



## 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).