

# Summing Pieces



Consider an array,  $A$ , of length  $n$ . We can split  $A$  into contiguous segments called *pieces* and store them as another array,  $B$ . For example, if  $A = [1, 2, 3]$ , we have the following arrays of pieces:

- $B = [(1), (2), (3)]$  contains three 1-element pieces.
- $B = [(1, 2), (3)]$  contains two pieces, one having 2 elements and the other having 1 element.
- $B = [(1), (2, 3)]$  contains two pieces, one having 1 element and the other having 2 elements.
- $B = [(1, 2, 3)]$  contains one 3-element piece.

We consider the *value* of a piece in some array  $B$  to be

(*sum of all numbers in the piece*)  $\times$  (*length of piece*), and we consider the *total value* of some array  $B$  to be the sum of the values for all pieces in that  $B$ . For example, the total value of  $B = [(1, 2, 4), (5, 1), (2)]$  is  $(1 + 2 + 4) \times 3 + (5 + 1) \times 2 + (2) \times 1 = 35$ .

Given  $A$ , find the total values for all possible  $B$ 's, sum them together, and print this sum modulo  $(10^9 + 7)$  on a new line.

## Input Format

The first line contains a single integer,  $n$ , denoting the size of array  $A$ .

The second line contains  $n$  space-separated integers describing the respective values in  $A$  (i.e.,  $a_0, a_1, \dots, a_{n-1}$ ).

## Constraints

- $1 \leq n \leq 10^6$
- $1 \leq a_i \leq 10^9$

## Output Format

Print a single integer denoting the sum of the total values for all piece arrays ( $B$ 's) of  $A$ , modulo  $(10^9 + 7)$ .

## Sample Input 0

```
3
1 3 6
```

## Sample Output 0

```
73
```

## Explanation 0

Given  $A = [1, 3, 6]$ , our piece arrays are:

- $B = [(1), (3), (6)]$ , and *total value* =  $(1) \times 1 + (3) \times 1 + (6) \times 1 = 10$ .
- $B = [(1, 3), (6)]$ , and *total value* =  $(1 + 3) \times 2 + (6) \times 1 = 14$ .
- $B = [(1), (3, 6)]$ , and *total value* =  $(1) \times 1 + (3 + 6) \times 2 = 19$ .
- $B = [(1, 3, 6)]$ , and *total value* =  $(1 + 3 + 6) \times 3 = 30$ .

When we sum all the total values, we get  $10 + 14 + 19 + 30 = 73$ . Thus, we print the result of  $73 \bmod (10^9 + 7) = 73$  on a new line.

**Sample Input 1**

```
5
4 2 9 10 1
```

**Sample Output 1**

```
971
```