Problem B. Bunch of Paper

Input file:	*standard input*
Output file:	*standard output*
Time limit:	2 seconds
Memory limit:	512 mebibytes

There are N sheets of paper, enumerated by sequential integers from 1 to N. Each sheet has K integers written on it, so i-th sheet contains the integers $v_{i,1}, v_{i,2}, \ldots, v_{i,K}$.

Then we choose one integer from each sheet and create the sequence a_i, where i-th integer is chosen from i-th sheet of paper. There are K^N ways to make such a sequence. How many of them are non-decreasing? A sequence is non-decreasing if $a_i \le a_{i+1}$ for all $1 \le i \le N - 1$.

The answer may be too large, so print it modulo $10^9 + 7$.

Input

The first line of the input contains two integers N and K ($1 \le N \le 100$, $1 \le K \le 10^4$). The i-th of the following N lines contains K integers $v_{i,1}, v_{i,2}, \ldots, v_{i,K}$ ($1 \le v_{i,1} < v_{i,2} < \ldots < v_{i,K} \le 10^9$).

Output

Print the number of non-decreasing sequences, modulo $10^9 + 7$.

Examples

standard input	standard output
2 2 2 4 1 5	2
2 3 4 5 6 1 2 3	0