Fast Learners Assignment

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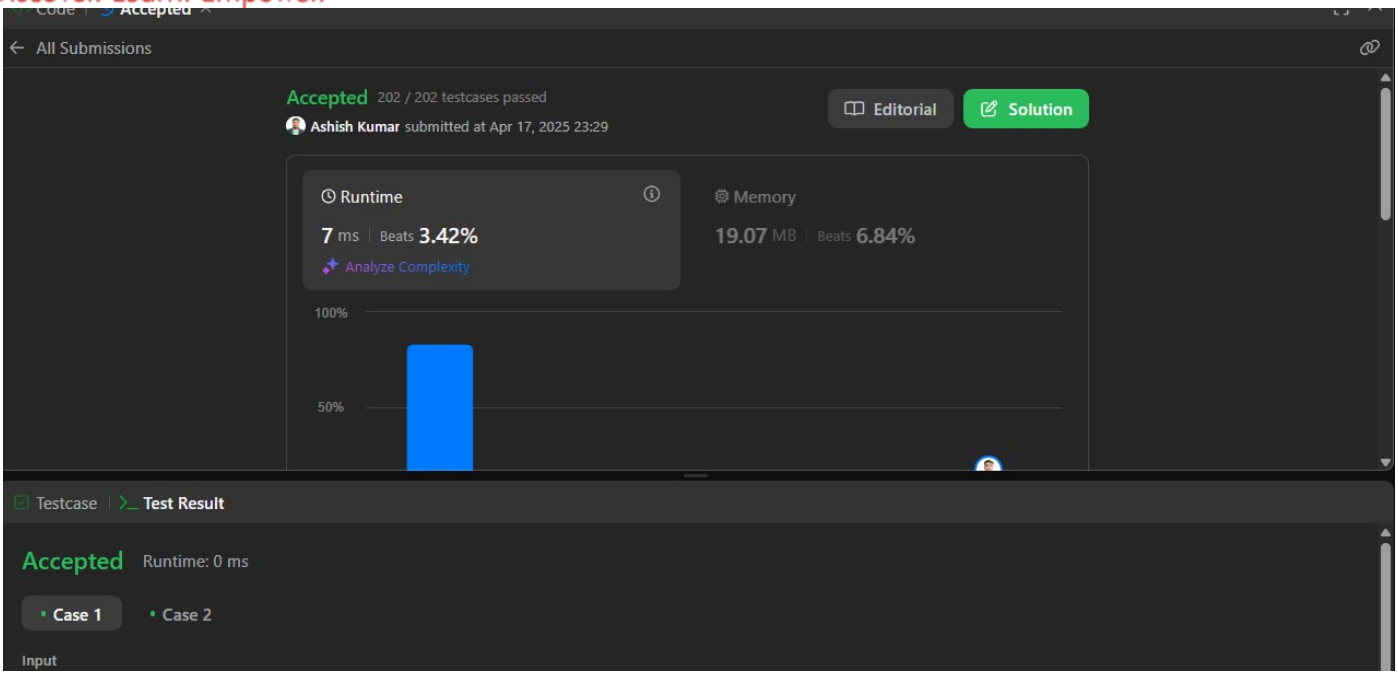
Branch: CSE **Section/Group:614(B)**
Semester: 6 **Date of Performance:17/04/25**
Subject Name: AP Lab **Subject Code: 22CSP-351**

Q1:-Given an m x n matrix, if an element is 0, set its entire row and column to 0.

```
class Solution {
public:
    void setZeroes(vector<vector<int>>& matrix) {
        unordered_map<int,int> r1,c1;

        for(int i = 0; i < matrix.size(); i++){
            for(int j = 0; j < matrix[i].size(); j++){
                if(matrix[i][j] == 0){
                    r1[i] = 1;
                    c1[j] = 1;
                }

            }
        }
         for(int i = 0; i < matrix.size(); i++){
            for(int j = 0; j < matrix[i].size(); j++){
                if(r1[i] == 1 || c1[j] == 1) matrix[i][j] = 0;
            }
        }
    }
};
```



Q2:-Given the head of a singly linked list and two integers left and right, reverse the nodes of the list from position left to right

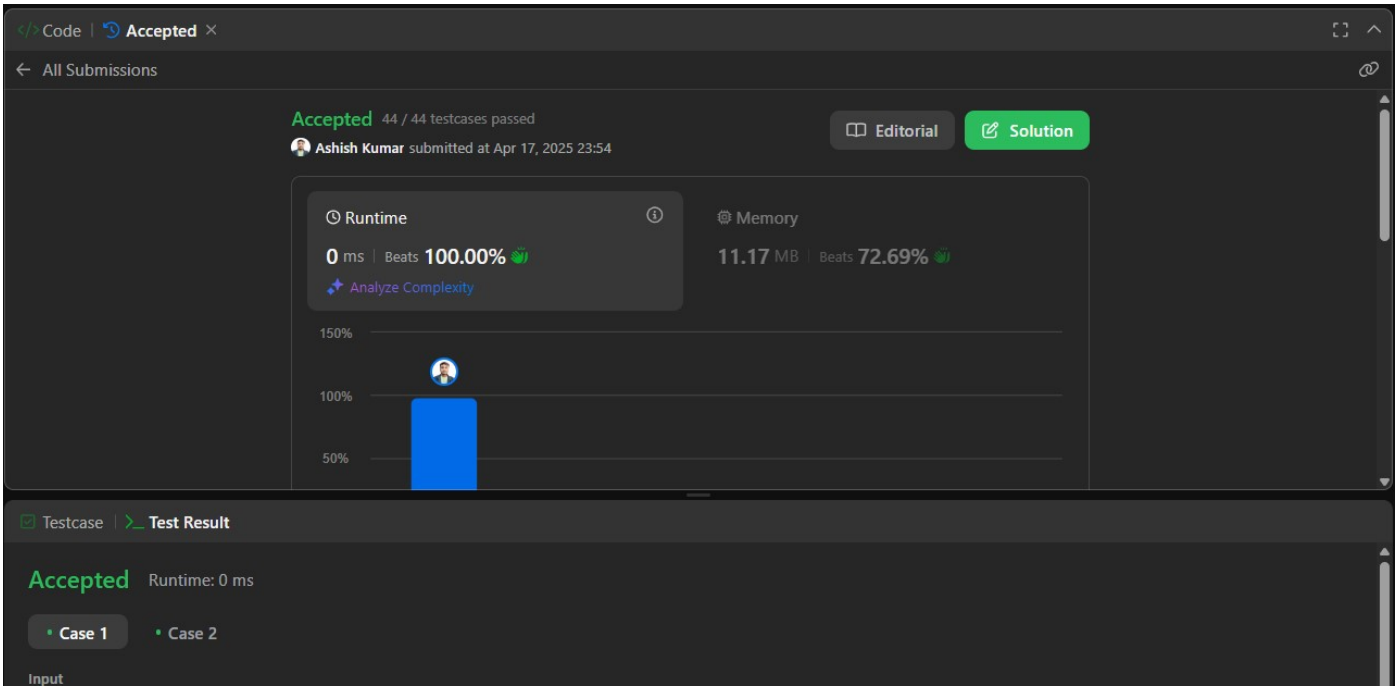
```
class Solution {
public:
    ListNode* reverseBetween(ListNode* head, int left, int right) {
        if (!head || left == right) return head;

        // Dummy node to simplify edge cases (like reversing from head)
        ListNode* dummy = new ListNode(0);
        dummy->next = head;
```

```
        // Step 1: Move `prev` to node before the `left` position
        ListNode* prev = dummy;
        for (int i = 1; i < left; ++i) {
            prev = prev->next;
        }
```

```
        // Step 2: Reverse the sublist
        ListNode* curr = prev->next;
        ListNode* next = nullptr;
        for (int i = 0; i < right - left; ++i) {
            next = curr->next;
            curr->next = next->next;
            next->next = prev->next;
            prev->next = next;
        }
```

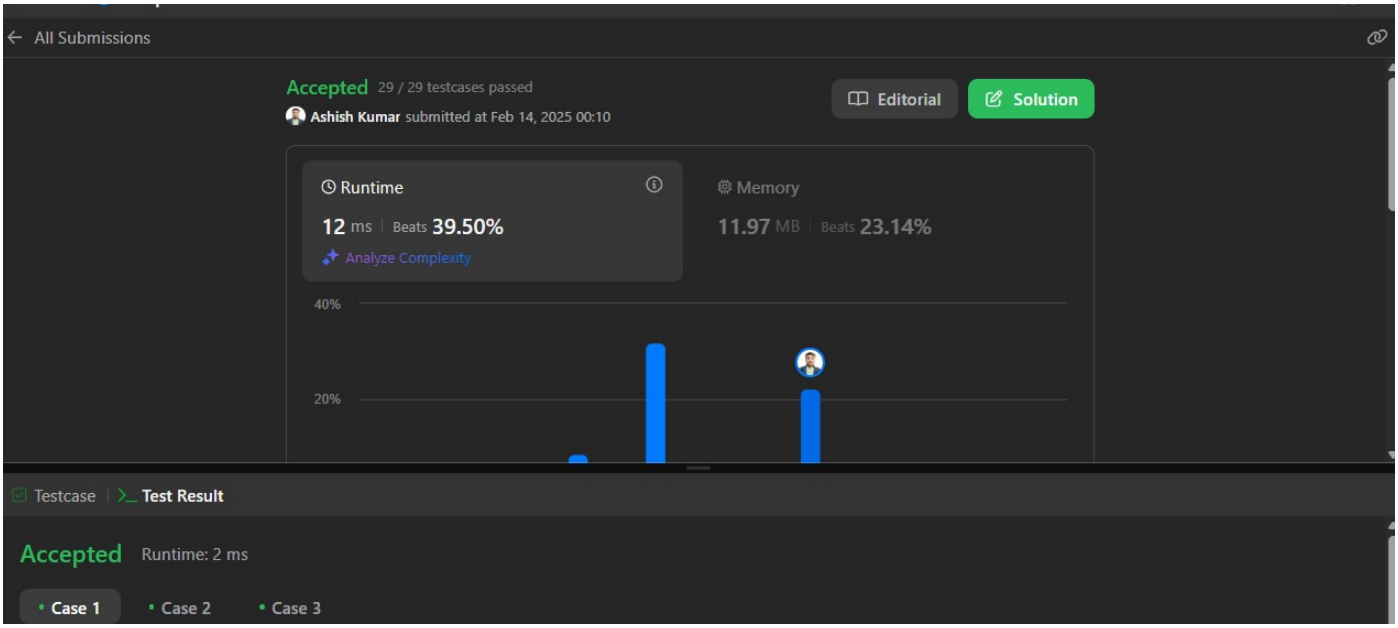
```
        return dummy->next;
    }
};
```



Q3:-Given the head of a linked list, determine whether the linked list contains a cycle. A cycle occurs if a node's next pointer points to a previous node in the list.

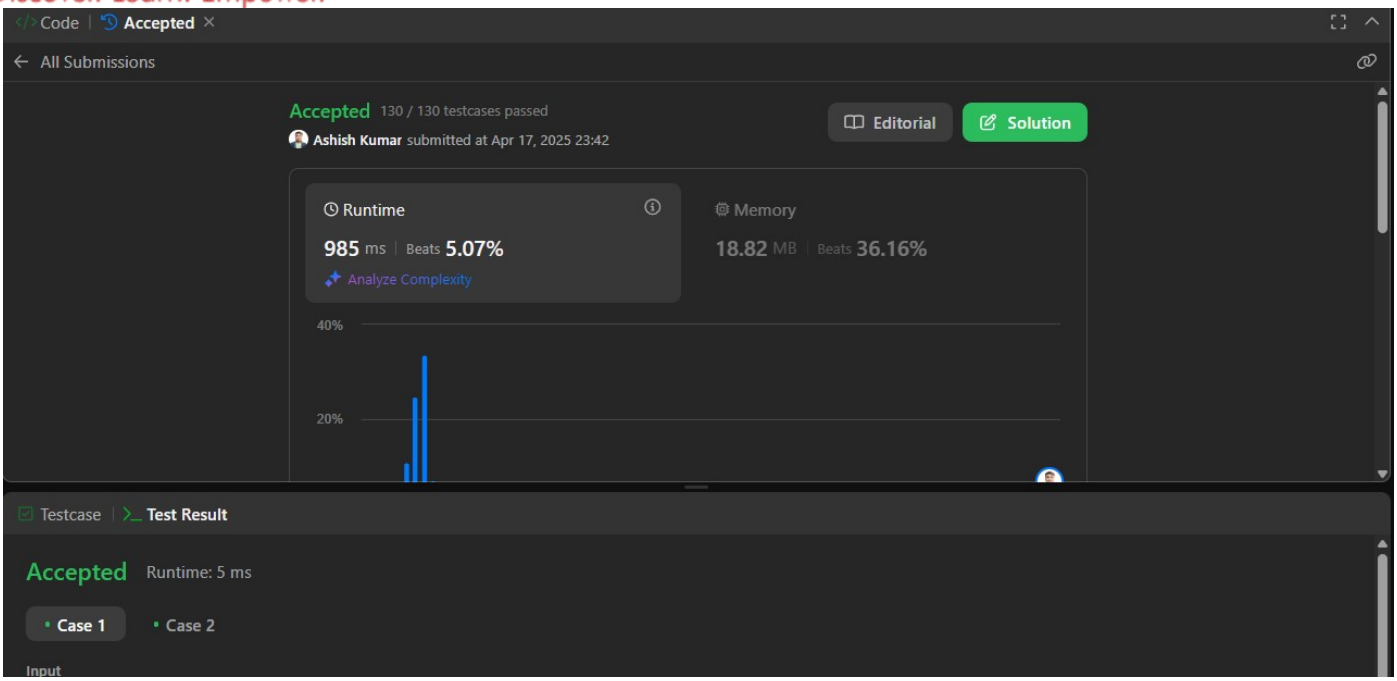
```
/**
 * Definition for singly-linked list.
 * struct ListNode {
 *     int val;
 *     ListNode *next;
 *     ListNode(int x) : val(x), next(NULL) {}
 * };
 */
class Solution {
public:
    bool hasCycle(ListNode *head) {
        if(head==NULL)
        {
            return false;
        }
        ListNode*fast=head;
        ListNode*slow=head;
        while(fast!=NULL && fast->next!=NULL)
        {
          fast=fast->next->next;
          slow=slow->next;
          if(fast==slow)
          {
            return true;
```

```
            }
        }
        return false;
    }
};
```



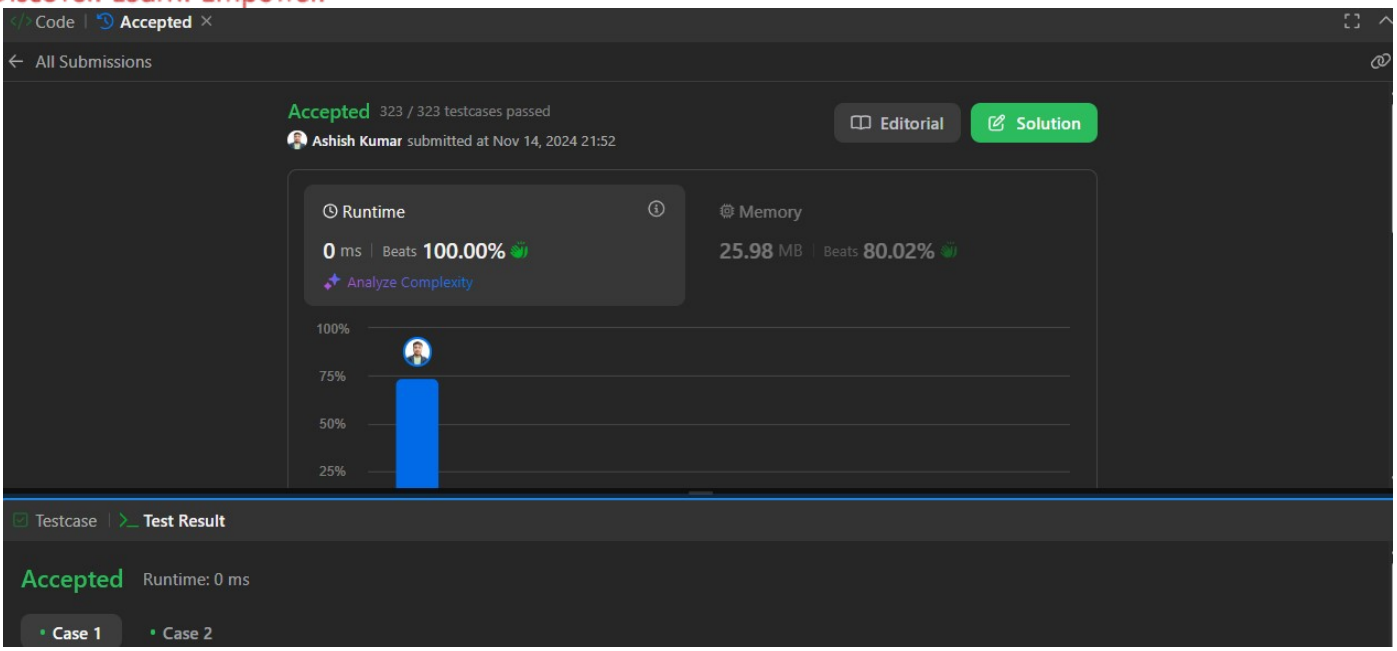
Q4:-Given an m x n matrix where each row is sorted in ascending order from left to right and each column is sorted in ascending order from top to bottom, and an integer target, determine if the target exists in the matrix.

```
class Solution {
public:
    bool searchMatrix(vector<vector<int>>& matrix, int target) {
        for(int i=0;i<matrix.size();i++)
        {
            for(int j=0;j<matrix[0].size();j++)
            {
                if(matrix[i][j]==target) return true;
            }
        }
        return false;
    }
};
```



Q5:- Given n non-negative integers representing an elevation map where the width of each bar is 1, compute the total amount of water that can be trapped after raining.

```
class Solution {
public:
    int trap(vector<int>& height) {
        int n=height.size();
        int sum=0;
        vector<int>leftMaxheight(n),rightMaxheight(n);
        if(n<=2) return 0;
        leftMaxheight[0]=height[0];
        for(int i=1;i<n;i++)
        {
            leftMaxheight[i]=max(leftMaxheight[i-1],height[i]);
        }
        rightMaxheight[n-1]=height[n-1];
        for(int i=n-2;i>=0;i--)
        {
            rightMaxheight[i]=max(rightMaxheight[i+1],height[i]);
        }
        for(int i=0;i<n;i++)
        {
        sum+=max(0,min(leftMaxheight[i],rightMaxheight[i])-height[i]);
        }
        return sum;
    }
};
```


Code
Accepted
All Submissions
Accepted 323 / 323 testcases passed
Ashish Kumar submitted at Nov 14, 2024 21:52
Editorial
Solution
Runtime
0 ms | Beats 100.00%
Analyze Complexity
Memory
25.98 MB | Beats 80.02%
100%
75%
50%
25%
Testcase
Test Result
Accepted Runtime: 0 ms
Case 1
Case 2