LeetCode 3362. Zero Array Transformation III May 22 2025

3362. Zero Array Transformation III

Solved

Medium | Topics | Companies | Hint

You are given an integer array `nums` of length `n` and a 2D array `queries` where `queries[i] = [l_i, r_i]`.

Each `queries[i]` represents the following action on `nums`:

- Decrement the value at each index in the range `[l_i, r_i]` in `nums` by **at most** 1.
- The amount by which the value is decremented can be chosen **independently** for each index.

A **Zero Array** is an array with all its elements equal to 0.

Return the **maximum** number of elements that can be removed from `queries`, such that `nums` can still be converted to a **zero array** using the *remaining* queries. If it is not possible to convert `nums` to a **zero array**, return -1.

Input: `nums = [1,1,1,1], queries = [[1,3],[0,2],[1,3],[1,2]]`

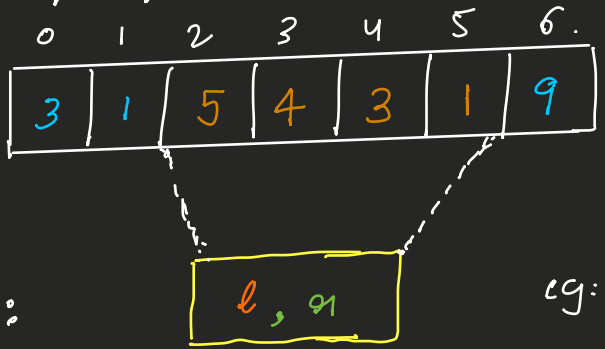
Output: 2

Explanation:

We can remove `queries[2]` and `queries[3]`.

Question: 1) Given an array of +ve numbers.

2) Given q - queries each is a range [l, r] ← index range.



query 1 : eg: (2, 5)

3) In this range, you can decrease any set of numbers by 1 for a query.

4) Finally return true if whole array can be made to zeros.

BUT what is different from Zero Array Tran. I question ??

Catch!!

we need to return the number of queries that are extra without using which can still achieve the zero Array.

Thought Process :-

1) Instead of that, do you think reframing the question would help us think in a clear way??

2) Basically, if you are about to find the extra number of queries, it may be very intuitive.

3) Instead try to use the Minimum Queries to do the job. And whatever answer you get, delete that from Total Queries.

(Total Queries − Minimum Usage = Maximum Leftover) ✓✓

4) Let say for a particular index - 'o'

You has two choices [0-2], [0, 4]

what would you choose? obviously the one that covers most of the array. Because, it can potentially impact larger range to right. ✓✓

5) Next, we need to keep track of Past used queries. Think?? for eg: if a query [0, 3] solves number at position '0'. we need to keep a track of that query until position 3. ✓✓

6) what would you use to keep track of Past used queries ?? - Heap ✓✓

7) The key intuition is that, reframe the question and try to find minimum queries required using Heaps, 1) focus on how longer a query can impact.

2) for a particular query before using a new query check if it can be solved by Past Queries.

This question needs a greedy brain and selection of appropriate Data structures based on the situation.

✓✓ Hopefully this helps.