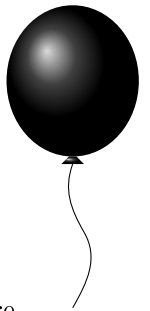# F Imam Mosque

TIME LIMIT: 4.0s
MEMORY LIMIT: 256MB

Isfahan is a city with n squares and $n - 1$ streets forming a connected network. The squares are numbered from 1 to n, with square 1 being the location of the Imam Mosque, Naqsh-e Jahan Square. The streets connect the squares in such a way that the city's network can be represented as a rooted, weighted tree. The root of the tree is the Imam Mosque (square 1), and the streets represent the edges of the tree.

Each square $i > 1$ is connected to its parent square par_i via a street of length w_i kilometers.

A total of q tourists are going to visit the Imam Mosque. They start from their respective squares, each having an initial amount of fuel in their cars. These tourists move sequentially, meaning tourist $i + 1$ begins their journey only after tourist i has completed theirs.

The journey follows these rules:

- At each square, the tourist collects all the fuel available in parked cars and adds it to their car.

- If the fuel in the car (f) is sufficient to travel to the parent square, the tourist:

  - Drives to the parent square, consuming w liters of fuel.
  - Receives $2 \times w$ liters of fuel as a gift from the hospitable Isfahani locals upon arrival.

- If f is insufficient:

  - The tourist parks their car at the current square, leaving any leftover fuel.
  - They then walk to the Imam Mosque from their current square.

- The hospitable Isfahani locals replenish all fuel taken from parked cars after each trip. Hence, once a tourist parks a car somewhere and leaves L liters of fuel in that car, each future tourist will have these L liters available at that location.

For each tourist, determine the number of the square where they will park their car.

INPUT

The first line of input consists of a single integer n ($2 \leq n \leq 3 \times 10^5$) — the number of squares in the city.

In the following $n - 1$ lines, each line contains two integers par_i and w_i ($1 \leq par_i < i$, $1 \leq w_i \leq 10^9$) — the parent of square i and the length of the street connecting i to par_i.

Next line contains a single integer q ($1 \leq q \leq 3 \times 10^5$) — the number of tourists.

In the following q lines, each line contains two integers u and f ($1 \leq u \leq n$, $1 \leq f \leq 10^9$) — the starting square of the tourist and the initial fuel in their car.
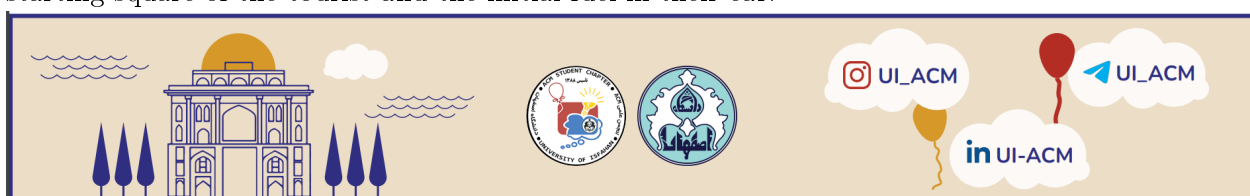
OUTPUT

The output should consist of q lines, where each line corresponds to a tourist and contains the number of the square where they will park their car.

SAMPLES

Sample input 1	Sample output 1
5	1
1 4	1
2 2	1
3 7	4
2 4	1
10	1
3 2	1
2 4	4
2 7	1
4 2	2
4 7	
5 9	
2 5	
4 3	
4 8	
2 1	