The \texttt{pagegrid} package

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2009/12/04 v1.4

Abstract
The \LaTeX\ package prints a page grid in the background.

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1 Documentation

The package puts a grid on the paper. It was written for developers of a class or package who have to put elements on definite locations on a page (e.g. letter class). The grid allows a faster optical check, whether the positions are correct. If the previewer already offers features for measuring, the package might be obsolete. Otherwise it saves the developer from printing the page and measuring by hand.
1.1 Options

Options are evaluated in the following order:

1. Configuration file `pagegrid.cfg` using `\pagegridsetup` if the file exists.
2. Package options given for `\usepackage`.
3. Later calls of `\pagegridsetup`.

```latex
\pagegridsetup{(option list)}
```

The options are key value options. Boolean options are enabled by default (without value) or by using the explicit value `true`. Value `false` disable the option.

1.1.1 Options `enable`, `disable`

`enable`: This boolean option controls whether the page grid is drawn. As default the page grid drawing is activated.

`disable`: It is the opposite of option `enable`. It was added for convenience and allows the abbreviation `disable` for `enable=false`.

1.1.2 Grid origins

The package supports up to two grids on a page allowing measurement from opposite directions. As default two grids are drawn, the first from bottom left to top right. The origin of the second grid is at the opposite top right corner. The origins are controlled by the following options. The number of grids (one or two) depend on the number of these options in one call of `\pagegridsetup`. The following frame shows a paper and in its corners are the corresponding options. At the left and right side alias names are given for the options inside the paper.

- left-top, lt, top-left: `tl`  
- top-right, rt, right-top: `tr`
- left-bottom, lb, bottom-left: `bl`
- bottom-right, rb, right-bottom: `br`

Examples:

```latex
\pagegridsetup{bl, tr}
```

This is the default setting with two grids as described previously. The following setups one grid only. Its origin is the upper left corner:

```latex
\pagegridsetup{top-left}
```

1.1.3 Grid unit

`step` This option takes a length and setups the unit for the grid. The page width and page height should be multiples of this unit. Currently the default is 1mm. But this might change later by a heuristic based on the paper size.

1.1.4 Color options

The basic grid lines are drawn as ultra thin help lines and is only drawn for the first grid. Each tenth and fiftyth line of the basic net is drawn thicker in a special color for the two grids.

`firstcolor`: Color for the thicker lines and the arrows of the first grid. Default value is `red`.

`secondcolor`: Color for the thicker lines and the arrows of the second grid. Default value is `blue`.

Use a color specification that package `tikz` understands. (The grid is drawn with `pgf/tikz`.)
1.1.5 Arrow options

Arrows are put at the origin at the grid to show the grid start and the direction of the grid.

**arrows:** This boolean option turns the arrows on or off. As default arrows are enabled.

**arrowlength:** The length given as value is the length of the edge of a square at the origin within the arrow is put as diagonal. Default is 10 times the grid unit (10 mm). The real arrow length is this length multiplied by $\sqrt{2}$.

1.1.6 Miscellaneous options

**double:** The output page is doubled, one without page grid and the other with page grid. Possible values are shown in the following table:

<table>
<thead>
<tr>
<th>Option</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>false</td>
<td>Turns option off.</td>
</tr>
<tr>
<td>first</td>
<td>Grid page comes first.</td>
</tr>
<tr>
<td>last</td>
<td>Grid page comes after the page without grid.</td>
</tr>
<tr>
<td>true</td>
<td>Same as last.</td>
</tr>
<tr>
<td>⟨no value⟩</td>
<td>Same as true.</td>
</tr>
</tbody>
</table>

**Note:** The double output of the page has side effects. All whatits are executed twice, for example: file writing and anchor setting. Some unwanted actions are caught such as multiple `\label` definitions, duplicate entries in the table of contents. For bookmarks, use package `bookmarks`.

**foreground:** Boolean option, default is `false`. Sometimes there might be elements on the page (e.g. large images) that hide the grid. Then option `foreground` puts the grids over the current output page.

2 Implementation

Reload check, especially if the package is not used with \LaTeX.

```latex
\begingroup\catcode61\catcode48\catcode32=10\relax% 
\catcode13=5 % ^^M
\endlinechar=13 %
\catcode35=6 % #
\catcode39=12 % '
\catcode44=12 % ,
\catcode45=12 % -
\catcode46=12 % .
\catcode58=12 % :
\catcode64=11 % @
\catcode123=1 % {
\catcode125=2 % }
\expandafter\let\expandafter\x\csname ver@pagegrid.sty\endcsname
\ifx\x\relax % plain-TeX, first loading
\else
\expandafter\ifx\csname PackageInfo\endcsname\relax
\def\empty{}
\ix\relax % plain-TeX, first loading,
\% variable is initialized, but \ProvidesPackage not yet seen
\else
\expandafter\ifx\ix\empty % La\TeX, first loading,
\% providesPackage not yet seen
\else
\expandafter\ix\csname PackageInfo\endcsname\relax
\def\#1#2{\immediate\write-1{Package \#1 Info: #2.}%%
\%}
\else
\endgroup
```

3
3 Test

3.1 Catcode checks for loading

\catcode`\{=1 \\
\catcode`\}=2 \\
\catcode`\#=6 \\
\catcode`\@=11 \\
\expandafter\ifx\csname count\endcsname\relax \\
\countdef\count@=255 \\
\fi \\
\expandafter\ifx\csname @gobble\endcsname\relax
\long\def\gobble#1{}% 
\fi 
\expandafter\ifx\csname @firstofone\endcsname\relax 
\long\def\firstofone#1{#1}% 
\fi 
\expandafter\ifx\csname loop\endcsname\relax 
\else 
\expandafter\@firstofone 
\else 
\expandafter\@gobble 
\fi 
{ 
\def\loop#1\repeat{}% 
\def\body{#1} 
\iterate 
\def\iterate{}% 
\body 
\let\next\iterate 
\else 
\let\next\relax 
\fi 
\next 
\let\repeat=\fi 
\} 
\def\RestoreCatcodes{} 
\count@=0 \% 
\loop 
\edef\RestoreCatcodes{} 
\RestoreCatcodes 
\catcode\the\count@=\the\catcode\count@\relax 
\ifnum\count@<255 \% 
\advance\count@ 1 \% 
\repeat 
\def\RangeCatcodeInvalid#1#2\{% 
\count@=#1\relax 
\loop 
\catcode\count@=15 \% 
\ifnum\count@<#2\relax 
\advance\count@ 1 \% 
\repeat 
\} 
\def\RangeCatcodeCheck#1#2#3\{% 
\count@=#1\relax 
\loop 
\ifnum#3=\catcode\count@ 
\else 
\errmessage{Character \the\count@\space with wrong catcode \the\catcode\count@\space instead of \number#3\} 
\fi 
\ifnum\count@<#2\relax 
\advance\count@ 1 \% 
\repeat 
\} 
\def\space{ } 
\expandafter\ifx\csname LoadCommand\endcsname\relax 
\def\LoadCommand{\input pagegrid.sty}\relax \%

10
\fi
% \def\Test{
% \RangeCatcodeInvalid{0}{47} %
% \RangeCatcodeInvalid{58}{64} %
% \RangeCatcodeInvalid{91}{96} %
% \RangeCatcodeInvalid{123}{255} %
% \catcode`\@=12 %
% \catcode`\\=0 %
% \catcode`\%=14 %
% \LoadCommand
% \RangeCatcodeCheck{0}{36}{15} %
% \RangeCatcodeCheck{37}{37}{14} %
% \RangeCatcodeCheck{38}{47}{15} %
% \RangeCatcodeCheck{48}{57}{12} %
% \RangeCatcodeCheck{58}{63}{15} %
% \RangeCatcodeCheck{64}{64}{12} %
% \RangeCatcodeCheck{65}{90}{11} %
% \RangeCatcodeCheck{91}{91}{15} %
% \RangeCatcodeCheck{92}{92}{0} %
% \RangeCatcodeCheck{93}{96}{15} %
% \RangeCatcodeCheck{97}{122}{11} %
% \RangeCatcodeCheck{123}{255}{15} %
% \RestoreCatcodes
%
}% \Test
% \csname @@end\endcsname
% \end
 ⟨/𭗍𭖾𭗌𭗍𭟣⟩

4 Installation

4.1 Download

Package. This package is available on CTAN\textsuperscript{1}:

\url{CTAN:macros/latex/contrib/oberdiek/pagegrid.dtx} The source file.
\url{CTAN:macros/latex/contrib/oberdiek/pagegrid.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.

\url{CTAN:install/macros/latex/contrib/oberdiek.tds.zip}

\textit{TDS} refers to the standard “A Directory Structure for \LaTeX\ Files” (\url{CTAN:tds/tds.pdf}). Directories with \texttt{texmf} in their name are usually organized this way.

4.2 Bundle installation

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

\texttt{unzip oberdiek.tds.zip -d ~/texmf}

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

\texttt{chmod +x scripts/oberdiek/pdfatfi.pl}
\texttt{cp scripts/oberdiek/pdfatfi.pl /usr/local/bin/}

\textsuperscript{1}\url{ftp://ftp.ctan.org/tex-archive/}
4.3 Package installation

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

\texttt{tex pagegrid.dtx}

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

\begin{verbatim}
pagegrid.sty    \rightarrow tex/latex/oberdiek/pagegrid.sty
pagegrid.pdf   \rightarrow doc/latex/oberdiek/pagegrid.pdf
test/pagegrid-test1.tex \rightarrow doc/latex/oberdiek/test/pagegrid-test1.tex
pagegrid.dtx   \rightarrow source/latex/oberdiek/pagegrid.dtx
\end{verbatim}

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.

4.4 Refresh file name databases

If your \TeX distribution (\TeX, \LaTeX, ...) relies on file name databases, you must refresh these. For example, \TeX users run \texttt{texhash} or \texttt{mktexlsr}.

4.5 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 \texttt{pdftk}, e.g. unpack the file into the current directory:

\texttt{pdftk pagegrid.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:

\texttt{latex \let\install=y\input{pagegrid.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 \texttt{ltxdoc.cfg}. For instance, put this line into this file, if you want to have A4 as paper format:

\texttt{\PassOptionsToClass{a4paper}{article}}

An example follows how to generate the documentation with pdf\LaTeX:

\texttt{pdflatex pagegrid.dtx}
\texttt{makeindex -s gind.ist pagegrid.idx}
\texttt{pdflatex pagegrid.dtx}
\texttt{makeindex -s gind.ist pagegrid.idx}
\texttt{pdflatex pagegrid.dtx}
5 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 `pagegrid.xml`.

```
<?xml version='1.0' encoding='us-ascii'?>
<!DOCTYPE entry SYSTEM 'catalogue.dtd'>
<entry datestamp='$Date$' modifier='$Author$' id='pagegrid'>
  <name>pagegrid</name>
  <caption>Print page grid in background.</caption>
  <authorref id='auth:oberdiek'/>
  <copyright owner='Heiko Oberdiek' year='2009'/>
  <license type='lppl1.3'/>
  <version number='1.4'/>
  <description>
    This package puts a grid on the paper. It was written for developers of a class or package who have to put elements on definite locations on a page (e.g. letter class). The grid allows a faster optical check, whether the positions are correct. If the previewer already offers features for measuring, the package might be unnecessary. Otherwise it saves the developer from printing the page and measuring by hand.
  </description>
  <documentation details='Package documentation' href='ctan:/macros/latex/contrib/oberdiek/pagegrid.pdf'/>
  <ctan file='true' path='/macros/latex/contrib/oberdiek/pagegrid.dtx'/>
  <miktex location='oberdiek'/>
  <texlive location='oberdiek'/>
  <install path='/macros/latex/contrib/oberdiek/oberdiek.tds.zip'/>
</entry>
```

6 Acknowledgement

*Klaus Braune*: He provided the idea and the first *tikz* code.

7 History

*[2009/11/06 v1.0]*
- The first version.

*[2009/11/06 v1.1]*
- Option `foreground` added.

*[2009/12/02 v1.2]*
- Color options, arrow options added.
- Names for origin options changed.

*[2009/12/03 v1.3]*
- Option `double` added.
- First CTAN release.
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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.

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Option double: Some unwanted side effects removed.