

1. Queen moves. This is a short demonstration of how to generate and traverse graphs with the Stanford GraphBase. It creates a graph with 12 vertices, representing the cells of a 3×4 rectangular board; two cells are considered adjacent if you can get from one to another by a queen move. Then it prints a description of the vertices and their neighbors, on the standard output file.

An ASCII file called `queen.gb` is also produced. Other programs can obtain a copy of the queen graph by calling `restore_graph("queen.gb")`. You might find it interesting to compare the output of QUEEN with the contents of `queen.gb`; the former is intended to be readable by human beings, the latter by computers.

```
#include "gb_graph.h"    /* we use the GB_GRAPH data structures */
#include "gb_basic.h"    /* we test the basic graph operations */
#include "gb_save.h"     /* and we save our results in ASCII format */

main()
{ Graph *g, *gg, *ggg;
  g = board(3L,4L,0L,0L,-1L,0L,0L); /* a graph with rook moves */
  gg = board(3L,4L,0L,0L,-2L,0L,0L); /* a graph with bishop moves */
  ggg = gunion(g,gg,0L,0L); /* a graph with queen moves */
  save_graph(ggg,"queen.gb"); /* generate an ASCII file for ggg */
  ⟨Print the vertices and edges of ggg 2⟩;
  return 0; /* normal exit */
}

2. ⟨Print the vertices and edges of ggg 2⟩ ≡
if (ggg ≡ Λ) printf("Something went wrong (panic code %ld)!\n", panic_code);
else {
  register Vertex *v; /* current vertex being visited */
  printf("Queen Moves on a 3x4 Board\n\n");
  printf("The graph whose official name is\n%s\n", ggg→id);
  printf("has %ld vertices and %ld arcs:\n\n", ggg→n, ggg→m);
  for (v = ggg→vertices; v < ggg→vertices + ggg→n; v++) {
    register Arc *a; /* current arc from v */
    printf("%s\n", v→name);
    for (a = v→arcs; a; a = a→next) printf(" → %s, length %ld\n", a→tip→name, a→len);
  }
}
}
```

This code is used in section 1.

3. Index.*a*: 2.*arcs*: 2.*board*: 1.*g*: 1.*gg*: 1.*ggg*: 1, 2.*gunion*: 1.*id*: 2.*len*: 2.*main*: 1.*name*: 2.*next*: 2.*panic_code*: 2.*printf*: 2.*restore_graph*: 1.*save_graph*: 1.*tip*: 2.*v*: 2.*vertices*: 2.

⟨ Print the vertices and edges of $ggg\ 2$ ⟩ Used in section 1.

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QUEEN

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