

A company offers personal computers for sale in  $N$  towns ( $3 \leq N \leq 35$ ). The towns are denoted by  $1, 2, \dots, N$ . There are direct routes connecting  $M$  pairs from among these towns. The company decides to build servicing stations in several towns, so that for any town  $X$ , there would be a station located either in  $X$  or in some immediately neighbouring town of  $X$ .

Write a program for finding out the minimum number of stations, which the company has to build, so that the above condition holds.

## Input

The input consists of more than one description of town (but totally, less than ten descriptions). Every description starts with number  $N$  of towns and number  $M$  of pairs of towns directly connected each other. The integers  $N$  and  $M$  are separated by a space. Every one of the next  $M$  rows contains a pair of connected towns, one pair per row. The pair consists of two integers for town's numbers, separated by a space. The input ends with  $N = 0$  and  $M = 0$ .

## Output

For every town in the input write a line containing the obtained minimum.

## Sample Input

```
8 12
1 2
1 6
1 8
2 3
2 6
3 4
3 5
4 5
4 7
5 6
6 7
6 8
0 0
```

## Sample Output

```
2
```