D. Roads in Yusland

time limit per test: 4 seconds
memory limit per test: 256 megabytes
input: standard input
output: standard output

Mayor of Yusland just won the lottery and decided to spent money on something good for town. For example, repair all the roads in the town.

Yusland consists of n intersections connected by $n - 1$ bidirectional roads. One can travel from any intersection to any other intersection using only these roads.

There is only one road repairing company in town, named "RC company". Company's center is located at the intersection 1. RC company doesn't repair roads you tell them. Instead, they have workers at some intersections, who can repair only some specific paths. The i-th worker can be paid c_i coins and then he repairs **all roads** on a path from u_i to some v_i that **lies on the path** from u_i to intersection 1.

Mayor asks you to choose the cheapest way to hire some subset of workers in order to repair all the roads in Yusland. It's allowed that some roads will be repaired more than once.

If it's impossible to repair all roads print -1.

Input

The first line of the input contains two integers n and m ($1 \le n, m \le 300\,000$) — the number of cities in Yusland and the number of workers respectively.

Then follow $n-1$ line, each of them contains two integers x_i and y_i ($1 \le x_i, y_i \le n$) — indices of intersections connected by the i-th road.

Last m lines provide the description of workers, each line containing three integers u_i, v_i and c_i ($1 \le u_i, v_i \le n$, $1 \le c_i \le 10^9$). This means that the i-th worker can repair all roads on the path from v_i to u_i for c_i coins. It's guaranteed that v_i lies on the path from u_i to 1. Note that v_i and u_i may coincide.

Output

If it's impossible to repair all roads then print -1. Otherwise print a single integer — minimum cost required to repair all roads using "RC company" workers.

Example

input
6 5 1 2 1 3 3 4 4 5 4 6 2 1 2 3 1 4 4 1 3 5 3 1 6 3 2
output
8

Note

In the first sample, we should choose workers with indices 1, 3, 4 and 5, some roads will be repaired more than once but it is OK. The cost will be equal to $2 + 3 + 1 + 2 = 8$ coins.