CSES Problem Set

Tree Diameter

Time limit: 1.00 s **Memory limit:** 512 MB

You are given a tree consisting of n nodes.

The *diameter* of a tree is the maximum distance between two nodes. Your task is to determine the diameter of the tree.

Input

The first input line contains an integer n: the number of nodes. The nodes are numbered $1, 2, \ldots, n$.

Then there are $n-1$ lines describing the edges. Each line contains two integers a and b: there is an edge between nodes a and b.

Output

Print one integer: the diameter of the tree.

Constraints

- $1 \le n \le 2 \cdot 10^5$
- $1 \le a, b \le n$

Example

Input:
```
5
1 2
1 3
3 4
3 5
```

Output:
```
3
```

Explanation: The diameter corresponds to the path $2 \to 1 \to 3 \to 5$.