Problem E. Paimon Segment Tree

Paimon just learns the persistent segment tree and decides to practice immediately. Therefore, Lumine gives her an easy problem to start:

Given a sequence $a_1, a_2, \cdots, a_n$ of length n, Lumine will apply m modifications to the sequence. In the i-th modification, indicated by three integers l_i, r_i ($1 \le l_i \le r_i \le n$) and x_i, Lumine will change a_k to $(a_k + x_i)$ for all $l_i \le k \le r_i$.

Let $a_{i,t}$ be the value of a_i just after the t-th operation. This way we can keep track of all historial versions of a_i. Note that $a_{i,t}$ might be the same as $a_{i,t-1}$ if it hasn't been modified in the t-th modification. For completeness we also define $a_{i,0}$ as the initial value of a_i.

After all modifications have been applied, Lumine will give Paimon q queries about the sum of squares among the historical values. The k-th query is indicated by four integers l_k, r_k, x_k and y_k and requires Paimon to calculate

$$\sum_{i=l_k}^{r_k} \sum_{j=x_k}^{y_k} a_{i,j}^2$$

Please help Paimon compute the result for all queries. As the answer might be very large, please output the answer modulo $10^9 + 7$.

Input

There is only one test case in each test file.

The first line of the input contains three integers n, m and q ($1 \le n, m, q \le 5 \times 10^4$) indicating the length of the sequence, the number of modifications and the number of queries.

The second line contains n integers $a_1, a_2, \cdots, a_n$ ($|a_i| < 10^9 + 7$) indicating the initial sequence.

For the following m lines, the i-th line contains three integers l_i, r_i and x_i ($1 \le l_i \le r_i \le n$, $|x_i| < 10^9 + 7$) indicating the i-th modification.

For the following q lines, the i-th line contains four integers l_i, r_i, x_i and y_i ($1 \le l_i \le r_i \le n$, $0 \le x_i \le y_i \le m$) indicating the i-th query.

Output

For each query output one line containing one integer indicating the answer modulo $10^9 + 7$.

Examples

standard input	standard output
3 1 1 8 1 6 2 3 2 2 2 0 0	1
4 3 3 2 3 2 2 1 1 6 1 3 3 1 3 6 2 2 2 3 1 4 1 3 4 4 2 3	180 825 8