

Experiment No. - 3

Student Name: Vivek Kumar

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();
    }
};
```


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

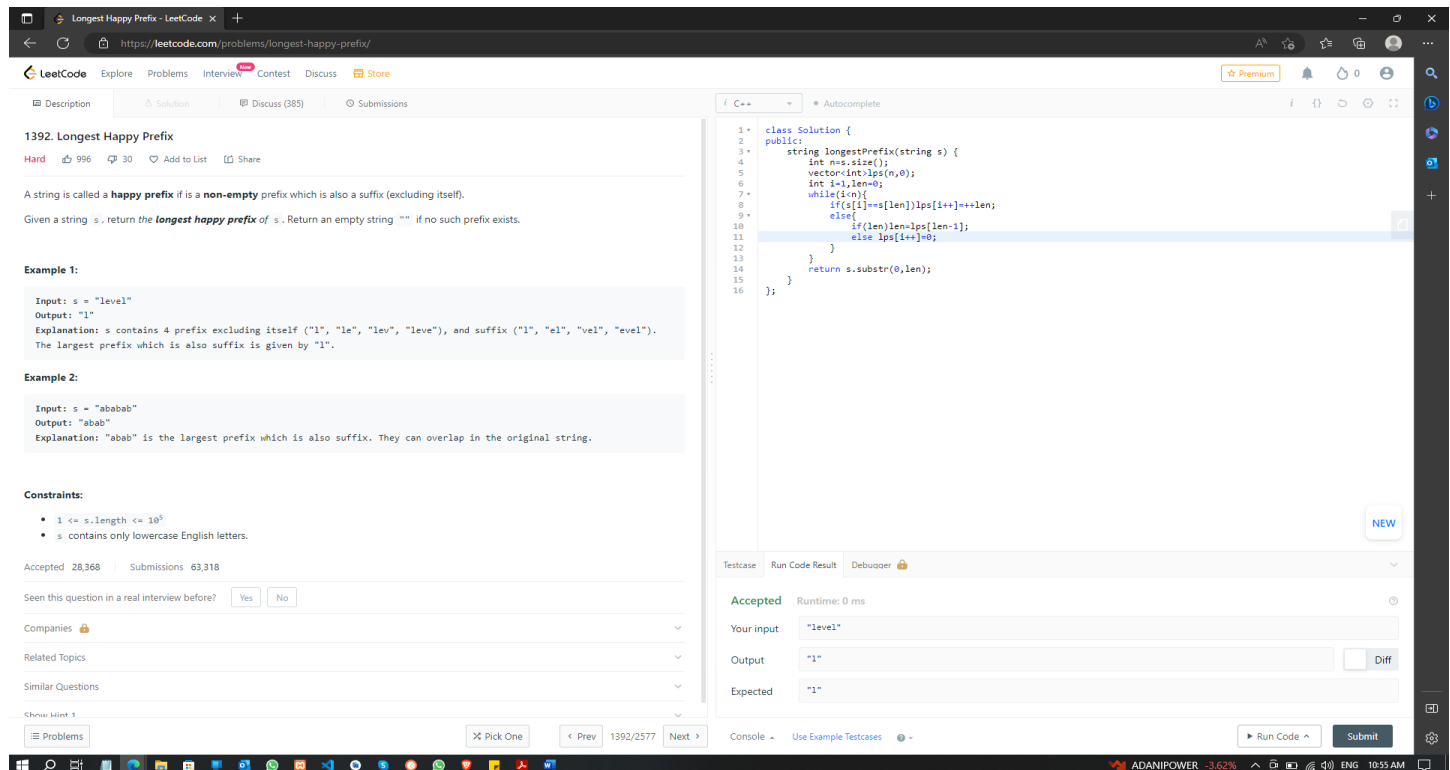
3. Objective:

- 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:



1392. Longest Happy Prefix

A string is called a **happy prefix** if it is a **non-empty** prefix which is also a suffix (excluding itself).

Given a string `s`, return the **longest happy prefix** of `s`. Return an empty string `""` if no such prefix exists.

Example 1:

Input: `s = "level"`
Output: `"l"`
Explanation: `s` contains 4 prefix excluding itself ("`l`", "`le`", "`lev`", "`leve`"), and suffix ("`l`", "`el`", "`vel`", "`evel`"). The largest prefix which is also suffix is given by "`l`".

Example 2:





























































Input: `s = "ababab"`
Output: `"abab"`
Explanation: "`abab`" is the largest prefix which is also suffix. They can overlap in the original string.

Constraints:

- `1 <= s.length <= 105`
- `s` contains only lowercase English letters.

Accepted: 28,368 | Submissions: 63,318

Seen this question in a real interview before? ☐ Yes ☐ No

Companies:                                                            

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:	