An Easy Geometry Problem

Input file:	`standard input`
Output file:	`standard output`
Time limit:	5 seconds
Memory limit:	256 megabytes

You are given an integer sequence $\{A_i\}$ of length n and a line $y = kx + b$ denoted by two integers k, b.

We say that an integer radius r of center i is **good** if and only if $i+r \leq n$, $i-r > 0$, and $A_{i+r} - A_{i-r} = kr+b$. We define the rad(i) as the maximum integer r_0 so that for every $1 \leq r \leq r_0$, r is a good radius of center i.

You need to process queries of two types:

- 1 l r v: for every $l \leq i \leq r$, increase A_i by v;
- 2 i: calculate rad(i).

Input

The first line of input contains four integers n, q, k, and b ($1 \leq n, q \leq 2 \times 10^5$, $|k|, |b| \leq 10^3$), denoting the length of the integer sequence, the number of queries, and the line.

The second line contains n integers $A_1, A_2, \ldots, A_n$ ($|A_i| \leq 10^3$), denoting the integer sequence.

The next q lines each contain a query, formatted as clarified in the statement. For each query of the first type, it is guaranteed that $1 \leq l \leq r \leq n$ and $|v| \leq 10^3$. For each query of the second type, it is guaranteed that $1 \leq i \leq n$.

Output

For every query of type 2, output a line denoting the answer.

Example

standard input	standard output
6 6 6 2 1 5 9 10 15 18 2 2 1 3 3 -3 2 2 1 3 4 3 2 3 2 4	1 0 2 0