# JOI '05 Final Round P4 - String of Rings

**Time limit:** 1.0s **Memory limit:** 128M

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 tieing 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 $\alpha$ for later reference) can be obtained by tieing them at the center of each string. A form looking like a ring (call it $\beta$) 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, $\alpha$ contains chains $[1, 3, 2]$, $[1, 3, 4]$, $[1, 3, 5]$, $[2, 3, 1]$, $[2, 3, 4]$, etc. of length 3, and $\beta$ 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 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 $b$ $(1 \leq a < b \leq 100)$ represents a string whose ends are rings with integers $a$ and $b$.

## Output

The output file should contain the maximum length.

## Sample Input 1

```
7
1 3
3 4
1 4
2 7
5 7
6 7
1 7
```

## Sample Output 1

```
5
```

## Sample Input 2

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

## Sample Output 2

```
6
```

## Sample Input 3

```
7
1 3
2 4
3 5
4 6
6 7
2 6
4 7
```

## Sample Output 3

```
4
```