

# Emma and sum of products

Emma is really fond of integers and loves playing with them. Her friends were jealous, and to test her, one of them gave her a problem.

Emma is given a list  $A$  of  $N$  integers and is asked a set of  $Q$  queries. Each query is denoted by an integer  $K$ , for which you have to return the sum of product of all possible sublists having exactly  $K$  elements.

Emma has got stuck in this problem and you being her best friend have decided to help her write a code to solve it. Since the answers can be very large, print the answers modulo **100003**.

### Input Format

First line has an integer  $N$ , denoting the number of integers in list  $A$ . Next line contains  $N$  space separated integers. The third line contains integer  $Q$ , and next  $Q$  lines have a single integer  $K$ .

### Output Format

For each of the queries, print the corresponding answer in a new line.

**NOTE** Sublist here refers to selecting  $K$  elements from a list of  $N$  elements. There will be  $\binom{N}{K}$  ways to do that, it doesn't matter if two elements are same.

### Constraints

$$1 \leq N \leq 3 \times 10^4$$
$$1 \leq A_i \leq 10^5$$
$$1 \leq Q \leq N$$
$$1 \leq K \leq N$$

### Sample Input #00

```
3
1 2 3
2
1
2
```

### Sample Output #00

```
6
11
```

### Sample Input #01

```
3
1 2 2
1
2
```

### Sample Output #01

## Explanation

Sample #00:

For  $K = 1$  possible sublists are  $\{1\}, \{2\}, \{3\}$  so answer is  $1 + 2 + 3 = 6$ .

For  $K = 2$  possible sublists are  $\{1, 2\}, \{2, 3\}, \{3, 1\}$  so answer is  
 $(1 \times 2) + (2 \times 3) + (3 \times 1) = 2 + 6 + 3 = 11$ .

Sample #01:

For  $K = 2$  possible sublists are  $\{1, 2\}, \{2, 2\}, \{2, 1\}$  so answer is  
 $(1 \times 2) + (2 \times 2) + (2 \times 1) = 2 + 4 + 2 = 8$ .