Started on	Sunday, 4 September 2022, 1:53 AM
State	Finished
Completed on	Sunday, 4 September 2022, 1:54 AM
Time taken	1 min 23 secs
Grade	**9.69** out of 10.00 (**96.92**%)

Information

These questions were randomly selected from the previous exams. Please use this opportunity to test your understanding.

Question 1

Correct

Mark 2.00 out of 2.00

Assume that h1(...) is an admissible function. Which functions are admissible in the following?

Select one or more:

- a. h2(...) = h1(...) - 10
- b. h2(...) = 10
- c. h2(...) = h1(...) / 10 ✔
- d. h2(...) = 0 ✔

Your answer is correct.

The correct answers are: h2(...) = h1(...) / 10, h2(...) = 0

Question 2

Correct

Mark 3.00 out of 3.00

All of the state-space search algorithms are the same, except for the data structure of the frontier. Please match the following algorithms with their data structure.

Depth-first search	Stack ✔
Uniform-cost search	Priority Queue (path cost) ✔
A* search	Priority Queue (path cost + heuristic value) ✔
Greedy search	Priority Queue (heuristic value) ✔
Breadth-first search	Queue ✔

Your answer is correct.

The correct answer is: Depth-first search → Stack, Uniform-cost search → Priority Queue (path cost), A* search → Priority Queue (path cost + heuristic value), Greedy search → Priority Queue (heuristic value), Breadth-first search → Queue

Question 3

Partially correct

Mark 3.69 out of 4.00

Consider a state-space with a finite maximum branching factor and maximum depth; the state-space graph is an acyclic graph (no loop). In addition, all actions' costs are the same, and we use an admissible heuristic function. Please answer the following questions:

Completeness and Optimality:

Algorithm	Complete	Optimal
Depth-First Search	Yes ✔	No ✔
Breadth-First Search	Yes ✔	Yes ✔
Uniform cost Search	Yes ✔	Yes ✔
Greedy Search	Yes ✔	No ✔
A* Search	Yes ✔	Yes ✔

Time and Memory Complexity:

- A uniform cost search is the same as a breadth-first search in this case: Yes ✔
- A* will always explore the same number of nodes as UCS: No ✔
- Greedy Search and DFS will use the least amount of memory: No ✖

Yes No

Your answer is partially correct.

You have correctly selected 12.

The correct answer is:

Consider a state-space with a finite maximum branching factor and maximum depth; the state-space graph is an acyclic graph (no loop). In addition, all actions' costs are the same, and we use an admissible heuristic function. Please answer the following questions:

Completeness and Optimality:

Algorithm	Complete	Optimal
Depth-First Search	[Yes]	[No]
Breadth-First Search	[Yes]	[Yes]
Uniform cost Search	[Yes]	[Yes]
Greedy Search	[Yes]	[No]
A* Search	[Yes]	[Yes]

Time and Memory Complexity:

- A uniform cost search is the same as a breadth-first search in this case: [Yes]
- A* will always explore the same number of nodes as UCS: [No]
- Greedy Search and DFS will use the least amount of memory: [Yes]

Question 4

Correct

Mark 1.00 out of 1.00

Given an experiment result of two heuristic functions of 8-puzzle problem here:

	Search Cost (nodes generated)		
d	IDS	A*(h_1)	A*(h_2)
2	10	6	6
4	112	13	12
6	680	20	18
8	6384	39	25
10	47127	93	39
12	3644035	227	73
14	–	539	113
16	–	1301	211
18	–	3056	363
20	–	7276	676
22	–	18094	1219
24	–	39135	1641

Why do h2 generate fewer nodes than h1?

Select one:

- a. h1 is more accurate at approximating the actual cost to the goal than h2.
- b. h2 is not admissible, but h1 is admissible.
- c. h1 is not admissible, but h2 is admissible.
- d. None of the answers are correct.
- e. h2 is more accurate at approximating the actual cost to the goal than h1. ✔

Your answer is correct.

The correct answer is: h2 is more accurate at approximating the actual cost to the goal than h1.

Information

If you want to practice more on the search algorithms (Lecture 3), you can work on the Arad - Bucharest pathfinding exercise.

Again, please help me complete Feedback for Week 4.