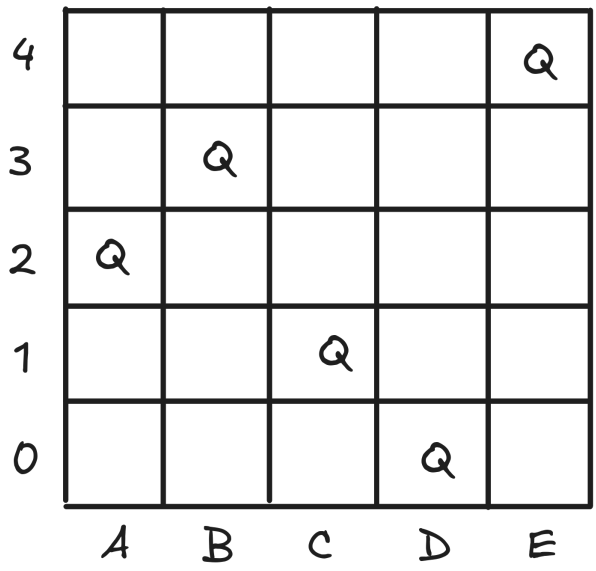
CSCI 4511/6511 - Exam Prep 2

Friday, 7 Feb 2025

Instructions:
This is ungraded exam prep to be completed as an in-class exercise.

1 Local Search



For this five-queens problem, with goal state of a board with no conflicts between the queens, describe how you would determine the next board position to evaluate using hill-climbing search. Your description should include:

- The objective function
- The value of this function for each proposed move from the current state (write directly on the board)
- The mathematical basis for choosing the next move

2 Minimax Search

Consider framing the game of "Tic-Tac-Toe" so that it can be solved with Minimax search.

2.1 `GameState`

In Python,[1] define a class `GameState` that:

- Captures the board state as a class variable
- Has a class method `toMove(self)` that returns which player moves next:
  - Max writes Xs, and goes first (return string `'Max'`)
  - Min writes Os, and goes second (return string `'Min'`)

[1] For exams, you won't lose any points for syntax errors, as long as your logic is clear and correct.

2.2 `getSuccessors`

- Define a `getSuccessors(self)` method that that returns a list of successor state-action pairs from the current state

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