Hamiltonian Cycles

You are given a complete undirected graph with **n** nodes numbered from 1 to **n**. You are also given **k** *forbidden* edges in this graph.

You are asked to find the number of Hamiltonian cycles in this graph that don't use any of the given **k** edges. A Hamiltonian cycle is a cycle that visits each vertex exactly once. A cycle that contains the same *edges* is only counted once. For example, cycles 1 2 3 4 1 and 1 4 3 2 1 and 2 3 4 1 2 are all the same, but 1 3 2 4 1 is different.

Input

The first line of input gives the number of cases, **N** (≤ 10). **N** test cases follow. The first line of each test case contains two integers, **n** (≤ 300) and **k** (≤ 15). The next **k** lines contain two integers each, representing the vertices of a forbidden edge. There will be no self-edges and no repeated edges.

Output

For each test case, output one line containing "Case #**X**: **Y**", where **X** is the case number (starting from 1) and **Y** is the number of Hamiltonian cycles that do not include any of those **k** edges. Print your answer modulo 9901.

Example

Input:

```
2
4 1
1 2
8 4
1 2
2 3
4 5
5 6
```

Output:

```
Case #1: 1
Case #2: 660
```