

F - Pyramid Alignment

Time Limit: 2 sec / Memory Limit: 1024 MiB

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AtCoder 对于生成式 AI 的规定 - 20251003 版本 (<https://info.atcoder.jp/entry/l1m-rules-en>)

注意此规则已于 2025 年 10 月 3 日更新。详情请见[这篇文章](https://atcoder.jp/posts/1568) (<https://atcoder.jp/posts/1568>)。

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, $1 \leq v \leq N$.
- 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:

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```
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

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

Copy

Sample Output 1

Copy

```
4  
1
```

Copy

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.

C++ 20 (gcc 12.2)



```
1
```

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