E. Intercity Travelling

time limit per test
1.5 seconds
memory limit per test
256 megabytes
input
standard input
output
standard output

Leha is planning his journey from Moscow to Saratov. He hates trains, so he has decided to get from one city to another by car.

The path from Moscow to Saratov can be represented as a straight line (well, it's not that straight in reality, but in this problem we will consider it to be straight), and the distance between Moscow and Saratov is n km. Let's say that Moscow is situated at the point with coordinate 0 km, and Saratov — at coordinate n km.

Driving for a long time may be really difficult. Formally, if Leha has already covered i kilometers since he stopped to have a rest, he considers the *difficulty of covering* $(i+1)$-th kilometer as a_{i+1}. It is guaranteed that for every $i \in [1, n-1]$ $a_i \leq a_{i+1}$. The difficulty of the journey is denoted as the sum of difficulties of each kilometer in the journey.

Fortunately, there may be some rest sites between Moscow and Saratov. Every integer point from 1 to $n-1$ may contain a rest site. When Leha enters a rest site, he may have a rest, and the next kilometer will have difficulty a_1, the kilometer after it — difficulty a_2, and so on.

For example, if $n=5$ and there is a rest site in coordinate 2, the difficulty of journey will be $2a_1 + 2a_2 + a_3$: the first kilometer will have difficulty a_1, the second one — a_2, then Leha will have a rest, and the third kilometer will have difficulty a_1, the fourth — a_2, and the last one — a_3. Another example: if $n=7$ and there are rest sites in coordinates 1 and 5, the difficulty of Leha's journey is $3a_1 + 2a_2 + a_3 + a_4$.

Leha doesn't know which integer points contain rest sites. So he has to consider every possible situation. Obviously, there are 2^{n-1} different distributions of rest sites (two distributions are different if there exists some point x such that it contains a rest site in exactly one of these distributions). Leha considers all these distributions to be equiprobable. He wants to calculate p — the expected value of difficulty of his journey.

Obviously, $p \cdot 2^{n-1}$ is an integer number. You have to calculate it modulo 998244353.

Input

The first line contains one number n ($1 \leq n \leq 10^6$) — the distance from Moscow to Saratov.

The second line contains n integer numbers $a_1, a_2, \ldots, a_n$ ($1 \leq a_1 \leq a_2 \leq \cdots \leq a_n \leq 10^6$), where a_i is the difficulty of i-th kilometer after Leha has rested.

Output

Print one number — $p \cdot 2^{n-1}$, taken modulo 998244353.

Examples

input

Copy

```
2
1 2
```

output

Copy

5

input

Copy

4
1 3 3 7

output

Copy

60