

Solution 1

```
1 # Copyright © 2020 AlgoExpert, LLC. All rights reserved.
2
3 # O(n) time | O(log(n)) space
4 def maxPathSum(tree):
5     _, maxSum = findMaxSum(tree)
6     return maxSum
7
8
9 def findMaxSum(tree):
10     if tree is None:
11         return (0, 0)
12
13     leftMaxSumAsBranch, leftMaxPathSum = findMaxSum(tree.left)
14     rightMaxSumAsBranch, rightMaxPathSum = findMaxSum(tree.right)
15     maxChildSumAsBranch = max(leftMaxSumAsBranch, rightMaxSumAsBranch)
16
17     value = tree.value
18     maxSumAsBranch = max(maxChildSumAsBranch + value, value)
19     maxSumAsRootNode = max(leftMaxSumAsBranch + value + rightMaxSumAsBranch, maxSumAsBranch)
20     maxPathSum = max(leftMaxPathSum, rightMaxPathSum, maxSumAsRootNode)
21
22     return (maxSumAsBranch, maxPathSum)
23
```