

PROBLEM 4

Consider n strings with rings at both ends. An integer is attached to each ring such that the integers, say a and b which we denote by $[a, b]$, attached to the both ends of a string are different. These pairs of integers identify the strings.

Two strings $[a, b]$ and $[c, d]$ can be connected if one of a, b is equal to one of c, d , by tying them together at the rings with the same number. The result is called a *chain*. For example, a chain $[1, 3, 4]$ is obtained by connecting two strings $[1, 3]$ and $[3, 4]$.

Similarly, a string and a chain, or two chains can be connected together at the rings with the same integer. For example, a chain $[1, 3, 4]$ and a string $[5, 1]$ can be connected to produce a chain $[5, 1, 3, 4]$. From two chains $[1, 3, 4]$ and $[2, 3, 5]$, a form looking like a cross (call it α for later reference) can be obtained by tying them at the center of each string. A form looking like a ring (call it β) can be obtained from two strings $[1, 3, 4]$ and $[4, 6, 1]$ by connecting them at both ends. In this way various forms can be obtained.

A part of such a form is called *chain* if it is a sequence of strings connected at their ends with the property that no two rings with the same integer appear on it. For example, α contains chains $[1, 3, 2]$, $[1, 3, 4]$, $[1, 3, 5]$, $[2, 3, 1]$, $[2, 3, 4]$, etc. of length 3, and β contains chains of length 4 such as $[1, 3, 4, 6]$, $[3, 4, 6, 1]$, $[4, 6, 1, 3]$, where the *length* of a chain is the number of integers on it.

Your task is to write a program to find the maximum length of possible chains.

INPUT

The input file is `input.txt`, the first line of which contains an integer n ($1 \leq n \leq 100$), followed by n lines containing two integers separated by a single space character. The $i + 1$ -st line ($1 \leq i \leq n$) containing integers a and b ($1 \leq a < b < 100$) represents a string whose ends are rings with integers a and b .

OUTPUT

The output file should be `output.txt` which should contain the maximum length and end with the Return code.

EXAMPLE

Example Inputs:

Input 1	Input 2	Input 3
7	6	7
1 3	1 2	1 3
3 4	2 3	2 4
1 4	3 4	3 5
2 7	4 5	4 6
5 7	1 5	6 7
6 7	2 6	2 6
1 7		4 7

Example Outputs:

Output 1	Output 2	Output 3
5	6	4