Problem H. Hamilton Path

Input file:	*standard input*
Output file:	*standard output*
Time limit:	4 seconds
Memory limit:	512 mebibytes

You are given a directed graph with n vertices and m edges. The vertices are labeled from 1 to n. You need to find all the permutations of vertices $p_1, p_2, \ldots, p_n$ satisfying the following constraint:

- For all $1 \le i < j \le n$, an edge (p_i, p_j) exists if and only if $j = i + 1$.

We define the value of a permutation $p_1, p_2, \ldots, p_n$ as

$$\left(\sum_{i=1}^{n} p_i \cdot 10^{n-i}\right) \bmod (10^9 + 7).$$

Output the number of such permutations modulo $10^9 + 7$. If the number of such permutations is not greater than n, you also need to consider them all in lexicographical order, and output their values in this order.

Input

The first line contains an integer T ($T \le 10^5$) indicating the number of test cases.

For each test case, the first line contains two integers n and m ($n \ge 1$, $m \ge 0$, $1 \le \sum n \le 5 \cdot 10^5$, $1 \le \sum m \le 10^6$).

Each of the following m lines contains two integers u and v ($1 \le u, v \le n$, $u \ne v$) indicating that there is a directed edge from u to v in the graph. Note that the graph can contain parallel edges.

Output

For each test case, output the number of the permutations modulo 10^9+7 in the first line. If the number of permutations is not greater than n, print another line with space-separated values of all the permutations, considered in lexicographical order. You **don't need to** output an empty line if the number is greater than n or there is no solution.

Example

standard input	standard output
1 5 6 3 4 2 5 5 3 1 3 4 2 5 1	2 13425 34251