



SUPERIOR UNIVERSITY

Artificial Intelligence (Lab)

Assignment - 8

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Program:

Artificial Intelligence.

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Question # 1:

Code of "Min Max Algorithm"

Explanation:

The Min-Max Algorithm is a recursive decision-making algorithm that takes goes through all the possible solutions and provides us with the best possible solution according to the input it receives. It needs the following things to start the program (depth = the current depth of the starting node, usually zero) (node_index = The place of the current node it is working on) (is_max = is a boolean value like 0,1 or True,False that lets us know about the turn of either min or max) (scores = it contains the list of leaf node values at the end of the tree) (height = the total height of the binary tree we are working on).

Code:

```
import math

def minimax(depth,node_index,is_max,scores,height):

    if depth==height:

        return scores[node_index]

    if is_max:

        return max(minimax(depth+1,node_index*2,False,scores,height),
                    minimax(depth+1,node_index*2+1,False,scores,height))

    else:

        return min(minimax(depth+1,node_index*2,True,scores,height),
                    minimax(depth+1,node_index*2+1,True,scores,height))

scores=[9,4,2,8,1,3,6,8]

height=math.log2(len(scores))

print("The optimal value is:")

print(minimax(0,0,True,scores,height))
```

Output:

```
The optimal value is:  
8
```