

Contest Duration: 2025-11-15(Sat) 23:00 (<http://www.timeanddate.com/worldclock/fixedtime.html?iso=20251115T2100&p1=248>) - 2025-11-16(Sun) 00:40 (<http://www.timeanddate.com/worldclock/fixedtime.html?iso=20251115T2240&p1=248>) (local time) (100 minutes)

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G - Sum of Binom(A, B)

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

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

2026-01-02 (Fri)
05:33:26 +11:00

$N \quad M$
 $A_1 \quad A_2 \quad \dots \quad A_N$
 $B_1 \quad B_2 \quad \dots \quad B_M$

Output

Output the answer.

Sample Input 1

[Copy](#)

3 2
2 5 4
1 3

[Copy](#)

Sample Output 1

[Copy](#)

25

[Copy](#)

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

[Copy](#)

Sample Output 2

[Copy](#)

65

[Copy](#)

Sample Input 3

[Copy](#)

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

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Sample Output 3

[Copy](#)

602855848

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