Fast Learner Assignment

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Branch: BE-CSE **Section/Group:** 22BCS_NTPP-602-A

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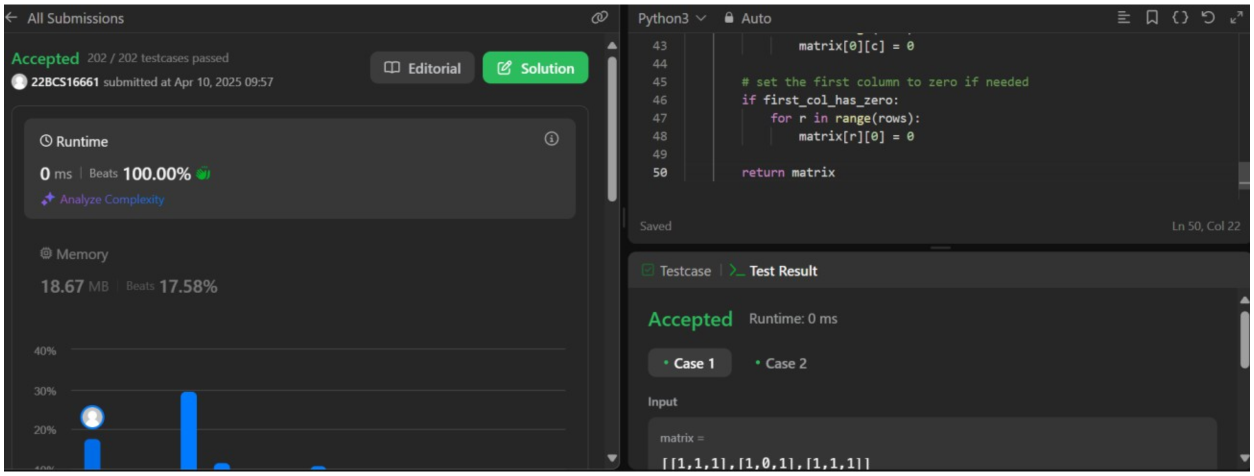
Subject Name: AP LAB - II **Subject Code:** 22CSP-351

1. **Aim:** To modify the given matrix such that if an element is 0, its entire row and column are set to 0.
2. **Source Code:**

```
class Solution:
    def setZeroes(self, matrix: List[List[int]]) -> None:
        rows = len(matrix)
        cols = len(matrix[0])

        first_row_has_zero = False
        first_col_has_zero = False

        # check if the first row contains zero
        for c in range(cols):
            if matrix[0][c] == 0:
                first_row_has_zero = True
                break

        # check if the first column contains zero
        for r in range(rows):
            if matrix[r][0] == 0:
                first_col_has_zero = True
                break

        # use the first row and column as a note
        for r in range(1, rows):
            for c in range(1, cols):
                if matrix[r][c] == 0:
                    matrix[r][0] = 0
                    matrix[0][c] = 0
        # set the marked rows to zero
        for r in range(1, rows):
            if matrix[r][0] == 0:
                for c in range(1, cols):
                    matrix[r][c] = 0

        # set the marked columns to zero
        for c in range(1, cols):
            if matrix[0][c] == 0:
                for r in range(1, rows):
                    matrix[r][c] = 0

        # set the first row to zero if needed
        if first_row_has_zero:
            for c in range(cols):
                matrix[0][c] = 0

        # set the first column to zero if needed
        if first_col_has_zero:
            for r in range(rows):
                matrix[r][0] = 0

        return matrix
```

3. Screenshots of outputs:



Accepted 202 / 202 testcases passed
22BCS16661 submitted at Apr 10, 2025 09:57

Runtime
0 ms | Beats 100.00%

Memory
18.67 MB | Beats 17.58%

```
            matrix[0][c] = 0

    # set the first column to zero if needed
    if first_col_has_zero:
        for r in range(rows):
            matrix[r][0] = 0

    return matrix
```

Saved
Ln 50, Col 22

Accepted Runtime: 0 ms

Input

matrix =
[[1,1,1],[1,0,1],[1,1,1]]

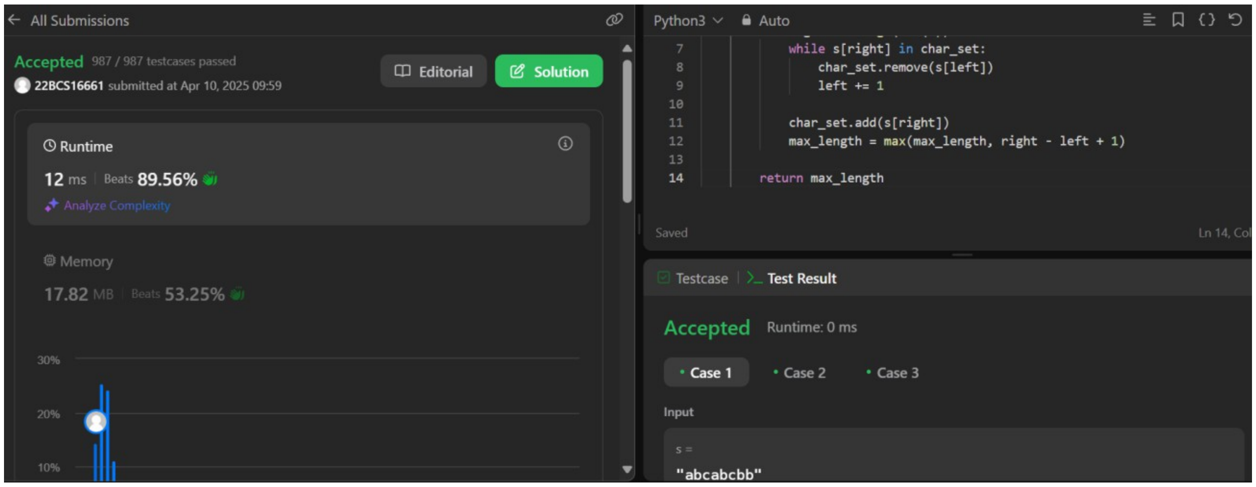
2.

Aim: To find the length of the longest substring in a given string without any repeating characters.

Source Code:

```
class Solution:
    def lengthOfLongestSubstring(self, s: str) -> int:
        left = max_length = 0
        char_set = set()

        for right in range(len(s)):
            while s[right] in char_set:
                char_set.remove(s[left])
                left += 1

            char_set.add(s[right])
            max_length = max(max_length, right - left + 1)

        return max_length
```

Screenshots of outputs:



Accepted 987 / 987 testcases passed
22BCS16661 submitted at Apr 10, 2025 09:59

Runtime
12 ms | Beats 89.56%

Memory
17.82 MB | Beats 53.25%

```
            while s[right] in char_set:
                char_set.remove(s[left])
                left += 1

            char_set.add(s[right])
            max_length = max(max_length, right - left + 1)

        return max_length
```

Saved
Ln 14, Col

Accepted Runtime: 0 ms
Case 1 Case 2 Case 3
Input
s =
"abcabcbb"

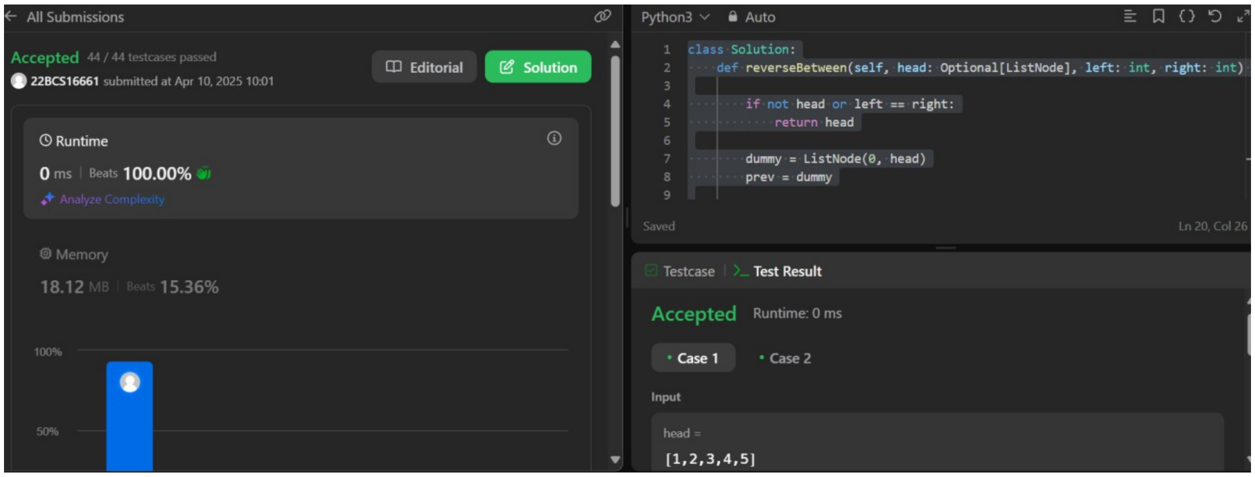
3.

Aim: To reverse a part of a linked list from position left to right.

Source Code:

```
class Solution:
    def reverseBetween(self, head: Optional[ListNode], left: int, right: int) -> Optional[ListNode]:

        if not head or left == right:
            return head

        dummy = ListNode(0, head)
        prev = dummy

        for _ in range(left - 1):
            prev = prev.next

        cur = prev.next
        for _ in range(right - left):
            temp = cur.next
            cur.next = temp.next
            temp.next = prev.next
            prev.next = temp

        return dummy.next
```

4. Screenshots of outputs:



Accepted 44 / 44 testcases passed
22BCS16661 submitted at Apr 10, 2025 10:01

Runtime
0 ms | Beats 100.00%

Memory
18.12 MB | Beats 15.36%

```
class Solution:
    def reverseBetween(self, head: Optional[ListNode], left: int, right: int)

        if not head or left == right:
            return head

        dummy = ListNode(0, head)
        prev = dummy

```

Saved   Ln 20, Col 26

Accepted Runtime: 0 ms

Input

head =
[1,2,3,4,5]