King Saud University
College of Computer and Information Sciences
Department of Computer Science

CSC 361: Artificial Intelligence
First Semester 1443-1444 H (FALL 2021)

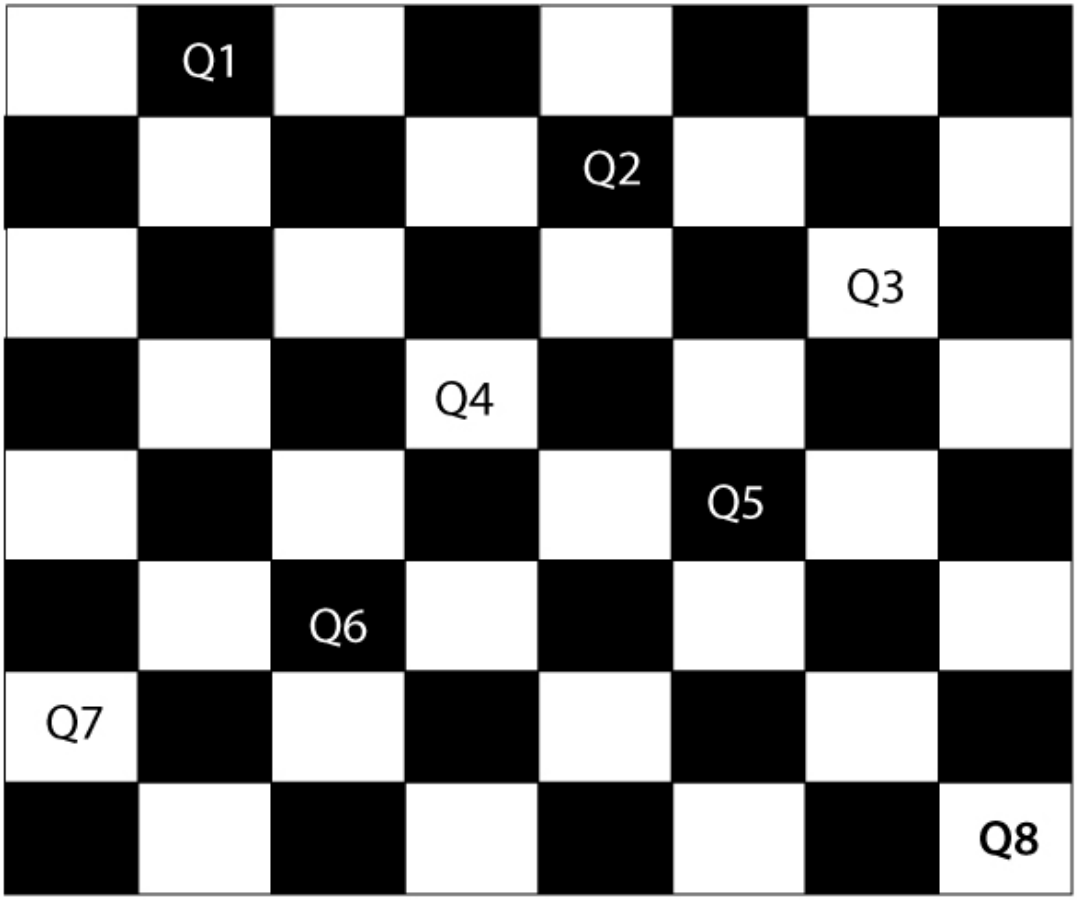
Project

Due Date: 24 NOVEMBER 2021

N-Queens Problem

The aim of this problem is to place N queens on a chessboard of size NxN in an order where no queen may attack another. A queen can attack other queens either diagonally, or in same row or column (See Figure-1).

Figure 1: Example of 8-queens



Program description:

You need to write a program to implement and solve the N-queens problem.

Input: N (integer)

Strategy (Hill Climbing, Genetic Algorithm)

Process: Solve the N-queens problem using each of the given strategies.

Output: For each strategy, your program is expected to produce the following items:

1- The maximum solvable N within 1 minute of search time.
2- Given N, your program should produce and print the solution (if any) along with the time spent to reach the solution.

What to submit:

- A report, containing the following sections:
  1. Brief description of the problem
  2. Brief description of your implementation
  3. Experimental results for a range of values for N, showing search time using each of the strategies given above (Hill Climbing, Genetic Algorithm)
  4. Analysis/Discussion of results
- You are required to prepare and deliver a 7 minutes presentation, and to make a demo
- You are required to work in groups of 2-3 students per group

Evaluation Criteria:

- Development (20%)
- Report (50%): (Structure, Format, Language, Clarity, Richness)
- Presentation (24%): (Structure, Clarity, Teamwork, time management)
- Participation (6%): Individual evaluation for participation during other presentations