

Problem 2265: Count Nodes Equal to Average of Subtree

Problem Information

Difficulty: Medium

Acceptance Rate: 86.70%

Paid Only: No

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**average** of the values in its **subtree**_.

Note:

* The **average** of `n` elements is the **sum** of the `n` elements divided by `n` and **rounded down** to the nearest integer.
* A **subtree** of `root` is a tree consisting of `root` and all of its descendants.

Example 1:

Input: root = [4,8,5,0,1,null,6] **Output:** 5 **Explanation:** For the node with value 4: The average of its subtree is $(4 + 8 + 5 + 0 + 1 + 6) / 6 = 24 / 6 = 4$. For the node with value 5: The average of its subtree is $(5 + 6) / 2 = 11 / 2 = 5$. For the node with value 0: The average of its subtree is $0 / 1 = 0$. For the node with value 1: The average of its subtree is $1 / 1 = 1$. For the node with value 6: The average of its subtree is $6 / 1 = 6$.

Example 2:

Input: root = [1] **Output:** 1 **Explanation:** For the node with value 1: The average of its subtree is $1 / 1 = 1$.

****Constraints:****

* The number of nodes in the tree is in the range `[1, 1000]`. * `0 <= Node.val <= 1000`

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 averageOfSubtree(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 averageOfSubtree(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 averageOfSubtree(self, root: TreeNode) -> int:
```