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

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:

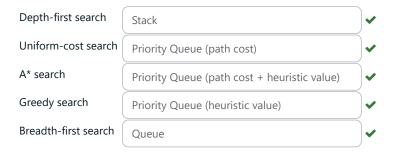
- a. h2(...) = h1(...) 10
- b. h2(...) = 10
- C. h2(...) = h1(...) / 10 ✓
- ☑ d. h2(...) = 0 ✓

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.



# Your answer is correct.

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