Problem 1973: Count Nodes Equal to Sum of Descendants

Problem Information

Difficulty: Medium
Acceptance Rate: 77.25%
Paid Only: Yes
Tags: Tree, Depth-First Search, Binary Tree

Problem Description

Given the `root` of a binary tree, return _the number of nodes where the value of the node is equal to the**sum** of the values of its descendants_.

A **descendant** of a node `x` is any node that is on the path from node `x` to some leaf node. The sum is considered to be `0` if the node has no descendants.

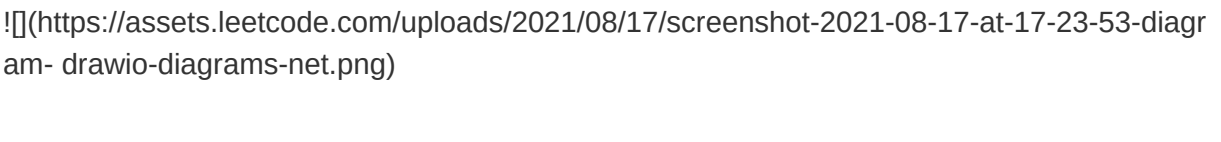
Example 1:

Input: root = [10,3,4,2,1] **Output:** 2 **Explanation:** For the node with value 10: The sum of its descendants is 3+4+2+1 = 10. For the node with value 3: The sum of its descendants is 2+1 = 3.

Example 2:

Input: root = [2,3,null,2,null] **Output:** 0 **Explanation:** No node has a value that is equal to the sum of its descendants.

Example 3:



Input: root = [0] **Output:** 1 For the node with value 0: The sum of its descendants is 0 since it has no descendants.

Constraints:

* The number of nodes in the tree is in the range `[1, 105]`. * `0 <= Node.val <= 105`

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