Lubenica

English

<u>Vietnamese</u>

The traffic network in a country consists of N cities (labeled with integers from 1 to N) and 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, $2 \le N \le 100\ 000$.
- 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 1 000 000. The next line contains an integer K, $1 \le K \le 100$ 000.
- 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.

Example

Input	Input	Input
1 6 5 100	7	9
25	364	122
50	171	231
50	132	345
10	126	274
20	254	153
23	244	561
	5	592
Output	6 4	183
100 200	7 6	5
50 150	12	69
50 100	1 3	78
	3 5	94
		12
	Output	73
	26	
	1 4	Output
	6 6	12
	2 2	24
	2 6	15
		22
		14