

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.

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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
27   \catcode44 12 % ,
28   \catcode45 12 % -
29   \catcode46 12 % .
30   \catcode58 12 % :
31   \catcode64 11 % @
32   \catcode123 1 % {
33   \catcode125 2 % }
34   \expandafter\let\expandafter\x\csname ver@uniquecounter.sty\endcsname
35   \ifx\x\relax % plain-TEX, first loading
36   \else
37     \def\empty{}%
38     \ifx\x\empty % LATEX, first loading,
39       % variable is initialized, but \ProvidesPackage not yet seen
40     \else
41       \catcode35 6 % #
42       \expandafter\ifx\csname PackageInfo\endcsname\relax
43       \def\x#1#2{%
```

```

44         \immediate\write-1{Package #1 Info: #2.}%
45     }%
46     \else
47         \def\x#1#2{\PackageInfo{#1}{#2, stopped}}%
48     \fi
49     \x{uniquecounter}{The package is already loaded}%
50     \aftergroup\endinput
51 \fi
52 \fi
53 \endgroup

```

Package identification:

```

54 \begingroup
55 \catcode35 6 % #
56 \catcode40 12 % (
57 \catcode41 12 % )
58 \catcode44 12 % ,
59 \catcode45 12 % -
60 \catcode46 12 % .
61 \catcode47 12 % /
62 \catcode58 12 % :
63 \catcode64 11 % @
64 \catcode91 12 % [
65 \catcode93 12 % ]
66 \catcode123 1 % {
67 \catcode125 2 % }
68 \expandafter\ifx\csname ProvidesPackage\endcsname\relax
69     \def\x#1#2#3[#4]{\endgroup
70         \immediate\write-1{Package: #3 #4}%
71         \xdef#1{#4}%
72     }%
73 \else
74     \def\x#1#2[#3]{\endgroup
75         #2[#{#3}]%
76         \ifx#1@undefined
77             \xdef#1{#3}%
78         \fi
79         \ifx#1\relax
80             \xdef#1{#3}%
81         \fi
82     }%
83 \fi
84 \expandafter\x\csname ver@uniquecounter.sty\endcsname
85 \ProvidesPackage{uniquecounter}%
86 [2009/09/11 v1.0 Provides unlimited unique counter (H0)]

```

2.2 Catcodes

```

87 \begingroup
88 \catcode123 1 % {
89 \catcode125 2 % }
90 \def\x{\endgroup
91     \expandafter\edef\csname uqc@AtEnd\endcsname{%
92         \catcode35 \the\catcode35\relax
93         \catcode64 \the\catcode64\relax
94         \catcode123 \the\catcode123\relax
95         \catcode125 \the\catcode125\relax
96     }%
97 }%
98 \x
99 \catcode35 6 % #
100 \catcode64 11 % @
101 \catcode123 1 % {

```

```

102 \catcode125 2 % }
103 \def\TMP@EnsureCode#1#2{%
104   \edef\uqc@AtEnd{%
105     \uqc@AtEnd
106     \catcode#1 \the\catcode#1\relax
107   }%
108   \catcode#1 #2\relax
109 }
110 \TMP@EnsureCode{33}{12}% !
111 \TMP@EnsureCode{39}{12}% '
112 \TMP@EnsureCode{42}{12}% *
113 \TMP@EnsureCode{43}{12}% +
114 \TMP@EnsureCode{46}{12}% .
115 \TMP@EnsureCode{47}{12}% /
116 \TMP@EnsureCode{61}{12}% =
117 \TMP@EnsureCode{96}{12}% `

118 \begingroup\expandafter\expandafter\expandafter\endgroup
119 \expandafter\ifx\csname RequirePackage\endcsname\relax
120   \input bigintcalc.sty\relax
121   \input infwarerr.sty\relax
122 \else
123   \RequirePackage{bigintcalc}[2007/11/11]%
124   \RequirePackage{infwarerr}[2007/09/09]%
125 \fi

\uqc@IncNum

126 \begingroup\expandafter\expandafter\expandafter\endgroup
127 \expandafter\ifx\csname numexpr\endcsname\relax
128   \def\uqc@IncNum#1{%
129     \begingroup
130       \count@=\csname uqc@cnt@#1\endcsname\relax
131       \advance\count@\@ne
132       \expandafter\xdef\csname uqc@cnt@#1\endcsname{%
133         \number\count@
134       }%
135       \ifnum\count@=2147483647 %
136         \global\expandafter\let\csname uqc@inc@#1\endcsname
137         \uqc@IncBig
138       \fi
139     \endgroup
140   }%
141 \else
142   \def\uqc@IncNum#1{%
143     \expandafter\xdef\csname uqc@cnt@#1\endcsname{%
144       \number\numexpr\csname uqc@cnt@#1\endcsname+1%
145     }%
146     \ifnum\csname uqc@cnt@#1\endcsname=2147483647 %
147       \global\expandafter\let\csname uqc@inc@#1\endcsname
148       \uqc@IncBig
149     \fi
150   }%
151 \fi

\uqc@IncBig

152 \def\uqc@IncBig#1{%
153   \expandafter\xdef\csname uqc@cnt@#1\endcsname{%
154     \expandafter\expandafter\expandafter
155     \BigIntCalcInc\csname uqc@cnt@#1\endcsname!%
156   }%
157 }

\uqc@Def

```

```

158 \begingroup\expandafter\expandafter\expandafter\endgroup
159 \expandafter\ifx\csname newcommand\endcsname\relax
160   \def\uqc@Def#1{\def#1##1}%
161 \else
162   \def\uqc@Def#1{\newcommand*{#1}[1]}%
163 \fi

```

\UniqueCounterNew

```

164 \uqc@Def\UniqueCounterNew{%
165   \expandafter\ifx\csname uqc@cnt@#1\endcsname\relax
166     \expandafter\xdef\csname uqc@cnt@#1\endcsname{0}%
167     \global\expandafter\let\csname uqc@inc@#1\endcsname\uqc@IncNum
168     \@PackageInfo{uniquecounter}{New unique counter ‘#1’}%
169   \else
170     \@PackageError{uniquecounter}{Unique counter ‘#1’ is already defined}\@ehc
171   \fi
172 }

```

\UniqueCounterIncrement

```

173 \uqc@Def\UniqueCounterIncrement{%
174   \expandafter\ifx\csname uqc@cnt@#1\endcsname\relax
175     \@PackageError{uniquecounter}{Unique counter ‘#1’ is undefined}\@ehc
176   \else
177     \csname uqc@inc@#1\endcsname{#1}%
178   \fi
179 }

```

\UniqueCounterGet

```

180 \uqc@Def\UniqueCounterGet{%
181   \csname uqc@cnt@#1\endcsname
182 }

```

\UniqueCounterCall

```

183 \uqc@Def\UniqueCounterCall{%
184   \expandafter\ifx\csname uqc@cnt@#1\endcsname\relax
185     \@PackageError{uniquecounter}{Unique counter ‘#1’ is undefined}\@ehc
186     \expandafter\uqc@Call\expandafter0%
187   \else
188     \UniqueCounterIncrement{#1}%
189     \expandafter\expandafter\expandafter\uqc@Call
190     \csname uqc@cnt@#1\endcsname
191   \fi
192 }

```

\uqc@Call

```

193 \long\def\uqc@Call#1#2{#2{#1}}%
194 \uqc@AtEnd
195 \</package>

```

3 Test

3.1 Catcode checks for loading

```

196 \test1
197 \catcode'\{=1 %
198 \catcode'\}=2 %
199 \catcode'\#=6 %
200 \catcode'\@=11 %
201 \expandafter\ifx\csname count@\endcsname\relax

```

```

202 \countdef\count@=255 %
203 \fi
204 \expandafter\ifx\csname @gobble\endcsname\relax
205 \long\def\@gobble#1{}%
206 \fi
207 \expandafter\ifx\csname @firstofone\endcsname\relax
208 \long\def\@firstofone#1{#1}%
209 \fi
210 \expandafter\ifx\csname loop\endcsname\relax
211 \expandafter\@firstofone
212 \else
213 \expandafter\@gobble
214 \fi
215 {%
216 \def\loop#1\repeat{%
217 \def\body{#1}%
218 \iterate
219 }%
220 \def\iterate{%
221 \body
222 \let\next\iterate
223 \else
224 \let\next\relax
225 \fi
226 \next
227 }%
228 \let\repeat=\fi
229 }%
230 \def\RestoreCatcodes{}
231 \count@=0 %
232 \loop
233 \edef\RestoreCatcodes{%
234 \RestoreCatcodes
235 \catcode\the\count@=\the\catcode\count@\relax
236 }%
237 \ifnum\count@<255 %
238 \advance\count@ 1 %
239 \repeat
240
241 \def\RangeCatcodeInvalid#1#2{%
242 \count@=#1\relax
243 \loop
244 \catcode\count@=15 %
245 \ifnum\count@<#2\relax
246 \advance\count@ 1 %
247 \repeat
248 }
249 \expandafter\ifx\csname LoadCommand\endcsname\relax
250 \def\LoadCommand{\input uniquecounter.sty\relax}%
251 \fi
252 \def\Test{%
253 \RangeCatcodeInvalid{0}{47}%
254 \RangeCatcodeInvalid{58}{64}%
255 \RangeCatcodeInvalid{91}{96}%
256 \RangeCatcodeInvalid{123}{255}%
257 \catcode'\@=12 %
258 \catcode'\=0 %
259 \catcode'\{=1 %
260 \catcode'\}=2 %
261 \catcode'\#=6 %
262 \catcode'\[=12 %
263 \catcode'\]=12 %

```

```

264 \catcode'\%=14 %
265 \catcode'\ =10 %
266 \catcode13=5 %
267 \LoadCommand
268 \RestoreCatcodes
269 }
270 \Test
271 \csname @@end\endcsname
272 \end
273 </test1>

```

3.2 Macro tests

3.2.1 Test with L^AT_EX

```

274 <*test2>
275 \NeedsTeXFormat{LaTeX2e}
276 \nofiles
277 \documentclass{minimal}
278 \usepackage{uniquecounter}[2009/09/11]
279 \usepackage{qstest}
280 \IncludeTests{*}
281 \LogTests{log}{*}{*}
282
283 \newcommand*\CheckValue[2]{%
284   \Expect*{#2}*{\UniqueCounterGet{#1}}%
285 }
286 \newcommand*\CheckSpace[1]{%
287   \sbox0{#1}%
288   \Expect{0.0pt}*{\the\wd0}%
289 }
290
291 \begin{qstest}{creation}{creation}
292   \CheckSpace{%
293     \UniqueCounterNew{test}%
294   }%
295   \CheckValue{test}{0}%
296 \end{qstest}
297
298 \begin{qstest}{increment}{increment}
299   \CheckSpace{%
300     \UniqueCounterIncrement{test}%
301   }%
302   \CheckValue{test}{1}%
303   \makeatletter
304   \def\uqc@cnt@test{2147483645}%
305   \CheckValue{test}{2147483645}%
306   \CheckSpace{%
307     \UniqueCounterIncrement{test}%
308   }%
309   \CheckValue{test}{2147483646}%
310   \CheckSpace{%
311     \UniqueCounterIncrement{test}%
312   }%
313   \Expect{true}*{\ifx\uqc@inc\uqc@NumInc true\else false\fi}%
314   \CheckValue{test}{2147483647}%
315   \CheckSpace{%
316     \UniqueCounterIncrement{test}%
317   }%
318   \CheckValue{test}{2147483648}%
319   \CheckSpace{%
320     \UniqueCounterIncrement{test}%
321   }%

```

```

322 \CheckValue{test}{2147483649}%
323 \end{qstest}
324
325 \begin{qstest}{call}{call}
326 \def\CheckCall#1#2{%
327 \Expect{#1}{#2}%
328 }%
329 \CheckSpace{%
330 \UniqueCounterNew{foo}%
331 }%
332 \CheckValue{foo}{0}%
333 \CheckSpace{%
334 \UniqueCounterCall{foo}{\CheckCall}{1}%
335 }%
336 \CheckSpace{%
337 \UniqueCounterCall{foo}{\CheckCall}{2}%
338 }%
339 \CheckValue{foo}{2}%
340 \end{qstest}
341
342 \csname @@end\endcsname
343 \end{test2}

```

3.2.2 Test with plain-TeX

```

344 (*test3)
345 \input uniquecounter.sty\relax
346 \catcode'\@=11 %
347 \def\CheckValue#1#2{%
348 \begingroup
349 \edef\A{#2}%
350 \edef\B{\UniqueCounterGet{#1}}%
351 \ifx\A\B
352 \else
353 \@PackageError{TEST}{Failed: \A\space<> \B}\@ehc
354 \fi
355 \endgroup
356 }
357 \def\CheckSpace#1{%
358 \setbox0=\hbox{#1}%
359 \ifdim\wd0=\z@
360 \else
361 \@PackageError{TEST}{Failed: 0.0pt <> \the\wd0}\@ehc
362 \fi
363 }
364
365 \begingroup
366 \CheckSpace{%
367 \UniqueCounterNew{test}%
368 }%
369 \CheckValue{test}{0}%
370 \endgroup
371
372 \begingroup
373 \CheckSpace{%
374 \UniqueCounterIncrement{test}%
375 }%
376 \CheckValue{test}{1}%
377 \def\uqc@cnt@test{2147483645}%
378 \CheckValue{test}{2147483645}%
379 \CheckSpace{%
380 \UniqueCounterIncrement{test}%
381 }%
382 \CheckValue{test}{2147483646}%

```



```

383 \CheckSpace{%
384   \UniqueCounterIncrement{test}}%
385 }%
386 \ifx\uqc@inc\uqc@NumInc
387 \else
388   \@PackageError{TEST}{Failed: wrong inc function}\@ehc
389 \fi
390 \CheckValue{test}{2147483647}%
391 \CheckSpace{%
392   \UniqueCounterIncrement{test}}%
393 }%
394 \CheckValue{test}{2147483648}%
395 \CheckSpace{%
396   \UniqueCounterIncrement{test}}%
397 }%
398 \CheckValue{test}{2147483649}%
399 \endgroup
400 \begingroup
401   \def\CheckCall#1#2{%
402     \begingroup
403       \def\A{#1}%
404       \def\B{#2}%
405       \ifx\A\B
406       \else
407         \@PackageError{TEST}{Failed: \A\space <> \B}\@ehc
408       \fi
409     \endgroup
410   }%
411   \CheckSpace{%
412     \UniqueCounterNew{foo}}%
413   }%
414   \CheckValue{foo}{0}%
415   \CheckSpace{%
416     \UniqueCounterCall{foo}{\CheckCall}{1}}%
417   }%
418   \CheckSpace{%
419     \UniqueCounterCall{foo}{\CheckCall}{2}}%
420   }%
421   \CheckValue{foo}{2}%
422 \endgroup
423 \csname @@end\endcsname\end
424 </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.

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.

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