5723 Water Gate Management

A dam has n water gates to let out water when necessary. Each water gate has its own capacity, water path and affected areas in the downstream. The affected areas may have a risk of flood when the water gate is open. The cost of potential damage caused by a water gate is measured in number calculated from the number of people and areas estimated to get affected.

Suppose a water gate G_i has the volumetric flow rate of F_i m^3/hour and the damage cost of C_i. In a certain situation, the dam has the volume V m^3 of water to flush out within T hours. Your task is to manage the opening of the water gates in order to get rid of *at least* the specified volume of water within a limited time in condition that the damage cost is minimized.

For example, a dam has 4 water gates and their properties are shown in the following table.

Water Gate	G_1	G_2	G_3	G_4
Flow rate (m^3/hour)	720,000	50,000	130,000	1,200,000
Cost	120,000	60,000	50,000	150,000

Case 1: You have to flush out the water 5 million m^3 within 7 hours. The minimum cost will be 120,000 by letting the water gate G_1 open for 7 hours.
Case 2: You have to flush out the water 5 million m^3 within 30 hours. The minimum cost will be 110,000 by letting the water gates G_2 and G_3 open, for example, G_2 is open for 29 hours and G_3 is open for 28 hours.

Note that each water gate is independent and it can be open only in a unit of whole hour (no fraction of hour).

Input

The first line includes an integer n indicating number of water gates ($1 \leq n \leq 20$). Then the next n lines contain, in each line, two integers: F_i and C_i corresponding to the flow rate (m^3/hour) and the damage cost of the water gate G_i respectively. The next line contains the number m which is the number of test cases ($1 \leq m \leq 50$). The following m lines contain, in each line, two integers: V and T corresponding to the volume (m^3) of water to let out within T hours. ($1 \leq F_i, V, C_i \leq 10^9$, $1 \leq T \leq 1000$)

Output

For each test case, print out the minimum cost in the exact format shown in the sample output below. If it is **not** possible to let out the water of volume V in T hours from the dam, print out '`IMPOSSIBLE`' (without quotation marks).

Sample Input

```
4
720000 120000
50000 60000
130000 50000
1200000 150000
3
5000000 7
5000000 30
63000000 24
```

Sample Output

```
Case 1: 120000
Case 2: 110000
Case 3: IMPOSSIBLE
```