

E. Product Tuples

time limit per test: 8 seconds
 memory limit per test: 128 megabytes
 input: standard input
 output: standard output

While roaming the mystic areas of Stonefalls, in order to drop legendary loot, an adventurer was given a quest as follows. He was given an array $A = a_1, a_2, \dots, a_N$ of length N , and a number K .

Define array B as $B(q, A) = \{q - a_1, q - a_2, \dots, q - a_N\}$. Define function F as $F(B, K)$ being sum of products of all K -tuples of elements in array B . For example, if the array B is $[2, 3, 4, 5]$, and with $K = 3$, sum of products of all 3-tuples is

$$F(B, 3) = 2 * 3 * 4 + 2 * 3 * 5 + 3 * 4 * 5 + 2 * 4 * 5$$

He was then given a number Q , number of queries of two types:

- Type 1: Given q, i , and d calculate $F(B(q, A), K)$ where we make change to initial array as $A[i] = d$.
- Type 2: Given q, L, R , and d calculate $F(B(q, A), K)$ where we make change to initial array as $A[i] = A[i] + d$ for all i in range $[L, R]$ inclusive.

All changes are temporarily made to initial array, and don't propagate to following queries. Help the adventurer calculate the answer to a quest, and finally get that loot!

Input

In the first two lines, numbers N ($1 \leq N \leq 2 * 10^4$) and K ($1 \leq K \leq N$), the length of initial array A , and tuple size, followed by $a_1, a_2, a_3, \dots, a_N$ ($0 \leq a_i \leq 10^9$), elements of array A , in the next line. Then follows number Q ($Q \leq 10$), number of queries. In the next Q lines come queries of the form:

- 1 q i d, for type 1,
- 2 q L R d, for type 2,

as explained above ($0 \leq q, d \leq 10^9, 1 \leq i, L, R \leq N$)

Output

Print Q lines, the answers to queries, modulo 998244353.

Example

input	Copy
5 2 1 2 3 4 5 3 1 6 1 1 1 6 5 2 2 6 2 3 1	
output	Copy
85 127 63	

Note

In the first query array $A = [1, 2, 3, 4, 5]$, $B = [5, 4, 3, 2, 1]$, sum of products of 2-tuples = 85.

In second query array $A = [1, 2, 3, 4, 2]$, $B = [5, 4, 3, 2, 4]$, sum of products of 2-tuples = 127

In third query array $A = [1, 3, 4, 4, 5]$, $B = [5, 3, 2, 2, 1]$, sum of products of 2-tuples = 63

Bubble Cup 12 - Finals [Online Mirror, unrated, Div. 1]

Finished

Practice



→ Virtual participation

Virtual contest is a way to take part in past contest, as close as possible to participation on time. It is supported only ICPC mode for virtual contests. If you've seen these problems, a virtual contest is not for you - solve these problems in the archive. If you just want to solve some problem from a contest, a virtual contest is not for you - solve this problem in the archive. Never use someone else's code, read the tutorials or communicate with other person during a virtual contest.

Start virtual contest

→ Practice

You are registered for practice. You can solve problems unofficially. Results can be found in the contest status and in the bottom of standings.

→ Clone Contest to Mashup

You can clone this contest to a mashup.

Clone Contest

→ Submit?

Language: GNU G++11 5.1.0

Choose file: 选择文件 未选择任何文件

Submit

→ Problem tags

divide and conquer fft *2500

No tag edit access

→ Contest materials

- Announcement (en) ✕
- Statements (en) ✕
- Tutorial (en) ✕

[Codeforces](#) (c) Copyright 2010-2019 Mike Mirzayanov
The only programming contests Web 2.0 platform
Server time: Sep/18/2019 08:05:54^{UTC+8} (f2).
Desktop version, switch to [mobile version](#).
[Privacy Policy](#)

Supported by



ITMO UNIVERSITY