662. Maximum Width of Binary Tree

Medium 4219 686 Add to List Share

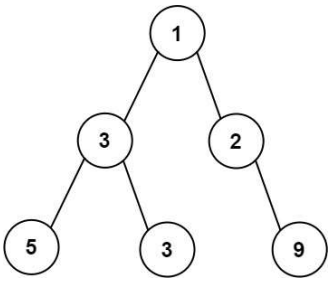
Given the `root` of a binary tree, return *the **maximum width** of the given tree*.

The **maximum width** of a tree is the maximum **width** among all levels.

The **width** of one level is defined as the length between the end-nodes (the leftmost and rightmost non-null nodes), where the null nodes between the end-nodes are also counted into the length calculation.

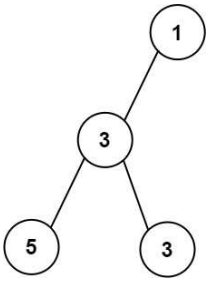
It is **guaranteed** that the answer will in the range of **32-bit** signed integer.

Example 1:



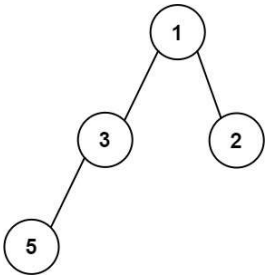

```
Input: root = [1,3,2,5,3,null,9]
Output: 4
Explanation: The maximum width existing in the third level with the length 4
(5,3,null,9).
```

Example 2:




```
Input: root = [1,3,null,5,3]
Output: 2
Explanation: The maximum width existing in the third level with the length 2 (5,3).
```

Example 3:




```
Input: root = [1,3,2,5]
Output: 2
Explanation: The maximum width existing in the second level with the length 2 (3,2).
```

Constraints:

- The number of nodes in the tree is in the range `[1, 3000]`.
- `-100 <= Node.val <= 100`

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```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 widthOfBinaryTree(TreeNode root) {

    }
}
```