

Subset Count

Input file: **standard input**
Output file: **standard output**
Time limit: 0.3 seconds
Memory limit: 64 megabytes

Kida decided to test you knowledge again. You are given a list V , of N integers. Kida asks you to count the number of interesting subsets that satisfy the following condition: for any two numbers V_x and V_y in the subset, V_x appears in the subset the same number of times as V_y .

Two subsets are considered different if there is at least one value i such that V_i is in one subset but not in the other. Note that two different subsets might contain the exactly same numbers.

Since this number can be very large, you need to count it modulo $10^9 + 7$.

Input

The first line contains the only integer N ($1 \leq N \leq 10^5$). The second line contains N integers V_i ($1 \leq V_i \leq 10^9$ for each $i = 0 \dots N - 1$).

For tests worth 20 points: $1 \leq N \leq 12$.

For tests worth 20 more points: $1 \leq V_i \leq 2$.

For tests worth 30 more points: $1 \leq N \leq 1000$.

For tests worth 30 more points: No additional limitations.

Output

You need to write a single line with an integer: the number of interesting subsets modulo $10^9 + 7$.

Examples

standard input	standard output
3 1 2 2	7
5 1 2 2 1 3	21

Note

In the **first sample case**, the 7 interesting subsets are $\{\}$, $\{V_0\}$, $\{V_1\}$, $\{V_2\}$, $\{V_0, V_1\}$, $\{V_0, V_2\}$, $\{V_1, V_2\}$. $\{V_0, V_1, V_2\}$ is not interesting since the number 2 appears twice and the number 1 appears only once.