

## Session 1

26 July 2021 10:02

### \* Odd occurring element

Given an array such that all elements occur even no. of times except for one element that occurs odd no. of times.

Find the odd occurring element.

Example:

1	3	2	1	1	2	1
---	---	---	---	---	---	---

$$1+2+3=6$$

$$2+1+3=6$$

$$3+1+2=6$$

1 - 4 times - even.  
2 - 2 times - even  
→ 3 - 1 time - odd.

Output: 3

A

2	7	3	7	1	1	2	2	3
---	---	---	---	---	---	---	---	---

Output: 2

Approach: `int result = 0;`

`for (i = 0; i < n; i++)`

`{ result = result ^ A[i];`

`}`

`print result`

count array:

0	2	3	2	0	0	0	2
0	1	2	3	4	5	6	7

1-7

^ - XOR

$$a \wedge a = 0$$

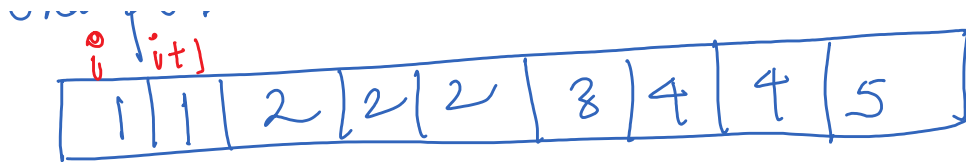
$$a \wedge 0 = a$$

2 2 2 7 7 3 3 1 1

### \* Remove duplicates from a sorted array:

Example 1:

1	1	1	2	2	2	4	4	5
---	---	---	---	---	---	---	---	---

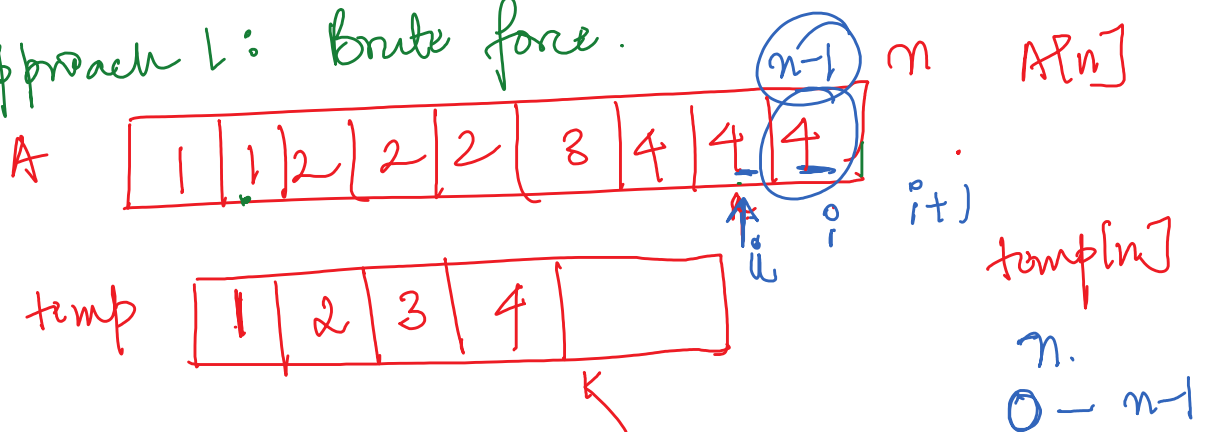


Output: 1, 2, 3, 4, 5

Example 2: 1, 2, 3      1, 2, 3

Example 3: 2, 2, 2      2

Approach 1: Brute force.



$k \leftarrow$

int  $i, k = 0;$

int  $t[n];$

if ( $n == 1$  ||  $n == 0$ )

return;

for ( $i = 0; i < n-1; i++$ )

{  
if ( $A[i] != A[i+1]$ )  
{  
 $t[k] = A[i];$   
 $k++;$   
}  
}

}

$t[k] = A[n-1];$

$$\int_{K+t}^{\cdot} t[k] = A[n-1]$$