

The `setto` package

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2016/05/16 v1.5

Abstract

Commands are defined for getting box sizes similar to L^AT_EX's `\set-`
`towidth` commands.

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*Please report any issues at <https://github.com/ho-tex/oberdiek/issues>

1 Usage

1.1 Get box dimensions

```
\setboxwidth{\langle LATEX length \rangle}{\langle LATEX box \rangle}  
\setboxheight{\langle LATEX length \rangle}{\langle LATEX box \rangle}  
\setboxdepth{\langle LATEX length \rangle}{\langle LATEX box \rangle}  
\setboxtotalheight{\langle LATEX length \rangle}{\langle LATEX box \rangle}
```

A $\langle L^A T_E X box \rangle$ is allocated by `\newsavebox`. It can be filled by `\sbox` or the environment `lrbox`. The commands above extract then the desired lengths.

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 $\langle L^A T_E X length expression \rangle$. 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}  
\setboxwidth{\mylength}{\mybox}
```

1.4.2 Test file that shows box manipulations

```
1 (*example)  
2 %<<END  
3 \documentclass{article}  
4  
5 \usepackage{settoebox}  
6 \usepackage{calc}  
7  
8 \newsavebox{\mybox}
```

```

9
10 \setlength{\fboxsep}{0pt}
11 \setlength{\parindent}{20pt}
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.}
22 % b) #1 % manipulates \mybox
23 % c) Print #1 commands.
24 % d) Print box with frame
25 %
26 % The implemenation looks more weird:
27 \makeatletter
28 \newcommand*{\test}[1]{%
29   \par
30   \begingroup
31   \raggedright
32   \edef\x{\detokenize{#1}}%
33   \let\do\@makeoother
34   \dospecials
35   \catcode`\~\active
36   \catcode`\ =10\relax
37   \def~{\}%
38   \noindent
39   \texttt{\scantokens\expandafter{\x}}%
40   \par
41   \endgroup
42   \begingroup
43   \let~\relax
44   \sbox{\mybox}{The cracy fox.}%
45   #1%
46   A---\fbox{\usebox\mybox}---B%
47   \endgroup
48   \par
49 }
50 \makeatother
51
52 \begin{document}
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}~%
61   \setboxwidth{\mybox}{\width + 5pt}%
62 }
63 \test{\setboxmoveright{\mybox}{0.5\width}}
64 \test{\setboxlower{\mybox}{\height}}
65 \test{\setboxraise{\mybox}{\depth}}
66 \test{%
67   \setboxmoveright{\mybox}{5pt}~%
68   \setboxwidth{\mybox}{\width + 5pt}~%
69   \setboxheight{\mybox}{\height + 5pt}~%
70   \setboxdepth{\mybox}{\depth + 5pt}%

```

```

71 }
72
73 \end{document}
74 %END
75 \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—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

```
76 (*package)
```

Package identification.

```
77 \NeedsTeXFormat{LaTeX2e}
```

```
78 \ProvidesPackage{settoebox}%
```

```
79 [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]{%
84   \setlength{#1}{\ht#2}%
85   \addtolength{#1}{\dp#2}%
86 }

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

\setboxheight
90 \newcommand*\setboxheight}[2]{%
91   \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]{%
100  \settobox@horiz{}{#1}{#2}%
101 }

\setboxlower
102 \newcommand*\setboxlower}[2]{%
103  \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{%
109   \settobox@calc{#2}{#3}{#1#2==##1sp\relax}%
110 }

\settobox@horiz
111 \def\settobox@horiz#1#2#3{%
112   \settobox@calc{#2}{#3}{\setbox#2=\hbox{\kern#1##1sp\copy#2}}%
113 }

\settobox@vert
114 \def\settobox@vert#1#2#3{%
115   \settobox@calc{#2}{#3}{\setbox#2=\hbox{#1##1sp\copy#2}}%
116 }

```

```

\settobox@calc
117 \def\settobox@calc#1#2#3{%
118   \begingroup
119   \def\width{\wd#1}%
120   \def\height{\ht#1}%
121   \def\depth{\dp#1}%
122   \dimen@\ht#1\relax
123   \advance\dimen@\dp#1\relax
124   \def\totalheight{\dimen@}%
125   \setlength{\dimen@}{#2}%
126   \count@\dimen@
127   \def\x##1{\endgroup
128     #3%
129   }%
130 \expandafter\x\expandafter{\the\count@}%
131 }

132 \endpackage

```

3 Installation

3.1 Download

Package. This package is available on CTAN¹:

[CTAN:macros/latex/contrib/oberdiek/settobox.dtx](http://ctan.org/pkg/settobox) The source file.

[CTAN:macros/latex/contrib/oberdiek/settobox.pdf](http://ctan.org/pkg/settobox) 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](http://ctan.org/pkg/settobox)

TDS refers to the standard “A Directory Structure for T_EX Files” ([CTAN:tds/tds.pdf](http://ctan.org/pkg/settobox)). 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 T_EX:

```
tex settobox.dtx
```

¹<http://ctan.org/pkg/settobox>

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

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

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 `mktextlsr`.

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{settoebox.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 `pdf \LaTeX` :

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

4 Catalogue

The following XML file can be used as source for the [\$\TeX\$ Catalogue](#). The elements `caption` and `description` are imported from the original XML file from the Catalogue. The name of the XML file in the Catalogue is `settoebox.xml`.

```
133 (*catalogue)
134 <?xml version='1.0' encoding='us-ascii'?>
135 <!DOCTYPE entry SYSTEM 'catalogue.dtd'>
136 <entry datestamp='$Date$' modifier='$Author$' id='settoebox'>
137   <name>settoebox</name>
138   <caption>Assigning dimensions of a box to a length register.</caption>
139   <authorref id='auth:oberdiek'/>
140   <copyright owner='Heiko Oberdiek' year='2000,2006-2008'/>
141   <license type='lppl1.3'/>
142   <version number='1.5'/>
```

```

143 <description>
144   Commands to assist the reuse of boxes (set up by <tt>\sbox</tt> or
145   by the <tt>lrbox</tt> environment); the <tt>\settoebox...</tt>
146   commands behave similarly to the <tt>\settowidth</tt> (etc.)
147   commands. For example:
148   <pre>
149     \newsavebox{\mybox}
150     \newlength{\mylength}
151     \sbox{\mybox}{Hello World}
152     \settoeboxwidth{\mylength}{\mybox}
153   </pre>
154 </p>
155   The package is part of the <xref refid='oberdiek'>oberdiek</xref> bundle.
156 </description>
157 <documentation details='Package documentation'
158   href='ctan:/macros/latex/contrib/oberdiek/settoebox.pdf'/>
159 <ctan file='true' path='/macros/latex/contrib/oberdiek/settoebox.dtx'/>
160 <miktex location='oberdiek'/>
161 <texlive location='oberdiek'/>
162 <install path='/macros/latex/contrib/oberdiek/oberdiek.tds.zip'/>
163 </entry>
164 </catalogue>

```

5 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]

- Code is not changed.
- URLs updated.

[2016/05/16 v1.5]

- Documentation updates.

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

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