CMPSCI 383, Fall 2011
Homework 2
Due in class or in the main office of the Computer Science building by 4:00 PM,
October 13, 2011

Problem 1: Exercise 4.1 on page 157
Problem 2: Exercise 4.10 on page 159
Problem 3: Exercise 4.12 on page 160
Problem 4: Exercise 5.6 on page 197
Problem 5: Exercise 5.7 on page 197
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Problem 8: Exercise 5.21 on page 200
Programming Assignment: We have implemented MiniMax for the game of
Othello, and will provide you with source code to make two MiniMax players
play against each other. The source code can be found on the course website.
Modify StudentPlayer.java so that it uses AlphaBeta pruning. Next modify the
evaluation function *public int heuristic(int[][] board)* to one that you expect to
perform better. Your modified evaluation function must at least:

- Right now, owning a square of the board gives a player +1 in the evalu-
  ation function, however some squares are better than others. Change the
  evaluation function to reflect this.

- Be time-dependent. That is, the number of moves made so far should some
  how influence the heuristic. You may use the total number of pieces played
  as a measure of time.

Submit the following:

- A print out of your StudentPlayer.java, and any other classes you created.
  Your code should be well commented.

- A comparison of the runtime of MiniMax and AlphaBeta for 3 different
  depths (what depths work will be computer-dependent).

- Describe your new evaluation function.

- Run ten games of your agent with the new heuristic against the MiniMax
  player with the original heuristic, both with the same depth, and report the
  total number of games won by each agent.