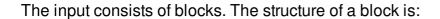
## **Matrix inverse**

Let p a prime number. A set  $F_p=\{0,1,...,p-1\}$  equipped with the mod p addition and multiplication is a finite field. In this problem you have to compute the multplicative inverse of some  $F_p$  valued (quadratic) matrices.



n p A<sub>11</sub>...A<sub>1n</sub> ...

 $A_{n1}...A_{nn}$ 

where p is a prime number, 1<n,p<101, and  $A_{ij}$  are in  $F_p$ . The last block followed by 0 0.

The ouput for each block is either the multiplicative inverse of a given matrix if it exists or the word "singular"

## **Example**

## Input:

4 2

1111

0001

0101

3 7

350

051

666

22

1 1

1 0

3 5

400

2 4 1 0 2 3

3 7

0 1 4

612

211

0 0

## **Output:**

0 1 0 1

0011

1 1 0 0

0010

633

5 1 1

332

0 1

1 1

singular

singular