

F. Special Matrices

time limit per test: 1 second

memory limit per test: 256 megabytes

input: standard input

output: standard output

An $n \times n$ square matrix is *special*, if:

- it is binary, that is, each cell contains either a 0, or a 1;
- the number of ones in each row and column equals 2.

You are given n and the first m rows of the matrix. Print the number of special $n \times n$ matrices, such that the first m rows coincide with the given ones.

As the required value can be rather large, print the remainder after dividing the value by the given number mod .

Input

The first line of the input contains three integers n, m, mod ($2 \leq n \leq 500, 0 \leq m \leq n, 2 \leq mod \leq 10^9$). Then m lines follow, each of them contains n characters — the first rows of the required special matrices. Each of these lines contains exactly two characters '1', the rest characters are '0'. Each column of the given $m \times n$ table contains at most two numbers one.

Output

Print the remainder after dividing the required value by number mod .

Examples

input
3 1 1000 011
output
2

input
4 4 100500 0110 1010 0101 1001
output
1

Note

For the first test the required matrices are:

011
101
110

011
110
101

In the second test the required matrix is already fully given, so the answer is 1.