Problem K. Easy problem II

Input file:	standard input
Output file:	standard output
Time limit:	8 seconds
Memory limit:	512 megabytes

note:The difference is that in this version,operation 1 is different,$n, m \leq 10^5$, x can take any possible value.

For a given sequence of n intergers a.

There are two types of operations:

$1 \quad l \quad r \quad x \quad (1 \leq l \leq r \leq n)$ — for each $i \in [l, r]$,change $a_i = \begin{cases} x - a_i & \text{if } a_i < x \\ \\ x + a_i & \text{if } a_i \geq x \end{cases}$.

$2 \quad l \quad r \quad (1 \leq l \leq r \leq n)$ — output ans $= \sum\limits_{i=l}^{r} a_i$

Input

The input consists of multiple test cases. The first line contains a single integer $T(1 \leq T \leq 1)$ — the number of test cases.

The first line of each test case contains two integers n and $m, (1 \leq n \leq 10^5, 1 \leq m \leq 10^5)$— the length of sequence and the number of operations.

The next line contains n integer $a_i(0 \leq a_i \leq 10^7)$

The next m line contains some integers opt, l, r, x $(1 \leq \text{opt} \leq 2, 1 \leq l \leq r \leq n, 0 \leq x \leq 10^7)$ — indicating the operations.

Output

For each query, output an interger in a single line indicating the ans.

Example

standard input	standard output
1	3
5 5	14
1 2 3 4 5	32
1 1 5 3	
2 1 2	
2 2 4	
1 2 3 5	
2 1 5	