

# Problem 2368: Reachable Nodes With Restrictions

## Problem Information

**Difficulty:** Medium

**Acceptance Rate:** 59.95%

**Paid Only:** No

**Tags:** Array, Hash Table, Tree, Depth-First Search, Breadth-First Search, Union Find, Graph

## Problem Description

There is an undirected tree with  $n$  nodes labeled from  $0$  to  $n - 1$  and  $n - 1$  edges.

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. You are also given an integer array `restricted` which represents **restricted** nodes.

Return **the maximum** number of nodes you can reach from node `0` without visiting a restricted node.

Note that node `0` will **not** be a restricted node.

**Example 1:**



**Input:**  $n = 7$ , `edges = [[0,1],[1,2],[3,1],[4,0],[0,5],[5,6]]`, `restricted = [4,5]` **Output:** 4

**Explanation:** The diagram above shows the tree. We have that `[0,1,2,3]` are the only nodes that can be reached from node 0 without visiting a restricted node.

**Example 2:**



**Input:** n = 7, edges = [[0,1],[0,2],[0,5],[0,4],[3,2],[6,5]], restricted = [4,2,1] **Output:** 3  
**Explanation:** The diagram above shows the tree. We have that [0,5,6] are the only nodes that can be reached from node 0 without visiting a restricted node.

**Constraints:**

$2 \leq n \leq 105$   
 $\text{edges.length} == n - 1$   
 $\text{edges}[i].\text{length} == 2$   
 $0 \leq a_i, b_i < n$   
 $a_i \neq b_i$   
 $\text{edges}$  represents a valid tree.  
 $1 \leq \text{restricted.length} < n$   
 $1 \leq \text{restricted}[i] < n$   
All the values of  $\text{restricted}$  are **unique**.

## Code Snippets

**C++:**

```
class Solution {
public:
    int reachableNodes(int n, vector<vector<int>>& edges, vector<int>& restricted) {

    }
};
```

**Java:**

```
class Solution {
    public int reachableNodes(int n, int[][] edges, int[] restricted) {

    }
}
```

**Python3:**

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