Problem H. Sepahan Keshvar

As you might know, Sepahan Keshvar has been the most developed country for centuries. Recently there was a new discovery in Sepahan-Labs. Narges found out that there is another Sepahan Keshvar in another parallel universe. She noticed that both of these countries are connected and have n states, connected by $n-1$ bidirectional roads. Although the states are same in both universes, the roads might be different.

As a reward, Narges wants to know for any arbitrary state, what is the most important state she can reach in both universes if she is allowed only to use the first x roads in the first universe and the first y roads in the second one.

Input

The first line includes two integers n and q, the number of Sepahan Keshvar's states and the number of queries respectively. $(1 \leq n, q \leq 2 \times 10^5)$

In the next $n-1$ lines, you are given roads of the first universe. In each line two numbers u and v are given, meaning that there is a road between states u and v.

After that, in $n-1$ lines you are given roads of the second universe. In each line two numbers u and v are given, meaning that there is a road between states u and v.

The next q lines consist of queries. In each of these lines, you are given three integers v, x, and y; v is a given state, the initial state in both universes.

Output

for each query, print the state with greatest number Narges can reach if she is only allowed to use the first x roads in the first universe and the first y roads in the second one, starting from the state number v.

Examples

test	answer
7 7 1 2 3 1 3 7 5 6 4 7 3 6 1 6 7 5 3 4 2 4 4 7 6 5 1 2 5 2 6 5 3 3 4 4 4 4 5 2 1 6 2 6 7 3 3	1 7 3 4 5 6 7