The settobox package

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2008/08/11 v1.4

Abstract

Commands are defined for getting box sizes similar to LaTeX's `\settowidth` commands.

Contents

1 Usage **1**
1.1 Get box dimensions . . . 1
1.2 Set box dimensions . . . 2
1.3 Move box . . . 2
1.4 Example . . . 2
1.4.1 Short example . . . 2
1.4.2 Test file that shows box manipulations . . . 2

2 Implementation **4**

3 Installation **6**
3.1 Download . . . 6
3.2 Bundle installation . . . 6
3.3 Package installation . . . 6
3.4 Refresh file name databases . . . 7
3.5 Some details for the interested . . . 7

4 History **7**
[2000/02/11 v1.0] . . . 7
[2000/09/07 v1.1] . . . 7
[2006/02/20 v1.2] . . . 7
[2007/04/11 v1.3] . . . 8
[2008/08/11 v1.4] . . . 8

5 Index **8**

1 Usage

1.1 Get box dimensions

`\settoboxwidth` {⟨*LaTeX length*⟩} {⟨*LaTeX box*⟩}
`\settoboxheight` {⟨*LaTeX length*⟩} {⟨*LaTeX box*⟩}
`\settoboxdepth` {⟨*LaTeX length*⟩} {⟨*LaTeX box*⟩}
`\settoboxtotalheight` {⟨*LaTeX length*⟩} {⟨*LaTeX box*⟩}

A ⟨*LaTeX box*⟩ is allocated by `\newsavebox`. It can be filled by `\sbox` or the environment `lrbox`. The commands above extract then the desired lengths.

1.2 Set box dimensions

\setboxwidth {⟨LaTeX box⟩} {⟨LaTeX length expression⟩}
\setboxheight {⟨LaTeX box⟩} {⟨LaTeX length expression⟩}
\setboxdepth {⟨LaTeX box⟩} {⟨LaTeX length expression⟩}

These commands allow the manipulation of the box. Package calc is supported in the ⟨LaTeX length expression⟩. Also the following length are available in this expression:

\width	width of the box
\height	height of the box
\depth	depth of the box
\totalheight	totalheight of the box

Note, the base point (point at the left margin of the baseline) always remain constant.

1.3 Move box

\setboxmoveleft {⟨LaTeX box⟩} {⟨LaTeX length expression⟩}
\setboxmoveright {⟨LaTeX box⟩} {⟨LaTeX length expression⟩}
\setboxlower {⟨LaTeX box⟩} {⟨LaTeX length expression⟩}
\setboxright {⟨LaTeX box⟩} {⟨LaTeX length expression⟩}

Note, the box is shifted relative to the base point. The base point is always inside the box, however the width and height of the box change along with the movement.

1.4 Example

1.4.1 Short example

```
\newsavebox{\mybox}
\newlength{\mylength}
\sbox{\mybox}{Hello World}
\settoboxwidth{\mylength}{\mybox}
```

1.4.2 Test file that shows box manipulations

```
⟨*example⟩
%<<END
\documentclass{article}

\usepackage{settobox}
\usepackage{calc}

\newsavebox{\mybox}

\setlength{\fboxsep}{0pt}
\setlength{\parindent}{20pt}
\setlength{\parskip}{10pt}
\pagestyle{empty}

% \test{#1}
% The macro is called with commands in #1 that manipulates
% the box \mybox. These commands along with the result of
% the manipulation is shown. Thus the essence of the
% macro is:
%
%   a) \sbox{\mybox}{The cracy fox.}
```

```
%   b) #1 % manipulates \mybox
%   c) Print #1 commands.
%   d) Print box with frame
%
% The implemenation looks more weird:
\makeatletter
\newcommand*{\test}[1]{%
  \par
  \begingroup
    \raggedright
    \edef\x{\detokenize{#1}}%
    \let\do\@makeother
    \dospecials
    \catcode`\~\active
    \catcode`\ =10\relax
    \def~{\\}%
    \noindent
    \texttt{\scantokens\expandafter{\x}}%
    \par
  \endgroup
  \begingroup
    \let~\relax
    \sbox{\mybox}{The cracy fox.}%
     #1%
     A---\fbox{\usebox\mybox}---B%
  \endgroup
  \par
}
\makeatother

\begin{document}

\test{\setboxwidth{\mybox}{1.25\width}}
\test{\setboxheight{\mybox}{0pt}}
\test{\setboxheight{\mybox}{2\height}}
\test{\setboxdepth{\mybox}{\height}}
\test{\setboxmoveleft{\mybox}{5pt}}
\test{%
  \setboxmoveleft{\mybox}{5pt}~%
  \setboxwidth{\mybox}{\width + 5pt}%
}
\test{\setboxmoveright{\mybox}{0.5\width}}
\test{\setboxlower{\mybox}{\height}}
\test{\setboxraise{\mybox}{\depth}}
\test{%
  \setboxmoveright{\mybox}{5pt}~%
  \setboxwidth{\mybox}{\width + 5pt}~%
  \setboxheight{\mybox}{\height + 5pt}~%
  \setboxdepth{\mybox}{\depth + 5pt}%
}

\end{document}
%END
```
⟨/example⟩

The result:

```
\setboxwidth {\mybox }{1.25\width }
```

A—The cracy fox.—B

```
\setboxheight {\mybox }{0pt}
```

A—The cracy fox.—B

```
\setboxheight {\mybox }{2\height }
```

A—The cracy fox.—B

```
\setboxdepth {\mybox }{\height }
```

A—The cracy fox.—B

```
\setboxmoveleft {\mybox }{5pt}
```

A—The cracy fox.—B

```
\setboxmoveleft {\mybox }{5pt}
\setboxwidth {\mybox }{\width + 5pt}
```

A—The cracy fox. —B

```
\setboxmoveright {\mybox }{0.5\width }
```

A— The cracy fox.—B

```
\setboxlower {\mybox }{\height }
```

A—
—B
The cracy fox.

```
\setboxraise {\mybox }{\depth }
```

A—The cracy fox.—B

```
\setboxmoveright {\mybox }{5pt}
\setboxwidth {\mybox }{\width + 5pt}
\setboxheight {\mybox }{\height + 5pt}
\setboxdepth {\mybox }{\depth + 5pt}
```

A— The cracy fox. —B

---

2 Implementation

76 ⟨∗package⟩

Package identification.

```
77 \NeedsTeXFormat{LaTeX2e}
78 \ProvidesPackage{settobox}%
79   [2008/08/11 v1.4 Getting box sizes (HO)]
80 \newcommand*{\settoboxwidth}[2]{\setlength{#1}{\wd#2}}
81 \newcommand*{\settoboxheight}[2]{\setlength{#1}{\ht#2}}
82 \newcommand*{\settoboxdepth}[2]{\setlength{#1}{\dp#2}}
83 \newcommand*{\settoboxtotalheight}[2]{%
84   \setlength{#1}{\ht#2}%
85   \addtolength{#1}{\dp#2}%
86 }
```

\setboxwidth

```
87 \newcommand*{\setboxwidth}[2]{%
88   \settobox@length\wd{#1}{#2}%
89 }
```

\setboxheight

```
\newcommand*{\setboxheight}[2]{%
  \settobox@length\ht{#1}{#2}%
}
```

\setboxheight

```
\newcommand*{\setboxdepth}[2]{%
  \settobox@length\dp{#1}{#2}%
}
```

\setboxmoveleft

```
\newcommand*{\setboxmoveleft}[2]{%
  \settobox@horiz{-}{#1}{#2}%
}
```

\setboxmoveright

```
\newcommand*{\setboxmoveright}[2]{%
  \settobox@horiz{}{#1}{#2}%
}
```

\setboxlower

```
\newcommand*{\setboxlower}[2]{%
  \settobox@vert\lower{#1}{#2}%
}
```

\setboxraise

```
\newcommand*{\setboxraise}[2]{%
  \settobox@vert\raise{#1}{#2}%
}
```

\settobox@length The work for the `\setbox...` commands is done by `\settobox@length`. Inside the length expression `\width`, `\height`, `\depth`, `\totalheight` are set to the dimensions of the box.

#1: the property of the box that is to be changed (`\wd`, `\ht`, `\dp`)
#2: the box
#3: length expression

```
\def\settobox@length#1#2#3{%
  \settobox@calc{#2}{#3}{#1#2=##1sp\relax}%
}
```

\settobox@horiz

```
\def\settobox@horiz#1#2#3{%
  \settobox@calc{#2}{#3}{\setbox#2=\hbox{\kern#1##1sp\copy#2}}%
}
```

\settobox@vert

```
\def\settobox@vert#1#2#3{%
  \settobox@calc{#2}{#3}{\setbox#2=\hbox{#1##1sp\copy#2}}%
}
```

\settobox@calc

```
\def\settobox@calc#1#2#3{%
  \begingroup
    \def\width{\wd#1}%
    \def\height{\ht#1}%
    \def\depth{\dp#1}%
    \dimen@\ht#1\relax
    \advance\dimen@\dp#1\relax
    \def\totalheight{\dimen@}%
    \setlength{\dimen@}{#2}%
    \count@\dimen@
```

```
    \def\x##1{\endgroup
      #3%
    }%
  \expandafter\x\expandafter{\the\count@}%
}
```

⟨/package⟩

3 Installation

3.1 Download

Package. This package is available on CTAN[1]:

CTAN:macros/latex/contrib/oberdiek/settobox.dtx The source file.

CTAN:macros/latex/contrib/oberdiek/settobox.pdf Documentation.

Bundle. All the packages of the bundle 'oberdiek' are also available in a TDS compliant ZIP archive. There the packages are already unpacked and the documentation files are generated. The files and directories obey the TDS standard.

CTAN:install/macros/latex/contrib/oberdiek.tds.zip

TDS refers to the standard "A Directory Structure for TEX Files" (CTAN:tds/tds.pdf). Directories with `texmf` in their name are usually organized this way.

3.2 Bundle installation

Unpacking. Unpack the `oberdiek.tds.zip` in the TDS tree (also known as `texmf` tree) of your choice. Example (linux):

```
unzip oberdiek.tds.zip -d ~/texmf
```

Script installation. Check the directory `TDS:scripts/oberdiek/` for scripts that need further installation steps. Package attachfile2 comes with the Perl script `pdfatfi.pl` that should be installed in such a way that it can be called as `pdfatfi`. Example (linux):

```
chmod +x scripts/oberdiek/pdfatfi.pl
cp scripts/oberdiek/pdfatfi.pl /usr/local/bin/
```

3.3 Package installation

Unpacking. The `.dtx` file is a self-extracting docstrip archive. The files are extracted by running the `.dtx` through plain-TEX:

```
tex settobox.dtx
```

TDS. Now the different files must be moved into the different directories in your installation TDS tree (also known as `texmf` tree):

```
settobox.sty          → tex/latex/oberdiek/settobox.sty
settobox.pdf          → doc/latex/oberdiek/settobox.pdf
settobox-example.tex → doc/latex/oberdiek/settobox-example.tex
settobox.dtx          → source/latex/oberdiek/settobox.dtx
```

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.

[1] ftp://ftp.ctan.org/tex-archive/

3.4 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 `mktexlsr`.

3.5 Some details for the interested

Attached source. The PDF documentation on CTAN also includes the `.dtx` source file. It can be extracted by AcrobatReader 6 or higher. Another option is pdftk, e.g. unpack the file into the current directory:

```
pdftk settobox.pdf unpack_files output .
```

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{settobox.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 this 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 pdfLATEX:

```
pdflatex settobox.dtx
makeindex -s gind.ist settobox.idx
pdflatex settobox.dtx
makeindex -s gind.ist settobox.idx
pdflatex settobox.dtx
```

4 History

[2000/02/11 v1.0]

- First public release, written as answer in the newsgroup de.comp.text.tex: "Die Hoehe von Minipages und Bild"[2]

[2000/09/07 v1.1]

- Documentation added.
- CTAN release.

[2006/02/20 v1.2]

- `\setboxwidth`, `\setboxheight`, `\setboxdepth` added.
- Box move commands added.
- DTX framework.
- LPPL 1.3

[2] Url: http://groups.google.com/group/de.comp.text.tex/msg/c3f6446f54f66c02

[2007/04/11 v1.3]

- Line ends sanitized.

[2008/08/11 v1.4]

- Code is not changed.
- URLs updated.

5 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

\@makeother 33
\\ 37
\~ 35
\␣ 36

A

\active 35
\addtolength 85
\advance 123

B

\begin 52

C

\catcode 35, 36
\copy 112, 115
\count@ 126, 130

D

\depth 65, 70, 121
\detokenize 32
\dimen@ 122, 123, 124, 125, 126
\do 33
\documentclass 3
\dospecials 34
\dp 82, 85, 94, 121, 123

E

\end 73

F

\fbox 46
\fboxsep 10

H

\hbox 112, 115
\height 56, 57, 64, 69, 120
\ht 81, 84, 91, 120, 122

K

\kern 112

L

\lower 103

M

\makeatletter 27
\makeatother 50
\mybox 8, 17, 21, 22, 44, 46, 54, 55, 56, 57, 58, 60, 61, 63, 64, 65, 67, 68, 69, 70

N

\NeedsTeXFormat 77
\newcommand 28, 80, 81, 82, 83, 87, 90, 93, 96, 99, 102, 105
\newsavebox 8
\noindent 38

P

\pagestyle 13
\par 29, 40, 48
\parindent 11
\parskip 12
\ProvidesPackage 78

R

\raggedright 31
\raise 106

S

\sbox 21, 44
\scantokens 39
\setbox 112, 115
\setboxdepth *2*, 57, 70, 93
\setboxheight *2*, 55, 56, 69, 90, 93
\setboxlower *2*, 64, 102
\setboxmoveleft *2*, 58, 60, 96
\setboxmoveright *2*, 63, 67, 99
\setboxraise 65, 105
\setboxright *2*
\setboxwidth *2*, 54, 61, 68, 87
\setlength 10, 11, 12, 80, 81, 82, 84, 125
\settobox@calc 109, 112, 115, 117
\settobox@horiz 97, 100, 111
\settobox@length 88, 91, 94, 108
\settobox@vert 103, 106, 114
\settoboxdepth *1*, 82
\settoboxheight *1*, 81
\settoboxtotalheight *1*, 83
\settoboxwidth *1*, 80

T

\test 15, 28, 54, 55, 56, 57, 58, 59, 63, 64, 65, 66
\texttt 39
\the 130
\totalheight 124

U

\usebox 46
\usepackage 5, 6

W

\wd 80, 88, 119
\width 54, 61, 63, 68, 119

X

\x 32, 39, 127, 130