

Contest Duration: 2025-11-15(Sat) 23:00 (<http://www.timeanddate.com/worldclock/fixedtime.html?iso=20251115T2100&p1=248>) - 2025-11-16(Sun) 00:40 (<http://www.timeanddate.com/worldclock/fixedtime.html?iso=20251115T2240&p1=248>) (local time) (100 minutes)

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E - Clamp

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Time Limit: 2 sec / Memory Limit: 1024 MiB

Score : 450 points

Problem Statement

You are given an integer sequence $A = (A_1, A_2, \dots, A_N)$ 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:

```
N Q
A1 A2 ... AN
query1
query2
:
queryQ
```

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

```
1 x y
```

```
2 l 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

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

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Sample Output 1

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```
11
12
```

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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 $(7, 0, 2)$.

- 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

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```
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
```

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Sample Output 2

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

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'#telegram)

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