## Distance Query

The traffic network in a country consists of N cities (labeled with integers from 1 to N ) and $\mathrm{N}-1$ roads connecting the cities. There is a unique path between each pair of different cities, and we know the exact length of each road.

Write a program that will, for each of the $K$ given pairs of cities, find the length of the shortest and the length of the longest road on the path between the two cities.

## Input

The first line of input contains an integer $N, 2 \leq N \leq 100000$. Each of the following $N-1$ lines contains three integers $A, B$ and $C$ meaning that there is a road of length $C$ between city $A$ and city $B$.

The length of each road will be a positive integer less than or equal to 1000000.
The next line contains an integer $K, 1 \leq K \leq 100000$. Each of the following $K$ lines contains two different integers $D$ and $E$ - the labels of the two cities constituting one query.

## Output

Each of the K lines of output should contain two integers - the lengths from the task description for the corresponding pair of the cities.

## Sample

## Input:

5
23100
43200
15150
1350
3
24
35
12
Output:
100200
50150
50100
Input:
7
364
171
132
126
254
244
5
64

12
13

Output:
26
14
66
22
26

