(E)Saunter

Description

Ms. Y and Mr. Le then happily saunter along the university town. As they have strolled about the town many times, they decided to make a difference this time. The town can be regarded as a graph. The intersections of roads are the vertices of the graph, and the directed roads are the edges of the graph. The lovers have the superpower to transfer themselves from one vertex to another vertex, but it costs a lot of energy. They prefer to walk along the roads and traverse all the vertices. However, they hate to visit one vertex twice in one date. Could you help them to find the routes that transfer as least times as they need?

Input

The first line is the number T – the number of test cases. Then T blocks follow. The first line of each block contains two integers: n $(1 \leq n \leq 150)$, m $(1 \leq m \leq 6000)$: the number of vertices and the number of directed edges. For the following m lines, each of them contains 2 integers i, j $(1 \leq i, j \leq n)$ indicating there is a directed edge from i to j. It is guaranteed that there is no circle in the graph.

Output

For each case, print the least number of transfer times in the first line. Then output corresponding routes. Please output the routes in alphabetic order. (e.g. routes "1 2 4 5" < "3" < "3 6")

Example

Input	Output
1	3
11 12	1 4 7 10 11
1 2	2 5 8
1 3	3 6 9
1 4	
2 5	
3 6	
4 7	
5 8	
6 9	
7 10	
8 11	
9 11	
10 11	