DEPARTMENT OF
COMPUTER SCIENCE & ENGINEERING
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NAAC GRADE A+
ACCREDITED UNIVERSITY

Course Name: ADSA Lab   Course Code: 23CSH-622

Problem-1

Aim of the Experiment :

Given a string s, find the first non-repeating character in it and return its index. If it does not exist, return -1.

Constraints:

1 <= s.length <= 105

s consists of only lowercase English letters.

1. Problem Description :

A string s is given and we have to find the first non repeating character in the string and then return index of that character. If the character does not exist then return -1.

We will use the map data structure and map each character with their occurrences. Then we will traverse the given string and check the value for each character in the map and if the corresponding occurrence is 1 then that character will be the required answer.

2. Algorithm :

Step 1: Define unordered_map<char,int> mp.

Step 2: Initialize int n = s.length().

Step 3: Traverse the whole string and set mp[s[i]]++.

Step 4: Traverse the string and compare the occurrences of each character.

```
if (mp[s[i]] == 1) {
        return i;
}
```
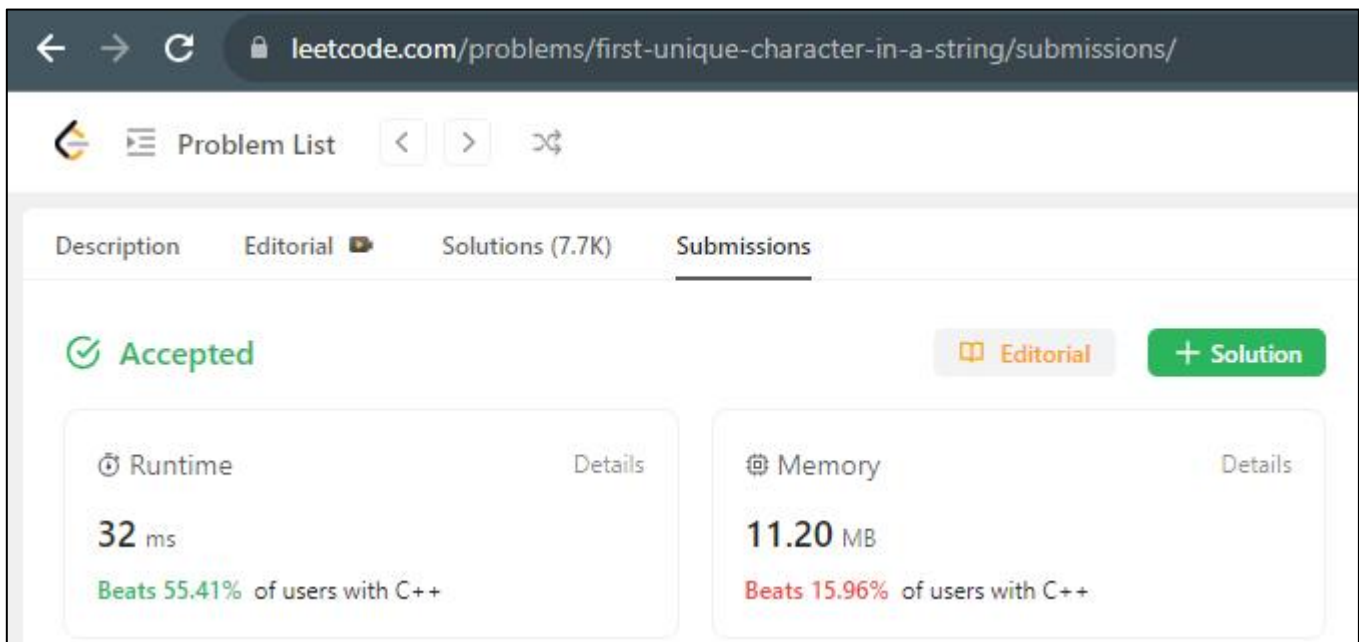Step 5: If no character have occurrence equal to 1, then return -1.

3. Source Code for Experiment :

```
class Solution {
public:
    int firstUniqChar(string s) {
        unordered_map<char,int> mp;
        int n = s.length();
        for ( int i = 0; i < n; i++) {
            mp[ s[i] ]++;
        }
        for ( int i = 0; i < n; i++) {
            if ( mp[ s[i] ] == 1 ) {
                return i; // Return the index of the first non-repeating character
            }
        }
        return -1;
    }
};
```

4. Result/Output :

Learning outcomes (What I have learnt):

1. I learnt about the string data structure in C++.

2. I learnt about the unordered map data structure.

3. I learnt about how to store the mapping in map data structure.

4. I learnt about the for loop and if condition statement.

5. I learnt about how to find first unique character in a string.