Tree height

Given a tree with N nodes which are numbered from 0 to N-1. Root of tree is node numbered by 0. Caculate height of the tree.

Input

The first line is an integer N (1 <= N <= 10 ^ 5).

Each line in the next N - 1 lines contains 2 integers u v, represeting an edge connecting vertex u and vertex v.

Output:

An integer which is height of the given tree.

Input:

3

0 1

1 2

Output:

2