The undolabl package*

H.-Martin Münch (Martin dot Muench at Uni-Bonn dot de)

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Abstract

This package allows to override existing labels, especially automatically generated ones.

WARNING: Since version 1.0d [2010/07/15] the \undonewlabel command takes only one argument, \undonewlabel{<label name>}, instead of two, \undonewlabel{<label name>} {\on@line}. Packages or documents, which used older versions of the undolabl package, must be updated by removing the second argument of \undonewlabel, i.e. the {\on@line}.

Note: The main code of this package was invented by

Ulrich Diez (eu_angelion@web.de)

and first published in the news:comp.text.tex newsgroup at

Sun, 20 Apr 2008 16:39:26 +0200, with subject:

Re: How to undefine/overwrite a label? (see e.g.

http://groups.google.de/group/comp.text.tex/msg/5ba8d4722e5cd326).

While Ulrich Diez neither wanted to create a package himself yet nor have one published under his name, he granted the publication of his code. Therefore: Thanks! I submitted this package to CTAN (after some updates of the documentation, mainly layout, typos and such things.)

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Save per page about 200 ml water, 2 g CO₂ and 2 g wood: Therefore please print only if this is really necessary.

^{*}This file has version number v1.0d, last revised 2010/07/15, documentation dated 2010/07/15.

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1 Introduction

The package's name undolabl is an eight-letter abbreviation for the phrases "undo" and "label".

This package allows to override existing labels, especially automatically generated ones.

When an instance of the \label-macro occurs in the document (e.g. \label{foo}), then a delayed \write (a write which is performed at shipout-time when the page-number is determined) to the .aux file is issued and you find in the .aux file something like:

```
\newlabel{foo}{{<page-no>}{<sectional no>}{foo}
```

During the beginning of the next LATEX-run, the .aux file will be read and

```
\newlabel{foo}{{<page-no>}{<sectional no>}{foo}{sectional no>}{opening else>}}
```

is expanded to

```
\label{lem:conditional} $$ \operatorname{cond} r\{foo\}_{{\operatorname{cond} no}}_{\operatorname{cond} no}} \simeq \operatorname{cond} r(foo)_{{\operatorname{cond} no}}_{\operatorname{cond} no}) $$
```

which in turn gets expanded to something like (pseudo code):

```
IF (macro \ensuremath{\mbox{\sc THEN}}
```

- Issue an error-message,
- Make sure that the multiply-defined-labels-warning occurs in the log-file

ELSE

\def\r@foo{{<page-no>}{<sectional no>}{}
ENDIF

Referencing works as follows:

```
\ref{foo} ->
```

- expand \r@foo: {<page-no>}{<sectional no>}{<probably something else>}
- grab the second from the resulting arguments: <sectional no>

```
\pageref{foo} ->
```

- expand \r@foo: {<page-no>}{<sectional no>}{<probably something else>}
- grab the first from the resulting arguments: <page-no>

Back to the \label-mechanism:

- At the beginning of the LATEX-run, all the \r@<label>-macros get defined from reading the .aux file. The \r@<label>-macros get used by the referencing-macros (\ref, \pageref...) during the LATEX-run.
- During the LATEX-run, the .aux file gets rewritten.
- At the end of the LATEX-run, the .aux file (which was rewritten/newly created during the LATEX-run) is read in order to detect whether references have changed during the current LATEX-run.

But this time $\ensuremath{\texttt{Qnewl@bel}}$ is redefined ($\ensuremath{\texttt{let}}$ equal to $\ensuremath{\texttt{Qtestdef}}$) and thus this time

```
\label{lem:convergence} $$ \operatorname{convergence} (\operatorname{convergence}) < \operatorname{convergence} (\operatorname{convergence}) $$
```

expands to something like (pseudo code):

```
Compare the (newly written) third argument (that is: {{<page-no>}{<sectional no>}{<probably something else>}} )
to the (current/former) definition of \r@foo.

If the two are different, then some page- or section-number
related to referencing has changed from the last to the current
LaTeX-run, thus in this case issue a message in the log-file:
"References may have changed. Rerun LaTeX in order to get
cross-references right".
```

So what do you need to do in order to override a label:

- First you need to write to the .aux file to silently undefine the associated \r@<label>-macro if it is already defined. That is why \overridelabel writes in terms of \protected@write to the .aux file:

```
\undonewlabel{<label>}
```

\undonewlabel "undefines" the \r@<label>-macro. (How this works will be explained below.)

- Then \overridelabel can call \label{<label>} again and thus produce another \newlabel{<label>}-entry to the .aux file.

In the .aux file all this results in a sequence like:

```
% from the former \label-call:
\newlabel{<label>}{..}
|->| \r0<label>-macro gets produced.
% from the \overrridelabel-call:
% - call to \undonewlabel within \overrridelabel:
\undonewlabel{<label>}
|->| \r0<label>-macro gets destroyed.
% - call to \label within \overrridelabel:
\newlabel{<label>}{..}
|->| a new \r0<label>-macro but no multiply-label-defined warning gets produced.
```

There is another issue left:

- It was said that .aux file is read at the beginning and at the end of the LATEX-run for detecting whether references have changed.
- When overriding a <label>, there will be several \newlabel{<label>}-calls associated to the same label-name in the .aux file.
- At the beginning of the LATEX-run only the last one counts for defining the associated $\rowngamma(abel)$ -macro.
- But at the end, when the new .aux file is read, they all count and thus with all these entries but the last one, the above-mentioned \@testdef-comparison will yield difference and thus in any case cause a warning-message about references having changed although that might not be a correct statement.

Ulrich Diez decided to catch this up by his \undolabl@testdef command. The \undolabl@testdef-comparison-mechanism gets enhanced via "replacing". This works as follows: When .aux file is read at the beginning of the LATEX-run, \@newl@bel is not let equal to \@testdef. When .aux file is read at the end of the LATEX-run, \@newl@bel is let equal to \@testdef. Thus it is sufficient to write into the beginning of the .aux file a direction which leads to letting \@newl@bel equal to \my@testdef in case its definition equals \@testdef. That direction is called "\reset@newl@bel". Also, when the .aux file is read at the end of the LATEX-run, \undonwelabel-entries therein should do nothing, thus \undonewlabel is let equal to \@gobble.

2 Usage

Load the package placing

\usepackage{undolabl}

in the preamble of your LATEX 2_{ε} source file.

When an existing label shall be replaced by a new one, say \overridelabel{<label name>} (where <label name> is the name of the label to be replaced by the new one), instead of just \label{<label name>}, which would produce a LaTeX Warning: Label '<label name>' multiply defined.

3 Example

```
1 (*example)
 2 \documentclass[british] {article}
4 \usepackage{undolabl}[2010/07/15]% v1.0d
5 %% There are no options for the undolabl package. %%
6 \usepackage{hyperref}[2010/06/18]% v6.81g; if you want to use nameref
7 \hypersetup{%
8 extension=pdf,%
9 plainpages=false,%
10 pdfpagelabels=true,%
11 hyperindex=false,%
12 pdflang={en},%
13 pdftitle={undolabl package example},%
14 pdfauthor={Hans-Martin Muench, after Ulrich Dietz},%
15 pdfsubject={Example for the undolabl package},%
16 pdfkeywords={LaTeX, undolabl, Ulrich Dietz, Hans-Martin Muench},%
17 pdfview=FitH,%
18 pdfstartview=FitH,%
19 pdfpagelayout=OneColumn,%
20 bookmarksopen=true%
21 }
22 \makeatletter
23 %% Code from tcilatex.tex, Macros for Scientific Word and
                                                                 %%
24 %% Scientific WorkPlace 5.5 <06 Oct 2005>
                                                                 %%
25 %% Copyright (C) 2005 Mackichan Software, Inc.
                                                                 %%
26 %% That macro file is NOT proprietary and may be freely copied %%
                                                                 %%
27 %% and distributed.
28 \def\unit#1{\mathord{\thinspace\rm #1}}%
29 %% End of code from tcilatex.tex
                                                                 %%
30 \makeatother
31 \listfiles
32 \begin{document}
33 \pagenumbering{arabic}
34 \section*{Example for undolabl}
36 This example demonstrates the use of package\newline
37 \textsf{undolabl}, v1.0d as of 2010/07/15 (HMM).\newline
38 For details please see the documentation!\newline
40 \noindent Save per page about $200\unit{ml}$~water,
41 \2\left(\frac{g}\right)^{CO}_{2}\ and 2\left(\frac{g}\right)^{wood}\cdot\right
42 Therefore please print only if this is really necessary.\newline
43 I do NOT think, that it is necessary to print THIS file, really\newline
44 (at least not after this page)!
46 \bigskip
47
48 \section{Test}
50 text \label{testlabel}\\
51 page-reference: \pageref{testlabel}\\% -> page 4
```

```
52 sectional-reference: \ref{testlabel}\\% -> section 4
53 name-reference: \nameref{testlabel}\%/ -> Still another test
55 \newpage
57 \section{Another test}
59 text \overridelabel{testlabel}\\
60 page-reference: \pageref{testlabel}\\%% -> page 4
61 sectional-reference: \ref{testlabel}\\% -> section 4
62 name-reference: \nameref{testlabel}\%/ -> Still another test
64 \newpage
66 \section{Yet another test}
67
68 text \overridelabel{testlabel}\\
69 page-reference: \pageref{testlabel}\\% -> page 4
70 sectional-reference: \ref{testlabel}\\% \rightarrow section 4
71 name-reference: \nameref{testlabel}%% -> Still another test
73 \newpage
74
75 \section{Still another test}
77 text \overridelabel{testlabel}\\
78 page-reference: \pageref{testlabel}\\% -> page 4
79 sectional-reference: \ref{testlabel}\\%% -> section 4
80 name-reference: \nameref{testlabel}%% -> Still another test
82 \end{document}
83 (/example)
```

4 The implementation

For a somewhat longer description see section 1.

We start off by checking that we are loading into IATEX 2_{ε} and announcing the name and version of this package.

```
84 (*package)
85 \NeedsTeXFormat{LaTeX2e}[1994/06/01]
86 \ProvidesPackage{undolabl}[2010/07/15 v1.0d
87 Overriding labels (HMM)]
88
```

\overridelabel

In order to override a label, first you need to write to the .aux file to silently undefine the associated \r@<label>-macro if it is already defined. That is why \overridelabel writes in terms of \protected@write to the .aux file: \undonewlabel{<label>}, "undefining" the \r@<label>-macro. And a message about this is given.

```
89 \newcommand\overridelabel[1]{%
90  \@bsphack
91  \protected@write\@auxout{}{\string\undonewlabel{#1}}%
92  \@overriddenmessage s{#1}%
```

Then \overridelabel can call \label{<label>} again and thus produce another \newlabel{<label>}-entry to the .aux file.

```
93 \label{#1}%
94 \@esphack
95 }
96
```

\undonewlabel

```
97 \newcommand\undonewlabel{\QundQnewlQbel r}%
```

98

```
\@und@newl@bel
```

\@overriddenmessage

\undolabl@testdef

\protected@write

\reset@newl@bel

@auxout

 $\frac{140}{141}$

142

\fi

143 }%

144 (/package)

138 \newcommand\reset@newl@bel{%
139 \ifx\@newl@bel\@testdef

\let\@newl@bel\undolabl@testdef

\let\undonewlabel\@gobble

```
If \r@<label> is undefined, give an error message:
99 \newcommand\@und@newl@bel[2]{%
     \ensuremath{\texttt{0ifundefined}}{\#10\#2}{\%}
        \PackageError{undolabl}{Label '#2' shall be overridden ^^J
101
102
          although it does not yet exist}{%
103
          A label which does not exist cannot be overridden.}%
104
     }{%
otherwise:
Undefine \r@label via letting it equal to \relax:
        \expandafter\global
        \expandafter\let
106
        \csname #10#2\endcsname\relax
107
108
       }%
     }
109
110
   Command for the notification of overriding a label:
111 \newcommand\@overriddenmessage[2]{%
     \label{local_energy} $$ \operatorname{local_Qnamedef}{\#10\#2}_{i}}_{%} $$
112
113
        \expandafter\g@addto@macro\csname #1@#2\endcsname{i}%
114
        }%
115
     \PackageWarning{undolabl}{Label '#2' overridden}
116
     }
117
118 \newcommand\undolabl@testdef[3]{%
119
     \@ifundefined{s@#2}\@secondoftwo\@firstofone{%
        \expandafter\ifx\csname s@#2\endcsname\empty
120
121
          \expandafter\@firstofone
122
        \else
123
        \expandafter\xdef\csname s@#2\endcsname{%
124
          \expandafter\expandafter
          \expandafter\@gobble
125
          \csname s@#2\endcsname
126
127
          }%
        \expandafter\@gobble
128
129
        \fi
       }%
130
        {%
131
132
        \ensuremath{\texttt{0}}$testdef{#1}{#2}{#3}%
133
       }%
134
     }%
135
136 \protected@write\@auxout{}{\string\reset@newl@bel}%
137
```

5 Installation

5.1 Downloads

Everything should be available on CTAN:, ftp://ftp.ctan.org/tex-archive/, but may need additional packages themselves.

undolabl.dtx

For unpacking the undolabl.dtx file and constructing the documentation it is required:

- TEXFormat LATEX 2ε , 1994/06/01, $v2\varepsilon$: CTAN:
- document class ltxdoc, 2007/11/11, v2.0u, CTAN:macros/latex/base/ltxdoc.dtx
- package holtxdoc, 2010/04/18, v0.18,
 CTAN:macros/latex/contrib/oberdiek/holtxdoc.dtx
- package hypdoc, 2010/03/26, v1.9,
 CTAN:macros/latex/contrib/oberdiek/hypdoc.dtx

undolabl.sty

The undolabl.sty for LATEX 2ε (i.e. all documents using the undolabl package) requires:

- TEXFormat LATEX 2ε , 1994/06/01, $v2\varepsilon$, CTAN:

undolabl-example.tex

The undolabl-example.tex requires the same files as all documents using the undolabl package, and additionally:

- class article, 2007/10/19, v1.4h, from classes.dtx: CTAN:macros/latex/base/classes.dtx
- package hyperref, 2010/06/18, v6.81g,
 CTAN:macros/latex/contrib/hyperref/,
 if nameref shall be used
 (and when the references shall be hyperlinked, of course)
- package undolabl, 2010/07/15, v1.0d,

CTAN:macros/latex/contrib/undolabl/undolabl.dtx

(Well, it is the example file for this package, and because you are reading the documentation for the undolabl package, it can be assumed that you already have some version of it – is it the current one?)

Oberdiek holtxdoc hypdoc All packages of Heiko Oberdiek's bundle 'oberdiek' (especially holtxdoc and hypdoc) are also available in a TDS compliant ZIP archive:

CTAN: install/macros/latex/contrib/oberdiek.tds.zip. Warning: holtxdoc, 2010/04/24 v0.19, requires the packages

- hypdoc, 2010/03/26, v1.9
- hyperref, 2010/03/30, v6.80u (latest: 2010/06/18, v6.81g)
- pdftexcmds, 2010/04/01, v0.9
- ltxcmds, 2010/03/09, v1.4 (latest: 2010/04/26, v1.7)
- hologo, 2010/04/24, v1.2
- array (latest: 2008/09/09, v2.4c)

(or more recent versions) and does neither work with nor check for earlier versions! (It is probably best to download

CTAN: install/macros/latex/contrib/oberdiek.tds.zip and use this, because the packages in there should be both recent and compatible.)

undolabl 2010/07/15, v1.0d, CTAN:macros/latex/contrib/undolabl.dtx

The package described in this very documentation.

(Code initally by Ulrich Dietz on news:comp.text.tex at

Mon, 21 Apr 2008 23:04:03 +0200, see e.g.

http://groups.google.de/group/comp.text.tex/msg/af6cfe93917097da.)

pagesLTS 2010/07/15, v1.1d, CTAN:macros/latex/contrib/pagesLTS.dtx

That package allows to refer to the (very) last page, gives the total number of pages, references to special pages, facilitates the use of nearly any pagenumbering you like (e.g. negative Roman numbers or more than Z pages with Alph page numbering), and works even with fnsymbol page numbers.

papermas 2010/06/24, v1.0c, CTAN:macros/latex/contrib/papermas.dtx

That package allows to compute the number of sheets of paper needed to print a document as well as the mass of that printed version of the document. Further that package allows to compute "base to the power of exponent" inside LaTeX.

hrefhide 2010/06/24, v1.0c, CTAN:macros/latex/contrib/hrefhide.dtx

That package allows to "hide" some (hyperlinked) text when printing the document while keeping the layout.

5.2 Package, unpacking TDS

Package. This package is available on CTAN::

CTAN:macros/latex/contrib/undolabl/undolabl.dtx

The source file.

CTAN:macros/latex/contrib/undolabl/undolabl.ins

The installation file.

CTAN:macros/latex/contrib/undolabl/undolabl.drv

The driver to generate the documentation.

CTAN:macros/latex/contrib/undolabl/ltxdoc.cfg

The LATEX documentation configuration file, also for generating the documentation.

CTAN:macros/latex/contrib/undolabl/undolabl.pdf

The documentation.

CTAN:macros/latex/contrib/undolabl/undolabl.sty

The style file.

CTAN:macros/latex/contrib/undolabl/undolabl-example.tex

The example file.

CTAN:macros/latex/contrib/undolabl/undolabl-example.pdf

The compiled example file, as it should look like.

CTAN:install/macros/latex/contrib/undolabl.tds.zip

Everything in TDS compliant, compiled format.

For required other packages, see the preceding subsection.

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

tex undolabl.dtx

About generating the documentation see paragraph 5.4 below.

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

```
\begin{array}{lll} undolabl.sty & \to tex/latex/muench/undolabl.sty \\ undolabl.pdf & \to doc/latex/muench/undolabl.pdf \\ undolabl-example.tex & \to doc/latex/muench/undolabl-example.tex \\ undolabl-example.pdf & \to doc/latex/muench/undolabl-example.pdf \\ undolabl.dtx & \to source/latex/muench/undolabl.dtx \\ \end{array}
```

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.

5.3 Refresh file name databases

If your T_EX distribution (teT_EX, mikT_EX,...) relies on file name databases, you must refresh these. For example, teT_EX users run texhash or mktexlsr.

5.4 Some details for the interested

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{undolabl.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 the following 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 pdfIATEX:

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

and with pdfLATeX:

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

6 Acknowledgements

The main code of this package was invented by **Ulrich Diez** (eu_angelion@web.de) and first published in the news:comp.text.tex newsgroup at

Sun, 20 Apr 2008 16:39:26 +0200, with subject:

Re: How to undefine/overwrite a label? (see e.g.

http://groups.google.de/group/comp.text.tex/msg/5ba8d4722e5cd326).

I (H.-Martin Münch) would like to thank Ulrich Diez for this as well as for his permission to publish it on CTAN:. I also thank those anonymouse people who had published it somewhere else on the internet, where I found it first. Further I would like to thank Heiko Oberdiek (heiko dot oberdiek at googlemail dot com) for providing a lot (!) of useful packages (from which I also got everything I know about creating a file in dtx format, ok, say it: copying), and the news:comp.text.tex and news:de.comp.text.tex newsgroups for their help in all things TEX.

7 History

[2008/04/20 v0.3]

• created by Ulrich Diez

[2010/04/08 v0.3b]

• .dtx updated by H.-Martin Münch, submitted to CTAN: (no changes in the style code).

[2010/06/01 v1.0]

- .dtx updated by H.-Martin Münch: some minor corrections in the documentation, an internal renaming for possible better compatibility with other packages.
- The main code of this package was invented in 2008 by Ulrich Diez (eu_angelion@web.de) and published on the internet. Because Ulrich Diez neither wanted to create a package himself yet nor have one published under his name, but granted the publication of his code (Thanks!), I had to change author/maintainer of this package and resubmit it.

[2010/06/03 v1.0b]

- Found an unchanged reference to the package author/maintainer.
- Example adapted to other examples of mine.
- Updated references to other packages.
- TDS locations updated.
- Several changes in the documentation and the Readme file.

[2010/06/24 v1.0c]

- holtxdoc warning in drv updated.
- Corrected the location of the package at CTAN. (TDS still missing due to packaging error.)
- Updated references to other packages: hyperref and pagesLTS.
- Added a list of my other packages.

[2010/07/15 v1.0d]

- There was another update by Ulrich Dietz on news:comp.text.tex at Mon, 21 Apr 2008 23:04:03 +0200, see e.g. http://groups.google.de/group/comp.text.tex/msg/af6cfe93917097da, which was now included in this package.
- Put more emphasis on **Ulrich Dietz** writing the initial code.
- Updated references to other packages: hyperref and pagesLTS.
- Corrected the given location of the undolabl.tds.zip file at CTAN.

When you find a mistake or have a suggestion for an improvement of this package, please send an e-mail to the maintainer, thanks! (Please see BUG REPORTS in the README.)

8 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.

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\@bsphack 90	\mathord 28
\@esphack 94	
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