

In this Video, we are going to solve Binary Search Advanced questions.

Questions Solved:

- Book Allocation Problem
- Painter's Partition Problem
- Aggressive Cows Problem

There is a lot to learn, Keep in mind “ Mnn boot karega k chor yrr apne se nahi yoga ya maza nahi para, Just ask 1 question “ Why I started ? “

Visit Relevel: <https://relevl.co/cu68>

Discord Server Link: <https://discord.gg/feSQvVXMrd>

Course Flow: <https://whimsical.com/dsa-4-placement...>

Homework: Added in Video already

Homework Questions:

- Painter's Partition Problem: <https://bit.ly/31v3Jiy>
- EKO SPOJ: <https://www.spoj.com/problems/EKO/>
- PRATA SPOJ: <https://bit.ly/3ExHXt5>

Notes Link: <https://drive.google.com/file/d/1d2eN...>

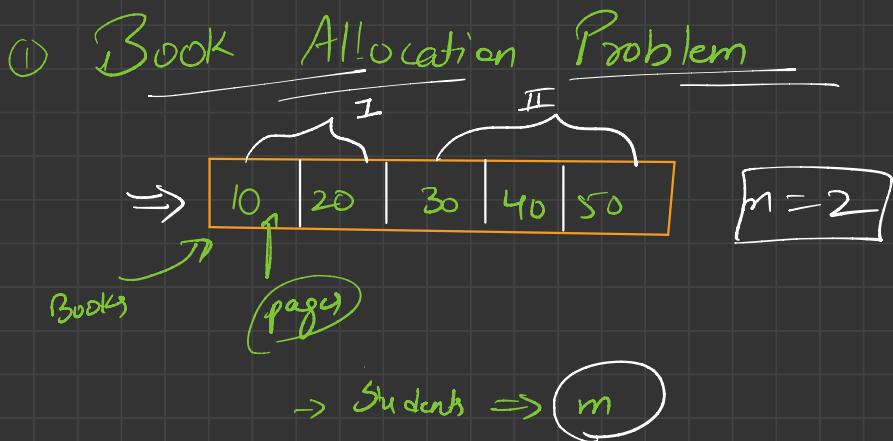
Code Links: <https://github.com/loveBabbar/CodeHe...>

Question Links:

- Book Allocation Problem: <https://bit.ly/3GiCqY0>
- Aggressive Cows: <https://bit.ly/3dkuQ2B>
- Painter's Partition Problem: <https://bit.ly/31v3Jiy>
- EKO SPOJ: <https://www.spoj.com/problems/EKO/>
- PRATA SPOJ: <https://bit.ly/3ExHXt5>

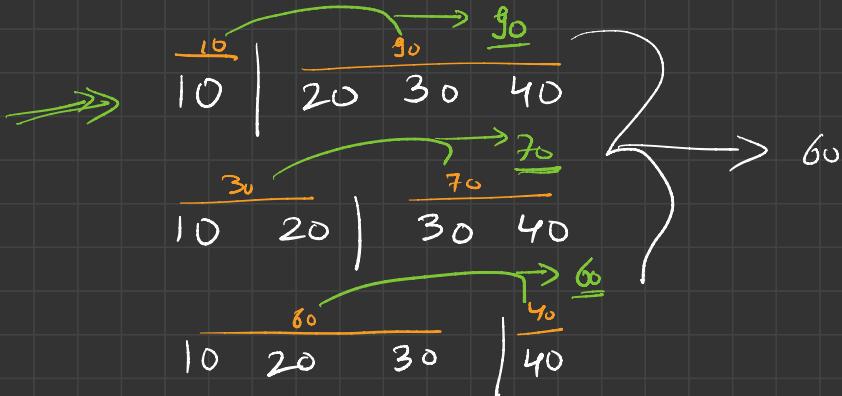
Do provide you feedback in the comments, we are going to make it best collectively.





0	1	2	3
10	20	30	40

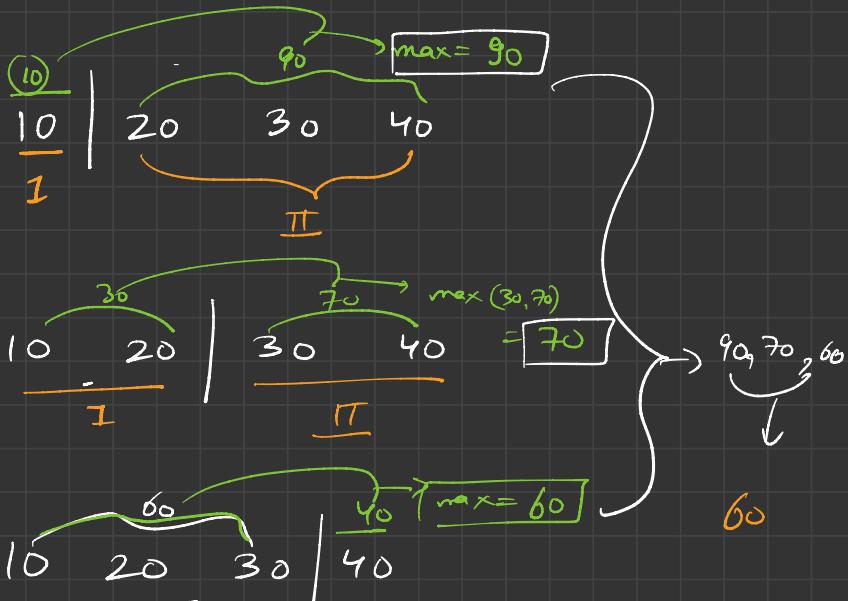
$n=4$
 $m=2$



10	20	30	40
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$$\underline{m=2}$$

Case I

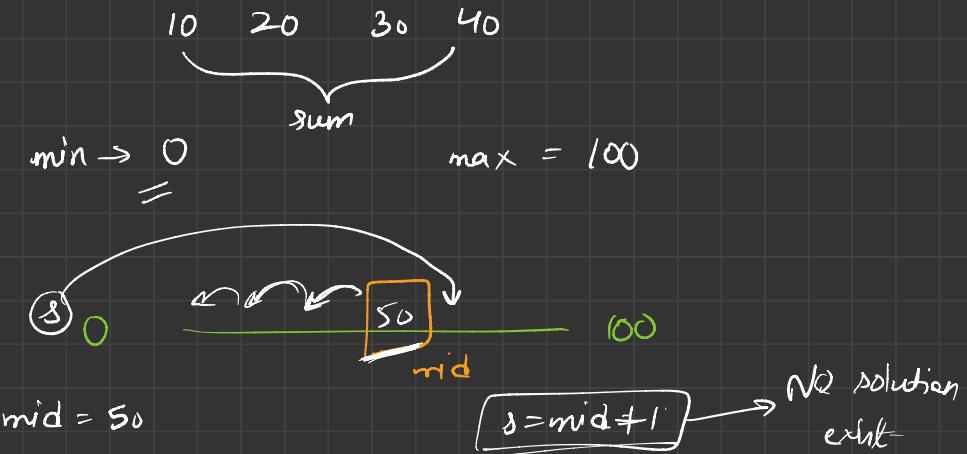


Case III

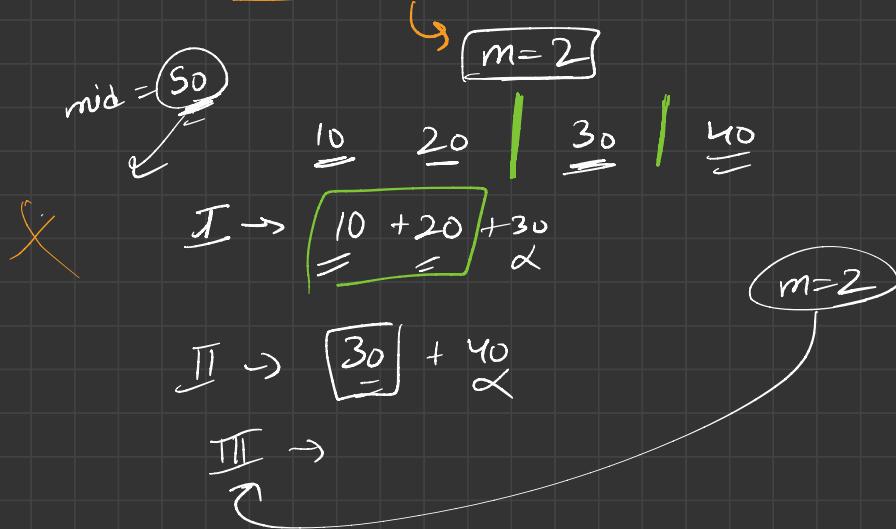
→ Concept → Search Space → minimax



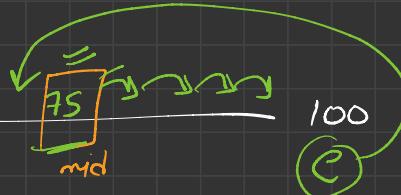
ans → search space



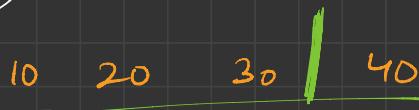
is Possible Solution (mid)



51



mid = 75



$$\text{I} \rightarrow [10 + 20 + 30] + 40 \quad \alpha$$

$$\text{II} \rightarrow 40$$

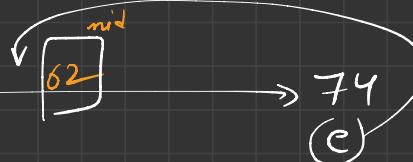
Possible sol \leftarrow

\downarrow one stone

\downarrow left part ($c = \text{mid} - 1$)
 \downarrow minimum

11 is a possible solution

51



$$\text{mid} = \left(\frac{51 + 74}{2} \right) = \frac{125}{2} = 62$$

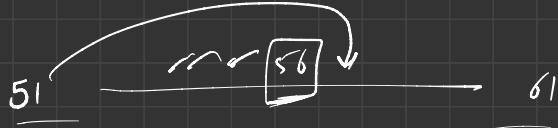
mid = 62



$$\text{I} \rightarrow 10 + 20 + 30$$

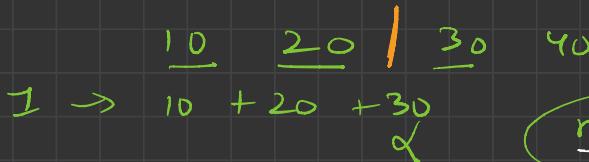
Soh \leftarrow exist

$$\text{II} \rightarrow 40$$



$$\text{mid} = \left(\frac{112}{2} \right) = \underline{56}$$

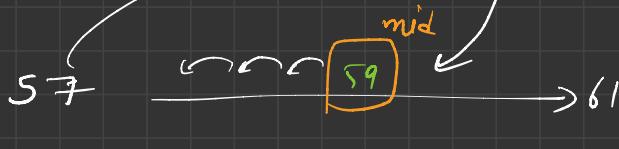
No Soln



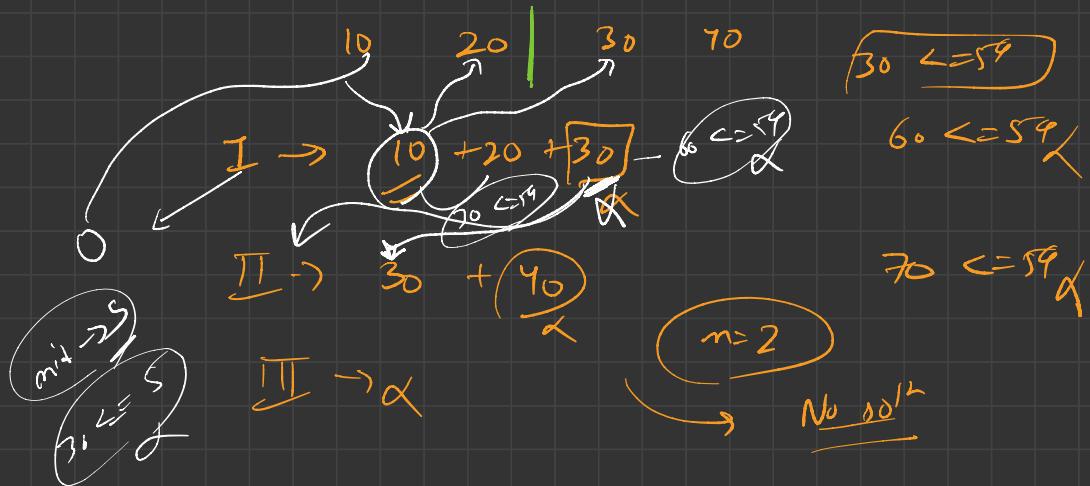
$$\text{II} \rightarrow 30 + 40 \quad \alpha$$

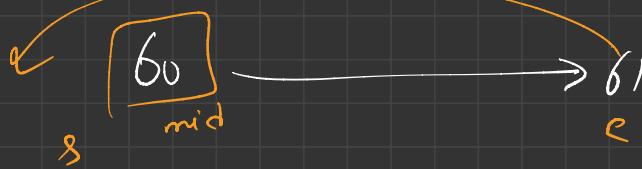
$$\underline{m=2}$$

$$\text{III} \rightarrow 40 \quad \alpha$$



$$\text{mid} = \left(\frac{57 + 61}{2} \right) = \left(\frac{118}{2} \right) > \underline{59}$$





$$mid = \frac{60 + 61}{2} = 60$$

10 20 30 | 40

$$s = 60$$

$$e = 59$$

$s > e$ out of
while

I \rightarrow $\boxed{10 + 20 + 30}$

II \rightarrow $\boxed{40}$ possible
soln

ans store

60

$10 \leftarrow 60 =$
 $30 \leftarrow 60 =$
 $60 \leftarrow 60 =$
 $100 \leftarrow 80 X$

$40 \leftarrow 6 \neq$

$$51 \xrightarrow{\text{mid}} \boxed{56} \xrightarrow{\text{mid}} 61$$

$$\text{mid} = 56$$

$$10 \quad \underline{20} \quad \underline{30} \quad 40$$

$$\text{I} \rightarrow \underline{10} + 20$$

$$\underline{\text{page sum}} \rightarrow \underline{0} + 10 = \underline{10} \rightarrow 10 \leftarrow \text{mid}$$

$$= 10 + 20 = \boxed{30 \leftarrow 56}$$

$$= (30) + 30 = \boxed{60 \leftarrow 56} \times$$

student ++

II

(30)

$$(30 \leftarrow 56) =$$

check

$$\text{page sum} = 30 + 30 \times$$

$$\underline{\text{page sum} = arr[i]}$$

$$\text{page sum} = 0 \}$$

$$\text{page sum} = \boxed{30}$$

Painter's Partition Problem

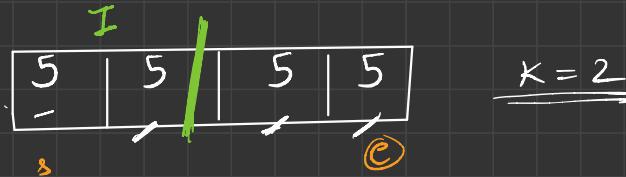
arr → $\{ \dots \}_{N}$

H/W

$K \rightarrow$ painter

1 unit Board → 1 unit time

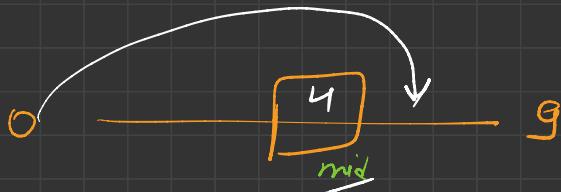
Painter → continuous section
minimum time ?



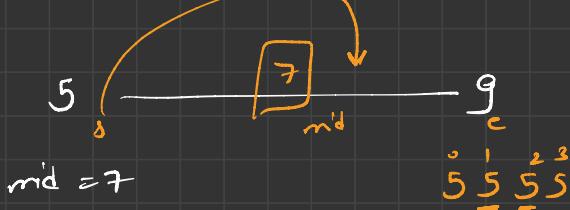
$$\underline{I} \rightarrow \underline{5 + 5} = 10$$

$$\underline{II} \rightarrow \underline{5 + 5} = 10 =$$

\Rightarrow Possible
 arr = 10
 left part



$$\text{I} \rightarrow 5 \leq 4 \text{ F}$$

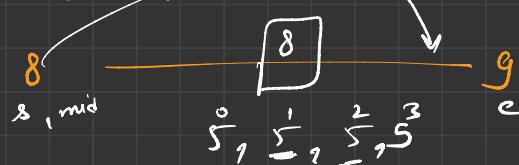


$$\text{I} \rightarrow 5$$

$$\text{II} \rightarrow 5$$

No solution

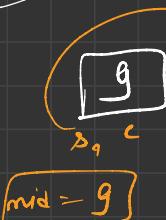
$$\text{III} \alpha$$



$$\text{I} \rightarrow 5 \leq 8$$

$$\text{II} \rightarrow 5 \leq 8 \rightarrow \text{No soln}$$

$$\text{III} \alpha$$



$$5, 5, 5, 5$$

$$\text{I} \rightarrow 5$$

$$\text{II} \rightarrow 5$$

$$\text{III} \alpha$$

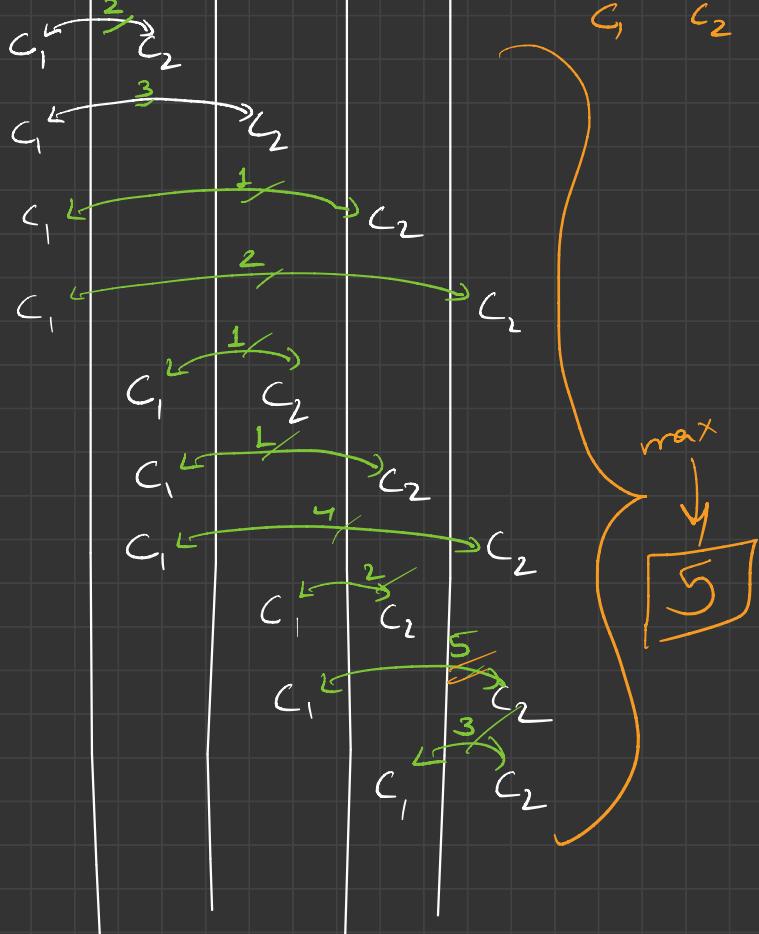
$$d = 10 \\ e = 9$$

Out
of while
loop

Aggressive Lows

stall
per

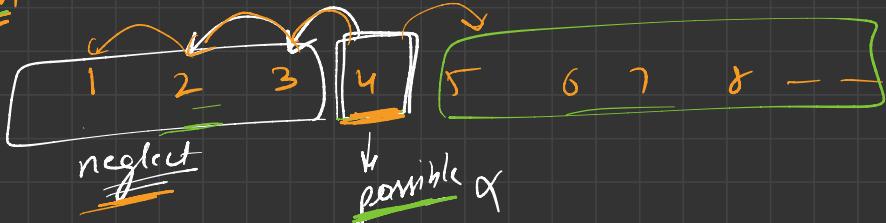
$$\text{arr. } \delta = \{4, \underline{\underline{2}}, 1, \underline{3}, 3, \underline{\underline{6}}\} \quad (k=2)$$



4 2 1 3 6

Cows = ?

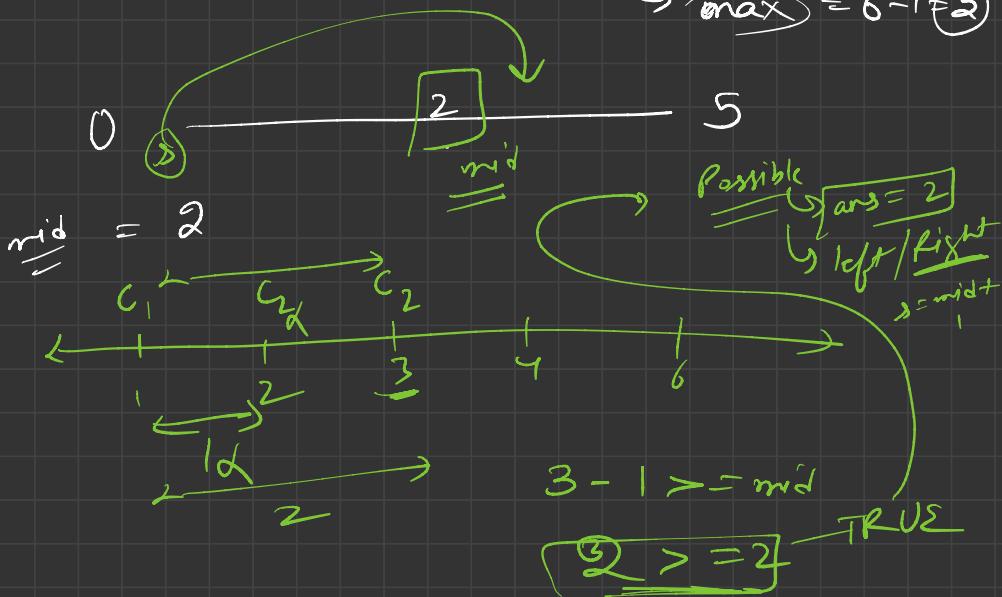
Search



4 2 1 3 6

Search Space

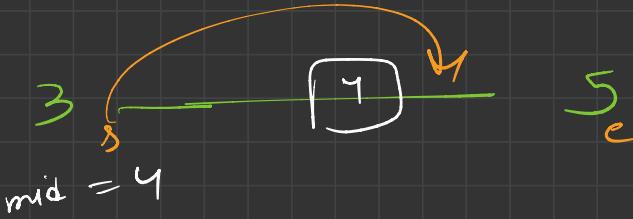
$$\text{min} \rightarrow 0$$
$$\text{max} \rightarrow 6$$
$$\text{max} - \text{min} \rightarrow (6 - 0)$$
$$\text{max} = 6 - 1 = 5$$



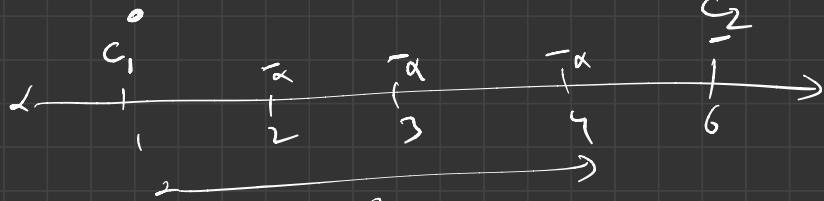
Possible

ans store

Right part



$$mid = 4$$

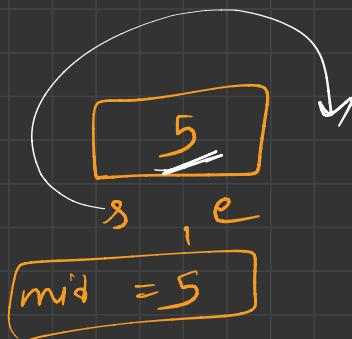


A diagram showing the inequality $5 \geq 4$ with a curved arrow pointing to it.

Possible

ans = 4

Right



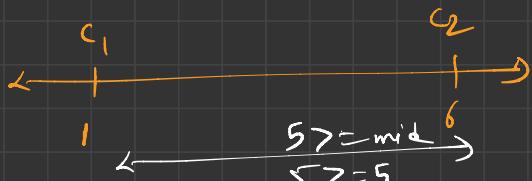
$$mid = 5$$

$$s = 6$$

$$e = 5$$

$$s < e$$

out of
while

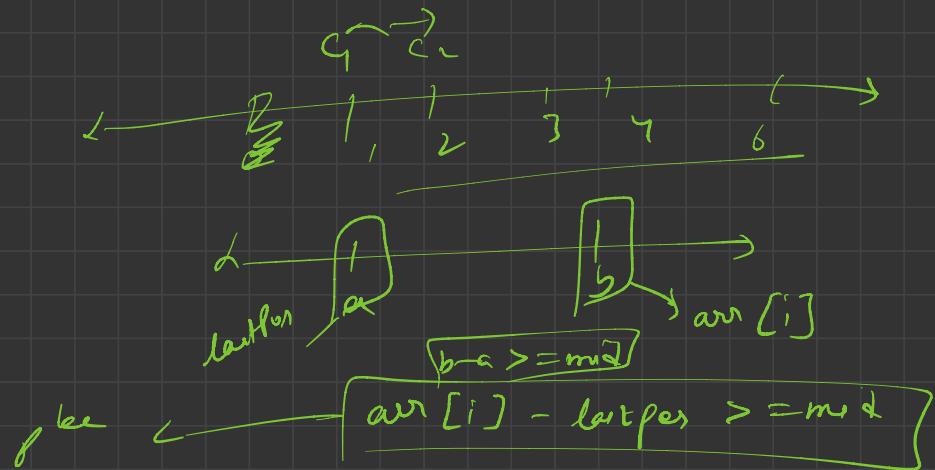
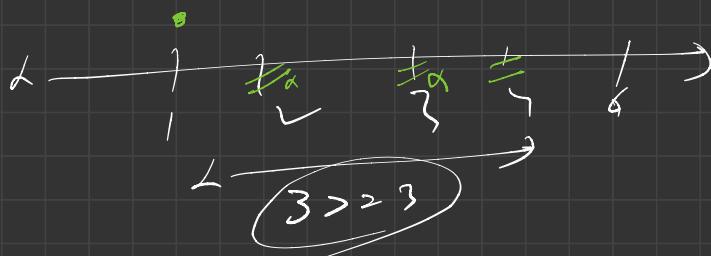
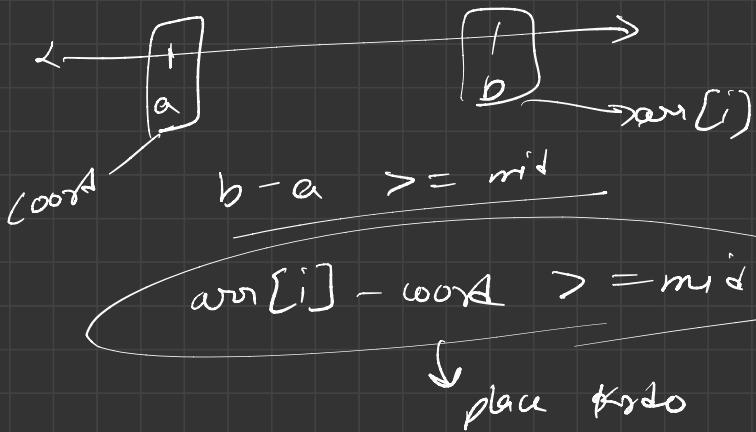


Possible

$$sol/2$$

$$\rightarrow ans = 5$$

$$\rightarrow r = mid + 1$$



→ Book Allocation

→ Painter Partition

→ Aggressive Cows

H/w

More Question

→ EKO SPOJ

→ PRATA SPOJ

→ Beautiful Triplets
(HackerEarth)