

Consecutive Neighbours

time limit per test: 1 second (2 seconds for Python)

memory limit per test: 250 megabytes

input: standard input

output: standard output

points: 100 · problem code: adjneighbours

A uniformly random permutation π of $1, 2, \dots, n$ is generated. For each $i = 1, 2, \dots, n - 1$, if the values i and $i + 1$ appear in adjacent positions of π , you score w_i .

Let X be the total score. Output the expected value of X .

It can be shown that the answer can be expressed as a rational number P/Q in lowest terms with Q coprime to $10^9 + 7$. Output $P \cdot Q^{-1} \bmod (10^9 + 7)$.

Input

The first line contains an integer n .

The second line contains $n - 1$ integers $w_1, w_2, \dots, w_{n-1}$. If $n = 1$, this line is empty.

Output

Print a single integer: the expected total score modulo $10^9 + 7$.

Constraints

- $1 \leq n \leq 2 \cdot 10^5$
- $0 \leq w_i \leq 10^9$

Example 1

Input

```
3
1 1
```

Output

```
333333337
```

Explanation

There are two pairs, $(1, 2)$ and $(2, 3)$. Each pair of consecutive values occupies adjacent positions with probability $2/3$, so the expected score is $4/3$. $4 \cdot 3^{-1} \equiv 333333337 \pmod{10^9 + 7}$.

Example 2

Input

```
2
10
```

Output

```
10
```

Explanation

The two values are always adjacent, so the score is always 10.

Example 3

Input

1

Output

0

Explanation

There are no consecutive pairs when $n = 1$.