

Shifted Additions

Input file: **standard input**
Output file: **standard output**
Time limit: 1 second
Memory limit: 256 megabytes

The problemsetter has seen way too many TikToks and Reels and has completely lost all creativity. So, fortunately for you, there is no story here — just the raw problem.

You are given an integer n and an array a of length n . You have an array b of length n that is initially filled with zeros.

You have to process q queries as follows.

Given an index i , update array b in the following way:

$$\begin{aligned} b_i &= b_i + a_1, \\ b_{i+1} &= b_{i+1} + a_2, \\ b_{i+2} &= b_{i+2} + a_3, \dots \end{aligned}$$

The updates continue while the index does not exceed n .

Formally, for every integer k such that $i + k - 1 \leq n$:

$$b_{i+k-1} = (b_{i+k-1} + a_k) \bmod 998244353$$

After processing the q queries, you need to print the whole array b .

If you want, next we can:

- write the editorial
- or add an evil constraints section to scare people just a bit more

Input

- The first line contains a single integer n ($1 \leq n \leq 2 \times 10^5$).
- The second line contains n integers $a_1, a_2, \dots, a_n$ ($0 \leq a_i < 998244353$).
- The third line contains a single integer q ($1 \leq q \leq 2 \times 10^5$) — the number of queries.
- The next q lines each contain one query.

Output

Output a single line containing n integers — the final state of array b .

Example

standard input	standard output
5 1 2 3 4 5 3 1 3 5	1 2 4 6 9

Note

- The initial array b is $[0, 0, 0, 0, 0]$
- After the first query, the array is $[1, 2, 3, 4, 5]$
- After the second query, the array is $[1, 2, 4, 6, 8]$
- After the last query, the array is $[1, 2, 4, 6, 9]$