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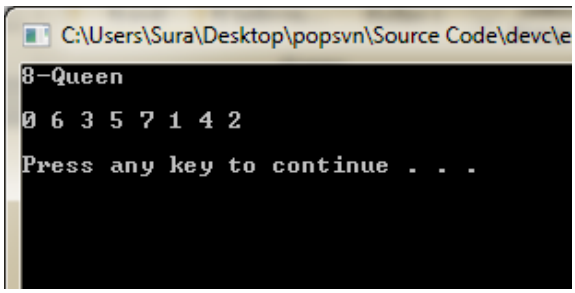
Homework 2

//แก้ไขจากตัวอย่างใน GAlib โดยใช้ binary to decimal gnome และ สร้าง fitness function ใหม่

```
#include <ga/GASimpleGA.h>
#include <ga/ga.h>
#include <ga/std_stream.h>
#include <cmath>
#define cout                STD_COUT
#define NBITS               (3)
#define MIN_VALUE      ((int)0)
#define MAX_VALUE      ((int)7)

float Objective(GAGenome &);
bool isMet(int i1, int j1, int i2, int j2);

int main(int argc, char **argv)
{
 cout << "8-Queen\n\n";
 cout.flush();

 for(int ii=1; ii<argc; ii++) {
  if(strcmp(argv[ii++],"seed") == 0) {
   GARandomSeed((unsigned int)atoi(argv[ii]));
  }
 }

 GABin2DecPhenotype map;
 for(int i = 0; i <= MAX_VALUE; i++)
 {
  map.add(NBITS, MIN_VALUE, MAX_VALUE);
 }

 GABin2DecGenome genome(map, Objective);

 int popsize  = 100;
 int ngen     = 10000;
 float pmut   = 0.001;
 float pcross = 0.9;

 GASimpleGA ga(genome);
 ga.populationSize(popsize);
 ga.nGenerations(ngen);
 ga.pMutation(pmut);
 ga.pCrossover(pcross);
 ga.evolve();
```

```
  cout << ga.statistics().bestIndividual() << "\n\n";

  system("PAUSE");
  return 0;
}

float Objective(GAGenome& g) {
  GABin2DecGenome & genome = (GABin2DecGenome &)g;
  double score = 0;
  int met = 0;
  for(int i = 0; i < genome.nPhenotypes()-1; i++)
  {
    for(int j = i+1; j < genome.nPhenotypes(); j++)
    {
      if(isMet(i, (int)genome.phenotype(i), j, (int)genome.phenotype(j)))
      {
        met++;
      }
    }
  }
  score = 28-met;
  return score;
}

bool isMet(int i1, int j1, int i2, int j2)
{
    if(j1 == j2)
      return true;
    else if(abs(i1-i2) == abs(j1-j2))
      return true;
    else return false;
}
```



Output