Problem A. Welcome to ICPCCamp 2017

Input file:	`standard input`
Output file:	`standard output`
Time limit:	1 second
Memory limit:	512 megabytes

ICPCCamp teams are often selected by a mysterious (X, Y)-rule described in a blog (?).

There are $(n+1)$ selection contests held to choose *ICPCCamp team* among m teams conveniently labeled with $1, 2, \ldots, m$. The number of teams attending the i-th contest is k_i. As the last (the $(n+1)$-th) contest called EasyCamp-Final is very important, $k_{n+1} = m$ always holds. The scoreboard of the i-th contest is $r_{i,1}, r_{i,2}, \ldots, r_{i,k_i}$ which indicates that team $r_{i,j}$ has rank j in the contest.

The (X, Y)-rule works as follows. Firstly, two non-negative integers X and Y and a permutation $P = \{p_1, p_2, \ldots, p_n\}$ of $\{1, 2, \ldots, n\}$ are chosen. After that, the first $X + Y$ distinct teams in the list $\{r_{n+1,1}, r_{n+1,2}, \ldots, r_{n+1,Y}, r_{p_1,1}, r_{p_2,1}, \ldots, r_{p_n,1}, r_{p_1,2}, r_{p_2,2}, \ldots, r_{p_n,2}, \ldots\}$ will be selected as *ICPCCamp team*. In other words, the list goes in the following order: the first Y EasyCamp-Final teams, then the top teams from the first n contests in the order defined by P, then the second teams from the first n contests in the same order, and so on.

Bobo would like to know the number of possible sets of *ICPCCamp team*s modulo $(10^9 + 7)$ if he can choose X, Y and P arbitrarily.

Wish you enjoy yourself in the upcoming World Finals!

Input

The input contains zero or more test cases, and is terminated by end-of-file. For each test case:

The first line contains two integers n and m ($0 \le n \le 2 \cdot 10^5$, $1 \le m \le 2 \cdot 10^5$).

The i-th of following n lines contains an integer k_i followed by k_i integers $r_{i,1}, r_{i,2}, \ldots, r_{i,k_i}$ ($1 \le k_i \le m$).

The last line contains m integers $r_{n+1,1}, r_{n+1,2}, \ldots, r_{n+1,m}$ ($1 \le r_{i,j} \le m$, and for each i, the numbers $\{r_{i,1}, r_{i,2}, \ldots, r_{i,k_i}\}$ are distinct).

It is guaranteed that both the sum of k_i and the sum of m do not exceed $2 \cdot 10^5$.

Output

For each test case, output an integer which denotes the number of sets modulo $(10^9 + 7)$.

Example

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