

NAME

gvgen – generate graphs

SYNOPSIS

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gvgen [ -dv? ] [ -in ] [ -cn ] [ -C $x,y$  ] [ -g/ $f$ / $x,y$  ] [ -G/ $f$ / $x,y$  ] [ -hn ] [ -kn ] [ -b $x,y$  ] [ -B $x,y$  ] [ -mn ] [ -M $x,y$  ] [ -pn ] [ -r $x,y$  ] [ -R $x$  ] [ -sn ] [ -Sn ] [ -Sn, $d$  ] [ -tn ] [ -td, $n$  ] [ -T $x,y$  ] [ -T $x,y,u,v$  ] [ -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 / 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 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.
- 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)