J. TONTON AND DIFFICULT HOMEWORK

Time limit: 1s | Memory limit: 512MB
Input stream: stdin | Output stream: stdout

Little duck Nari is on semester break, golden and beautiful beach are waiting for him. However, there is a monster preventing him from holiday called homework. Even though he has almost finished the homework, there is still a difficult task left. The task is as follows. Given a sequence of n integer numbers $a_1, a_2, \dots, a_n$. There are q operations you need to do in order. Each operation is described by two integers l and r. The operation requires replacing all numbers at position from l to r in the given sequence by either minimum or maximum value of replaced ones. After having done this operation, length of the sequence decreases by $r - l$. The question is how many different sequences that Nari can obtained after having done q operations. Since the answer can be very large, Nari only interested in its remainder after dividing $10^9 + 7$.

Limit

$1 \le n, q \le 10^5$
$1 \le a_i \le 10^9$

Input

- The first line contains one integer – n.
- The second line contains n integers - $a_1, a_2, \dots, a_n$ separated by a single space.
- The third line contains q – number of operations
- The next q lines, each line contains two integers l and r ($1 \le l < r \le length\ of\ sequence\ so\ far$)

Output

- Print exactly one integer modulo $10^9 + 7$ – the number of different sequences after q operations.

Sample

Input	Output
5 1 2 2 3 4 2 1 4 1 2	3