

Problem L. Median

Recall the definition of the median of n elements where n is odd: sort these elements and the median is the $\frac{(n+1)}{2}$ -th largest element.

In this problem, the exact value of each element is not given, but m relations between some pair of elements are given. The i -th relation can be described as (a_i, b_i) , which indicates that the a_i -th element is strictly larger than the b_i -th element.

For all $1 \leq k \leq n$, is it possible to assign values to each element so that all the relations are satisfied and the k -th element is the median of the n elements?

Input

There are multiple test cases. The first line of the input contains an integer T , indicating the number of test cases. For each test case:

The first line contains two integers n and m ($1 \leq n < 100$, $1 \leq m \leq n^2$), indicating the number of elements and the number of relations. It's guaranteed that n is odd.

For the following m lines, the i -th line contains two integers a_i and b_i , indicating that the a_i -th element is strictly larger than the b_i -th element. It guaranteed that for all $1 \leq i < j \leq m$, $a_i \neq a_j$ or $b_i \neq b_j$.

It's guaranteed that the sum of n of all test cases will not exceed 2×10^3 .

Output

For each test case output one line containing one string of length n . If it is possible to assign values to each element so that all the relations are satisfied and the i -th element is the median, the i -th character of the string should be '1', otherwise it should be '0'.

Example

standard input	standard output
2	01000
5 4	000
1 2	
3 2	
2 4	
2 5	
3 2	
1 1	
2 3	

Note

For the first sample test case, as the 2nd element is smaller than the 1st and the 3rd elements and is larger than the 4th and the 5th elements, it's possible that the 2nd element is the median.

For the second sample test case, as the 1st element can't be larger than itself, it's impossible to assign values to the elements so that all the relations are satisfied.