

```
(function() { var po = document.createElement('script'); po.type = 'text/javascript'; po.async = true;
po.src = 'https://apis.google.com/js/plusone.js'; var s =
document.getElementsByTagName('script')[0]; s.parentNode.insertBefore(po, s); })();
```

SPOJ Problem Set (partial)

2798. Query on a tree again!

Problem code: QTREE3

English

Vietnamese

You are given a tree (an acyclic undirected connected graph) with N nodes. The tree nodes are numbered from 1 to N . In the start, the color of any node in the tree is white.

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

- **0 i** : change the color of the i -th node (from white to black, or from black to white);
or
- **1 v** : ask for the id of the first black node on the path from node 1 to node v . if it doesn't exist, you may return -1 as its result.

Input

In the first line there are two integers N and Q .

In the next $N-1$ lines describe the edges in the tree: a line with two integers a b denotes an edge between a and b .

The next Q lines contain instructions "**0 i**" or "**1 v**" ($1 \leq i, v \leq N$).

Output

For each "**1 v**" operation, write one integer representing its result.

Example

Input :

```
9 8
1 2
1 3
2 4
2 9
5 9
7 9
8 9
6 8
1 3
0 8
1 6
1 7
```

```
0 2
1 9
0 2
1 9
```

Output :

```
-1
8
-1
2
-1
```

Constraints & Limits

There are 12 real input files.

For 1/3 of the test cases, $N=5000$, $Q=400000$.

For 1/3 of the test cases, $N=10000$, $Q=300000$.

For 1/3 of the test cases, $N=100000$, $Q=100000$.



Added by: [Trichromatic] XilinX

Date: 2008-06-14

Time limit: 1.5s

Source limit: 50000B

Cluster: Pyramid (Intel Pentium III 733 MHz)

Languages: All except: ERL JS NODEJS PERL 6

Resource: VNOI Marathon '08 - Round 6/DivA

>Problem Setter: Blue Mary<td>