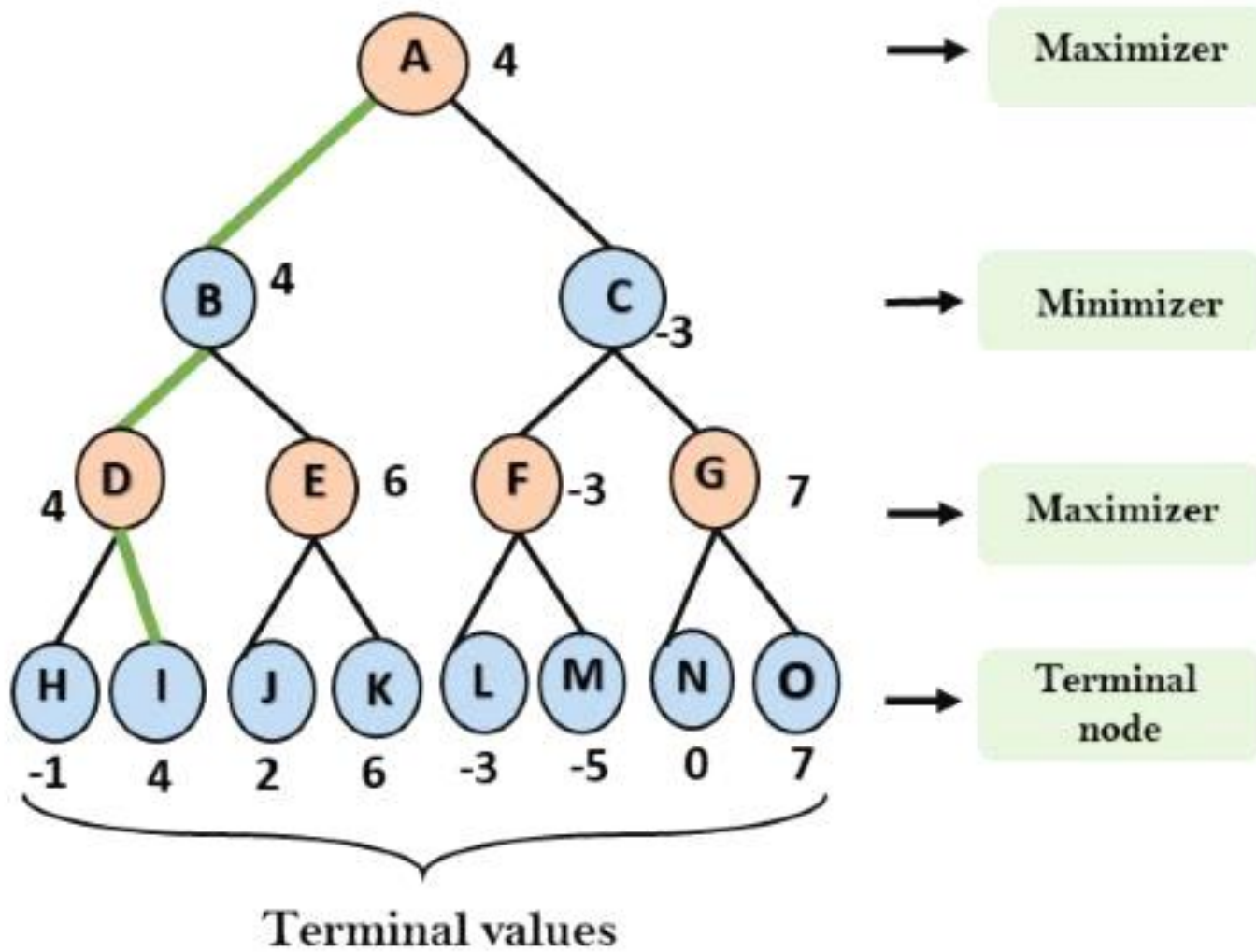


EX.NO: 4

DATE:

MINIMAX ALGORITHM

- A simple example can be used to explain how the minimax algorithm works. We've included an example of a game-tree below, which represents a two-player game.
- There are two players in this scenario, one named Maximizer and the other named Minimizer.
- Maximizer will strive for the highest possible score, while Minimizer will strive for the lowest possible score.
- Because this algorithm uses DFS, we must go all the way through the leaves to reach the terminal nodes in this game-tree.
- The terminal values are given at the terminal node, so we'll compare them and retrace the tree till we reach the original state.



AIM :

To implement MINIMAX Algorithm problem using Python.

CODE :

```
+ Code + Text
Path Round: [ A , C , F , G ]

#Experiment 5 - Minimax
# A simple Python3 program to find
# maximum score that
# maximizing player can get
import math

def minimax (curDepth, nodeIndex,
            maxTurn, scores,
            targetDepth):

    # base case : targetDepth reached
    if (curDepth == targetDepth):
        return scores[nodeIndex]

    if (maxTurn):
        return max(minimax(curDepth + 1, nodeIndex * 2,
                        False, scores, targetDepth),
                minimax(curDepth + 1, nodeIndex * 2 + 1,
                        False, scores, targetDepth))

    else:
        return min(minimax(curDepth + 1, nodeIndex * 2,
                        True, scores, targetDepth),
                minimax(curDepth + 1, nodeIndex * 2 + 1,
                        True, scores, targetDepth))

# Driver code
scores = [3, 5, 2, 9, 12, 5, 23, 23]

treeDepth = math.log(len(scores), 2)

print("The optimal value is : ", end = "")
print(minimax(0, 0, True, scores, treeDepth))

# This code is contributed
# by rootshadow
```

OUTPUT:

```
↗ The optimal value is : 12
```

RESULT :

thus the output is successfully executed and output is verified

