D. Gargari and Permutations

time limit per test: 2 seconds
memory limit per test: 256 megabytes
input: standard input
output: standard output

Gargari got bored to play with the bishops and now, after solving the problem about them, he is trying to do math homework. In a math book he have found k permutations. Each of them consists of numbers $1, 2, ..., n$ in some order. Now he should find the length of the longest common subsequence of these permutations. Can you help Gargari?

You can read about longest common subsequence there: `https://en.wikipedia.org/wiki/Longest_common_subsequence_problem`

Input

The first line contains two integers n and k ($1 \le n \le 1000$; $2 \le k \le 5$). Each of the next k lines contains integers $1, 2, ..., n$ in some order — description of the current permutation.

Output

Print the length of the longest common subsequence.

Examples

input
4 3 1 4 2 3 4 1 2 3 1 2 4 3
output
3

Note

The answer for the first test sample is subsequence [1, 2, 3].