

Problem E. Reachable Sequences

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

ZZX has a sequence a , which is a permutation of $1, 2, \dots, n$. Now ZZX wants to perform some modifications on this sequence. For each modification, he can choose a pair of integers i and j , satisfying $1 \leq i < j \leq n$ and $a_i > a_j$, and then swap a_i and a_j .

If a permutation b can be obtained by performing some (possibly zero) modifications on the initial sequence a , then ZZX says b is *reachable* from a .

Now JRY has m sequences $a^{(1)}, a^{(2)}, \dots, a^{(m)}$. Each of them is a permutation of $1, 2, \dots, n$. He wants to know how many pairs (i, j) such that $1 \leq i \leq m$ and $1 \leq j \leq m$ have the property that a_i is reachable from a_j .

Input

The first line contains an integer T . Then T test cases follow. In each test case:

The first line contains two integers n and m . After that, m lines follow. The k -th of them contains n integers $a_1^{(k)}, a_2^{(k)}, \dots, a_n^{(k)}$. Each $a^{(k)}$ is a permutation of $1, 2, \dots, n$.

There are at most 1000 small test cases and 1 large test case. The small test cases satisfy $1 \leq n \leq 5$ and $1 \leq m \leq 500$. The large test case satisfies $1 \leq n \leq 9$ and $1 \leq m \leq 3 \cdot 10^5$.

Output

For each test case, print the answer on a separate line.

Example

standard input	standard output
2	5
3 3	4
1 2 3	
3 1 2	
2 3 1	
2 2	
1 2	
1 2	