

G. Little Artem and Graph

time limit per test: 12 seconds

memory limit per test: 256 megabytes

input: standard input

output: standard output

Little Artem is given a graph, constructed as follows: start with some k -clique, then add new vertices one by one, connecting them to k already existing vertices that form a k -clique.

Artem wants to count the number of spanning trees in this graph modulo $10^9 + 7$.

Input

First line of the input contains two integers n and k ($1 \leq n \leq 10\,000$, $1 \leq k \leq \min(n, 5)$) — the total size of the graph and the size of the initial clique, respectively.

Next $n - k$ lines describe $k + 1$ -th, $k + 2$ -th, ..., i -th, ..., n -th vertices by listing k distinct vertex indices $1 \leq a_{ij} < i$ it is connected to. It is guaranteed that those vertices form a k -clique.

Output

Output a single integer — the number of spanning trees in the given graph modulo $10^9 + 7$.

Examples

input
3 2 1 2
output
3

input
4 3 1 2 3
output
16