

# 2655. Find Maximal Uncovered Ranges Premium

Medium Topics Hint

You are given an integer `n` which is the length of a **0-indexed** array `nums`, and a **0-indexed** 2D-array `ranges`, which is a list of sub-ranges of `nums` (sub-ranges may **overlap**).

Each row `ranges[i]` has exactly 2 cells:

- `ranges[i][0]`, which shows the start of the  $i^{\text{th}}$  range (inclusive)
- `ranges[i][1]`, which shows the end of the  $i^{\text{th}}$  range (inclusive)

These ranges cover some cells of `nums` and leave some cells uncovered. Your task is to find all of the **uncovered** ranges with **maximal** length.

Return a 2D-array `answer` of the uncovered ranges, **sorted** by the starting point in **ascending order**.

By all of the **uncovered** ranges with **maximal** length, we mean satisfying two conditions:

- Each uncovered cell should belong to **exactly** one sub-range
- There should **not exist** two ranges  $(l_1, r_1)$  and  $(l_2, r_2)$  such that  $r_1 + 1 = l_2$

### Example 1:

**Input:** `n = 10, ranges = [[3,5],[7,8]]`

**Output:** `[[0,2],[6,6],[9,9]]`

**Explanation:** The ranges (3, 5) and (7, 8) are covered, so if we simplify the array `nums` to a binary array where 0 shows an uncovered cell and 1 shows a covered cell, the array becomes `[0,0,0,1,1,1,0,1,1,0]` in which we can observe that the ranges (0, 2), (6, 6) and (9, 9) aren't covered.

### Example 2:

**Input:** `n = 3, ranges = [[0,2]]`

**Output:** `[]`

**Explanation:** In this example, the whole of the array `nums` is covered and there are no uncovered cells so the output is an empty array.

### Example 3:

**Input:** `n = 7, ranges = [[2,4],[0,3]]`

**Output:** `[[5,6]]`

**Explanation:** The ranges (0, 3) and (2, 4) are covered, so if we simplify the array `nums` to a binary array where 0 shows an uncovered cell and 1 shows a covered cell, the array becomes `[1,1,1,1,1,0,0]` in which we can observe that the range (5, 6) is uncovered.

### Constraints:

- `1 <= n <= 109`
- `0 <= ranges.length <= 106`
- `ranges[i].length = 2`
- `0 <= ranges[i][j] <= n - 1`
- `ranges[i][0] <= ranges[i][1]`

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

Yes No

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Topics

ArraySorting

Hint 1

The complexity of the solution is independent of the length of the array `nums`.

Hint 2

Sort ranges by their start points.

Hint 3

An uncovered range should start right after the end of one of the input ranges (or starts at zero) and also ends right before the start of one of the input ranges (or ends at `n`).

Similar Questions

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Discussion (1)

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