

Tree Diameter

Time Limit 1 sec/Memory Limit 256 MB

You are given a tree with n vertices and $n - 1$ edges, and each edge is length 1.

Each vertex pair (x, y) on tree has an unique path from x to y .

The diameter of a tree is the length of the longest path on it.

For a given tree, you need to output the diameter of the tree.

Input Format

- The first line of the input contains one integer n .
- The following contain $n - 1$ lines. Each line consists of two numbers x_i, y_i , representing the undirected edge connection between vertex x_i, y_i .

Output format

- Output one integer, which means the diameter of the given tree.

Constraints

- $1 \leq n \leq 300000$

sample input #1	sample output #1
7 1 2 1 3 1 5 1 7 2 4 5 6	4

sample input #2	sample output #2
10	9
8 5	
7 4	
2 6	
3 9	
6 8	
4 1	
3 10	
5 10	
1 2	