Solution 1

```go
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package main

type BinaryTree struct {
  Value       int
  Left, Right *BinaryTree
}

// O(n) time | O(log(n)) space
func MaxPathSum(tree *BinaryTree) int {
  _, maxSum := findMaxSum(tree)
  return maxSum
}

func findMaxSum(tree *BinaryTree) (int, int) {
  if tree == nil {
    return 0, 0
  }
  leftMaxSumAsBranch, leftMaxPathSum := findMaxSum(tree.Left)
  rightMaxSumAsBranch, rightMaxPathSum := findMaxSum(tree.Right)
  maxChildSumAsBranch := max(leftMaxSumAsBranch, rightMaxSumAsBranch)

  value := tree.Value
  maxSumAsBranch := max(maxChildSumAsBranch+value, value)
  maxSumAsRootNode := max(leftMaxSumAsBranch+value+rightMaxSumAsBranch, maxSumAsBranch)
  maxPathSum := max(leftMaxPathSum, rightMaxPathSum, maxSumAsRootNode)

  return maxSumAsBranch, maxPathSum
}

func max(first int, vals ...int) int {
  for _, val := range vals {
    if val > first {
      first = val
    }
  }
  return first
}

```