Problem 1740: Find Distance in a Binary Tree

Problem Information

Difficulty: Medium
Acceptance Rate: 74.15%
Paid Only: Yes
Tags: Hash Table, Tree, Depth-First Search, Breadth-First Search, Binary Tree

Problem Description

Given the root of a binary tree and two integers `p` and `q`, return _the**distance** between the nodes of value _`p` _and value_`q` _in the tree_.

The **distance** between two nodes is the number of edges on the path from one to the other.

Example 1:

![](https://assets.leetcode.com/uploads/2018/12/14/binarytree.png)

Input: root = [3,5,1,6,2,0,8,null,null,7,4], p = 5, q = 0 **Output:** 3 **Explanation:** There are 3 edges between 5 and 0: 5-3-1-0.

Example 2:

![](https://assets.leetcode.com/uploads/2018/12/14/binarytree.png)

Input: root = [3,5,1,6,2,0,8,null,null,7,4], p = 5, q = 7 **Output:** 2 **Explanation:** There are 2 edges between 5 and 7: 5-2-7.

Example 3:

![](https://assets.leetcode.com/uploads/2018/12/14/binarytree.png)

Input: root = [3,5,1,6,2,0,8,null,null,7,4], p = 5, q = 5 **Output:** 0 **Explanation:** The distance between a node and itself is 0.

Constraints:

* The number of nodes in the tree is in the range `[1, 104]`. * `0 <= Node.val <= 109` * All `Node.val` are **unique**. * `p` and `q` are values in the tree.

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 findDistance(TreeNode* root, int p, int q) {

}
};
```

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 findDistance(TreeNode root, int p, int q) {

}
}
```

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 findDistance(self, root: Optional[TreeNode], p: int, q: int) -> int:
```