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 $[A_N, A_1, A_2, \ldots, A_{N-1}]$. Similarly if we rotate A to the left, it becomes $[A_2, A_3, \ldots, A_N, A_1]$.

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 $A_1, \ldots, A_N$ - 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 $x_1, \ldots, x_Q$, 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 Hrs 16 Min 30 Sec

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