# Problem E. Efficient Data Structure

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|---|---|
| Input file: | *standard input* |
| Output file: | *standard output* |
| Time limit: | 5 seconds |
| Memory limit: | 512 mebibytes |

Elly has two sequences $a_1, a_2, \ldots, a_n$ and $b_1, b_2, \ldots, b_n$. She would like to perform the following operations:

- `1` $x$ $y$, change the value of $a_x$ to $y$.
- `2` $x$ $y$, change the value of $b_x$ to $y$.
- `3` $x$, find the value of $c_x$, where $c_0 = 0$, $c_i = \max(c_{i-1} + b_i, a_i)$ for $1 \le i \le x$.

Implement an efficient data structure to process those operations.

## Input

The input consists of several test cases terminated by end-of-file. For each test case:

The first line contains two integers $n$ and $m$ , which are the length of the two sequences and the number of operations. The second line contains $n$ integers $a_1, a_2, \ldots, a_n$. The third line contains $n$ integers $b_1, b_2, \ldots, b_n$. Each of the last $m$ lines contains a query.

- $1 \le n, m \le 2 \times 10^5$
- $-10^9 \le a_i, b_i, y \le 10^9$
- $1 \le x \le n$
- The sum of $n$ and the sum of $m$ do not exceed $2 \times 10^6$.

## Output

For each query of type 3, output an integer denoting the value of $c_x$.

## Example

| standard input | standard output |
|---|---|
| 4 9<br>1 2 3 3<br>-1 2 3 3<br>3 1<br>3 2<br>3 3<br>3 4<br>2 2 -4<br>3 1<br>3 2<br>3 3<br>3 4 | 1<br>3<br>6<br>9<br>1<br>2<br>5<br>8 |