Problem Píngjūn shù wèntí

Input file	`stdin`
Output file	`stdout`

You are given a tree with N nodes, labeled from 1 to N, where each edge has an integer weight. We define the distance between nodes a and b as the sum of weights on the unique simple path that connects them.

You are also given Q queries of the form K L R, where you have to determine the shortest distance between node K and any node between L and R, inclusive.

Input data

The first line of `stdin` contains two space-separated integers, N and Q.

Each of the next $N - 1$ lines of `stdin` contains three space-separated integers, a, b and c, representing a weighted edge connecting nodes a and b with weight c.

Each of the next Q lines of `stdin` contains three space-separated integers, K, L and R, representing a query, as described above.

Output data

Each of the next Q lines of `stdout` will contain an integer D, representing the shortest distance to any node between L and R, inclusive.

Restrictions

- $1 \leq N, Q \leq 300\,000$;
- $1 \leq a_i, b_i \leq N$;
- $1 \leq c_i \leq 10\,000$;

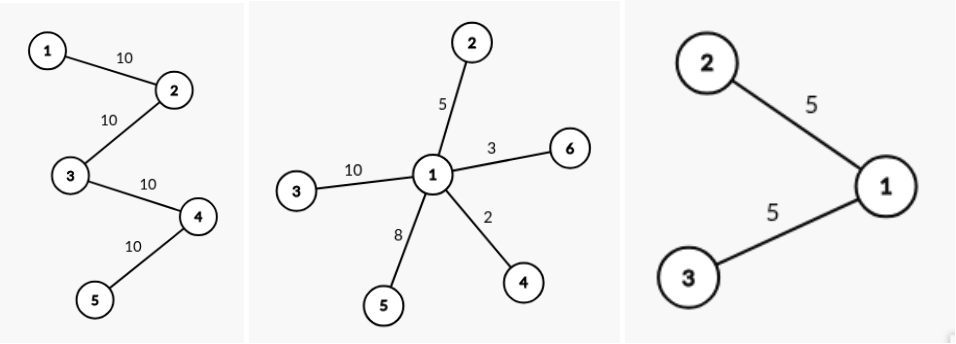
#	Points	Restrictions
1	15	$1 \leq N, Q \leq 1\,000$
2	12	$1 \leq N, Q \leq 30\,000$
3	13	$1 \leq N, Q \leq 100\,000$
4	20	$1 \leq N, Q \leq 100\,000$, the tree is a path
5	15	$1 \leq N, Q \leq 200\,000$
6	25	No further restrictions.

Examples

Input file	Output file
5 3 1 2 10 2 3 10 3 4 10 4 5 10 1 3 5 3 1 2 2 4 5	20 10 20
6 3 1 2 5 1 3 10 1 4 2 1 5 8 1 6 3 2 4 6 4 2 3 3 5 6	7 7 13
3 1 1 2 5 1 3 5 1 2 3	5

Explanations

The trees in the sample cases are illustrated below.



In the first sample case, the solutions are nodes 3, 2 and 4 for each of the queries. In the second sample case, the solutions are nodes 4, 2 and 6 for each of the queries. In the third sample case, the solution is node 2.