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## NAME

mm2gv – Matrix Market-DOT converters

## SYNOPSIS

**mm2gv** [ **-cluv?** ] [ **-Ui** ] [ **-outfile** ] [ *file* ]

## DESCRIPTION

**mm2gv** converts a sparse matrix of the Matrix Market format to a graph in the GV (formerly DOT) format. If the matrix  $M$  is not square, the graph is considered bipartite and the matrix is viewed as a bipartite graph adjacency matrix, with the rows and columns of the matrix specifying the two sets of vertices. Equivalently, the matrix is converted into a symmetric square matrix

$$\begin{bmatrix} 0 & M \\ M^T & 0 \end{bmatrix}$$
 a block matrix with square blocks of 0's in the upper left and lower right, the upper right block being  $M$  and the lower left block being the transpose of  $M$ . This matrix is then viewed as the adjacency matrix of the graph.

For a square matrix, **mm2gv** uses it directly as an adjacency matrix if its pattern of non-zero entries is symmetric; otherwise, it will treat it as a bipartite graph as with the case of non-square matrices. This behavior can be modified by the **-U** flag.

## OPTIONS

The following options are supported:

- c** This flag causes **mm2gv** to assign colors to the edges. The matrix element is scaled to the range [0,1] depending on where it lies between the minimum and maximum set matrix values. This scaled value is used as the "*wt*" attribute of the corresponding edge. In addition, this scalar value is mapped to an RGB value, which is stored as the edge "*color*".
- l** If set, **mm2gv** attaches a label to the graph indicating the base name of the input file, and the number of nodes and edges.
- u** If specified, the graph is assumed to be undirected. By default, the graph generated is directed.
- v** This flag causes **mm2gv** to store the matrix values as the "*len*" attribute of the corresponding edge.

### **-U***bflag*

Specifies how square matrices are handled. If *bflag* is 0, a square matrix will always be treated as an adjacency matrix. If *bflag* is 1 (the default), a square matrix with a symmetric pattern of non-zero entries will be used as an adjacency matrix; otherwise, it will be used a bipartite graph. If *bflag* is 2, a symmetric matrix will be used as an adjacency matrix; otherwise, it will be used a bipartite graph. If *bflag* is 3, any input matrix will be treated like a bipartite graph.

### **-o***outfile*

Prints output to the file *outfile*. If not given, **mm2gv** uses stdout.

## OPERANDS

The following operand is supported:

*file* Name of the file in MatrixMarket format. If no *file* operand is specified, the standard input will be used.

## RETURN CODES

Return 0 if there were no problems during conversion; and non-zero if any error occurred.

## AUTHORS

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## ADDITIONAL INFO

See <http://math.nist.gov/MatrixMarket/> for description of the format and <http://www.cise.ufl.edu/research/sparse/matrices/> for a large collection of sparse matrices in this format.