Equalize (hard version)

Input file:	standard input
Output file:	standard output
Time limit:	1 second
Memory limit:	256 megabytes

You are given an array a of n integers.

Consider positive integers $b_1, \ldots, b_n$ that satisfy that for any i, j such that $(1 \leq i < j \leq n)$, $a_i \times b_i = a_j \times b_j$.

Find the minimum possible value of $b_1 + \cdots + b_n$ for such $b_1, \ldots, b_n$.

Since the answer can be enormous, print the sum modulo $(10^9 + 7)$.

Input

First line contains n $(1 \leq n \leq 10^4)$ – number of elements.

Second line contains n integers $a_1, \ldots, a_n$ $(1 \leq a_i \leq 10^6)$

Output

Output one line contains the minimum value for $b_1 + \cdots + b_n$ that satisfies the conditions above modulo $(10^9 + 7)$

Example

standard input	standard output
3 1 2 3	11

Note

The minimum possible value for this test case is $6, 3, 2$

such that $1 \times 6 = 2 \times 3 = 3 \times 2$. So the answer is $6 + 2 + 3 = 11$.