Lab Assignment

Subject: Programming for problem solving **Discipline: B – Tech (All)**
Subject Code: ES-CS291 **Semester: 2nd**

Assignment – 7

The objective of this assignment is to learn how to use string in the program
[Do the all programs using library function and without using library function]

1. Write a C program to find the length of a string.
   [**Hint:** Use **strlen()** under <string.h> header file]
   Algorithm without library function:
   STEP 1: Take input in character array
   STEP 2: Using a for loop, count the number of characters in the array from 0th position, until a null character (‘\0’) is found.

2. Write a C program to count the total number of vowels and consonants in a string.
   Algorithm:
   STEP 1: Take input in character array
   STEP 2: Initialize two variables: vowel=0 & consonant=0
   STEP 3: Find the length of the string
   STEP 4: Run a loop from start till end of string
   STEP 5: Check if the current character is a vowel, increment vowel variable by one, else increment consonant variable by one

3. Write a C program to concatenate two strings.
   [**Hint:** Use **strcat()** under <string.h> header file]
   Algorithm without library function:
   STEP 1: Take 2 strings in 2 character arrays as input.
   STEP 2: Find length of 1st string and store it in a variable say j.
   STEP 3: Run a loop from 0 to the last character of the 2nd string.
   [for(i=0;s2[i]!=’\0′;i++)]
   STEP 4: Append the characters of the 2nd string at s1[j+i] position of the 1st string until there is no character available in the 2nd string. So 2nd string is added at the end of the 1st string.
   STEP 5: Print the 1st string

4. Write a C program to find the reverse of a string.
   [**Hint:** Use **strrev()** under <string.h> header file]
   Algorithm without library function:
   STEP 1: Take input in character array
   STEP 2: Find the length of the string
   STEP 3: Initialize a variable j with 1 less than the length of the input string. [As in the reverse array, we will store the value from the 0th position.]
   STEP 4: Run a loop from 0 to less than the length of input string. [for(i=0; i<count; i++)]
   STEP 5: At ith position of the reverse array, store the jth positional value of the input string.
   STEP 6: Decrement j by 1 inside the loop. [will point to the next element of input string.]
   STEP 7: Print the reverse array.

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5. Write a C program to remove all extra blank spaces from a given string.
   STEP 1: Input a string with space.
   STEP 2: Find the length of the string
   STEP 3: Start a loop [i] from 0 to length of string
   STEP 4: Check if the current character is a space or not using [if str[i]== ' ']
   STEP 5: If it's a space, start another loop [j] from i to length of string
   STEP 6: Replace space with next element [str[j] = str[j+1]]
   STEP 7: Decrement the length by 1 inside if statement
   STEP 8: Print the string without space.

6. Write a C program to count the frequency of each character in a string.
   STEP 1: Input a string with space.
   STEP 2: Find the length of the string
   STEP 3: Start a for loop [i] from 0 to length of string
   STEP 4: Initialize a counter=1.
   STEP 5: If string is not null start a loop [j] from i+1 to length of string
   STEP 6: If(str[i] == str[j]) increment the counter, and set the current position of j with null. [s[j]='\0']
   [If the frequency of a character is already counted, then it will be replaced with null character to remove duplicity of character.]
   STEP 7: Print the character and frequency of that character outside the inner for loop [j], inside the if statement.

7. Write a C program to convert lowercase string to uppercase string and vice versa.
   [**Hint:** Use **toupper()** and **tolower()** under <string.h> header file]

8. Write a C program to compare two strings.
   [**Hint:** Use **strcmp()** under <string.h> header file]

9. Write a C program to check whether a string is palindrome or not (using single string only).

10. Write a C program to find the total number of alphabets, digits or special characters in a string.