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 $1, 2, \ldots, n$. Please answer some queries.

We define $\texttt{dist}(i, j)$ 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

$$\min_{l \le i < j \le r} (\texttt{dist}(i, j)).$$

Input

The first line contains one integer n ($1 \le n \le 2 \times 10^5$), 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 ($1 \le a_i, b_i \le n, 1 \le w_i \le 10^9$), the labels of vertices it connects and its weight.

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

Each of the following q lines contains two integers l, r ($1 \le l \le r \le n$) 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 $1 \le i < j \le r$, the answer is -1.

Example

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