

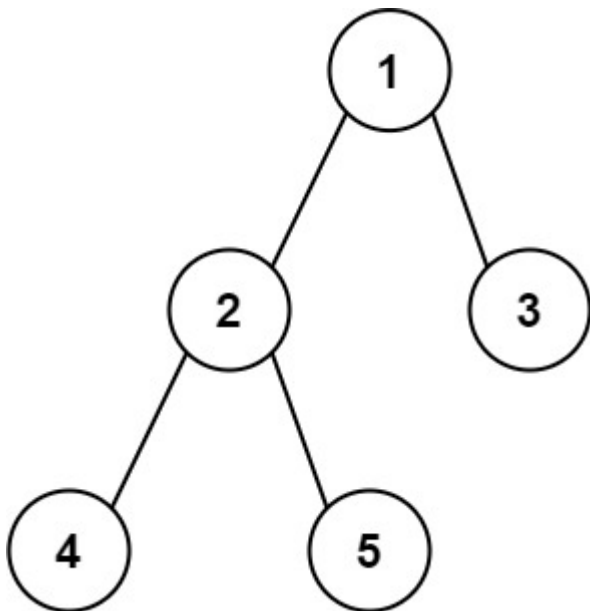
543. Diameter of Binary Tree(V.V.V.V.V Important)

Very Important concept and question

Given the `root` of a binary tree, return *the length of the **diameter** of the tree*.

The **diameter** of a binary tree is the **length** of the longest path between any two nodes in a tree. This path may or may not pass through the `root`.

The **length** of a path between two nodes is represented by the number of edges between them.



```
def diameterOfBinaryTree(self, root: TreeNode) -> int:
    if root.left is None and root.right is None:
        return 0
    ans = [0]
    self.helper(root, ans)
    return ans[0]
```

```
def helper(self, root, res):
    if root is None:
        return -1
    ld = self.helper(root.left, res)
    rd = self.helper(root.right, res)
```

```
res[0] = max(res[0], 2+ld + rd)
return 1 + max(ld, rd)
```