Graph Automorphism

Input file:	`standard input`
Output file:	`standard output`
Time limit:	2 seconds
Memory limit:	64 megabytes

Bobo heard that Babai discovered a new quosi-polynomial algorithm for Graph Isomorphism problem. Now Bobo was going to solve in polynomial time ... on some simple graph.

Actually, Bobo would like to solve Graph Automorphism (defined below) on a connected graph $G = \langle V, E \rangle$ with n vertices and m edges where $V = \{1, 2, \ldots, n\}$. An automorphism ϕ is a permutation on V such that for all $\{x, y\} \in E$, $\{\phi(x), \phi(y)\} \in E$.

Bobo would like to count the number of automorphisms modulo $(10^9 + 7)$.

Input

The first line contains 2 integers n, m ($3 \le n \le 2000, n \le m \le n + 4$).

The i-th of following m lines contains 2 integers a_i, b_i which denotes an edge between vertices a_i and b_i ($1 \le a_i, b_i \le n$, $a_i \ne b_i$).

It was guaranteed that the graph was connected without multiple edges.

Output

An integer denotes the number of automorphisms modulo $(10^9 + 7)$.

Examples

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