

**NAME**

gvgen – generate graphs

**SYNOPSIS**

**gvgen** [ **-d?** ] [ **-cn** ] [ **-C***x,y* ] [ **-g**/*f*/*x,y* ] [ **-G**/*f*/*x,y* ] [ **-hn** ] [ **-kn** ] [ **-b***x,y* ] [ **-pn** ] [ **-sn** ] [ **-Sn** ] [ **-tn** ] [ **-T***x,y* ] [ **-wn** ] [ **-o***outfile* ]

**DESCRIPTION**

**gvgen** generates a variety of simple, regularly-structured abstract graphs.

**OPTIONS**

The following options are supported:

- c** *n*     Generate a cycle with *n* vertices and edges.
- C** *x,y*   Generate an *x* by *y* cylinder. This will have  $x*y$  vertices and  $2*x*y - y$  edges.
- g** /*f*/*x,y*     Generate an *x* by *y* grid. If *f* is given, the grid is folded, with an edge attaching each pair of opposing corner vertices. This will have  $x*y$  vertices and  $2*x*y - y - x$  edges if unfolded and  $2*x*y - y - x + 2$  edges if folded.
- G** /*f*/*x,y*     Generate an *x* by *y* partial grid. If *f* is given, the grid is folded, with an edge attaching each pair of opposing corner vertices. This will have  $x*y$  vertices.
- h** *n*     Generate a hypercube of degree *n*. This will have  $2^n$  vertices and  $n*2^{(n-1)}$  edges.
- k** *n*     Generate a complete graph on *n* vertices with  $n*(n-1)/2$  edges.
- b** *x,y*   Generate a complete *x* by *y* bipartite graph. This will have  $x+y$  vertices and  $x*y$  edges.
- p** *n*     Generate a path on *n* vertices. This will have  $n-1$  edges.
- s** *n*     Generate a star on *n* vertices. This will have  $n-1$  edges.
- S** *n*     Generate a Sierpinski graph of order *n*. This will have  $3*(3^{(n-1)} - 1)/2$  vertices and  $3^n$  edges.
- t** *n*     Generate a binary tree of height *n*. This will have  $2^{n-1}$  vertices and  $2^{n-2}$  edges.
- T** *x,y*   Generate an *x* by *y* torus. This will have  $x*y$  vertices and  $2*x*y$  edges.
- w** *n*     Generate a path on *n* vertices. This will have  $n-1$  edges.
- o** *outfile*     If specified, the generated graph is written into the file *outfile*. Otherwise, the graph is written to standard out.
- d**        Make the generated graph directed.
- ?**        Print usage information.

**EXIT STATUS**

**gvgen** exits with 0 on successful completion, and exits with 1 if given an ill-formed or incorrect flag, or if the specified output file could not be opened.

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**SEE ALSO**

gc(1), acyclic(1), gvpr(1), gvcolor(1), ccomps(1), sccmap(1), tred(1), libgraph(3)