M4D File Formats

M4D input files - see m4d.commands.

arraydump file - input for **arrayread**

For each array the file contains a one line header with the name, size and type (d, i or c). If the array size is 1, the value is on the same line. Otherwide this is followed by the values in the order stored starting on a new line. The arrays may be read in again using arrayread. Commands varinit (formats 2 and 3) and keyword also read arraydump files. Note a formatted dump is used so that the files may also be read by humans. Example:

```
TIME 1 d 0.1
idim4d 4 i
 14 27 27 1
rmsmm 20 d
 1.07189 2 1.57362 7.50391 1.19978e-08 6.43822e-08 0 0 0 0
 0 0 0 0 0 0 0 0 0 0
csym 12 c
 x x n y z z s s s s R R
```

color.map - file to translate pixel color numbers to rgb colors for creating .gif files.

The standard color.map file is in directory jgm. It begins

```
55 1 1 0 3
0 255 255 255
1 0 0 0
2 255 0 0
3 0 220 0
4 255 255 0
5 0 0 255
```

(lines omitted) and ends

```
53 220 150 0
54  160 0 255
```

The first line gives the number of colors (55) followed by other information used by a different program. M4D reads only the first value, then looks for a newline character. The maximum number of colors which may be specified are 256. The following lines contain *ii,ir,ig,ib* for each color. Note each must start on a new line as again M4D looks for a newline charater after each color is read so that you may comment the file.

ii is the color number. This is ignored, as the program specifies the number by the position of the line in the file.

ir,ig,ib are the red, green, blue intensities for the color. These must be from 0 to 255.

The standard color.map file contains colors
White, black, red, greed, yellow, blue (colors 0-5)

5 shades of grey (colors 6-10)
a sequence of blues, greens, yellows to reds, and purples (colors 11-50) suitable for color contour plots.

font.list - file listing available pixel image fonts.

The standard font.list file, in directory jgm, contains:

```
2
letters18x30.fmap
symbol23x23.fmap
```

The first line indicates that there are 2 fonts, and the next 2 lines give the file names. Note, while M4D reads both fonts, the plot package is currently limited so that only the first one is used. The font is used to label color bar and lineplot images.

.gif - a GIF87a pixel image (Compuserve) gif format.

The outgif option of command image creates .gif files.

.fmap - map for a fixed size pixel image font.

Example:

```
9 15  test9x15
|| 3 60 15 60
```

The first line gives the pixel width and height for all the characters in the font, followed by the font name. Each letter then begins a new line. The letter used for the symbol is gives twice, as the first and second characters on the line. In the above sample the first letter is the vertical line, |. Following that is the number of entries used to describe the symbol, (in this case, 3.) and then the entries themselves. The entries gives the off/on off/on... sequence; the number of pixels to be left blank, followed by the number to be filled. These are given top-down. then across

Two .fmap files come with M4D, letters18x30.fmap and symbol23x23.fmap in directory jgm.

jgm - a pixel image format specified by color number.

This simple pixel image format specifies on the first line the pixel-width, *iw*, then the pixel-height, *ih,* of the image. Following are pairs of numbers, *num, ic* where *num* is the number of pixels to be filled with color *ic*. The total pixels specified are *iw***ih*. The array is filled top-down, then left-to-right. Example:

```
6 6
3 11 3 12 3 11 3 12 3 11 3 12  3 30 3 40 3 30 3 40 3 30 3 40
```

corresponds to 4 3x3 squares with colors

```
11  30
12  40
```

The outjgm option of command image creates jgm format files.

lineplot file - input for **lineplot**

Tabular stype data for creating lineplots.

Example:

```
Test data
3
t    aa   ff
0     4    6
1.    4   6.6
3     5.   8.2
4.    7.   10.
```

The first line is a one line comment. Then the number of variables (3), then the variable names (t aa ff), then the values, until an end-of-file is reached.

Commands iplaneint, keyword, lineoutput, lineoutputijk create lineplot files.

MEFP grid file - 3-d grids in MEFP format

Example: (file geom.cartesian in the box cavity example)

```
3-d cartesian a=x b=y c=z, no walls extent -100 100 in x, y and z
 2 2 2 1
-100 100 -100 100
-100  1 -100 -100 -100  1 -100 100 -100
     1 -100 -100 100   1 -100 100 100
100  1 100 -100 -100  1 100 100 -100
     1 100 -100 100   1 100 100 100
```

The format is:

A one line comment

igm,jgm,kgm, (grid dimensions), lcoor (assumed to be 1)

(bm(j), j=1,jgm), (cm(k), k=1,kgm)

(am(i), (ltm(i,j,k),x(i,j,k),y(i,j,k),z(i,j,k),j=1,jgm, k=1,kgm),i=1,igm)

igm, jgm, kgm, lcoor and ltm(i,j,k) are integers. ltm specifies the point type with ltm=1 or 2 for flow points, 3 or 4 for wall points and 5 for internal solid points. am, bm, cm, are floating point 1-d parameters for the i, j, k, grid directions. They must monotomically increase with i, j, k.

MEFP grids are read by the subroutine readmefpgrid in readmefpgrid.c.