MCS 253P Quiz 3

Name: Aswin **UciNetID:** Saswin **(@uci.edu)**

1) (70 pts) Given a **0-indexed** string **s**, repeatedly perform the following operation **any** number of times:

- Choose an index i in the string, and let c be the character in position i. **Delete** the **closest occurrence** of **c** to the **left** of **i** (if any) and the **closest occurrence** of **c** to the **right** of i (if any).

Your task is to **minimize** the length of **s** by performing the above operation any number of times.

Return an integer denoting the length of the **minimized** string.

2) (30 pts) Give **2 test cases** and **time complexity.**

Example 1:

***Input:** s = "aaabc"*

***Output:** 3*

TC 1

input = "abcddbcaabcd"

output = "dbca"

TC 2

input = " "

Output = " "

TC 3

input = abcdefgh // Nothing to delete

Output = abcdefgh

Time complexity: O(n²)

① Traverse string from left

② Pick character and make all the occurences of them in the right to '#'

③ Repeat till pointer does not reach end of string.

④ Return a new String that contain non '#' chars from previous.

Eg: abcabcabc

Pick a → abc#bc#bc

Pick b → abc##c##c

Pick c → abc######

Traverse through string again & return "abc".

```
String minimizeString (string input) {
    String output = ' ';
    if (input.length() ==0) return output;
    int n = input.length();

for (int i=0; i<n; i++) {
    ~~char chosenchar chosenchar = input[i];~~
    if (input[i] != '#') {
        for (int j = i+1; j<n; j++) {
            if (input[j] == input[i]) {
                ~~output +=~~
                input[j] = '#';
            }
        }
    }
}
// Add unique chars to output
for (char c : input)
    if (c != '#') output += c;
return output;

}

// Time complexity = O(n²)
// ~~Space complexity = O(1) we just use~~
```