

Help Alice

Alice and Bob are best buddies. One day Bob gives Alice a problem to test her intelligence. He gives him an array of N natural numbers and asks her to solve the following queries:

Query 0: modify the element present at index i to x .

Query 1: count the number of even numbers in range l to r inclusive.

Query 2: count the number of odd numbers in range l to r inclusive.

Note: indexing starts from 1.

Input

First line of the input contains the number N . Next line contains N natural numbers.

Next line contains an integer Q followed by Q queries.

0 x y - modify the number at index x to y .

1 x y - count the number of even numbers in range l to r inclusive.

2 x y - count the number of odd numbers in range l to r inclusive.

Output

Print the answer to each query in a separate line.

Constraints:

$$1 \leq N, Q \leq 10^5$$

$$1 \leq l \leq r \leq N$$

$$0 \leq A_i \leq 10^9$$

$$1 \leq x \leq N$$

$$0 \leq y \leq 10^9$$

Sample Input

```
6
1 2 3 4 5 6
4
1 2 5
2 1 4
0 5 4
1 1 6
```

Sample Output

```
2
2
4
```