

337. House Robber III

Description

Hints

Submissions

Discuss

Solution

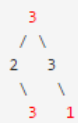
Pick One

The thief has found himself a new place for his thievery again. There is only one entrance to this area, called the "root." Besides the root, each house has one and only one parent house. After a tour, the smart thief realized that "all houses in this place forms a binary tree". It will automatically contact the police if two directly-linked houses were broken into on the same night.

Determine the maximum amount of money the thief can rob tonight without alerting the police.

Example 1:

Input: [3,2,3,null,3,null,1]

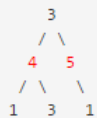


Output: 7

Explanation: Maximum amount of money the thief can rob = 3 + 3 + 1 = 7.

Example 2:

Input: [3,4,5,1,3,null,1]



Output: 9

Explanation: Maximum amount of money the thief can rob = 4 + 5 = 9.

```

public class L337 {
    public class TreeNode {
        int val;
        TreeNode left;
        TreeNode right;

        TreeNode(int x) {
            val = x;
        }
    }
    /*
    * 这是一个动态规划的题目，分为偷不偷当前节点。
    */
    public int rob(TreeNode root) {
        int [] res = dfs(root);
        return Math.max(res[0], res[1]);
    }

    private int [] dfs(TreeNode root){
        int [] dp = new int [2];
        if(root == null)
            return dp;

        int [] left = dfs(root.left);
        int [] right = dfs(root.right);
        //dp[0]表示偷root的，那么左右不能偷，所以用left[1], right[1], left[1]表示不偷左子树的根
        dp[0] = left[1] + right[1] + root.val;
        //dp[1]表示不偷root的，那么左右偷不偷都可以，取最大值。
        dp[1] = Math.max(left[0], left[1]) + Math.max(right[0], right[1]);
        return dp;
    }
}

```