

Problem L. Tree Distance

Input file: standard input
Output file: standard output
Time limit: 4 seconds
Memory limit: 512 megabytes

You are given an unrooted weighted tree T with vertices $1, 2, \dots, n$. Please answer some queries.

We define $\text{dist}(i, j)$ as the distance between vertex i and vertex j in T .

For each query, you are given two integers l, r . Please answer the value of

$$\min_{l \leq i < j \leq r} (\text{dist}(i, j)).$$

Input

The first line contains one integer n ($1 \leq n \leq 2 \times 10^5$), the number of vertices in the tree.

Each of the next $n - 1$ lines describes an edge of the tree. Edge i is denoted by three integers a_i, b_i, w_i ($1 \leq a_i, b_i \leq n, 1 \leq w_i \leq 10^9$), the labels of vertices it connects and its weight.

Then one line contains one integer q ($1 \leq q \leq 10^6$), the number of queries.

Each of the following q lines contains two integers l, r ($1 \leq l \leq r \leq n$) describing a query.

It is guaranteed that the given edges form a tree.

Output

For each query, output the answer in one line. If there is no i, j such that $1 \leq i < j \leq r$, the answer is -1 .

Example

standard input	standard output
5	-1
1 2 5	3
1 3 3	7
1 4 4	7
3 5 2	2
5	
1 1	
1 4	
2 4	
3 4	
2 5	