The **showlabels** package*

Norman Gray

norman@astro.gla.ac.uk

1999/07/22

This package introduces no new commands, it just helps you keep track of all the labels by putting the name of the new label into the margin whenever either the `\label` command is used, or an equation is automatically numbered (by replacing the internal `\@eqnnum` command). There are therefore no usage instructions. You invoke this package with the command `\usepackage{showlabels}` in the preamble, and you may give the options `inner` or `outer` (the default) to have the labels placed in the inner or outer margin of the text. If you don’t use the `twoside` option, then all pages are ‘right-hand’ pages, and the ‘outer margin’ is the right hand one.

The package will also work in the presence of the `twocolumn` option. In this case, the options `inner` and `outer` will be ignored, and the label will be placed in the nearer margin.

In version 1.1, the package was modified to conform to the slightly different mechanism that `amsmath` uses to produce equation numbers. I don’t habitually use `amsmath`, so I won’t discover any bugs or weaknesses with its support here, and I’d consequently be glad to be informed of any that appear. Do note that the `\usepackage{showlabels}` command must appear after the `\usepackage{amsmath}`. Note also that, since these additions appeared, AMS-\LaTeX and the `amstex` package seem to have been declared ‘obsolete’ in favour of the `amsmath` package. This package now claims conformance with the `amsmath` package alone.

If you want to change the font the labels appear in, use something along the lines of `\renewcommand{\showlabelsfont}{\small\slfamily}`.

For reasonably obvious reasons, this package will not work at all well with the `multicol` package, and for possibly less obvious reasons, it won’t work with the `leqno` option either (at some point it should be modified to at least recognise and warn of the conflict in either case, though it’s not obvious to me how to do that).

The package might still work with \TeXX2.09, but that’s neither supported, nor even tested.

This software is copyright, 1999, Norman Gray. It is released under the terms of the GNU General Public Licence. See the copyright declaration at the top of file `showlabels.dtx`, and the file `LICENCE` for the licence conditions. You can find an online copy of the GPL at `<http://www.gnu.org/copyleft/gpl.html>`.

*This file has version number v1.3c, last revised 1999/07/22, documentation dated 1999/07/22*
1 History and Credits

For version 1.3, I received comments and bug reports from: David R. Leal Valmana <david@quijote.uc3m.es>, Sungmo Park <smp@dingo.etri.re.kr>, Olivier Michel <Olivier.Michel@lri.fr>, Jiri Vesely <jvesely@karlin.mff.cuni.cz>, Patrick Sibille <sibille@amoco.saclay.cea.fr>, Hagen Kleinert <kleinert@physik.fu-berlin.de>, Francis M. C. Ching <fmcching@kingcong.uwaterloo.ca>, Michael Friendly <friendly@hotspur.psych.yorku.ca>. Many thanks to all.

Back in 29-Jan-92, Darrel Hankerson <hank@ducvax.auburn.edu>, made the update to NFSS, and changed the name to ‘showlabel.sty’.

Originally released 21-Sep-91 by me, under the name labels.sty.

2 Implementation

Before we do anything else, find out if we’re using AMS-LaTeX,... Note that, since these additions appeared, AMS-LaTeX and the amstex package seem to have been declared ‘obsolete’. This package now claims conformance with the amsmath package.

\begin{verbatim}
\ifSL@AMS
\expandafter\if\csname maketag@@@\endcsname\relax
\SL@AMSfalse
\else
\SL@AMStrue
\typeout{with AMS-LaTeX equation tags}
\fi
\@eqnnum
\end{verbatim}

This replacement for \@eqnnum will produce a note, sticking into the margin beside the equation number, showing the equation’s label. \SL@labeln@me is initialised to \relax, redefined within the \label macro, and reset to \relax here. If it’s already equal to \relax here, the equation number hasn’t been labelled, and so ‘???’ is put in the margin. Don’t do this for the AMS-LaTeX case as it artfully incorporates the \maketag@@@ mechanism into a redefined \@eqnnum.

\begin{verbatim}
\ifSL@AMS
AMS-LaTeX uses \maketag@@@, to form tags in equations. All we have to do is hook into the \maketag@@@ macro, and use \df@label, which is pre-defined with the current label name.
\let\@maketag@@@=\maketag@@@
\def\maketag@@@#1{\@maketag@@@{#1}%%
\expandafter\if\csname sl@eqnlrtext\endcsname\\% \SL@eqnlrtext{???}\\%
\else
\SL@eqnlrtext{df@label}\\%
\fi}
\else
The ‘normal’ case, without AMS-LaTeX
\let\@eqnnum=\@eqnnum
\def\@eqnnum{\@empty}
\expandafter\if\csname sl@labeln@me\endcsname\\%
\fi
\end{verbatim}

2
And initialise the value of \labeln@me to \relax, so that \@eqnnum starts off behaving the right way.

Labels are printed with the font specified by \showlabelfont, which can be overridden within the document:
\def\showlabelfont{\small\tt}

Leave this as \small\tt, to avoid a pointless incompatibility with L\LaTeX2.09.

For the benefit of \prlabelname, define \SL@gobblethree to do nothing other than eat three tokens.
\def\SL@gobblethree#1#2#3{ }

\prlabelname Expansion is label name with all catcodes ‘other’ (Appendix D trickery abounds!). Use \r@#1, rather then just \#1 to avoid defining any new control sequences.
\def\prlabelname#1{\expandafter\expandafter\expandafter\SL@gobblethree\expandafter\string\csname r@#1\endcsname}

\@makecaption Simple replacement for the \@makecaption command. This simply issues the original \@makecaption command after redefining \label. This does not put the label name in the margin (that’s too complicated for the moment), but instead inserts it as part of the caption.
\let\SL@makecaption\@makecaption
\long\def\@makecaption#1#2{{\def\label##1{{\showlabelfont\{\prlabelname{##1}\}\space}\SL@label{##1}}\ldots and follows it with the original, saved, \@makecaption.}
\SL@makecaption(#1){#2}}

\label This is the central bit of this package. Depending on the mode, put the current label name in the margin in one of a variety of ways. First of all, issue the saved \SL@label command.
\let\SL@label\label
\def\label#1{\@bsphack\SL@label{#1} }

In maths mode, produce a label name alongside the equation number. If we’re not using AMS-L\LaTeX, then save the label name in \SL@labelname. If we are using AMS-L\LaTeX, then we don’t have to worry, because it’s saved in \df@label for us.
\ifmmode
\ifSL@AMS\else
\xdef\SL@labeln@me{\prlabelname(#1)}\%
\fi
\fi

Otherwise, create a box with zero height and depth, and the same width as the page. Put all this in braces, to contain the setting of \box0 (which probably shouldn’t be necessary).
and attach it below the last one, using \nointerlineskip if we're in vertical mode, or \vadjust otherwise.

That's it. Finish off the \ifmmode and give the partner to \@bsphack.

\margintext
Set the actual text of the label. Use \prlabelname here: without this, a label command given outside of an equation or a \caption will appear wrongly if the label has things like underscores within it.

But where is the marginal text actually set? It can be in the left margin, the right one, or can alternate. \SL@lrtext, used in the \vbox above, is set, under the control of \if@outerlabels below, to one of \SL@lefttext, \SL@righttext or \SL@alternatetext.

The code for \SL@alternatetext doesn't work perfectly, as it sometimes manages to get things on the wrong side of the text near the top of a new page. This is a venial slip, however, as this package should never be used in a final version.

The case where the twocolumn option is set is slightly different. There we have to switch between placing the note in the left and right margins, depending on whether we're setting the first or second column. This macro, and \SL@eqntwocoltext below, uses the switch \if@firstcolumn to decide whether it's in the first or the second column of the text (I suppose it'll get terribly confused if we use multicol.sty along with this). This is defined and maintained in
the base file `ltoutput.dtx`. It’s not part of the defined interface, however (there
doesn’t seem to be one, grump), so I don’t suppose we should really rely on it.
There isn’t an option, however.

\texttt{\SL@twocoltext}

\texttt{68 \def\SL@twocoltext{\%\n69 \if@firstcolumn\n70 \let\SL@next\SL@lefttext\n71 \else\n72 \let\SL@next\SL@righttext\n73 \fi\n74 \SL@next}}

We have very similar things for equations, except that they are set in place,
rather than within a zero depth box. This code ASSUMES that equation numbers
are going to be on the right hand side of the page. It should probably check for
the existence of the \texttt{leqno} option (how?).

\texttt{\SL@eqnrighttext \SL@eqnlefttext}

\texttt{75 \def\SL@eqnrighttext#1{\rlap{\quad\SL@margintext{#1}}}\n76 \def\SL@eqnlefttext #1{\hbox to 0pt{\kern -\columnwidth\n77 \llap{\SL@margintext{#1}\quad}\hss}}}\n
Now do the analogues for the equation numbers, in the case of the alternate page
selection…

\texttt{\SL@eqnalternatetext}

\texttt{78 \def\SL@eqnalternatetext{\%\n79 \if@outerlabels\n80 \ifodd\c@page\n81 \let\SL@next\SL@eqnrighttext\else\n82 \let\SL@next\SL@eqnlefttext\fi\n83 \else\n84 \ifodd\c@page\n85 \let\SL@next\SL@eqnlefttext\else\n86 \let\SL@next\SL@eqnrighttext\fi\n87 \fi\n88 \SL@next}}

… and the twocolumn option

\texttt{\SL@eqntwocoltext}

\texttt{89 \def\SL@eqntwocoltext{\%\n90 \if@firstcolumn\n91 \let\SL@next\SL@eqnlefttext\n92 \else\n93 \let\SL@next\SL@eqnrighttext\n94 \fi\n95 \SL@next}}

To keep track of things, declare the \texttt{\if@outerlabels} switch, and set it true
by default.

\texttt{96 \newif\if@outerlabels\n97 \@outerlabelstrue}
We select between the various possibilities using the \texttt{outer} and \texttt{inner} options and, implicitly, the \texttt{twoside} option.

\begin{verbatim}
\DeclareOption{outer}{\@outerlabelstrue}
\DeclareOption{inner}{\@outerlabelsfalse}
\end{verbatim}

Process any options that have been set.

\begin{verbatim}
\ProcessOptions
and use the values of \texttt{\if@outerlabels} and \texttt{\if@twoside} which may have been set by those options, to set \texttt{\SL@lertext} to be the appropriate control sequence. The presence of the \texttt{twocolumn} option means that we ignore the \texttt{inner} and \texttt{outer} options.

\begin{verbatim}
\if@twocolumn
\let\SL@lertext\SL@twocoltext
\let\SL@eqnlrtext\SL@eqntwocoltext
\else
\if@outerlabels
\if@twoside
\let\SL@lertext\SL@alternatetext
\let\SL@eqnlrtext\SL@eqnalternatetext
\else
\let\SL@lertext\SL@righttext
\let\SL@eqnlrtext\SL@eqnrighttext
\fi
\else
\if@twoside
\let\SL@lertext\SL@alternatetext
\let\SL@eqnlrtext\SL@eqnalternatext
\else
\let\SL@lertext\SL@lefttext
\let\SL@eqnlrtext\SL@eqnlefttext
\fi
\fi
\fi
\fi
\end{verbatim}

That’s us.

\begin{verbatim}
</package>
\end{verbatim}