

NAME

gvgen - generate graphs

SYNOPSIS

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gvgen [ -dv? ] [ -in ] [ -cn ] [ -Cx,y ] [ -g/f/x,y ] [ -G/f/x,y ] [ -hn ] [ -kn ] [ -bx,y ] [ -Bx,y ] [ -mn ] [ -Mx,y ] [ -pn ] [ -rx,y ] [ -Rx ] [ -sn ] [ -Sn ] [ -Sn,d ] [ -tn ] [ -td,n ] [ -Tx,y ] [ -Tx,y,u,v ] [ -wn ] [ -nprefix ] [ -Nname ] [ -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.

-B *x,y*

Generate an *x* by *y* ball, i.e., an *x* by *y* cylinder with two "cap" nodes closing the ends. This will

have $x*y + 2$ vertices and $2*x*y + y$ edges.

-m *n*

Generate a triangular mesh with n vertices on a side. This will have $(n+1)*n/2$ vertices and $3*(n-1)*n/2$ edges.

-M *x,y*

Generate an x by y Moebius strip. This will have $x*y$ vertices and $2*x*y - y$ edges.

-p *n*

Generate a path on n vertices. This will have $n-1$ edges.

-r *x,y*

Generate a random graph. The number of vertices will be the largest value of the form 2^n-1 less than or equal to x . Larger values of y increase the density of the graph.

-R *x*

Generate a random rooted tree on x vertices.

-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.

-S *n,d*

Generate a d -dimensional Sierpinski graph of order n . At present, d must be 2 or 3. For d equal to 3, there will be $4*(4^{n-1} + 1)/2$ vertices and $6 * 4^{n-1}$ edges.

-t *n* Generate a binary tree of height n . This will have 2^n-1 vertices and 2^n-2 edges.

-t *h,n*

Generate a n -ary tree of height h .

-T *x,y***-T *x,y,u,v***

Generate an x by y torus. This will have $x*y$ vertices and $2*x*y$ edges. If u and v are given, they specify twists of that amount in the horizontal and vertical directions, respectively.

-w *n*

Generate a path on n vertices. This will have $n-1$ edges.

-i n Generate n graphs of the requested type. At present, only available if the **-R** flag is used.

-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.

-v Verbose output.

-? 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

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SEE ALSO

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