1950. Maximum of Minimum Values in All Subarrays Premium

Medium | Topics | Companies | Hint

You are given an integer array `nums` of size `n`. You are asked to solve `n` queries for each integer `i` in the range `0 <= i < n`.

To solve the i^{th} query:

1. Find the **minimum value** in each possible subarray of size `i + 1` of the array `nums`.
2. Find the **maximum** of those minimum values. This maximum is the **answer** to the query.

Return *a **0-indexed** integer array* `ans` *of size* `n` *such that* `ans[i]` *is the answer to the* i^{th} *query.*

A **subarray** is a contiguous sequence of elements in an array.

Example 1:

```
Input: nums = [0,1,2,4]
Output: [4,2,1,0]
Explanation:
i=0:
- The subarrays of size 1 are [0], [1], [2], [4]. The minimum values are 0, 1, 2, 4.
- The maximum of the minimum values is 4.
i=1:
- The subarrays of size 2 are [0,1], [1,2], [2,4]. The minimum values are 0, 1, 2.
- The maximum of the minimum values is 2.
i=2:
- The subarrays of size 3 are [0,1,2], [1,2,4]. The minimum values are 0, 1.
- The maximum of the minimum values is 1.
i=3:
- There is one subarray of size 4, which is [0,1,2,4]. The minimum value is 0.
- There is only one value, so the maximum is 0.
```

Example 2:

```
Input: nums = [10,20,50,10]
Output: [50,20,10,10]
Explanation:
i=0:
- The subarrays of size 1 are [10], [20], [50], [10]. The minimum values are 10, 20, 50, 10.
- The maximum of the minimum values is 50.
i=1:
- The subarrays of size 2 are [10,20], [20,50], [50,10]. The minimum values are 10, 20, 10.
- The maximum of the minimum values is 20.
i=2:
- The subarrays of size 3 are [10,20,50], [20,50,10]. The minimum values are 10, 10.
- The maximum of the minimum values is 10.
i=3:
- There is one subarray of size 4, which is [10,20,50,10]. The minimum value is 10.
- There is only one value, so the maximum is 10.
```

Constraints:

- `n == nums.length`
- `1 <= n <= 10^5`
- `0 <= nums[i] <= 10^9`

Seen this question in a real interview before? 1/5

Yes No

Accepted **3.1K** | Submissions **6.4K** | Acceptance Rate **49.3%**

Topics

Array Stack Monotonic Stack

Companies

0 - 6 months

Amazon 2

Hint 1

Imagine the array is empty, and each element is coming to its index one by one, starting with the smallest element.

Hint 2

For each coming element nums[i], calculate L and R, the indices of the first smallest elements on the left and the right respectively.

Hint 3

The answer of the queries from 1 to R-L+1 will be at least this element.

Discussion (3)