B. Sereja and Array

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

Sereja has got an array, consisting of n integers, $a_1, a_2, ..., a_n$. Sereja is an active boy, so he is now going to complete m operations. Each operation will have one of the three forms:

1. Make v_i-th array element equal to x_i. In other words, perform the assignment $a_{v_i} = x_i$.
2. Increase each array element by y_i. In other words, perform n assignments $a_i = a_i + y_i$ $(1 \le i \le n)$.
3. Take a piece of paper and write out the q_i-th array element. That is, the element a_{q_i}.

Help Sereja, complete all his operations.

Input

The first line contains integers n, m $(1 \le n, m \le 10^5)$. The second line contains n space-separated integers $a_1, a_2, ..., a_n$ $(1 \le a_i \le 10^9)$ — the original array.

Next m lines describe operations, the i-th line describes the i-th operation. The first number in the i-th line is integer t_i $(1 \le t_i \le 3)$ that represents the operation type. If $t_i = 1$, then it is followed by two integers v_i and x_i, $(1 \le v_i \le n, 1 \le x_i \le 10^9)$. If $t_i = 2$, then it is followed by integer y_i $(1 \le y_i \le 10^4)$. And if $t_i = 3$, then it is followed by integer q_i $(1 \le q_i \le n)$.

Output

For each third type operation print value a_{q_i}. Print the values in the order, in which the corresponding queries follow in the input.

Examples

input
10 11 1 2 3 4 5 6 7 8 9 10 3 2 3 9 2 10 3 1 3 10 1 1 10 2 10 2 10 3 1 3 10 3 9

output
2 9 11 20 30 40 39