

D. Birthday

time limit per test: 2 seconds

memory limit per test: 256 megabytes

input: standard input

output: standard output

Ali is Hamed's little brother and tomorrow is his birthday. Hamed wants his brother to earn his gift so he gave him a hard programming problem and told him if he can successfully solve it, he'll get him a brand new laptop. Ali is not yet a very talented programmer like Hamed and although he usually doesn't cheat but this time is an exception. It's about a brand new laptop. So he decided to secretly seek help from you. Please solve this problem for Ali.

An n -vertex weighted rooted tree is given. Vertex number 1 is a root of the tree. We defined $d(u, v)$ as the sum of edges weights on the shortest path between vertices u and v . Specifically we define $d(u, u) = 0$. Also let's define $S(v)$ for each vertex v as a set containing all vertices u such that $d(1, u) = d(1, v) + d(v, u)$. Function $f(u, v)$ is then defined using the following formula:

The goal is to calculate $f(u, v)$ for each of the q given pair of vertices. As the answer can be rather large it's enough to print it modulo $10^9 + 7$.

Input

In the first line of input an integer n ($1 \leq n \leq 10^5$), number of vertices of the tree is given.

In each of the next $n - 1$ lines three space-separated integers a_i, b_i, c_i ($1 \leq a_i, b_i \leq n, 1 \leq c_i \leq 10^9$) are given indicating an edge between a_i and b_i with weight equal to c_i .

In the next line an integer q ($1 \leq q \leq 10^5$), number of vertex pairs, is given.

In each of the next q lines two space-separated integers u_i, v_i ($1 \leq u_i, v_i \leq n$) are given meaning that you must calculate $f(u_i, v_i)$.

It is guaranteed that the given edges form a tree.

Output

Output q lines. In the i -th line print the value of $f(u_i, v_i)$ modulo $10^9 + 7$.

Examples

input
5 1 2 1 4 3 1 3 5 1 1 3 1 5 1 1 1 5 2 4 2 1 3 5
output
10 1000000005 1000000002 23 1000000002

input

```
8
1 2 100
1 3 20
2 4 2
2 5 1
3 6 1
3 7 2
6 8 5
6
1 8
2 3
5 8
2 6
4 7
6 1
```

output

```
999968753
49796
999961271
999991235
999958569
45130
```