E - Clamp

Editorial (/contests/abc432/tasks/abc432_e/editorial)

Time Limit: 2 sec / Memory Limit: 1024 MiB

Score : 450 points

Problem Statement

You are given an integer sequence $A = (A_1, A_2, \ldots, A_N)$ of length N.

You are given Q queries, which you should process in order. Each query is in one of the following formats:

- `1 x y` : Change the value of A_x to y.
- `2 l r` : Find the value of $\sum_{1 \leq i \leq N} \max(l, \min(r, A_i))$.

Constraints

- $1 \leq N \leq 5 \times 10^5$
- $1 \leq Q \leq 2 \times 10^5$
- $0 \leq A_i \leq 5 \times 10^5$
- For queries of the first type,
  - $1 \leq x \leq N$
  - $0 \leq y \leq 5 \times 10^5$
- For queries of the second type,
  - $0 \leq l, r \leq 5 \times 10^5$
- All inputs are integers.

Input

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

$$
\begin{aligned}
&N \quad Q \\
&A_1 \quad A_2 \quad \dots \quad A_N \\
&\mathrm{query}_1 \\
&\mathrm{query}_2 \\
&\vdots \\
&\mathrm{query}_Q
\end{aligned}
$$

Here, query_i $(1 \leq i \leq Q)$ represents the i-th query and is given in one of the following formats:

$$1 \quad x \quad y$$

$$2 \quad l \quad r$$

Output

Let K be the number of queries of the second type. Output K lines. The i-th line ($1 \leq i \leq K$) should contain the answer to the i-th query of the second type.

Sample Input 1 Copy

Copy

```
3 4
4 3 2
1 1 7
2 3 5
1 2 0
2 4 2
```

Sample Output 1 Copy

Copy

```
11
12
```

Initially, $A = (4, 3, 2)$.

- First query: Change the value of A_1 to 7. A becomes $(7, 3, 2)$.
- Second query: Output $\max(3, \min(5, 7)) + \max(3, \min(5, 3)) + \max(3, \min(5, 2)) = 5 + 3 + 3 = 11$.
- Third query: Change the value of A_2 to 0. A becomes $(7, 0, 2)$.

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- Fourth query: Output $\max(4, \min(2, 7)) + \max(4, \min(2, 0)) + \max(4, \min(2, 2)) = 4 + 4 + 4 = 12$.

Sample Input 2 Copy

Copy

```
8 10
320 578 244 604 145 839 156 857
2 400 556
1 5 168
2 254 62
2 145 301
1 1 23
1 3 0
2 413 758
2 297 613
1 8 451
2 598 692
```

Sample Output 2 Copy

Copy

```
3824
2032
2073
4350
3596
4884
```

/#telegram)

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