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 $a_1, a_2 \ldots a_n$, 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 l 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 Copy

```
3
1 2 3
5
1 1 2
1 1 3
1 2 3
0 2 1
1 1 3
```

output Copy

```
-1
2
-1
3
```