

Problem 979: Distribute Coins in Binary Tree

Problem Information

Difficulty: Medium

Acceptance Rate: 77.22%

Paid Only: No

Tags: Tree, Depth-First Search, Binary Tree

Problem Description

You are given the `root` of a binary tree with `n` nodes where each `node` in the tree has `node.val` coins. There are `n` coins in total throughout the whole tree.

In one move, we may choose two adjacent nodes and move one coin from one node to another. A move may be from parent to child, or from child to parent.

Return _the**minimum** number of moves required to make every node have **exactly** one coin_.

Example 1:

Input: root = [3,0,0] **Output:** 2 **Explanation:** From the root of the tree, we move one coin to its left child, and one coin to its right child.

Example 2:

Input: root = [0,3,0] **Output:** 3 **Explanation:** From the left child of the root, we move two coins to the root [taking two moves]. Then, we move one coin from the root of the tree to the right child.

Constraints:

* The number of nodes in the tree is `n`. * `1 <= n <= 100` * `0 <= Node.val <= n` * The sum of all `Node.val` is `n`.

Code Snippets

C++:

```
/**
 * Definition for a binary tree node.
 * struct TreeNode {
 *     int val;
 *     TreeNode *left;
 *     TreeNode *right;
 *     TreeNode() : val(0), left(nullptr), right(nullptr) {}
 *     TreeNode(int x) : val(x), left(nullptr), right(nullptr) {}
 *     TreeNode(int x, TreeNode *left, TreeNode *right) : val(x), left(left),
 *     right(right) {}
 * };
 */
class Solution {
public:
    int distributeCoins(TreeNode* root) {
        }
    };
}
```

Java:

```
/**
 * Definition for a binary tree node.
 * public class TreeNode {
 *     int val;
 *     TreeNode left;
 *     TreeNode right;
 *     TreeNode() {}
 *     TreeNode(int val) { this.val = val; }
 *     TreeNode(int val, TreeNode left, TreeNode right) {
 *         this.val = val;
 *         this.left = left;
 *         this.right = right;
 *     }
 * }
```

```
* }
*/
class Solution {
public int distributeCoins(TreeNode root) {

}
}
```

Python3:

```
# Definition for a binary tree node.
# class TreeNode:
#     def __init__(self, val=0, left=None, right=None):
#         self.val = val
#         self.left = left
#         self.right = right
class Solution:

    def distributeCoins(self, root: Optional[TreeNode]) -> int:
```