

7143 Room Assignment

There are N guests checking in at the front desk of the hotel. $2K$ ($0 \leq 2K \leq N$) of them are twins. There are M rooms available. Each room has capacity c_i which means how many guests it can hold. It happens that the total room capacity is N , i.e. $c_1 + c_2 + \dots + c_M = N$.

The hotel receptionist wonders how many different room assignments to accommodate all guests. Since the, receptionist cannot tell the two twins in any pair of twins apart, two room assignments are considered the same if one can be generated from the other by swapping the two twins in each of some number of pairs. For rooms with capacity greater than 1, it only matters which people are in the room; they are not considered to be in any particular order within the room.

Input

The first line of the input gives the number of test cases, T . T test cases follow. Each test case starts with three integers N , M , and K , which indicates the number of guests, the number of rooms, and the number of pairs of twins. The following line contains M integers, c_1, c_2, \dots, c_M , which indicates the i -th room's capacity.

Output

For each test case, first output one line containing 'Case # x : y ', where x is the test case number (starting from 1) and y is the number of different room assignments *modulo* 1,000,000,007 ($10^9 + 7$).

Limits:

$$1 \leq T \leq 100,$$

$$1 \leq N \leq 10^5,$$

$$0 \leq M \leq 10,$$

$$0 \leq K \leq 100,$$

$$2K \leq N$$

Sample Input

```
2
3 2 1
1 2
7 2 2
3 4
```

Sample Output

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Case #1: 2
Case #2: 18
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