# A. Ancient

time limit per test: 4 seconds
memory limit per test: 256 megabytes

In the hushed sands of time, a story unfolds, tracing back over 5,000 years to the birth of an ancient civilization along the banks of the Nile. Egypt's history, steeped in mystery and grandeur, weaves tales of ancient Egyptians, pyramids, and a timeless legacy that continues to captivate the world to this day. Taha, a determined archaeologist, and Mohamed, a young historian, unite to unravel Egypt's enigmatic past. Their shared journey leads them through the ages, revealing secrets that will reverberate through time, as they uncover the untold tales of the mighty ancient Egyptians and the lost wonders of an ancient world.

While Taha and Mohamed were exploring the ancient Egypt, they came across an array $a$ of $n$ integers. Taha, who loved mathematics, gave it to Mohamed and asked him to count the number of Tahanian subsets in the array. A Tahanian subset is a non-empty group of numbers from the array whose product is a perfect square.

Since Mohamed is occupied with exploring the ancient Egypt, he needs your help to solve the problem. Can you do it?

As the answer can be very big, print it modulo $1000000007(10^9+7)$.

## Input

the first line contains a single integer $n$ $(1 \leq n \leq 10^5)$, the number of elements in the array $a$.

Then $n$ integers separated by a space follow representing the elements of the array $a$ $(1 \leq a_i \leq 10^3)$.

## Output

output an integer represents the number of Tahanian subsets in the array modulo $1000000007(10^9+7)$.

### Examples

| input | Copy |
|---|---|
| 4<br>1 1 1 1 | |

| output | Copy |
|---|---|
| 15 | |

| input | Copy |
|---|---|
| 4<br>2 2 2 2 | |

| output | Copy |
|---|---|
| 7 | |

| input | Copy |
|---|---|
| 5<br>1 2 4 5 8 | |

| output | Copy |
|---|---|
| 7 | |