

Problem F. Longest path in a tree

Time limit	500 ms
Mem limit	1572864 kB
Code length Limit	50000 B
OS	Linux

You are given an unweighted, undirected tree. Write a program to output the length of the longest path (from one node to another) in that tree. The length of a path in this case is number of edges we traverse from source to destination.

Input

The first line of the input file contains one integer N --- number of nodes in the tree ($0 < N \leq 10000$). Next $N-1$ lines contain $N-1$ edges of that tree --- Each line contains a pair (u, v) means there is an edge between node u and node v ($1 \leq u, v \leq N$).

Output

Print the length of the longest path on one line.

Example

Input:

```
3
1 2
2 3
```

Output:

```
2
```