

Saurabh and Exponential Crowd

Time Limit: 2 seconds

In the near future, lockdown opened and crowd emerges in the market. Saurabh goes to market to meet his friend after a long time but is unable to find him. Saurabh called his friend to ask where is he. His friend said "Everyone in the crowd is wearing a T-Shirt with a number on it and every T-Shirt repeats K times except the one I am wearing (Because I am unique)."

Saurabh's friend gives him an array A , consisting of N integers, where A_i represents the T-Shirt number of i^{th} person in the crowd $1 \leq i \leq N$. Saurabh needs to find x , the T-shirt number of his friend, which is unique and every other T-shirt number is repeated.

Now, to reach his friend, Saurabh needs to calculate his friend's location so that he could directly teleport to his friend avoiding contact with any other person. His friend also gave him an integer R and the location is defined as $x^{2R} C_R$, where ${}^N C_r = \frac{N!}{R!(N-R)!}$

Saurabh needs to print calculate the location finally. Since the location can be very big, print the location(answer) modulo $10^9 + 7$. $[\%(10^9 + 7)]$.

Note: Output for 0^0 is 1

Input Format

The first line contains T , the number of test cases.

The first line of every test case contains N, K and R .

The second line of every test case contains N integers denoting A_i .

Output Format

For every test case, print location $\%10^9 + 7$ in new line.

Constraints

$$1 \leq T \leq 1,000$$

$$3 \leq N \leq 1,00,000$$

$$1 \leq A_i \leq 10^9$$

$$2 \leq K \leq N - 1$$

$$0 \leq R \leq 10^9$$

Sample Examples

Input

```
2
6 5 4
11 11 11 14 11 11
5 2 10
8 8 6 6 7
```

Output

```
947961792
527936690
```

Explanation

In first test case, $N = 6$, $K = 5$ and $R = 4$. We can see that 11 is repeated 4 times but 14 occurs once, so $x = 14$. Now, ${}^{2*4}C_4 = 70$. So, the location is $(14^{70})\%(10^9 + 7) = 947961792$.

In the second test case, $N = 5$, $K = 2$ and $R = 10$. We can see that 8 and 6 are repeated 2 times but 7 occurs once, so $x = 7$. Now, ${}^{2*10}C_{10} = 184756$. So, the location is $(7^{184756})\%(10^9 + 7) = 527936690$.