

Problem 1372: Longest ZigZag Path in a Binary Tree

Problem Information

Difficulty: Medium

Acceptance Rate: 66.90%

Paid Only: No

Tags: Dynamic Programming, Tree, Depth-First Search, Binary Tree

Problem Description

You are given the `root` of a binary tree.

A ZigZag path for a binary tree is defined as follow:

- * Choose **any** node in the binary tree and a direction (right or left). * If the current direction is right, move to the right child of the current node; otherwise, move to the left child. * Change the direction from right to left or from left to right. * Repeat the second and third steps until you can't move in the tree.

Zigzag length is defined as the number of nodes visited - 1. (A single node has a length of 0).

Return _the longest**ZigZag** path contained in that tree_.

Example 1:

Input: root = [1,null,1,1,1,null,null,1,1,null,1,null,null,null,1] **Output:** 3 **Explanation:**
Longest ZigZag path in blue nodes (right -> left -> right).

Example 2:

****Input:**** root = [1,1,1,null,1,null,null,1,1,null,1] ****Output:**** 4 ****Explanation:**** Longest ZigZag path in blue nodes (left -> right -> left -> right).

****Example 3:****

****Input:**** root = [1] ****Output:**** 0

****Constraints:****

* The number of nodes in the tree is in the range `[1, 5 * 104]`. * `1 <= Node.val <= 100`

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