

Range Sum

Problem Statement

You are initially given an array of N integers ($1 \leq N \leq 10^5$). Given this array, you have to perform 2 kinds of operations :

(i) Operation 1 : Op1(l, r)

You are given 2 integers l and r . ($1 \leq l \leq r \leq$ current size of the array). You need to return the sum of all the elements with indices between l and r (both inclusive). That is, if the elements currently in the array are $a_1, a_2, a_3, \dots, a_n$, you need to return the following sum : $a_l + a_{l+1} + a_{l+2} \dots + a_r$.

(ii) Operation 2 : Op2(x)

You are given a single integer x ($|x| \leq 10^9$). Add this element to the beginning of the array. After this operation, x will now become a_1 , the old a_1 will now become a_2 , and so on. The size of the array will increase by 1.

Input

The first line contains a single integer N ($1 \leq N \leq 10^5$), the number of elements initially in the array.

This is followed by a line containing N space separated integers, $a_1 a_2 \dots a_N$. ($|a_i| \leq 10^9$)

The next line contains a single integer Q , the number of operations you will be asked to perform. ($1 \leq Q \leq 10^5$)

Q lines of input follow. Each such line starts with either the number 1 or the number 2. This indicates the type of operation that you are required to perform. The format of these queries are as follows :

1 l r : Carry out operation 1 with arguments l and r . ($1 \leq l \leq r \leq$ current size of the array)
That is, return the sum of the following array elements : $a_l + a_{l+1} \dots + a_r$

2 x : Carry out operation 2 with the argument x . ($|x| \leq 10^9$)
That is, add the value x at the beginning of the array.

Output

For each query of type 1, output the return value on a new line. No output needs to be printed for queries of type 2.

Example

Input #1:

```
10
1 2 3 4 5 6 7 8 9 10
4
1 1 10
1 1 1
1 10 10
1 2 7
```

Output #1:

```
55
1
10
27
```

Input #2:

```
5
6 7 8 9 10
9
2 5
2 4
1 2 7
2 3
2 2
2 1
1 1 10
1 1 1
1 10 10
```

Output #2:

```
45
55
1
10
```