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Unit 10 - Week 8

Course outline

[How to access the portal](#)[Pre-requisite Assignment](#)[Week 1](#)[Week 2](#)[Week 3](#)[Week 4](#)[Week 5](#)[Week 6](#)[Week 7](#)[Week 8](#)☐ Problem Decomposition with Goal Trees☐ AO* Algorithm☐ Game Playing☐ Quiz : Assignment 8☐ Week 8 Feedback : Artificial Intelligence Search

Assignment 8

The due date for submitting this assignment has passed.

As per our records you have not submitted this assignment. **Due on 2018-09-26, 23:59 IST.**

NOTE : Wherever you are required to type in the answer (instead of clicking on a button) please DO NOT ENTER ANY BLANKS. This assessment is evaluated by a program that does exact string matching. *An extra blank in the answer will result in even a correct answer being evaluated as wrong.*

This “no blanks” policy will hold THROUGHOUT this course.

1) An AND/OR graph embodies a problem solving approach in which

1 point

- ☐ the problem is solved in a goal directed fashion.
- ☐ one can break up a problem into smaller sub-problems.
- ☐ search starts from one state/solution towards the goal state/solution.
- ☐ each node represents a candidate solution.

No, the answer is incorrect.

Score: 0

Accepted Answers:

*the problem is solved in a goal directed fashion.
one can break up a problem into smaller sub-problems.*

2) In an AND/OR graph

1 point

- ☐ an AND node represents choices of how a problem can be solved.
- ☐ an AND node shows how a problem can be decomposed.
- ☐ an OR node represents choices of how a problem can be solved.
- ☐ an OR node shows how a problem can be decomposed.

No, the answer is incorrect.

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- ☐ a complete solution to the original problem.
- ☐ a part of a possible solution to the original problem.
- ☐ a leaf node that needn't be reduced any further.
- ☐ a leaf node that has a primitive/trivial solution associated with it.
- ☐ an AND internal node all whose children are labeled solved.
- ☐ an OR internal node whose marked best choice is labeled SOLVED.

No, the answer is incorrect.**Score: 0****Accepted Answers:**

a part of a possible solution to the original problem.
a leaf node that needn't be reduced any further.
a leaf node that has a primitive/trivial solution associated with it.
an AND internal node all whose children are labeled solved.
an OR internal node whose marked best choice is labeled SOLVED.

4) The heuristic function used by the AO* algorithm represents

1 point

- ☐ an estimate of the distance to the goal node.
- ☐ an estimate of the cost of solving the node.
- ☐ an estimate of cost of decomposing the node.
- ☐ none of the above.

No, the answer is incorrect.**Score: 0****Accepted Answers:**

an estimate of the cost of solving the node.

5) Identify the true statements

2 points

- ☐ When AO* reaches a SOLVED node it always terminates.
- ☐ When AO* picks a SOLVED node it backs up its value to its parents.
- ☐ AO* terminates with a solution when the root is labeled SOLVED.
- ☐ AO* finds an optimal solution when the heuristic function underestimates the actual cost.
- ☐ AO* finds an optimal solution when the heuristic function overestimates the actual cost.
- ☐ The solution found by AO* is a subtree of the AO graph.
- ☐ The solution found by AO* is always a path in the AO graph.

No, the answer is incorrect.**Score: 0****Accepted Answers:**

When AO picks a SOLVED node it backs up its value to its parents.*
AO terminates with a solution when the root is labeled SOLVED.*
AO finds an optimal solution when the heuristic function underestimates the actual cost.*
The solution found by AO is a subtree of the AO graph.*

6) Figure 8.1 below depicts the AO* algorithm working on a problem. The nodes are labeled with their heuristic values. The cost of each edge is 10. **1 point**
 Which of the following node(s), identified by their heuristic value, could the algorithm expand/refine next?

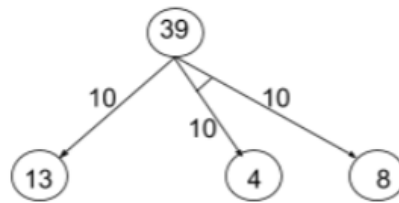


Figure 8.1

- ☐ Node with value 4.
- ☐ Node with value 8.
- ☐ Node with value 13.
- ☐ None of the above.

No, the answer is incorrect.

Score: 0

Accepted Answers:

Node with value 13.

7) Figure 8.2 below depicts the AO* algorithm working on a problem. The nodes are labeled **1 point** with their heuristic values. Each edge is labeled with a different cost. Which of the following node(s), identified by their heuristic value, could the algorithm expand/refine next?

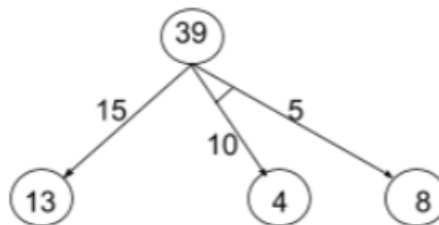


Figure 8.2

- ☐ Node with value 4
- ☐ Node with value 8
- ☐ Node with value 13.
- ☐ None of the above.

No, the answer is incorrect.

Score: 0

Accepted Answers:

Node with value 4

Node with value 8

8) Figure 8.3 represents an AO graph with the values labeled as follows. The value in a single line circle is an estimate of cost. The value in a double lined circle, a SOLVED node, is the actual value. Each edge is labeled with a different cost. What is the value of the root node for the optimal solution for the AO graph?

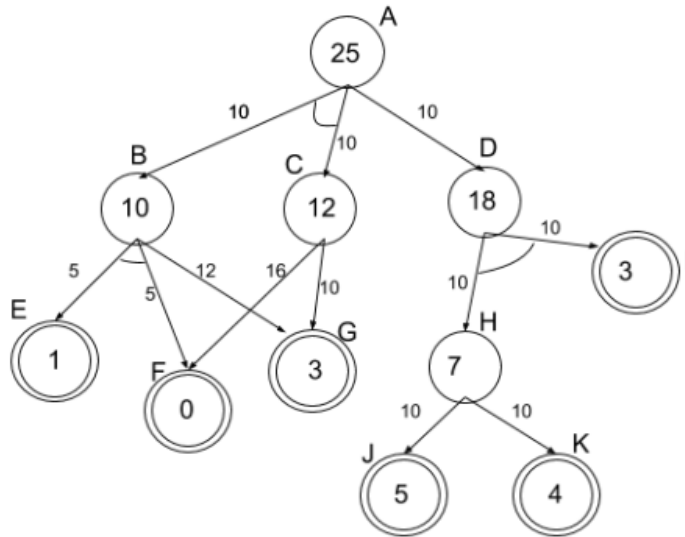


Figure 8.3

Hint

No, the answer is incorrect.

Score: 0

Accepted Answers:

(Type: Numeric) 44

1 point

9) List the nodes (in lexicographic order) that form the part of the solution found by AO* for the above problem. Your answer should be comma separated list of nodes in lexicographic order. For example, if nodes in the solution are P,S,T,R then enter: P,R,S,T as your answer.

No, the answer is incorrect.

Score: 0

Accepted Answers:

(Type: String) A,B,C,E,F,G

1 point

10) The payoff in a game is the benefit that a player gets. The NASH equilibrium in a game depicts

1 point

- ☐ The rational choices of each player.
- ☐ The rational choice of the winner.
- ☐ A decision point from where anyone who deviates gets lower payoff.
- ☐ A decision point from where anyone who deviates gets higher payoff.

No, the answer is incorrect.

Score: 0

Accepted Answers:

The rational choices of each player.

A decision point from where anyone who deviates gets lower payoff.

1 point

- the total payoff of the two players is always zero.

1 point

- S confesses and G confesses.*

1 point



- Score: 0**

Accepted Answers:*MAX wins the game.*

14) In the game tree in Fig. 8.4 if MAX plays the move labeled A then

1 point

- ☐ the game ends in a draw.
- ☐ MAX wins the game.
- ☐ MIN wins the game.
- ☐ Cannot say.

No, the answer is incorrect.**Score: 0****Accepted Answers:***MAX wins the game.*

15) In the game tree in Fig. 8.4 if MAX plays the move labeled B then

1 point

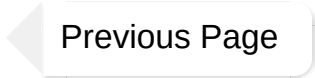
- ☐ the game ends in a draw.
- ☐ MAX wins the game.
- ☐ MIN wins the game.
- ☐ Cannot say.

No, the answer is incorrect.**Score: 0****Accepted Answers:***MIN wins the game.*

16) In the game tree in Fig. 8.4 if MAX plays the move labeled C then

1 point

- ☐ the game ends in a draw.
- ☐ MAX wins the game.
- ☐ MIN wins the game.
- ☐ Cannot say.

No, the answer is incorrect.**Score: 0****Accepted Answers:***the game ends in a draw.*Previous PageEnd

