

## G2. Passable Paths (hard version)

time limit per test: 3 seconds

memory limit per test: 256 megabytes

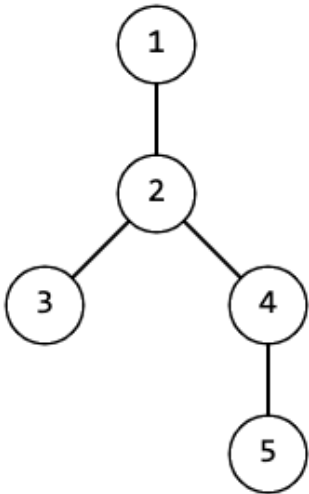
This is a hard version of the problem. The only difference between an easy and a hard version is in the number of queries.

Polycarp grew a tree from  $n$  vertices. We remind you that a tree of  $n$  vertices is an undirected connected graph of  $n$  vertices and  $n - 1$  edges that does not contain cycles.

He calls a set of vertices *passable* if there is such a path in the tree that passes through each vertex of this set without passing through any edge twice. The path can visit other vertices (not from this set).

In other words, a set of vertices is called *passable* if there is a simple path that passes through all the vertices of this set (and possibly some other).

For example, for a tree below sets  $\{3, 2, 5\}$ ,  $\{1, 5, 4\}$ ,  $\{1, 4\}$  are *passable*, and  $\{1, 3, 5\}$ ,  $\{1, 2, 3, 4, 5\}$  are not.



Polycarp asks you to answer  $q$  queries. Each query is a set of vertices. For each query, you need to determine whether the corresponding set of vertices is **passable**.

### Input

The first line of input contains a single integer  $n$  ( $1 \leq n \leq 2 \cdot 10^5$ ) — number of vertices.

Following  $n - 1$  lines a description of the tree..

Each line contains two integers  $u$  and  $v$  ( $1 \leq u, v \leq n, u \neq v$ ) — indices of vertices connected by an edge.

Following line contains single integer  $q$  ( $1 \leq q \leq 10^5$ ) — number of queries.

The following  $2 \cdot q$  lines contain descriptions of sets.

The first line of the description contains an integer  $k$  ( $1 \leq k \leq n$ ) — the size of the set.

The second line of the description contains  $k$  of distinct integers  $p_1, p_2, \dots, p_k$  ( $1 \leq p_i \leq n$ ) — indices of the vertices of the set.

It is guaranteed that the sum of  $k$  values for all queries does not exceed  $2 \cdot 10^5$ .

### Output

Output  $q$  lines, each of which contains the answer to the corresponding query. As an answer, output "YES" if the set is **passable**, and "NO" otherwise.

You can output the answer in any case (for example, the strings "yEs", "yes", "Yes" and "YES" will be recognized as a positive answer).

### Examples

input	Copy
5 1 2 2 3 2 4 4 5 5 3 3 2 5 5 1 2 3 4 5 2 1 4 3 1 3 5 3 1 5 4	
output	Copy
YES NO YES NO YES	

### Codeforces Round 805 (Div. 3)

Finished

Practice



### → Virtual participation

Virtual contest is a way to take part in past contest, as close as possible to participation on time. It is supported only ICPC mode for virtual contests. If you've seen these problems, a virtual contest is not for you - solve these problems in the archive. If you just want to solve some problem from a contest, a virtual contest is not for you - solve this problem in the archive. Never use someone else's code, read the tutorials or communicate with other person during a virtual contest.

Start virtual contest

### → Clone Contest to Mashup

You can clone this contest to a mashup.

Clone Contest

### → Submit?

Language: GNU G++20 13.2 (64 bit, win)

Choose file: Choose File No file chosen

Submit

### → Last submissions

Submission	Time	Verdict
<a href="#">319123743</a>	May/11/2025 03:29	Accepted
<a href="#">319123293</a>	May/11/2025 03:07	Wrong answer on test 5
<a href="#">319123279</a>	May/11/2025 03:07	Wrong answer on test 4
<a href="#">319123089</a>	May/11/2025 02:58	Runtime error on test 4

### → Problem tags

data structures dfs and similar trees

\*2000

No tag edit access

### → Contest materials

- Announcement
- Tutorial (en)

↑

input

Copy

5  
1 2  
3 2  
2 4  
5 2  
4  
2  
3 1  
3  
3 4 5  
3  
2 3 5  
1  
1

output

Copy

YES  
NO  
YES  
YES

Supported by

