E. Max History

time limit per test: 3 seconds
memory limit per test: 256 megabytes
input: standard input
output: standard output

You are given an array a of length n. We define f_a the following way:

- Initially $f_a = 0, M = 1$;
- for every $2 \le i \le n$ if $a_M < a_i$ then we set $f_a = f_a + a_M$ and then set $M = i$.

Calculate the sum of f_a over all $n!$ permutations of the array a modulo $10^9 + 7$.

Note: two elements are considered different if their indices differ, so for every array a there are exactly $n!$ permutations.

Input

The first line contains integer n ($1 \le n \le 1\,000\,000$) — the size of array a.

Second line contains n integers $a_1, a_2, ..., a_n$ ($1 \le a_i \le 10^9$).

Output

Print the only integer, the sum of f_a over all $n!$ permutations of the array a modulo $10^9 + 7$.

Examples

input
2 1 3

output
1

input
3 1 1 2

output
4

Note

For the second example all the permutations are:

- $p = [1, 2, 3]$: f_a is equal to 1;
- $p = [1, 3, 2]$: f_a is equal to 1;
- $p = [2, 1, 3]$: f_a is equal to 1;
- $p = [2, 3, 1]$: f_a is equal to 1;
- $p = [3, 1, 2]$: f_a is equal to 0;
- $p = [3, 2, 1]$: f_a is equal to 0.

Where p is the array of the indices of initial array a. The sum of f_a is equal to 4.