Uva 10308 Roads in the North

Building and maintaining roads among communities in the far North is an expensive business. With this in mind, the roads are built in such a way that there is only one route from a village to a village that does not pass through some other village twice.

Given is an area in the far North comprising a number of villages and roads among them such that any village can be reached by road from any other village. Your job is to find the road distance between the two most remote villages in the area.

The area has up to **10,000** villages connected by road segments. The villages are numbered from **1**.

Input

The input contains several sets of input. Each set of input is a sequence of lines, each containing three positive integers: the number of a village, the number of a different village, and the length of the road segment connecting the villages in kilometers. All road segments are two-way. Two consecutive sets are separated by a blank line.

Output

For each set of input, you are to output a single line containing a single integer: the

road distance between the two most remote villages in the area.

Sample Input

```
5 1 6
1 4 5
6 3 9
2 6 8
```

```
6 1 7
```

Sample Output

```
22
```

Uva 315 Network

A Telephone Line Company (TLC) is establishing a new telephone cable network. They are connecting several places numbered by integers from 1 to N. No two places have the same number. The lines are bidirectional and always connect together two places and in each place the lines end in a telephone exchange. There is one telephone exchange in each place. From each place it is possible to reach through lines every other place, however it need not be a direct connection, it can go through several exchanges. From time to time the power supply fails at a place and then the exchange does not operate. The officials from TLC realized that in such a case it can happen that besides the fact that the place with the failure is unreachable, this can also cause that some other places cannot connect to each other. In such a case we will say the place (where the failure occured) is critical. Now the officials are trying to write a program for finding the number of all such critical places. Help them.

Input

The input file consists of several blocks of lines. Each block describes one network. In the first line of each block there is the number of places $N < 100$. Each of the next at most N lines contains the number of a place followed by the numbers of some places to which there is a direct line from this place. These at most N lines completely describe the network, i.e., each direct connection of two places in the network is contained at least in one row. All numbers in one line are separated by one space. Each block ends with a line containing just 0. The last block has only one line with $N = 0$.

Output

The output contains for each block except the last in the input file one line containing the number of critical places.

Sample Input

5

```
5 1 2 3 4
0
6
2 1 3
5 4 6 2
0
0
```

Sample Output

```
1
2
```

ICPC4262 - Road Networks

There is a road network comprised by *M* roads and *N* cities. For convenience, we use {1, 2,..., *N*} to denote the *N* cities. Each road between two cities *i* and *j* , where $1 \leq i , j \leq N$ and $i \neq j$, has two types: One type is bidirectional, which allows a citizen to drive a car from *i* to *j* (denoted by *i* $\rightsquigarrow j$) and from *j* to *i* (denoted by *j* $\rightsquigarrow i$). The other type is unidirectional, which allows a citizen to drive a car following exactly one direction, either from *i* to *j* or from *j* to *i* .

We say that City *j* is reachable from City *i* if one can drive a car from *i* to *j* , visiting a sequence of cities $c_1, c_2,..., c_k$ for $k \geq 0$, such that $i \rightsquigarrow c_1 \rightsquigarrow c_2 \rightsquigarrow ...$ $\rightsquigarrow c_k \rightsquigarrow j$. (Every city is always reachable from itself.) A region is a maximal set of cities so that the following mutually reachable property holds: for two arbitrary cities *i* and *j* , *i* is reachable from *j* and *j* is also reachable from *i* . The adjective ``maximal'' means that if we include any other city in the given region, the mutually reachable property cannot be retained. Given a road network, your task is to write a computer program to compute the number of regions in the road network.

Technical Specification

1. We use {1, 2,..., *N*} to denote the *N* cities.

2. $M \leq 2000$ is a non-negative integer

3. $N \leq 1000$ is a positive integer.

4. If a road between *i* and *j* is bidirectional, then we use two order pairs (*i*, *j*) and (*j*, *i*) to represent it. Otherwise, if a road between *i* and *j* is unidirectional from *i* to *j* (respectively, *j* to *i*), we use (*i* , *j*) (respectively, (*j* , *i*)) to represent it.

Input

The input consists of a number of test cases. The first line of the input file contains an integer indicating the number of test cases to follow. Each test case consists of a road network, which has the following format: the first line of each test case contains two numbers, N and M, separated by a single space. The next M lines contain the description of M roads such that one line contains two cities representing an order pair (i, j). Each line is represented by two positive numbers separated by a single space; the first number representing the former element in the order pair and the second number representing the latter element in the order pair. A `0' at the $(M + 2)$ -th line of each test case (except for the last test case) indicates the end of this test case.

The next test case starts after the previous ending symbol `0'. Finally, a `-1' signals the end of the whole inputs.

Output

The output contains one line for each test case. Each line contains an integer, which is the number of the regions in the given road network.

Sample Input

```
2
3 2
1 2
1 3
0
3 3
1 2
2 3
3 1
-1
```

Sample Output

```
3
1
```