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CS682

### Problem set [0]

① @→ Environment : Maze

Observation : Do sensors give complete world state?  
→ Partially.

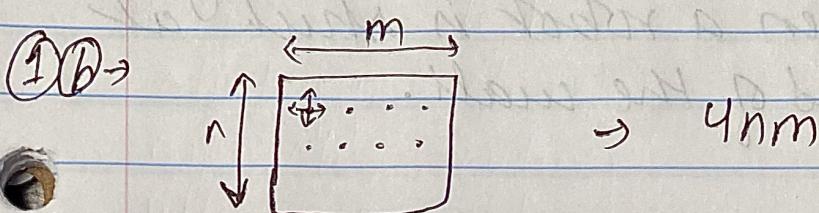
Deterministic : Can next state be determined by current state and action?  
→ Yes.

Episodic : Does quality of action depend only on current state?  
→ No.

Static : Does the environment stay the same while the agent thinks?  
→ Yes.

Discrete : Are the number of precepts and actions limited?

→ Yes



①

① (i)  $\rightarrow$  since, only in intersections a robot can turn. So,  $U_i$ . And rest of the space robot can move only forward and backward direction i.e.  $2(nm - i)$ .

$$\therefore U_i + 2(nm - i)$$

① (ii)  $\rightarrow$  No, because robot moves around the maze without the user's control.

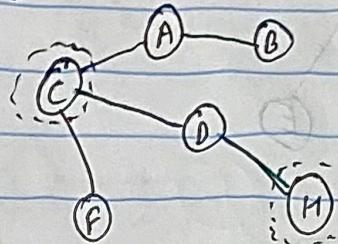
① (iii)  $\rightarrow$  i) Detail of the Maze: It says that maze is in a space that is  $nm \times mn$ . But, it only represents <sup>the</sup> maze a rectangle which might not be enough information.

ii) Robot's movement: It says the robot can turn E, W, N, S and move back and forth. What if the intersection is at  $45^\circ$ . Robot cannot turn.

iii) Dead end wall: Haven't clarify the situation when a robot is stuck at the dead end of the wall.

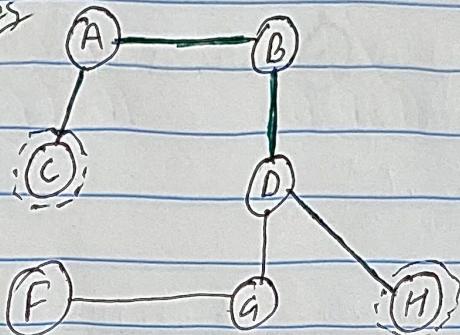
② a

BFS



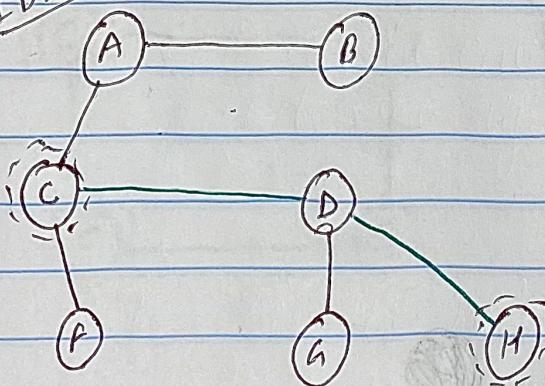
② b

DFS



② c

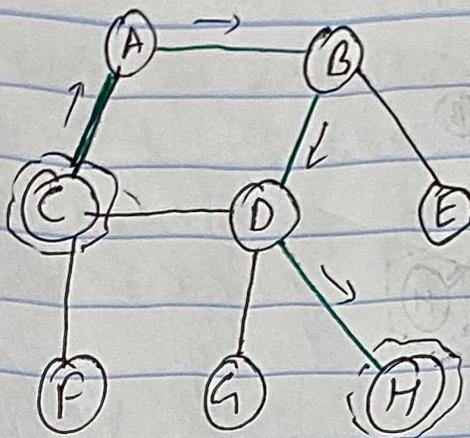
IDDFS



③

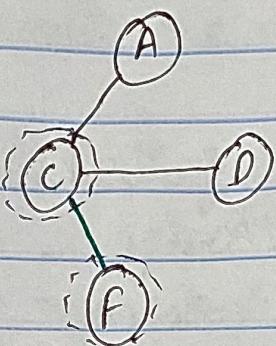
②(d)

A\*



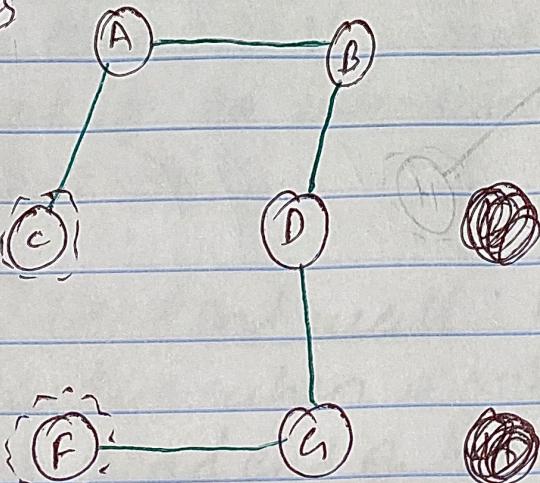
②(e)

BFS



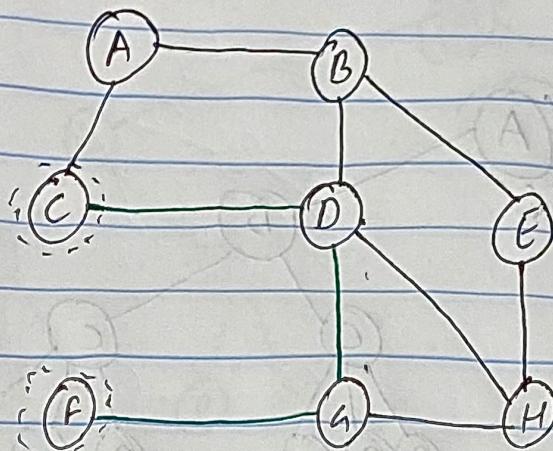
②(f)

DFS

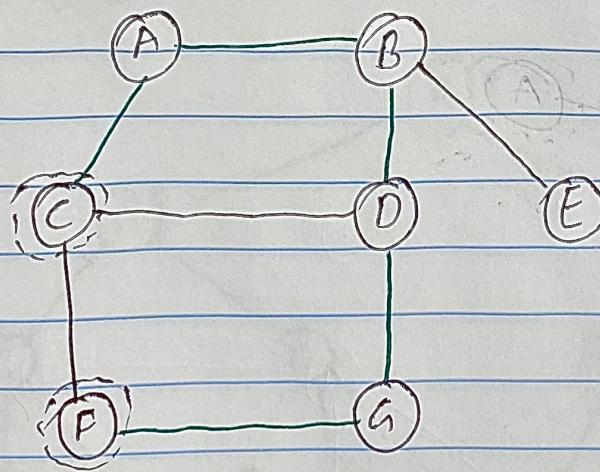


④

(2g)



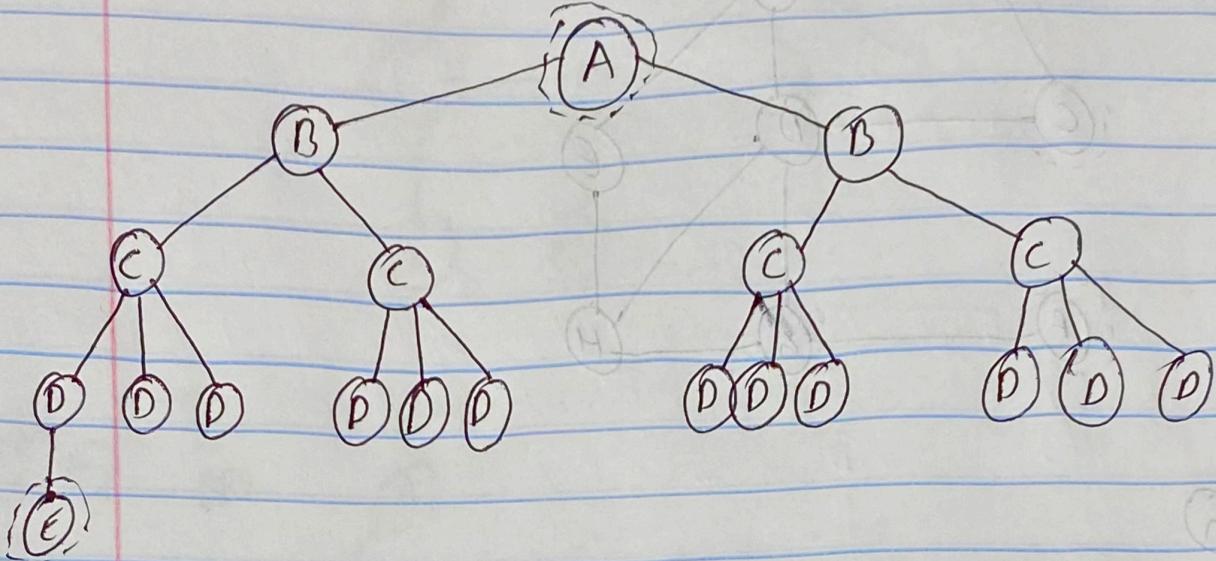
(2h)



(5)

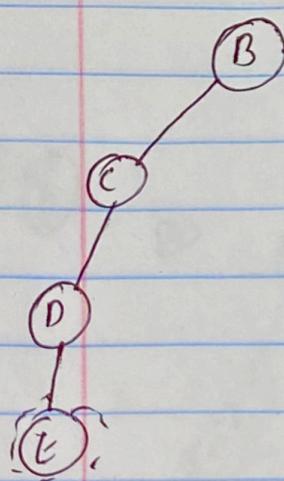
③(a)

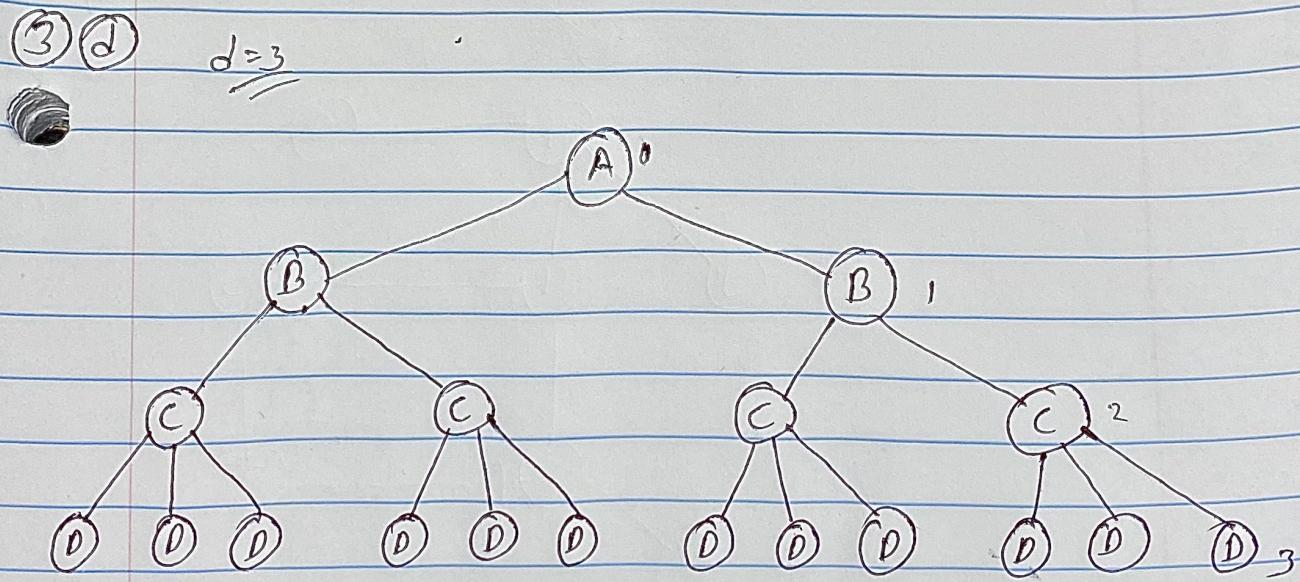
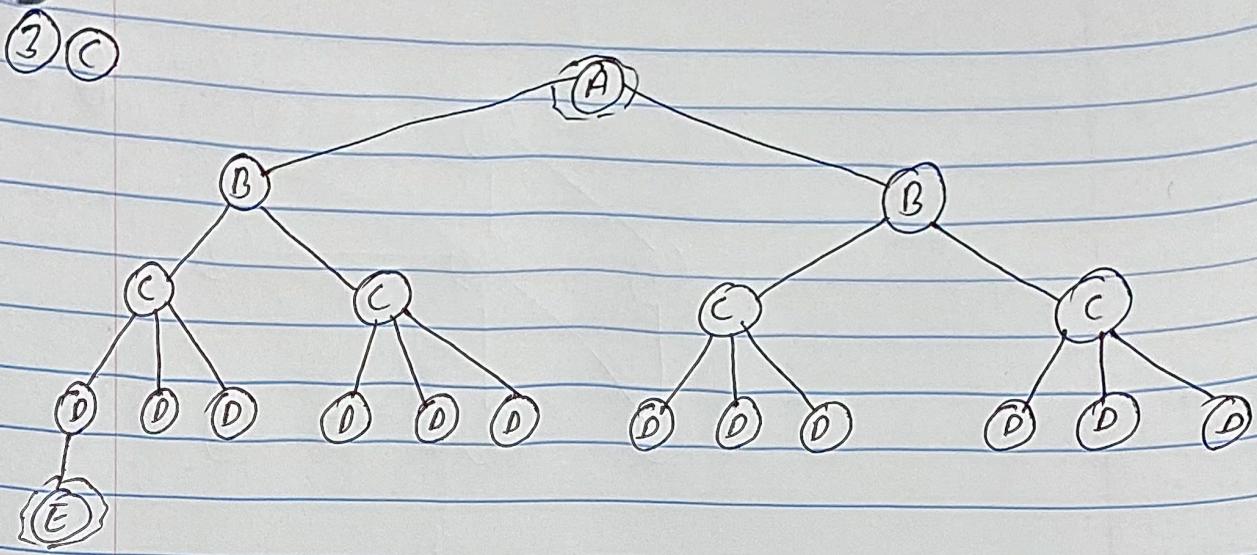
BFS



③(b)

DFS





THE END

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