Unit 10 - Week 8

Assignment 8

The due date for submitting this assignment has passed. Due on 2019-09-25, 23:59 IST.
As per our records you have not submitted this assignment.

Topics: Problem Decomposition, Algorithm AO*, Game Playing

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.
Score: 0
Accepted Answers:
an AND node shows how a problem can be decomposed
an OR node represents choices of how a problem can be solved

3) A SOLVED node in an AND/OR graph represents *1 point*

- 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 the 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* labels a node as SOLVED it always terminates
- When AO* labels a node as SOLVED it backs up its value to its parents
- AO* terminates with a solution when the root is labeled SOLVED
- AO* always finds an optimal solution when the heuristic function underestimates the actual cost
- AO* always 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 labels a node as SOLVED it backs up its value to its parents*
AO terminates with a solution when the root is labeled SOLVED*
AO always 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. *2 points*
Which of the following node(s), identified by their heuristic value, could the algorithm expand/refine next?

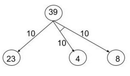

Figure 8.1

- Node with value 4
- Node with value 8
- Node with value 23
- None of the above

No, the answer is incorrect.
Score: 0
Accepted Answers:
Node with value 4
Node with value 8

7) Figure 8.2 below depicts the AO* algorithm working on a problem. The nodes are labeled 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? *2 points*

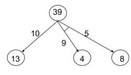

Figure 8.2

- 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 13

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 or heuristic value. The value in a double lined circle, a SOLVED node, is the actual value. The cost of each edge is 10 units. What is the value of the root node for the optimal solution for the AO graph?

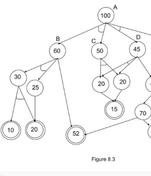

Figure 8.3

No, the answer is incorrect.
Score: 0
Accepted Answers:
(Type: Numeric) 152

2 points

9) Looking at the graph in figure 8.3, which of the following is true? *1 point*

- The heuristic function is definitely admissible
- The heuristic function appears to be admissible
- The heuristic function appears to be non-admissible
- The heuristic function is definitely non-admissible

No, the answer is incorrect.
Score: 0
Accepted Answers:
The heuristic function is definitely non-admissible

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

11) A two person zero sum game is a game in which *1 point*

- the maximum payoff possible for each player is zero
- the minimum payoff possible for each player is zero
- when one player loses the other wins and vice versa
- the total payoff of the two players is always zero

No, the answer is incorrect.
Score: 0
Accepted Answers:
when one player loses the other wins and vice versa
the total payoff of the two players is always zero

12) Two persons A and B were involved in a heinous crime they did together. The police is interrogating them separately. If only one of them confesses he will be let off with a fine of 5 crore, while the other gets a fine of 90 crore. If both confess they get a fine of 60 crore each, and if both deny they get (let off with) a light fine of 30 crores each. Assuming that the two are not related to each other (for example being brothers) and act rationally in their own individual interest, *1 point*
what is the outcome when each acts rationally?

- S confesses and G confesses
- S denies and G confesses
- S confesses and G denies
- S denies and G denies

No, the answer is incorrect.
Score: 0
Accepted Answers:
S confesses and G confesses

13) Figure 8.4 depicts a complete game tree in which MAX is to play. The leaves are labelled with respect to MAX. That is W is a win for MAX, L is a loss for MAX, and D is a draw. What is the outcome of the game when both players play perfectly *1 point*

Figure 8.4

- MAX wins the game
- MIN wins the game
- The game is a draw
- Cannot say

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

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

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