

F. Connected Sensor Array

Standard I/O | Time Limit: 2.0s | Memory Limit: 256MB

A vital defense grid in Sector 2026 relies on a linear sensor array consisting of n monitoring nodes positioned sequentially from 1 to n . The calibration levels of these nodes form a permutation $p_1, p_2, \dots, p_n$ of integers from 1 to n .

To analyze local signal stability, mission control examines every non-empty contiguous subarray $p_l, p_{l+1}, \dots, p_r$ (where $1 \leq l \leq r \leq n$). For each such subarray, an undirected communication graph is constructed as follows:

- The vertices of the graph are the node indices $\{l, l+1, \dots, r\}$.
- For any two indices i and j within the window with $l \leq i < j \leq r$, an undirected link (i, j) is established if and only if $p_i > p_j$.

In other words, two sensor nodes are directly connected if and only if their calibration levels form an inversion. A subarray is deemed coherent if and only if its induced graph is connected. (Note that any singleton window containing exactly one vertex is always considered connected).

Determine the total number of non-empty contiguous subarrays whose induced inversion graph is connected.

Input

The first line contains a single integer n ($1 \leq n \leq 200,000$). The second line contains n space-separated integers $p_1, p_2, \dots, p_n$, forming a permutation of $1, 2, \dots, n$.

Output

Print a single integer: the number of contiguous subarrays that form a connected graph.

Constraints

$1 \leq n \leq 200,000$, p is a permutation of integers from 1 to n .

Standard Input	Standard Output
3 3 1 2	5
4 1 2 3 4	4
4 4 3 2 1	10

Explanation 1: Subarray $[3, 1]$ is connected because $3 > 1$ forms an edge. Subarray $[1, 2]$ has no inversions, so it is disconnected. The three singletons $[3], [1], [2]$ are each trivially connected, and the full array $[3, 1, 2]$ is connected (edges $(1,2)$ and $(1,3)$), yielding 5 connected subarrays in total.

Explanation 2: There are no inversions anywhere in the permutation. Thus, any subarray of length ≥ 2 has zero edges and is disconnected. Only the 4 singleton subarrays are connected.

Explanation 3: Every pair of elements forms an inversion, making the graph for every subarray a complete clique. Thus, all 10 non-empty contiguous subarrays are connected.