

Labeling Balls

<https://vjudge.net/problem/poj-3687>

Windy has N balls of distinct weights from 1 unit to N units. Now he tries to label them with 1 to N in such a way that:

- 1. No two balls share the same label.
- 2. The labeling satisfies several constrains like "The ball labeled with a is lighter than the one labeled with b ".

Can you help windy to find a solution?

Input

The first line of input is the number of test case. The first line of each test case contains two integers, N ($1 \leq N \leq 200$) and M ($0 \leq M \leq 40,000$). The next M line each contain two integers a and b indicating the ball labeled with a must be lighter than the one labeled with b . ($1 \leq a, b \leq N$) There is a blank line before each test case.

Output

For each test case output on a single line the balls' weights from label 1 to label N . If several solutions exist, you should output the one with the smallest weight for label 1, then with the smallest weight for label 2, then with the smallest weight for label 3 and so on... If no solution exists, output -1 instead.

Sample

Input	Output
5	1 2 3 4
4 0	-1
4 1	-1
1 1	2 1 3 4
	1 3 2 4
4 2	
1 2	
2 1	
4 1	
2 1	
4 1	
3 2	