The showkeys package*

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2014/10/28

sec:intro

1 Introduction

`showkeys.sty` modifies the `\label`, `\ref`, `\pageref`, `\cite`, and `\bibitem` commands so that the 'internal' key is printed. The package tries hard to position these labels so that the formatting of the rest of the document is unchanged. `\label` and `\bibitem` cause the key to appear in a box either in the margin, or in a TeX box of zero width, which may possibly over-print other text. The `\ref`, `\pageref` and `\cite` commands print their arguments in small type, raised just above the line, like this: sec:intro. This package works with the fleqn option, the packages in the AMS-LaTeX collection, and the varioref, natbib and harvard packages.

options

2 Package Options

Some people have commented that the printing of the `\ref` and `\cite` keys is less useful than the printing of the `\label` keys and so showkeys now supports two options that can be given in the `\usepackage` command:

notref to stop the redefinition of `\ref` and `\pageref`, and related commands from the varioref package.

notcite to stop the redefinition of `\cite` and related commands from the harvard and natbib packages.

So if the package is loaded with `\usepackage[notref]{showkeys}` then `\ref` will have its standard definition, but `\label` will print its key argument (usually in the margin).

If you find the printed keys distracting, but don't want to use the above options to stop them altogether you may use:

color Print the keys in a distinguishing colour. The default value is a light grey.

*This file has version number v3.17, last revised 2014/10/28.

The colours may be changed by redefining the following two colours after the package is loaded. `refkey` (also used for `\cite`) and `labelkey` (also used for `\bibitem`). The defaults are:

```
\definecolor{refkey}{gray}{.75}
\definecolor{labelkey}{gray}{.75}
```

If this option is used the color package will be loaded.
The package accepts two further options.

final to suporess the action of this package, for 'final' versions.

draft the normal behaviour of this package.

Clearly there is not much point in entering the `final` option directly in the `\usepackage` command, as just not loading this package would have the same effect, and execute more quickly, however the `final` option may be useful as it may be used once in the `documentclass` command to affect any number of packages that may be loaded. The `draft` option does not do anything, but is there to honour an informal convention that packages have these options in pairs.

You can also control the appearance of the typeset label with the command `\showkeyslabelformat`, which takes one argument. The default is

```
\providecommand*\showkeyslabelformat[1]{%
  \fbox{\normalfont\small\ttfamily#1}}
```

The command is called inside a group so you can put in local modifications of `\fboxsep`, for instance, without them leaking to the rest of the document.

3 More Examples

examples

The only other similar package that I could find in the macro index, DMJ:mi [3], was `showlabels.sty`, GN:sl [1]. After the first draft of this package was written, I found anon:sk [2] on my local installation! I think the current package is more robust than anon:sk [2], but I thought that `showkeys` was rather a good name, so I have stolen it for this file.

e^1 1. This has `\label` immediately after `\item`.

e^2 2. This has the `\label` at the end.

A minipage :-

Within environments like this `minipage`, we cannot use `\marginpar`[1], so the appearance is slightly different. Here is that `enumerate` environment again:

m&e^1 1. This has `\label` immediately after `\item`.

m&e^2 2. This has the `\label` at the end.

Displayed math (without `equation` counter).

$$0 = 0 \quad \texttt{disp}$$

Some text referring to the maths on page 2, and the item 1.

If `showkeys` thinks that the current environment is going to produce an "equation number", then it does not show the label where the `\label` command occurs, but tries to put it in the margin, as shown with equation 1. The package 'knows' about the standard `equation` and `eqnarray` environments, and also all the numbered alignment environments offered by the AMSLaTeX package, `amsmath`.

$$1 = 1 \tag{1}$$

eq:xx

$$\begin{aligned} 2 &= 2 \\ 3 &= 3 \\ 4 &= 4 \end{aligned} \qquad \begin{aligned} &(2) \\ &\\ &(3) \end{aligned}$$

eqnar:a

eqnar:b

Within a `figure` environment, the `\label` must not come before the `\caption` command. If you place `\label` inside the argument of `\caption` the label will be shown like this:

Figure 1: Within the caption argument.

cap:a

If you place `\label` immediately after the `\caption` command it will be shown like this:

Figure 2: Immediately after the caption argument.

cap:b

If you place the `\label` command at some random point after the `\caption` command, it may be shown like:

Figure 3: In vertical mode not immediately after a box.

cap:c

References

GN:sl [1] Gil Neiger, *showlabels.sty*, Undated package, similar to this one, but shows labels inline, affecting the formatting of the document.

anon:sk [2] Anonymous, *showkeys.sty*, Package, dated 14 May 1988. Very similar to this one, also uses `\marginpar` in outer vertical mode.

DMJ:mi [3] David M. Jones, *TEX Macro Index*, A catalogue of TEX macros, including LaTeX packages, available from all good TEX archives.

4 The Macros

1 ⟨*package⟩

First we handle the options. Normally all related commands are defined to show their 'keys'. But since v3.03 one can specify:

[1] Actually `\marginpar` is not used at all in this package now.

`notref` to stop the redefinition of `\ref` (and `\pageref`, and related commands from varioref package),

`notcite` to stop the redefinition of `\cite` and related commands from the harvard and natbib packages.

```
\DeclareOption{notref}{\let\SK@ref\@empty}
\DeclareOption{notcite}{\let\SK@cite\@empty}
```

`\SK@refcolor` `\SK@labelcolor` Colour commands. Normally no-op.

```
\let\SK@refcolor\relax
\let\SK@labelcolor\relax
```

`color` option loads the color package and defines the colours. Delayed to the end of the package as package loading not allowed in this option section.

```
\DeclareOption{color}{\AtEndOfPackage{%
  \RequirePackage{color}%
  \definecolor{refkey}{gray}{.75}%
  \definecolor{labelkey}{gray}{.75}%
  \def\SK@refcolor{\color{refkey}}%
  \def\SK@labelcolor{\color{labelkey}}}}
```

Allow `final` to be specified in the document class options to suppress the loading of this package.

```
\DeclareOption{final}{%
  \providecommand*\showkeyslabelformat[1]{}%
  \endinput}
\DeclareOption{draft}{}
\ProcessOptions
```

`\SK@label` `\SK@bibitem` `\SK@lbibitem` The saved original definitions

```
\let\SK@label\label
\let\SK@bibitem\@bibitem
\let\SK@lbibitem\@lbibitem
```

`\label` The new definition, print the argument, and then do the old definition.

```
\def\label#1{%
  \@bsphack
  \SK@\SK@@label{#1}%
  \begingroup
    \SK@label{#1}%
  \endgroup
  \@esphack}
```

`\@bibitem` `\@lbibitem` For `\bibitem`, position the showkeys code as for a standard list with `\item` and `\label`.

```
\def\@bibitem#1{%
  \SK@bibitem{#1}\SK@\SK@@label{#1}\ignorespaces}
\def\@lbibitem[#1]#2{%
  \SK@lbibitem[{#1}]{#2}\SK@\SK@@label{#2}\ignorespaces}
```

`\SK@` Grab hold of `#2` via `\meaning` so characters like `&` and `^` do not cause problems later, and pass the result on to the command `#1`.

```
\def\SK@#1#2{%
  \protected@edef\@tempa{#2}%
  \expandafter#1\meaning\@tempa\SK@}
```

\showkeyslabelformat

```
\providecommand*\showkeyslabelformat[1]{%
  \fbox{\normalfont\small\ttfamily#1}}
```

\SK@@label Strip off the initial segment of the \meaning output, and then put the rest either in a \marginpar or in a box of size 0pt, hopefully not disturbing the surrounding text.

```
\def\SK@@label#1>#2\SK@{%
```

Need to work globally as in some cases like alignments, and fleqn, the counter will be printed in a different group to the \label command.

```
  \gdef\SK@lab{\smash{\SK@labelcolor\showkeyslabelformat{#2}}}%
  \ifvmode
    \if@inlabel
```

If the \label is straight after \item (\bibitem is handled by this case as well) then the item label has not been added to the page yet. It is hanging around in the box \@labels waiting for the paragraph to start. So just need to attach the label to this box.

```
      \global\setbox\@labels\hbox{%
        \llap{\SK@lab\SK@lab@relax
              \kern\@totalleftmargin\kern\marginparsep}%
        \box\@labels}%
    \else
```

If we insert a box into the main vertical list, do not want to change \prevdepth as that would affect vertical spacing in the document. (The box itself should not cause any difference in break points as there is a node there anyway coming from the \write to the aux file.

```
      \dimen@\prevdepth
      \nointerlineskip
```

The inner vertical mode cases are mainly designed to do the right thing with float captions, but seem to work OK in other cases as well.

```
      \ifinner
        \skip@\lastskip\unskip
```

In inner vertical mode, attach the label to the right of the immediately preceding box, if it is a box before the current point. Otherwise just put it in a box of zero dimensions, with no interline skip. (This may slightly move the surrounding text (but perhaps not now that \prevdepth is restored.)

```
        \advance\skip@\lastskip\unskip
        \setbox\z@\lastbox
        \ifvoid\z@
          \llap{\SK@lab\SK@lab@relax\kern\marginparsep}%
        \else
          \hbox{\box\z@\rlap{\kern\marginparsep\SK@labx}}%
        \fi
        \vskip\skip@
      \else
```

In outer vertical mode, previously used a \vadjust at the start of the next paragraph (and before that used \marginpar). These methods sometimes cause extra

space, eg if paragraph starts with a math display, so now just insert the box directly, taking care not to change \prevdepth.

```
        \llap{\SK@lab\SK@lab@relax\kern\marginparsep}%
      \fi
```

Restore \prevdepth.

```
      \prevdepth\dimen@
    \fi
  \else
```

If we are in an numbered equation-style environment, do nothing as the code to print the number will also print the label, otherwise just stick the label at the current point, in a box of zero dimensions.

```
    \csname SK@\@currenvir\endcsname
    \ifSK@equation\else
      \ifmmode
        \SK@labx
      \else
```

Inner horizontal mode. Not much we can do, just stick it here.

```
        \ifinner
          \rlap\SK@lab
      \else
```

In outer horizontal mode use \vadjust to get to the margin.

```
          \vadjust{\llap{\SK@lab\kern\marginparsep}}%
        \fi
        \SK@lab@relax
      \fi
    \fi
  \fi}
```

\tagform@
\@eqnnum
\maketag@@@

Firstly we grab \@eqnnum.

```
\AtBeginDocument{%
  \let\SK@eqnnum\@eqnnum
```

Then check for amsmath where we grab the internal commands \tagform@ and \maketag@@@. Redefine them and redefine \@eqnnum as well.

```
  \@ifpackageloaded{amsmath}{%
    \let\SK@tagform@\tagform@
    \let\SK@maketag@@@\maketag@@@
    \iftagsleft@
      \def\tagform@#1{%
        \ifx\df@label\@empty
          \SK@lab@relax
        \else
          \expandafter\SK@@label\meaning\df@label\SK@
        \fi
        \llap{\SK@lab\kern\marginparsep}%
        \SK@lab@relax\SK@tagform@{#1}}%
      \def\maketag@@@#1{%
        \ifx\df@label\@empty
          \SK@lab@relax
        \else
          \expandafter\SK@@label\meaning\df@label\SK@
```

```
        \fi
        \llap{\SK@lab\kern\marginparsep}\SK@lab@relax
        \SK@maketag@@@{#1}%
      }%
      \def\@eqnnum{%
        \llap{\SK@lab\kern\displaywidth\kern\marginparsep}%
        \SK@lab@relax\SK@eqnnum}%
    \else
```

Almost the same for tags on the right, except we use `\rlap` and typeset it after the tag.

```
      \def\tagform@#1{%
        \ifx\df@label\@empty
          \SK@lab@relax
        \else
          \expandafter\SK@@label\meaning\df@label\SK@
        \fi
        \SK@tagform@{#1}%
        \rlap{\kern\marginparsep\SK@lab}\SK@lab@relax}%
      \def\maketag@@@#1{%
        \ifx\df@label\@empty
          \SK@lab@relax
        \else
          \expandafter\SK@@label\meaning\df@label\SK@
        \fi
        \SK@maketag@@@{#1}%
        \rlap{\kern\marginparsep\SK@lab}\SK@lab@relax
      }%
      \def\@eqnnum{\SK@eqnnum\rlap{\kern\marginparsep\SK@lab}%
        \SK@lab@relax}%
    \fi
  }%
```

If amsmath wasn't loaded we check explicitly if the `leqno` option was used in `\documentclass` and redefine accordingly.

```
  {%
    \@ifundefined{ver@leqno.clo}{%
      \def\@eqnnum{\SK@eqnnum\rlap{\kern\marginparsep\SK@lab}%
        \SK@lab@relax}%
    }{%
      \def\@eqnnum{%
        \llap{\SK@lab\kern\displaywidth\kern\marginparsep}%
        \SK@lab@relax\SK@eqnnum}%
    }%
  }%
}
```

`\SK@labx` Print the label, and then globally reset the print command to `\relax`.

```
\def\SK@labx{\rlap\SK@lab\global\let\SK@lab\relax}
```

`\SK@lab@relax` Clear the label.

```
\def\SK@lab@relax{\global\let\SK@lab\relax}\SK@lab@relax
```

\SK@equation
\SK@eqnarray

The following environments print an equation number, so `\label` should not print its argument at the point where it appears. Note this will fail to show the label if you are in an `eqnarray` environment, and use `\label` together with `\nonumber` This might just about make sense if you are going to use `\pageref`, but that is too bad...

```
\newif\ifSK@equation
\let\SK@equation\SK@equationtrue
\let\SK@eqnarray\SK@equationtrue
```

\eqnarray

When the AMS packages are loaded `showkeys` assumes environments work 'The AMS way' However `eqnarray` (unlike `equation`) is not redefined, so here we need to remove some of the AMS hacks.

```
\toks@\expandafter{\eqnarray}
\edef\eqnarray{\let\noexpand\tagform@\noexpand\SK@tagform@\the\toks@}
```

\SK@align
\SK@alignat
\SK@xalignat
\SK@xxalignat
\SK@gather
\SK@multline
\SK@flalign

The AMS environments

```
\let\SK@align\SK@equationtrue
\let\SK@alignat\SK@equationtrue
\let\SK@xalignat\SK@equationtrue
\let\SK@xxalignat\SK@equationtrue
\let\SK@gather\SK@equationtrue
\let\SK@multline\SK@equationtrue
\let\SK@flalign\SK@equationtrue
```

\SK@align*
\SK@alignat*
\SK@flalign*
\SK@gather*
\SK@multline*
\SK@equation*

Starred versions of the AMS environments.

```
\expandafter\let\csname SK@align*\endcsname\SK@equationtrue
\expandafter\let\csname SK@alignat*\endcsname\SK@equationtrue
\expandafter\let\csname SK@flalign*\endcsname\SK@equationtrue
\expandafter\let\csname SK@gather*\endcsname\SK@equationtrue
\expandafter\let\csname SK@multline*\endcsname\SK@equationtrue
\expandafter\let\csname SK@equation*\endcsname\SK@equationtrue
```

\SK@def

This macro redefines a command `#1`. The new definition can make use of the old definition as `\SK@`*old name*. If `#1` is really a `\protect`'ed command with the real definition in a '*space*' command then the 'space' version is used as the old definition. Need to test this for each command as some package may have changed the status of a command to being 'protected'. The new definition is made as if with `\DeclareRobustCommand`, but with `\def` syntax for the argument specification.

```
\def\SK@def#1{%
  \edef\@tempa{\expandafter\@gobble\string#1}%
  \@ifundefined{\@tempa\space}%
    {\expandafter\let\csname SK@\@tempa\endcsname#1}%
    {\expandafter\let\csname SK@\@tempa\expandafter\endcsname
                          \csname\@tempa\space\endcsname}%
  \expandafter\def\expandafter#1\expandafter{%
        \expandafter\protect\csname\@tempa\space\endcsname}%
  \expandafter\def\csname\@tempa\space\endcsname}
```

The next section redefines `\ref` and `\pageref` (unless the `notref` option was given).

```
\ifx\SK@ref\@empty
```

Even if `notref` option is used, need to fudge the varioref commands as they use `\label` internally.

```
\AtBeginDocument{%
  \@ifpackageloaded{varioref}{%
    \SK@def\@@vpageref#1[#2]#3{{%
      \let\label\SK@label
      \SK@@@vpageref{#1}[{#2}]{#3}}}%
    \def\vr@f#1{%
      \leavevmode\unskip\vref@space
      \ref{#1}%
      {\let\label\SK@label
      \vpageref[\unskip]{#1}}}%
  }{}}
\else
```

`\ref` `\pageref` Save the redefinition to `\begin{document}` so that this package can work with packages that redefine `\cite`. Tested with harvard and natbib packages. Also add code at this point to support varioref.

```
\AtBeginDocument{%
  \SK@def\ref#1{\SK@\SK@@ref{#1}\SK@ref{#1}}%
  \SK@def\pageref#1{\SK@\SK@@ref{#1}\SK@pageref{#1}}%
```

varioref support.

```
  \@ifpackageloaded{varioref}{%
    \SK@def\@@vpageref#1[#2]#3{{%
      \let\label\SK@label\let\ref\SK@ref\let\pageref\SK@pageref
      \leavevmode\unskip\SK@\SK@@ref{#3}\SK@@@vpageref{#1}[{#2}]{#3}}}%
    \def\vr@f#1{%
      \leavevmode\unskip\vref@space
      \ref{#1}%
      \let\label\SK@label\let\ref\SK@ref\let\pageref\SK@pageref
      \vpageref[\unskip]{#1}}%
  }{}}
\fi
```

Now redefine `\cite` unless `notcite` option given.

```
\ifx\SK@cite\@empty
\AtBeginDocument{%
  \ifx\HAR@checkdef\@undefined\else
      \expandafter\let\expandafter
         \SK@HAR@bi\csname\string\harvarditem\endcsname
      \expandafter\def\csname\string\harvarditem\endcsname[#1]#2#3#4{%
        \SK@HAR@bi[{#1}]{#2}{#3}{#4}\SK@\SK@@label{#4}}%
  \fi}
\else
```

`\cite`

```
\AtBeginDocument{%
  \ifx\HAR@checkdef\@undefined
```

Standard (non-harvard) support, including extra cite commands from natbib and cite.

If cite or overcite is being used, redefine `\citen` rather than `\cite` so as not to spoil the space and punctuation calculations done by those packages.

```
    \ifx\citen\@undefined
      \SK@def\@citex[#1]#2{\SK@citex[{#1}]{#2}}%
    \else
      \SK@def\citen#1{\SK@\SK@@ref{#1}\SK@citen{#1}}%
    \fi
    \SK@def\citeauthor#1{\SK@\SK@@ref{#1}\SK@citeauthor{#1}}%
    \SK@def\citefullauthor#1{\SK@\SK@@ref{#1}\SK@citefullauthor{#1}}%
    \SK@def\citeyear#1{\SK@\SK@@ref{#1}\SK@citeyear{#1}}%
  \else
```

In the harvard style do *not* redefine individual cite commands. Just redefine one internal command that is used in all the citation forms.

```
    \SK@def\HAR@checkdef#1#2{%
      \expandafter\SK@\expandafter\SK@@ref\expandafter{#1}%
      \SK@HAR@checkdef{#1}{#2}}%
      \expandafter\let\expandafter
         \SK@HAR@bi\csname\string\harvarditem\endcsname
      \expandafter\def\csname\string\harvarditem\endcsname[#1]#2#3#4{%
        \SK@HAR@bi[{#1}]{#2}{#3}{#4}\SK@\SK@@label{#4}}%
  \fi}
\def\SK@citex[#1]#2{%
  \SK@\SK@@ref{#2}\SK@@citex[{#1}]{#2}}
\fi
```

`\SK@@ref` This is much simpler than the printing of the label, as we know that we can be in horizontal mode. Note extra group for colour safety.

```
\def\SK@@ref#1>#2\SK@{%
  \leavevmode\vbox to\z@{{%
    \vss
    \SK@refcolor
    \rlap{\vrule\raise .75em%
       \hbox{\underbar{\normalfont\footnotesize\ttfamily#2}}}}}}
```

⟨/package⟩