

D. The Child and Sequence

time limit per test: 4 seconds
memory limit per test: 256 megabytes

At the children's day, the child came to Picks's house, and messed his house up. Picks was angry at him. A lot of important things were lost, in particular the favorite sequence of Picks.

Fortunately, Picks remembers how to repair the sequence. Initially he should create an integer array $a[1], a[2], \dots, a[n]$. Then he should perform a sequence of m operations. An operation can be one of the following:

- Print operation l, r . Picks should write down the value of $\sum_{i=l}^r a[i]$.
- Modulo operation l, r, x . Picks should perform assignment $a[i] = a[i] \bmod x$ for each i ($l \leq i \leq r$).
- Set operation k, x . Picks should set the value of $a[k]$ to x (in other words perform an assignment $a[k] = x$).

Can you help Picks to perform the whole sequence of operations?

Input

The first line of input contains two integer: n, m ($1 \leq n, m \leq 10^5$). The second line contains n integers, separated by space: $a[1], a[2], \dots, a[n]$ ($1 \leq a[i] \leq 10^9$) — initial value of array elements.

Each of the next m lines begins with a number $type$ ($type \in \{1, 2, 3\}$).

- If $type = 1$, there will be two integers more in the line: l, r ($1 \leq l \leq r \leq n$), which correspond the operation 1.
- If $type = 2$, there will be three integers more in the line: l, r, x ($1 \leq l \leq r \leq n$; $1 \leq x \leq 10^9$), which correspond the operation 2.
- If $type = 3$, there will be two integers more in the line: k, x ($1 \leq k \leq n$; $1 \leq x \leq 10^9$), which correspond the operation 3.

Output

For each operation 1, please print a line containing the answer. Notice that the answer may exceed the 32-bit integer.

Examples

input	Copy
5 5 1 2 3 4 5 2 3 5 4 3 3 5 1 2 5 2 1 3 3 1 1 3	
output	Copy
8 5	

input	Copy
10 10 6 9 6 7 6 1 10 10 9 5 1 3 9 2 7 10 9 2 5 10 8 1 4 7 3 3 7 2 7 9 9 1 2 4 1 6 6 1 5 9 3 1 10	
output	Copy
49 15 23 1 9	

Note

Consider the first testcase:

- At first, $a = \{1, 2, 3, 4, 5\}$.
- After operation 1, $a = \{1, 2, 3, 0, 1\}$.
- After operation 2, $a = \{1, 2, 5, 0, 1\}$.
- At operation 3, $2 + 5 + 0 + 1 = 8$.
- After operation 4, $a = \{1, 2, 2, 0, 1\}$.
- At operation 5, $1 + 2 + 2 = 5$.

Codeforces Round 250 (Div. 1)

Finished

Practice

→ Virtual participation

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Start virtual contest

→ Clone Contest to Mashup

You can clone this contest to a mashup.

Clone Contest

→ Submit?

Language: GNU G++20 13.2 (64 bit, win

Choose file: Choose File No file chosen

Submit

→ Last submissions

Submission	Time	Verdict
291103004	Nov/11/2024 21:17	Accepted
277450655	Aug/21/2024 02:25	Accepted

→ Problem tags

data structures math *2300

No tag edit access

→ Contest materials

- Codeforces Round #250
- Tutorial (en)