Kapıcılar Kralı

There are N floor and M escalators(Escalators move only one way). If someone starts to traverse from any floor, there is no way he/she comes back to where he/she started. If there are no escalators to a floor, that floor is called magical. If there are no escalators from a floor, that floor is called haunted. Some floors are both magical and haunted.

There are 2 housekeepers of this mansion, Tarık and Okan. They gave a number to each magical and haunted floors 1 to k separately. k escalators from magical floors to haunted floors considered as one group. These k escalators are grouped so that none of the escalators intersect at any floor. In that case there is exactly one route from one haunted floor to one magical floor. If there is an escalator that exists in one group, and doesn't exist in other group, we say that these two groups are different. Assume there is a route from haunted floor i, to magical floor $f(i)$. For every pair (i, j) in a group, if $i < j$ and $f(i) > f(j)$ is true, this is considered as dangerous situation. If number of dangerous situations in a graph is odd, Okan owes 1 gayme to Tarık. If not, Tarık owes 1 Okan to Tarık.

Tarık and Okan have lots of free time and both of them love to gamble. So they have chosen all possible groups exactly once.Print how many gayme Okan has at the end modulo $10^9 + 7$.

Input Format

First line contains two integers, N and M, number of floors and number of escalators respectively. Next M lines contain a b, escalator from a to b.

Constraints

$1 \leq N \leq 500$
$0 \leq M \leq 10^5$

Output Format

Print how many gayme Okan has at the end modulo $10^9 + 7$.

Sample Input 0

6 2
6 1
3 5

Sample Output 0

1

Sample Explanation 0

In this example there are 4 $[1, 2, 4, 5]$ haunted floors and 4 $2, 3, 4, 6$ magical floors. For a group which has 4 escalators $(6 \rightarrow 1)$, $(3 \rightarrow 5)$, $(2 \rightarrow 2)$, $(4 \rightarrow 4)$ there are 4 dangerous situations. Hence Tarık owes 1 gayme to Okan.

Sample Input 1

5 4
3 1
3 5
4 1
4 5

Sample Output 1

0

Sample Explanation 1

In this example there are 2 different groups with 3 elements in them. For one of the groups Tarık owes 1 gayme to Okan and for other Okan owes Tarık 1 gayme.

Sample Input 2

3 1
1 3

Sample Output 2

1000000006

Sample Explanation 2

In this example, There is only 1 dangerous situation, hence Okan owes Tarık 1 gayme.