Artificial Intelligence Lab 03 (Alpha-Beta Pruning) EEE472/CSE422 (Winner finding problem)

Optimus

Prime
Megatron

[C05, C06]

Marks 10

recreations of fellow robots for the last 10 years. In Robot Olympic 2082, there is a game called 'ROBO Sword-Fight'. In this game, two robots fight against each other using swords.

One of the participants in the ROBO Sword-Fight is Optimus Prime. Optimus Prime convincingly won each of his previous games. There is only one game left for him to reach glory, and he will have to fight Megatron in that game. In order to win the game, Optimus Prime will have to achieve a certain amount of points.

You have to perform the two tasks given below by using Alpha-Beta pruning.

Task 1: Calculate the points and find if Optimus Prime won or not. [6]

Task 2: Shuffle the generated list by S times and find how many times Optimus Prime won. [4]

[Hint: This will be a 4-level binary tree. On Level 0(MAX), it will be Optimus Prime's Turn. On Level 1(MIN) it will be Megatron's Turn. On Level 2(MAX), again it will be Optimus

consider it as 8

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---**Sample Input 1 :**

Enter your student ID

25485465

Sample Output 1(For Task-1):

Generated 8
random points
between the
minimum and
maximum point
limits: [66, 74,
14, 73, 19, 26,
32, 40]
Total points to win: 56
Achieved point by applying alpha-
beta pruning = 73
The winner is Optimus Prime

[**How to find the winner**: As the achieved point by Optimus Prime is 73 which is greater than 56, Optimus Prime wins. If the Achieved point by applying alpha-beta pruning >= Total points to win, then Winner is Optimus Prime. Otherwise, the Winner is Megatron]

Sample Output 1(For Task-2):

After the shuffle:
List of all
points
values from
each
shuffles:
[66, 73, 66,

Explanation:

25485465 = 5 (5th digit of your student ID)	Minimum points the Optimus Prime can achieve from the game is 5
25485465 = 56*1.5 = 84 (Reverse last 2 digits of your student ID and multiply that number with 1.25 and take nearest integer (upper))	1. Maximum points the Optimus Prime can achieve from the game = 84 2. Total points to win = 56 (reverse of last two digits of the ID)

25485465 = 8 (4th digit of your student ID)	Total number of shuffles, S = 8 (for Task-2)

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Sample Input 2 :

Enter your student ID

17564039

Sample Output 2:

limits: [90, 28,
112, 57, 85, 80,
107, 28]
Total points to win: 93
Achieved point by applying alpha-beta pruning = 85
The Winner is Megatron

After the shuffle:
List of all points values from each shuffle: [107, 80, 85, 80, 85, 107]
The maximum value of all shuffles: 107
Won 2 times out of 6 number of shuffles