G - Sum of Binom(A, B)

Editorial (/contests/abc432/tasks/abc432_g/editorial)

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Time Limit: 2 sec / Memory Limit: 1024 MiB

Score : 575 points

Problem Statement

You are given a sequence of positive integers $A = (A_1, A_2, \ldots, A_N)$ of length N and a sequence of positive integers $B = (B_1, B_2, \ldots, B_M)$ of length M.

Find the value of $\displaystyle\sum_{i=1}^{N}\sum_{j=1}^{M}\binom{A_i}{B_j}$, modulo 998244353.

Here, $\binom{x}{y}$ represents the number of ways to choose y objects from x objects (binomial coefficient), and particularly, it is 0 if $x < y$.

Constraints

- $1 \leq N, M \leq 5 \times 10^5$
- $1 \leq A_i, B_j \leq 5 \times 10^5$
- All input values are integers.

Input

The input is given from Standard Input in the following format:

N M
A_1 A_2 $\ldots$ A_N
B_1 B_2 $\ldots$ B_M

Output

Output the answer.

Sample Input 1 Copy

```
3 2
2 5 4
1 3
```

Sample Output 1 Copy

```
25
```

The answer is $\binom{2}{1} + \binom{2}{3} + \binom{5}{1} + \binom{5}{3} + \binom{4}{1} + \binom{4}{3} = 2 + 0 + 5 + 10 + 4 + 4 = 25$.

Sample Input 2 Copy

```
4 4
2 5 1 5
2 1 2 4
```

Sample Output 2 Copy

```
65
```

Sample Input 3 Copy

```
6 8
203497 47202 407775 394325 463982 304784
468417 302156 131932 235902 395728 78537 223857 330739
```

Sample Output 3 Copy

```
602855848
```
Copy

'#telegram)

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