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[Home \(/\)](#) » [Compete \(/contests/\)](#) » [April Lunchtime 2021 Division 2 \(/LTIME95B\)](#) » Array Rotation

# Array Rotation

Problem Code: **ARRROT**

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Given an array  $A$  of length  $N$ , we can define rotation as follows. If we rotate  $A$  to the right, all elements move to the right one unit, and the last element moves to the beginning. That is, it becomes  $[A_N, A_1, A_2, \dots, A_{N-1}]$ . Similarly if we rotate  $A$  to the left, it becomes  $[A_2, A_3, \dots, A_N, A_1]$ .

Given an array  $A$  and an integer  $x$ , define  $f(A, x)$  to be the array  $A$  rotated by the amount  $x$ . If  $x \geq 0$ , this means we rotate it right  $x$  times. If  $x < 0$ , this means we rotate it left  $|x|$  times.

You are given an array  $A$  of length  $N$ . Then  $Q$  queries follow. In each query, an integer  $x$  is given. To answer the query, you should replace  $A$  with  $A + f(A, x)$  where  $+$  denotes concatenation. After this operation, you must output the sum of all elements of  $A$ . Since this number can be large, output it modulo  $10^9 + 7$ .

Note that the queries are cumulative. When you modify  $A$  to answer one query, it starts that way for the next query.

## Input

- The first line contains an integer  $N$  - the size of the initial array.
- The second line contains  $N$  integers  $A_1, \dots, A_N$  - the elements of the initial array.
- The third line contains an integer  $Q$  - the number of queries.
- The fourth line contains  $Q$  space-separated integers  $x_1, \dots, x_Q$ , where  $x_i$  is the parameter of the  $i$ -th query.

## Output

After each query, output in a single line the the sum of all elements of the current array modulo  $10^9 + 7$ .

## Constraints

- $1 \leq N \leq 10^5$
- $1 \leq Q \leq 10^5$
- $-10^9 \leq A_i \leq 10^9$
- $-10^5 \leq x_i \leq 10^5$

## Subtasks

**Subtask #1 (100 points):** original constraints

## Sample Input

```
2
1 2
2
1 1
```

### Submission Ends In

2 14 53  
Hrs Min Sec

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**Successful Submissions**



## Sample Output

6  
12

## Explanation

Initially, the array is  $[1, 2]$ . After the first query, the array becomes  $[1, 2] + f([1, 2], 1) = [1, 2] + [2, 1] = [1, 2, 2, 1]$ . The total sum is 6. After the second query, the array becomes  $[1, 2, 2, 1] + f([1, 2, 2, 1], 1) = [1, 2, 2, 1] + [1, 1, 2, 2]$ . The total sum is 12.  
 $= [1, 2, 2, 1, 1, 1, 2, 2]$

Date Added: 19-04-2021

Time Limit: 0.5 secs

Source Limit: 50000 Bytes

Languages: CPP14, C, JAVA, PYTH 3.6, PYTH, CS2, ADA, PYPY, PYP3, TEXT, CPP17, PAS fpc, RUBY, PHP, NODEJS, GO, TCL, HASK, PERL, SCALA, kotlin, BASH, JS, PAS gpc, BF, LISP sbcl, CLOJ, LUA, D, R, CAML, rust, ASM, FORT, FS, LISP clisp, SQL, swift, SCM guile, PERL6, CLPS, WSPC, ERL, ICK, NICE, PRLG, ICON, PIKE, COB, SCM chicken, SCM qobi, ST, NEM, SQLQ

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