Saagar Sanghavi, Jin Seok Won, Kevin Zhu

Project T Final

State Spaces and Search Quiz Questions

Question 1: Recall in the coding assignment, the robot could only move one joint at a time, at a specific amount, 30 degrees. If the angle the robot could move at one time is changed to 15 degrees, how would this affect the size of the state space?

Question 2: What is the state space size of a baseball game when you only consider the runners in each of the bases, number of outs, balls, and strikes?

Question 3: What is the runtime complexity of DFS and what is the worst case scenario in terms of runtime?

Question 4: Suppose we knew the structure of the state space and all of the costs were equal. When would we use DFS versus BFS?

Question 5: Suppose your search graph has negative edge costs. Is UCS optimal in this case? Explain.

Question 6: The fringe of UCS is usually implemented with which type of data structure?

Question 7: For A* Search to be optimal and complete, should the heuristic be an underestimate or overestimate of the actual distance to the goal node? Explain.

Question 8: Which of the following is an example of a difference between UCS and Dijkstra's Algorithm? Choose all that apply.

Question 9: When all of the edge weights in the state space graph are equal, which search algorithm would perform best, given no information about the goal node?

Question 10: Unlike the graph search algorithms you may have seen in a class like CS 61B, the search algorithms here generate the graph "on demand." Why would this be beneficial?