Problem C
Tree Diameter

Time limit: 1 second

Memory limit: 2048 megabytes

Problem Description

A tree is an undirected connected graph without cycles. You are given a tree of n vertices, where the vertices are numbered from 1 to n.

The diameter of a tree is defined as the largest of all shortest-path distances in the tree. Find the diameter of the given tree.

Input Format

The first line of the input contains an integer n. The i-th of the following $n-1$ lines contains two integers u_i and v_i denoting an undirected edge between vertex u_i and v_i.

Output Format

Output the diameter of the tree in one line.

Technical Specification

- $1 \leq n \leq 2 \times 10^5$
- $1 \leq u_i, v_i \leq n$ for $i = 1, 2, \ldots, n-1$
- $u_i \neq v_i$ for $i = 1, 2, \ldots, n-1$
- It is guaranteed that the given graph is a tree and has no loops or multiple edges.

Scoring

1. (6 points) $1 \leq n \leq 1000$
2. (14 points) No additional constraints.

Sample Input 1

```
5
1 2
1 3
2 4
2 5
```

Sample Output 1

```
3
```

Sample Input 2

```
10
7 5
2 6
7 2
4 10
9 1
9 7
3 9
2 4
8 2
```

Sample Output 2

```
5
```

Sample Input 3

```
6
1 2
2 3
3 4
4 5
5 6
```

Sample Output 3

```
5
```

Sample Input 4

```
1
```

Sample Output 4

```
0
```