

Simon received the board game [Ticket to Ride](#) as a birthday present. After playing it with his friends, he decides to come up with a strategy for the game.

There are n cities on the map and $n - 1$ road plans. Each road plan consists of the following:

- Two cities which can be directly connected by a road.
- The length of the proposed road.

The entire road plan is designed in such a way that if one builds all the roads, it will be possible to travel between any pair of cities.

A ticket enables you to travel between two different cities. There are m tickets, and each ticket has a cost associated with it. A ticket is considered to be *useful* if there is a path between those cities.

Simon wants to choose two cities, u and v , and build a *minimal* number of roads so that they form a simple path between them. Let s_t be the sum of costs of all *useful* tickets and s_r be the sum of lengths of all the roads Simon builds. The profit for pair (u, v) is defined as $s_t - s_r$. Note that u and v are not necessarily unique and may be the same cities.

Given n road plans and m ticket prices, help Simon by printing the value of his maximum possible profit on a new line.

Input Format

The first line contains single positive integer, n , denoting the number of cities.

Each of the $n - 1$ subsequent lines contains three space-separated integers describing the respective values of u , v , and l for a road plan, where $1 \leq u, v \leq n$, and $u \neq v$. Here, u and v are two cities that the road plan proposes to connect and l is the length of the proposed road.

The next line contains a single positive integer, m , denoting the number of tickets.

Each of the m subsequent lines contains three space-separated integers describing the respective values of u , v , and c for a ticket from city u to city v (where c is the cost of the ticket).

Constraints

- $1 \leq n \leq 2 \times 10^5$
- $1 \leq m \leq 10^5$
- $1 \leq l, c \leq 10^9$

Output Format

Print a single integer denoting the the maximum profit Simon can make.

Time Limits

- 6 seconds for Java and C#.
- Please refer to our [Environment](#) page to see time limits for other languages.

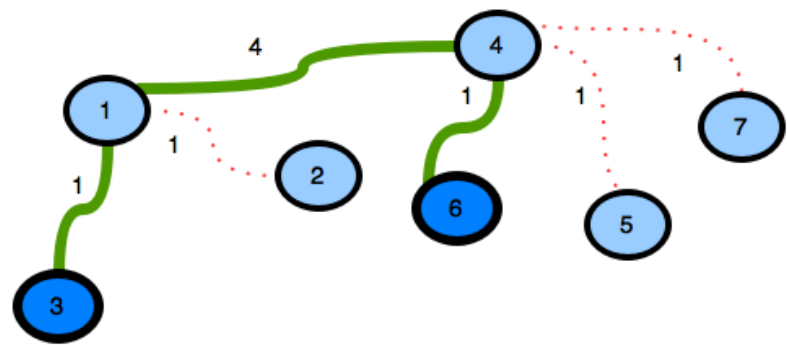
Sample Input

1 2 1
 1 3 1
 1 4 4
 4 5 1
 4 6 1
 4 7 1
 5
 5 7 3
 3 6 2
 3 4 10
 2 7 15
 1 6 7

Sample Output

13

Explanation



Simon can maximize his profit by choosing the pair **(3, 6)**.

The roads on the path between them are **(3, 1)**, **(1, 4)**, and **(4, 6)**. The total road length is $s_r = 1 + 4 + 1 = 6$.

The useful tickets are **(3, 6)**, **(3, 4)**, and **(1, 6)**. The total ticket cost is $s_t = 2 + 10 + 7 = 19$.

The profit is $s_t - s_r = 19 - 6 = 13$.