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## Array Problems

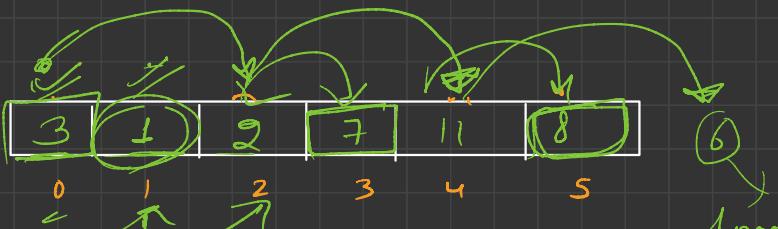
① Swap alternate

$$i/p \rightarrow arr[5] = \{ \overbrace{1, 2}, \overbrace{7, 8}, \overbrace{5} \}$$

$$o/p \rightarrow \{ 2, 1, 8, 7, 5 \}$$

$$\boxed{\{ 1, 2, 3, 4, 5, 6 \}}$$

$$\boxed{ans \rightarrow \{ 2, 1, 4, 3, 6, 5 \}}$$

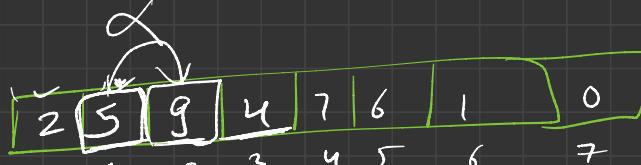


Algo:-

```

for ( index → 0 — 5 ) , i++ ✕
{
    if ( i+1 < size )
        swap ( arr[i] , arr[i+1] )
}
    
```

}



Index

i = 0    1    2    i

$i < size$

size → arr.length

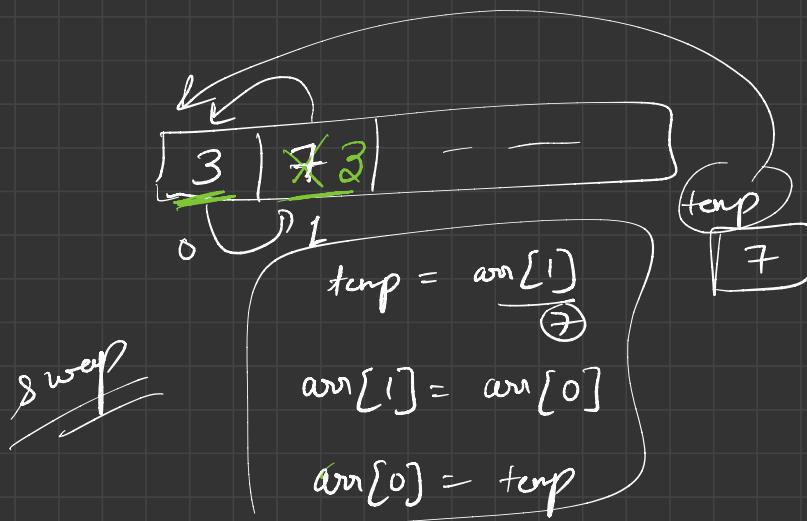
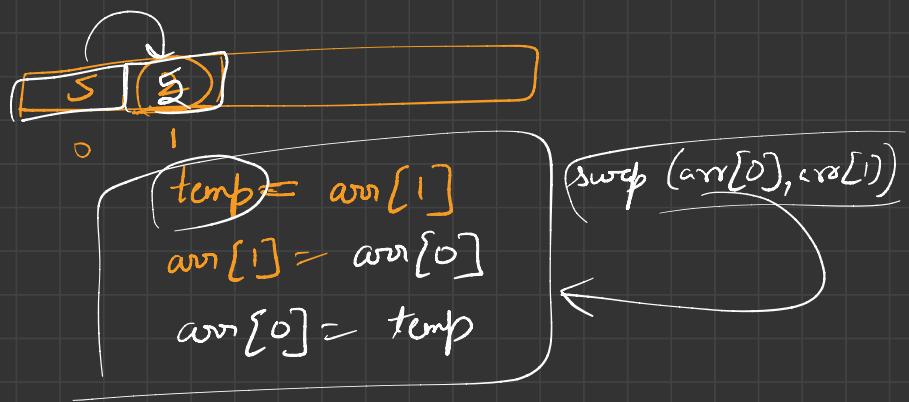
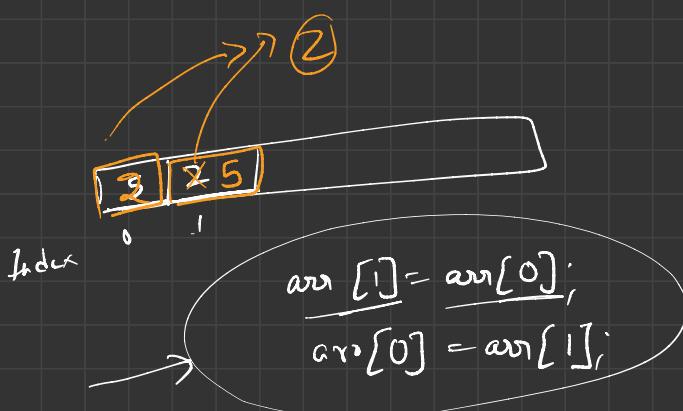
8

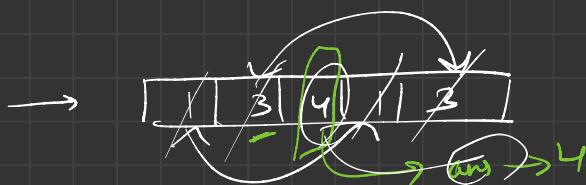
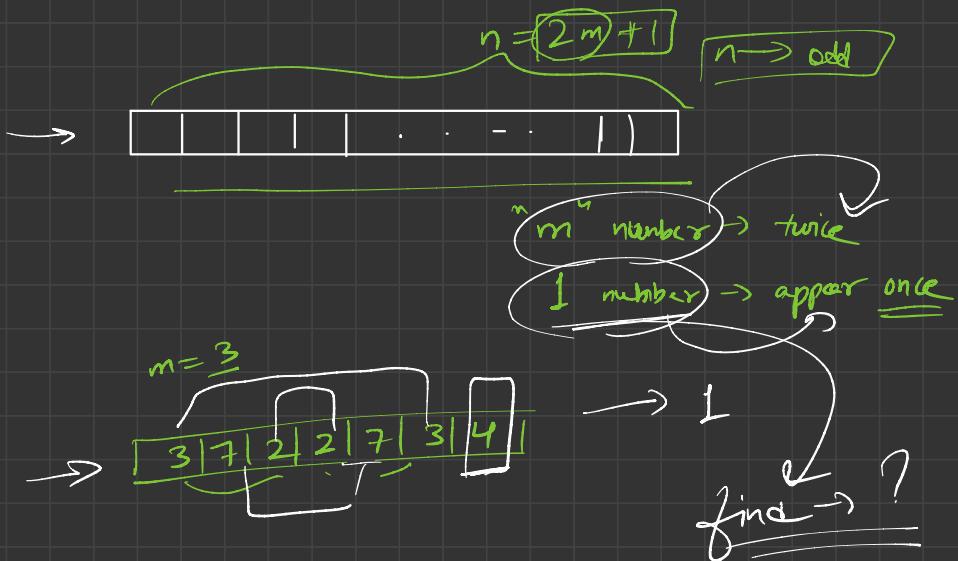
$1 < 8$  → 1 is inside array

$i = i + 2$   
 $i = 2$   
 $i = i + 2$

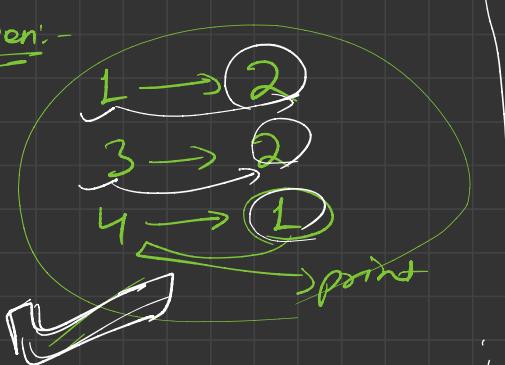
$i = i + 2$

$i = i + 1$  ✕





Solution:-



$$\begin{aligned}
 &= 3 + 2 - 3 \\
 &= 2 \\
 &= 10 + 10 - 10 - 10 + 1 \\
 &= 1
 \end{aligned}$$

XOR:-

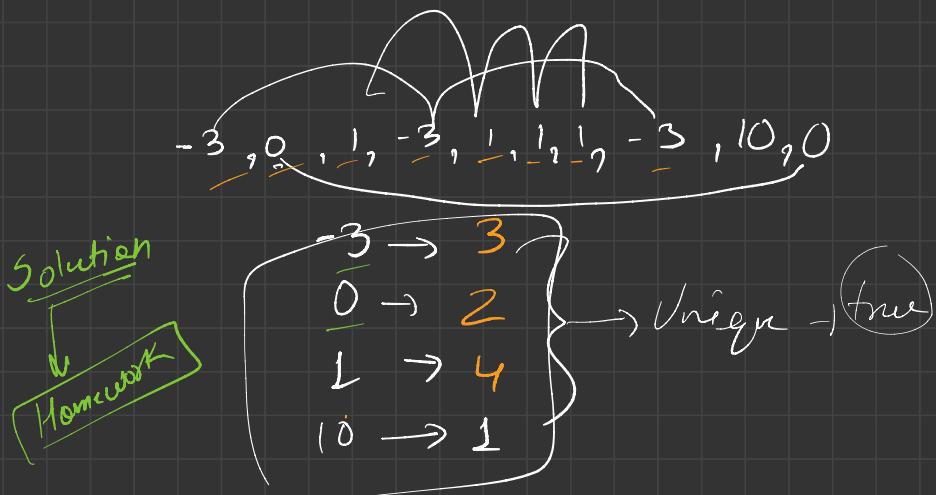
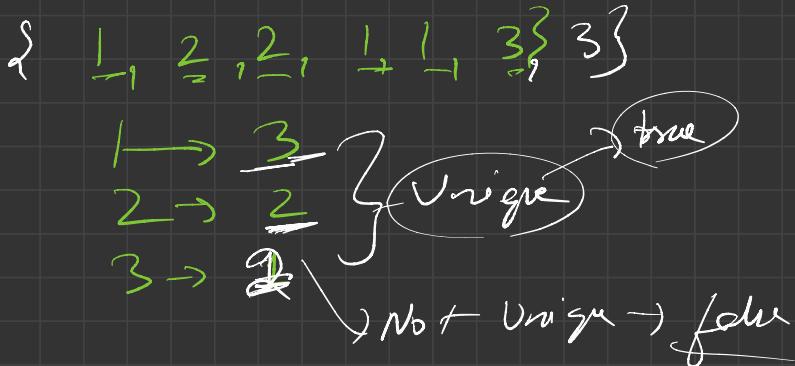
$$\underline{a} \wedge \underline{a} = 0$$

$$0 \wedge a = a$$

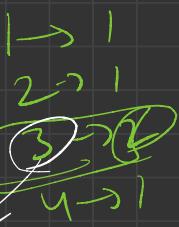
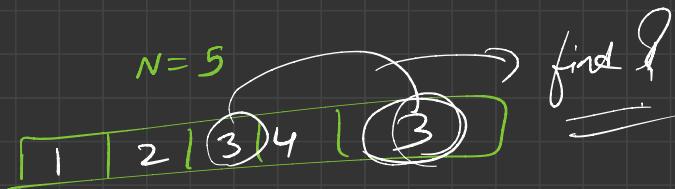
$[1|3|4|1|3]$   
 $0 \quad 0 \wedge 4 \wedge 0$   
 $= 4$

$$\begin{array}{r}
 2 \quad 3 \quad 1 \quad 6 \quad 3 \quad 6 \quad 2 \\
 - \quad - \quad - \quad - \quad - \quad - \quad - \\
 \underline{2}^{\wedge} \quad \underline{3}^{\wedge} \quad \boxed{1}^{\wedge} \quad \underline{6}^{\wedge} \quad \underline{3}^{\wedge} \quad \underline{6}^{\wedge} \quad \underline{2}^{\wedge} \\
 0^{\wedge} \quad 0^{\wedge} \quad 0^{\wedge} \quad \textcircled{1} = \textcircled{1} \rightarrow \text{diff}
 \end{array}$$

→ Leet code → Unique no of Occurrence



① find duplicate



$$[-1, S-1] \rightarrow [1, 4]$$

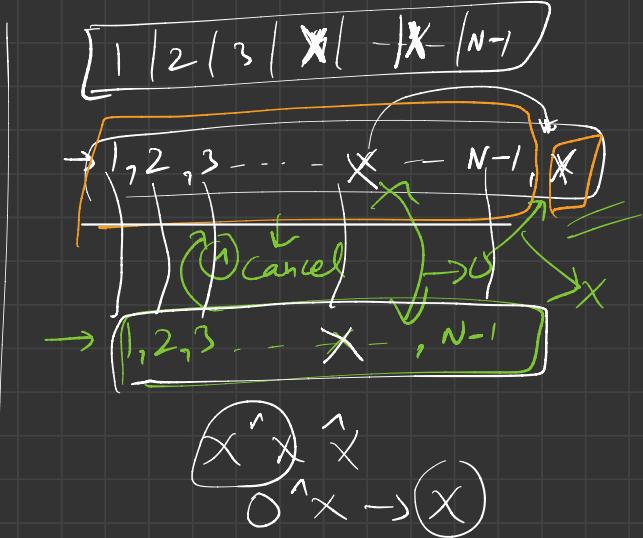
$$[1, N-1]$$

## Solution

## Counting

12 24 56 1

Vector  $\rightarrow$  dynamic



$\{ \}$

$\{ 1, n-1 \} \rightarrow 1$  client dropped

$\{ 1, 2, 3, \dots, \underline{\underline{x}}, \dots, N-1 \}, X$

$\downarrow \text{xor} \rightarrow 0$

$\{ 1, 2, 3, \dots, \underline{\underline{-x}}, \dots, N-1 \}, X$

Loc lock  $\rightarrow$  find all duplicates in an array

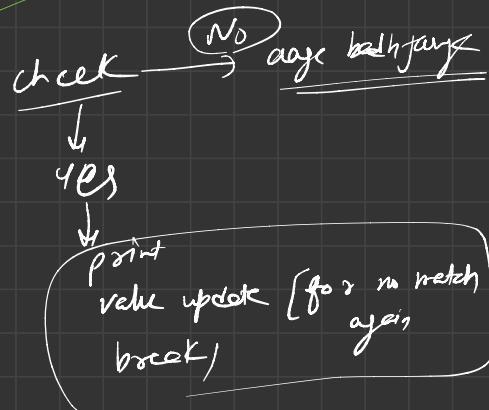
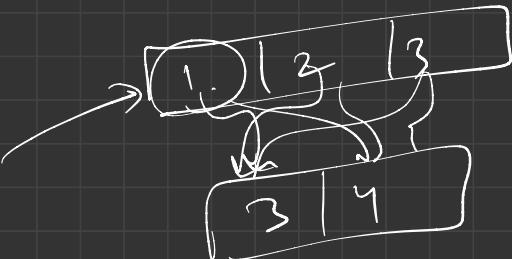
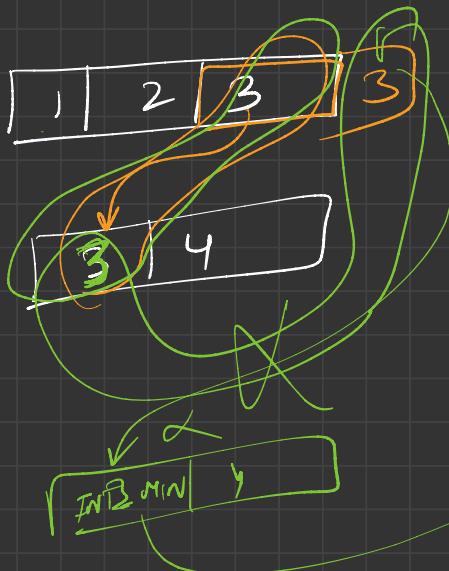
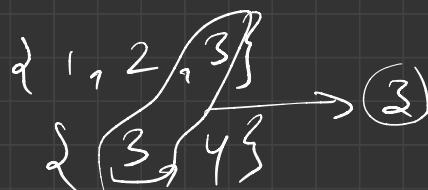
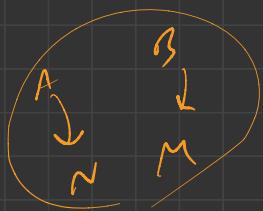
Homework

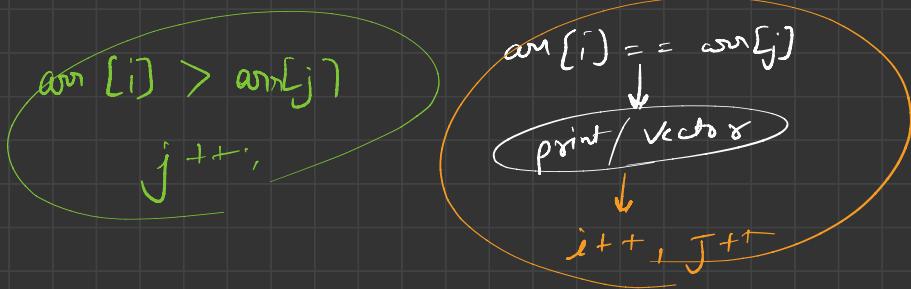
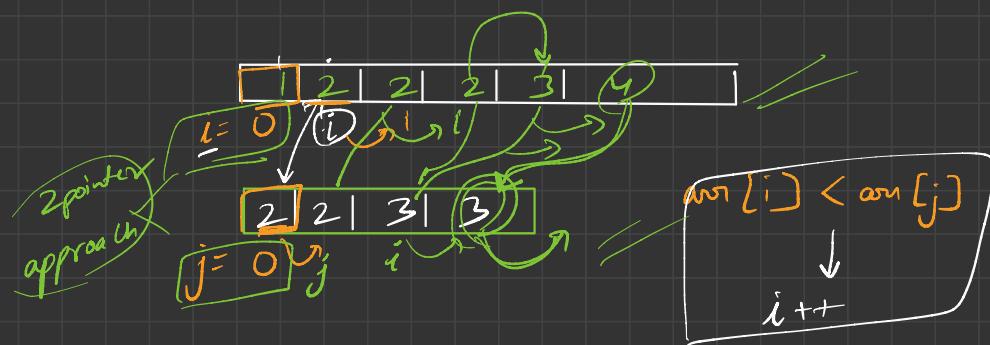
$\rightarrow \cap$  intersection  $\rightarrow$  common element

No f present

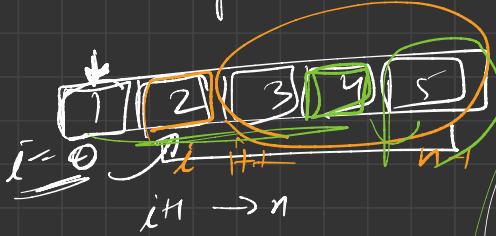
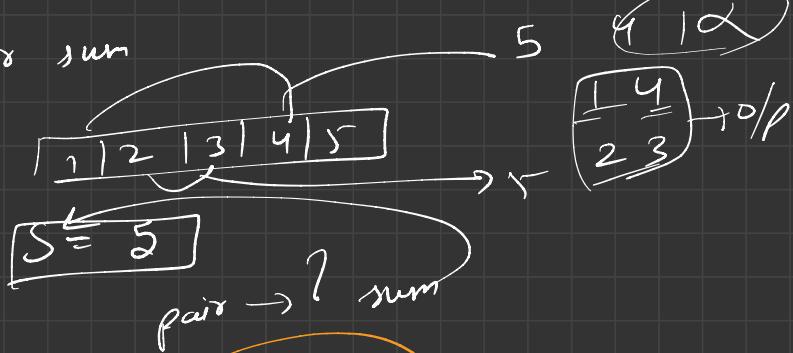
(-1) ans

sorted (non-dec order)





→ Pair sum

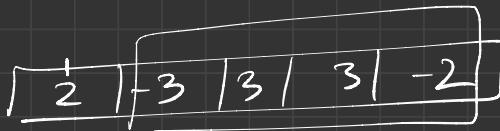
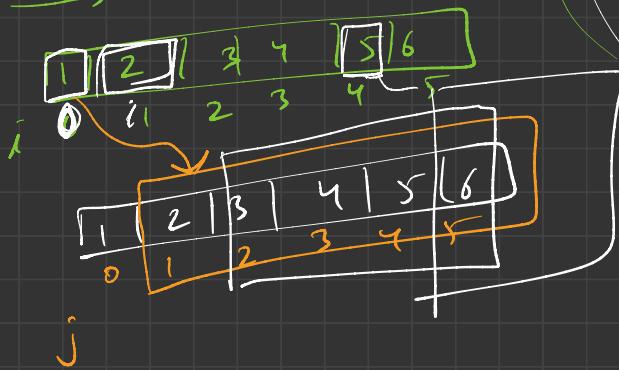


for ( $0 \rightarrow n-1$ )

  for ( $i+1 \rightarrow n-1$ )

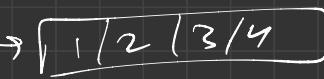
{

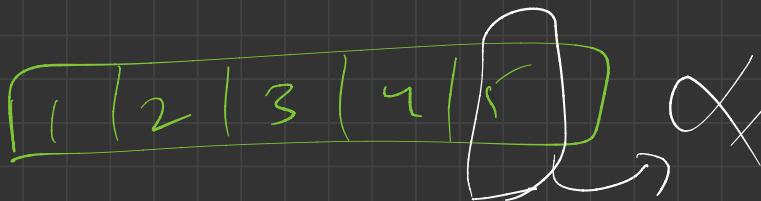
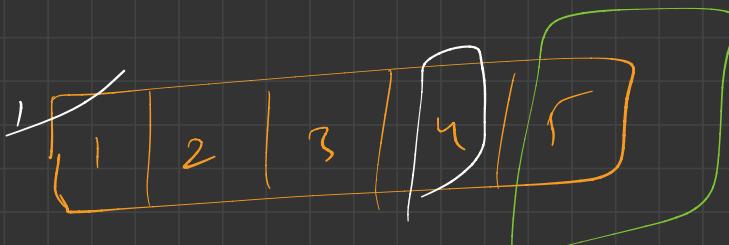
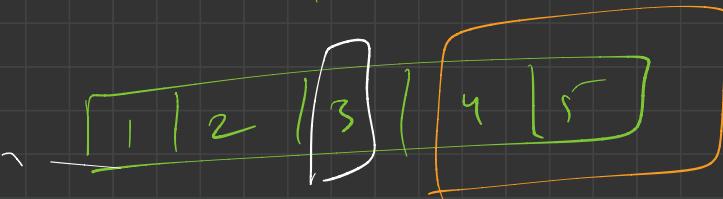
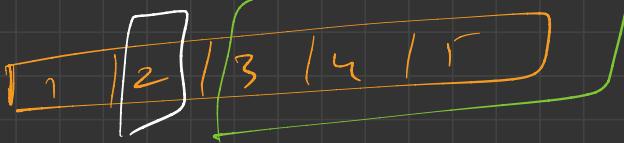
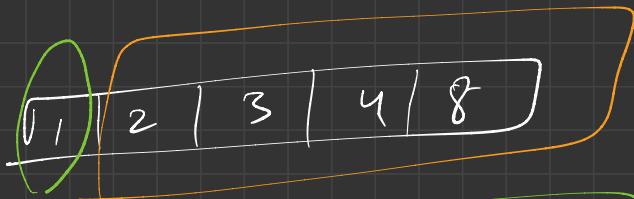
$i \rightarrow 0 \rightarrow n-1$

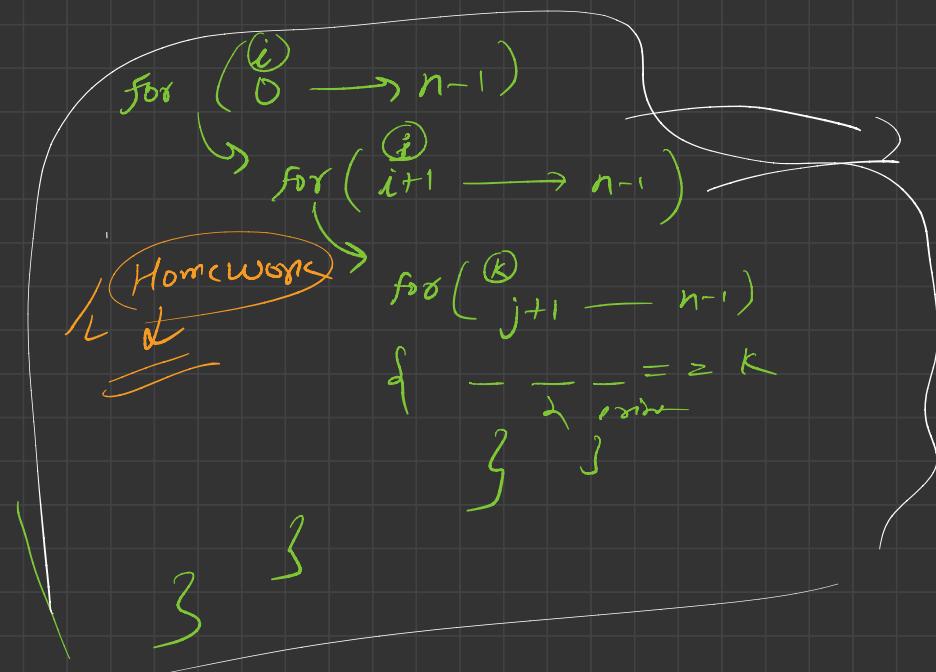
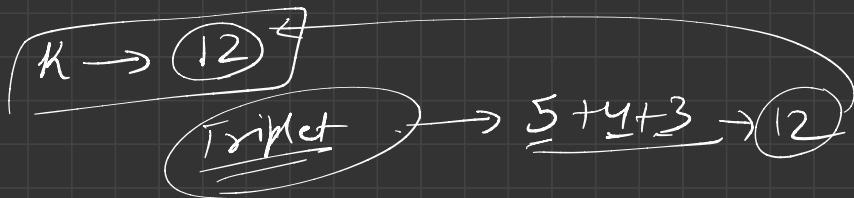
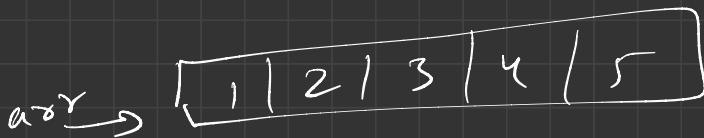


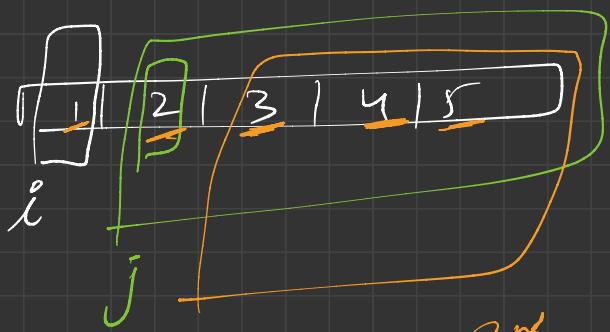
(2, -2)

sort









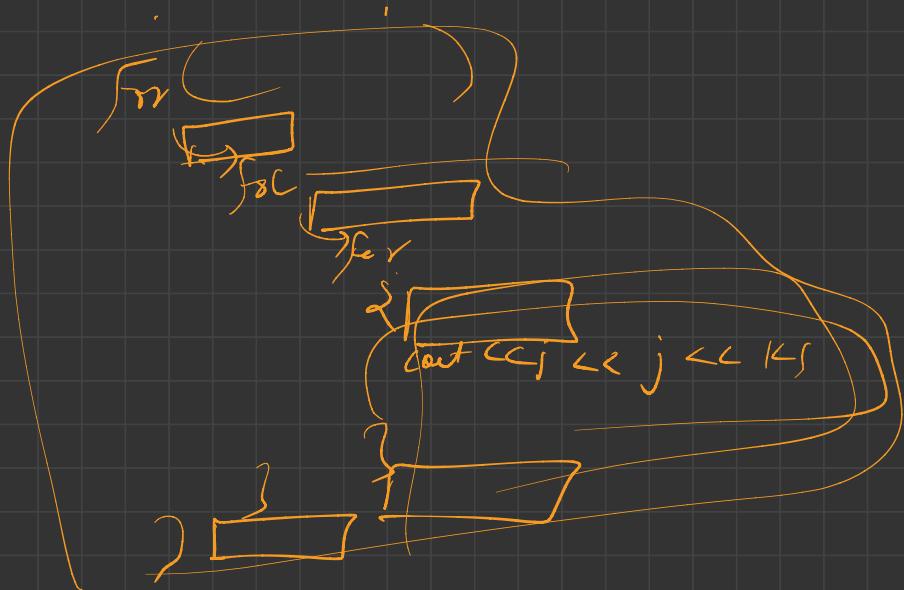
$i$	$j$	$K$
1	2	3
L	2	4
L	2	5

2<sup>nd</sup>

$\exists \sqrt{d}$

1	3	4
1	3	5

1	4	5
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Sort [0, 1]  $\rightarrow$  left,  $L \rightarrow$  right

i  $\quad \quad \quad$  j  
[0 | 1 | 1 | 0 | 0 | 1]

0/1  $\rightarrow$  [0 | 0 | 0 | 1 | 1 | 1 | L]

Solution

Count  
 $0 \rightarrow 3$

$L \rightarrow 3$

$O(n)$

Traversal  
0/1  
2 traversal

↳ sort

[0|0|0|1|1|1|1]

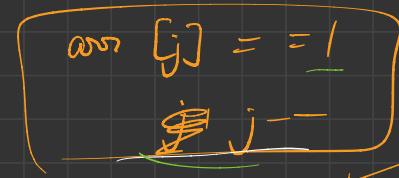
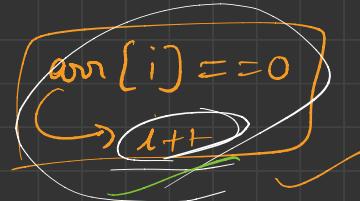
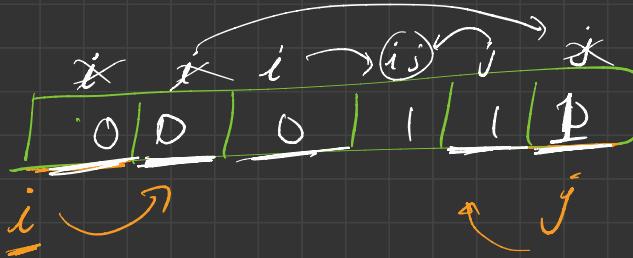
$n \log n$

Two-pointer  
approach

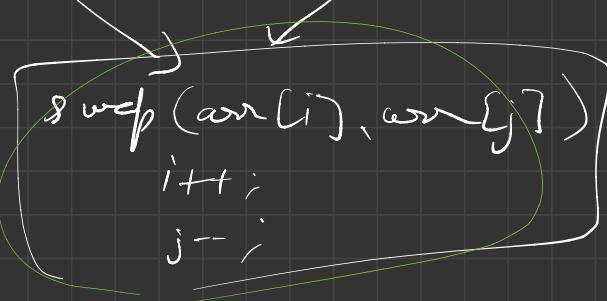
single traversal

$O(n)$

$i \rightarrow \text{left}$   
 $L \rightarrow \text{right}$



$\text{arr}[i] == 1$   $\wedge$   $\text{arr}[j] == 0$



$i >= j$   $\rightarrow$  loop not done

11|1|0|0|0|0|1|1|0

i

j

0|1|1|0|0|0|0|1|1

i

j

Play Rule

0|1|0|0|0|1|1|1

j

2<sup>nd</sup> approach

i/p  $\rightarrow$  [0 | 2 2 | 1 | 0 | 1 | 1 | 0 | 2]

o/p  $\rightarrow$  [0 | 1 | 0 | 1 | 1 | 1 | 2 | 2 | 2]

Solve  $\rightarrow$  Answer