

Intro to Artificial Intelligence

Assignment 3

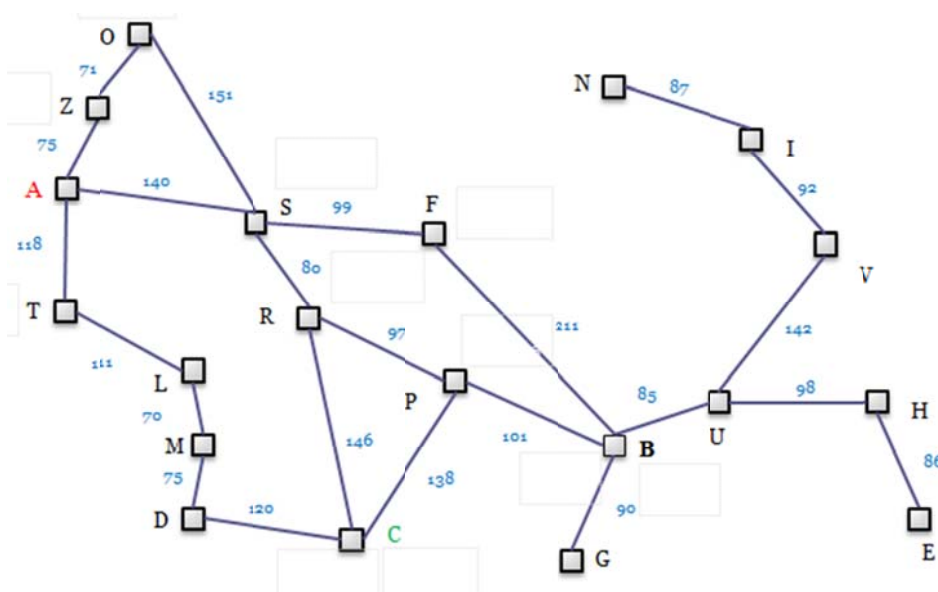
Due: Next week section.

1. True or False:

- a. The searching algorithm is optimal if it is able to find the goal at the optimal path with respect to the frontiers selection criteria.
- b. Breadth first search is an optimal algorithm.
- c. Depth first search is an optimal algorithm.
- d. Breadth first search saves more memory than Depth first search.
- e. Uniform-cost search is a complete searching algorithm.
- f. Depth first search is a complete searching algorithm.

2. The following figure represent a map between a set of nodes where the distances between nodes are showed over the arches. The showed table contains information about the estimated distances between every node and node "C".

- a. Use Breadth first search to find the path between A and C and give its cost and length.
- b. Use Depth first search to find the path between A and C and give its cost and length.
- c. Use Uniform Cost search to find the path between A and C and give its cost and length.
- d. Use A* search to find the path between A and C and give its cost and length.



Straight line distance to C

A	340
B	190
C	0
D	120
E	370
F	210
G	150
H	390
I	500
L	200
M	170
N	540
O	380
P	138
R	146
S	215
T	310
U	280
V	450
Z	350

3. What is the advantages of using A* Search compared to Uniform cost search?
4. Write a Python program for A* search algorithm. The program takes a graph map as input and return a path as output. Test the program to find a path from A to J in the figure showed with question 2.