

The uniquecounter package

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Abstract

This package provides a kind of counter that provides unique number values. Several counter can be created by different names. The numeric values are not limited.

Contents

1	Documentation	1
1.1	Example	2
2	Implementation	2
2.1	Reload check and package identification	2
2.2	Catcodes	3
3	Test	6
3.1	Catcode checks for loading	6
3.2	Macro tests	8
3.2.1	Test with L ^A T _E X	8
3.2.2	Test with plain-T _E X	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	History	12
	[2009/09/11 v1.0]	12
	[2009/12/18 v1.1]	12
	[2011/01/30 v1.2]	12
6	Index	12

1 Documentation

`\UniqueCounterNew {<name>}`

Macro `\UniqueCounterNew` creates a new unique counter `<name>`. An error is thrown, if the counter already exists.

`\UniqueCounterCall {<name>} {<code>}`

Macro `\UniqueCounterCall` calls the given `<code>` with a new value of counter `<name>` as argument.

`\UniqueCounterIncrement {<name>}`

Macro `\UniqueCounterIncrement` generates a new value for the counter `<name>` by incrementing by one (globally).

`\UniqueCounterGet {<name>}`

Expandable macro `\UniqueCounterGet` returns the current value of counter `<name>`

1.1 Example

```
1 <*example>
2 \documentclass{minimal}
3 \usepackage{uniquecounter}
4 \UniqueCounterNew{anchor}
5 \makeatletter
6 \newcommand*{\DefNewAnchorName}[2]{%
7   % #1 is unique counter value
8   % #2 is name of anchor
9   \@namedef{anchor@#2}{a#1}%
10 }
11 \newcommand*{\NewAnchorName}[1]{%
12   \UniqueCounterCall{anchor}\DefNewAnchorName{#1}%
13 }
14 \newcommand*{\PrintAnchorName}[1]{%
15   \@nameuse{anchor@#1}%
16 }
17 \begin{document}
18   \NewAnchorName{Top}%
19   \NewAnchorName{Left}%
20   \noindent
21   Top: \PrintAnchorName{Top}\\%
22   Left: \PrintAnchorName{Left}%
23 \end{document}
24 </example>
```

2 Implementation

```
25 <*package>
```

2.1 Reload check and package identification

Reload check, especially if the package is not used with L^AT_EX.

```
26 \begingroup\catcode61\catcode48\catcode32=10\relax%
27 \catcode13=5 % ^~M
28 \endlinechar=13 %
29 \catcode35=6 % #
30 \catcode39=12 % '
31 \catcode44=12 % ,
32 \catcode45=12 % -
33 \catcode46=12 % .
34 \catcode58=12 % :
35 \catcode64=11 % @
36 \catcode123=1 % {
37 \catcode125=2 % }
```

```

38 \expandafter\let\expandafter\x\csname ver@uniquecounter.sty\endcsname
39 \ifx\x\relax % plain-TeX, first loading
40 \else
41   \def\empty{}%
42   \ifx\x\empty % LaTeX, first loading,
43     % variable is initialized, but \ProvidesPackage not yet seen
44   \else
45     \expandafter\ifx\csname PackageInfo\endcsname\relax
46       \def\x#1#2{%
47         \immediate\write-1{Package #1 Info: #2.}%
48       }%
49     \else
50       \def\x#1#2{\PackageInfo{#1}{#2, stopped}}%
51     \fi
52     \x{uniquecounter}{The package is already loaded}%
53   \aftergroup\endinput
54 \fi
55 \fi
56 \endgroup%

```

Package identification:

```

57 \begingroup\catcode61\catcode48\catcode32=10\relax%
58 \catcode13=5 % ^^M
59 \endlinechar=13 %
60 \catcode35=6 % #
61 \catcode39=12 % '
62 \catcode40=12 % (
63 \catcode41=12 % )
64 \catcode44=12 % ,
65 \catcode45=12 % -
66 \catcode46=12 % .
67 \catcode47=12 % /
68 \catcode58=12 % :
69 \catcode64=11 % @
70 \catcode91=12 % [
71 \catcode93=12 % ]
72 \catcode123=1 % {
73 \catcode125=2 % }
74 \expandafter\ifx\csname ProvidesPackage\endcsname\relax
75   \def\x#1#2#3[#4]{\endgroup
76     \immediate\write-1{Package: #3 #4}%
77     \xdef#1{#4}%
78   }%
79 \else
80   \def\x#1#2[#3]{\endgroup
81     #2[#{#3}]%
82     \ifx#1\@undefined
83       \xdef#1{#3}%
84     \fi
85     \ifx#1\relax
86       \xdef#1{#3}%
87     \fi
88   }%
89 \fi
90 \expandafter\x\csname ver@uniquecounter.sty\endcsname
91 \ProvidesPackage{uniquecounter}%
92 [2011/01/30 v1.2 Provides unlimited unique counter (H0)]%

```

2.2 Catcodes

```

93 \begingroup\catcode61\catcode48\catcode32=10\relax%
94 \catcode13=5 % ^^M
95 \endlinechar=13 %

```

```

96 \catcode123=1 % {
97 \catcode125=2 % }
98 \catcode64=11 % @
99 \def\x{\endgroup
100 \expandafter\edef\csname uqc@AtEnd\endcsname{%
101 \endlinechar=\the\endlinechar\relax
102 \catcode13=\the\catcode13\relax
103 \catcode32=\the\catcode32\relax
104 \catcode35=\the\catcode35\relax
105 \catcode61=\the\catcode61\relax
106 \catcode64=\the\catcode64\relax
107 \catcode123=\the\catcode123\relax
108 \catcode125=\the\catcode125\relax
109 }%
110 }%
111 \x\catcode61\catcode48\catcode32=10\relax%
112 \catcode13=5 % ^~M
113 \endlinechar=13 %
114 \catcode35=6 % #
115 \catcode64=11 % @
116 \catcode123=1 % {
117 \catcode125=2 % }
118 \def\TMP@EnsureCode#1#2{%
119 \edef\uqc@AtEnd{%
120 \uqc@AtEnd
121 \catcode#1=\the\catcode#1\relax
122 }%
123 \catcode#1=#2\relax
124 }
125 \TMP@EnsureCode{33}{12}% !
126 \TMP@EnsureCode{39}{12}% '
127 \TMP@EnsureCode{42}{12}% *
128 \TMP@EnsureCode{43}{12}% +
129 \TMP@EnsureCode{46}{12}% .
130 \TMP@EnsureCode{47}{12}% /
131 \TMP@EnsureCode{91}{12}% [
132 \TMP@EnsureCode{93}{12}% ]
133 \TMP@EnsureCode{96}{12}% '
134 \edef\uqc@AtEnd{\uqc@AtEnd\noexpand\endinput}

135 \begingroup\expandafter\expandafter\expandafter\endgroup
136 \expandafter\ifx\csname RequirePackage\endcsname\relax
137 \def\TMP@RequirePackage#1[#2]{%
138 \begingroup\expandafter\expandafter\expandafter\endgroup
139 \expandafter\ifx\csname ver@#1.sty\endcsname\relax
140 \input #1.sty\relax
141 \fi
142 }%
143 \TMP@RequirePackage{bigintcalc}[2007/11/11]%
144 \TMP@RequirePackage{infwarerr}[2007/09/09]%
145 \else
146 \RequirePackage{bigintcalc}[2007/11/11]%
147 \RequirePackage{infwarerr}[2007/09/09]%
148 \fi

```

\uqc@IncNum

```

149 \begingroup\expandafter\expandafter\expandafter\endgroup
150 \expandafter\ifx\csname numexpr\endcsname\relax
151 \def\uqc@IncNum#1{%
152 \begingroup
153 \count@=\csname uqc@cnt@#1\endcsname\relax
154 \advance\count@\@ne
155 \expandafter\xdef\csname uqc@cnt@#1\endcsname{%

```

```

156         \number\count@
157     }%
158     \ifnum\count@=2147483647 %
159         \global\expandafter\let\csname uqc@inc@#1\endcsname
160         \uqc@IncBig
161     \fi
162 \endgroup
163 }%
164 \else
165     \def\uqc@IncNum#1{%
166         \expandafter\xdef\csname uqc@cnt@#1\endcsname{%
167             \number\numexpr\csname uqc@cnt@#1\endcsname+1%
168         }%
169         \ifnum\csname uqc@cnt@#1\endcsname=2147483647 %
170             \global\expandafter\let\csname uqc@inc@#1\endcsname
171             \uqc@IncBig
172         \fi
173     }%
174 \fi

```

\uqc@IncBig

```

175 \def\uqc@IncBig#1{%
176     \expandafter\xdef\csname uqc@cnt@#1\endcsname{%
177         \expandafter\expandafter\expandafter
178         \BigIntCalcInc\csname uqc@cnt@#1\endcsname!%
179     }%
180 }

```

\uqc@Def

```

181 \begingroup\expandafter\expandafter\expandafter\endgroup
182 \expandafter\ifx\csname newcommand\endcsname\relax
183     \def\uqc@Def#1{\def#1##1}%
184 \else
185     \def\uqc@Def#1{\newcommand*{#1}[1]}%
186 \fi

```

\UniqueCounterNew

```

187 \uqc@Def\UniqueCounterNew{%
188     \expandafter\ifx\csname uqc@cnt@#1\endcsname\relax
189         \expandafter\xdef\csname uqc@cnt@#1\endcsname{0}%
190         \global\expandafter\let\csname uqc@inc@#1\endcsname\uqc@IncNum
191         \@PackageInfo{uniquecounter}{New unique counter ‘#1’}%
192     \else
193         \@PackageError{uniquecounter}{Unique counter ‘#1’ is already defined}\@ehc
194     \fi
195 }

```

\UniqueCounterIncrement

```

196 \uqc@Def\UniqueCounterIncrement{%
197     \expandafter\ifx\csname uqc@cnt@#1\endcsname\relax
198         \@PackageError{uniquecounter}{Unique counter ‘#1’ is undefined}\@ehc
199     \else
200         \csname uqc@inc@#1\endcsname{#1}%
201     \fi
202 }

```

\UniqueCounterGet

```

203 \uqc@Def\UniqueCounterGet{%
204     \csname uqc@cnt@#1\endcsname
205 }

```

\UniqueCounterCall

```

206 \uqc@Def\UniqueCounterCall{%
207   \expandafter\ifx\csname uqc@cnt@#1\endcsname\relax
208     \@PackageError{uniquecounter}{Unique counter ‘#1’ is undefined}\@ehc
209     \expandafter\uqc@Call\expandafter0%
210   \else
211     \UniqueCounterIncrement{#1}%
212     \expandafter\expandafter\expandafter\uqc@Call
213     \expandafter\expandafter\expandafter{%
214       \csname uqc@cnt@#1\expandafter\endcsname\expandafter
215     }%
216   \fi
217 }

```

\uqc@Call

```

218 \long\def\uqc@Call#1#2{#2{#1}}%
219 \uqc@AtEnd%
220 \</package>

```

3 Test

3.1 Catcode checks for loading

```

221 (*test1)
222 \catcode'\{=1 %
223 \catcode'\}=2 %
224 \catcode'\#=6 %
225 \catcode'\@=11 %
226 \expandafter\ifx\csname count@\endcsname\relax
227   \countdef\count@=255 %
228 \fi
229 \expandafter\ifx\csname @gobble\endcsname\relax
230   \long\def\@gobble#1{%
231 \fi
232 \expandafter\ifx\csname @firstofone\endcsname\relax
233   \long\def\@firstofone#1{#1}%
234 \fi
235 \expandafter\ifx\csname loop\endcsname\relax
236   \expandafter\@firstofone
237 \else
238   \expandafter\@gobble
239 \fi
240 {%
241   \def\loop#1\repeat{%
242     \def\body{#1}%
243     \iterate
244   }%
245   \def\iterate{%
246     \body
247     \let\next\iterate
248   \else
249     \let\next\relax
250   \fi
251   \next
252 }%
253 \let\repeat=\fi
254 }%
255 \def\RestoreCatcodes{}
256 \count@=0 %
257 \loop

```

```

258 \edef\RestoreCatcodes{%
259   \RestoreCatcodes
260   \catcode\the\count@=\the\catcode\count@\relax
261 }%
262 \ifnum\count@<255 %
263   \advance\count@ 1 %
264 \repeat
265
266 \def\RangeCatcodeInvalid#1#2{%
267   \count@=#1\relax
268   \loop
269     \catcode\count@=15 %
270   \ifnum\count@<#2\relax
271     \advance\count@ 1 %
272   \repeat
273 }
274 \def\RangeCatcodeCheck#1#2#3{%
275   \count@=#1\relax
276   \loop
277     \ifnum#3=\catcode\count@
278     \else
279       \errmessage{%
280         Character \the\count@\space
281         with wrong catcode \the\catcode\count@\space
282         instead of \number#3%
283       }%
284     \fi
285   \ifnum\count@<#2\relax
286     \advance\count@ 1 %
287   \repeat
288 }
289 \def\space{ }
290 \expandafter\ifx\csname LoadCommand\endcsname\relax
291   \def\LoadCommand{\input uniquecounter.sty\relax}%
292 \fi
293 \def\Test{%
294   \RangeCatcodeInvalid{0}{47}%
295   \RangeCatcodeInvalid{58}{64}%
296   \RangeCatcodeInvalid{91}{96}%
297   \RangeCatcodeInvalid{123}{255}%
298   \catcode'\@=12 %
299   \catcode'\=0 %
300   \catcode'\%=14 %
301   \LoadCommand
302   \RangeCatcodeCheck{0}{36}{15}%
303   \RangeCatcodeCheck{37}{37}{14}%
304   \RangeCatcodeCheck{38}{47}{15}%
305   \RangeCatcodeCheck{48}{57}{12}%
306   \RangeCatcodeCheck{58}{63}{15}%
307   \RangeCatcodeCheck{64}{64}{12}%
308   \RangeCatcodeCheck{65}{90}{11}%
309   \RangeCatcodeCheck{91}{91}{15}%
310   \RangeCatcodeCheck{92}{92}{0}%
311   \RangeCatcodeCheck{93}{96}{15}%
312   \RangeCatcodeCheck{97}{122}{11}%
313   \RangeCatcodeCheck{123}{255}{15}%
314   \RestoreCatcodes
315 }
316 \Test
317 \csname @@end\endcsname
318 \end
319 </test1>

```

3.2 Macro tests

3.2.1 Test with L^AT_EX

```
320 (*test2)
321 \NeedsTeXFormat{LaTeX2e}
322 \nofiles
323 \documentclass{minimal}
324 \usepackage{uniquecounter}[2011/01/30]
325 \usepackage{qstest}
326 \IncludeTests{*}
327 \LogTests{log}{*}{*}
328
329 \newcommand*\CheckValue[2]{%
330   \Expect*{#2}*{\UniqueCounterGet{#1}}%
331 }
332 \newcommand*\CheckSpace[1]{%
333   \sbox0{#1}%
334   \Expect{0.0pt}*{\the\wd0}%
335 }
336
337 \begin{qstest}{creation}{creation}
338   \CheckSpace{%
339     \UniqueCounterNew{test}%
340   }%
341   \CheckValue{test}{0}%
342 \end{qstest}
343
344 \begin{qstest}{increment}{increment}
345   \CheckSpace{%
346     \UniqueCounterIncrement{test}%
347   }%
348   \CheckValue{test}{1}%
349   \makeatletter
350   \def\uqc@cnt@test{2147483645}%
351   \CheckValue{test}{2147483645}%
352   \CheckSpace{%
353     \UniqueCounterIncrement{test}%
354   }%
355   \CheckValue{test}{2147483646}%
356   \CheckSpace{%
357     \UniqueCounterIncrement{test}%
358   }%
359   \Expect{true}*{\ifx\uqc@inc\uqc@NumInc true\else false\fi}%
360   \CheckValue{test}{2147483647}%
361   \CheckSpace{%
362     \UniqueCounterIncrement{test}%
363   }%
364   \CheckValue{test}{2147483648}%
365   \CheckSpace{%
366     \UniqueCounterIncrement{test}%
367   }%
368   \CheckValue{test}{2147483649}%
369 \end{qstest}
370
371 \begin{qstest}{call}{call}
372   \def\CheckCall#1#2{%
373     \Expect{#1}{#2}%
374   }%
375   \CheckSpace{%
376     \UniqueCounterNew{foo}%
377   }%
378   \CheckValue{foo}{0}%

```



```

379 \def\Check#1{%
380   \CheckSpace{%
381     \UniqueCounterCall{foo}{\CheckCall}{#1}%
382   }%
383   \CheckValue{foo}{#1}%
384 }%
385 \Check{1}%
386 \Check{2}%
387 \Check{3}%
388 \Check{4}%
389 \Check{5}%
390 \Check{6}%
391 \Check{7}%
392 \Check{8}%
393 \Check{9}%
394 \Check{10}%
395 \Check{11}%
396 \Check{12}%
397 \end{qstest}
398
399 \csname @@end\endcsname
400 </test2>

```

3.2.2 Test with plain-TeX

```

401 <*test3>
402 \input uniquecounter.sty\relax
403 \catcode'\@=11 %
404 \def\CheckValue#1#2{%
405   \begingroup
406     \edef\A{#2}%
407     \edef\B{\UniqueCounterGet{#1}}%
408     \ifx\A\B
409       \else
410         \@PackageError{TEST}{Failed: \A\space<> \B}\@ehc
411       \fi
412   \endgroup
413 }
414 \def\CheckSpace#1{%
415   \setbox0=\hbox{#1}%
416   \ifdim\wd0=\z@
417   \else
418     \@PackageError{TEST}{Failed: 0.0pt <> \the\wd0}\@ehc
419   \fi
420 }
421
422 \begingroup
423   \CheckSpace{%
424     \UniqueCounterNew{test}%
425   }%
426   \CheckValue{test}{0}%
427 \endgroup
428
429 \begingroup
430   \CheckSpace{%
431     \UniqueCounterIncrement{test}%
432   }%
433   \CheckValue{test}{1}%
434   \def\uqc@cnt@test{2147483645}%
435   \CheckValue{test}{2147483645}%
436   \CheckSpace{%
437     \UniqueCounterIncrement{test}%
438   }%
439   \CheckValue{test}{2147483646}%

```

```

440 \CheckSpace{%
441   \UniqueCounterIncrement{test}}%
442 }%
443 \ifx\uqc@inc\uqc@NumInc
444 \else
445   \@PackageError{TEST}{Failed: wrong inc function}\@ehc
446 \fi
447 \CheckValue{test}{2147483647}%
448 \CheckSpace{%
449   \UniqueCounterIncrement{test}}%
450 }%
451 \CheckValue{test}{2147483648}%
452 \CheckSpace{%
453   \UniqueCounterIncrement{test}}%
454 }%
455 \CheckValue{test}{2147483649}%
456 \endgroup
457 \begingroup
458 \def\CheckCall#1#2{%
459   \begingroup
460     \def\A{#1}%
461     \def\B{#2}%
462     \ifx\A\B
463     \else
464       \@PackageError{TEST}{Failed: \A\space <> \B}\@ehc
465     \fi
466   \endgroup
467 }%
468 \CheckSpace{%
469   \UniqueCounterNew{foo}}%
470 }%
471 \CheckValue{foo}{0}%
472 \CheckSpace{%
473   \UniqueCounterCall{foo}{\CheckCall}{1}}%
474 }%
475 \CheckSpace{%
476   \UniqueCounterCall{foo}{\CheckCall}{2}}%
477 }%
478 \CheckValue{foo}{2}%
479 \endgroup
480 \csname @@end\endcsname\end
481 </test3>

```

4 Installation

4.1 Download

Package. This package is available on CTAN¹:

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

[CTAN:macros/latex/contrib/oberdiek/uniquecounter.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 \TeX Files” ([CTAN:tds/tds.pdf](#)). Directories with `texmf` in their name are usually organized this way.

¹<http://ftp.ctan.org/tex-archive/>

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 `TEX`:

```
tex uniquecounter.dtx
```

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

<code>uniquecounter.sty</code>	→ <code>tex/generic/oberdiek/uniquecounter.sty</code>
<code>uniquecounter.pdf</code>	→ <code>doc/latex/oberdiek/uniquecounter.pdf</code>
<code>uniquecounter-example.tex</code>	→ <code>doc/latex/oberdiek/uniquecounter-example.tex</code>
<code>test/uniquecounter-test1.tex</code>	→ <code>doc/latex/oberdiek/test/uniquecounter-test1.tex</code>
<code>test/uniquecounter-test2.tex</code>	→ <code>doc/latex/oberdiek/test/uniquecounter-test2.tex</code>
<code>test/uniquecounter-test3.tex</code>	→ <code>doc/latex/oberdiek/test/uniquecounter-test3.tex</code>
<code>uniquecounter.dtx</code>	→ <code>source/latex/oberdiek/uniquecounter.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 `TEX` distribution (`teTEX`, `mikTEX`, ...) relies on file name databases, you must refresh these. For example, `teTEX` 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 uniquecounter.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{uniquecounter.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 pdfL^AT_EX:

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

5 History

[2009/09/11 v1.0]

- First public version.

[2009/12/18 v1.1]

- Bug fix in `\UniqueCounterCall` for values > 9 (bug report of Lev Bishop).

[2011/01/30 v1.2]

- Already loaded package files are not input in plain T_EX.

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; plain numbers refer to the code lines where the entry is used.

Symbols		\BigIntCalcInc 178	
\#	224	\body	242, 246
\%	300	C	
\@	225, 298, 403	\catcode	26, 27, 29, 30, 31, 32, 33, 34, 35, 36, 37, 57, 58, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 93, 94, 96, 97, 98, 102, 103, 104, 105, 106, 107, 108, 111, 112, 114, 115, 116, 117, 121, 123, 222, 223, 224, 225, 260, 269, 277, 281, 298, 299, 300, 403
\@PackageError	193, 198, 208, 410, 418, 445, 464	\Check	379, 385, 386, 387, 388, 389, 390, 391, 392, 393, 394, 395, 396
\@PackageInfo	191	\CheckCall ...	372, 381, 458, 473, 476
\@ehc .	193, 198, 208, 410, 418, 445, 464	\CheckSpace	332, 338, 345, 352, 356, 361, 365, 375, 380, 414, 423, 430, 436, 440, 448, 452, 468, 472, 475
\@firstofone	233, 236	\CheckValue	329, 341, 348, 351, 355, 360, 364, 368, 378, 383, 404, 426, 433, 435, 439, 447, 451, 455, 471, 478
\@gobble	230, 238	\count@	153, 154, 156, 158, 227, 256, 260, 262, 263, 267, 269, 270, 271, 275, 277, 280, 281, 285, 286
\@namedef	9		
\@nameuse	15		
\@ne	154		
\@undefined	82		
\%	21, 299		
\{	222		
\}	223		
A			
\A	406, 408, 410, 460, 462, 464		
\advance	154, 263, 271, 286		
\aftergroup	53		
B			
\B	407, 408, 410, 461, 462, 464		
\begin	17, 337, 344, 371		

<code>\countdef</code>	227		P	
<code>\csname</code>	38, 45, 74, 90, 100, 136, 139, 150, 153, 155, 159, 166, 167, 169, 170, 176, 178, 182, 188, 189, 190, 197, 200, 204, 207, 214, 226, 229, 232, 235, 290, 317, 399, 480		<code>\PackageInfo</code>	50
			<code>\PrintAnchorName</code>	14, 21, 22
			<code>\ProvidesPackage</code>	43, 91
		D		
<code>\DefNewAnchorName</code>	6, 12		R	
<code>\documentclass</code>	2, 323		<code>\RangeCatcodeCheck</code>	274, 302, 303, 304, 305, 306, 307, 308, 309, 310, 311, 312, 313
		E	<code>\RangeCatcodeInvalid</code>	266, 294, 295, 296, 297
<code>\empty</code>	41, 42		<code>\repeat</code>	241, 253, 264, 272, 287
<code>\end</code>	23, 318, 342, 369, 397, 480		<code>\RequirePackage</code>	146, 147
<code>\endcsname</code>	38, 45, 74, 90, 100, 136, 139, 150, 153, 155, 159, 166, 167, 169, 170, 176, 178, 182, 188, 189, 190, 197, 200, 204, 207, 214, 226, 229, 232, 235, 290, 317, 399, 480		<code>\RestoreCatcodes</code> ..	255, 258, 259, 314
<code>\endinginput</code>	53, 134		S	
<code>\endlinechar</code>	28, 59, 95, 101, 113		<code>\sbox</code>	333
<code>\errmessage</code>	279		<code>\setbox</code>	415
<code>\Expect</code>	330, 334, 359, 373		<code>\space</code>	280, 281, 289, 410, 464
		H		
<code>\hbox</code>	415		T	
		I	<code>\Test</code>	293, 316
<code>\ifdim</code>	416		<code>\the</code> 101, 102, 103, 104, 105, 106, 107, 108, 121, 260, 280, 281, 334, 418	
<code>\ifnum</code>	158, 169, 262, 270, 277, 285		<code>\TMP@EnsureCode</code> ...	118, 125, 126, 127, 128, 129, 130, 131, 132, 133
<code>\ifx</code>	39, 42, 45, 74, 82, 85, 136, 139, 150, 182, 188, 197, 207, 226, 229, 232, 235, 290, 359, 408, 443, 462		<code>\TMP@RequirePackage</code> ...	137, 143, 144
<code>\immediate</code>	47, 76		U	
<code>\IncludeTests</code>	326		<code>\UniqueCounterCall</code>	2, 12, 206, 381, 473, 476
<code>\input</code>	140, 291, 402		<code>\UniqueCounterGet</code> ...	2, 203, 330, 407
<code>\iterate</code>	243, 245, 247		<code>\UniqueCounterIncrement</code>	2, 196, 211, 346, 353, 357, 362, 366, 431, 437, 441, 449, 453
		L	<code>\UniqueCounterNew</code>	1, 4, 187, 339, 376, 424, 469
<code>\LoadCommand</code>	291, 301		<code>\uqc@AtEnd</code>	119, 120, 134, 219
<code>\LogTests</code>	327		<code>\uqc@Call</code>	209, 212, 218
<code>\loop</code>	241, 257, 268, 276		<code>\uqc@cnt@test</code>	350, 434
		M	<code>\uqc@Def</code>	181, 187, 196, 203, 206
<code>\makeatletter</code>	5, 349		<code>\uqc@inc</code>	359, 443
		N	<code>\uqc@IncBig</code>	160, 171, 175
<code>\NeedsTeXFormat</code>	321		<code>\uqc@IncNum</code>	149, 190
<code>\NewAnchorName</code>	11, 18, 19		<code>\uqc@NumInc</code>	359, 443
<code>\newcommand</code> ...	6, 11, 14, 185, 329, 332		<code>\usepackage</code>	3, 324, 325
<code>\next</code>	247, 249, 251		W	
<code>\nofiles</code>	322		<code>\wd</code>	334, 416, 418
<code>\noindent</code>	20		<code>\write</code>	47, 76
<code>\number</code>	156, 167, 282		X	
<code>\numexpr</code>	167		<code>\x</code> 38, 39, 42, 46, 50, 52, 75, 80, 90, 99, 111	
		Z		
			<code>\z@</code>	416