NAME

postmd – matrix display program for PostScript printers

SYNOPSIS

postmd [**–b** *num*] [**–c** *num*] [**–d** *dimen*] [**–g** *list*] [**–i** *list*] [**–m** *num*] [**–n** *num*] [**–o** *list*] [**–p** *mode*] [**–w** *window*] [**–x** *num*] [**–y** *num*] [*file* . . .]

/usr/lib/lp/postscript/postmd

DESCRIPTION

The **postmd** filter reads a series of floating point numbers from *files*, translates them into a PostScript gray scale image, and writes the results on the standard output. In a typical application the numbers might be the elements of a large matrix, written in row major order, while the printed image could help locate patterns in the matrix. If no *files* are specified, or if – is one of the input *files*, the standard input is read.

OPTIONS

–b *num* Pack the bitmap in the output file using *num* byte patterns. A value of 0 turns off all packing of the output file. By default, *num* is **6.**

–c *num* Print *num* copies of each page. By default, only one copy is printed.

–d *dimen* Sets the default matrix dimensions for all input *files* to *dimen*. The *dimen* string can be given as rows or rows**x**columns. If *columns* is omitted it will be set to rows. By default, **postmd** assumes each matrix is square and sets the number of rows and columns to the square root of the number of elements in each input file.

–g *list* *list* is a comma or space separated string of integers, each lying between 0 and 255 inclusive, that assigns PostScript gray scales to the regions of the real line selected by the **–i** option. 255 corresponds to white, and 0, to black. The **postmd** filter assigns a default gray scale that omits white (that is, 255) and gets darker as the regions move from left to right along the real line.

–i *list* *list* is a comma, space or slash(/) separated string of *N* floating point numbers that partition the real line into 2*N*+1 regions. The *list* must be given in increasing numerical order. The partitions are used to map floating point numbers read from the input *files* into gray scale integers that are either assigned automatically by **postmd** or arbitrarily selected using the **–g** option. The default interval *list* is **–1,0,1**, which partions the real line into seven regions.

–m *num* Magnify each logical page by the factor *num*. Pages are scaled uniformly about the origin which, by default, is located at the center of each page. The default magnification is **1.0.**

–n *num* Print *num* logical pages on each piece of paper, where *num* can be any positive integer. By default, *num* is set to **1.**

–o *list* Print pages whose numbers are given in the comma separated *list*. The list contains single numbers *N* and ranges *N1* – *N2*. A missing *N1* means the lowest numbered page, a missing *N2* means the highest. The page range is an expression of logical pages rather than physical sheets of paper. For example, if you are printing two logical pages to a sheet, and you specified a range of **4,** then two sheets of paper would print, containing four page layouts. If you specified a page range of **3-4,** when requesting two logical pages to a sheet; then *only* page 3 and page 4 layouts would print, and they would appear on one physical sheet of paper.

−p *mode* Print *files* in either portrait or landscape *mode.* Only the first character of *mode* is significant. The default *mode* is portrait.

−w *window*
Window is a comma or space separated list of four positive integers that select the upper left and lower right corners of a submatrix from each of the input *files*. Row and column indices start at 1 in the upper left corner and the numbers in the input *files* are assumed to be written in row major order. By default, the entire matrix is displayed.

−x *num* Translate the origin *num* inches along the positive x axis. The default coordinate system has the origin fixed at the center of the page, with positive x to the right and positive y up the page. Positive *num* moves everything right. The default offset is **0** inches.

−y *num* Translate the origin *num* inches along the positive y axis. Positive *num* moves everything up the page. The default offset is **0.**

Only one matrix is displayed on each logical page, and each of the input *files* must contain complete descriptions of exactly one matrix. Matrix elements are floating point numbers arranged in row major order in each input file. White space, including newlines, is not used to determine matrix dimensions. By default, **postmd** assumes each matrix is square and sets the number of rows and columns to the square root of the number of elements in the input file. Supplying default dimensions on the command line with the **−d** option overrides this default behavior, and in that case the dimensions apply to all input *files*.

An optional header can be supplied with each input file and is used to set the matrix dimensions, the partition of the real line, the gray scale map, and a window into the matrix. The header consists of keyword/value pairs, each on a separate line. It begins on the first line of each input file and ends with the first unrecognized string, which should be the first matrix element. Values set in the header take precedence, but apply only to the current input file. Recognized header keywords are **dimension**, **interval**, **grayscale**, and **window**. The syntax of the value string that follows each keyword parallels what is accepted by the **−d**, **−i**, **−g**, and **−w** options.

EXAMPLES

For example, suppose file initially contains the 1000 numbers in a 20x50 matrix. Then you can produce exactly the same output by completing three steps. First, issue the following command line:

example% postmd −d20x50 −i"−100 100" −g0,128,254,128,0 *file*

Second, prepend the following header to *file*:

dimension 20x50
interval −100.0 .100e+3
grayscale 0 128 254 128 0

Third, issue the following command line:

example% postmd *file*

The interval list partitions the real line into five regions and the gray scale list maps numbers less than −100 or greater than 100 into 0 (that is, black), numbers equal to −100 or 100 into 128 (that is, 50 percent black), and numbers between −100 and 100 into 254 (that is, almost white).

FILES

/usr/lib/lp/postscript/forms.ps
/usr/lib/lp/postscript/ps.requests

SEE ALSO

dpost(1), **postdaisy**(1), **postdmd**(1), **postio**(1), **postprint**(1), **postreverse**(1), **posttek**(1)

DIAGNOSTICS

An exit status of **0** is returned if *files* were successfully processed.

NOTES

The largest matrix that can be adequately displayed is a function of the interval and gray scale lists, the printer resolution, and the paper size. A 600x600 matrix is an optimistic upper bound for a two element interval list (that is, five regions) using 8.5x11 inch paper on a 300 dpi printer.

Using white (that is, 255) in a gray scale list is not recommended and won't show up in the legend and bar graph that **postmd** displays below each image.