

mkpic interface for making pictures with mfpic

doc generated from the script with `gendoc`

perl script, version=1.03

Synopsis

```
mkpic [options] [picfile]
```

Options

<code>-c, --clean</code>	remove all but the input file and die
<code>-p, --pdfsample</code>	create pdf file with sample images
<code>-f, --font=</code>	set default font for labels
<code>--[no]box</code>	produce framed boxes
<code>-V, --version</code>	report version number and die
<code>-h, --help</code>	display help info and die
<code>--[no]debug</code>	display debugging information
<code>-l, --log=<logfile></code>	file for warning messages

Without an input file, the DATA section is used.

Command overview

```
begin    name x1 y1 xmin ymin xmax ymax xlabel ylabel
end
stop
var=value
#        comment

arccst   xcenter ycenter xstart ystart theta
arcset   xstart ystart xend yend theta
arccrtt  xcenter ycenter radius theta1 theta2
arc3     x1 y1 x2 y2 x3 y3

xmark    [label1] x1 [label2] x2 ...
Xmark    [label1] x1 [label2] x2 ...
ymark    [label1] y1 [label2] y2 ...
Ymark    [label1] y1 [label2] y2 ...

xdrop    x y
ydrop    x y
xydrop   x y

arrow    x1 y1 x2 y2 label
label    YX x y label
xlabels  YX x y dx label ...
ylabels  YX x y dy label ...

point    x1 y1 x2 y2 ...
dpoint   x1 y1 dx1 dy1 ...
lines    x1 y1 x2 y2 ...
dlines   x1 y1 dx1 dy1 ...
curve    x1 y1 x2 y2 ...
dcurve   x1 y1 dx1 dy1 ...

rect     x1 y1 x2 y2
direct   x y dx dy
```

```

dcrect  x y dx dy
crect   x1 y1 x2 y2
arect   xc yc width height theta
bar     x xdev height

func    xmin xmax step expression-in-x

grid    dx dy xgap ygap
hatch
bhat
ehat

```

Description

mkpic provides an easy interface for making small pictures with mfpic. To this end an input file has to be created consisting of commands, one per line, with space separated parameters (or you modify the DATA section of the **mkpic** script, which is used if you run it without an input file). For an extensive description see the files **mkpicdoc.tex** and **mkpicdoc.pdf**, which are part of the distribution.

mkpic produces two files. Assuming an input file named **picfile** defaulting to **mkpic** these are:

```

picfile.mac
    a macro file which will contain TeX commands for every picture
picfile.sty
    a style file for latex, defining the same TeX commands for every picture.

```

With the `--pdfsample` option, two other files are produced:

```

picfile.pdf
    a PDF file containing all pictures. This lets you easily check the results of your designs.

```

```

picfile.tex
    the TeX source used for creating this PDF file.

```

In LaTeX, you have to include `\usepackage{picfile}` and to include commands like `\Figname` in your source, where *name* is the name you gave one of your pictures in an **mkpic begin** command.

In TeX and ConTeXt, you have to `\input_picfile.mac` and to include commands like `\Figname` in your source, where *name* is the name you gave one of your pictures in an **mkpic begin** command.

In TeX, you must use the `\bye` command (*not* `\end` to finish your TeX source

See the RUNNING section for how to run **mkpic** and TeX, LaTeX, or ConTeXt.

Commands

The source is set up so that it is easy to add your own commands, Currently the following commands have been implemented (the arguments are not listed here; for those, refer to the SYNOPSIS section):

```

begin, end
    Every picture begins with the begin command and ends with the end command. The begin command defines a name for the picture and defines a tex command with that name, prefixed with 'Fig'. The resulting command is written to a .mac file. Thus the command

```

```
begin aa ...
```

starts writing `\def \Figaa {...}` to the **.mac** file, and the picture can be reproduced in a TeX document by importing the **.mac** file and using the `\Figaa` command.

`x1` and `y1` are the lengths of the x- and y-axes. `xlabel` and `ylabel` are the label that are placed at the ends of those axes. Use a space to suppress labeling, or "-" to suppress drawing the axes at all.

`stop`

stops further reading of the input. Useful if you have many pictures, but want to see only the first few for testing purposes.

`var=value`

sets the variable `var` to `value`. This variable, or an expression containing it, can be used instead of any numerical parameter. Variable names may contain lower and uppercase letters, digits or underscores, with the restriction that they must start with a letter and may not end in an underscore.

`#`

denotes a comment

`xmark`, `ymark`, `Xmark`, `Ymark`

These commands place one or more labels along the x- or y-axes, either below (`xmark` and `ymark`) or above (`Xmark` and `Ymark`) the axis.

For the `[xYy]mark` commands a parameter containing any character other than `[-.0-9]` is interpreted as the label (this implies that you cannot use expressions here!) to be placed and its position is expected in the next parameter. If a parameter is just a number, it is placed at that x-position. If you want a number to be interpreted as a label, put it in braces: `{1950}`.

`arcst`

(Mnemonic: center start theta.) Draws an arc with its center in `xcenter`, `ycenter`, starting in `xstart`, `ystart` and with an arc length of `theta` degrees.

`arcset`

(Mnemonic: start end theta.) Draws an arc starting in `xstart`, `ystart` ending in `xend`, `yend` and with an arc length of `theta` degrees.

`arcrtt`

(Mnemonic: center radius theta1 theta2.) Draws an arc with its center in `xcenter`, `ycenter`, a radius `radius` starting at `theta1` degrees and ending at `theta2` degrees.

`arc3`

(Mnemonic: 3 points.) Draws an arc starting at `(x1,y1)`, through `(x2,y2)` and ending in `(x3,y3)`.

`xdrop`, `ydrop`, `xydrop`

These commands draw dotted arrows perpendicularly to the x-axis, the y-axis and both axes, respectively, ending on the axes with the arrow head.

`arrow`

draws an arrow from `(x1,y1)` to `(x2,y2)` labeled on its tail with `label`

`label`

draws a label at `(x,y)`. `YX` tells how it will be adjusted: for `Y=t,b,c` `(x,y)` will be, in the y-direction, on top, bottom or center of the label respectively, for `X=l,r,c` it will be, in the x-direction, left, right or center adjusted on `(x,y)`. Thus

```
label tl 0 0 Hello World!
```

will draw the string "Hello World" with its lower left corner at (0,0)

`xlabels`

draws many labels, starting at (x,y) , and incrementing x with dx after every label. YX: see `label`. Labels may not contain spaces; if you need spaces, use `-` instead.

`ylabels`

Same as `xlabels`, but incrementing y with dy instead.

`point`

draws points (dots) at (x_1,y_1) , (x_2,y_2) et cetera.

`dpoint`

draws points (dots) starting at (x_1,y_1) and then moving by (dx_1,dy_1) , (dx_2,dy_2) et cetera.

`lines`

draws line segments from (x_1,y_1) to (x_2,y_2) , (x_3,y_3) et cetera.

`dlines`

draws line segments starting at (x_1,y_1) and then moving by (dx_1,dy_1) , (dx_2,dy_2) et cetera.

`curve`

draws a bezier curve from (x_1,y_1) to (x_2,y_2) , (x_3,y_3) et cetera.

`dcurve`

draws a bezier curve starting at (x_1,y_1) and then moving by (dx_1,dy_1) , (dx_2,dy_2) et cetera.

`rect`

draws a rectangle with diagonal points at (x_1,y_1) and (x_2,y_2) .

`drect`

draws a rectangle with diagonal points at (x,y) and $(x+dx,y+dy)$.

`crect`

clears a rectangle with diagonal points at (x_1,y_1) and (x_2,y_2) .

`dcrect`

clears a rectangle with diagonal points at (x,y) and $(x+dx,y+dy)$.

`arect`

draws a rectangle with a width `width` and a height `height`; the middle of the bottom is at (xc,yc) and the centerline through (xc,yc) makes an angle `theta` with the x-axis.

`bar`

draws a equivalent with `rect_x-xdev_θ_x+xdev_height`

`func`

draws the function given by `expression-in-x` between `xmin` and `xmax`, stepping with `step` units in the x-direction. Note that the `expression-in-x` will be evaluated by `Metafont`, so you will have to use `metafont` syntax.

`grid`

draw dotted grid lines at distances `dx` and `dy` in the x- and y directions; the gaps between the dots are set to `xgap` an `ygap` respectively. For an esthetic appearance, be sure to use integer `dx/xgap` and `dy/ygap` ratios.

`hatch`

hatch the closed curve that follows.

`bhat`

starts a path that will eventually be closed, and then hatched.

`ehat`

ends a path started with `bhat`, closes it and then hatches it.

anything else

will be inserted as is in the macro file, and therefore should be a valid `mfpic` statement. You use this when you need such a statement only once, or a few times and therefore see no need to define a proper command for it.

Running `mkpic/TeX`

The effect of running

```
mkpic picfile
```

is the creation of `picfile.mac`, which you can `\input` into a TeX or ConTeXt source, and `picfile.sty` which can be input into a LaTeX source using the `\usepackage` command.

After running TeX (or LaTeX or ConTeXt), you will find a file `picfile.mf` and you will have to run Metafont on it, which (assuming you configured TeX for 600 dpi) produces `picfile.600gf`. This file will have to be converted to a pk file with `gftopk`. Finally, you need to run TeX, normally at least twice, again. So for pdfLaTeX the sequence is:

```
mkpic picfile pdflatex file.tex mf picfile gftopk picfile.600gf pdflatex file pdflatex file
```

Bug

Currently only up to 256 pictures can be generated. In the future this problem will probably be solved by introducing more than one font and generating tex-command names that have the font name in front.

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