

The `settobox` package

Heiko Oberdiek
<oberdiek@uni-freiburg.de>

2006/02/20 v1.2

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	Some details for the interested	6
4	History	7
[2000/02/11 v1.0]		7
[2000/09/07 v1.1]		7
[2006/02/20 v1.2]		7
5	Index	7

1 Usage

1.1 Get box dimensions

<code>\settoboxwidth{\langle\text{\LaTeX} length\rangle}{\langle\text{\LaTeX} box\rangle}</code>
<code>\settoboxheight{\langle\text{\LaTeX} length\rangle}{\langle\text{\LaTeX} box\rangle}</code>
<code>\settoboxdepth{\langle\text{\LaTeX} length\rangle}{\langle\text{\LaTeX} box\rangle}</code>
<code>\settoboxtotalheight{\langle\text{\LaTeX} length\rangle}{\langle\text{\LaTeX} box\rangle}</code>

A $\langle\text{\LaTeX} box\rangle$ 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{\langle LATEX box\rangle}{\langle LATEX length expression\rangle}  
\setboxheight{\langle LATEX box\rangle}{\langle LATEX length expression\rangle}  
\setboxdepth{\langle LATEX box\rangle}{\langle LATEX length expression\rangle}
```

These commands allow the manipulation of the box. Package `calc` is supported in the $\langle L^A T_E X \text{ length expression} \rangle$. Also the following length are available in this expression:

<code>\width</code>	width of the box
<code>\height</code>	height of the box
<code>\depth</code>	depth of the box
<code>\totalheight</code>	totalheight of the box

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

1.3 Move box

```
\setboxmoveleft{\langle LATEX box\rangle}{\langle LATEX length expression\rangle}  
\setboxmoveright{\langle LATEX box\rangle}{\langle LATEX length expression\rangle}  
\setboxlower{\langle LATEX box\rangle}{\langle LATEX length expression\rangle}  
\setboxright{\langle LATEX box\rangle}{\langle LATEX length expression\rangle}
```

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

```
1 \example  
2 \documentclass{article}  
3  
4 \usepackage{settobox}  
5 \usepackage{calc}  
6  
7 \newsavebox{\mybox}  
8  
9 \setlength{\fboxsep}{0pt}  
10 \setlength{\parindent}{20pt}  
11 \setlength{\parskip}{10pt}  
12 \pagestyle{empty}  
13  
14 % \test{#1}  
15 % The macro is called with commands in #1 that manipulates  
16 % the box \mybox. These commands along with the result of  
17 % the manipulation is shown. Thus the essence of the  
18 % macro is:  
19 %  
20 % a) \sbox{\mybox}{The cracy fox.}  
21 % b) #1 % manipulates \mybox
```

```

22 % c) Print #1 commands.
23 % d) Print box with frame
24 %
25 % The implemenation looks more weird:
26 \makeatletter
27 \newcommand*{\test}[1]{%
28   \par
29   \begingroup
30     \raggedright
31     \edef\x{\detokenize{#1}}
32     \let\do\@makeoother
33     \dospecials
34     \catcode'\~\active
35     \catcode'\ =10\relax
36     \def~{\}%
37     \noindent
38     \texttt{\scantokens\expandafter{x}}
39     \par
40   \endgroup
41   \begingroup
42     \let~\relax
43     \sbox{\mybox}{The cracy fox.}
44     #1%
45     A---\fbox{\usebox\mybox}---B
46   \endgroup
47   \par
48 }
49 \makeatother
50
51 \begin{document}
52
53 \test{\setboxwidth{\mybox}{1.25\width}}
54 \test{\setboxheight{\mybox}{0pt}}
55 \test{\setboxheight{\mybox}{2\height}}
56 \test{\setboxdepth{\mybox}{\height}}
57 \test{\setboxmoveleft{\mybox}{5pt}}
58 \test{%
59   \setboxmoveleft{\mybox}{5pt}~%
60   \setboxwidth{\mybox}{\width + 5pt}%
61 }
62 \test{\setboxmoveright{\mybox}{0.5\width}}
63 \test{\setboxlower{\mybox}{\height}}
64 \test{\setboxraise{\mybox}{\depth}}
65 \test{%
66   \setboxmoveright{\mybox}{5pt}~%
67   \setboxwidth{\mybox}{\width + 5pt}~%
68   \setboxheight{\mybox}{\height + 5pt}~%
69   \setboxdepth{\mybox}{\depth + 5pt}%
70 }
71
72 \end{document}
73 </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—The cracy fox.—B

\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

```

74 (*package)

```

Package identification.

```

75 \NeedsTeXFormat{LaTeX2e}
76 \ProvidesPackage{settobox}%
77 [2006/02/20 v1.2 Getting box sizes (H0)]
78 \newcommand*{\settoboxwidth}[2]{\setlength{#1}{\wd#2}}
79 \newcommand*{\settoboxheight}[2]{\setlength{#1}{\ht#2}}
80 \newcommand*{\settoboxdepth}[2]{\setlength{#1}{\dp#2}}
81 \newcommand*{\settoboxtotalheight}[2]{%
82   \setlength{#1}{\ht#2}%
83   \addtolength{#1}{\dp#2}%
84 }

```

`\setboxwidth`

```

85 \newcommand*{\setboxwidth}[2]{%
86   \settobox@length\wd{#1}{#2}%
87 }

```

`\setboxheight`

```

88 \newcommand*{\setboxheight}[2]{%

```

```

89 \settobox@length\ht{#1}{#2}%
90 }

\setboxheight
91 \newcommand*\setboxdepth[2]{%
92 \settobox@length\dp{#1}{#2}%
93 }

\setboxmoveleft
94 \newcommand*\setboxmoveleft[2]{%
95 \settobox@horiz{-}{#1}{#2}%
96 }

\setboxmoveright
97 \newcommand*\setboxmoveright[2]{%
98 \settobox@horiz{}{#1}{#2}%
99 }

\setboxlower
100 \newcommand*\setboxlower[2]{%
101 \settobox@vert\lower{#1}{#2}%
102 }

\setboxraise
103 \newcommand*\setboxraise[2]{%
104 \settobox@vert\raise{#1}{#2}%
105 }

\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
106 \def\settobox@length#1#2#3{%
107 \settobox@calc{#2}{#3}{#1#2=##1sp\relax}%
108 }

\settobox@horiz
109 \def\settobox@horiz#1#2#3{%
110 \settobox@calc{#2}{#3}{\setbox#2=\hbox{\kern#1##1sp\copy#2}}%
111 }

\settobox@vert
112 \def\settobox@vert#1#2#3{%
113 \settobox@calc{#2}{#3}{\setbox#2=\hbox{#1##1sp\copy#2}}%
114 }

\settobox@calc
115 \def\settobox@calc#1#2#3{%
116 \begingroup
117 \def\width{\wd#1}%
118 \def\height{\ht#1}%
119 \def\depth{\dp#1}%
120 \dimen@ \ht#1\relax
121 \advance\dimen@ \dp#1\relax
122 \def\totalheight{\dimen@}%
123 \setlength{\dimen@}{#2}%
124 \count@\dimen@
125 \def\x##1{\endgroup

```

```

126      #3%
127    }%
128    \expandafter\x\expandafter{\the\count@}%
129  }

130 </package>

```

3 Installation

CTAN. This package is available on CTAN¹:

[CTAN:macros/latex/contrib/oberdiek/settobox.dtx](#) The source file.

[CTAN:macros/latex/contrib/oberdiek/settobox.pdf](#) Documentation.

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`.

Refresh file databases. If your \TeX distribution (`te \TeX` , `mik \TeX` , ...) rely on file databases, you must refresh these. For example, `te \TeX` users run `texhash` or `mktexlsr`.

3.1 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 intension:

```
latex \install=y\input{settobox.dtx}
```

Do not forget to quote the argument according to the demands of your shell.

¹<http://ftp.ctan.org/tex-archive/>

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 pdfL^AT_EX:

```
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` in the thread *Die Hoehe von Minipages und Bild*, date: 2000/02/11.

[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

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		
<code>\@makeoother</code>	32	<code>\copy</code> 110, 113
<code>\%</code>	36	<code>\count@</code> 124, 128
<code>\~</code>	34	
		D
		<code>\depth</code> 64, 69, 119
		<code>\detokenize</code> 31
<code>_</code>	35	<code>\dimen@</code> 120, 121, 122, 123, 124
		<code>\do</code> 32
		<code>\documentclass</code> 2
		<code>\dospecials</code> 33
		<code>\dp</code> 80, 83, 92, 119, 121
		E
		<code>\end</code> 72
		F
		<code>\fbox</code> 45
		<code>\fboxsep</code> 9
		A
<code>\active</code>	34	
<code>\addtolength</code>	83	
<code>\advance</code>	121	
		B
<code>\begin</code>	51	
		C
<code>\catcode</code>	34, 35	

H		<code>\scantokens</code> 38	
<code>\hbox</code>	110, 113	<code>\setbox</code> 110, 113	
<code>\height</code>	55, 56, 63, 68, 118	<code>\setboxdepth</code> 2, 56, 69, 91	
<code>\ht</code>	79, 82, 89, 118, 120	<code>\setboxheight</code> 2, 54, 55, 68, 88, 91	
K		<code>\setboxlower</code> 2, 63, 100	
<code>\kern</code>	110	<code>\setboxmoveleft</code> 2, 57, 59, 94	
L		<code>\setboxmoveright</code> 2, 62, 66, 97	
<code>\lower</code>	101	<code>\setboxraise</code> 64, 103	
M		<code>\setboxright</code> 2	
<code>\makeatletter</code>	26	<code>\setboxwidth</code> 2, 53, 60, 67, 85	
<code>\makeatother</code>	49	<code>\setlength</code> 9, 10, 11, 78, 79, 80, 82, 123	
<code>\mybox</code>	7, 16, 20, 21, 43, 45, 53, 54, 55, 56, 57, 59, 60, 62, 63, 64, 66, 67, 68, 69	<code>\settobox@calc</code> 107, 110, 113, 115	
N		<code>\settobox@horiz</code> 95, 98, 109	
<code>\NeedsTeXFormat</code>	75	<code>\settobox@length</code> 86, 89, 92, 106	
<code>\newcommand</code>	27, 78, 79, 80, 81, 85, 88, 91, 94, 97, 100, 103	<code>\settobox@vert</code> 101, 104, 112	
<code>\newsavebox</code>	7	<code>\settoboxdepth</code> 1, 80	
<code>\noindent</code>	37	<code>\settoboxheight</code> 1, 79	
P		<code>\settoboxtotalheight</code> 1, 81	
<code>\pagestyle</code>	12	<code>\settoboxwidth</code> 1, 78	
<code>\par</code>	28, 39, 47	T	
<code>\parindent</code>	10	<code>\test</code> 14, 27, 53, 54, 55, 56, 57, 58, 62, 63, 64, 65	
<code>\parskip</code>	11	<code>\texttt</code> 38	
<code>\ProvidesPackage</code>	76	<code>\the</code> 128	
R		<code>\totalheight</code> 122	
<code>\raggedright</code>	30	U	
<code>\raise</code>	104	<code>\usebox</code> 45	
S		<code>\usepackage</code> 4, 5	
<code>\sbox</code>	20, 43	W	
X		<code>\wd</code> 78, 86, 117	
		<code>\width</code> 53, 60, 62, 67, 117	
X			
<code>\x</code>	31, 38, 125, 128		