week-3-assignment-2203a51498

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[1]:
```
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 = [-1,4,2,6,-3,-5,0,7]

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

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

```
The optimal value is : 4
```

[2]:
```
MAX, MIN = 1000, -1000

def minimax(depth, nodeIndex, maximizingPlayer,
                        values, alpha, beta):
```

```
        if depth == 3:
                return values[nodeIndex]

        if maximizingPlayer:

                best = MIN


                for i in range(0, 2):

                        val = minimax(depth + 1, nodeIndex * 2 + i,
                                                False, values, alpha, beta)
                        best = max(best, val)
                        alpha = max(alpha, best)


                        if beta <= alpha:
                                break

                return best

        else:
                best = MAX


                for i in range(0, 2):

                        val = minimax(depth + 1, nodeIndex * 2 + i,
                                                    True, values, alpha,␣
 ↪beta)
                        best = min(best, val)
                        beta = min(beta, best)


                        if beta <= alpha:
                                break

                return best
values = [-1,4,2,6,-3,-5,0,7]
print("The optimal value is :", minimax(0, 0, True, values, MIN, MAX))
```

```
The optimal value is : 4
```