Problem 2583: Kth Largest Sum in a Binary Tree

Problem Information

Difficulty: Medium
Acceptance Rate: 59.11%
Paid Only: No
Tags: Tree, Breadth-First Search, Sorting, Binary Tree

Problem Description

You are given the `root` of a binary tree and a positive integer `k`.

The **level sum** in the tree is the sum of the values of the nodes that are on the **same** level.

Return _the_`kth` _**largest** level sum in the tree (not necessarily distinct)_. If there are fewer than `k` levels in the tree, return `-1`.

Note that two nodes are on the same level if they have the same distance from the root.

Example 1:

![](https://assets.leetcode.com/uploads/2022/12/14/binaryytreeedrawio-2.png)

Input: root = [5,8,9,2,1,3,7,4,6], k = 2 **Output:** 13 **Explanation:** The level sums are the following: - Level 1: 5. - Level 2: 8 + 9 = 17. - Level 3: 2 + 1 + 3 + 7 = 13. - Level 4: 4 + 6 = 10. The 2nd largest level sum is 13.

Example 2:

![](https://assets.leetcode.com/uploads/2022/12/14/treedrawio-3.png)

Input: root = [1,2,null,3], k = 1 **Output:** 3 **Explanation:** The largest level sum is 3.

Constraints:

* The number of nodes in the tree is `n`. * `2 <= n <= 105` * `1 <= Node.val <= 106` * `1 <= k <= n`

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:
long long kthLargestLevelSum(TreeNode* root, int k) {

}
};
```

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 long kthLargestLevelSum(TreeNode root, int k) {

}
}
```

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