

Q1. Describe Block's World with the help of diagram and Predicate Calculus. Show the rules for "clear" and "stack" operation in Predicate Calculus. (10)

Q2. a. What is the major difference between Hill-climbing search and Best-first search (5)

b. Describe how hill-climbing is used for machine translation, including the evaluation function that is used to determine the best next state (What is the start state, transformation/evaluation function, and selection of next state) (5)

Q3. Consider the search space below, where S is the start node and G1 and G2 are goal nodes. Arcs are labeled with the value of a *cost function*; the number gives the cost of traversing the arc. Above each node is the value of a *heuristic function*; the number gives the estimate of the distance to the goal. Assume that uninformed search algorithms always choose the left branch first when there is a choice. Assume that the algorithms do *not* keep track of and recognize repeated states.

For each of the following search strategies, (30)

(a) Indicate which goal state is reached first (if any) and

(b) List *in order*, all the states that are popped off the list.

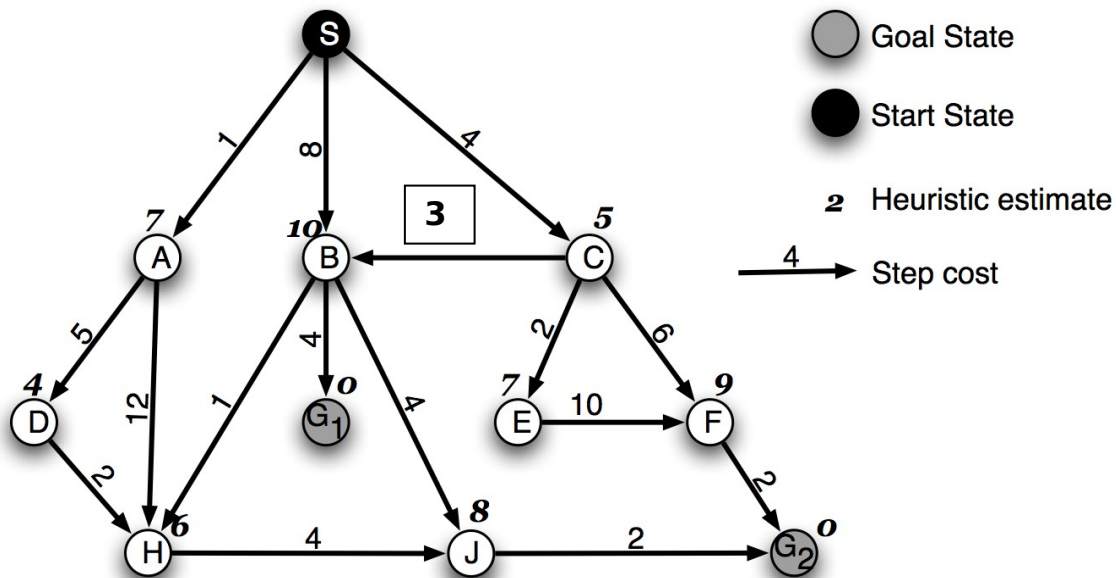
Artificial Intelligence

QUIZ 1

Date: September 19, 2018

Marks: 40

Time: 30 min.



SOLUTION

Breadth-first search

(a) -----

(b) -----

Depth-first search

(a) -----

(b) -----

A*

(a) -----

(b) -----