Division

Problem Description

In 2048, in the examination room of the 30th CSP certification, Xiaoming, as a contestant, opened the first question. The sample of this problem has n groups of data, numbered from 1 to n, and the scale of data i is a_i.

Xiaoming designed a violent program for this problem. For a set of data of size u, the **running time** of the program is u^2. However, after the program has run a set of data of size u, it will run an error on any one set of data of size **less than** u. The a_i in the sample isn't necessarily incremented, but Xiaoming wants to run the example correctly without modifying the program, so he decides to use a very primitive solution: Divide all the data into segments with **contiguous** serial numbers, and then merge the data in the same segment into new data whose size is equal to **the sum of the sizes** of the original data in the segment. Xiaoming will let the size of the new data increase.

In other words, Ming needs to find some cut-off points $1 \le k_1 < k_2 < ... < k_p < n$, such that

$$\sum_{i=1}^{k_1} a_i \le \sum_{i=k_1+1}^{k_2} a_i \le \cdots \le \sum_{i=k_p+1}^{n} a_i$$

Note that p can be 0 and at that time, $k_0 = 0$, that is, Xiaoming can run all the data together.

Xiaoming wants the running time to be minimized while running the sample correctly, that is, to **minimize**

$$(\sum_{i=1}^{k_1} a_i)^2 + (\sum_{i=k_1+1}^{k_2} a_i)^2 + \cdots + (\sum_{i=k_p+1}^{n} a_i)^2$$

Xiaoming finds this problem very interesting and asks for your advice: Given n and a_i, please find the minimum running time of Xiaoming's program under the optimal division scheme.

Input

Due to the large data range of the question, a_i of some test points will be generated in the program.

Two integers, n and type, are in the first line. See the program description for the meaning of n, and type denotes the type of input.

1. If type = 0, the a_i of the test point is **given directly**. The following input file: n space-separated integers a_i in the second line, indicating the size of each group of data.
2. If type = 1, a_i for this test point will be **specially generated**, as described below. The following input file: Six space-separated integers x, y, z, b_1, b_2, m in the second line. In the next m lines, line i ($1 \le i \le m$) contains three space-separated positive integers p_i, l_i, r_i.

For test points 23~25 with type = 1, a_i is generated as follows:

Given integers x, y, z, b_1, b_2, m, and m triples (p_i, l_i, r_i).

Guarantee $n \geq 2$. If $n > 2$, then $\forall\ 3 \leq i \leq n$, $b_i = (x \times b_{i-1} + y \times b_{i-2} + z) \bmod 2^{30}$.

Ensure that $1 \leq p_i \leq n$ and $p_m = n$. Let $p_0 = 0$, then p_i also satisfies that $\forall\ 0 \leq i < m$ has $p_i < p_{i+1}$.

For all $1 \leq j \leq m$, if the subscript value i ($1 \leq i \leq n$) satisfies $p_{j-1} < i \leq p_j$, then there is

a_i = (bi mod(r_j - l_j + 1)) + l_j

The above data generation method is only used to reduce the size of the input. Standard algorithms do not rely on this generation method.

Output

Output one line with one integer, indicating the answer.

Sample Input 1

5 0
5 1 7 9 9

Sample Output 1

247

Sample Input 2

10 0
5 6 7 7 4 6 2 13 19 9

Sample Output 2

1256

Sample Input 3

10000000 1
123 456 789 12345 6789 3
2000000 123456789 987654321
7000000 234567891 876543219
10000000 456789123 567891234

Sample Output 3

4972194419293431240859891640

Hint

[Explanation of Sample 1]

The optimal division scheme is {5,1}, {7}, {9}, {9}. $5 + 1 \le 7 \le 9 \le 9$, so the scheme is legal.

The answer is $(5 + 1)^2 + 7^2 + 9^2 + 9^2 = 247$.

Although the division scheme {5}, {1}, {7}, {9}, {9} corresponds to a smaller running time than 247, it is not a set of legal schemes because $5 > 1$.

Although the division scheme {5}, {1,7}, {9}, {9} is legal, the corresponding running time of this scheme is 251, which is larger than 247.

[Explanation of Sample 2]

The optimal division scheme is {5}, {6}, {7}, {7}, {4,6,2}, {13}, {19, 9}.

[Data Range]

Test Point	$n \le$	$a_i \le$	type=
1~3	10	10	0
4~6	50	10^3	0
7~9	400	10^4	0
10~16	5000	10^5	0
17~22	5×10^5	10^6	0
23~25	4×10^7	10^9	1

For all the test points with type=0, make sure the final output answer $\le 4\times10^{18}$

All the test points satisfy: type $\in \{0,1\}$, $2 \le n \le 4\times10^7$,$1 \le a_i \le 10^9$,$1 \le m \le 10^5$,$1 \le l_i \le r_i \le 10^9$, $0 \le x,y,z, b_1, b_2, < 2^{30}$.