CSPB 3202 - Truong - Artificial Intelligence

Started on	Monday, 20 May 2024, 2:17 PM
State	Finished
Completed on	Tuesday, 21 May 2024, 9:11 PM
Time taken	1 day 6 hours

Question **1**

Correct

Marked out of 2.00

You, a noble knight on a quest for treasure, find yourself trapped in a scary cave. Naturally, there is a dragon and a troll in this cave, protecting the treasure.

The cave measure 4x4, where 1 "unit" is a distinct location in which one of you, the troll or the dragon can stand. Each unit tile is only large enough for one of you, the dragon or the troll to occupy. By the laws of magic, the dragon and the troll cannot occupy the same space as the treasure. You, however, can - and want to! - occupy the same space as the treasure.

The image below is an example. (You are the stick figure in row 1, column 2.)

How many world states are there?

Select one:

- ⦿ 47,040 ✔
- ◯ 1
- ◯ 65,536
- ◯ 43,680

Question **2**

Correct

Marked out of 3.00

Consider the task environment of a robotic vacuum cleaning a room. Suppose there is a dog in the vicinity that periodically tracks dirt around the room. Thus, the robot vacuum cannot assume that a particular patch of floor is clean just because it was clean at a previous point in time.

What environment characteristic best describes this particular aspect of the environment?

| stochastic | ✔ |

Since dirt can appear on the previously clean patches of floor, the robotic vacuum agent should keep track of which patches of floor it has cleaned, and when it has cleaned them. That way, once a suitably long period of time has elapsed since the vacuum last cleaned a particular patch of floor, the vacuum will go check this patch again for tidiness.
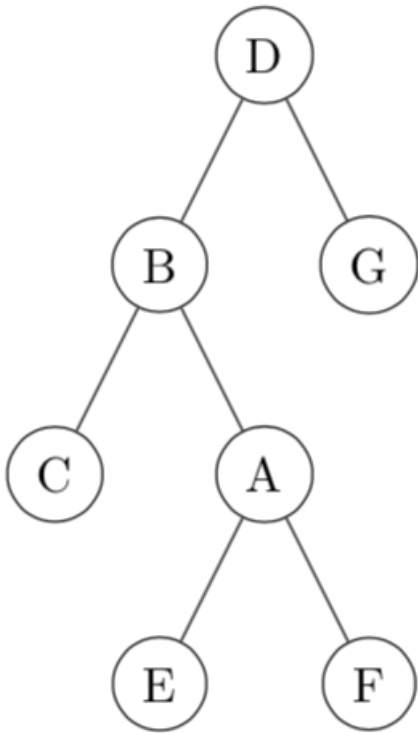
You can certainly argue that this vacuum agent is of multiple types that we discussed in class. Which of the following agent type descriptors **best describes** the fact that the robotic vacuum keeps track of state of affairs in its world?

| model-based | ✔ |

Question **3**

Correct

Marked out of 2.00

In the tree above, what order will nodes be visited in a breadth-first search? Assume left children are visited before right children.

1st node visited: D ✔

2nd node visited: B ✔

3rd node visited: G ✔

4th node visited: C ✔

5th node visited: A ✔

6th node visited: E ✔

7th node visited: F ✔

Question **4**

Correct

Marked out of 2.00

Using the same tree from the previous question, what order will nodes be visited by a depth first search? Again, assume left children are visited before right children.

|		
1st node visited:	D	✔
2nd node visited:	B	✔
3rd node visited:	C	✔
4th node visited:	A	✔
5th node visited:	E	✔
6th node visited:	F	✔
7th node visited:	G	✔

Question **5**

Correct

Marked out of 3.00

Suppose you use **depth-first search** to find a path from state c to state m. Assume that states are added to the queue in **reverse** alphabetical order (i.e., if we are expanding state g, we would add k to the queue, then add f to the queue) and we keep track of visited states so we do not backtrack.

What would the resulting path be? (include c and m in your answer)

1) [c] ✔

2) [b] ✔

3) [a] ✔

4) [h] ✔

5) [i] ✔

6) [m] ✔
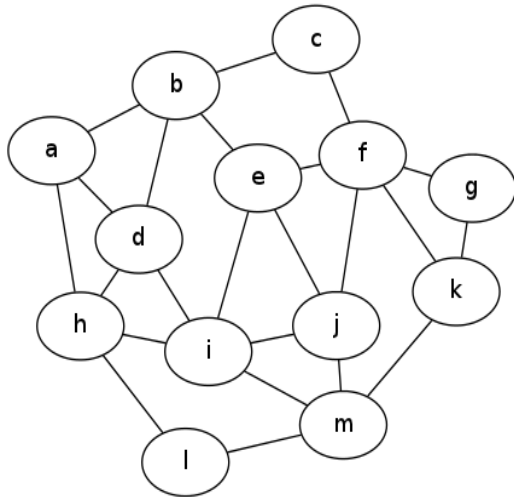
Question **6**

Correct

Marked out of 3.00

Suppose you use **breadth-first search** to find a path from state c to state e. Assume that states are added to the queue in alphabetical order (i.e., if we are expanding state g, we would add f to the queue, then add k to the queue) and we keep track of visited states so we do not backtrack.

In what order are the nodes **generated**? That is, in what order are the nodes put onto the queue representing the frontier? (include c and e in your answer)
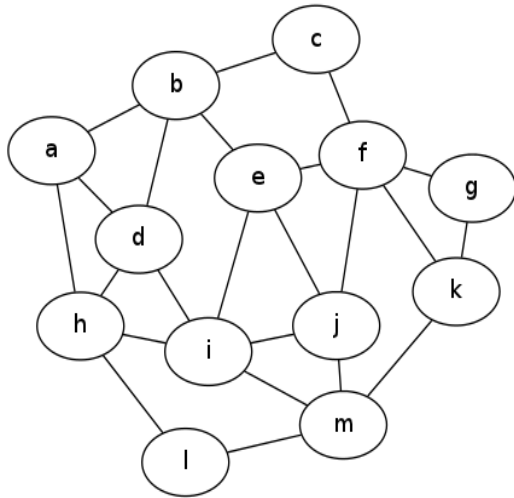
Select one:

- ○ *c-b-f-a-d-e* ✔

- ○ *c-b-e*

- ○ *c-b-a-d-h-i-e*

- ○ *c-b-f-a-d-e-g-j-k-h-i-m-l*