

# Can you answer these queries IV

You are given a sequence  $A$  of  $N$  ( $N \leq 100,000$ ) positive integers. Their sum will be less than  $10^{18}$ . On this sequence you have to apply  $M$  ( $M \leq 100,000$ ) operations:

(A) For given  $x, y$ , for each element between the  $x$ -th and the  $y$ -th ones (inclusively, counting from 1), modify it to its positive square root (rounded down to the nearest integer).

(B) For given  $x, y$ , query the sum of all the elements between the  $x$ -th and the  $y$ -th ones (inclusively, counting from 1) in the sequence.

## Input

Multiple test cases, please proceed them one by one. Input terminates by EOF.

For each test case:

The first line contains an integer  $N$ . The following line contains  $N$  integers, representing the sequence  $A_1..A_N$ .

The third line contains an integer  $M$ . The next  $M$  lines contain the operations in the form " $i$   $x$   $y$ ".  $i=0$  denotes the modify operation,  $i=1$  denotes the query operation.

## Output

For each test case:

Output the case number (counting from 1) in the first line of output. Then for each query, print an integer as the problem required.

Print a blank line after each test case.

See the sample output for more details.

## Example

**Input:**

```
5
1 2 3 4 5
5
1 2 4
0 2 4
1 2 4
0 4 5
1 1 5
4
10 10 10 10
3
1 1 4
0 2 3
1 1 4
```

**Output:**

Case #1:

9

4

6

Case #2:

40

26