The settobox package

Heiko Oberdiek*
<heiko.oberdiek at googlemail.com>

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Abstract

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

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

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

```
1 ⟨*example⟩
2 %<<END
3 \documentclass{article}
4
5 \usepackage{settobox}
6 \usepackage{calc}
7
8 \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

```
⟨*package⟩
```

Package identification.

```
\NeedsTeXFormat{LaTeX2e}
\ProvidesPackage{settobox}%
  [2016/05/16 v1.5 Assign box dimensions to length registers (HO)]
```

```
\newcommand*{\settoboxwidth}[2]{\setlength{#1}{\wd#2}}
\newcommand*{\settoboxheight}[2]{\setlength{#1}{\ht#2}}
\newcommand*{\settoboxdepth}[2]{\setlength{#1}{\dp#2}}
\newcommand*{\settoboxtotalheight}[2]{%
  \setlength{#1}{\ht#2}%
  \addtolength{#1}{\dp#2}%
}
```

\setboxwidth

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

\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
```

[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):

```
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.

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

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 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 settobox.xml.

```
⟨*catalogue⟩
<?xml version='1.0' encoding='us-ascii'?>
<!DOCTYPE entry SYSTEM 'catalogue.dtd'>
<entry datestamp='$Date$' modifier='$Author$' id='settobox'>
  <name>settobox</name>
  <caption>Assigning dimensions of a box to a length register.</caption>
  <authorref id='auth:oberdiek'/>
  <copyright owner='Heiko Oberdiek' year='2000,2006-2008'/>
  <license type='lppl1.3'/>
  <version number='1.5'/>
```

```
<description>
  Commands to assist the reuse of boxes (set up by <tt>\sbox</tt> or
  by the <tt>lrbox</tt> environment); the <tt>\settobox...</tt>
  commands behave similarly to the <tt>\settowidth</tt> (etc.)
  commands.  For example:
  <pre>
    \newsavebox{\mybox}
    \newlength{\mylength}
    \sbox{\mybox}{Hello World}
    \settoboxwidth{\mylength}{\mybox}
  </pre>
  <p/>
  The package is part of the <xref refid='oberdiek'>oberdiek</xref> bundle.
</description>
<documentation details='Package documentation'
    href='ctan:/macros/latex/contrib/oberdiek/settobox.pdf'/>
<ctan file='true' path='/macros/latex/contrib/oberdiek/settobox.dtx'/>
<miktex location='oberdiek'/>
<texlive location='oberdiek'/>
<install path='/macros/latex/contrib/oberdiek/oberdiek.tds.zip'/>
</entry>
⟨/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.

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

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