Problem J. Easy problem I

Input file:	standard input
Output file:	standard output
Time limit:	9 seconds
Memory limit:	512 megabytes

note:The difference is that in this version,operation 1 **is different,**$n, m \leq 2 \times 10^5$,$x_j \leq x_{j+1}$.

For a given sequence of n intergers a.

There are two types of operations:

1   l r x_j $(1 \leq l \leq r \leq n)$ — for each $i \in [l, r]$,change $a_i = |a_i - x_j|$.

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

tips:Due to the large input data, it may be necessary to FastIO.

Input

The input consists of multiple test cases. The first line contains a single integer $T(1 \leq T \leq 5)$ — the number of test cases.

The first line of each test case contains two integers n and m, $(1 \leq n \leq 2 \times 10^5, 1 \leq m \leq 2 \times 10^5)$ — 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 $(1 \leq opt \leq 2, 1 \leq l \leq r \leq n, 0 \leq x \leq 10^7)$ — 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	2
1 2 3 4 5	14
1 1 5 3	
2 1 2	
2 2 4	
1 2 3 5	
2 1 5	