

Glass key

Problem Description

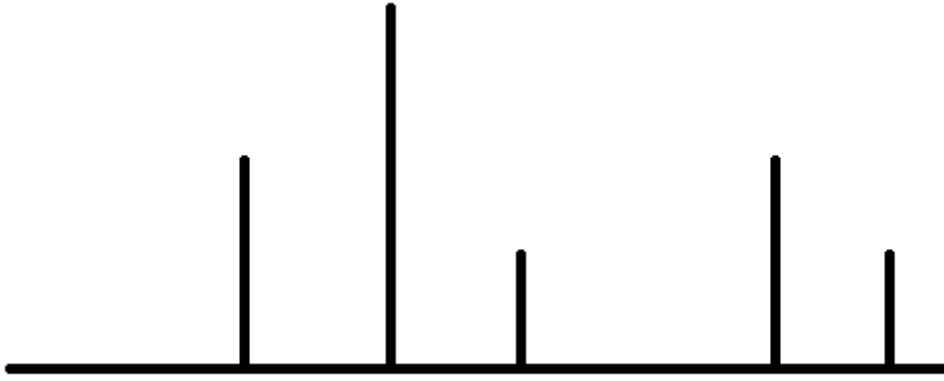
Cinderella left the balls after dancing all night with the prince, but she left in such a rush that she dropped her glass key off! Cinderella knew the prince would try the key on every door to find her, but now she wonders if she would accidentally share the same door key with her stepsister Drizella.

After a fine amount of investigation, she found out the original blueprint of Drizella's key. She noticed that blueprints of a key are an unrooted tree with the following conditions:

- Every node has at most 3 adjacent nodes.
- A node with 3 adjacent nodes is called a **joint**.
- There are at least 2 **joints**.
- There exists a simple path that contains every **joint**.

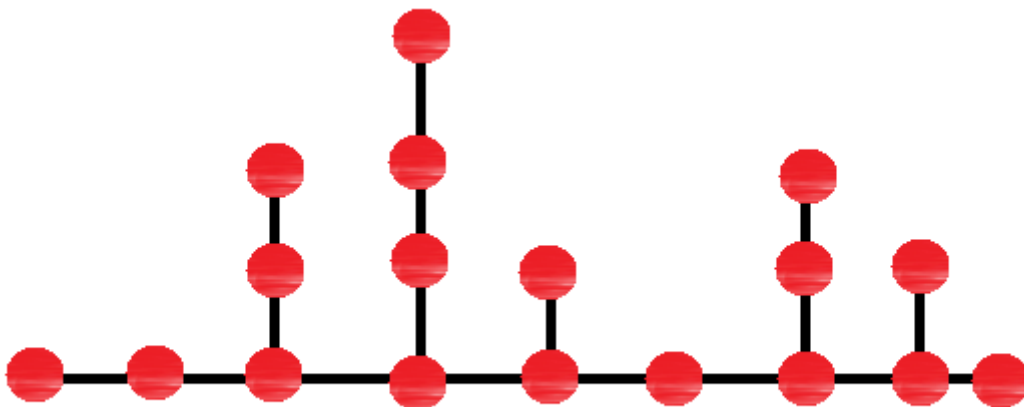
Recall that:

- An unrooted tree is a connected graph with n nodes and $n - 1$ edges.
- Two nodes (u, v) are adjacent to each other if (u, v) is an edge on the graph.
- A simple path is a sequence of vertices v_1, v_2, \dots, v_k such that
 1. (v_i, v_{i+1}) are adjacent, for $i \leq (k - 1)$.
 2. $v_i \neq v_j$ for $i \neq j$.
- Example of a blueprint of Drizella.



By reading comments on the blueprint, she realized that a key is made by the following procedures:

- The locksmith finds 2 leaf nodes (a, b) , whose path $a, u_1, u_2, \dots, u_k, b$ contains every **joint**.
- Edges on the path of the (a, b) are forged as horizontal bars as the baseline.
- Edges **not** on the path lie above the baseline as vertical bars (they lie on **joints** as long vertical bars).
- A key is a sequence of lengths of vertical bars on each **joint** from a to b .
- One of possible Drizella's key: $[2, 3, 1, 2, 1]$



Given Cinderella's key and blueprint of Drizella's key, tell Cinderella if she would possibly share the same key with Drizella.

Input Format

The first line contains n , the number of nodes of the blueprint of Drizella's key.

Each of the next $(n - 1)$ lines contains two integers a, b ($0 \leq a, b < n$) — the edges on the graph.

The next line contains m , the length of Cinderella's key.

The next line contains m integers c_i ($1 \leq c_i \leq 10^9$) — the key of Cinderella.

Output Format

Output “YES” if it is possible that Cinderella and Drizella share the same key.

Output “NO” otherwise.

Technical Specification

- $0 \leq m \leq n \leq 10^6$

Sample Input 1

```
14
4 13
2 5
5 8
1 11
11 7
9 2
1 13
12 0
8 1
10 6
9 6
3 9
7 12
2
2 2
```

Sample Output 1

```
YES
```