

**NAME**

gvgen – generate graphs

**SYNOPSIS**

**gvgen** [ **-d?** ] [ **-cn** ] [ **-C<sub>x,y</sub>** ] [ **-g/f<sub>x,y</sub>** ] [ **-G/f<sub>x,y</sub>** ] [ **-hn** ] [ **-kn** ] [ **-b<sub>x,y</sub>** ] [ **-pn** ] [ **-sn** ] [ **-Sn** ] [ **-tn** ] [ **-T<sub>x,y</sub>** ] [ **-wn** ] [ **-nprefix** ] [ **-Nname** ] [ **-ooutfile** ]

**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<sub>x,y</sub>**   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<sub>x,y</sub>**   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 <sub>x,y</sub>**   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 <sub>x,y</sub>**   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.
- n *prefix***   Normally, integers are used as node names. If *prefix* is specified, this will be prepended to the integer to create the name.
- N *name***   Use *name* as the name of the graph. By default, the graph is anonymous.
- 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)