The \texttt{mcaption} package\textsuperscript{*}

Stephan Hennig

\texttt{stephanhennig@arcor.de}

March 13, 2009

\textbf{Abstract}

This package provides a \texttt{margincap} environment for putting captions into
the outer document margin with either a top or bottom alignment.

1 Package options

The \texttt{mcaption} package provides the following options:

<table>
<thead>
<tr>
<th>option</th>
<th>brief description</th>
<th>page</th>
</tr>
</thead>
<tbody>
<tr>
<td>\texttt{bottom}</td>
<td>vertical caption alignment</td>
<td>2</td>
</tr>
<tr>
<td>\texttt{top}</td>
<td>vertical caption alignment</td>
<td>2</td>
</tr>
<tr>
<td>v2.2</td>
<td>compatibility option</td>
<td>1</td>
</tr>
</tbody>
</table>

2 Usage

\texttt{margincap} The \texttt{margincap} environment places its contents into a box whose width matches
the current line width and attaches a caption (with an optional label) next to the
box in the outer margin. Caption text and the label are taken from \texttt{\caption}
and \texttt{\label} commands within the environment. A typical use-case is to put the
\texttt{margincap} environment into a float, such as a \texttt{figure} or \texttt{tabular} environment:

\begin{verbatim}
\begin{figure}
  \begin{margincap}
    \centering
    \includegraphics{picture}
    \caption[short caption text]{long caption text}
    \label{fig:pic}
  \end{margincap}
\end{figure}
\end{verbatim}

\texttt{wrapfigure} The \texttt{margincap} environment also works with the \texttt{wrapfigure} environment pro-

\textsuperscript{*}This document corresponds to \texttt{mcaption} v3.0, dated 2009/03/13.
vided by the \texttt{wrapfig} package. Note, wrapped figures or tables have to appear in the outer margin, \textit{i.e.}, parameters ‘o’ or ‘O’ have to be applied to the \texttt{wrapfigure} environment. This even works in two-column mode. See file \texttt{example.tex} for an example.

Up to \texttt{mcaption} v2.2 the \texttt{margincap} environment had a different syntax. Macros \texttt{\caption} and \texttt{\label} haven’t been recognized inside the environment. Instead, short and long caption texts had to be given as optional and mandatory arguments to the \texttt{margincap} environment. To apply a label to a \texttt{margincap} environment, the \texttt{\label} command had to passed as part of the long caption text.

The \texttt{mcaption} package provides a compatibility option v2.2 that enables the old behaviour. This option is disabled by default.

3 Caption Format

3.1 Vertical alignment

\texttt{top}  Vertical alignment of margin captions can be controlled by package options \texttt{top} or \texttt{bottom}.

\texttt{bottom}  Option \texttt{top} aligns the top-most line of the caption to the top of the \texttt{margincap} environment’s contents (an image, tabular, \textit{etc.}) Similarly, option \texttt{bottom} aligns the bottom-most line of the caption to the bottom of the \texttt{margincap} environment’s contents. In case a caption has a larger height or depth than a figure, it will hang or grow beneath the running text. Option \texttt{bottom} is the default.

Up to \texttt{mcaption} v2.2, the vertical alignment of captions required some user-interaction. For tabulars, the baseline alignment had to match that of the caption. For that reason a macro \texttt{\margincapalign} had been provided that had to be passed as an alignment specifier to all tabular declarations. Newer versions of \texttt{mcaption} don’t need this alignment specifier. For backwards compatibility macro \texttt{\margincapalign} is still provided, but it’s use is deprecated. Legacy documents, that use \texttt{\margincapalign} in tabular declarations, should still compile as soon as \texttt{mcaption} is loaded with package option v2.2 (see section 2).

3.2 Horizontal alignment

\texttt{\margincapsep}  Horizontal spacing between a \texttt{margincap} environment’s contents and the caption can be adjusted by the length \texttt{\margincapsep}. This has to be done after \texttt{\begin{document}} or via \texttt{\AtBeginDocument} in the preamble. Since changing \texttt{\margincapsep} will affect all further \texttt{margincap} environments, the author suggests one document wide setting to get a consistent look throughout the document. Default value is \texttt{\marginparsep}.

3.3 Further tweaks

To get visually pleasing results you should provide wide enough outer margins. To further smoothen line breaking consider using a smaller caption font and setting
captions ragged. The author suggests using the `caption` package to format captions. 

\textit{E. g.}, issuing the following line in the document preamble

\texttt{\usepackage[text=footnotesize,justification=raggedright]{caption}}

will typeset all further captions at a smaller font size and flush left. The \texttt{RaggedRight} option might be useful here, too, to allow for hyphenation inside ragged text.

4 Known Problems

1. Captions may appear in the wrong margin, sometimes. Running \LaTeX{} twice should solve that problem. \textit{Background:} For robustness, \texttt{mcaption} relies on the \texttt{changepage} package with option \texttt{strict} to detect left- and right-hand pages. This requires two \LaTeX{}-passes. The behaviour can be changed with macro \texttt{\easypagecheck} (see package \texttt{changepage}).

2. Captions are positioned slightly too high. This is because \texttt{margincap} doesn’t reliably know the contents’ exact bottom-most base line. Additional artificial zero height lines are used to align environment contents and caption text. For that reason, the true depth of both are not taken into account. \textit{Todo:} Provide means for vertical fine-tuning of captions.

3. When using the \texttt{wrapfig} package the auto sizing feature of the \texttt{wrapfigure} environment won’t work when putting a \texttt{margincap} environment in. You’ll have to specify the width of a \texttt{wrapfigure} manually.

5 Bugs

If you find bugs, feel free to contact me at \texttt{stepanhennig@arcor.de}.

6 Implementation

Make sure the \texttt{changepage} package is loaded.

1 \texttt{\RequirePackage[strict]{changepage}}

2 \texttt{\mcaption@alignv}\ This macro is used by options \texttt{bottom} and \texttt{top}.

3 \texttt{\newcommand*{\mcaption@alignv}{}\}

4 Declare options \texttt{bottom} and \texttt{top} to determine vertical alignment of a caption.

Default package option is \texttt{bottom}.

5 \texttt{\ExecuteOptions{bottom}}
Declare compatibility option \texttt{v2.2}, that restores the behaviour of \texttt{mcaption v2.2} for the \texttt{margincap} environment.

6 \DeclareOption{v2.2}{%
7 \AtEndOfPackage{% 
   Activate \texttt{margincap} with optional and mandatory caption argument.
8 \let\margincap\mcaption@mcIIIdotII%
9 \let\endmargincap\endmcaption@mcIIIdotII%

\margincapalign Macro \texttt{\margincapalign} is deprecated (cf. macro \texttt{\mcaption@alignv}). It is only provided for backwards compatibility.

10 \newcommand*{\margincapalign}{\mcaption@alignv}%
11}%
12}%

Process the options.
13 \ProcessOptions\relax

\margincapsep Length \texttt{\margincapsep} determines the horizontal distance between contents and caption and can be adjusted by the user. This length has to be set only after \texttt{\begin{document}} and equals \texttt{\marginparsep} by default.

14 \newlength{\margincapsep}
15 \AtBeginDocument{%
16 \setlength{\margincapsep}{\marginparsep}\}%
17 }

Declare macros for storing long and short caption text and a flag.

18 \newcommand*{\mcaption@CaptionLong}{}
19 \newcommand*{\mcaption@CaptionShort}{}
20 \newcommand*{\mcaption@CaptionFlag}{}

Declare macros for storing a label and a flag.

21 \newcommand*{\mcaption@Label}{}
22 \newcommand*{\mcaption@LabelFlag}{}

Declare boxes to store the contents and caption of a \texttt{margincap} environment.

23 \newsavebox{\mcaption@ObjectBox}
24 \newsavebox{\mcaption@CaptionBox}

\mcaption@mcIIIdotII Declare a template for the traditional \texttt{margincap} environment as of \texttt{mcaption v2.2}, that takes an optional and a mandatory caption text argument, \textit{cf.} environment \texttt{mcaption@mcIIIdotII}.

25 \newenvironment{mcaption@mcIIIdotII}{\mcaption@DefaultOpt}{%
26 \caption with or without optional argument. Trick taken from UK-T\TeX-FAQ, question 286: ‘Optional arguments like \texttt{section}’. 
27 \def\mcaption@DefaultOpt{#2}%
Store optional and mandatory caption arguments for later processing. Flag a caption without label.

\begin{lrbox}{\mcaption@ObjectBox}\
\begin{minipage}{\linewidth}
\end{minipage}\
\end{lrbox}

Call the working macros.

We're done.

% mcaption@mcIIIdot

Declare a template for the new \texttt{margincap} environment as of \texttt{mcaption v3.0}, that accepts \texttt{\caption} and \texttt{\label} arguments inside the environment, \textit{cf.} environment \texttt{mcaption@mcIIIdotII}.

\newenvironment{mcaption@mcIIIdot}{% 
\let\mcaption@origcaption\caption% 
\let\caption\mcaption@caption% 
\gdef\mcaption@CaptionFlag{f}% 
\let\mcaption@origlabel\label% 
\let\label\mcaption@label% 
\gdef\mcaption@LabelFlag{f}% 

Collect environment contents in a box \texttt{\mcaption@ObjectBox} of width \texttt{\linewidth}.

\begin{lrbox}{\mcaption@ObjectBox}\begin{minipage}{\linewidth}\end{minipage}\end{lrbox}

Restore original \texttt{\caption} and \texttt{\label} definitions.

\let\caption\mcaption@origcaption% 
\let\label\mcaption@origlabel% 

Call the working macros.

We're done.
margincap

Provide the \margincap environment.

\newenvironment{margincap}{\{}{\%}

Activate the new behaviour for the \margincap environment.

\let\margincap\mcaption@mcIIIdot%
\let\endmargincap\endmcaption@mcIIIdot%

Define auxiliary macros and environments.
These macros are used for saving the original \caption and \label definitions.

\newcommand*{\mcaption@origcaption}{}%\newcommand*{\mcaption@origlabel}{}

Declare an auxiliary macro for storing the unexpanded optional \caption argument.

\newcommand*{\mcaption@DefaultOpt}{}

\mcaption@caption
This \caption replacement macro just stores its arguments in \mcaption@CaptionShort and \mcaption@CaptionLong for later reference and sets a flag.

\newcommand*{\mcaption@caption}[2]{\mcaption@DefaultOpt}{%\newcommand*{\mcaption@caption}[2]{\mcaption@DefaultOpt}{%}
\gdef\mcaption@DefaultOpt{#2}%
\gdef\mcaption@CaptionShort{#1}%
\gdef\mcaption@CaptionLong{#2}%
\gdef\mcaption@CaptionFlag{t}%
\ignorespaces%\ignorespaces%

\mcaption@label
This \label replacement macro just stores its arguments in \mcaption@Label for later reference and sets a flag.

\newcommand*{\mcaption@label}[1]{%\newcommand*{\mcaption@label}[1]{%
\gdef\mcaption@Label{#1}%
\gdef\mcaption@LabelFlag{t}%
\ignorespaces%\ignorespaces%

\mcaption@align@boxes
This macro prepares and aligns contents and caption boxes.

\newcommand*{\mcaption@align@boxes}{}%\begin{lrbox}{\mcaption@CaptionBox}%
\begin{lrbox}{\mcaption@CaptionBox}%
\setlength{\@tempdima}{\marginparwidth}%
\addtolength{\@tempdima}{\marginparsep}%
\addtolength{\@tempdima}{-\margincapsep}%
\begin{minipage}{\@tempdima}%
\if\mcaption@CaptionFlag t%
\setlength{\abovecaptionskip}{0pt}%
\setlength{\belowcaptionskip}{0pt}%
\caption{\mcaption@CaptionShort}{\strut\mcaption@CaptionLong\strut}%
\fi%
\if\mcaption@LabelFlag t%
\caption{\mcaption@CaptionShort}{\strut\mcaption@CaptionLong\strut}%
\fi%\fi}
Wrap contents into zero height top and bottom lines to get the desired reference point. Then use \vtop or \vbox for aligning boxes.

\sbox{\mcaption@ObjectBox}{%  
  \if\mcaption@alignv t\vtop
  \else\vbox
  \fi
  \vskip0pt%
  \hbox{\usebox{\mcaption@ObjectBox}}%
  \vskip0pt%
}%
\sbox{\mcaption@CaptionBox}{%  
  \if\mcaption@alignv t\vtop
  \else\vbox
  \fi
  \vskip0pt%
  \hbox{\usebox{\mcaption@CaptionBox}}%
  \vskip0pt%
}%

\mcaption@output@oddpage  This macro first outputs the contents and then the caption box.
\newcommand*{\mcaption@output@oddpage}{%  
  \makebox[\linewidth][l]{%  
    \usebox{\mcaption@ObjectBox}\hspace*{\margincapsep}\smash{\usebox{\mcaption@CaptionBox}}%  
  }%  
}%

\mcaption@output@evenpage  This macro first outputs the caption and then the contents box.
\newcommand*{\mcaption@output@evenpage}{%  
  \makebox[\linewidth][r]{%  
    \smash{\usebox{\mcaption@CaptionBox}}\hspace*{\margincapsep}\usebox{\mcaption@ObjectBox}%  
  }%  
}%

\mcaption@output@boxes  This macro outputs contents and caption boxes in the correct order.
\newcommand*{\mcaption@output@boxes}{%  
  \makebox[\linewidth][l]{%  
    \usebox{\mcaption@ObjectBox}\hspace*{\margincapsep}\smash{\usebox{\mcaption@CaptionBox}}%  
  }%  
}%
In two-sided documents check for odd and even pages. In one-sided documents treat every page as an odd page.

\if@twoside%
  \checkoddpage%
  \ifoddpage%
    \mcaption@output@oddpage%
  \else%
    \mcaption@output@evenpage%
  \fi%
\else%
  \mcaption@output@oddpage%
\fi%

Change History

v2.0
  General: Prepared .dtx package. .......... 3

v2.1
  \mcaption@mcIIIdotII: Now works with standard classes. .......... 4

v2.2
  General: New package options ‘bottom’ and ‘top’. .......... 3
  \mcaption@output@boxes: Fixed: In one-sided documents captions were put into the wrong margin. .......... 8

v3.0
  General: Complete revision of vertical alignment mechanism. .......... 3
  New package option ‘v2.2’. .......... 4
  Replace package chngpage by newer changepage. .......... 3
  \mcaption@mcIIIdotII: Delay caption handling. .......... 5
  \mcaption@mcIIIdot: Recognize \caption and \label commands. .......... 5
  \margincapalign: Deprecated. .......... 4
  \mcaption@align@boxes: Use temporary \LaTeX length. .......... 6
  \mcaption@output@boxes: Fixed: In one-sided documents chngpage/changepage’s even/odd page detection was subtly broken by \mcaption. .......... 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; numbers in roman refer to the code lines where the entry is used.

Symbols
\AtBeginDocument .......... 15 \caption .......... 40, 41, 51, 83
\AtEndOfPackage .......... 7 \checkoddpage .......... 127
@tempdima .......... 76–79
A \abovecaptionskip .......... 81
\addtolength .......... 77, 78
B \belowcaptionskip .......... 82
C \DeclareOption .......... 3, 4, 6
D \endmargincap .......... 9, 58
E