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D. Problem About Weighted Sum

time limit per test: 1 second
memory limit per test: 256 megabytes input: standard input output: standard output

In this problem you are to answer queries about weighted sum of a given array. Formally, you are given an array $a[1 \dots n]$ of length n. You are to answer queries of two types:

- change on segment: given three integers l,r,d you are to add d to each elements i of the array, such that $l \leq i \leq r$,
- compute weighted sum: given two integers l,r you are to compute and print $a[l]\cdot 1+a[l+1]\cdot 2+\dots \ a[r]\cdot (r-l+1).$

Input

The first line contains two integers n, m ($1 \le n, m \le 10^5$), n is the length of the array, and m is the number of queries.

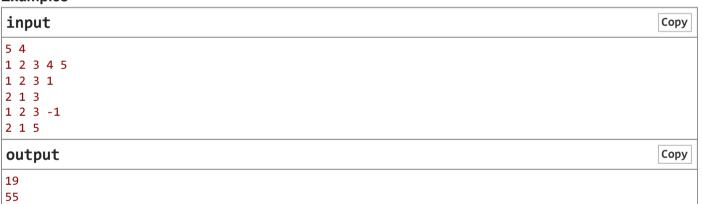
The second line contains integers $a[1], a[2], \ldots, a[n]$ ($-100 \le a[i] \le 100$) — the given array.

Next m lines contain queries, one per line. Query of the first type is given as "1 l r d" ($1 \le l \le r \le n, -100 \le d \le 100$), and query of the second type is given as "2 l r" ($1 \le l \le r \le n$).

Output

For each query of the second type, print the answer on a separate line.

Examples



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