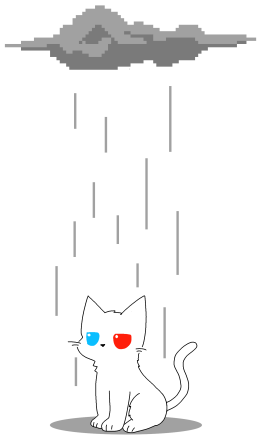
Problem F. World of Rains

Little Cyan Fish is exploring a world of rain! A two-dimensional world is represented as an $N \times M$ grid. We denote the cell in the i-th row and j-th column as (i, j), where $1 \le i \le N$ and $1 \le j \le M$.



A magical cat controls the rain in this world. The rainfall process spans $S+1$ seconds, numbered from 1 to $S+1$. At the beginning (time 0, before the first second), no cell contains any water.

Each second i $(1 \le i \le S+1)$, the following happens:

1. **Rainfall:** For each cell that **does not** currently contain a water droplet, the cat independently and randomly decides whether to create a new water droplet in that cell.
2. **Movement (except at time $S+1$):** If $i \le S$, all existing water droplets move simultaneously due to gravity and wind. A droplet at cell (x, y) moves to cell $(x+1, y+d_i)$.
3. **Disappearance:** Any droplet that moves outside the bounds of the $N \times M$ grid disappears permanently.

Your task is to calculate the number of distinct possible rainfall scenarios. Two scenarios are considered different if and only if there exists at least one cell (i, j) and one time t $(1 \le t \le S+1)$ where a droplet is created in that cell at that time in one scenario, but not in the other.

Since the number of scenarios can be very large, output the result modulo 998 244 353.

Input

There are multiple test cases. The first line of the input contains a single integer T $(T \ge 1)$, indicating the number of the test cases. For each test case:

The first line of the input contains three integers N, M, and S $(1 \le N, M, S \le 5 \times 10^5)$.

The next line of the input contains S integers: $d_1, d_2, \ldots, d_S$ $(-10^9 \le d_i \le 10^9)$.

It is guaranteed that the sum of S over all test cases does not exceed 5×10^5.

Output

For each test case:

Output a single line containing a single integer, indicating the answer modulo 998 244 353.

Example

standard input	standard output
3 2 2 1 1 3 3 5 1 0 0 0 -1 9 10 7 1 4 -2 -8 5 -7 142857	192 536867776 736446321