3323. Minimize Connected Groups by Inserting Interval Premium

Medium | Topics | Companies | Hint

You are given a 2D array `intervals`, where `intervals[i] = [start_i, end_i]` represents the start and the end of interval `i`. You are also given an integer `k`.

You must add **exactly one** new interval `[start_new, end_new]` to the array such that:

- The length of the new interval, `end_new - start_new`, is at most `k`.
- After adding, the number of **connected groups** in `intervals` is **minimized**.

A **connected group** of intervals is a maximal collection of intervals that, when considered together, cover a continuous range from the smallest point to the largest point with no gaps between them. Here are some examples:

- A group of intervals `[[1, 2], [2, 5], [3, 3]]` is connected because together they cover the range from 1 to 5 without any gaps.
- However, a group of intervals `[[1, 2], [3, 4]]` is not connected because the segment `(2, 3)` is not covered.

Return the **minimum** number of connected groups after adding **exactly one** new interval to the array.

Example 1:

> **Input:** `intervals = [[1,3],[5,6],[8,10]], k = 3`
>
> **Output:** 2
>
> **Explanation:**
>
> After adding the interval `[3, 5]`, we have two connected groups: `[[1, 3], [3, 5], [5, 6]]` and `[[8, 10]]`.

Example 2:

> **Input:** `intervals = [[5,10],[1,1],[3,3]], k = 1`
>
> **Output:** 3
>
> **Explanation:**
>
> After adding the interval `[1, 1]`, we have three connected groups: `[[1, 1], [1, 1]]`, `[[3, 3]]`, and `[[5, 10]]`.

Constraints:

- `1 <= intervals.length <= 10^5`
- `intervals[i] == [start_i, end_i]`
- `1 <= start_i <= end_i <= 10^9`
- `1 <= k <= 10^9`

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

Yes No

Accepted 441 | Submissions 731 | Acceptance Rate 60.3%

Topics

Array Binary Search Sliding Window Sorting

Companies

0 - 3 months

DE Shaw 10

Hint 1

Sort the intervals.

Hint 2

Merge all the mergeable intervals.

Hint 3

For each interval, binary search the latest interval that it can be merged with by adding exactly one interval.

Similar Questions

Merge Intervals	Medium

Discussion (1)