

Contest Duration: 2025-10-18(Sat) 23:30 (<http://www.timeanddate.com/worldclock/fixedtime.html?iso=20251018T2130&p1=248>) - 2025-10-19(Sun) 01:10 (<http://www.timeanddate.com/worldclock/fixedtime.html?iso=20251018T2130&p1=248>) (local time) (100 minutes)

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F - Pyramid Alignment

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Time Limit: 2 sec / Memory Limit: 1024 MiB

Score : 525 points

Problem Statement

There are N intervals on a number line, numbered from 1 to N .

The left endpoint of interval i is at coordinate 0, and the right endpoint is at coordinate W_i .

Here, $W_1 < W_2 < \dots < W_N$.

You are given Q queries; process them in the order they are given. Each query is one of the following three types:

- Type 1 (1 v): Let l be the coordinate of the current **left endpoint** of interval v . Translate each of the intervals numbered v or less so that its **left endpoint** is at coordinate l .
- Type 2 (2 v): Let r be the coordinate of the current **right endpoint** of interval v . Translate each of the intervals numbered v or less so that its **right endpoint** is at coordinate r .
- Type 3 (3 x): Output the current number of intervals that contain coordinate $x + \frac{1}{2}$.

Constraints

- $1 \leq N \leq 2 \times 10^5$
- $1 \leq Q \leq 2 \times 10^5$
- $1 \leq W_i \leq 10^9$ ($1 \leq i \leq N$)
- $W_1 < W_2 < \dots < W_N$
- For v given in queries of types 1 and 2, $1 \leq v \leq N$.

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- For x given in queries of type 3, $0 \leq x \leq 10^9$.
- At least one query of type 3 is given.
- All input values are integers.

Input

The input is given from Standard Input in the following format:

```

N
W1 ... WN
Q
query1
query2
⋮
queryQ

```

query _{j} represents the j -th query. Each query is given in one of the following formats:

```
1 v
```

```
2 v
```

```
3 x
```

Output

Let q be the number of queries of type 3, output q lines. The j -th line ($1 \leq j \leq q$) should contain the answer to the j -th query of type 3.

Sample Input 1

Copy

```

4
2 4 6 10
5
2 3
1 2
3 2
2 4
3 1

```

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Sample Output 1

[Copy](#)

```
4
1
```

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Initially, the intervals in order of their numbers are $[0, 2]$, $[0, 4]$, $[0, 6]$, $[0, 10]$.

- For the 1st query, the coordinate of the **right endpoint** of interval 3 before the operation is 6, so the intervals after the operation are $[4, 6]$, $[2, 6]$, $[0, 6]$, $[0, 10]$ in order of their numbers.
- For the 2nd query, the coordinate of the **left endpoint** of interval 2 before the operation is 2, so the intervals after the operation are $[2, 4]$, $[2, 6]$, $[0, 6]$, $[0, 10]$ in order of their numbers.
- For the 3rd query, the intervals that contain coordinate $2 + \frac{1}{2}$ are intervals 1, 2, 3, 4, which is four intervals, so output 4.
- For the 4th query, the coordinate of the **right endpoint** of interval 4 before the operation is 10, so the intervals after the operation are $[8, 10]$, $[6, 10]$, $[4, 10]$, $[0, 10]$ in order of their numbers.
- For the 5th query, the intervals that contain coordinate $1 + \frac{1}{2}$ is only interval 4, which is one interval, so output 1.

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