CODE WITH COFFEE

Session-01

16/04/2025

What is DSA?Why DSA?

Think of DSA (Data Structures and Algorithms) as your personal toolkit for:

- Organizing messy data ✨ (Data Structures)
- Solving problems smartly 🔍 (Algorithms)

You could brute-force your way through a coding problem...

...or you could bring your DSA sword to the battle ⚔️

🚀 Why Should You Care?

- Makes your code faster, cleaner, and cooler 😎
- Tech interviews? 🧠 DSA is 80% of it.
- Want to build the next Google Maps or Netflix? They breathe DSA.
- From your favorite apps to AI models — it's DSA behind the curtain 🎩

💡 Real Talk:

DSA is not just a syllabus topic.

It's what turns you from a coder into a problem solver.

What Language to pick?

C++, Java, Python... Which One's Your Buddy?

Start with what you're comfortable with. Stick to one.
Learn logic, not syntax.

Platforms

Where do I practice?

Where to learn from?

Your Learning Toolkit

YouTube: Striver(Take U Forward),Neetcode , Kunal Kushwaha, Love Babbar, Code with Harry
Books: Reema Thareja(for C and DSA),Cracking the Coding Interview for interview prep.

Learn by solving, not watching!!

1 Lets Code Together

Easy

You are given an integer n. Return the bitwise XOR of all the integers from 1 to n (inclusive).

In other words, compute the result of:

1 ⊕ 2 ⊕ 3 ⊕ ... ⊕ n

where ⊕ denotes the bitwise XOR operation.

Example 1:

Input:

n = 5

Output:

1

Explanation:

1 ⊕ 2 ⊕ 3 ⊕ 4 ⊕ 5 = 1

Example 2:

Input:

n = 10

Output:

11

Explanation:

1 ⊕ 2 ⊕ 3 ⊕ 4 ⊕ 5 ⊕ 6 ⊕ 7 ⊕ 8 ⊕ 9 ⊕ 10 = 11

Constraints:

- 1 <= n <= 10^9

Lets Code Together

Medium

Follow Up Question:

Now write a function to find the XOR of numbers of a range of numbers from L to H, where L is the lower limit and H is the upper limit.

Similar Leetcode Code question:

Q No. 1486 Easy

2 Lets Code Together

Medium

3. Longest Substring Without Repeating Characters

Solved

Medium | Topics | Companies | Hint

Given a string `s`, find the length of the **longest** **substring** without duplicate characters.

Example 1:

```
Input: s = "abcabcbb"
Output: 3
Explanation: The answer is "abc", with the length of 3.
```

Example 2:

```
Input: s = "bbbbb"
Output: 1
Explanation: The answer is "b", with the length of 1.
```

Example 3:

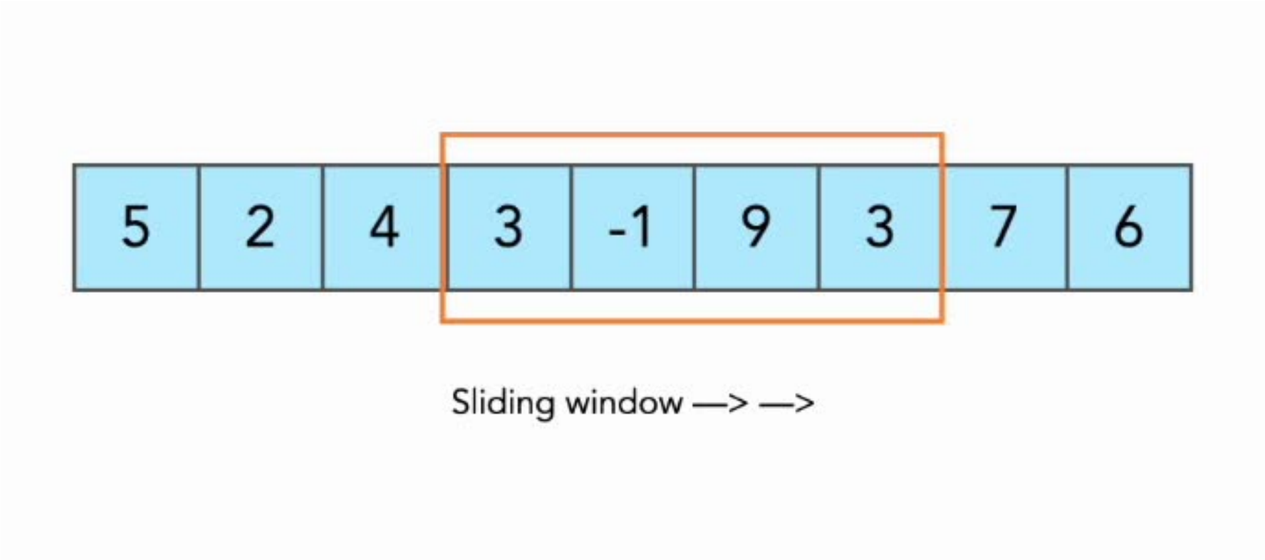
```
Input: s = "pwwkew"
Output: 3
Explanation: The answer is "wke", with the length of 3.
Notice that the answer must be a substring, "pwke" is a subsequence and
not a substring.
```

Constraints:

- `0 <= s.length <= 5 * 10^4`
- `s` consists of English letters, digits, symbols and spaces.

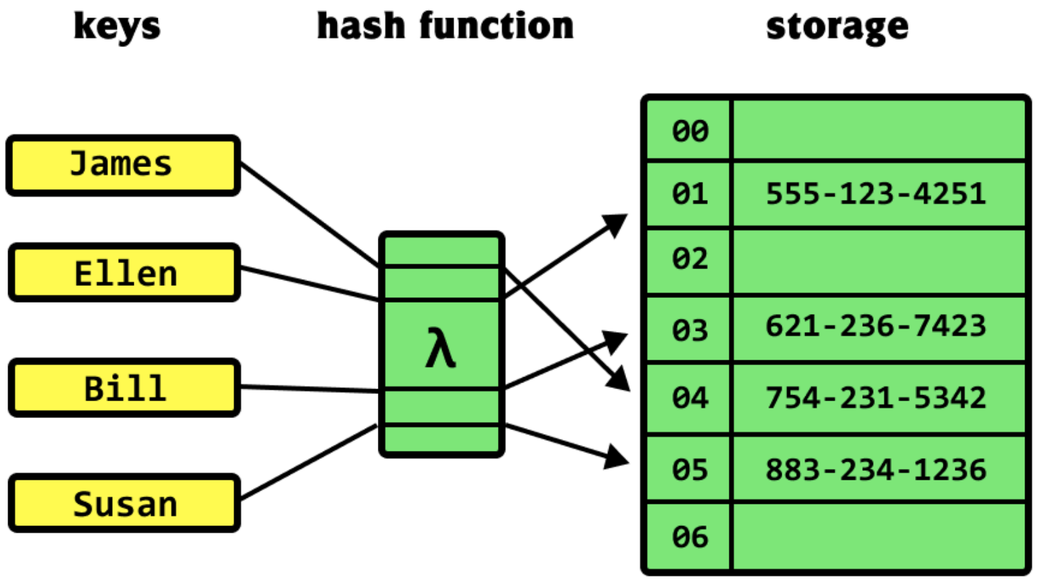
2 Lets Code Together

Medium



2 Lets Code Together

Medium



2 Lets Code Together

Medium

Solution:

Approach 1 (Sliding window and Set):

```python
class Solution:
    def lengthOfLongestSubstring(self, s: str) -> int:
        charSet=set()
        l=0
        res=0
        for r in range(len(s)):
            while s[r] in charSet:
                charSet.remove(s[l])
                l+=1
            charSet.add(s[r])
            res=max(res,r-l+1)

        return res
```

2 Lets Code Together

Medium

Solution:

Approach 2 (Sliding Window and hashmap):

```python
class Solution:
    def lengthOfLongestSubstring(self, s: str) -> int:

        max_length = left = 0
        count = {}

        for right, c in enumerate(s):
            count[c] = 1 + count.get(c, 0)
            while count[c] > 1:
                count[s[left]] -= 1
                left += 1

            max_length = max(max_length, right - left + 1)

        return max_length
```

Challenge Question

ChalkBoard XOR Game

You are given an array of integers `nums` represents the numbers written on a chalkboard.

Alice and Bob take turns erasing exactly one number from the chalkboard, with Alice starting first. If erasing a number causes the bitwise XOR of all the elements of the chalkboard to become `0`, then that player loses. The bitwise XOR of one element is that element itself, and the bitwise XOR of no elements is `0`.

Also, if any player starts their turn with the bitwise XOR of all the elements of the chalkboard equal to `0`, then that player wins.

Return `true` *if and only if Alice wins the game, assuming both players play optimally*.

Challenge Question

ChalkBoard XOR Game

Example 1:

> **Input:** nums = [1,1,2]
> **Output:** false
> **Explanation:**
> Alice has two choices: erase 1 or erase 2.
> If she erases 1, the nums array becomes [1, 2]. The bitwise XOR of all the elements of the chalkboard is 1 XOR 2 = 3. Now Bob can remove any element he wants, because Alice will be the one to erase the last element and she will lose.
> If Alice erases 2 first, now nums become [1, 1]. The bitwise XOR of all the elements of the chalkboard is 1 XOR 1 = 0. Alice will lose.

Challenge Question

ChalkBoard XOR Game

Example 2:

```
Input: nums = [0,1]
Output: true
```

Example 3:

```
Input: nums = [1,2,3]
Output: true
```

Challenge Question

ChalkBoard XOR Game

If you have solved this question, Congratulations- you just solved a Leetcode Hard!

@RVCE_WIC_INSIDERCIRCLE

Follow us on our socials and join the Whatsapp community for more updates!

THANK YOU

Was our performance optimized or should we go back and fix the time complexity?!

Network and Chill!!

Your only competition is the coder you were yesterday.