CS 205 Exam 2

Sri Sai Naga Venkata Adithya Swarna

TOTAL POINTS

42 / 45

QUESTION 1

1 Q1 **6 / 6**

✓ **- 0 pts** *Correct*

- 2 pts For each incorrect answer

QUESTION 2

2 Q2 **4 / 4**

✓ **- 0 pts** *Correct*

- 2 pts Incorrect DFS improvement

- 2 pts Incorrect BFS improvement

QUESTION 3

3 Q3 **8 / 8**

✓ **- 0 pts** *Correct*

- 2 pts For each incorrect value (move cost or heuristic)

- 8 pts Incorrect answer or no answer

QUESTION 4

4 Q4 **12 / 12**

✓ **+ 2 pts** *Correct*

✓ **+ 2 pts** *Click here to replace this description.*

✓ **+ 2 pts** *Click here to replace this description.*

✓ **+ 3 pts** *Click here to replace this description.*

✓ **+ 3 pts** *Click here to replace this description.*

QUESTION 5

5 Q5 **12 / 12**

✓ **- 0 pts** *Correct*

- 2 pts One point incorrect from 1st *

- 4 pts Two points incorrect from 1st *

- 6 pts One technique fully incorrect

- 2 pts One point incorrect from 2nd *

- 4 pts Two points incorrect from 2nd *

- 6 pts Second technique fully wrong

- 2 pts Not putting asterisks or using more than 2(You were clearly warned.)

QUESTION 6

6 Bonus **0 / 3**

- 0 pts Correct

- 1 pts Click here to replace this description.

- 2 pts Click here to replace this description.

✓ **- 3 pts** *Click here to replace this description.*

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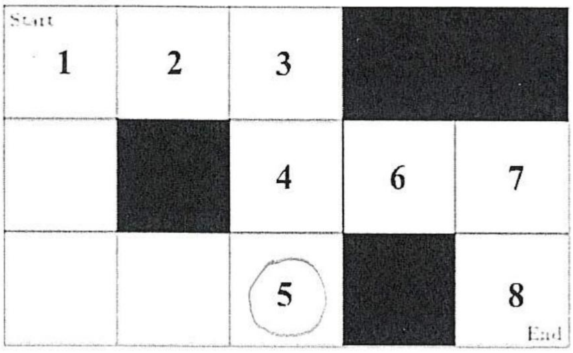
Exam

CS 205 - 2023 Fall

Blind Search



a) Which is most likely, BFS or DFS? DFS

b) Likely Order of Operations: RDUL

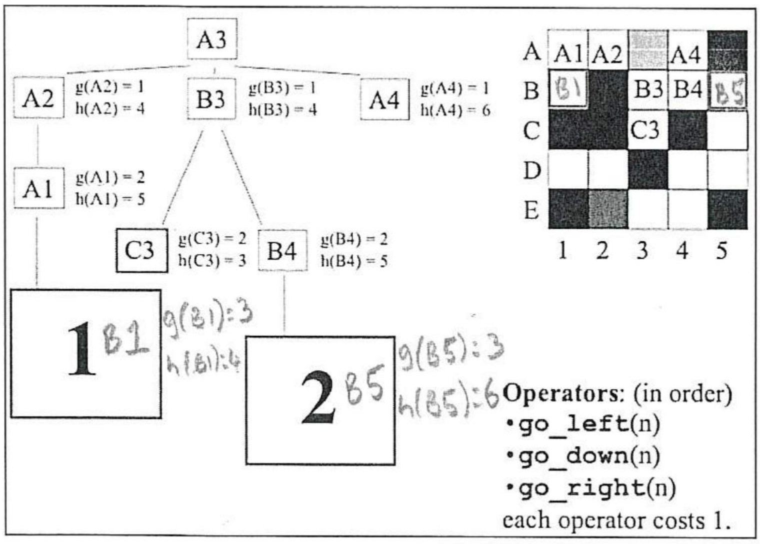
c) Circle the likely error in the diagram.

Breadth-first and depth-first search each have strengths and weaknesses in terms of completeness, optimality, and efficiency (i.e., space and time complexity). One way to improve DFS is to introduce a depth-limit, which improves completeness if the goal is within the limit, but it is still not optimal. Whereas, iterative-deepening is a perfect marriage. Compared to BFS and DFS, what does iterative deepening improve upon?

BFS improvement: Fast and Cheap

DFS improvement: Complete and Optimal

A* Search



Operators: (in order)
- go_left(n)
- go_down(n)
- go_right(n)

each operator costs 1.

Follow direction precisely. The image is annotated like we did in class to demonstrate A* in progress on the given puzzle. Study the annotations carefully, note the syntax. You must precisely finish annotating the two indicated boxes just like the image prescribes (lose points if you are careless).

1. B1, g(B1):3, h(B1):4

2. B5, g(B5):3, h(B5):6

If you want to annotate the image directly as well, feel free. It is not for extra points, only to ensure no mis-interpretation.

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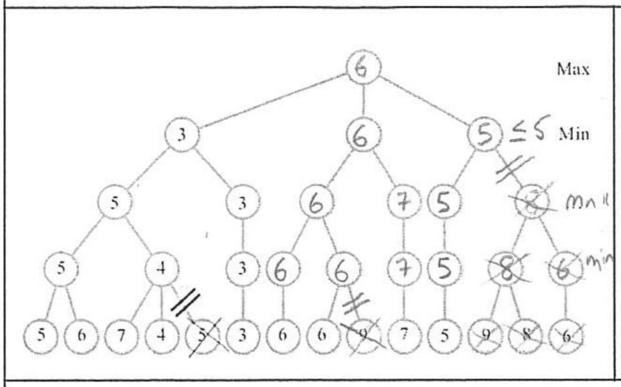
Adversarial Search: Mini-Max w Alpha Beta Pruning	
 Max Min ≤5 max min 6 3 6 5 5 3 6 7 5 8 5 4 3 6 6 7 5 8 6 5 6 7 4 5 3 6 6 9 7 5 9 8 6 // //	In alpha-beta pruning, we are deciding not to examine certain pathways because they provide no advantage. The annotated image demonstrates this principle: the "5" node is pruned and, in reality, we never even know it is a "5" at all (hence the "X" mark to indicate it is never really even examined). Apply the same annotation approach precisely to complete the search. Annotate the image.
Rubric: You are expected to: a) place numbers in all empty nodes, b) use the "//" mark to indicate which search path is pruned, c) use "X" mark to indicate all unvisited nodes.	

CAN YOU FOLLOW DIRECTIONS?

Miscellaneous Search (12 points, plus 3 optional bonus points)

Place an asterisk (*) next to any two (2) and write at least three (3) important facts about each. Use brief and concise but complete sentences only in the space provided.
For those two asterisked as primary, earn 2 points for each fact (or 6 points total per * topic).
As bonus, for 1 point each, you may do up to 3 additional topics. But failure to follow directions may cost you severely, i.e., especially if you do not place the asterisk on the two primary ones.

hill climbing	-> When β=1 ~~for~~ for beam search it is hill climbing -> It is an informed search
☆ **beam search**	-> It is an informed search. -> Variation of best-first search, just limiting beamwidth -> Not optimal and not complete
simulated annealing	-> It can be said as combination of greedy and random search.
genetic algorithms ☆	-> Uses functions like compute fitness -> Approximately optimal and inspired by genetics -> Introduced by John Holland
constraint satisfaction	-> Problems where we donot care about path.
situation calculus	
planning domain	