Line Sweep Algorithm Concepts & Qns

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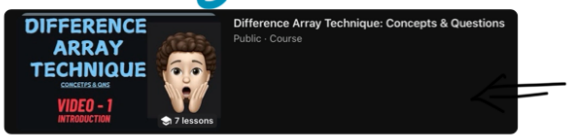
Video - 2

Motivation : When you don't feel like studying, stop and tell yourself - only do it

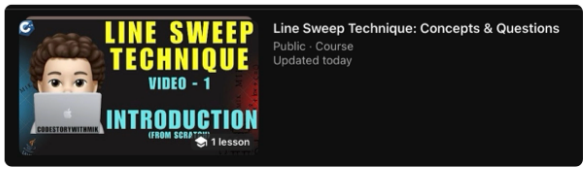
for next (30/45 minutes) and then I'll take a break :)
This helps make you feel good as well as there won't be any guilt of "Not Studying"

Difference Array Technique



VS

Line Sweep Technique

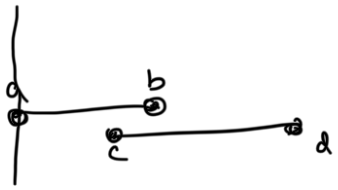


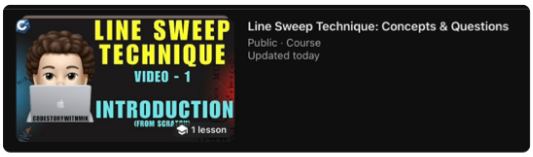
- Difference Array Technique (DAT) is a specific, simplified implementation of the Line Sweep Technique (especially in 1D Problems)

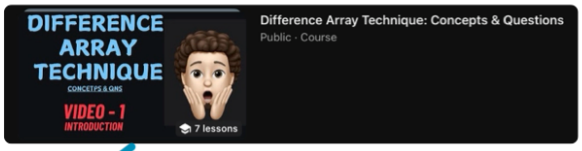
- They might sound different, but they have the

Same Core idea.

Events

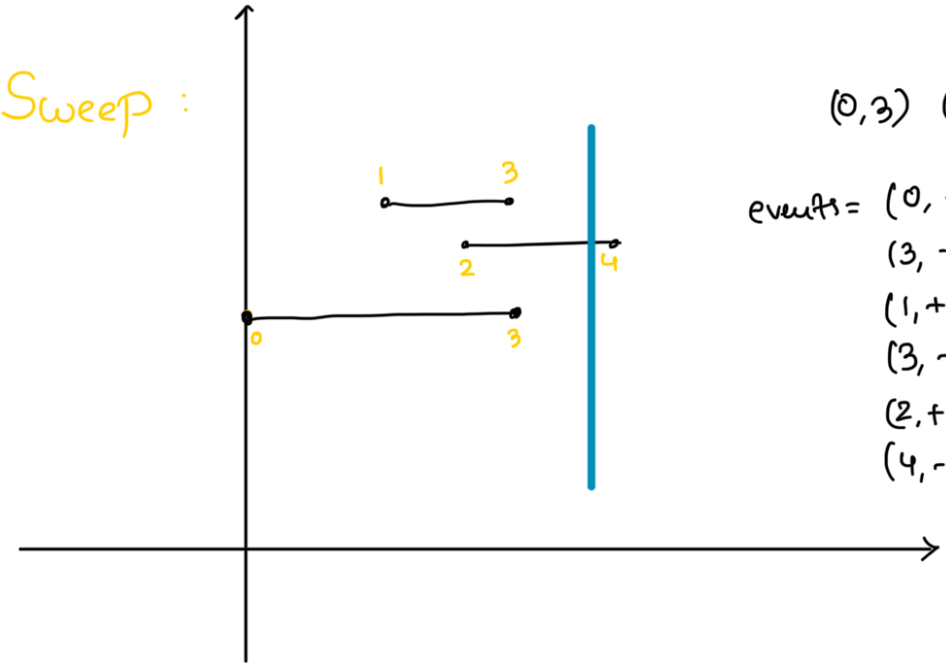






Do something only when we see an event.

Line Sweep :



(0,3) (1,3) (2,4)

events = (0, +1)
(3, -1)
(1, +1)
(3, -1)
(2, +1)
(4, -1)

sort().

Difference Array: (1,3,+1), (2,4,-1), (0,3,+1)

	0	1	2	3	4	5
diff =	+1	+1	+1	0	-2	-1

CumSum

PrefixSum

This is nothing but equivalent to sweeping a line left to right and accumulating changes (sum)

What's the Difference ???

diff

DAT

- Mostly 1-D
- Apply → +1, -1

Line Sweep

- 1D, 2D, shapes etc
- Sort events
- Line over events only.

- Later find cum·sum

- Sweep

Conclusion: DAT is a special case of Line Sweep.

- DAT → 1 simple implementation of Line Sweep
- Line Sweep → Thinking technique

Up Next

In the next video, we will solve a problem using DAT as well as Line Sweep

Thank You :)