The settobox package

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Abstract

Commands are defined for getting box sizes similar to L*TeX's $\$ commands.

Contents

1	Usage 1			
	1.1	Get box dimensions	-	
	1.2	Set box dimensions	,	
	1.3	Move box	,	
	1.4	Example	,	
		1.4.1 Short example)	
		1.4.2 Test file that shows box manipulations	,	
2	Imp	plementation 4	Ę	
3	Inst	allation 6	;	
	3.1	Download	j	
	3.2	Bundle installation	j	
	3.3	Package installation	j	
	3.4	Refresh file name databases	j	
	3.5	Some details for the interested	,	
4	History 7			
	[200	$0/02/11 \text{ v}1.0] \dots \dots 7$,	
		0/09/07 v1.1	,	
	[200	$\frac{6}{02}$ v1.2	,	
		7/04/11 v1.3	,	
	-	8/08/11 v1.4	,	
		6/05/16 v1.5]	,	
K	Ind	ov. S	,	

1 Usage

1.1 Get box dimensions

A $\langle E^{\dagger}T_{E}X \ box \rangle$ is allocated by **\newsavebox**. It can be filled by **\sbox** or the environment **lrbox**. The commands above extract then the desired lengths.

^{*}Please report any issues at https://github.com/ho-tex/oberdiek/issues

1.2 Set box dimensions

```
\setboxwidth \{\langle \cancel{E}TEX \ box \rangle\} \{\langle \cancel{E}TEX \ length \ expression} \}
\setboxheight \{\langle \cancel{E}TEX \ box \rangle\} \{\langle \cancel{E}TEX \ length \ expression} \}
\setboxdepth \{\langle \cancel{E}TEX \ box \rangle\} \{\langle \cancel{E}TEX \ length \ expression} \}
```

These commands allow the manipulation of the box. Package calc is supported in the $\langle \cancel{E}T_{E}X \ length \ expression \rangle$. 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 \{\langle \cancel{E}^{1}TEX \ box \rangle\} \{\langle \cancel{E}^{1}TEX \ length \ expression \rangle\} \setboxmoveright \{\langle \cancel{E}^{1}TEX \ box \rangle\} \{\langle \cancel{E}^{1}TEX \ length \ expression \rangle\} \setboxright \{\langle \cancel{E}^{1}TEX \ box \rangle\} \{\langle \cancel{E}^{1}TEX \ length \ expression \rangle\} \setboxright \{\langle \cancel{E}^{1}TEX \ box \rangle\} \{\langle \cancel{E}^{1}TEX \ 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 %<<END
3 \documentclass{article}
5 \usepackage{settobox}
6 \usepackage{calc}
8 \newsavebox{\mybox}
10 \setlength{\fboxsep}{0pt}
11 \left\{ \right\}
12 \setlength{\parskip}{10pt}
13 \pagestyle{empty}
14
15 % \test{#1}
16\ \% The macro is called with commands in #1 that manipulates
17 % the box \mybox. These commands along with the result of
18\ \% the manipulation is shown. Thus the essence of the
19 % macro is:
20 %
21 %
      a) \sbox{\mybox}{The cracy fox.}
```

```
b) #1 % manipulates \mybox
22 %
      c) Print #1 commands.
23 %
24 %
      d) Print box with frame
25 %
26 % The implementation looks more weird:
27 \makeatletter
28 \newcommand*{\test}[1]{%
29
    \par
30
     \begingroup
       \raggedright
31
       \edef\x{\detokenize{#1}}%
32
       \let\do\@makeother
33
       \dospecials
34
       \catcode'\~\active
35
       \catcode'\ =10\relax
36
37
       \def~{\\}%
38
       \noindent
       \texttt{\scantokens\expandafter{\x}}%
39
40
       \par
41
     \endgroup
42
     \begingroup
       \let~\relax
43
       \sbox{\mybox}{The cracy fox.}%
44
45
        A---\fbox{\usebox\mybox}---B%
46
47
     \endgroup
48
     \par
49 }
50 \makeatother
51
52 \geq 52 
53
54 \test{\setboxwidth{\mybox}{1.25\width}}
55 \test{\setboxheight{\mybox}{0pt}}
56 \test{\setboxheight{\mybox}{2\height}}
57 \test{\setboxdepth{\mybox}{\height}}
58 \test{\setboxmoveleft{\mybox}{5pt}}
59 \test{%
60
    \setboxmoveleft{\mybox}{5pt}~%
     \stboxwidth{\mybox}{\width + 5pt}%
61
62 }
63 \test{\setboxmoveright{\mybox}{0.5\width}}
64 \test{\setboxlower{\mybox}{\height}}
65 \test{\setboxraise{\mybox}{\depth}}
66 \test{%
67
     \setboxmoveright{\mybox}{5pt}~%
     \setboxwidth{\mybox}{\width + 5pt}~%
69
     \setboxheight{\mybox}{\height + 5pt}~%
70
     \setboxdepth{\mybox}{\depth + 5pt}%
71 }
72
73 \end{document}
74 %END
75 (/example)
The result:
\setboxwidth {\mybox }{1.25\width }
    A—The cracy fox. —B
\setboxheight {\mybox }{Opt}
```

```
A—The cracy fox.—B
\setboxheight {\mybox }{2\height }
      The cracy fox.—B
\setboxdepth {\mybox }{\height }
       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 }
             The cracy fox.—B
\setboxlower {\mybox }{\height }
      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}
        The cracy fox.
```

2 Implementation

```
76 (*package)
               Package identification.
               77 \NeedsTeXFormat{LaTeX2e}
               78 \ProvidesPackage{settobox}%
                   [2016/05/16 v1.5 Assign box dimensions to length registers (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]{%
                   \left\{ \frac{\#1}{\hbar \#2} \right\}
                    \verb|\addtolength{#1}{\dp#2}||
                85
                86 }
 \setboxwidth
                87 \newcommand*{\setboxwidth}[2]{%
                88 \settobox@length\wd{#1}{#2}%
               89 }
\setboxheight
```

```
90 \newcommand*{\setboxheight}[2]{%
                   \settobox@length\ht{#1}{#2}%
                 92 }
  \setboxheight
                 93 \newcommand*{\setboxdepth}[2]{%
                94 \settobox@length\dp{#1}{#2}%
                95 }
 \setboxmoveleft
                 96 \newcommand*{\setboxmoveleft}[2]{%
                97 \settobox@horiz{-}{#1}{#2}%
                98 }
\setboxmoveright
                 99 \newcommand*{\setboxmoveright}[2]{%
                     \strut_{1}{\#1}{\#2}%
                101 }
   \setboxlower
                102 \newcommand*{\setboxlower}[2]{%
                     \settobox@vert\lower{#1}{#2}%
                104 }
   \setboxraise
                105 \newcommand*{\setboxraise}[2]{%
                106
                    \settobox@vert\raise{#1}{#2}%
                107 }
\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
                108 \def\settobox@length#1#2#3{%
                    \settobox@calc{#2}{#3}{#1#2=##1sp\relax}%
                110 }
 \settobox@horiz
                111 \def\settobox@horiz#1#2#3{%
                    113 }
 \settobox@vert
                114 \def\settobox@vert#1#2#3{%
                    116 }
 \settobox@calc
                117 \def\settobox@calc#1#2#3{%
                118
                    \begingroup
                119
                       \def\width{\wd#1}\%
                       \left( \frac{\pi}{\hbar \pi} \right)
                120
                       \left\langle def \right\rangle \
                121
                       \dim 0 
                122
                       \advance\dimen@\dp#1\relax
                123
                       \def\totalheight{\dimen@}%
                124
                       \setlength{\dimen@}{#2}%
                125
                126
                       \count@\dimen@
                127
                       \def\x##1{\endgroup
```

```
128 #3%

129 }%

130 \expandafter\x\expandafter{\the\count@}%

131 }

132 \(/package\)
```

3 Installation

3.1 Download

Package. This package is available on CTAN¹:

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:pkg/tds). 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
```

3.3 Package installation

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

```
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):

```
\begin{array}{lll} \texttt{settobox.sty} & \rightarrow \texttt{tex/latex/oberdiek/settobox.sty} \\ \texttt{settobox.pdf} & \rightarrow \texttt{doc/latex/oberdiek/settobox.pdf} \\ \texttt{settobox-example.tex} & \rightarrow \texttt{doc/latex/oberdiek/settobox-example.tex} \\ \texttt{settobox.dtx} & \rightarrow \texttt{source/latex/oberdiek/settobox.dtx} \end{array}
```

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.

3.4 Refresh file name databases

If your T_EX distribution (T_EX Live, MiKT_EX, ...) relies on file name databases, you must refresh these. For example, T_EX Live users run texhash or mktexlsr.

¹CTAN:pkg/settobox

3.5 Some details for the interested

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

[2007/04/11 v1.3]

• Line ends sanitized.

[2008/08/11 v1.4]

- \bullet Code is not changed.
- URLs updated.

 $^{^2\}mathrm{Url}$: https://groups.google.com/group/de.comp.text.tex/msg/c3f6446f54f66c02

$[2016/05/16\ v1.5]$

 \bullet Documentation updates.

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; plain numbers refer to the code lines where the entry is used.

Symbols	\newcommand 28, 80, 81,
\@makeother 33	82, 83, 87, 90, 93, 96, 99, 102, 105
\\ 37	\newsavebox 8
\	\noindent 38
\~ <u>35</u>	_
	P
\mathbf{A}	\pagestyle 13
\active 35	\par 29, 40, 48
\addtolength 85	\parindent 11
\advance 123	\parskip 12
В	\ProvidesPackage 78
-	R
\begin 52	\raggedright 31
\mathbf{C}	\raise
\catcode 35, 36	(14150
\copy 112, 115	${f S}$
\count@ 126, 130	\sbox 21, 44
(,,	\scantokens 39
D	\setbox 112, 115
\depth 65, 70, 121	\setboxdepth
\detokenize 32	\setboxheight 2, 55, 56, 69, 90, 93
\dimen@ 122, 123, 124, 125, 126	\setboxlower
\do 33	\setboxmoveleft 2, 58, 60, 96
\documentclass 3	\setboxmoveright 2, 63, 67, 99
\dospecials 34	\setboxraise 65, <u>105</u>
\dp 82, 85, 94, 121, 123	\setboxright 2
To.	\setboxwidth 2, 54, 61, 68, <u>87</u>
E \end 73	\setlength 10, 11, 12, 80, 81, 82, 84, 125
Vend	\settobox@calc 109, 112, 115, 117
${f F}$	\settobox@horiz 97, 100, <u>111</u>
\fbox 46	\settobox@length 88, 91, 94, <u>108</u>
\fboxsep 10	\settobox@vert 103, 106, <u>114</u>
	\settoboxdepth
H	\settoboxheight
\hbox	\settoboxtotalheight
\height 56, 57, 64, 69, 120	\settoboxwidth
\ht 81, 84, 91, 120, 122	${f T}$
K	\test 15, 28,
\kern 112	54, 55, 56, 57, 58, 59, 63, 64, 65, 66
•	\texttt 39
${f L}$	\the 130
\lower 103	\totalheight 124
D.A.	${f U}$
M	· ·
\makeatletter	\usebox
	\usepackage 5, 6
\mybox 8, 17, 21, 22, 44, 46, 54, 55, 56, 57,	\mathbf{W}
58, 60, 61, 63, 64, 65, 67, 68, 69, 70	\wd 80, 88, 119
50, 50, 51, 50, 51, 50, 51, 50, 63, 10	\width 54, 61, 63, 68, 119
${f N}$	${f v}$
\NeedsTeXFormat	X
	\x 32, 39, 127, 130