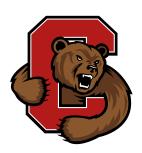# The Final Touchdown
Problem ID: finaltouchdown

Attention: This problem is HARD! Only attempt to solve it after you are done with the other problems.

Touchdown, or the Big Red Bear, is the unofficial mascot of Cornell University. It appears on the logo for Cornell Athletics and is represented in a statue erected outside Teagle Hall since 2015.

It's the year 2021. Your team is participating in the Cornell University High School Programming Contest, and you have come this far. The only problem left between your team and the ultimate victory of solving all problems in the contest is this problem called "The Final Touchdown." All you need to do is come up with some magical string, usually regarded as "the source code," typing it into a text box and hitting the submit button. Almost too easy - except that you have no clue of what that magical string look like.

Fortunately Touchdown comes to help you win the game! He gives you the following clues:

- The solution you are looking for is a permutation of the numbers from 1 to N.

- Touchdown tells you that M of the N numbers are red (the others are white). He also tells you which are these numbers.

- Touchdown tells you a strictly increasing sequence S of K numbers between 1 and N, and he guarantees that S is a subsequence of the solution. Furthermore, no increasing subsequences in the solution has more red numbers than S. (Touchdown calls S a *Big Red Sequence*)

But there could still be many such permutations. Write a program to compute the number of permutations that satisfy Touchdown's description. As the number might be very large, output it modulo $10^9 + 7$.

Input

The first line contains three integers N, M, K, $1 \le N \le 200$, $0 \le M \le min(15, N)$, $1 \le K \le min(50, N)$.

The second line contains M integers, the numbers that are colored red.

The third line contains K integers in strictly increasing order, the Big Red Sequence.

Output

Output a single integer, the number of permutations consistent with what Touchdown told you.

Sample Input 1	Sample Output 1
5 4 3 1 2 3 4 1 3 4	15

Sample Input 2	Sample Output 2
10 5 1 1 3 5 7 9 5	30240