Ada and List

Ada the Ladybug has a TODO-list (containing only numbers - for simplicity). She is still doing something, so she sometimes erases k^{th} number, sometimes she inserts something on k^{th} position and sometime she asks for k^{th} number.

Sadly, she is now searching for a work at position **k** so she doesn't have time to do this herself. Can you help her?

Input

The first line will contain $0 < N \leq 10^5, 0 < Q < 5*10^5$, the number of elements in TODO-list and number of queries.

Then a line with **N** numbers follows. Each number $0 \leq A_k \leq 10^9$ means k^{th} number in her TODO-list.

Afterward, **Q** lines follow, each beginning with number $1 \leq a \leq 3$

1 **k x** means that you will add number **x** to position **k**

2 **k** means that you will erase number from position **k**

3 **k** means that you will print number from position **k**

For all queries, it is true that $1 \leq k \leq \#SizeOfList$, $0 \leq x \leq 10^9$ (for query **1**, it can be also put to position **#SizeOfList + 1**)

You will never get query of type **2** or **3** if the list is empty

Output

For each query of type **3**, print k^{th} numbers

Example Input

```
6 10
1 2 4 8 16 32
3 4
1 1 7
3 2
2 2
2 2
3 2
1 6 666
3 6
2 1
3 1
```

Example Output

8
1
4
666
4

Queries explanations

1 2 4 **8** 16 32
7 1 2 4 8 16 32
7 **1** 2 4 8 16 32
7 2 4 8 16 32
7 4 8 16 32
7 **4** 8 16 32
7 4 8 16 32 666
7 4 8 16 32 **666**
4 8 16 32 666
4 8 16 32 666