


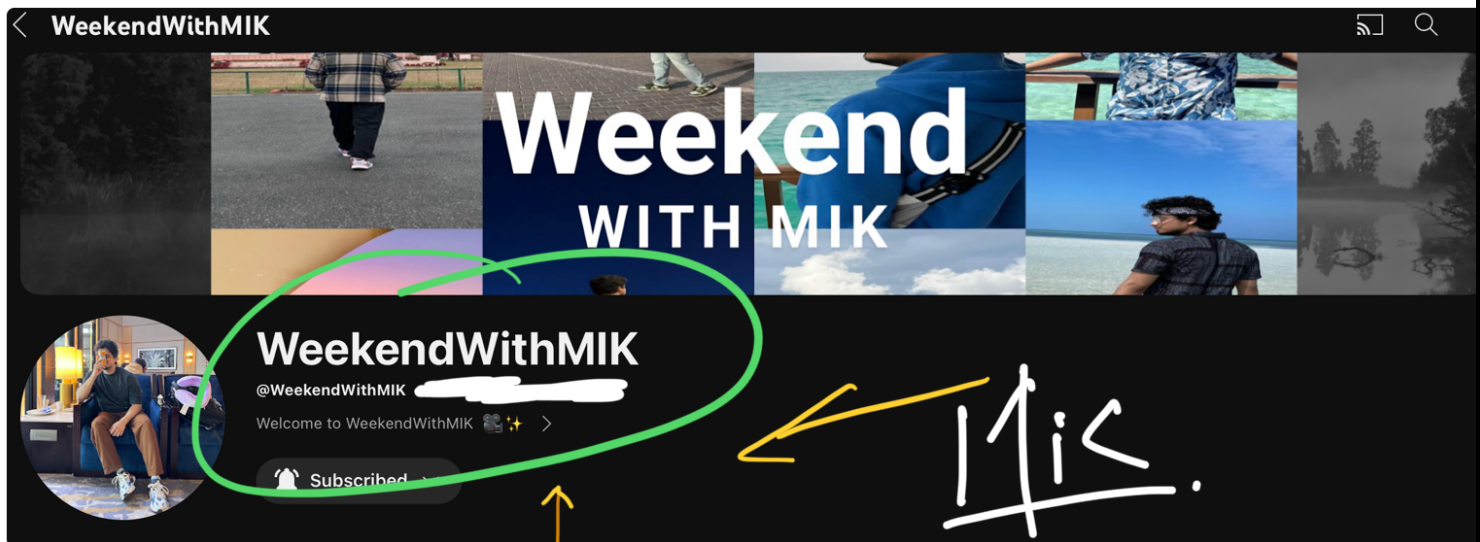

ARRAY : Video - 143



   cod storywithmik

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see "Life behind the scenes + Tech News"

Motivation -

Great code isn't born perfect - It evolves.

Don't fear messy first drafts (brute force)
; they pave the way to optimal ones.



MIK...

Keep building → Keep refining.

1524. Number of Sub-arrays With Odd Sum

Medium

Topics

Companies

Hint

Given an array of integers `arr`, return the number of subarrays with an **odd** sum.

Since the answer can be very large, return it modulo $10^9 + 7$.

Example:- $arr = \{1, 3, 5\}$

Output = 4

$\{1\}$ $\{1, 3, 5\}$
 $\{3\}$
 $\{5\}$

$arr = [2, 4, 6]$

Output = 0

Thought Process

Brute Force

arr = { ⁱ1, ¹3, ²5, ³6, ⁴2 }

```
for (i = 0; i < n; i++) {  
    for (j = i; j < n; j++) {  
        int sum = 0;  
        for (int k = i; k <= j; k++) {  
            sum += arr[k];  
        }  
        if (sum % 2 != 0) { // ODD [i..j]  
            count++;  
        }  
    }  
}
```

$$T.C = O(n^3)$$

$$S.C = O(1).$$

Brute Force.

Better Approach:

```
for (i = 0; i < n; i++) {  
    int sum = 0;  
    for (int j = 0; j < n; j++) {  
        sum += arr[j];  
        if (sum % 2 != 0) {  
            count++;  
        }  
    }  
}
```

$$T.C = O(n^2)$$

$$S.C = \underline{\underline{O(1)}}.$$

Optimal Approach:-

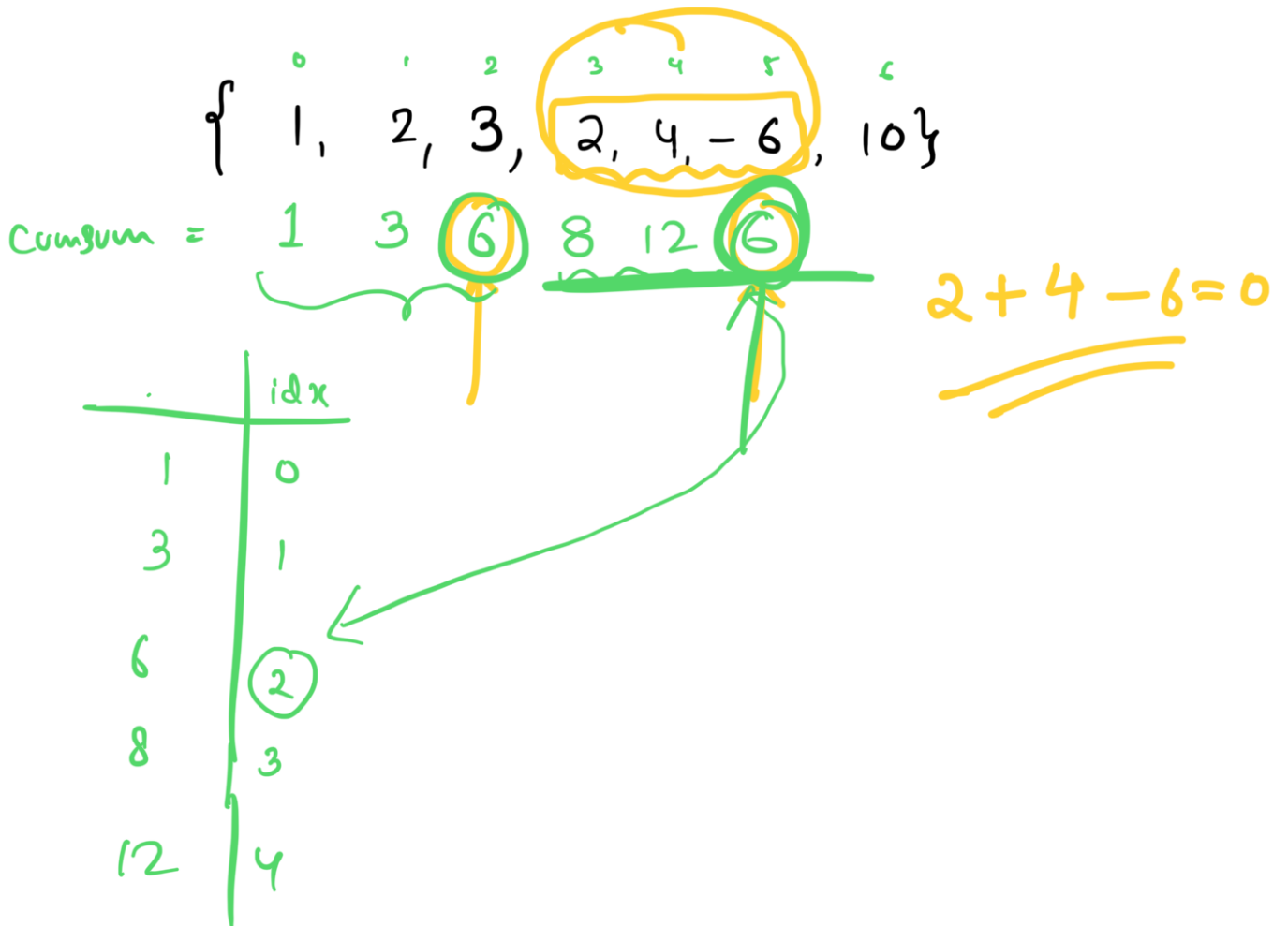
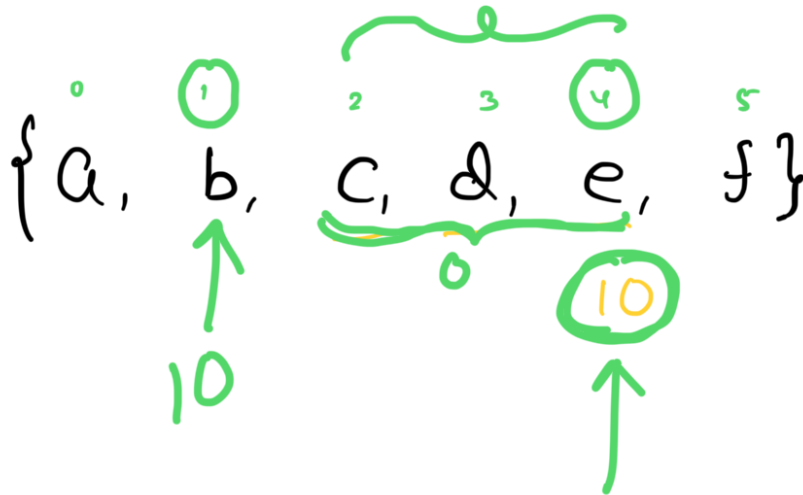
Subarray having sum = 0

Subarray having Sum = K → LeetCode - 560

ARRAYS (1-0/2-D) • SIMPLEST EXPLANATION • BRUTE FORCE • OPTIMAL
LEETCODE - 560
LEETCODE - 1074
1 pt FREE
codestorywithMIK

Number of Submatrices That Sum to Target | Subarray Sum Equals K | LeetCode 1074 | LeetCode 560

Subarray Sum Equals K
Number of Submatrices That Sum to Target
56:53



$$\text{Arr} = \{2, 2, 5, 6, 2\}$$

ODD

$$\text{Prefix} = 0 \{2, 4, 9, 15, 17\}$$

Even₁ Even₂ Even₃ ODD ODD ODD

{2, 5}
{2, 2, 5}
{5}

$$\text{Even} + \text{ODD} = \text{ODD}$$

$$\text{result} = 3 + 3 + 3 = 9$$

{2, 5, 6}
{2, 2, 5, 6}
{5, 6}

$$\text{ODD} + \text{Even} = \text{ODD}$$

{2, 1, {3}}



$$\text{EvenCount} = 1 + 1 + 1$$

$$\text{oddCount} = 1$$

$$0 + 2 + 1 = 3$$

$$\text{ODD} + \text{Even} = \text{ODD}$$

$$\text{Even} + \text{ODD} = \text{ODD}$$

