

The undolabl package*

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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/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 ml water, 2 g CO₂ and 2 g wood: Therefore please print only if this is really necessary.

*This file has version number v1.0h, last revised 2011/02/01, documentation dated 2011/02/01.

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

During the beginning of the next \LaTeX -run, the `.aux` file will be read and

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

is expanded to

```
\@newl@bel r{foo}{<page-no>}<sectional no>}<probably something else>}}
```

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

```
IF (macro \r@foo is already defined)
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>}<probably something else>}}
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 `\@newl@bel` is redefined (`\let` equal to `\@testdef`) and thus this time

```
\@newl@bel 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 \overridelabel-call:
% - call to \undonewlabel within \overridelabel:
\undonewlabel{<label>}
|->| \r@<label>-macro gets destroyed.
% - call to \label within \overridelabel:
\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 .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 `\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 L^AT_EX 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{article}
3 %%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
4 \usepackage{undolabl}[2011/02/01]% v1.0h
5 %% There are no options for the undolabl package. %%
6 \usepackage{hyperref}[2010/12/16]% v6.81z; when 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 \gdef\unit#1{\mathord{\thinspace\mathrm{#1}}}%
23 \listfiles
24 \begin{document}
25 \pagenumbering{arabic}
26 \section*{Example for undolabl}
27
28 This example demonstrates the use of package\newline
29 \textsf{undolabl}, v1.0h as of 2011/02/01 (HMM).\newline
30 For details please see the documentation!\newline
31
32 \noindent Save per page about $200\unit{ml}$~water,
33 $2\unit{g}$~CO$_{2}$ and $2\unit{g}$~wood:\newline
34 Therefore please print only if this is really necessary.\newline
35 I do NOT think, that it is necessary to print THIS file, really\newline
36 (at least not after this page)!
37
38 \bigskip
39
40 \section{Test}
41
42 text \label{testlabel}\
43 page-reference: \pageref{testlabel}\% -> page 4
44 sectional-reference: \ref{testlabel}\% -> section 4
45 name-reference: \nameref{testlabel}% -> Still another test
46
47 \newpage
48
49 \section{Another test}
50
51 text \overridelabel{testlabel}\
```

```

52 page-reference: \pageref{testlabel}\% -> page 4
53 sectional-reference: \ref{testlabel}\% -> section 4
54 name-reference: \nameref{testlabel}% -> Still another test
55
56 \newpage
57
58 \section{Yet another test}
59
60 text \overridelabel{testlabel}\
61 page-reference: \pageref{testlabel}\% -> page 4
62 sectional-reference: \ref{testlabel}\% -> section 4
63 name-reference: \nameref{testlabel}% -> Still another test
64
65 \newpage
66
67 \section{Still another test}
68
69 text \overridelabel{testlabel}\
70 page-reference: \pageref{testlabel}\% -> page 4
71 sectional-reference: \ref{testlabel}\% -> section 4
72 name-reference: \nameref{testlabel}% -> Still another test
73
74 \end{document}
75 /example)

```

4 The implementation

For a somewhat longer description see section 1.

We start off by checking that we are loading into L^AT_EX 2_ε and announcing the name and version of this package.

```

76 (*package)
77 \NeedsTeXFormat{LaTeX2e}[1994/06/01]
78 \ProvidesPackage{undolabl}[2011/02/01 v1.0h
79   Overriding labels (HMM)]
80

```

`\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.

```

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

```

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

```

85   \label{#1}%
86   \@esphack
87 }
88

```

`\undonewlabel`

```

89 \newcommand\undonewlabel{\@und@newl@bel r}
90

```

`\@und@newl@bel`

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

```

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

```

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

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

`\@overriddenmessage`

Command for the notification of overriding a label:

```
103 \newcommand\@overriddenmessage[2]{%
104   \@ifundefined{#1@#2}{\global\@namedef{#1@#2}{i}}{%
105     \expandafter\g@addto@macro\csname #1@#2\endcsname{i}%
106   }%
107   \PackageWarning{undolabl}{Label ‘#2’ overridden}%
108 }
109
```

`\undolabl@testdef`

```
110 \newcommand\undolabl@testdef[3]{%
111   \@ifundefined{s@#2}\@secondoftwo\@firstofone{%
112     \expandafter\ifx\csname s@#2\endcsname\empty
113     \expandafter\@firstofone
114   }else
115   \expandafter\xdef\csname s@#2\endcsname{%
116     \expandafter\expandafter
117     \expandafter\@gobble
118     \csname s@#2\endcsname
119   }%
120   \expandafter\@gobble
121   \fi
122 }{\@testdef{#1}{#2}{#3}%
123 }%
124 }
125
```

`\protected@write`

`@auxout`

```
126 \protected@write\@auxout{}{\string\reset@newl@bel}
127
```

`\reset@newl@bel`

```
128 \newcommand\reset@newl@bel{%
129   \ifx\@newl@bel\@testdef
130     \let\@newl@bel\undolabl@testdef
131     \let\undonewlabel\@gobble
132   \fi
133 }
134
135 </package>
```

5 Installation

5.1 Downloads

Everything is 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:

- T_EXFormat L^AT_EX 2_ε, 1994/06/01, v2_ε: [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 L^AT_EX 2_ε (i. e. all documents using the `undolabl` package) requires:

- T_EXFormat L^AT_EX 2_ε, 1994/06/01, v2_ε, [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`, 2010/12/16, v6.81z,
[CTAN:macros/latex/contrib/hyperref/](#),
if `nameref` shall be used
(and when the references shall be hyperlinked, of course)
- package `undolabl`, 2011/02/01, v1.0h,
[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` All packages of Heiko Oberdiek’s bundle ‘`oberdiek`’ (especially `holtxdoc` and
`holtxdoc` `hypdoc`) are also available in a TDS compliant ZIP archive:

`hypdoc` [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: 2010/12/16, v6.81z)
- `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.)

`Münch` A list of my 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 a `undolabl.tds.zip` available:

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

Everything in TDS compliant, compiled format.

which additionally contains

<code>undolabl.ins</code>	The installation file.
<code>undolabl.drv</code>	The driver to generate the documentation.
<code>ltxdoc.cfg</code>	The \LaTeX documentation configuration file, also for generating the documentation.
<code>undolabl.sty</code>	The <code>.style</code> file.
<code>undolabl-example.tex</code>	The example file.

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 \TeX :

```
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):

<code>undolabl.sty</code>	\rightarrow <code>tex/latex/muench/undolabl.sty</code>
<code>undolabl.pdf</code>	\rightarrow <code>doc/latex/muench/undolabl.pdf</code>
<code>undolabl-example.tex</code>	\rightarrow <code>doc/latex/muench/undolabl-example.tex</code>
<code>undolabl-example.pdf</code>	\rightarrow <code>doc/latex/muench/undolabl-example.pdf</code>
<code>undolabl.dtx</code>	\rightarrow <code>source/latex/muench/undolabl.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`.

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 `mktextlsr`.

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 pdfL^AT_EX:

```
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 ([heiko dot oberdiek at googlemail dot com](mailto: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), 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 T_EX.

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.
- 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?dmode=source>, which now has been 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.

[2010/07/25 v1.0e]

- Bugs reported by ULRICH DIETZ 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 “v1.0fOverriding”.
- Changed the \unit definition (got rid of an old \rm).
- A lot of small changes.

