The undolabl package

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2012/01/01 v1.0k

Abstract

This LATEX 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/af6cfe93917097da?dmode=source).

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) and try to maintain it.

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Save per page about $200 \,\mathrm{ml}$ water, $2 \,\mathrm{g}$ CO_2 and $2 \,\mathrm{g}$ wood: Therefore please print only if this is really necessary.

Contents

1	Introduction	3
2	Usage	5
3	Example	5
4	The implementation	7
5	Installation	9
	5.1 Downloads	9
	5.2 Package, unpacking TDS	10
	5.3 Refresh file name databases	10
	5.4 Some details for the interested	11
6	Acknowledgements	11
7	History	12
	[2008/04/20 v0.3(a)]	12
	[2010/04/08 v0.3b]	12
	[2010/06/01 v1.0(a)]	12
	[2010/06/03 v1.0b]	12
	[2010/06/24 v1.0c]	12
	[2010/07/15 v1.0d]	12
	[2010/07/25 v1.0e]	13
	[2010/07/29 v1.0f]	13
	[2010/09/12 v1.0g]	13
	[2011/02/01 v1.0h]	13
	[2011/06/26 v1.0i]	13
	[2011/08/08 v1.0j]	13
		13 14
	$[2012/01/01 \text{ v}1.0\text{k}] \dots \dots$	14
8	Index	14

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>}{<probably something else>}}
```

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

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

is expanded to

```
\OnewlObel r{foo}{{<page-no>}{<sectional no>}{<probably something else>}}
```

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

Referencing works as follows:

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

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

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

- expand \r@foo: {<page-no>}{<sectional no>}{for 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 $\ensuremath{\verb{Qnewl@bel}}$ is redefined ($\ensuremath{\verb{let}}$ equal to $\ensuremath{\verb{Qtestdef}}$) and thus this time

```
\OnewlObel r{foo}{{<page-no>}{<sectional no>}{<probably something else>}}
```

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>}{...}
|->| \r@<label>-macro gets produced.
% from the \overrridelabel-call:
% - call to \undonewlabel within \overrridelabel:
\undonewlabel{<label>}
|->| \r@<label>-macro gets destroyed.
% - call to \label within \overrridelabel:
\newlabel{<label>}{...}
|->| a new \r@<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 \r@<label>-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 the .aux file is read at the beginning of the LATEX-run, \@newl@bel is not let equal to \@testdef. When the .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 \undolabl@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, \undonewlabel-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 2ε 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} [2007/10/19]% v1.4h
4 \usepackage{undolabl}[2012/01/01]% v1.0k
5 %% There are no options for the undolabl package. %%
6 \usepackage[%
  extension=pdf,%
  plainpages=false,%
9 pdfpagelabels=true,%
10 hyperindex=false,%
11 pdflang={en},%
12 pdftitle={undolabl package example},%
13 pdfauthor={H.-Martin Muench, after Ulrich Diez},%
14 pdfsubject={Example for the undolabl package},%
15 pdfkeywords={LaTeX, undolabl, undolabel, H.-Martin Muench, Ulrich Diez},%
16 pdfview=FitH,%
17 pdfstartview=FitH,%
  pdfpagelayout=OneColumn,%
19 bookmarksopen=true%
20 ]{hyperref}[2011/12/04]% v6.82m; when you want to use nameref
21 \gdef\unit#1{\mathord{\thinspace\mathrm{#1}}}%
22 \listfiles
23 \begin{document}
24 \pagenumbering{arabic}
```

```
25 \section*{Example for undolabl}
27 This example demonstrates the use of package\newline
29 For details please see the documentation!\newline
31 \noindent Save per page about $200\unit{ml}$~water,
32 2\left(\frac{g}\right)^{CO}_{2}\ and 2\left(\frac{g}\right)^{wood:\left(\frac{g}\right)}
33 Therefore please print only if this is really necessary.\newline
34\;\mathrm{I} do NOT think, that it is necessary to print THIS file, really!
36 \bigskip
37
38 \section{Test}
40 text \label{testlabel}\\
41 page-reference: \pageref{testlabel}\\%% -> page 4
42 sectional-reference: \ref{testlabel}\\%% -> section 4
43 name-reference: \nameref{testlabel}%% -> Still another test
44
46
47 \section{Another test}
49 text \overridelabel{testlabel}\\
50 page-reference: \pageref{testlabel}\\%% -> page 4
51 sectional-reference: \ref{testlabel}\\% -> section 4
52\;\text{name-reference: }\mbox{\colored}\ ~> Still another test
54 \newpage
56 \section{Yet another test}
57
58 \text{ text } \operatorname{label} \
59 page-reference: \pageref{testlabel}\\%% -> page 4
60 sectional-reference: \ref{testlabel}\\% \rightarrow section 4
61 name-reference: \nameref{testlabel}\%% -> Still another test
63 \newpage
64
65 \section{Still another test}
67 \text{ text } \operatorname{label} \
68 page-reference: \pageref{testlabel}\\% -> page 4
69 sectional-reference: \ref{testlabel}\\%% -> section 4
70 name-reference: nameref{testlabel}\% -> Still another test
71
72 \end{document}
73 (/example)
```

4 The implementation

For a somewhat longer description see section 1.

We start off by checking that we are loading into \LaTeX 2ε and announcing the name and version of this package.

```
74 \(^*package\)
75 \NeedsTeXFormat{LaTeX2e}[2011/06/27]
76 \ProvidesPackage{undolabl}[2012/01/01 v1.0k
77 Overriding labels (HMM)]
78 %% undolabl may work with earlier versions of LaTeX2e,
79 %% but this was not tested. Please consider updating
80 %% your LaTeX2e to the most recent version
81 %% (if it is not already the most recent version).
82
```

\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.

```
83 \newcommand\overridelabel[1]{%
84 \@bsphack
85 \protected@write\@auxout{}{\string\undonewlabel{#1}}%
86 \@overriddenmessage s{#1}%
```

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

```
87 \label{#1}%
88 \@esphack%
89 }
```

\undonewlabel

```
91 \newcommand\undonewlabel{\@und@newl@bel r}
```

\@und@newl@bel

If \r@<label> is undefined, give an error message:

```
93 \newcommand\@und@newl@bel[2]{%
94 \@ifundefined{#1@#2}{%
95 \PackageError{undolabl}{Label '#2' shall be overridden ^^J%
96 although it does not yet exist}{%
97 A label which does not exist cannot be overridden.}%
98 }{%
```

otherwise:

Undefine \r@label via letting it equal to \relax:

```
99 \expandafter\global
100 \expandafter\let
101 \csname #1@#2\endcsname\relax
102 }%
103 }
```

```
Command for the notification of overriding a label:
\@overriddenmessage
                       105 \newcommand
\@overriddenmessage[2]{\%
                             \label{local_end} $$ \operatorname{local_enamedef}_{10\#2}_{i}}_{\%} $$
                       106
                               \expandafter\g@addto@macro\csname #1@#2\endcsname{i}%
                       107
                       108
                       109
                             \PackageWarning{undolabl}{Label '#2' overridden}%
                       110
                       111
  \undolabl@testdef
                       112 \newcommand\undolabl@testdef[3]{%
                             \@ifundefined{s@#2}\@secondoftwo\@firstofone{%
                               \expandafter\ifx\csname s@#2\endcsname\empty
                       114
                       115
                                 \verb|\expandafter|@firstofone|
                               \else
                       116
                               \verb|\expandafter\xdef\csname| s@#2\endcsname{%|}|
                       117
                                 \expandafter\expandafter
                       118
                       119
                                 \expandafter\@gobble
                       120
                                 \csname s@#2\endcsname
                                 }%
                       121
                               \expandafter\@gobble
                       122
                       123
                               \fi
                               }{\@testdef{#1}{#2}{#3}%
                       124
                       125
                                }%
                       126
                             }
                       127
   \protected@write
             @auxout
                       128 \texttt{\protected@write\@auxout{}} {\tt \string\reset@newl@bel}
    \reset@newl@bel
                       130 \newcommand\reset@newl@bel{%
                            \ifx\@newl@bel\@testdef
                       131
                               \let\@newl@bel\undolabl@testdef
                       132
                       133
                               \let\undonewlabel\@gobble
                            \fi
                       134
                       135
                            }
                       136
                       137 (/package)
```

5 Installation

5.1 Downloads

Everything is available on CTAN:, http://www.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:

- TFX Format LATFX 2_E, http://www.CTAN.org/
- document class ltxdoc, 2007/11/11, v2.0u, http://ctan.org/pkg/ltxdoc
- package holtxdoc, 2011/02/04, v0.21, http://ctan.org/pkg/holtxdoc
- package hypdoc, 2010/03/26, v1.9, http://ctan.org/pkg/hypdoc

undolabl.sty

The undolabl.sty for LATeX 2ε (i.e. each document using the undolabl package) requires:

- T_EX Format IAT_EX 2_€, http://www.CTAN.org/

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, 2011/12/04, v6.82m: http://ctan.org/pkg/hyperref, if \nameref shall be used
 (and when the references shall be hyperlinked, of course)
- package undolabl, 2012/01/01, v1.0k, http://ctan.org/pkg/undolabl
 (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.

It is probably best to download and use this, because the packages in there are quite probably both recent and compatible among themselves.

hyperref

hyperref is not included in that bundle and needs to be downloaded separately, http://mirror.ctan.org/install/macros/latex/contrib/hyperref.tds.zip.

Münch A hyperlinked list of my (other) packages can be found at http://www. Uni-Bonn.de/~uzs5pv/LaTeX.html.

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.pdf

The documentation.

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

The compiled example file, as it should look like.

CTAN:macros/latex/contrib/undolabl/README

The README file.

There is also an undolabl.tds.zip available:

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

Everything in TDS compliant, compiled format.

which additionally contains

undolabl.ins The installation file.

undolabl.drv The driver to generate the documentation.

undolabl.sty The .style file. undolabl-example.tex The example file.

For required other packages, please see the preceding subsection.

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

```
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 & \rightarrow tex/latex/undolabl/undolabl.sty \\ undolabl.pdf & \rightarrow doc/latex/undolabl/undolabl.pdf \\ undolabl-example.tex & \rightarrow doc/latex/undolabl/undolabl-example.tex \\ undolabl-example.pdf & \rightarrow doc/latex/undolabl/undolabl-example.pdf \\ undolabl.dtx & \rightarrow source/latex/undolabl/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 TEX distribution (teTEX, mikTEX,...) relies on file name databases, you must refresh these. For example, teTEX 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 T_EX: 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 a 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
```

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?dmode=source as well as http://groups.google.de/group/comp.text.tex/msg/af6cfe93917097da?dmode=source).

I (H.-Martin Münch) would like to thank Ulrich Diez for this as well as for his permission to publish it on CTAN: as well as for his bug reports. I also thank those anonymous people who had published the package somewhere else on the internet, where I found it first. Further I would like to thank Rainer Wintermute for explaining the \CheckSum, Heiko Oberdiek 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), Robin Fairbairns and everybody of the CTAN: team for managing CTAN:, 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(a)]

• 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(a)]

- .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 of this version was still missing due to a packaging error.)
- Updated references to other packages: hyperref and pagesLTS (which has been renamed to pageslts and is no longer referenced since v1.0h).
- Added a list of my other packages.

[2010/07/15 v1.0d]

- There was another update by ULRICH DIEZ 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?dmode=source, which now has been included in this package.
- Put more emphasis on **Ulrich Diez** writing the initial code.

- Updated references to other packages: hyperref and pagesLTS (which has been renamed to pageslts and is no longer referenced since v1.0h).
- Corrected the given location of the undolabl.tds.zip file at CTAN:.

[2010/07/25 v1.0e]

- Bugs reported by ULRICH DIEZ on news:comp.text.tex at Sat, 17 Jul 2010 12:27:10 +0200, subject
 Re: CTAN Update: undolabl, see e.g. http://groups.google.com/group/comp.text.tex/msg/d366821ce4f8b62e?dmode=source, eradicated.
- \StopEventually added and \CheckSum value corrected (was 0).
- Minor details.

[2010/07/29 v1.0f]

• Corrected diverse urls, updated references to other packages.

[2010/09/12 v1.0g]

- There was a wrong % behind 2010/07/29 v1.0f, resulting in the version being displayed as "v1.0f0verriding".
- Changed the \unit definition (got rid of an old \rm).
- A lot of small changes.

[2011/02/01 v1.0h]

- Updated to new version of the hyperref package.
- Removed /muench/ from the path at diverse locations.
- Replaced the list of my packages with a link to a web page list of those, which has the advantage of showing the recent versions of all those packages.
- Some small changes.

[2011/06/26 v1.0i]

- The holtxdoc package was fixed (recent: 2011/02/04, v0.21), therefore the warning in drv could be removed. Adapted the style of this documentation to new Oberdiek dtx style.
- There is a new version of the used hyperref package.
- Quite some changes in the .dtx/documentation.

[2011/08/08 v1.0j]

- The pagesLTS package has been renamed to pageslts: 2011/08/08, v1.2a.
- Some minor changes.

[2012/01/01 v1.0k]

- Bugfix: Obsolete installation path given in the documentation, updated.
- Bugfix: A section was broken in the documentation (text had been lost but was recovered now).
- Update of documentation, README, and dtx internals.

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.

Symbols	${f M}$	
\@auxout 85, 128	\M\"{u}nch 9	
\@bsphack 84		
\@esphack 88	${f N}$	
\@firstofone 113, 115	\nameref 43, 52, 61, 70	
\@gobble 119, 122, 133	\newcommand 83, 91, 93, 105, 112, 130	
\@ifundefined 94, 106, 113		
\@namedef 106	О	
\@newl@bel 131, 132	\Oberdiek 9	
\@overriddenmessage $8, 86, 105$	\overridelabel $7, 49, 58, 67, 83$	
\@secondoftwo 113	_	
\@testdef 124, 131	P	
\@und@newl@bel 7, 91, 93	\PackageError 95	
\mathbf{C}	\PackageWarning 109	
<u> </u>	\pagenumbering 24	
\csname 101, 107, 114, 117, 120	\pageref 41, 50, 59, 68	
\mathbf{E}	\protected@write 85, 128	
\empty 114	\protected@write\\@auxout 8	
\endcsname 101, 107, 114, 117, 120	R	
	\ref 42, 51, 60, 69	
G	\reset@newl@bel 8, 128, 130	
\g@addto@macro		
Н	${f U}$	
\holtxdoc 9	\undolabl-example.tex 9	
\hypdoc	\undolabl.dtx 9	
\hyperref 9	\undolabl.sty 9	
. 71	\undolabl@testdef 8, 112, 132	
${f L}$	\undonewlabel 7, 85, 91, 133	
\label 40, 87	\unit 21, 31, 32	