \AtVeryEnd@RedefEndDocument\keependdoc % aguplus.sty
344 \AtVeryEnd@RedefEndDocument\EMenddocument % t-angles.sty
345 \AtVeryEnd@RedefEndDocument\docmute@enddocument % docmute.sty
346 \AtVeryEnd@RedefEndDocument\@enddocument % al latex.sty
347 \AtVeryEnd@RedefEndDocument\enddocumentasusual % frenchle.sty
348 \AtVeryEnd@RedefEndDocument\old@enddocument % uwthesis.cls

```

2.3 Using hooks of other packages

2.3.1 Package scrfile

```

349 \AtBeginDocument{%

```

```

350 \ifpackageloaded{scrfile}{%
351   \@ifundefined{BeforeClosingMainAux}{}{%
352     \BeforeClosingMainAux{\Call@AfterLastShipout}%
353   }%
354   \@ifundefined{AfterReadingMainAux}{}{%
355     \AfterReadingMainAux{\Call@AtVeryEndDocument}%
356   }%
357 }{}%

```

2.3.2 Package etoolbox

```

358 \ifpackageloaded{etoolbox}{%
359   \@ifundefined{AfterEndDocument}{}{%
360     \AfterEndDocument{\Call@AtVeryEndDocument}%
361   }%
362 }{}%

```

2.4 Hack into \enddocument

```

363 \def\AtVeryEnd@document{document}%
364 \def\AtVeryEnd@RedefCheckEnd{%
365   \expandafter\def\expandafter\@checkend
366   \expandafter##\expandafter1\expandafter{%
367     \@checkend{##1}%
368     \def\AtVeryEnd@temp{##1}%
369     \ifx\AtVeryEnd@temp\AtVeryEnd@document
370       \let\AtVeryEnd@OrgClearpage\clearpage
371       \def\clearpage{%
372         \let\clearpage\AtVeryEnd@OrgClearpage
373         \Call@BeforeClearDocument
374         \clearpage
375         \Call@AfterLastShipout
376       }%
377     \fi
378   }%
379   \aftergroup\AtVeryEnd@RedefCheckEnd
380 }%
381 \AtEndDocument{%
382   \AtVeryEnd@RedefCheckEnd
383 }%
384 }

385 \AtEndDocument{%
386   \@ifundefined{@dofilelist}{%
387     \gdef@dofilelist{\Call@AtVeryEndDocument}%
388   }{%
389     \begingroup
390       \toks@\expandafter{\@dofilelist}%
391       \xdef@dofilelist{%
392         \noexpand\Call@AtVeryEndDocument
393         \the\toks@
394       }%
395     \endgroup
396   }%
397 }

```

2.5 Class letter

The class letter and some similar classes insert material (`\@startlabels`) at the end of the document. However, this method violates a precondition of this package that the `\clearpage` in `\enddocument` is the final call with no material at later times. Therefore we move the label making from the .aux file to `\AtEndDocument`.

```

398 \def\AtVeryEnd@temp{%
399   \AtBeginDocument{%
400     \let\@startlabels\startlabels

```

```

401 \let\@mlabel\mlabel
402 \if@filesw
403 \immediate\write\@mainaux{\string\@startlabels}%
404 \fi
405 }%
406 \AtEndDocument{%
407 \if@filesw
408 \immediate\write\@mainaux{\string\clearpage}%
409 \fi
410 }%
411 }
412 \ifx\makelabels\AtVeryEnd@temp
413 \else
414 \expandafter\AtVeryEnd@AtEnd
415 \fi%
416 \let\AtVeryEnd@PatchLetter=N%
417 \begingroup\expandafter\expandafter\expandafter\endgroup
418 \expandafter\ifx\csname endletter\endcsname\relax
419 \else
420 \long\def\AtVeryEnd@TestEndLetter#1\@auxout#2#3\AtVeryEnd@Nil{%
421 \def\AtVeryEnd@temp{#2}%
422 \ifx\AtVeryEnd@temp\@empty
423 \else
424 \@onelevel@sanitize\AtVeryEnd@temp
425 \edef\AtVeryEnd@StringMlabel{%
426 \string\string
427 \string\@mlabel
428 \expandafter\@gobble\string\{
429 }%
430 \def\AtVeryEnd@CatchFirst##1##2##3##4##5##6##7##8{%
431 ##1##2##3##4##5##6##7##8\AtVeryEnd@CatchSecond
432 }%
433 \def\AtVeryEnd@CatchSecond##1##2##3##4##5##6##7##8##9\@nil{%
434 ##1##2##3##4##5##6##7##8%
435 }%
436 \edef\AtVeryEnd@temp{%
437 \expandafter\AtVeryEnd@CatchFirst\AtVeryEnd@temp
438 {}{}{}{}{}{}{}{}%
439 {}{}{}{}{}{}{}{}%
440 \@nil
441 }%
442 \ifx\AtVeryEnd@temp\AtVeryEnd@StringMlabel
443 \expandafter\def\expandafter\endletter\expandafter{%
444 \endletter
445 \begingroup
446 \let\=\relax
447 \let\protect\@unexpandable@protect
448 \let\@mlabel=\relax
449 \edef\x{\endgroup
450 \noexpand\AtEndDocument{%
451 \@gobble#2%
452 }%
453 }%
454 \x
455 }%
456 \let\AtVeryEnd@PatchLetter=Y%
457 \fi
458 \fi
459 }%
460 \expandafter\AtVeryEnd@TestEndLetter\endletter
461 \@auxout{}\AtVeryEnd@Nil
462 \fi

```

```

463 \ifx\AtVeryEnd@PatchLetter Y%
464   \begingroup
465     \let\on@line\@empty
466     \PackageInfo{atveryend}{%
467       \@backslashchar makelabels detected. %
468       Moving labels\MessageBreak
469       from '.aux' file to \@backslashchar AtEndDocument%
470     }%
471   \endgroup
472   \def\makelabels{%
473     \AtBeginDocument{%
474       \let\@startlabels\startlabels
475       \let\@mlabel\mlabel
476     }%
477   }%
478   \AtEndDocument{%
479     \ifundefined{@startlabels}{%
480       }{%
481         \clearpage
482         \@startlabels
483       }%
484     }%
485     \AfterLastShipout{%
486       \let\@startlabels\relax
487       \let\@mlabel\@gobbletwo
488     }%
489   \else
490     \PackageWarningNoLine{atveryend}{%
491       \@backslashchar makelabels detected, but labels cannot\MessageBreak
492       be moved to \@backslashchar AtEndDocument, because\MessageBreak
493       \@backslashchar endletter is not in expected form%
494     }%
495   \fi
496 \AtVeryEnd@AtEnd%
497 \</package>

```

3 Test

3.1 Catcode checks for loading

```

498 \<test1>
499 \catcode'\{=1 %
500 \catcode'\}=2 %
501 \catcode'\#=6 %
502 \catcode'\@=11 %
503 \expandafter\ifx\csname count@\endcsname\relax
504   \countdef\count@=255 %
505 \fi
506 \expandafter\ifx\csname @gobble\endcsname\relax
507   \long\def\@gobble#1{}%
508 \fi
509 \expandafter\ifx\csname @firstofone\endcsname\relax
510   \long\def\@firstofone#1{#1}%
511 \fi
512 \expandafter\ifx\csname loop\endcsname\relax
513   \expandafter\@firstofone
514 \else
515   \expandafter\@gobble
516 \fi
517 {%
518   \def\loop#1\repeat{%

```

```

519     \def\body{#1}%
520     \iterate
521 }%
522 \def\iterate{%
523     \body
524     \let\next\iterate
525     \else
526     \let\next\relax
527     \fi
528     \next
529 }%
530 \let\repeat=\fi
531 }%
532 \def\RestoreCatcodes{}
533 \count@=0 %
534 \loop
535     \edef\RestoreCatcodes{%
536         \RestoreCatcodes
537         \catcode\the\count@=\the\catcode\count@\relax
538     }%
539 \ifnum\count@<255 %
540     \advance\count@ 1 %
541 \repeat
542
543 \def\RangeCatcodeInvalid#1#2{%
544     \count@=#1\relax
545     \loop
546         \catcode\count@=15 %
547         \ifnum\count@<#2\relax
548             \advance\count@ 1 %
549         \repeat
550 }
551 \def\RangeCatcodeCheck#1#2#3{%
552     \count@=#1\relax
553     \loop
554         \ifnum#3=\catcode\count@
555         \else
556             \errmessage{%
557                 Character \the\count@\space
558                 with wrong catcode \the\catcode\count@\space
559                 instead of \number#3%
560             }%
561         \fi
562         \ifnum\count@<#2\relax
563             \advance\count@ 1 %
564         \repeat
565 }
566 \def\space{ }
567 \expandafter\ifx\csname LoadCommand\endcsname\relax
568     \def\LoadCommand{\input atveryend.sty\relax}%
569 \fi
570 \def\Test{%
571     \RangeCatcodeInvalid{0}{47}%
572     \RangeCatcodeInvalid{58}{64}%
573     \RangeCatcodeInvalid{91}{96}%
574     \RangeCatcodeInvalid{123}{255}%
575     \catcode'\@=12 %
576     \catcode'\=0 %
577     \catcode'\%=14 %
578     \LoadCommand
579     \RangeCatcodeCheck{0}{36}{15}%
580     \RangeCatcodeCheck{37}{37}{14}%

```

```

581 \RangeCatcodeCheck{38}{47}{15}%
582 \RangeCatcodeCheck{48}{57}{12}%
583 \RangeCatcodeCheck{58}{63}{15}%
584 \RangeCatcodeCheck{64}{64}{12}%
585 \RangeCatcodeCheck{65}{90}{11}%
586 \RangeCatcodeCheck{91}{91}{15}%
587 \RangeCatcodeCheck{92}{92}{0}%
588 \RangeCatcodeCheck{93}{96}{15}%
589 \RangeCatcodeCheck{97}{122}{11}%
590 \RangeCatcodeCheck{123}{255}{15}%
591 \RestoreCatcodes
592 }
593 \Test
594 \csname @@end\endcsname
595 \end
596 </test1>

```

4 Installation

4.1 Download

Package. This package is available on CTAN¹:

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

[CTAN:macros/latex/contrib/oberdiek/atveryend.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_EX 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_EX:

```
tex atveryend.dtx
```

¹<http://ftp.ctan.org/tex-archive/>

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

```
atveryend.sty      → tex/latex/oberdiek/atveryend.sty
atveryend.pdf      → doc/latex/oberdiek/atveryend.pdf
test/atveryend-test1.tex → doc/latex/oberdiek/test/atveryend-test1.tex
atveryend.dtx      → source/latex/oberdiek/atveryend.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 (`te \TeX` , `mik \TeX` , ...) relies on file name databases, you must refresh these. For example, `te \TeX` users run `texhash` or `mktextlsr`.

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 atveryend.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{atveryend.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 atveryend.dtx
makeindex -s gind.ist atveryend.idx
pdflatex atveryend.dtx
makeindex -s gind.ist atveryend.idx
pdflatex atveryend.dtx
```

5 Acknowledgement

Arthur Ogawa: He proposed the new API with `\AfterLastShipout` and gave me much feedback, comprehensive class/package lists, many suggestions and comments.

6 References

- [1] The L^AT_EX3 Project: *L^AT_EX2_ε for class and package writers* 2006/02/15; [CTAN:macros/latex/doc/clsguide.pdf](#).
- [2] James Darrell McCauley, Jeff Goldberg: *The endfloat package*; 1995/10/11 v2.4i; [CTAN:macros/latex/contrib/endfloat/endfloat.pdf](#).
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- [4] Sebastian Rahtz, Heiko Oberdiek: *The hyperref package*; 2009/12/05 v6.79l; [CTAN:macros/latex/contrib/hyperref/](#).
- [5] Markus Kohm: *KOMA-Script*; 2009/07/24 v3.04a; <http://www.komascript.de/>.
- [6] Jeff Goldberg: *The lastpage package*; 1994/07/20 v0.1b; [CTAN:macros/latex/contrib/lastpage/lastpage.pdf](#).
- [7] APS, AIP, Arthur Orgawa; ReVTeX 4.1; 2009/10/13 v4.1; <http://authors.aps.org/revtex4/>.

7 History

[2009/12/06 v1.0]

- The first version.

[2009/12/07 v1.1]

- Bug fixes.

[2009/12/09 v1.2]

- Additional support of classes and packages.

[2009/12/11 v1.3]

- Patch for letter like classes that puts label into the ‘.aux’ file.
- Hook `\BeforeClearDocument` added (request from Arthur Ogawa).
- Patch of `\clear@document` removed (Arthur Ogawa).
- A nested `\AtBeginDocument` removed.

[2010/01/25 v1.4]

- Moved from TDS:*/generic/* to TDS:*/latex/.

[2010/03/24 v1.5]

- `\Call@BeforeClearDocument` fixed (Ahmed Musa).

8 Index

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