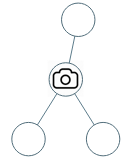
You are given the root of a binary tree. We install cameras on the tree nodes where each camera at a node can monitor its parent, itself, and its immediate children.

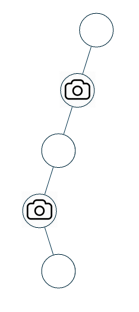
Return *the minimum number of cameras needed to monitor all nodes of the tree*.

**Example 1:**



Input: root = [0,0,null,0,0]  
Output: 1  
Explanation: One camera is enough to monitor all nodes if placed as shown.

**Example 2:**



Input: root = [0,0,null,0,null,0,null,null,0]  
Output: 2  
Explanation: At least two cameras are needed to monitor all nodes of the tree. The above image shows one of the valid configurations of camera placement.

**Constraints:**

* The number of nodes in the tree is in the range [1, 1000].
* Node.val == 0