

Practice Contest

[A. Old Magician](#)[B. Square Fields](#)**C. Cycles**[Questions asked](#) **4**

Submissions

Old Magician

5pt Not attempted
203/214 users
correct (95%)10pt Not attempted
193/198 users
correct (97%)

Square Fields

10pt Not attempted
146/157 users
correct (93%)25pt Not attempted
107/128 users
correct (84%)

Cycles

15pt Not attempted
126/146 users
correct (86%)35pt Not attempted
20/41 users correct
(49%)

Top Scores

gawry	100
bmerry	100
Olexiy	100
ACRush	100
ardiankp	100
gepa	100
natalia	100
Alexus	100
almelv	100
OpenGL	100

Problem C. Cycles

This contest is open for practice. You can try every problem as many times as you like, though we won't keep track of which problems you solve. Read the [Quick-Start Guide](#) to get started.

Small input
15 points

Solve C-small

Large input
35 points

Solve C-large

Problem

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 . N test cases follow. The first line of each test case contains two integers, n and k . 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.

Limits
 $1 \leq N \leq 10,$
 $0 \leq k \leq 15.$
Small dataset $3 \leq n \leq 10$ **Large dataset** $3 \leq n \leq 300$ **Sample**

Input	Output
2	Case #1: 1
4 1	Case #2: 660
1 2	
8 4	
1 2	
2 3	
4 5	
5 6	

In the first sample input, there is only one cycle: 1 3 2 4 1.

