Quarantine

Unfortunately, the trip to the tropics did not end happily. Not only did each participant become infected with a different tropical disease at the beginning of the trip (you may assume that participant i suffers from seases i), but the participants continued to infect each other during the trip. That is, if participant x had frequent contact with participant y, then y gets infected with all diseases x acquires during the trip (note that this relation is not symmetric). Your task is to organize the quarantine; for this purpose, it is necessary to separate a smallest non-empty subset S of participants with the property that each person from outside S does not suffer from any disease the participants from S suffer at the beginning of the trip. Thus, we can start the quarantine with the participants from the set S, thus eliminating the diseases people in S suffered at the beginning of the trip.

Hint: Your task is to compute the strongly connected components in the „infection digraph" and output the size of the smallest sink (strongly connected component S having no edge outgoing from S to other strongly connected component).

Your algorithm should work in linear time in size of the „infection digraph".

Input

The first line contains integer z ($1 \leqslant z \leqslant 2 \cdot 10^9$) – the number of data sets. Each data set is as follows:

The first line contains the number n ($1 \leqslant n \leqslant 4000$) of the participants of the trip and the number m ($1 \leqslant m \leqslant 10000$) of contacts between the participants of the trip. We assume the participants are enumerated with numbers $0, \ldots, n-1$. Each of the next m lines contains two numbers x and y; each such line means that person x had frequent contact with person y and infected y with all the diseases of x.

Output

The size of the set S.

Example

For the input:

```
1
8 14
0 2
0 3
2 3
3 1
1 0
2 1
2 4
3 5
5 4
4 6
6 5
6 7
5 7
7 6
```

the output is:

```
4
```