Extremum Permutations

Let's consider a permutation $P = \{p_1, p_2, ..., p_N\}$ of the set of $N = \{1, 2, 3, ..., N\}$ elements .

P is called a magic set if it satisfies both of the following constraints:

- Given a set of K integers, the elements in positions $a_1, a_2, ..., a_K$ are less than their adjacent elements, i.e., $p_{a_i-1} > p_{a_i} < p_{a_i+1}$
- Given a set of L integers, elements in positions $b_1, b_2, ..., b_L$ are greater than their adjacent elements, i.e., $p_{b_i-1} < p_{b_i} > p_{b_i+1}$

How many such magic sets are there?

Input Format
The first line of input contains three integers N, K, L separated by a single space.
The second line contains K integers, $a_1, a_2, ... a_K$ each separated by single space.
the third line contains L integers, $b_1, b_2, ... b_L$ each separated by single space.

Output Format
Output the answer modulo 1000000007 (10^9+7).

Constraints
3 <= N <= 5000
1 <= K, L <= 5000
2 <= a_i, b_j <= N-1, where i ∈ [1, K] AND j ∈ [1, L]

Sample Input #00

```
4 1 1
2
3
```

Sample Output #00

```
5
```

Explanation #00

Here, N = 4 a_1 = 2 and b_1 = 3. The 5 permutations of {1,2,3,4} that satisfy the condition are

- 2 1 4 3
- 3 2 4 1
- 4 2 3 1
- 3 1 4 2
- 4 1 3 2

Sample Input #01

```
10 2 2
2 4
```

```
3 9
```

Sample Output #01

```
161280
```