

E. Present for Vitalik the Philatelist

time limit per test: 5 seconds
memory limit per test: 256 megabytes
input: standard input
output: standard output

Vitalik the philatelist has a birthday today!

As he is a regular customer in a stamp store called 'Robin Bobin', the store management decided to make him a gift.

Vitalik wants to buy one stamp and the store will give him a non-empty set of the remaining stamps, such that the greatest common divisor (GCD) of the price of the stamps they give to him is more than one. If the GCD of prices of the purchased stamp and prices of present stamps set will be equal to 1, then Vitalik will leave the store completely happy.

The store management asks you to count the number of different situations in which Vitalik will leave the store completely happy. Since the required number of situations can be very large, you need to find the remainder of this number modulo $10^9 + 7$. The situations are different if the stamps purchased by Vitalik are different, or if one of the present sets contains a stamp that the other present does not contain.

Input

The first line of the input contains integer n ($2 \leq n \leq 5 \cdot 10^5$) — the number of distinct stamps, available for sale in the 'Robin Bobin' store.

The second line contains a sequence of integers a_1, a_2, \dots, a_n ($2 \leq a_i \leq 10^7$), where a_i is the price of the i -th stamp.

Output

Print a single integer — the remainder of the sought number of situations modulo $10^9 + 7$.

Examples

input
3 2 3 2
output
5

input
2 9 6
output
0

Note

In the first sample the following situations are possible:

- Vitalik buys the 1-st stamp, the store gives him the 2-nd stamp as a present;
- Vitalik buys the 3-rd stamp, the store gives him the 2-nd stamp as a present;
- Vitalik buys the 2-nd stamp, the store gives him the 1-st stamp as a present;
- Vitalik buys the 2-nd stamp, the store gives him the 3-rd stamp as a present;
- Vitalik buys the 2-nd stamp, the store gives him the 1-st and 3-rd stamps as a present.