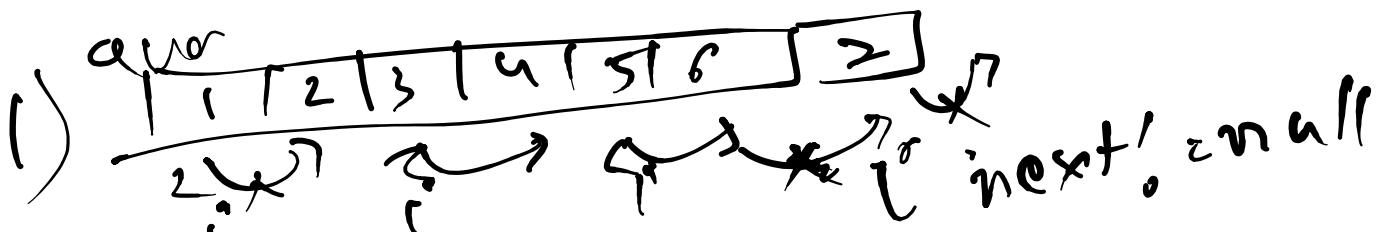


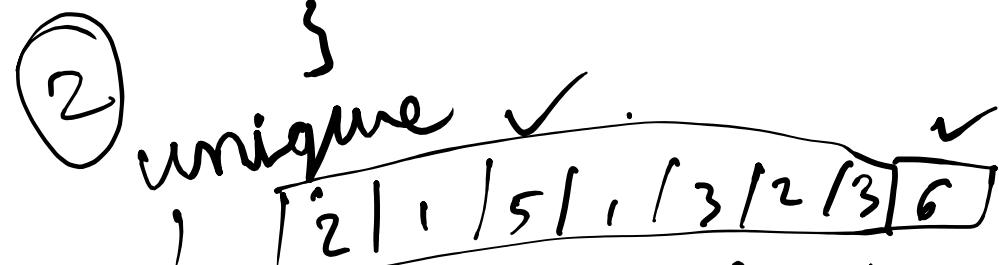
# Day4

Saturday, 27 July 2024 1:50 AM

1. Swap alternate elements in array
2. Find unique element in an array
3. Find duplicate in an array
4. Array intersection
5. Pair sum
6. Triplet sum
7. Sort 0s and 1st

(1) 

```
for (i=0; i<n; i++)  
{    next = i+1;  
    if (arr[next] == 0)  
        swap(i, next);  
}
```

(2) 

cond: dups repeat only twice  $\forall a \neq 0$

1

^

$$\text{① } \text{ xor } = 0 \oplus b = b$$

$SC = O(1)$   
 $FC = O(n)$   
 cond: only one duplicate & arra

③ duplicate

$[1, 2, 3, 3, 4, 5]$

$$[a_0 \dots a_{n-1}] \dots a \geq [n-1] a$$

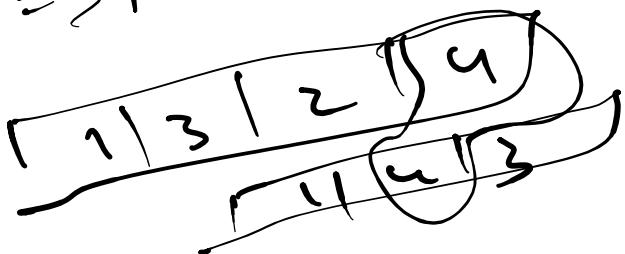
$$1 + n - \text{sum} \leq [n-1]$$

$SC = O(1)$   
 $FC = O(n)$   $\oplus a \geq 0 \Rightarrow (1 \oplus 2 \oplus \dots \oplus n) \oplus [1 \dots \oplus n] = 0$

④



$$\Rightarrow 1 \oplus 4$$



$$\Rightarrow 1$$

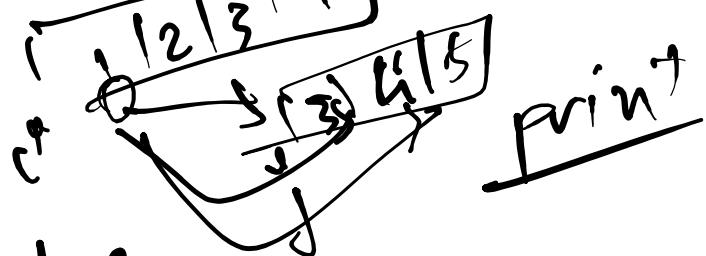
1 ... n

in seq of integers

$$F_a = a \sqrt{}$$

$\text{f} \dots a \dots a \dots = x_{\text{SO}}(fa, b)$

Solution 1: Brute force



Solution 2:

map      1, 2, 3, 4, 0

0, 0, 0, 0, 1

$\rightarrow$  found

SC:  $O(n)$

$\pi \in O(n)$

Solution 3 ✓  
- sort & then pointer search  
while ( $i < \text{size}, j < \text{size}$ )

$\begin{bmatrix} 1 & 2 & 3 & 4 & 5 \end{bmatrix}$

$i < j$ :

$\begin{bmatrix} 1 & 2 & 3 & 4 & 5 \end{bmatrix}$

$i++$  set unorder

$j = j + 1$  add  $j < i + 1$ : or  
ve

$j < i$ :

$O(n+m)$

$\sigma(i)$

Another approach:  
... cut & paste ordered

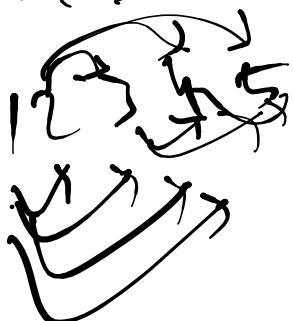
)

d

for

o  $\text{pair sum} > \epsilon' \text{ } \boxed{\text{11-14}}$  end even  
o (ulogn) set  $\boxed{123}$  contains  $\rightarrow$  print

⑤ pair sum



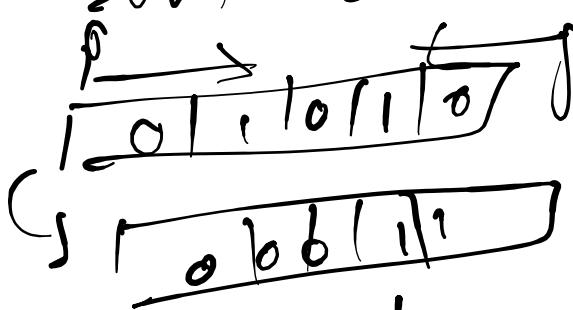
R[i]  
R[j]

⑥ Triplet sum



3 nested loops

⑦ sort '01101101'

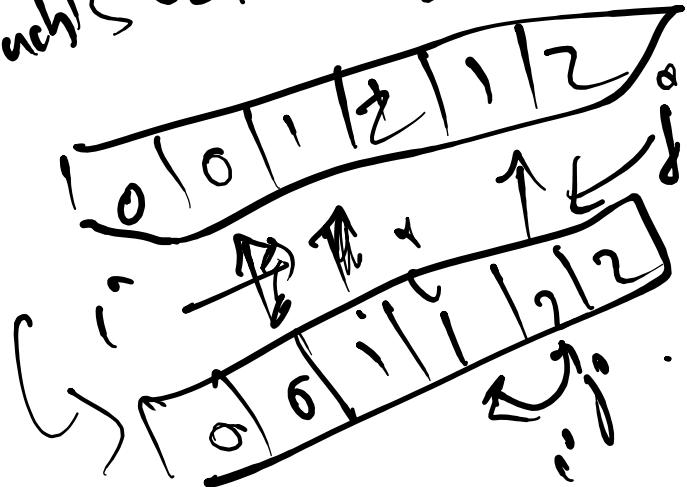


shorter

$i = \infty^0$   
 $j++$   
 $i = \infty^1$   
 $j = -$   
swap  $i & j$

$\Rightarrow 4$

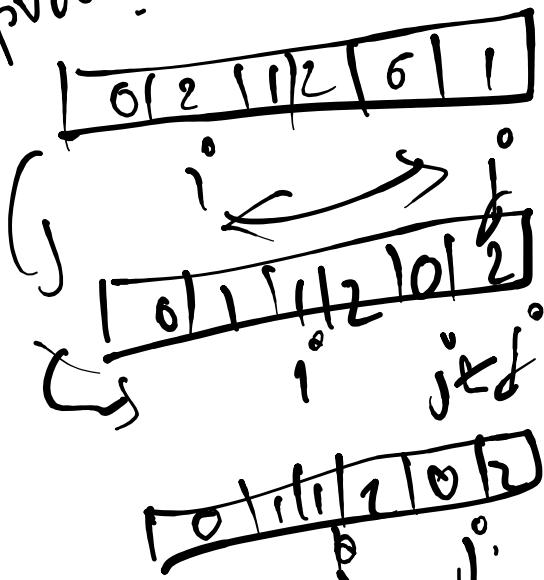
Approach 1 sort O&B's



```

i := 0
if +
j := 2
j ←
i ≠ j
for ap
else +
    
```

Approach 2



count all 0's & 1's

Approach 3  
+ch national flag

$\rho u'$   
 $l_{min}$

