### Assignment 3

The due date for submitting this assignment has passed. As per our records you have not submitted this assignment.

The figure shows a map with several locations on a grid where each tile is 10km x 10km in size. In this map, S is the start node and G is the goal node, the locations are connected by two way edges (or roads). The MoveGen returns nodes in alphabetical order. Assume that RemoveSeen procedure removes children already in OPEN or CLOSED list. Use Manhattan distance when needed.

1. In the map, starting with node S, list the first 7 nodes inspected (or expanded) by Depth First Search (DFS) algorithm. List the nodes in the order they were inspected. If the algorithm terminates early then list all the nodes seen.

   Enter a comma separated list of node labels. Do not enter spaces, periods or other characters in the textbox

   No, the answer is incorrect.
   Score: 0
   Accepted Answers:
   (Type: String) S,L,D,A,K,F,C

2. In the map, starting with node S, what is the 15th node inspected (or expanded) by Depth First Search (DFS) algorithm? If the algorithm terminates early then name the last node inspected.

   Enter a node label in the textbox

   No, the answer is incorrect.
   Score: 0
   Accepted Answers:
3) In the map, starting with node S, list the first 7 nodes inspected (or expanded) by the Breadth First Search (BFS) algorithm. List the nodes in the order they were inspected. If the algorithm terminates early then list all the nodes seen.

Enter a comma separated list of node labels. Do not enter spaces, periods or other characters in the textbox.

No, the answer is incorrect.
Score: 0
Accepted Answers:
(String) S,L,O,U,V,D,H

4) In the map, starting with node S, what is the 15th node inspected (or expanded) by Breadth First Search (BFS) algorithm? If the algorithm terminates early then name the last node inspected.

Enter a node label in the textbox.

No, the answer is incorrect.
Score: 0
Accepted Answers:
(String) K

5) What is the heuristic value of node E?

Enter an integer in the textbox.

No, the answer is incorrect.
Score: 0
Accepted Answers:
(Numeric) 90

6) What is the heuristic value of node W?

Enter an integer in the textbox.

No, the answer is incorrect.
Score: 0
Accepted Answers:
(Numeric) 140

7) Which node has the largest heuristic value? What is its heuristic value?

Enter the node label and the heuristic value as a comma separated list. For example: A,170

No, the answer is incorrect.
Score: 0
Accepted Answers:
(String) P1,270

8) Which node has the smallest heuristic value? What is its heuristic value?

Enter the node label and the heuristic value as a comma separated list. For example: A,170

No, the answer is incorrect.
Score: 0
Accepted Answers:
(String) G,0

9) In the map, starting with node S, list the first 7 nodes inspected (or expanded) by the Best First Search algorithm. If the algorithm terminates early then list the nodes inspected including the goal node. List the nodes in the order they were inspected.

Enter a comma separated list of node labels. Do not enter spaces, periods or other characters in the textbox.

No, the answer is incorrect.
Score: 0
Accepted Answers:
10) In the map, starting with node S, what is the 15th node inspected (or expanded) by Best First Search algorithm? If the algorithm terminates early then list the last node inspected.

Enter a node label in the textbox.

No, the answer is incorrect.
Score: 0
Accepted Answers:
(Type: String) G

11) In the map, starting with node S, list the first 7 nodes inspected (or expanded) by Hill Climbing algorithm. If the algorithm terminates early then list the nodes inspected. List the nodes in the order they were inspected.

Enter a comma separated list of node labels. Do not enter spaces, periods or other characters in the textbox.

No, the answer is incorrect.
Score: 0
Accepted Answers:
(Type: String) S,O,Q,M

12) In the map, starting with node S, what is the 15th node inspected (or expanded) by Hill Climbing algorithm? If the algorithm terminates early then list the last node inspected.

Enter a node label in the textbox.

No, the answer is incorrect.
Score: 0
Accepted Answers:
(Type: String) M

13) For the given map, which of the algorithms finds a path from the start node S to the goal node G?

- Depth First Search
- Breadth First Search
- Hill Climbing
- Best First Search

No, the answer is incorrect.
Score: 0
Accepted Answers:
Depth First Search
Breadth First Search
Best First Search

14) For the city map given above, ignore all nodes with only one edge. Now try and find a TSP tour for the remaining nodes. Note: It is not a complete graph and only the given edges are to be considered. Choose the correct options below. For the remaining nodes,

- I could not find a tour
- No one can find a tour
- I found one tour
- There appears to be more than one tour
- There is definitely more than one tour

No, the answer is incorrect.
Score: 0
Accepted Answers:
I could not find a tour
I found one tour

15) For the above problem assume that the edge cost is equal to the Euclidean distance between the two nodes. Then

- the Nearest Neighbour algorithm finds a tour
- the Nearest Neighbour algorithm finds an optimal tour
- the Greedy algorithm finds an optimal tour
- None of the above

No, the answer is incorrect.
Score: 0
Accepted Answers:
None of the above

16) Select the correct statements
17) Given a finite state space or a finite solution space, which of these algorithms will always find a path/solution if one exists?

- Depth First Search
- Breadth First Search
- Best First Search
- Beam Search
- Hill Climbing
- Variable Neighbourhood Descent
- Tabu Search

No, the answer is incorrect. Score: 0
Accepted Answers:
- Heuristic function gives an estimate of the distance between a node and its nearest goal node
- Heuristic search is goal directed

18) Working with the 2-City-Exchange or the 2-Edge-Exchange operator means that:

- one is using a Constructive method to solve the TSP
- one is searching for the solution in the State Space
- one is using a Perturbative method to solve the TSP
- one is searching for the solution in the Solution Space

No, the answer is incorrect. Score: 0
Accepted Answers:
- one is using a Perturbative method to solve the TSP
- one is searching for the solution in the Solution Space

19) The Iterated Hill Climbing algorithm

- works only for planning problems
- works only for configuration problems
- can work for both planning and configuration problems
- is one of the approaches for State Space Search
- is one of the approaches for Solution Space Search

No, the answer is incorrect. Score: 0
Accepted Answers:
- works only for configuration problems
- is one of the approaches for Solution Space Search

20) In Week 3 lecture on "The Traveling Salesman Problem" a web resource for TSP (http://comopt.ifi.uni-heidelberg.de/software/TSPLIB95/) was provided. Which of the following types of problems are supported/discussed in that site?

- Hamiltonian cycle problem (HCP)
- Symmetric traveling salesman problem (TSP)
- Asymmetric traveling salesman problem (ATSP)
- Sequential ordering problem (SOP)
- Capacitated vehicle routing problem (CVRP)

No, the answer is incorrect. Score: 0
Accepted Answers:
- Hamiltonian cycle problem (HCP)
- Symmetric traveling salesman problem (TSP)
- Asymmetric traveling salesman problem (ATSP)
- Sequential ordering problem (SOP)
- Capacitated vehicle routing problem (CVRP)