Problem 3249: Count the Number of Good Nodes

Problem Information

Difficulty: Medium
Acceptance Rate: 55.05%
Paid Only: No
Tags: Tree, Depth-First Search

Problem Description

There is an **undirected** tree with `n` nodes labeled from `0` to `n - 1`, and rooted at node `0`. You are given a 2D integer array `edges` of length `n - 1`, where `edges[i] = [ai, bi]` indicates that there is an edge between nodes `ai` and `bi` in the tree.

A node is **good** if all the subtrees rooted at its children have the same size.

Return the number of **good** nodes in the given tree.

A **subtree** of `treeName` is a tree consisting of a node in `treeName` and all of its descendants.

Example 1:

Input: edges = [[0,1],[0,2],[1,3],[1,4],[2,5],[2,6]]

Output: 7

Explanation:

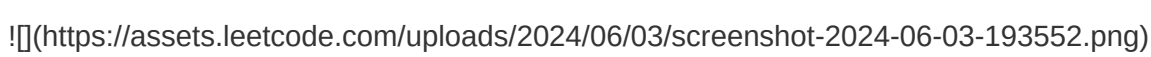
All of the nodes of the given tree are good.

Example 2:

Input: edges = [[0,1],[1,2],[2,3],[3,4],[0,5],[1,6],[2,7],[3,8]]

Output: 6

Explanation:



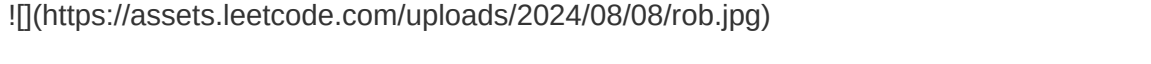
There are 6 good nodes in the given tree. They are colored in the image above.

Example 3:

Input: edges = [[0,1],[1,2],[1,3],[1,4],[0,5],[5,6],[6,7],[7,8],[0,9],[9,10],[9,12],[10,11]]

Output: 12

Explanation:



All nodes except node 9 are good.

Constraints:

* `2 <= n <= 105` * `edges.length == n - 1` * `edges[i].length == 2` * `0 <= ai, bi < n` * The input is generated such that `edges` represents a valid tree.

Code Snippets

C++:

```
class Solution {
public:
int countGoodNodes(vector<vector<int>>& edges) {

}
};
```

Java:

```
class Solution {
public int countGoodNodes(int[][] edges) {

}
}
```

Python3:

```
class Solution:
def countGoodNodes(self, edges: List[List[int]]) -> int:
```