

The mdwref* package

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Contents

1	User guide	1	A The GNU General Public License	4
2	Implementation	2		

1 User guide

I always name my cross-reference labels with a prefix telling me what kind of thing they are. A figure might be `fig:foo` or a table `tab:bar`. When I refer to the thing, then, I basically have to repeat myself: ‘`see table~\ref{tab:bar}`’. Kinda silly.

`\xref` The `\xref` command understands my prefixing system. I can say ‘`\xref{tab:bar}`’ and it inserts a reference to ‘table 4’, for example. This is, of course, useless if you want to put the reference at the beginning of a sentence: ‘Table 4 shows...’. The `\Xref` command (note the initial capital) handles this properly, so you just type ‘`\Xref{tab:bar} shows...`’.

The full syntax of the `\xref` command is like this.

$$\langle xref-command \rangle ::= \xrightarrow{\hspace{1cm}} \backslash xref \underbrace{\hspace{1cm}}_{[- \langle mangle \rangle -]} \{ - \langle reference \rangle - \} \longrightarrow$$

`\toupper` The optional $\langle mangle \rangle$ argument is a command to be applied to the generated text: it *must* be a single token. Rather than printing ‘table’, or whatever, it prints $\langle mangle \rangle\{table\}$. The most obvious application of this is the `\Xref` command, which uses a helper `\toupper`. The call `\toupper{stuff}` typesets $\langle stuff \rangle$ with the first character in uppercase. So `\Xref` is defined simply as¹

`\newcommand{\Xref}[1]{\xref[\toupper]{#1}}`

`\formatxref` The reference itself is typeset by calling `\formatxref{mangle}{string}{label}`, which can do as it pleases: the $\langle mangle \rangle$ token is from the `\xref` invocation; the $\langle string \rangle$ is category of thing being referred to (as established by `\defxref` below); and $\langle label \rangle$ is the label, again

*The mdwref package is currently at version 1.01, dated 9 April 2007.

¹Modulo the fact that the author is a dreadful TeX hacker.

from `\xref`. The default behaviour is to print $\langle mangle \rangle \{ \langle string \rangle \} \sim \text{\ref} \{ \langle label \rangle \}$, but this can be overridden. (Not quite true: in fact, the default does something better if `hyperref` is detected, but the idea is basically the same.)

All that remains is to define the strings to be typeset for various kinds of labels.

`\defxref` For this, we use the `\defxref` command:

$\langle definition \rangle ::= \text{\texttt{\defxref}} - \{ - \langle prefix \rangle - \} - \{ - \langle string \rangle - \} \longrightarrow$

The $\langle prefix \rangle$ is what you put on the front of your labels; the $\langle string \rangle$ is the string to be typeset by `\xref`.

A number of useful prefixes are already defined, following my usual preferences; they're shown in table 1.

Prefix	Text
ch	chapter
app	appendix
sec	section
def	definition
th	theorem
lem	lemma
prop	proposition
cor	corollary
fig	figure
tab	table
eq	equation
i	item
ex	exercise

Table 1: Predefined reference prefixes

2 Implementation

1 `\package`

The following quark will be useful.

2 `\def\q@delim{\q@delim}`

`\defxref` Defining prefixes is easy. We store the text for each prefix in a macro called `\xref$\langle prefix \rangle`. The only catch is that, for the purposes of generating table 1, we maintain a list of the prefixes which have been defined so far, but this is fairly easy.

3 `\def\defxref#1#2{%`

4 `\toks@\expandafter{\xref@defs\i{#1}{#2}}\xdef\xref@defs{\the\toks@}%`

5 `\expandafter\def\csname xref$#1\endcsname{#2}%`

6 `}`

The list is obviously empty initially.

7 `\gdef\xref@defs{}`

`\formatxref` Output a cross-reference in the right way.

```
8 \def\formatxref#1#2#3{%
9   \ifx\hyperref\@undefined #1{#2}~\ref{#3}%
10  \else \hyperref[#3]{#1{#2}~\ref*{#3}}\fi%
11 }
```

`\xref` We're meant to typeset a reference. The first job is to see whether there's an optional argument. If so, grab it; otherwise `\relax` will do.

```
12 \def\xref{\@ifnextchar[\xref@{\xref@[\relax]}}
13 \def\xref@[#1]#2{\xref@{#1}#2:\q@delim:\q@delim:\q@delim\q@delim}
```

Right; now we abuse TeX's argument parser to pick apart the reference label, which ought to have the form $\langle prefix \rangle : \langle suffix \rangle$.

```
14 \def\xref@{#1#2:#3:\q@delim#4\q@delim\q@delim{%
```

So, `#1` is the optional command, or `\relax`. `#2` should be the prefix, and `#3` the suffix. However, if the string doesn't have any colons in, then `#3` will be `\q@delim`. This is easy to check for using `\ifx`.

```
15   \def\@tempa{#2}\def\@tempb{#3}%
16   \ifx\@tempb\q@delim%
17     \PackageError{xref}{Bad ref syntax}%
18   \else%
19     \expandafter\let\expandafter\@tempa\csname xref$#2\endcsname%
20     \ifx\@tempa\relax%
21       \PackageError{xref}{Unknown ref kind '#2'}%
22     \else%
23       \toks@\expandafter{\@tempa}%
24       \edef\next@##1{##1{\the\toks@}}%
25       \next@\formatxref{#1}{#2:#3}%
26     \fi%
27   \fi%
28 }
```

`\toupper` That's the difficult stuff done. Uppercasing is a matter of picking out the first letter and passing it to TeX's `\uppercase` primitive.

```
29 \def\toupper#1{\toupper@#1}
30 \def\toupper@#1{\uppercase{#1}}
```

`\Xref` As promised, `\Xref` is very easy.

```
31 \def\Xref{\xref[\toupper]}
```

Now all that remains is to initialize the table of prefix strings.

```
32 \defxref{ch}{chapter}
33 \defxref{app}{appendix}
34 \defxref{sec}{section}
35 \defxref{def}{definition}
36 \defxref{th}{theorem}
37 \defxref{lem}{lemma}
38 \defxref{prop}{proposition}
39 \defxref{cor}{corollary}
40 \defxref{fig}{figure}
41 \defxref{tab}{table}
42 \defxref{eq}{equation}
43 \defxref{i}{item}
44 \defxref{ex}{exercise}
```

And we're done!

45 `</package>`

Mark Wooding, 9 April 2007

Appendix

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Version 2, June 1991

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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.

Symbols		Q	
<code>\@@undefined</code>	..... 9	<code>\q@delim</code>	..... 2, 13, 14, 16
<code>\@ifnextchar</code>	..... 12	R	
<code>\@tempa</code>	..... 15, 19, 20, 23	<code>\ref</code>	..... 9, 10
<code>\@tempb</code>	..... 15, 16	T	
D		<code>\toks@</code>	..... 4, 23, 24
<code>\defxref</code>	..... 2, <u>3</u> , 32–44	<code>\touppe</code>	..... 1, <u>29</u> , 31
F		<code>\touppe@</code>	..... 29, 30
<code>\formatxref</code>	..... 1, <u>8</u> , 25	U	
H		<code>\uppercase</code>	..... 30
<code>\hyperref</code>	..... 9, 10	X	
I		<code>\Xref</code>	..... 1, <u>31</u>
<code>\i</code>	..... 4	<code>\xref</code>	..... 1, <u>12</u> , 31
N		<code>\xref@</code>	..... 12, 13
<code>\next@</code>	..... 24, 25	<code>\xref@@</code>	..... 13, 14
P		<code>\xref@defs</code>	..... 4, 7
<code>\PackageError</code>	..... 17, 21		