

Statement problem Match

There are M matches between N players in which only one of the players can win. In each match two different players A_i and B_i compete against each other. At the end of every match, a point is given to the winner.

Find a way to choose the winner of every match such that the maximum score of all the players is the lowest possible. If there are multiple solutions, choose the one where the lowest score of all the players is the highest possible.

Input

The input will be read from *stdin* and it will contain on the first line the number of tests T . The next lines contain the T tests.

For each test, the first line contains two numbers: the number of players N and the number of matches M . The next M lines will contain the pair of numbers A_i and B_i , representing the indexes of the two players that will play against each other.

Output

The output will be written in *stdout* and it will contain T lines, where the i^{th} line contains the solution to the i^{th} test: two numbers representing the lowest possible maximum score and the maximum possible minimum score of the players.

Restrictions

- $T \leq 25$
- $N \leq 50$
- $M \leq 200$
- For each of the T tests, the M lines describing the matches are randomly generated. In other words, the two indexes of each of these lines are chosen with an uniform probability from the set of pairs of different integers between 1 and N .

Example

stdin	stdout
1 5 5 1 2 1 3 1 4 2 3 4 5	11

Explanation

An optimal solution is:

- player 1 wins against player 2
- player 1 loses to player 3
- player 1 loses to player 4
- player 2 wins against player 3
- player 4 loses to player 5

This way, every players gets one win, so both the lowest maximum score and the highest minimum score are 1.