3637: Query on a tree VI

Time Limit: 8 Sec Memory Limit: 1024 MB
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Description

You are given a tree (an acyclic undirected connected graph) with n nodes. The tree nodes are numbered from 1 to n.

Each node has a color, white or black. All the nodes are black initially.

We will ask you to perfrom some instructions of the following form:

- 0 u : ask for how many nodes are connected to u, two nodes are connected iff all the node on the path from u to v (inclusive u and v) have a same color.
- 1 u : toggle the color of u(that is, from black to white, or from white to black).

Input

The first line contains a number n denoted how many nodes in the tree($1 \le n \le 10^5$). The next n - 1 lines, each line has two numbers (u, v) describe a edge of the tree($1 \le u$, $v \le n$). The next line contains a number m denoted how many operations we are going to process($1 \le m \le 10^5$). The next m lines, each line describe a operation (t, u) as we mentioned above($0 \le t \le 1$, $1 \le u \le n$).

Output

For each query operation, output the corresponding result.

Sample Input

```
5

1 2

1 3

1 4

1 5

3

0 1

1 1

0 1
```

Sample Output

```
5

1
```

HINT

Source

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