E. Little Elephant and LCM

time limit per test: 4 seconds
memory limit per test: 256 megabytes
input: standard input
output: standard output

The Little Elephant loves the LCM (least common multiple) operation of a non-empty set of positive integers. The result of the LCM operation of k positive integers $x_1, x_2, ..., x_k$ is the minimum positive integer that is divisible by each of numbers x_i.

Let's assume that there is a sequence of integers $b_1, b_2, ..., b_n$. Let's denote their LCMs as $lcm(b_1, b_2, ..., b_n)$ and the maximum of them as $max(b_1, b_2, ..., b_n)$. The Little Elephant considers a sequence b *good*, if $lcm(b_1, b_2, ..., b_n) = max(b_1, b_2, ..., b_n)$.

The Little Elephant has a sequence of integers $a_1, a_2, ..., a_n$. Help him find the number of good sequences of integers $b_1, b_2, ..., b_n$, such that for all i $(1 \le i \le n)$ the following condition fulfills: $1 \le b_i \le a_i$. As the answer can be rather large, print the remainder from dividing it by 1000000007 $(10^9 + 7)$.

Input

The first line contains a single positive integer n $(1 \le n \le 10^5)$ — the number of integers in the sequence a. The second line contains n space-separated integers $a_1, a_2, ..., a_n$ $(1 \le a_i \le 10^5)$ — sequence a.

Output

In the single line print a single integer — the answer to the problem modulo 1000000007 $(10^9 + 7)$.

Examples

input
4 1 4 3 2

output
15

input
2 6 3

output
13