

CSCI 5582 Quiz 1

Name: _____

On my honor, as a University of Colorado at Boulder student, I have neither given nor received unauthorized assistance on this work. _____.

1. **(5 points)** Which of the following search algorithms are *complete*?
 - Breadth First
 - Depth First
 - Uniform cost
 - IDA*

2. **(5 points)** True or False: Any search algorithm that is *complete* and *optimal* must examine all possible paths to a goal state.

3. **(5 points)** What problem with A* is IDA* designed to solve and what technique does it use to solve it?

4. **(5 Points)** If MiniMax is applied to a game with a branching factor of 10 to a depth of 6 moves (3 by each player) how many times will the board evaluation function be called?

5. Consider the following predicament. You are working in a route finding domain and you are employing A* with a straight-line heuristic. Unfortunately, the device used to generate the heuristic values sporadically returns a value less than the true straight-line distance.
 - a) **(5 points)** What effect, if any, does this broken heuristic value generator have on the optimality of your A* search?
 - b) **(5 points)** What effect, if any, does it have on the time and space performance of the search? Why?
 - c) **(5 points)** Suggest a simple patch to your A* implementation that will ameliorate the effect of this broken device.

Use the back of this page for your answers to this question.