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A. Sign alternation

time limit per test: 2 seconds memory limit per test: 1024 megabytes input: standard input output: standard output

Implement data structure of n elements $a_1, a_2 \dots a_n$, with the following operations:

- assign the element a_i value j;
- find alternating sign sum in the range from l to r inclusive ($a_l-a_{l+1}+a_{l+2}-\ldots\pm a_r$).

Input

The first line of the input file contains a natural number n ($1 \le n \le 10^5$) — the length of the array. The second line contains the initial values of the elements (non-negative integers not exceeding 10^4).

The third line contains a positive integer m ($1 \le m \le 10^5$) — the number of operations. The following m lines contain operations:

- the operation of the first type is given by three numbers 0 i j ($1 \le i \le n$, $1 \le j \le 10^4$).
- an operation of the second type is given by three numbers 1 1 r ($1 \le l \le r \le n$).

Output

For each operation of the second type, print on a separate line the corresponding sign alternating sum.

Example

input	Сору
3	
1 2 3	
5	
1 1 2	
1 1 3	
1 2 3	
0 2 1	
1 1 3	
output	Сору
-1	
2	
-1	
3	

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