



BACD Pattern (bacd)

Given a permutation $P = [P_0, P_1, \dots, P_{N-1}]$ of length N , count the number of tuples $0 \leq a < b < c < d < N$, where $P_b < P_a < P_c < P_d$. Since the answer can be large, print its remainder modulo $10^9 + 7$.

Among the attachments of this task you may find a template file `bacd.*` with a sample incomplete implementation.

Input

The input file consists of:

- a line containing integer N .
- a line containing the N integers P_0, \dots, P_{N-1} .

Output

The output file must contain a single line consisting of integer K – the number of such tuples modulo $10^9 + 7$.

The *modulo* operation ($a \bmod m$) can be written in C/C++/Python as `(a % m)` and in Pascal as `(a mod m)`. To avoid the *integer overflow* error, remember to reduce all partial results through the modulus, and not just the final result!
Notice that if $x < 10^9 + 7$, then $2x$ fits into a C/C++ `int` and Pascal `longint`.

Constraints

- $1 \leq N \leq 500\,000$.
- $1 \leq P_i \leq N$ for each $i = 0 \dots N - 1$.
- $P_i \neq P_j$ for every $0 \leq i < j < N$.

Scoring

Your program will be tested against several test cases grouped in subtasks. In order to obtain the score of a subtask, your program needs to correctly solve all of its test cases.

- **Subtask 1** (0 points) Examples.
- **Subtask 2** (30 points) $N \leq 100$.
- **Subtask 3** (30 points) $N \leq 1000$.
- **Subtask 4** (40 points) No additional limitations.

Examples

input	output
5 2 1 3 4 5	3
10 4 5 1 2 8 7 9 3 6 10	27

Explanation

In the **first sample case** the following tuples meet the requirements: $(0, 1, 2, 3)$, $(0, 1, 2, 4)$, $(0, 1, 3, 4)$.