

Trafikverket's Mistake

Problem ID: trafikverketsmisstag

The unthinkable has happened! The plan laid by the traffic department (Trafikverket¹) has gone awry. Just before people were about to leave work in the small town of Lönköping, a horrendous snowstorm knocked out all the internet in the town. Since the internet is down, they can't get the latest information about Trafikverket's Plan, and therefore can't drive home without risking a crash.

It is now your job to find a way for everyone to get home without any collisions. Lönköping's road network consists of N houses and $N - 1$ roads. Each road directly connects two houses. If you are at a certain house, you can travel to all houses connected to your current house by a road. The network is also constructed such that one can travel between every pair of houses by using one or more roads.

Thanks to the data collection that took place before the creation of Trafikverket's Plan, you know where each person is located (they are all at work, and you know where they work) and which house they want to go home to. Right now, each person is sitting in their car outside their workplace, blocking other cars from passing by that house. To get everyone home safely, you will use a drone that flies around and tells people to "drive home". They will then drive home along the shortest path between their workplace and their home without stopping. Once they are home, they will park their car in their garage and no longer block any roads. Due to the cold, the drone is so slow that you can assume that each person has sufficient time to drive home and park before the drone reaches the next person.

If a car ever starts driving home and there is another car in the way, they will collide due to the slippery road conditions. Determine if there is an order in which the cars can drive home that is completely free from collisions. If such an order exists, find it.

Input

The first line of the input contains two integers, N and C ($1 \leq C \leq N \leq 2 \cdot 10^5$), the number of houses in Lönköping's road network and the number of people who want to go home.

The following $N - 1$ lines each contain two integers, a and b ($1 \leq a, b \leq N, a \neq b$), indicating that there is a road between house a and house b . It is guaranteed that one can travel between every pair of houses by traveling along one or more roads.

After that, there are C lines, each containing two integers W_i and H_i ($1 \leq W_i, H_i \leq N$), indicating the house where the i -th person works and the house where they live, respectively. It is guaranteed that at most one person starts at each house ($W_i \neq W_j$ for every $1 \leq i, j \leq N, i \neq j$).

Output

If there is an order in which the residents can drive home without collisions, first output "Yes". Then, print out the order in which the residents should drive home. The resident represented first in the input corresponds to 1 in the order, the second one to 2, and so on.

If there is no order without collisions, output "No".

Points

Your solution will be tested on several test case groups. To get the points for a group, it must pass all the test cases in the group.

Group	Point value	Constraints
1	5	$C \leq 8, N \leq 100$
2	10	$N \leq 100$
3	10	$N \leq 4000$, the length of the longest path is less than 50.
4	25	$N \leq 4000$
5	50	No additional constraints.

¹See <https://open.kattis.com/problems/trafikverketsplan>

Sample Input 1

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

Sample Output 1

Yes
3 4 2 1

Sample Input 2

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

Sample Output 2

No