

Problem 1943: Describe the Painting

Problem Information

Difficulty: Medium

Acceptance Rate: 51.34%

Paid Only: No

Tags: Array, Hash Table, Sorting, Prefix Sum

Problem Description

There is a long and thin painting that can be represented by a number line. The painting was painted with multiple overlapping segments where each segment was painted with a **unique** color. You are given a 2D integer array `segments`, where `segments[i] = [starti, endi, colori]` represents the **half-closed segment** `[starti, endi)` with `colori` as the color.

The colors in the overlapping segments of the painting were **mixed** when it was painted. When two or more colors mix, they form a new color that can be represented as a **set** of mixed colors.

* For example, if colors `2`, `4`, and `6` are mixed, then the resulting mixed color is `{2,4,6}`.

For the sake of simplicity, you should only output the **sum** of the elements in the set rather than the full set.

You want to **describe** the painting with the **minimum** number of non-overlapping **half-closed segments** of these mixed colors. These segments can be represented by the 2D array `painting` where `painting[j] = [leftj, rightj, mixj]` describes a **half-closed segment** `[leftj, rightj)` with the mixed color **sum** of `mixj`.

* For example, the painting created with `segments = [[1,4,5],[1,7,7]]` can be described by `painting = [[1,4,12],[4,7,7]]` because: * `[1,4)` is colored `{5,7}` (with a sum of `12`) from both the first and second segments. * `[4,7)` is colored `{7}` from only the second segment.

Return _the 2D array_ `painting` _describing the finished painting (excluding any parts that are^{not} painted). You may return the segments in **any order**_.

A **half-closed segment** `[a, b)` is the section of the number line between points `a` and `b` **including** point `a` and **not including** point `b`.

Example 1:

Input: segments = [[1,4,5],[4,7,7],[1,7,9]] **Output:** [[1,4,14],[4,7,16]] **Explanation:** The painting can be described as follows: - [1,4) is colored {5,9} (with a sum of 14) from the first and third segments. - [4,7) is colored {7,9} (with a sum of 16) from the second and third segments.

Example 2:

Input: segments = [[1,7,9],[6,8,15],[8,10,7]] **Output:** [[1,6,9],[6,7,24],[7,8,15],[8,10,7]] **Explanation:** The painting can be described as follows: - [1,6) is colored 9 from the first segment. - [6,7) is colored {9,15} (with a sum of 24) from the first and second segments. - [7,8) is colored 15 from the second segment. - [8,10) is colored 7 from the third segment.

Example 3:

Input: segments = [[1,4,5],[1,4,7],[4,7,1],[4,7,11]] **Output:** [[1,4,12],[4,7,12]] **Explanation:** The painting can be described as follows: - [1,4) is colored {5,7} (with a sum of 12) from the first and second segments. - [4,7) is colored {1,11} (with a sum of 12) from the third and fourth segments. Note that returning a single segment [1,7) is incorrect because the mixed color sets are different.

Constraints:

* `1 <= segments.length <= 2 * 104` * `segments[i].length == 3` * `1 <= starti < endi <= 105` * `1 <= colori <= 109` * Each `colori` is distinct.

Code Snippets

C++:

```
class Solution {
public:
vector<vector<long long>> splitPainting(vector<vector<int>>& segments) {
}
};
```

Java:

```
class Solution {
public List<List<Long>> splitPainting(int[][] segments) {
}
}
```

Python3:

```
class Solution:
def splitPainting(self, segments: List[List[int]]) -> List[List[int]]:
```