2015 I SPY

The spies at *Alpha Complex* have become concerned that *Beta Complex* and *Gamma Complex* might be planning a co-ordinated offensive. There has been a series of observed meetings, every one consisting of a single spy from each of *Beta Complex* and *Gamma Complex*. Unfortunately the observations have not indicated which spies belonged to which complex. The *Alpha Complex* bureaucracy would like to know the possible sizes of their adversaries.

The observed spies have been given a sophisticated labelling in the record of meetings — they have been allocated a number from 1 to n.

For example, suppose there are 6 spies and that meetings have been observed between 1 and 2, between 2 and 3, and between 4 and 5. 1 and 3 must work the same complex, which is different to 2's employer. 4 and 5 must work for different complexes but nothing can be deduced about how that corresponds to those for which 1, 2 and 3 work, or spy 6's employer. The maximum possible number of spies working for *Beta Complex* is 4.

SAMPLE INPUT

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

Write a program that determines the maximum size of *Beta Complex*. The first line of the input will contain a single integer n ($2 \leq n \leq 2^{18}$) indicating the number of spies. Each successive line will consist of a pair of integers, indicating a meeting where the given two spies met. Each meeting will be given once, there will be at most 2^{18} meetings and the input will be consistent (i.e. no spy works for both complexes). The input will be terminated by the line `-1 -1`.

You should output a single integer, the maximum size for *Beta Complex*.

SAMPLE OUTPUT

```
4
```