## NAME

gvgen − generate graphs

## SYNOPSIS

**gvgen** [ **−d?** ] [ **-c***n* ] [ **-C***x,y* ] [ **-g***[***f***]x,y* ] [ **-G***[***f***]x,y* ] [ **-h***n* ] [ **-k***n* ] [ **-b***x,y* ] [ **-p***n* ] [ **-s***n* ] [ **-S***n* ] [ **-t***n* ] [ **-T***x,y* ] [ **-w***n* ] [ **-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.

## AUTHOR

Emden R. Gansner <erg@research.att.com>

## SEE ALSO

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