Problem E. Experiment With Balls

Input file:	*standard input*
Output file:	*standard output*
Time limit:	1 second
Memory limit:	1024 mebibytes

Consider balls with integers written on them. For each $i = 1, 2, \ldots, N$, there are A_i balls with integer i.

The balls are put into a box and mixed up. Consider a binary string s. Initially, s consists of N digits "0". Then we draw the balls out of the box one by one (uniformly at random and independently) and leave them outside the box. When we draw a ball with integer i written on it, the i-th character of s becomes "1" (or remains unchanged if it was already "1").

Find the probability that, at some moment during this process, s contains "101" as a contiguous substring, and print it modulo the prime number 998 244 353.

Formally, it can be proved that the sought probability is a rational number. Additionally, the constraints of this problem guarantee that, if this number is represented as an irreducible fraction $\frac{y}{x}$, then x is not divisible by 998 244 353. Thus there is a unique q such that $0 \le q < 998\,244\,353$ and $y \equiv x \cdot q \pmod{998\,244\,353}$. You should find and print this value q.

Input

The first line of input contains a single integer N ($1 \le N \le 2 \cdot 10^5$).

The second line contains N integers $A_1, A_2, \ldots, A_N$: here, A_i is the number of balls with integer A_i written on them (all $A_i > 0$ and $\sum_{i=1}^{N} A_i < 998\,244\,353$).

Output

Print the sought probability modulo 998 244 353.

Examples

standard input	*standard output*
3 1 2 3	465847365
10 3 1 4 1 5 9 2 6 5 3	488186016