Line Sweep Algorithm Concepts & Qns

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Video - 10

Motivation :

Your dream doesn't have an expiration date.
Take a deep breath and try again;
the only way you truly lose is if you stop

MIK...

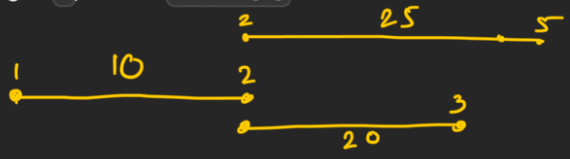
1109. Corporate Flight Bookings

Medium | Topics | Companies

There are `n` flights that are labeled from `1` to `n`.

You are given an array of flight bookings `bookings`, where `bookings[i] = [first_i, last_i, seats_i]` represents a booking for flights `first_i` through `last_i` (**inclusive**) with `seats_i` seats reserved for **each flight** in the range.

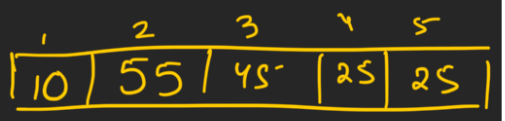
Return *an array* `answer` *of length* `n`*, where* `answer[i]` *is the total number of seats reserved for flight* `i`.



Example 1:

> **Input:** bookings = [[1,2,10],[2,3,20],[2,5,25]], n = 5
> **Output:** [10,55,45,25,25]
> **Explanation:**

```
Flight labels:        1   2   3   4   5
Booking 1 reserved:  10  10
Booking 2 reserved:      20  20
Booking 3 reserved:      25  25  25  25
Total seats:         10  55  45  25  25
Hence, answer = [10,55,45,25,25]
```



Constraints:

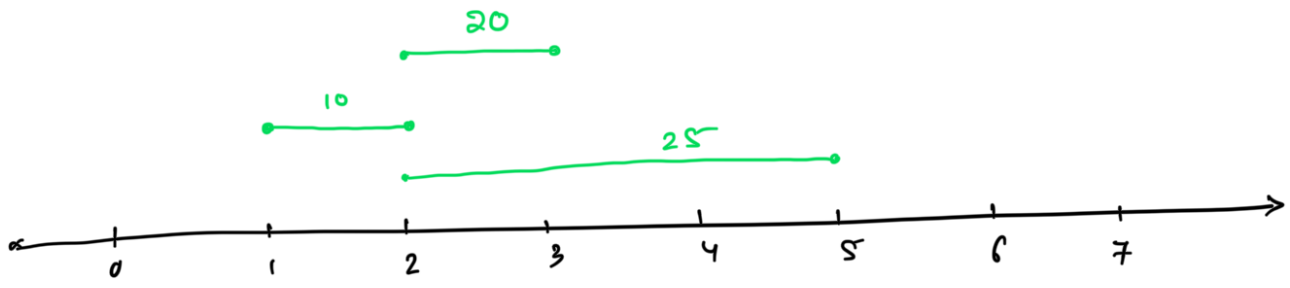
- `1 <= n <= 2 * 10^4`
- `1 <= bookings.length <= 2 * 10^4`
- `bookings[i].length == 3`
- `1 <= first_i <= last_i <= n`
- `1 <= seats_i <= 10^4`

Thought Process

bookings = [(1, 2, 10), (2, 3, 20), (2, 5, 25)], n = 5

mp[start] += 25

mp[end+1] -= 25



start = 2
end = 5
count = 25

Line Sweep.

map

1 → +10
3 → -10
2 → +20 +25
4 → -20
6 → -25

n = 5

map

Key
1 → 10
2 → 45
3 → -10
4 → -20
6 → -25

Cumsum = 10 + 45 - 10 = 45 - 20

1	2	3	4	5
10	55	45	25	

	1	2	3	4	5	6
diff =	+10	45	-10	-20	0	-25

n = 5

Cum : 10 + 45 = 55 - 10 = 45 - 20 = 25 + 0 = 25

Result = { 10, 55, 45, 25, 25 }

1	2	3	4	5

Diff. Arr. Ques

(Line Sweep Tup)

(start, end, seats)

start = 1
end = n

diff[start] += seats.
diff[n+1] -= seats

diff(n+2); ← (n+1)