Problem 2049: Count Nodes With the Highest Score

Problem Information

Difficulty: Medium
Acceptance Rate: 52.07%
Paid Only: No
Tags: Array, Tree, Depth-First Search, Binary Tree

Problem Description

There is a **binary** tree rooted at `0` consisting of `n` nodes. The nodes are labeled from `0` to `n - 1`. You are given a **0-indexed** integer array `parents` representing the tree, where `parents[i]` is the parent of node `i`. Since node `0` is the root, `parents[0] == -1`.

Each node has a **score**. To find the score of a node, consider if the node and the edges connected to it were **removed**. The tree would become one or more **non-empty** subtrees. The **size** of a subtree is the number of the nodes in it. The **score** of the node is the **product of the sizes** of all those subtrees.

Return _the**number** of nodes that have the **highest score**_.

Example 1:

![example-1](https://assets.leetcode.com/uploads/2021/10/03/example-1.png)

Input: parents = [-1,2,0,2,0] **Output:** 3 **Explanation:** - The score of node 0 is: 3 * 1 = 3 - The score of node 1 is: 4 = 4 - The score of node 2 is: 1 * 1 * 2 = 2 - The score of node 3 is: 4 = 4 - The score of node 4 is: 4 = 4 The highest score is 4, and three nodes (node 1, node 3, and node 4) have the highest score.

Example 2:

![example-2](https://assets.leetcode.com/uploads/2021/10/03/example-2.png)

Input: parents = [-1,2,0] **Output:** 2 **Explanation:** - The score of node 0 is: 2 = 2 - The score of node 1 is: 2 = 2 - The score of node 2 is: 1 * 1 = 1 The highest score is 2, and two nodes (node 0 and node 1) have the highest score.

Constraints:

* `n == parents.length` * `2 <= n <= 105` * `parents[0] == -1` * `0 <= parents[i] <= n - 1` for `i != 0` * `parents` represents a valid binary tree.

Code Snippets

C++:

```
class Solution {
public:
int countHighestScoreNodes(vector<int>& parents) {

}
};
```

Java:

```
class Solution {
public int countHighestScoreNodes(int[] parents) {

}
}
```

Python3:

```
class Solution:
def countHighestScoreNodes(self, parents: List[int]) -> int:
```