NAME

gvgen – generate graphs

SYNOPSIS

gvgen [−**dV?**] [**-i**n] [**-c**n] [**-C**x,y] [**-g[f]**x,y] [**-G[f]**x,y] [**-h**n] [**-k**n] [**-b**x,y] [**-B**x,y] [**-m**n] [**-M**x,y] [**-p**n] [**-r**x,y] [**-R**x] [**-s**n] [**-S**n] [**-t**n] [**-t**d,n] [**-T**x,y] [**-T**x,y,u,v] [**-w**n] [**-n**$prefix$] [**-N**$name$] [**-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 $2\hat{\ }n$ vertices and $n*2\hat{\ }(n-1)$ 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 $2\hat{\ }n-1$ 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 $3*(3\hat{\ }(n-1) - 1)/2$ vertices and $3\hat{\ }n$ edges.

−**t** n Generate a binary tree of height n. This will have $2\hat{\ }n-1$ vertices and $2\hat{\ }n-2$ 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.

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SEE ALSO

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