Kavraz Tree

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Unlike others, this story is actually real!

It is an ordinary day at Istanbul Technical University and Balık is trying to irritate Kavraz as usual. He challenges Kavraz to invent a new type of tree to prove his knowledge of algorithms while expecting him to fail. Trying not to be defeated, Kavraz invents an absurd tree and names it after himself: "Kavraz Tree".

In a Kavraz Tree, levels are defined differently than usual. There are four rules about the levels of a Kavraz Tree:

1. Any node in the tree has a different level number from its siblings and parent.
2. Child nodes' levels are greater than parent's level.
3. The root's level is always 0.
4. Parent-child relations do not change.

Confident in the absurdity of his tree, Kavraz talks back to Balık, "If you can calculate the minimum level of any given Kavraz tree, then I will agree that you are better at algorithms and Segment Trees than I am".

Can you help Balık to find the minimum level of a given Kavraz tree?

Submit Solution

Points: 1

Time limit: 1.0s
Java: 2.0s
Java 8: 2.0s
Javascript v8: 3.0s
Mono C#: 2.0s
Python: 3.0s

All submissions

Best submissions

Input Format

First line contains an integer n denoting the number of nodes.

The next $n-1$ lines contain two integers u and v indicating an undirected edge between the nodes u and v. All nodes have a unique id in range $[0, n-1)$.

Next line contains an integer r denoting the root of the tree.

Constraints

- $1 \leq n \leq 10^5$
- $0 \leq u, v, r \leq n-1$

Output Format

Print one integer for the minimum level of the given Kavraz tree.

Sample Input

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

Sample Output

```
4
```

Request clarification