Problem B. Prism of the Bubbles

Input file:	*standard input*
Output file:	*standard output*
Time limit:	2 seconds
Memory limit:	1024 mebibytes

In the magical land of Bubbledom, the annual bubble festival is about to take place. The highlight of the festival is the creation of special "prismatic bubbles", formed through an ancient wizardry that combines three distinct magical prime essences.

A number is called *prismatic* if it is the product of exactly three distinct prime numbers. For example, 30 is a prismatic number since $30 = 2 \cdot 3 \cdot 5$, but 12 is not prismatic since it equals $2 \cdot 2 \cdot 3$ (using the same prime more than once).

The wizards of Bubbledom are given a set of N magical essence numbers, each represented by a positive integer. Your task is to determine how many non-empty subsets of these essence numbers have a product that is a prismatic number.

Since this number can be large, you should output it modulo $10^9 + 7$.

Input

The first line contains an integer N: the number of bubble essence numbers ($1 \le N \le 10^5$).

The second line contains N integers $S_1, S_2, \ldots, S_N$: the essence numbers ($1 \le S_i \le 10^6$).

Output

Print a single integer: the number of subsets whose product is a prismatic number, modulo $10^9 + 7$.

Example

standard input	*standard output*
6 1 3 3 7 21 13	6

Note

In the example, the six subsets are:

- $3, 7, 13$
- $3, 7, 13$ (using the second 3)
- $21, 13$
- $1, 3, 7, 13$
- $1, 3, 7, 13$ (using the second 3)
- $1, 21, 13$