Overflow

Time limit: 1.4s **Memory limit:** 256M

Joe is an economical man and he has found a new scheme to save some money! Joe wants to save money on his water bill, so he decides to collect rainwater. Joe has a row of N water containers, all initially empty and each with a maximum capacity of v_i liters of water. The containers are connected in such a way that when container i overflows, the excess liquid flows to container $i+1$. When container N overflows, the extra water magically disappears. Joe wishes to gather information about the efficacy of his setup, and so he has prepared Q queries of the following types:

- $1\ l\ r\ v$: Rainfall arrives, and v liters of water falls directly into each container from position l to r inclusive.
- $2\ x\ v$: Joe changes the maximum capacity of bucket x to v. If the volume decreases, any resulting overflow passes on to bucket $x+1$ as usual.
- $3\ x$: Joe wishes to know the current volume of water being held in container x.

Constraints

$1 \leq N, Q \leq 10^5$

$1 \leq x_i \leq N$

$1 \leq l_i \leq r_i \leq N$

$1 \leq v_i \leq 10^{12}$

Subtask 1 [10%]

$1 \leq N, Q \leq 100$

Subtask 2 [10%]

All queries of type 3 appear after all queries of type 1; there are no queries of type 2.

Subtask 3 [30%]

For all queries of type 1, $l_i = r_i$.

Subtask 4 [50%]

No additional constraints.

Input Specification

The first line will contain N and Q, the number of containers and number of queries respectively.

The second line will contain N space-separated integers, $v_1, v_2, \ldots, v_N$.

The next Q lines will contain queries of the form mentioned in the problem description.

Output Specification

Output the answer to each type 3 query on separate lines.

Sample Input

```
5 5
4 5 2 9 3
1 1 2 3
2 1 1
1 2 5 2
3 4
3 5
```

Sample Output

```
4
2
```