Problem E: Birthday Cake

Time limit: 1s; Memory limit: 256 MB

Bob is celebrating his birthday with his friends. During the party, Bob wants to cut the birthday cake and share it with his friends.

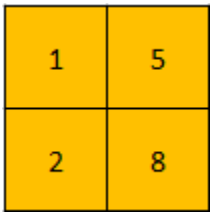
The birthday cake is a rectangle of size R x C made from a variety of materials. Let a[*i*][*j*] is the calories of the cell in *i*-th row and *j*-th column, total calories of a piece of cake are the sum of its cells.

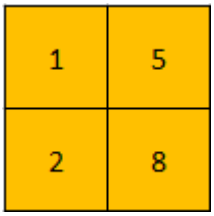
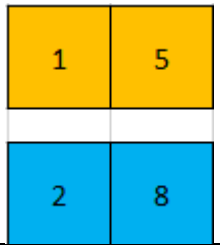
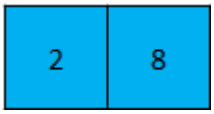
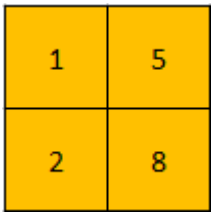
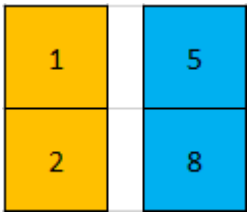
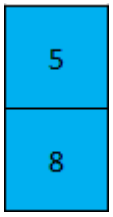
There are *n* friends in the party. Because of the fear of obesity, they do not want to eat too much. Let p[*k*] is the maximum calories of *k*-th friend.

Bob wants to cut this cake *n* – 1 times to obtain n smaller pieces which can be given to their friends. Bob must cut exactly *n* – 1 times, according to the following rule:

- During the *l*-th cut, Bob must cut the current (rectangular) piece of cake horizontally or vertically so that it results in two 2 smaller (rectangular) pieces, each piece must be of size at least 1×1.
  - If the *l*-th cut was done horizontally, the upper piece must be given to the *l*-th friend, and the lower piece of cake must be used for the next cutting phase.
  - If the *l*-th cut was done vertically, the left piece must be given to the *l*-th friend, and the right piece of cake must be used for the next cutting phase.
- After *n* - 1 cuts, there are exactly *n* pieces of cake to be given to *n* friends with no leftovers. The *l*-th piece of cake must satisfy the *l*-th friend's calorie condition, that is, total calories of the *i*-th piece of cake must not be greater than p[*l*].

For example: let *n* = 3, p = [5, 10, 15] and the below birthday cake:



Method 1:	Before the horizontal cut  After 	Before the vertical cut  After 	The total calories of the pieces of cake are [6, 2, 8]. The first piece is not satisfied due to 6 > 5.
Method 2:	Before the vertical cut  After 	Before the horizontal cut  After 	The total calories of the pieces are [3, 5, 8] satisfying for n friends.

Given the calories of the cake and the maximum calories of n friends, please help Bob compute the number of different ways to cut the cake that meet all rules and satisfy all friends.

Input

The first line contains 3 integers R, C, and *n*. ($1 \le R, C \le 100$, $1 \le n \le min(10, R + C - 1)$).

The next R lines, each line contains C numbers, that is the calorie of the cell $a[i][j]$. ($0 \le a[i][j] \le 100$).

The next line contains *n* integers, the *i*-th integer is the maximum calories $p[k]$ of the *k*-th friend. ($0 \le p[k] \le 10^6$).

Output

Output the number of different ways to cut the cake that meet all rules and satisfy all friends. Since the answer can be quite large, output the answer module 10^9+7.

Sample

Input	Output
2 2 3 1 5 2 8 5 10 15	1
3 3 2 10 8 6 8 4 10 1 1 0 78 25	3