The `mdframed` package [1]

auto-split frame environment

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The standard methods for framing text (`\fbox` or `\fcolorbox`) require you to handle page breaks by hand, meaning that you have to split the `\fbox` into two. The present package defines the environment `mdframed` which automatically deals with pagebreaks in framed text.

By defining new environments the user may choose between several individual designs.

Linked files: `mdframed-example-default.pdf` `mdframed-example-tikz.pdf` `mdframed-example-pstricks.pdf` `mdframed-example-texsx.pdf`

FYI: I create a repository for `mdframed` on github where you can download the current development status.

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1. Motivation

Many users wish to (further) emphasize lemmata, definitions, proofs, etc. The package `mdframed` allows you to create environments with breakable frames. I think an example is the best way to

[1] Extending the package `framed.sty`

demonstrate its properties.

Theorem 1.1 (Pythagorean theorem) *In any right triangle, the area of the square whose side is the hypotenuse is equal to the sum of the areas of the squares whose sides are the two legs.*

$$a^2 + b^2 = c^2$$

The frame was defined with the following settings.

```
\newmdtheoremenv[%
    outerlinewidth   = 2                ,%
    roundcorner      = 10pt             ,%
    leftmargin       = 40               ,%
    rightmargin      = 40               ,%
    backgroundcolor  = yellow!40        ,%
    outerlinecolor   = blue!70!black    ,%
    innertopmargin   = \topskip         ,%
    splittopskip     = \topskip         ,%
    ntheorem         = true             ,%
  ]{theorem}{Theorem}[section]
\begin{theorem}[Pythagorean theorem]
...
\end{theorem}
```

2. Syntax

Required packages by `mdframed`

The package itself loads the packages

`kvoptions` `xparse` `etoolbox` `color`.

Depending on the option `frememthod` `mdframed` will load

`xcolor` `tikz` `pstricks`.

Load the package as usual:

```
\usepackage[<GLOBAL OPTIONS>]{mdframed}
```

Only the option `framemethod` should be loaded by the optional argument of `\usepackage`. All other options should be loaded with `\mdfsetup` or related environments. The package should be loaded after `amsthm` if you need the package.

Provided environment

The package defines only one environment with the following syntax:

```
\begin{mdframed}[<LOCAL OPTIONS>]
```

```
    <CONTENT>
\end{mdframed}
```

To create own environments with `mdframed` see section 4.

Autodetecting floats

`mdframed` detects whether the environment is used inside `float` or `minipage` environments. If you use `mdframed` in such an environment `mdframed` will use the option `nobreak` automatically.

3. The frames

Normally you can say `mdframed` draws only some lines. To allow page breaks the following designs are supported. If you load the package with `framemethod=default` you can only draw a single line. Inside the gray boxes of the images below the text will be printed.

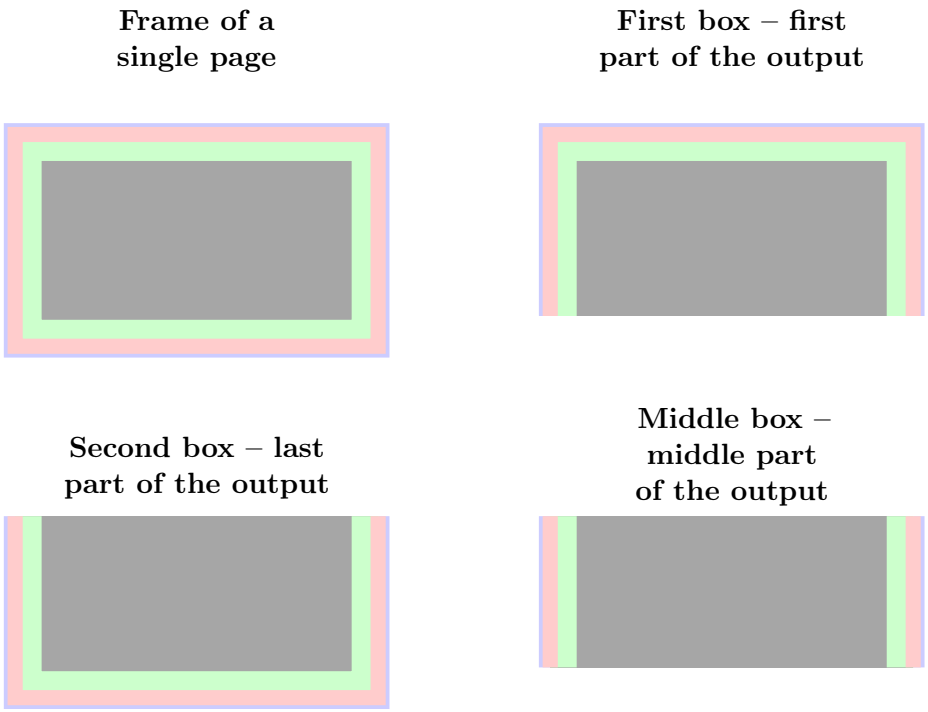


Figure 1: The basic frames

4. Commands

The following commands should countenance your by the handling with `mdframed`.

`\newmdenv[options]{env-name}`

The command allows the definition of a new environment which is surrounded by `mdframed`. The command has the following syntax:

```
\newmdenv[<MDFRAMED OPTIONS>]{Name of the environment}
```

In this way you can say:

```
\newmdenv[linecolor=red,frametitle=Infobox]{infobox}

\begin{infobox}[backgroundcolor=yellow]
  Some Infos\ldots
\end{infobox}
```

`\renewmdenv[options]{env-name}`

By using this command you can redefine environments which are created by `\newmdenv`.

`\surroundwithmdframed[options]{environment}`

Sometimes you have predefined environments. This commands allows you to surround an predefined `environment` with `mdframed` without changing the original name. To set a `mdframed` around the environment `verbatim` you can simple say.

```
\surroundwithmdframed[linewidth=2pt]{verbatim}
```

`\mdflength{options}`

If you want to work with length defined by `mdframed` (for example `innerleftmargin`) you can use the command `\mdflength`.

```
The distance is \hspace{\mdflength{innerleftmargin}}
\the\mdflength{innerleftmargin}
```

The result will be:

The distance is 10.0pt

`\mdfsetup{options}`

To set the options you can use the optional argument of `\usepackage` or you can use the command `\mdfsetup` which is not limited to the preamble. Inside a group the settings work only local.

At this point I want to recommend the usage of the command `\mdfsetup` instead of setting package option via the optional argument of `\usepackage`. So you are avoiding breaking of non robust commands.[2] The sole exception is the option `framemethod` which must given as an optional argument of `\usepackage`.

5. Defining your own style

In the next section all options are introduced. However instead of passing them global or as an optional argument of the environment you can define your own styles. The method is as follows

`\mdfdefinestyle{style name}{options}`

`\mdfdefinestyle` allows the user to define different styles which can be used as an option of `mdframed` via `style`.

`\mdfapptodefinestyle{style name}{options}`

This commands add options to a defined style.[3]

[2] Thanks to Heiko Oberdiek and Philipp Stephani kvoptions-Declaration von Optionen schlägt fehl

[3] Thanks to Martin Scharrer and Enrico Gregorio:
http://tex.stackexchange.com/questions/34684/argument-of-setkeys

`style`

If you define a special style with `\mdfdefinestyle` you can use the key `style` to load the style. `mdframed` has no predefined styles yet.

Here a small example:

```
\mdfdefinestyle{mystyle}{leftmargin=1cm,linecolor=blue}
\begin{mdframed}[style=mystyle]
 foo
\end{mdframed}
```

6. Options

The package provides various options to manipulate frames. In the following section all options are listed. Some internal macros which can be manipulated are not shown in this documentation. The listed options are divided in global and local options. The global options can not be used inside `\mdfsetup`.

6.1. Global Options

The following options are only global options.

`xcolor` default=`none`

By setting this key, the package `xcolor` will be loaded with the given value(s). Without any value `mdframed` loads the package `color` without any options. If the package `xcolor` is already loaded the given option will be ignored. I recommend to load `xcolor` before `mdframed`.

`framemethod` default=`default`

With this key you can change the way frames are drawn. You can decide whether the frame is drawn with

1. LaTeX-commands `\hrule`, `\vrule`, `\rule`,
2. `TikZ` (the package `TikZ` will be loaded) or
3. `PSTricks` (the package `pstricks` will be loaded).

The option `framemethod` requires a string. Allowed combinations are listed in the following table.

Table 1: Allowed keys for `framemethod`

Method	Allowed keys
LaTeX-commands	`default, tex, latex, none, 0`
TikZ	`tikz, pgf, 1`
PSTricks	`pstricks, ps, postscript, 2`

If you are lazy you can also work with the following short forms: `tikz`, `TikZ`, `pstricks`, `PSTricks` or `ps`. Of course for the default method exists no key.

FYI

It is independently whether the `method` is written with no, one or more capital letter.

All other options listed below can be set globally or locally and they are not limited to the preamble. I was trying to define self explained names.

6.2. Restoring the settings

Sometimes it's useful to remove all done settings. Every default value is saved in a style wich can be called by the option `default` or a more suitable name `style=defaultoptions`. Both do the same.

Here a small example:

```
\mdfsetup{%
   middlelinecolor=red,
   middlelinewidth=2pt,
   backgroundcolor=red!10,
   roundcorner=10pt}
\begin{mdframed}
 Text\par Text
\end{mdframed}

\begin{mdframed}[default]
 Text\par Text
\end{mdframed}
```

Text
Text

Text
Text

6.3. Options with lengths

In figure (2) you can see the adjustable lengths (compare also figure (1)).

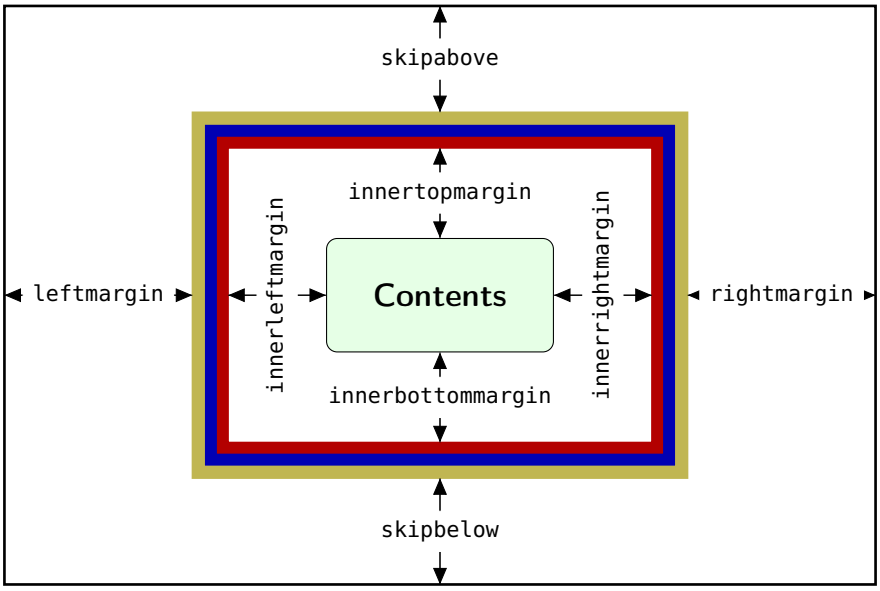


Figure 2: adjustable lengths of `mdframed`

`defaultunit` default=`pt`

All lengths accept two kinds of input. The first one is a length (e.g. 2pt) and the second one is a number (e.g. 2) which will be multiplied by `1 defaultunit`. To get a better overview, all length options with their default value are listet in a table. I think the names are self explained so that don't describe it anymore. Although special hints and length are described below

The first table lists the length for the geometry of the frame.

`skipabove`	= 0pt	`skipbelow`	= 0pt
`leftmargin`	= 0pt	`rightmargin`	= 0pt
`innerleftmargin`	= 10pt	`innerrightmargin`	= 10pt
`innertopmargin`	= 5pt	`innerbottommargin`	= 5pt

Before the next options are introduced here an example where the described length are used.

```
\mdfdefinestyle{mdfexample1}{leftmargin=1cm,rightmargin=2cm,%
  innerleftmargin=1cm,innerrightmargin=1cm,roundcorner=10pt}
\begin{mdframed}[style=mdfexample1]
  In any right triangle, the area of the square whose side is the hypotenuse
  is equal to the sum of the areas of the squares whose sides are the two
  legs.
\end{mdframed}
```

In any right triangle, the area of the square whose side is the hypotenuse is equal to the sum of the areas of the squares whose sides are the two legs.

The next table lists the options to manipulate the lines of `mdframed`. If you are working with `frametheme=default` you have only one line for framing.

`linewidth`	= 0.4pt	`innerlinewidth`	= 0pt	`middlelinewidth`	= 0.4pt
`outerlinewidth`	= 0pt	`roundcorner`	= 0pt		

If you are working width `frametheme=tikz` or `frametheme=pstricks` the option `linewidth` is an alias for the option `middlelinewidth`.

6.4. Colored Options

Now we want to bring some color on your frames. The limitation is equal the the length options. For `frametheme=default` you have only one line.

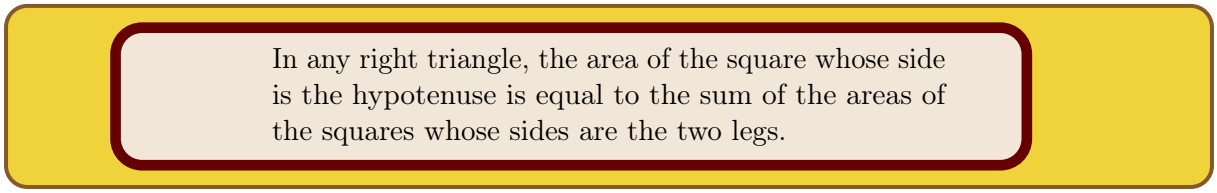
`linecolor`	= black	`innerlinecolor`	= black
`middlelinecolor`	= black	`outerlinecolor`	= black
`backgroundcolor`	= white	`fontcolor`	= black

`font` default=`{}`

Although it's no really a color options you can also specify the font of the contents. Therefor the option `font` can be used.

Ok after we have some lengths and some colors we can improve our example.

```
\mdfapptodefinestyle{example1}{backgroundcolor=brown!20,%
    linecolor=red!40!black,linewidth=4pt}
\begin{mdframed}[style=mdfexample1]
  In any right triangle, the area of the square whose side is the hypotenuse
  is equal to the sum of the areas of the squares whose sides are the two
  legs.
\end{mdframed}
```



6.5. Shadows

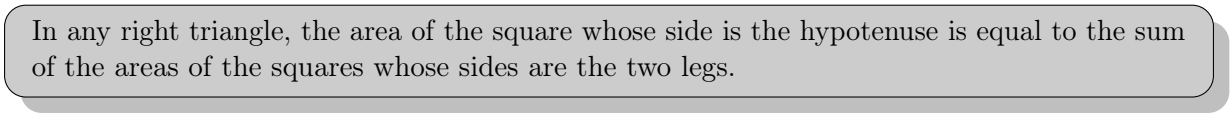
Another possibility to highlight a frame can be a shadow. The package `mdframed` supports some elementary options to add a shadow. For `framemethod=tikz` the library `shadows` is needed which must be loaded by the user by `\usetikzlibrary{shadows}`.

`shadowsize` default=`8pt`

`shadowcolor` default=`black!50`

If a shadow is used depends on the option `shadow` which can be either `true` or `false`. The option shadows enables two new options `shadowsize` and `shadowcolor`.

```
\begin{mdframed}[backgroundcolor=gray!40,shadow=true,roundcorner=8pt]
  In any right triangle, the area of the square whose side is the hypotenuse
  is equal to the sum of the areas of the squares whose sides are the two
  legs.
\end{mdframed}
```



6.6. Hidden Lines

The default behaoiur of the output was shown in a previous picture. `mdframed` offers the possibility to print only requested lines. If you don't want any right line you can say `rightline=false`. The table below listed all keys to this topic and shows their default setting.

`topline` = `true`	`rightline` = `true`
`leftline` = `true`	`bottomline` = `true`

`hidealllines` default=`false`

If you want to disable all lines you can use the short from `hidealllines`.

6.7. Working in twoside-mode

Many books are written in `twoside` mode. In those cases it's better to set the margins related to the site. Instead of the explained options `leftmargin` and `rightmargin` you can work with the options `outermargin` and `innermargin`. Of course if you working in `oneside` mode the options have no effect. If you don't want to work with `outermargin` and `innermargin` whether the document is done in `twoside` mode you can disable the behaviour by the option `usetwoside`. Allowed values for this key are `true` or `false`.

6.8. Footnotes

Inside the environment you can use the command `\footnote` as usual. `mdframed` uses the syntax of environment `minipage` with the same counter.

Every footnote text will be collected inside a box and will be displayed at the end of the environment `mdframed`.

`footnotedistance` default= `\bigskipamount`

The length is the distance between the end of the environment `mdframed` and the displaying of the `\footnoterule`.

`footnoteinside` default=`true`

The position of the footnotes can be changed with the option `footnoteinside`. The footnotes will be displayed at the end of the environment but you can decide whether the output is inside `mdframed` or after.

Note

The output of the footnotes with the option `footnoteinside=false` are not in a splitted frame. I think it isn't useful because the first line of a new page shouldn't be a footnote.

6.9. Page breaks

The package `mdframed` splits its content if neccessary. In figure 1 the default style for splitting is presented. However there a sevaral situations where no page preak should occur.

`nobreak` default=`false`

For this case you can use the option `nobreak` which is either `true` or `false`. As you can see in figure 1 the different elements have different ways of drawing. E.g. the middle part of `mdframed` has only a left and a right line.

`everyline` default=`false`

If you want that all parts of `mdframed` get a whole frame you can work with the option `everyline`. Then all parts are displayed as a single frame.

In a previous section the options `innertopmargin` and `innerbottommaring` were introduced. However if a page break occurs you have two new length options which influence the space at the breaking point.

`splittopskip` default=`0pt`

Sets the length of the skip above the split part of the environment.

`splitbottomskip` default=`0pt`

Sets the length of the skip below the split part of the environment.

6.10. Frametitle

In this section all relevant options of the frame title will be presented. They are not divided in their properties.

`frametitle` default=`none`

The environment gets a title. To set a title use `frametitle={The Title of the frame}` as an option of the environment.

`frametitlefont` default=`\normalfont\bfseries`

Sets the format of the `frametitle`.

`frametitlealignment` default=`\raggedleft`

Align the `frametitle`. This option must be set via `\mdfsetup`.

`frametitlerule` default=`false`

Set this key to `true` to get a line between the frame title and the text.

`frametitlerulewidth` default=`.2pt`

Sets the width of the line between the text and the title of `mdframed`.

`frametitleaboveskip` default=`5pt`

Sets the skip of the frame title to the margin above of `mdframed`.

`frametitlebelowskip` default=`5pt`

Sets the skip of the frame title to the rule of the frame title.

`frametitlebackgroundcolor` default=`backroundcolor`

Sets the color of the background of the frametitle

`repeatframetitle` default=`false`

Repeat the frame title on every frame.

The following picture demonstrates the behaviour of the lengths if the option `frametitle` is used.

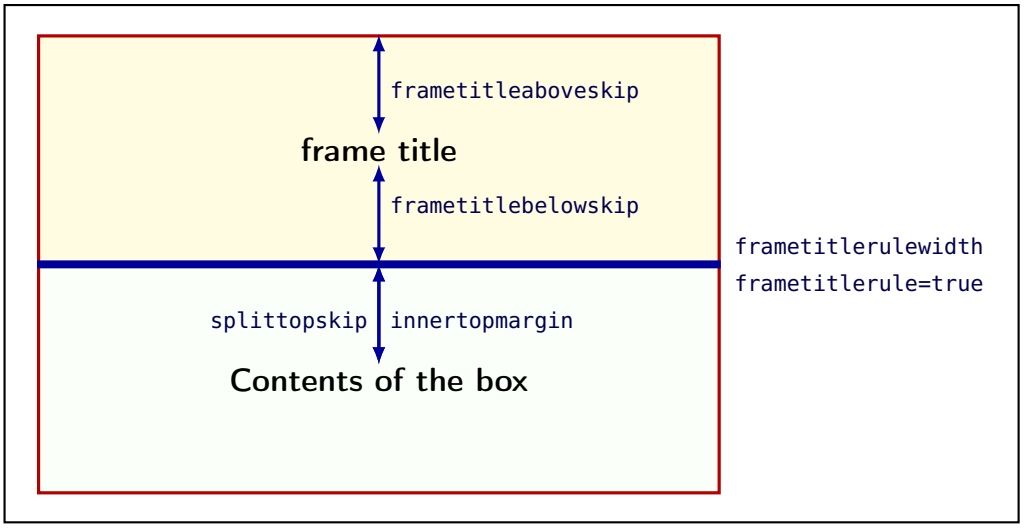


Figure 3: Behavior of the lengths if `frametitle` is used

FYI and Note

The splitting of the frame title is really a fiddly issue. If you want to use the option `repeatframetitle` a splitting is more than wrong. On the other hand if you use the option `repeatframetitle` the user must prepare the contents well.

6.11. Title commands inside the environment

To provide titles inside the environment `mdframed` you can use `\mdfsubtitle`. The relavant options are listed below.

`\mdfsubtitle`

Set a title inside `mdframed` of the internal level 1.

The command accepts one optional and one mandatory argument. The optional argument sets the option of `mdframed` whereby everything will be local. The second argument of subtitle also allows paragraph breaking.

Breaks inside the `\mdfsubtitle` are not supported.

\mdfsubtitle[<options>]{the subtitle}

6.11.1. Options related to the title of level 1

`subtitleaboveline` default=`false`

Decide to draw a line above the subtile.

`subtitlebelowline` default=`false`

Decide to draw a line below the subtitle.

`subtitlefont` default=`\normalfont\bfseries`

Sets the font for subtitles.

`subtitlebackgroundcolor` default=`white`

Sets the background color of the subtitle between the above and below line.

`subtitleabovelinecolor` default=`black`

Sets the line color of the line above.

`subtitlebelowlinecolor` default=`black`

Sets the line color of the line below.

`subtitleabovelinewidth` default=`0.8pt`

Sets the line width of the line above.

`subtitlebelowlinewidth` default=`0.6pt`

Sets the line width of the line below.

`subtitleaboveskip` default=`\baselineskip`

Sets the skip before the subtitle line above will be drawn.

`subtitlebelowskip` default=`1.2\baselineskip`

Sets the skip after the subtitle line below is drawn.

`subtitleinneraboveskip` default=`0.5\baselineskip`

Sets the skip after the line above and the subtitle itself.

`subtitleinnerbelowskip` default=`0.5\baselineskip`

Sets the skip after the subtitle and the line below.

Here an example to demonstrate the behaviour:

Theorem

Some Text ...

Notes

Some Text ...

```
\newmdenv[%
  roundcorner=5pt,
  subtitlebelowline=true,subtitleaboveline=true,
  subtitlebackgroundcolor=yellow!70!white,
  backgroundcolor=blue!20!white,
  frametitle={Theorem},frametitlerule=true,
  frametitlebackgroundcolor=yellow!70!white,
  ]{subtitleenv}
\begin{subtitleenv}
    Some Text \ldots
    \mdfsubtitle{Notes}
    Some Text \ldots
\end{subtitleenv}
```

6.12. General options

Some options can't be classified. Such options are listed in this section.

`ntheorem` default=`false`

Before setting this boolean key, you have to load the package `ntheorem`. With this option you set the values `\theorempreskipamount` and `\theorempostskipamount` to 0 pt to avoid extra vertical skip.

`needspace` default=`0pt`

Sometimes it is useful to set a minimum height before a frame should be splitted. For such cases you can use `needspace`. The option requires a length which sets the minimum height before a frame will be splitted.

`ignorelastdescenders` default=`false`

Try to ignore the last descenders of the environment `mdframed`. The complete idea was inspired by Tobias Weh and the solution was provided by Stefan Lemke. See How to make mdframed ignore descenders in last line Of course you have some more length which can be manipulate.

`userdefinedwidth` default=`\linewidth`

Sets the width of the whole `mdframed` environment. The width represent the width including the line width and the inner margins. The outer margins will be ignored.

`align` default=`left`

Sometimes it is useful to align the environment itself. For this you have the option `align` which can be set to the following strings:

- `left`,
- `right` and
- `center`.

The alignments `left` or `right` depend on the given lengths `leftmargin` and `rightmargin`. Later I will present an example to demonstrate my bad English explanation.

Be aware of using this option please.

6.13. TikZ options

`tikzsetting` default=`{}`

With this key you can pass several options to `\tikzset`. Some examples are listed in the next section. It is very important to put the options of `tikzsetting` in brackets.

`apptotikzsetting` default=`{}`

With this key you can add several options to `tikzsetting`. This key based on the idea of manipulation of predefined keys of `mdframed`. The package `mdframed` defines via `\tikzset` the following keys to draw frames.

- `\tikzset{mdfbox/.style}`
- `\tikzset{mdfcorners/.style}`
- `\tikzset{mdfbackground/.style}`
- `\tikzset{mdfinnerline/.style}`
- `\tikzset{mdfouterline/.style}`
- `\tikzset{mdfmiddleline/.style}`
- `\tikzset{mdfframetitlerule/.style}`
- `\tikzset{mdfframetitlebackground/.style}`
- `\tikzset{mdfshadow/.style}`

Before you change one please have a look at the file `md-frame-1.mdf` to see the settings.

6.14. PSTricks options

`pstrickssetting` default=`{}`

With this key you can pass several options to `\psset`. For example if you want all lines dashed you will have to set `pstrickssetting={linestyle=dashed}`. It is very important to put the options of `pstrickssetting` in brackets.

`pstricksappsetting` default=`{}`

`mdframed` works with defined styles for the different elements. By using `\addtopsstyle` in combination with this option you can expand the definition. The predefined styles are

- `mdfbackgroundstyle`
- `mdfframetitlebackgroundstyle`
- `mdfouterlinestyle`
- `mdfinnerlinestyle`
- `mdfmiddlelinestyle`

Before you change one please have a look at the file `md-frame-2.mdf` to see the settings.

7. Hooks and Bools

The following options and bool flags can be used by the any user. Of course some needs more experience than other.

`settings` default={}

This option allows the user to commit some macros at the beginning of `mdframed`. The given material is executed before the savebox starts.

`singleextra` default={}

With this key you can put extra material to the drawing environment of `mdframed` only for a non splitted frame.
This works only with `framemethod=TikZ and PSTricks`.

`firstextra` default={}

With this key you can put extra material to the drawing environment of `mdframed` only for the first part of the splitted frame.
This works only with `framemethod=TikZ and PSTricks`.

`middleextra` default={}

With this key you can put extra material to the drawing environment of `mdframed` only for the middle part of the splitted frame.
This works only with `framemethod=TikZ and PSTricks`.

`secondextra` default={}

With this key you can put extra material to the drawing environment of `mdframed` only for the second part of the splitted frame.
This works only with `framemethod=TikZ and PSTricks`.

After you can add material to any part of the frame you can also detect which part of the frame is drawn. Therefor the bool flags are defined which can be test by `\ifbool{boolflag}`. All flags are set to true before the output of the content occurs.

`mdfsingleframe` default=`false`

This bool is only true for a non splitting frame.

`mdffirstframe` default=`false`

This bool is only for the first part of the frame true.

`mdfmiddleframe` default=`false`

see above.

`mdflastframe` default=`false`

see above.

For the advanced users there are also some other hooks which can be used to manipulate the output:

`beforesingleframe` default={}

Every given code to this option is executed before a single frame is is printed.

`aftersingleframe` default={}

Every given code to this option is executed after a single frame is is printed.

`beforebreak` default={}

The value of this option is only executed at breakable frames. Related to the introduction the first and middle frame can be manipulated.

`afterbreak` default={}

The value of this option is only executed at breakable frames. Related to the introduction the first and middle frame can be manipulated.

`beforelastframe` default={}

The option is executed only for the last frame of a splitted frame.

`afterlastframe` default={}

The option is executed only for the last frame of a splitted frame.

`startcode` default={}

Every code given to this option is executed at the beginning of the environment.

`startinnercode` default={}

This option is executed at the beginning of the save box.

`endinnercode` default={}

This option is executed at the end of the save box.

`endcode` default={}

The code is executed at the end of the environment.

8. Theorems

In this section is described which commands can help you to define theorem environments with `mdframed`.

`\newmdtheoremenv`

Since the package is often used to highlight theorem environments, the package providesa command to simplify this process. The command has the following syntax:

```
\newmdtheoremenv[<mdframed-options>]{<envname>}%
                [<numberedlike>]{<caption>}[<within>]
```

The last four arguments are equivalent to the command `\newtheorem`. Only the first optional argument is able to pass `mdframed`-options. A simple example is:

```
\theoremstyle{<some style>}
\newmdtheoremenv[linecolor=blue]{lemma}{Lemma}[section]
...
\begin{lemma}[Some title]
   foo foo foo foo foo foo
\end{lemma}
```

So far there is no `\renewmdtheoremenv`!

`\mdtheorem`

This is a special kind of `\newtheorem`. The command has the following syntax.

```
\mdtheorem[<mdframed-options>]{<envname>}%
                [<numberedlike>]{<caption>}[<within>]
```

As you can see the arguments are equal to `\newtheorem` but the command ignores every `\theoremstyle`. This is based on the following behavior.

The command `\mdtheorem` creates two environments based on the given first mandatory argument. The first environment is named like the given argument and creates a numbered theorem. The second environment is named like the first mandatory argument with a star. This environment has the same formating but isn't numbered.

The syntax of the new defined environments is equal to the normal theorem environments.

```
\begin{environment}[optional title]
  ...
\end{environment}
```

What happened? The caption of the command will be set as the frame title. In this way all options of the frame title are available. Furthermore `mdframed` provides additional options explained below.

`theoremseparator` default=`{:}`

Sets the separator of the caption and the title of the theorem. The `theoremseparator` will be printed only if an theorem title is given.

`theoremtitlefont` default=`{}`

Via the option `frametitlefont` you can manipulate the font of the frame title. The option `theoremtitlefont` allows to set a different font to the title of the theorem.

`theoremspace` default=`\space`

Sets the space after `theoremseparator`.

Examples can be found in the attached files.

9. complexe example – Matlab Terminal

The following example was inspiered by a question on TeX.SX.

Command Window

```
% >> help sin
%  sin    Sine of argument in radians.
%     sin(X) is the sine of the elements of X.
%
%     See also asin, sind.
%
%     Overloaded methods:
%        sdpvar/sin
%        codistributed/sin
%        gpuArray/sin
%
%     Reference page in Help browser
%        doc sin
%
% >>
fx %
```

The code for this result is:

```
\definecolor{DarkBlue}{rgb}{.11,.23,.60}
\mdfdefinestyle{commandline}%
{leftmargin=5pt, rightmargin=10pt,innerleftmargin=15pt,
 middlelinecolor=DarkBlue,
 middlelinewidth=2pt,
 frametitlerule=false,
```

```
  backgroundcolor=black!10!white,
  frametitle={Command Window},
  frametitlefont={\normalfont\sffamily\color{white}\hspace{-1em}},
  frametitlebackgroundcolor=DarkBlue,
  singleextra={\draw[black!20,line width=12pt]
          ($(O)+(7pt,1pt)$) --
          ($(O|-P)+(7pt,-\mdframetitleboxtotalheight)-(0,1pt)$);
          \node[inner sep=0pt,color=black]at ($(O)+(7pt,9pt)$)%
          {$\scriptstyle f\!x$}; },
  nobreak,
}

\lstnewenvironment{script} {%
   \lstset{language=Matlab,basicstyle=\tiny\ttfamily,breaklines=true,%
               aboveskip=0pt,belowskip=0pt}}{}
\surroundwithmdframed[style=commandline]{script}
\begin{script}
>> help sin
  sin Sine of argument in radians.
      sin(X) is the sine of the elements of X.

      See also asin, sind.

      Overloaded methods:
          sdpvar/sin
          codistributed/sin
          gpuArray/sin

      Reference page in Help browser
          doc sin

>>
\end{script}
```

10. Examples

I outsource the examples in four files documentation. The files are

`mdframed-example-default`
: Demonstration of examples created with `framemethod=default`.

`mdframed-example-tikz`
: Demonstration of examples created with `framemethod=TikZ`.

`mdframed-example-pstricks`
: Demonstration of examples created with `framemethod=pstricks`.

`mdframed-example-texsx`
: Demonstration of examples like interaction with `listings`

The examples are often not equivalent but normally they can be adapted to another method. So I really recommend to have a look to all example files.

The Korean TEXGroup created a very nice presentation. I want to show the link because it's really a great work: kts 2012 mdframed.

The mdframed package

Examples for framemethod=default

Marco Daniel 1.9 2013/04/27

In this document I collect various examples for framemethod=default. Some presented examples are more or less exorbitant.

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1 Loading

In the preamble only the package mdframed with the option framemethod=default is loaded. All other modifications will be done by \mdfdefinestyle or \mdfsetup.

Note

Every \global inside the examples is necessary to work with my own created environment tltxmdfexample*.

2 Examples

All examples have the following settings:

```
\mdfsetup{skipabove=\topskip,skipbelow=\topskip}
\newrobustcmd\ExampleText{%
   An \textit{inhomogeneous linear} differential equation has the form
   \begin{align}
         L[v ] = f,
   \end{align}
   where $L$ is a linear differential operator, $v$ is the dependent
   variable, and $f$ is a given non−zero function of the independent
   variables alone.
}
```

Example 1 – very simple

```
\global\mdfdefinestyle{exampledefault}{%
        linecolor=red,linewidth=3pt,%
        leftmargin=1cm,rightmargin=1cm
}
\begin{mdframed}[style=exampledefault]
\ExampleText
\end{mdframed}
```

An *inhomogeneous linear* differential equation has the form

$$L[v] = f, \tag{1}$$

where L is a linear differential operator, v is the dependent variable, and f is a given non-zero function of the independent variables alone.

Example 2 – hidden line + frame title

```
\global\mdfapptodefinestyle{exampledefault}{%
 topline=false,bottomline=false}
\begin{mdframed}[style=exampledefault,frametitle={Inhomogeneous linear}]
\ExampleText
\end{mdframed}
```

Inhomogeneous linear

An *inhomogeneous linear* differential equation has the form

$$L[v] = f, \tag{2}$$

where L is a linear differential operator, v is the dependent variable, and f is a given non-zero function of the independent variables alone.

Example 3 – colored frame title

```
\global\mdfapptodefinestyle{exampledefault}{%
    rightline=true,innerleftmargin=10,innerrightmargin=10,
    frametitlerule=true,frametitlerulecolor=green,
    frametitlebackgroundcolor=yellow,
    frametitlerulewidth=2pt}
\begin{mdframed}[style=exampledefault,frametitle={Inhomogeneous linear}]
```

```
\ExampleText
\end{mdframed}
```

Inhomogeneous linear

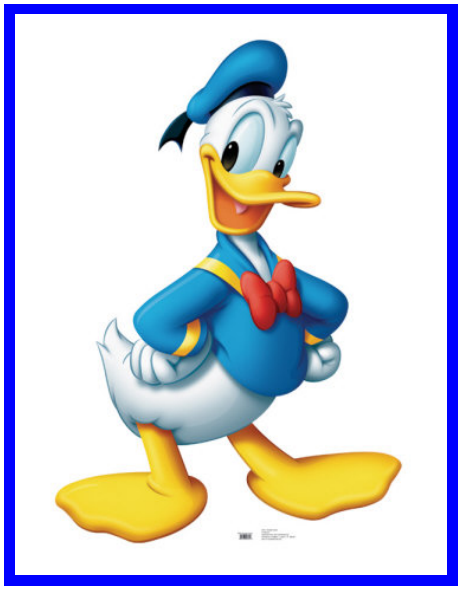
An *inhomogeneous linear* differential equation has the form

$$L[v] = f, \tag{3}$$

where L is a linear differential operator, v is the dependent variable, and f is a given non-zero function of the independent variables alone.

Example 4 – framed picture which is centered

```
\begin{mdframed}[userdefinedwidth=6cm,align=center,
                 linecolor=blue,linewidth=4pt]
\IfFileExists{donald-duck.jpg}%
  {\includegraphics[width=\linewidth]{donald-duck}}%
  {\rule{\linewidth}{4cm}}%
\end{mdframed}
```



Example 5 – Theorem environments

```
\mdfdefinestyle{theoremstyle}{%
        linecolor=red,linewidth=2pt,%
        frametitlerule=true,%
        frametitlebackgroundcolor=gray!20,
        innertopmargin=\topskip,
```

```
    }
\mdtheorem[style=theoremstyle]{definition}{Definition}
\begin{definition}
\ExampleText
\end{definition}
\begin{definition}[Inhomogeneous linear]
\ExampleText
\end{definition}
\begin{definition*}[Inhomogeneous linear]
\ExampleText
\end{definition*}
```

Definition 1

An *inhomogeneous linear* differential equation has the form

$$L[v] = f, \tag{4}$$

where L is a linear differential operator, v is the dependent variable, and f is a given non-zero function of the independent variables alone.

Definition 2: Inhomogeneous linear

An *inhomogeneous linear* differential equation has the form

$$L[v] = f, \tag{5}$$

where L is a linear differential operator, v is the dependent variable, and f is a given non-zero function of the independent variables alone.

Definition: Inhomogeneous linear

An *inhomogeneous linear* differential equation has the form

$$L[v] = f, \tag{6}$$

where L is a linear differential operator, v is the dependent variable, and f is a given non-zero function of the independent variables alone.

Example 6 – theorem with separate header and the help of TikZ (complex)

```
\newcounter{theo}[section]
\newenvironment{theo}[1][]{%
  \stepcounter{theo}%
    \ifstrempty{#1}%
```

```
    {\mdfsetup{%
       frametitle={%
            \tikz[baseline=(current bounding box.east),outer sep=0pt]
              \node[anchor=east,rectangle,fill=blue!20]
              {\strut Theorem~\thetheo};}}
    }%
    {\mdfsetup{%
         frametitle={%
            \tikz[baseline=(current bounding box.east),outer sep=0pt]
              \node[anchor=east,rectangle,fill=blue!20]
              {\strut Theorem~\thetheo:~#1};}}%
     }%
     \mdfsetup{innertopmargin=10pt,linecolor=blue!20,%
                    linewidth=2pt,topline=true,
                    frametitleaboveskip=\dimexpr-\ht\strutbox\relax,}
     \begin{mdframed}[]\relax%
     }{\end{mdframed}}
\begin{theo}[Inhomogeneous Linear]
\ExampleText
\end{theo}

\begin{theo}
\ExampleText
\end{theo}
```

Theorem 1: Inhomogeneous Linear

An *inhomogeneous linear* differential equation has the form

$$L[v] = f, \tag{7}$$

where L is a linear differential operator, v is the dependent variable, and f is a given non-zero function of the independent variables alone.

Theorem 2

An *inhomogeneous linear* differential equation has the form

$$L[v] = f, \tag{8}$$

where L is a linear differential operator, v is the dependent variable, and f is a given non-zero function of the independent variables alone.

Example 7 – hide only a part of a line

The example below is inspired by the following post on StackExchange Theorem decorations that stay with theorem environment

```
\makeatletter
\newlength{\interruptlength}
\newrobustcmd\interruptrule[3]{%
  \color{#1}%
  \hspace*{\dimexpr\mdfboundingboxwidth+
                    \mdf@innerrightmargin@length\relax}%
  \rule[\dimexpr-\mdfboundingboxdepth+
                    #2\interruptlength\relax]%
          {\mdf@middlelinewidth@length}%
          {\dimexpr\mdfboundingboxtotalheight-#3\interruptlength\relax}%
}
\newrobustcmd\overlaplines[2][white]{%
  \mdfsetup{everyline=false}%
  \setlength{\interruptlength}{#2}
  \appto\mdf@frame@leftline@single{\llap{\interruptrule{#1}{1}{2}}}
  \appto\mdf@frame@rightline@single{\rlap{\interruptrule{#1}{1}{2}}}
  \appto\mdf@frame@leftline@first{\llap{\interruptrule{#1}{0}{1}}}
  \appto\mdf@frame@rightline@first{\rlap{\interruptrule{#1}{0}{1}}}
  \appto\mdf@frame@leftline@second{\llap{\interruptrule{#1}{1}{1}}}
  \appto\mdf@frame@rightline@second{\rlap{\interruptrule{#1}{1}{1}}}
  \appto\mdf@frame@leftline@middle{\llap{\interruptrule{#1}{0}{0}}}
  \appto\mdf@frame@rightline@middle{\rlap{\interruptrule{#1}{0}{0}}}
}
\makeatother

\overlaplines{2.5ex}
\begin{mdframed}[linecolor=blue,linewidth=8pt]
\ExampleText
\end{mdframed}
\overlaplines[blue!70!black!20]{2.5ex}
\begin{mdframed}[linecolor=blue,linewidth=8pt]
\ExampleText
\end{mdframed}
```

An *inhomogeneous linear* differential equation has the form

$$L[v] = f, \tag{9}$$

where L is a linear differential operator, v is the dependent variable, and f is a given non-zero function of the independent variables alone.

An *inhomogeneous linear* differential equation has the form

$$L[v] = f, \tag{10}$$

where L is a linear differential operator, v is the dependent variable, and f is a given non-zero function of the independent variables alone.

The mdframed package

Examples for `frememethod=TikZ`

Marco Daniel 1.9 2013/04/27

In this document I collect various examples for `frememethod=TikZ`. Some presented examples are more or less exorbitant.

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1 Loading

In the preamble only the package `mdframed` width the option `frememethod=TikZ` is loaded. All other modifications will be done by `\mdfdefinestyle` or `\mdfsetup`.

Note

Every `\global` inside the examples is necessary to work with my own created environment `tltxmdfexample*`.

2 Examples

All examples have the following settings:

```
\mdfsetup{skipabove=\topskip,skipbelow=\topskip}
\newrobustcmd\ExampleText{%
   An \textit{inhomogeneous linear} differential equation has the form
   \begin{align}
         L[v ] = f,
   \end{align}
   where $L$ is a linear differential operator, $v$ is the dependent
   variable, and $f$ is a given non−zero function of the independent
   variables alone.
}
```

Example 1 – round corner

```
\global\mdfdefinestyle{exampledefault}{%
        outerlinewidth=5pt,innerlinewidth=0pt,
        outerlinecolor=red,roundcorner=5pt
}
\begin{mdframed}[style=exampledefault]
\ExampleText
\end{mdframed}
```

An *inhomogeneous linear* differential equation has the form

$$L[v] = f, \tag{1}$$

where L is a linear differential operator, v is the dependent variable, and f is a given non-zero function of the independent variables alone.

Example 2 – hidden line + frame title

```
\global\mdfapptodefinestyle{exampledefault}{%
        topline=false,leftline=false,}
\begin{mdframed}[style=exampledefault,frametitle={Inhomogeneous linear}]
\ExampleText
\end{mdframed}
```

Inhomogeneous linear

An *inhomogeneous linear* differential equation has the form

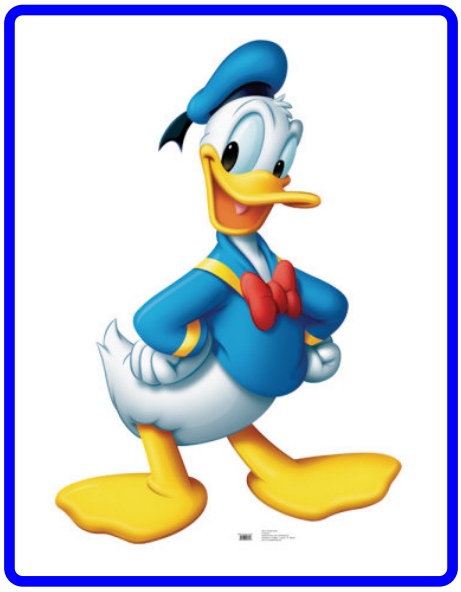
$$L[v] = f, \tag{2}$$

where L is a linear differential operator, v is the dependent variable, and f is a given non-zero function of the independent variables alone.

Example 3 – framed picture which is centered

```
\begin{mdframed}[userdefinedwidth=6cm,align=center,
                        linecolor=blue,middlelinewidth=4pt,roundcorner=5pt]
\IfFileExists{donald-duck.jpg}%
  {\includegraphics[width=\linewidth]{donald-duck}}%
  {\rule{\linewidth}{4cm}}%
```

```
\end{mdframed}
```



Example 4 – Gimmick

```
\mdfsetup{splitbottomskip=0.8cm,splittopskip=0cm,
          innerrightmargin=2cm,innertopmargin=1cm,%
          innerlinewidth=2pt,outerlinewidth=2pt,
          middlelinewidth=10pt,backgroundcolor=red,
          linecolor=blue,middlelinecolor=gray,
          tikzsetting={draw=yellow,line width=3pt,%
                       dashed,%
                       dash pattern= on 10pt off 3pt},
          rightline=false,bottomline=false}
\begin{mdframed}
\ExampleText
\end{mdframed}
```

An *inhomogeneous linear* differential equation has the form

$$L[v] = f, \tag{3}$$

where L is a linear differential operator, v is the dependent variable, and f is a given non-zero function of the independent variables alone.

Example 5 – complex example with TikZ

```
\tikzset{titregris/.style =
        {draw=gray, thick, fill=white, shading = exersicetitle, %
         text=gray, rectangle, rounded corners, right,minimum height=.7cm}}
\pgfdeclarehorizontalshading{exersicebackground}{100bp}
                {color(0bp)=(green!40); color(100bp)=(black!5)}
\pgfdeclarehorizontalshading{exersicetitle}{100bp}
                {color(0bp)=(red!40);color(100bp)=(black!5)}
\newcounter{exercise}
\renewcommand*\theexercise{Exercise~n\arabic{exercise}}
\makeatletter
\def\mdf@@exercisepoints{}%new mdframed key:
\define@key{mdf}{exercisepoints}{%
      \def\mdf@@exercisepoints{#1}
}
\mdfdefinestyle{exercisestyle}{%
   outerlinewidth=1em,outerlinecolor=white,%
   leftmargin=-1em,rightmargin=-1em,%
   middlelinewidth=1.2pt,roundcorner=5pt,linecolor=gray,
   apptotikzsetting={\tikzset{mdfbackground/.append style ={%
                                shading = exersicebackground}}},
   innertopmargin=1.2\baselineskip,
   skipabove={\dimexpr0.5\baselineskip+\topskip\relax},
   skipbelow={-1em},
   needspace=3\baselineskip,
   frametitlefont=\sffamily\bfseries,
   settings={\global\stepcounter{exercise}},
   singleextra={%
        \node[titregris,xshift=1cm] at (P-|O) %
            {~\mdf@frametitlefont{\theexercise}\hbox{~}};
        \ifdefempty{\mdf@@exercisepoints}%
        {}%
        {\node[titregris,left,xshift=-1cm] at (P)%
           {~\mdf@frametitlefont{\mdf@@exercisepoints points}\hbox{~}};}%
    },
   firstextra={%
        \node[titregris,xshift=1cm] at (P-|O) %
            {~\mdf@frametitlefont{\theexercise}\hbox{~}};
        \ifdefempty{\mdf@@exercisepoints}%
        {}%
        {\node[titregris,left,xshift=-1cm] at (P)%
           {~\mdf@frametitlefont{\mdf@@exercisepoints points}\hbox{~}};}%
    },
}
\makeatother

\begin{mdframed}[style=exercisestyle]
\ExampleText
\end{mdframed}

\begin{mdframed}[style=exercisestyle,exercisepoints=10]
\ExampleText
\end{mdframed}
```

Exercise n1

An *inhomogeneous linear* differential equation has the form

$$L[v] = f, \tag{4}$$

where L is a linear differential operator, v is the dependent variable, and f is a given non-zero function of the independent variables alone.

Exercise n2 **10points**

An *inhomogeneous linear* differential equation has the form

$$L[v] = f, \tag{5}$$

where L is a linear differential operator, v is the dependent variable, and f is a given non-zero function of the independent variables alone.

Example 6 – Theorem environments

```
\mdfdefinestyle{theoremstyle}{%
        linecolor=red,middlelinewidth=2pt,%
        frametitlerule=true,%
        apptotikzsetting={\tikzset{mdfframetitlebackground/.append style={%
                                    shade,left color=white, right color=blue!20}}},
        frametitlerulecolor=green!60,
        frametitlerulewidth=1pt,
        innertopmargin=\topskip,
    }
\mdtheorem[style=theoremstyle]{definition}{Definition}
\begin{definition}[Inhomogeneous linear]
\ExampleText
\end{definition}
\begin{definition*}[Inhomogeneous linear]
\ExampleText
\end{definition*}
```

Definition 1: Inhomogeneous linear

An *inhomogeneous linear* differential equation has the form

$$L[v] = f, \tag{6}$$

where L is a linear differential operator, v is the dependent variable, and f is a given non-zero function of the independent variables alone.

Definition: Inhomogeneous linear

An *inhomogeneous linear* differential equation has the form

$$L[v] = f, \tag{7}$$

where L is a linear differential operator, v is the dependent variable, and f is a given non-zero function of the independent variables alone.

The mdframed package

Examples for `frametheme=tikz`

Marco Daniel 1.9 2013/04/27

In this document I collect various examples for `frametheme=tikz`. Some presented examples are more or less exorbitant.

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1 Loading

In the preamble only the package `mdframed` width the option `frametheme=tikz` is loaded. All other modifications will be done by `\mdfdefinestyle` or `\mdfsetup`.

Note

Every `\global` inside the examples is necessary to work with my own created environment `tltxmdfexample*`.

2 Examples

All examples have the following settings:

```
\mdfsetup{skipabove=\topskip,skipbelow=\topskip}
\newrobustcmd\ExampleText{%
   An \textit{inhomogeneous linear} differential equation has the form
   \begin{align}
         L[v ] = f,
   \end{align}
   where $L$ is a linear differential operator, $v$ is the dependent
   variable, and $f$ is a given non−zero function of the independent
   variables alone.
}
```

Example 1 – Package listings

The example below is inspired by the following post on StackExchange Background overflows when using rounded corners for listings (package: 'listings')

Here the solution which can be decorate as usual.

```
\BeforeBeginEnvironment{lstlisting}{%
    \begin{mdframed}[<modification>]%
    \vspace{-0.7em}}
\AfterEndEnvironment{lstlisting}{%
    \vspace{-0.5em}%
    \end{mdframed}}
```

With the new command `\surroundwithmdframed` you can use

```
\surroundwithmdframed{listings}
```

Example 2 – Package multicol

How I wrote in "Known Problems" you can't combine `multicol` with `mdframed`. In a simple way without any breaks you can use:

```
\begin{multicols}{2}
  \lipsum[1]
  \begin{mdframed}
    \ExampleText
  \end{mdframed}
  \lipsum[2]
\end{multicols}
```

Lorem ipsum dolor sit amet, consectetuer adipiscing elit. Ut purus elit, vestibulum ut, placerat ac, adipiscing vitae, felis. Curabitur dictum gravida mauris. Nam arcu libero, nonummy eget, consectetuer id, vulputate a, magna. Donec vehicula augue eu neque. Pellentesque habitant morbi tristique senectus et netus et malesuada fames ac turpis egestas. Mauris ut leo. Cras viverra metus rhoncus sem. Nulla et lectus vestibulum urna fringilla ultrices. Phasellus eu tellus sit amet tortor gravida placerat. Integer sapien est, iaculis in, pretium quis, viverra ac, nunc. Praesent eget sem vel leo ultrices bibendum. Aenean faucibus. Morbi dolor nulla, malesuada eu, pulvinar at, mollis ac, nulla. Curabitur auctor semper nulla. Donec varius orci eget risus. Duis nibh mi, congue eu, accumsan eleifend, sagittis quis, diam. Duis eget orci sit amet orci dignissim rutrum.

An *inhomogeneous linear* differential equation has the form

$$L[v] = f, \tag{1}$$

where L is a linear differential operator, v is the dependent variable, and f is a given non-zero function of the independent variables alone.

Nam dui ligula, fringilla a, euismod sodales, sollicitudin vel, wisi. Morbi auctor lorem non justo. Nam lacus libero, pretium at, lobortis vitae, ultricies et, tellus. Donec aliquet, tortor sed accumsan bibendum, erat ligula aliquet magna, vitae ornare odio metus a mi. Morbi ac orci et nisl hendrerit mollis. Suspendisse ut massa. Cras nec ante. Pellentesque a nulla. Cum sociis natoque penatibus et magnis dis parturient montes, nascetur ridiculus mus. Aliquam tincidunt urna. Nulla ullamcorper vestibulum turpis. Pellentesque cursus luctus mauris.

Example 3 – Working in twocolumn mode

```
\lipsum[1]\lipsum[2]
\begin{mdframed}[%
    leftmargin=10pt,%
    rightmargin=10pt,%
    linecolor=red,
    backgroundcolor=yellow]
\ExampleText
\end{mdframed}
\lipsum[2]
```

Lorem ipsum dolor sit amet, consectetuer adipiscing elit. Ut purus elit, vestibulum ut, placerat ac, adipiscing vitae, felis. Curabitur dictum gravida mauris. Nam arcu libero, nonummy eget, consectetuer id, vulputate a, magna. Donec vehicula augue eu neque. Pellentesque habitant morbi tristique senectus et netus et malesuada fames ac turpis egestas. Mauris ut leo. Cras viverra metus rhoncus sem. Nulla et lectus vestibulum urna fringilla ultrices. Phasellus eu tellus sit amet tortor gravida placerat. Integer sapien est, iaculis in, pretium quis, viverra ac, nunc. Praesent eget sem vel leo ultrices bibendum. Aenean faucibus. Morbi dolor nulla, malesuada eu, pulvinar at, mollis ac, nulla. Curabitur auctor semper nulla. Donec varius orci eget risus. Duis nibh mi, congue eu, accumsan eleifend, sagittis quis, diam. Duis eget orci sit amet orci dignissim rutrum.

Nam dui ligula, fringilla a, euismod sodales, sollicitudin vel, wisi. Morbi auctor lorem non justo. Nam lacus libero, pretium at, lobortis vitae, ultricies et, tellus. Donec aliquet, tortor sed accumsan bibendum, erat ligula aliquet magna, vitae ornare odio metus a mi. Morbi ac orci et nisl hendrerit mollis. Suspendisse ut massa. Cras nec ante. Pellentesque a nulla. Cum sociis natoque penatibus et magnis dis parturient montes, nascetur ridiculus mus. Aliquam tincidunt urna. Nulla ullamcorper vestibulum turpis. Pellentesque cursus luctus mauris.

An *inhomogeneous linear* differential equation has the form

$$L[v] = f, \tag{2}$$

where L is a linear differential operator, v is the dependent variable, and f is a given non-zero function of the independent variables alone.

Nam dui ligula, fringilla a, euismod sodales, sollicitudin vel, wisi. Morbi auctor lorem non justo. Nam lacus libero, pretium at, lobortis vitae, ultricies et, tellus. Donec aliquet, tortor sed accumsan bibendum, erat ligula aliquet magna, vitae ornare odio metus a mi. Morbi ac orci et nisl hendrerit mollis. Suspendisse ut massa. Cras nec ante. Pellentesque a nulla. Cum sociis natoque penatibus et magnis dis parturient montes, nascetur ridiculus mus. Aliquam tincidunt urna. Nulla ullamcorper vestibulum turpis. Pellentesque cursus luctus mauris.

Example 4 – Working inside enumerate

```
Text Text Text Text Text Text Text Text
\begin{enumerate}
\item in the following \ldots
        \begin{mdframed}[linecolor=blue,middlelinewidth=2]
            \ExampleText
        \end{mdframed}
\item \lipsum[2]
\end{enumerate}
Text Text Text Text Text Text
```

Text Text Text Text Text Text Text Text

1. in the following ...

   An *inhomogeneous linear* differential equation has the form

   $$L[v] = f, \tag{3}$$

   where L is a linear differential operator, v is the dependent variable, and f is a given non-zero function of the independent variables alone.

2. Nam dui ligula, fringilla a, euismod sodales, sollicitudin vel, wisi. Morbi auctor lorem non justo. Nam lacus libero, pretium at, lobortis vitae, ultricies et, tellus. Donec aliquet, tortor sed accumsan bibendum, erat ligula aliquet magna, vitae ornare odio metus a mi. Morbi ac orci et nisl hendrerit mollis. Suspendisse ut massa. Cras nec ante. Pellentesque a nulla. Cum sociis natoque penatibus et magnis dis parturient montes, nascetur ridiculus mus. Aliquam tincidunt urna. Nulla ullamcorper vestibulum turpis. Pellentesque cursus luctus mauris.

Text Text Text Text Text Text

Example 5 – Position a specific symbol at a line

```
\tikzset{
   warningsymbol/.style={
        rectangle,draw=red,
        fill=white,scale=1,
        overlay}}
\mdfdefinestyle{warning}{%
 hidealllines=true,leftline=true,
 skipabove=12,skipbelow=12pt,
 innertopmargin=0.4em,%
 innerbottommargin=0.4em,%
 innerrightmargin=0.7em,%
 rightmargin=0.7em,%
 innerleftmargin=1.7em,%
 leftmargin=0.7em,%
```

```
  middlelinewidth=.2em,%
  linecolor=red,%
  fontcolor=red,%
  firstextra={\path let \p1=(P), \p2=(O) in ($(\x2,0)+0.5*(0,\y1)$)
                                        node[warningsymbol] {\$};},%
  secondextra={\path let \p1=(P), \p2=(O) in ($(\x2,0)+0.5*(0,\y1)$)
                                        node[warningsymbol] {\$};},%
  middleextra={\path let \p1=(P), \p2=(O) in ($(\x2,0)+0.5*(0,\y1)$)
                                        node[warningsymbol] {\$};},%
  singleextra={\path let \p1=(P), \p2=(O) in ($(\x2,0)+0.5*(0,\y1)$)
                                        node[warningsymbol] {\$};},%
}
\begin{mdframed}[style=warning]
\ExampleText
\end{mdframed}
```

An *inhomogeneous linear* differential equation has the form

$$L[v] = f, \tag{4}$$

where L is a linear differential operator, v is the dependent variable, and f is a given non-zero function of the independent variables alone.

Example 6 – digression-environement inspired by Tobias Weh

```
\usetikzlibrary{calc,arrows}
\tikzset{
    excursus arrow/.style={%
        line width=2pt,
        draw=gray!40,
        rounded corners=2ex,
    },
    excursus head/.style={
        fill=white,
        font=\bfseries\sffamily,
        text=gray!80,
        anchor=base west,
    },
}
\mdfdefinestyle{digressionarrows}{%
  singleextra={%
        \path let \p1=(P), \p2=(O) in (\x2,\y1) coordinate (Q);
        \path let \p1=(Q), \p2=(O) in (\x1,{(\y1-\y2)/2}) coordinate (M);
        \path [excursus arrow, round cap-to]
            ($(O)+(5em,0ex)$) -| (M) |- %
            ($(Q)+(12em,0ex)$) .. controls +(0:16em) and +(185:6em) .. %
            ++(23em,2ex);
        \node [excursus head] at ($(Q)+(2.5em,-0.75pt)$) {Digression};},
  firstextra={%
        \path let \p1=(P), \p2=(O) in (\x2,\y1) coordinate (Q);
```

```
        \path [excursus arrow,-to]
            (O) |- %
            ($(Q)+(12em,0ex)$) .. controls +(0:16em) and +(185:6em) .. %
            ++(23em,2ex);
        \node [excursus head] at ($(Q)+(2.5em,-2pt)$) {Digression};},
 secondextra={%
        \path let \p1=(P), \p2=(O) in (\x2,\y1) coordinate (Q);
        \path [excursus arrow,round cap-]
            ($(O)+(5em,0ex)$) -| (Q);},
 middleextra={%
        \path let \p1=(P), \p2=(O) in (\x2,\y1) coordinate (Q);
        \path [excursus arrow]
            (O) -- (Q);},
   middlelinewidth=2.5em,middlelinecolor=white,
   hidealllines=true,topline=true,
   innertopmargin=0.5ex,
   innerbottommargin=2.5ex,
   innerrightmargin=2pt,
   innerleftmargin=2ex,
   skipabove=0.87\baselineskip,
   skipbelow=0.62\baselineskip,
}

\begin{mdframed}[style=digressionarrows]
            \ExampleText
\end{mdframed}
```

Digression

An *inhomogeneous linear* differential equation has the form

$$L[v] = f, \tag{5}$$

where L is a linear differential operator, v is the dependent variable, and f is a given non-zero function of the independent variables alone.

Example 7 – Theorem style shading background

```
\mdtheorem[%
 apptotikzsetting={%
   \tikzset{mdfbackground/.append style ={%
                top color=yellow!40!white,
                bottom color=yellow!80!black},
                mdfframetitlebackground/.append style={
                        top color=purple!40!white,
                        bottom color=purple!80!black
                }
            }%
  },
  ,roundcorner=10pt,middlelinewidth=2pt,
```

```
    shadow=true,frametitlerule=true,frametitlerulewidth=4pt,
    innertopmargin=10pt,%
    ]{alternativtheorem}{Theorem}
\begin{alternativtheorem}[Inhomogeneous linear]
\ExampleText
\end{alternativtheorem}
```

Theorem 1: Inhomogeneous linear

An *inhomogeneous linear* differential equation has the form

$$L[v] = f, \tag{6}$$

where L is a linear differential operator, v is the dependent variable, and f is a given non-zero function of the independent variables alone.

The mdframed package

Examples for framemethod=PSTricks

Marco Daniel 1.9 2013/04/27

In this document I collect various examples for framemethod=PSTricks. Some presented examples are more or less exorbitant.

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1 Loading

In the preamble only the package mdframed width the option framemethod=PSTricks is loaded. All other modifications will be done by \mdfdefinestyle or \mdfsetup.

Note

Every \global inside the examples is necessary to work with my own created environment tltxmdfexample*.

2 Examples

All examples have the following settings:

```
\mdfsetup{skipabove=\topskip,skipbelow=\topskip}
\newrobustcmd\ExampleText{%
   An \textit{inhomogeneous linear} differential equation has the form
   \begin{align}
         L[v ] = f,
   \end{align}
   where $L$ is a linear differential operator, $v$ is the dependent
   variable, and $f$ is a given non−zero function of the independent
   variables alone.
}
```

Example 1 – very simple

```
\global\mdfdefinestyle{exampledefault}{%
        linecolor=red,middlelinewidth=3pt,%
        leftmargin=1cm,rightmargin=1cm
}
\begin{mdframed}[style=exampledefault,roundcorner=5]
\ExampleText
\end{mdframed}
```

An *inhomogeneous linear* differential equation has the form

$$L[v] = f, \tag{1}$$

where L is a linear differential operator, v is the dependent variable, and f is a given non-zero function of the independent variables alone.

Example 2 – hidden line + frame title

```
\global\mdfapptodefinestyle{exampledefault}{%
 topline=false,rightline=false,bottomline=false,
 frametitlerule=true,innertopmargin=6pt,
 outerlinewidth=6pt,outerlinecolor=blue,
 pstricksappsetting={\addtopsstyle{mdfouterlinestyle}{linestyle=dashed}},
 innerlinecolor=yellow,innerlinewidth=5pt}%
\begin{mdframed}[style=exampledefault,frametitle={Inhomogeneous linear}]
\ExampleText
\end{mdframed}
```

Inhomogeneous linear

An *inhomogeneous linear* differential equation has the form

$$L[v] = f, \tag{2}$$

where L is a linear differential operator, v is the dependent variable, and f is a given non-zero function of the independent variables alone.

Example 3 – Dash Lines

[morekeywords=pstrickssetting,linestyle,dashed]

```
\global\mdfdefinestyle{exampledefault}{%
```

```
    pstrickssetting={linestyle=dashed,},linecolor=red,middlelinewidth=2pt}
\begin{mdframed}[style=exampledefault]
\ExampleText
\end{mdframed}
```

An *inhomogeneous linear* differential equation has the form

$$L[v] = f, \tag{3}$$

where L is a linear differential operator, v is the dependent variable, and f is a given non-zero function of the independent variables alone.

Example 4 – Double Lines

```
\global\mdfdefinestyle{exampledefault}{%
  pstricksappsetting={\addtopsstyle{mdfmiddlelinestyle}{%
                          doubleline=true,doublesep=6pt,linewidth=4pt}},%
  linecolor=red,middlelinewidth=16pt}
\begin{mdframed}[style=exampledefault]
\ExampleText
\end{mdframed}
```

An *inhomogeneous linear* differential equation has the form

$$L[v] = f, \tag{4}$$

where L is a linear differential operator, v is the dependent variable, and f is a given non-zero function of the independent variables alone.

Example 5 – Shadow frame

```
\newmdenv[shadow=true,
          shadowsize=11pt,
          linewidth=8pt,
          frametitlerule=true,
          roundcorner=10pt,
          ]{myshadowbox}
\begin{myshadowbox}[frametitle={Inhomogeneous linear}]
\ExampleText
\end{myshadowbox}
```

Inhomogeneous linear

An *inhomogeneous linear* differential equation has the form

$$L[v] = f, \tag{5}$$

where L is a linear differential operator, v is the dependent variable, and f is a given non-zero function of the independent variables alone.

11. Errors, Warnings and Messages

The package `mdframed` provides different errors, warnings and messages in the `log`-file. Some LaTeX-editors like TeXMaker or TeXStudio have a special tab for errors and warnings but not for messages. So you should look in the `log-File` itself.

The following errors and warnings are generated by `mdframed`.

> The package ... does not exist but
> needed by **mdframed**

To avoid this problem you should install the required packages which are listed in section 2.

> package option **style** is depreciated
> use **framemethod** instead **style**

With version 0.9d `mdframed` changed the meaning of the option `style`. The option is used to load a defined style by `\mdfdefinestyle`. Instead use `framemethod` (see section 6.1).

> Unknown **framemethod** .... **mdframed**

The input string for the option `framemethod` is unkown. See section 6.1.

> You have not loaded **ntheorem** yet

To use the option `ntheorem` you have to load the package `ntheorem`.

> You have only a width of 3cm

The package `mdframed` calculates the width of the contents based on the given options. If the width of the contents is smaller than 3 cm you will get this warnings. You should change the settings to get a greater width.

> You got a bad break
> you have to change it manually
> by changing the **text**, the space
> or something else

Sometimes you have enough vertical space for the rules and the space between the rules and the contents but not for the contents itself. In this situation you will get this warning because the contents of this box is empty. You have the possibility to change the settings or include a `\clearpage` in front of the environment `mdframed`. So far I have no idea how to avoid such things.

> You got a bad break
> because the split box is empty
> You have to change the page **settings**
> like enlargethispage or something else

You got a bad break

See the explanation above.

You got a bad break
because the last split box is empty
You have to change the **settings**

The same reason as above but only in the last box.

Option ... is already consumed
and has no effect on input line ...

If you set a global option inside the document body you will get this warning.

12. Known Limitations

In this section I will collect known issues. In case you encounter any further problems, please drop me an email, marco.daniel at mada-nada.de.

Do you have any ideas / wishes on further extensions to this package? Please let me know!

1. So far the environment isn't compatible with the package `gmverb`.
2. If you load the package `picins` the frame will no be splitted. That based on a problem of the package 'picins' which defines `\@captype` global. To work with the package picins you can use the following hack.

```
\usepackage{picins}
\makeatletter
\let\@captype\@undefined
\def\newcaption{%
  \begingroup%
    \def\@captype{figure}%
    \refstepcounter\@captype\@dblarg{\@newcaption\@captype}%
  \endgroup%
}
\makeatother
```

3. `mdframed` can't handle the option `allowframebreaks` of the class `beamer`.
4. A nested `mdframed` environment can't be splitted.

13. ToDo

It is important to update the documentation

1. see "Known Problems".
2. So far it isn't possible to combine the environment `\begin{multicols}` of the package `multicol` with `mdframed` with the whole option list.

3. Create new styles.
4. Improve page breaks.
5. Improve footnotes.
6. Improve documentation and examples.
7. Create styles for `frametitle`.
8. Create an inline version of `mdframed` that's works like `\fbox`
9. Add `\ht\strutbox` to file `md-frame-1.mdf`

14. Acknowledgements

Dick Nickalls; Dietrich Grau; Piazza Luca; Jobst Hoffmann; Martin Scharrer; Enrico Gregorio; Heiko Oberdiek; Philipp Stephani.

Thanks for proofreading
Alan Munn and Nahid Shajari
I hope I forgot nobody.

A. More information

In the following section I want to present how to create your own frame.

A.1. How does `mdframed` work?

With the environment `\begin{mdframed}` ... `\end{mdframed}` the whole contents will be saved in a `\savebox` called `\mdf@splitbox@one`. After the calculation of the width and the height of the `\mdf@splitbox@one` (done by `mdframed.sty`) the box will be set sequently (done by `md-frame-X.mdf`). The following figure demonstrates this.

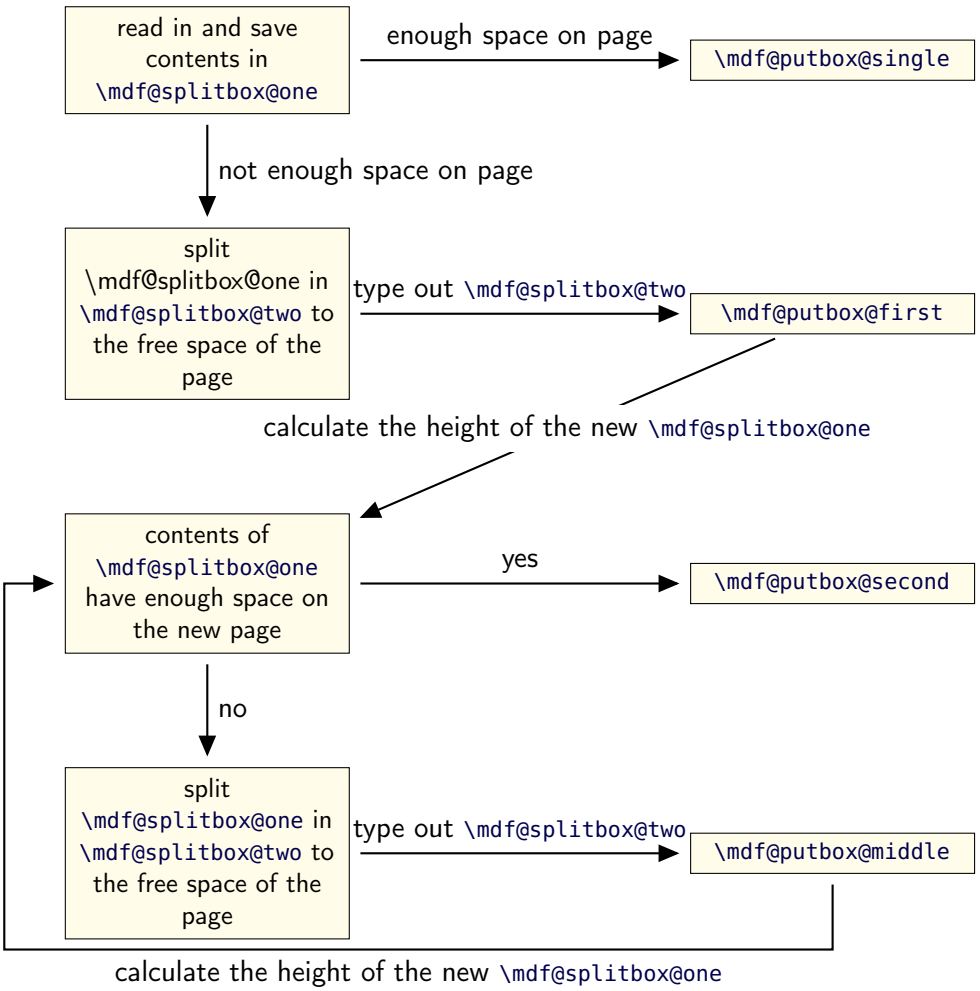

Figure 4: Setting the contents of `mdframed`

The width of the contents is the result of the settings of `leftmargin`, `rightmargin`, `linewidth`, `innerleftmargin` and `innerrightmargin` (see figure (2)).

A.2. The Framecommands

The package `mdframed` knows four kinds of "Framecommand". These commands tell LaTeX how to set the contents of `mdframed`.

`\mdf@putbox@single` This command sets the contents of a single unsplit frame.

`\mdf@putbox@first` This command sets the contents of the first frame of a split frame.

`\mdf@putbox@middle` This command sets the contents of the middle frame of a split frame.

`\mdf@putbox@second` This command sets the contents of the last frame of a split frame.

Using the explained commands we give an example. The command `\box` uses the contents of the savebox and types them out.

First we want to type out the single box without any settings (but with the calculated width).

```
\makeatletter
  \def\mdf@putbox@single{\box\mdf@splitbox@one}
\makeatother
```

I am using the command `\leftline` to start the "Framecommands" at the left.

```
\makeatletter
  \def\mdf@putbox@single{\leftline{\box\mdf@splitbox@one}}
\makeatother
```

Now you have to know how the lengths are named. Every length which can be modified by the options has the following syntax:

```
\mdf@<Name of the Length>@length
```

For example the leftmargin is:

```
\mdf@leftmargin@length
```

To create only a line at the left with the correct `leftmargin` you can set `\mdf@putboxsingle` as follows

```
\makeatletter
\def\mdf@putbox@single{%
            \leftline{%
                  \hspace*{\mdf@leftmargin@length}%
                  \rule[-\dp\mdf@splitbox@one]{\mdf@linewidth}%
                        {\ht\mdf@splitbox@one+\dp\mdf@splitbox@one}%
                  \box\mdf@splitbox@one
            }%
}
\makeatother
```

In this way you can do what you want. If you create your own style you can save the file as `md-frame-X.mdf`. `X` must be an integer. In this way you can use the option `framemethod` to load the file by setting `framemethod=X`.