Experiment No. - 3

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Branch: BE-CSE(LEET)
Semester: 6th
Subject Name: Competitive coding - II

UID: 21BCS8129
Section/Group: 20BCS-ST-801/B
Date of Performance: 28/02/2023
Subject Code: 20CSP-351

1. **Aim/Overview of the practical:**

   Q.1 Kth Largest Element in a Stream.

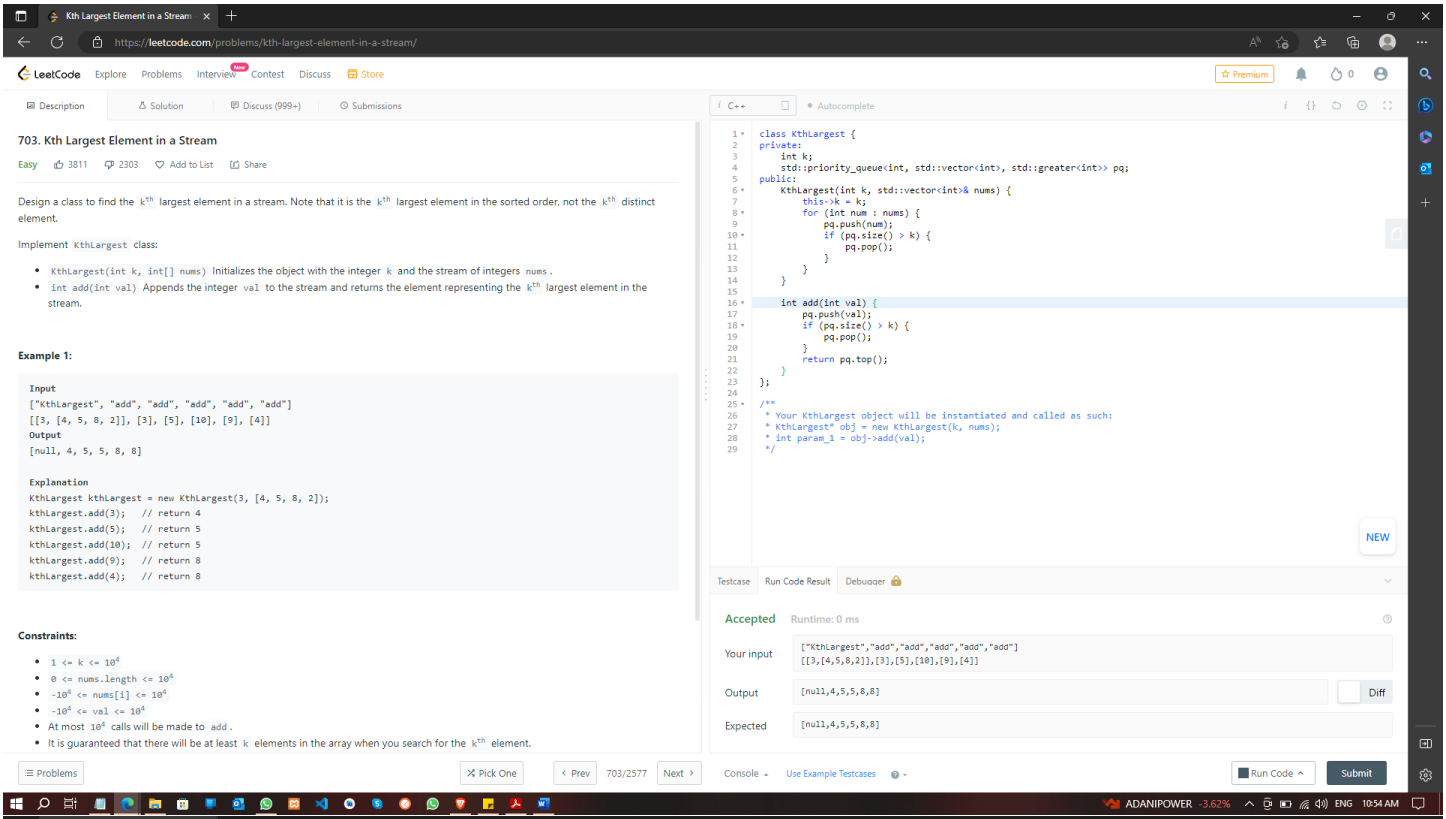
   https://leetcode.com/problems/kth-largest-element-in-a-stream/

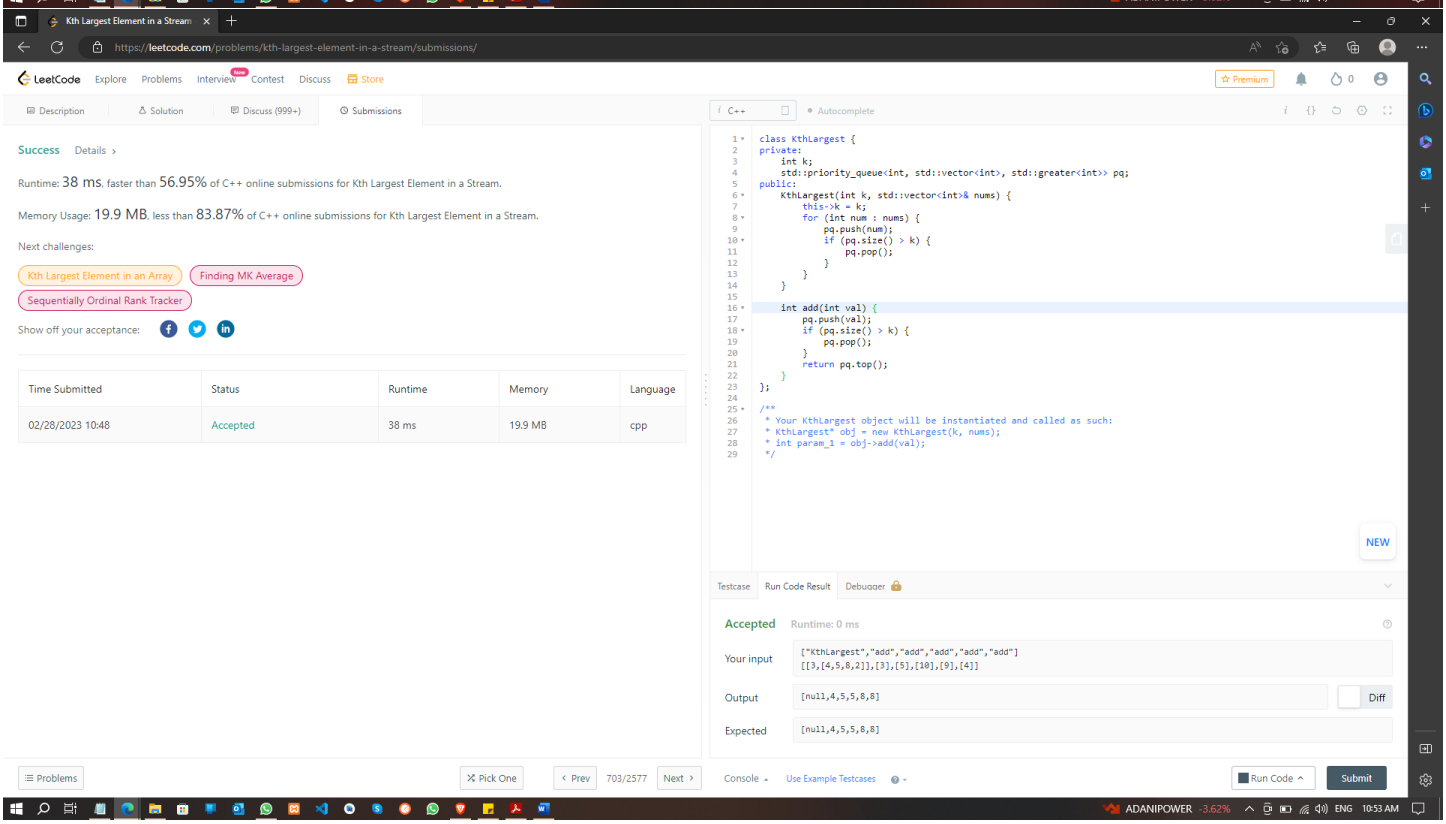
2. **Apparatus / Simulator Used:**
   - Windows 7 or above
   - Google Chrome
3. **Objective:**
   - To understand the concept of Queue
   - To implement the concept of Heap.
4. **Code:**

```
class KthLargest {
private:
    int k;
    std::priority_queue<int, std::vector<int>, std::greater<int>> pq;
public:
    KthLargest(int k, std::vector<int>& nums) {
        this->k = k;
        for (int num : nums) {
            pq.push(num);
            if (pq.size() > k) {
                pq.pop();
            }
        }
    }

    int add(int val) {
        pq.push(val);
        if (pq.size() > k) {
            pq.pop();
        }
        return pq.top();
    }
};
```

5. Result/Output/Writing Summary:





1. **Aim/Overview of the practical:**

   Q.2 Longest Happy Prefix
   https://leetcode.com/problems/longest-happy-prefix/

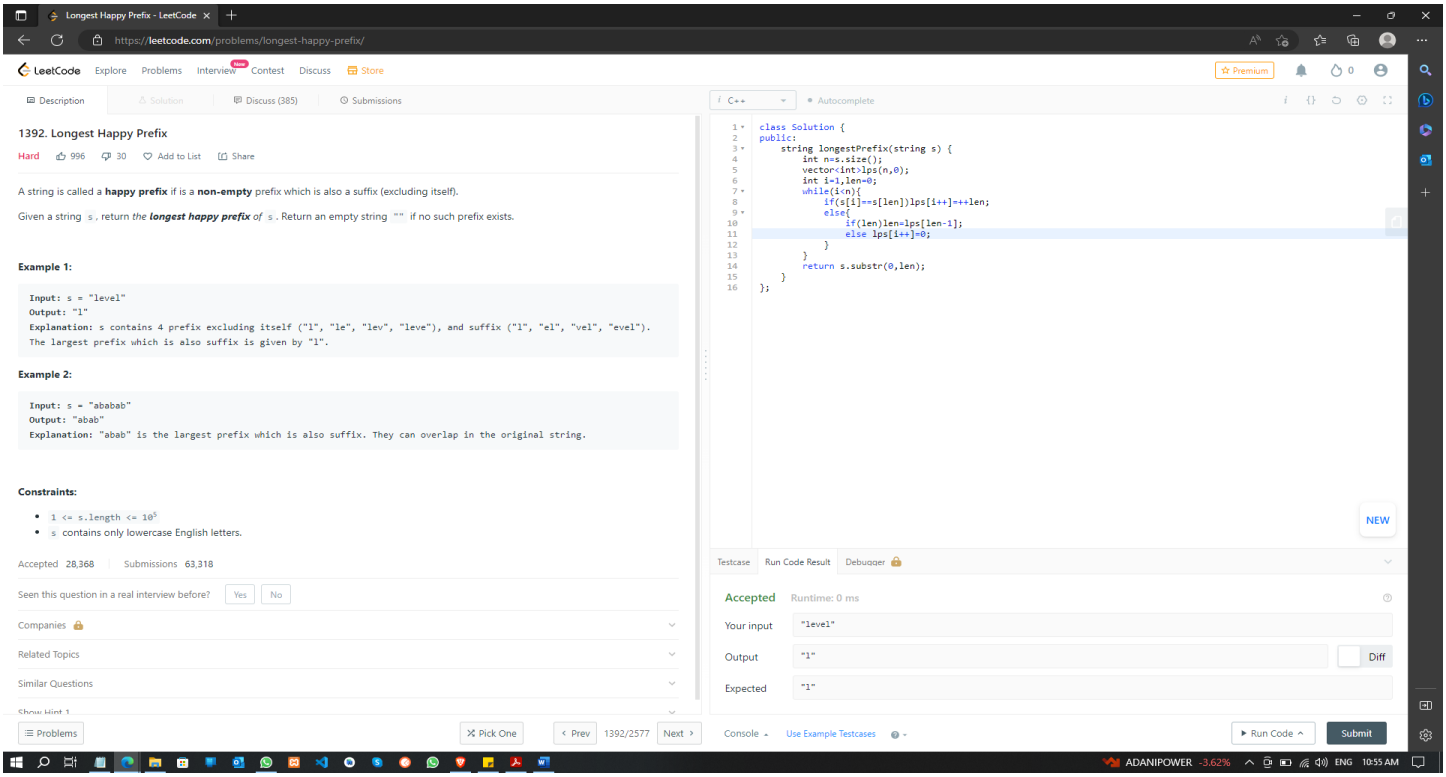
2. **Apparatus / Simulator Used:**
   - Windows 7 or above
   - Google Chrome

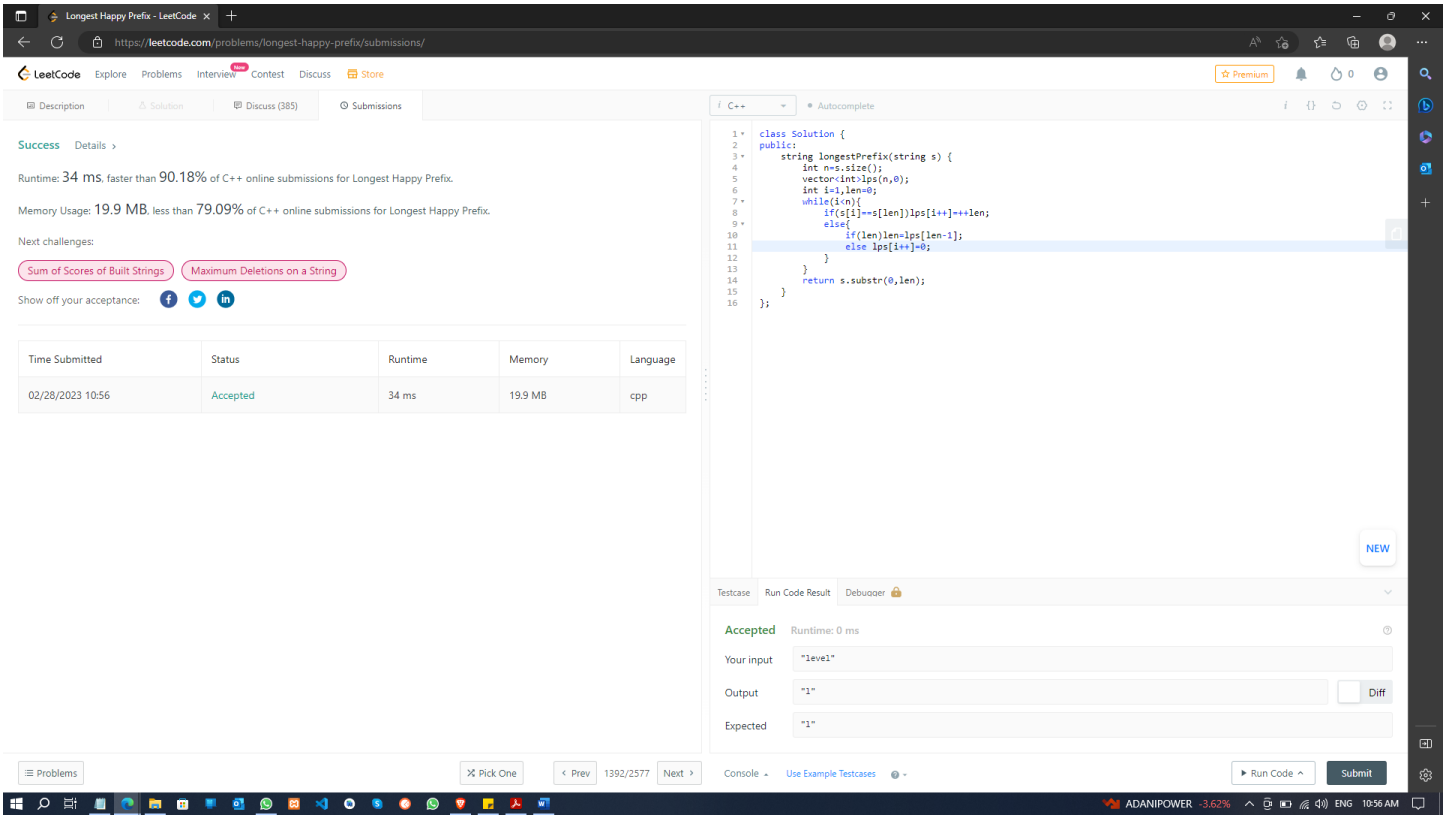
3. **Objective:**
   - To understand the concept of Longest Prefix.
   - To implement the concept of String iteration.

4. **Code:**

```
class Solution {
public:
    string longestPrefix(string s) {
        int n=s.size();
        vector<int>lps(n,0);
        int i=1,len=0;
        while(i<n){
            if(s[i]==s[len])lps[i++]=++len;
            else{
                if(len)len=lps[len-1];
                else lps[i++]=0;
            }
        }
        return s.substr(0,len);
    }
};
```

5. Result/Output/Writing Summary:





Learning outcomes (What I have learnt):

- Learned the concept of String iteration.
- Learnt about Array in Longest Prefix in the given string.

Evaluation Grid (To be created per the faculty's SOP and Assessment guidelines):

Sr. No.	Parameters	Marks Obtained	Maximum Marks
1.	Worksheet completion including writing learning objectives/Outcomes. (To be submitted at the end of the day).		
2.	Post-Lab Quiz Result.		
3.	Student Engagement in Simulation/Demonstration/Performance and Controls/Pre-Lab Questions.		
	Signature of Faculty (with Date):	Total Marks Obtained:	