Trade Analysis

Investment managers are always trying to find new information about the market to better their competitive advantage and help increase their holdings. In her quest to find such information, your boss asks you to analyze a set of dollar amounts from previous trades according to formula $G(S)$. She can then combine the resultant number with other information to gain crucial insight about the market.

Given an n-element sequence, $S = (a_0, a_1, \ldots, a_{n-1})$, of dollar amounts, calculate and print the value of function $G(S)$.

$$G(S) = \sum_{T \text{ is a nonempty subsequence of } S} |T| \cdot (\text{product of all elements in } T)$$

where $|T|$ is the length of the sequence T. As the value of $G(S)$ can be large, print the result modulo $(10^9 + 7)$.

Input Format

The first line contains an integer denoting the value of n.
The second line contains n space-separated integers $a_0, a_1, \ldots, a_{n-1}$, describing the elements in S.

Constraints

- $1 \leq n \leq 10^5$
- $0 \leq a_i \leq 10^9$

Output Format

Print the value of $G(S) \bmod (10^9 + 7)$ on a new line.

Sample Input

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3
1 2 3
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Sample Output

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46
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Explanation

There are 7 nonempty subsequences: $(1), (2), (3), (1, 2), (1, 3), (2, 3), (1, 2, 3)$.

$$\begin{aligned} G(S) &= 1 \cdot (1) + 1 \cdot (2) + 1 \cdot (3) + 2 \cdot (1 \cdot 2) + 2 \cdot (1 \cdot 3) + 2 \cdot (2 \cdot 3) + 3 \cdot (1 \cdot 2 \cdot 3) \\ &= 1 + 2 + 3 + 4 + 6 + 12 + 18 \\ &= 46 \end{aligned}$$

We then print the result of $46 \bmod (10^9 + 7)$, which is 46.