**Purpose: Introduction to character arrays, null termination, user input and displaying array, using C-String standard C++ library, writing program using strlen, strcpy etc**

**Problem 1:** Write a function MyOwnStrlen whose parameter is a null terminated character array. The function finds and returns the length of this array.

**Problem 2:** Write a function MyOwnStrcmp whose parameters are two null terminated character arrays. The function returns true if both arrays are identical and false otherwise. Use MyOwnStrlen written in part 1 to find the length of both arrays.

**Problem 3:** Write a function charCount whose parameters are a null terminated character array and a character. The function returns the number of times this character is found in the character array. Implement a driver program (main) to test these functions.

**Problem 4:** Write a function strcat whose parameters are three arrays. Array1 and array2 have a fixed size. Concatenate both these arrays into array3. (You can use functions MyOwnStrlenwritten in inlab, if needed.)

**Problem 5:** Write a function findsubstr whose parameters are 2 null terminated character arrays. The function returns true if array2 exists in array1 and false otherwise.

**Problem 6:** Write a function countwords whose parameters are 2 arrays. The function returns the number of times array2 exists in array1. (You can use function in pl task 2, if you want.)

**Problem 7: Note:** All the arrays (input/output) are declared in the caller (main or any other function) then pass them as parameters in function.

1. Declare a character string of size 50 and initialize all items of the array to zero:

const int MAXSIZE = 50;

char str[MAXSIZE] = {0};

1. Now input the string using:

cin >> str; //(When running the programming specify “*hello this is my ITC lab* “ as input string.)

What do you get when you output the string using cout? (cout << str)

Repeat the same for different strings that contain spaces. What are your observations?

2.Run a for loop and output all the 50 characters of the string as numbers

(Using cout << (int) str[i])? What do you observe?

3. Try this instead of simple cin:

cin.getline(str,MAXSIZE);

Now output the string using cout and output individual characters of the string using the above mentioned for loop. What do you observe?

4. Next reduce the allocated size of the string to 5 (MAXSIZE=5) and in the getline function input more than 5 characters. What are your observations?

1. Write a function to find the length of a string (find actual number of characters in the given string) .What parameters are required by this function?

NOTE: Remember you can pass the maximum size of the array allocated for storing characters (optional) but this won’t be the actual size of the string.

For example:

Input string: “I love programming”

String Size: 18

1. Write a function that takes as parameters a string (char array), a ‘find’ character and a ‘replace’ character. The function should replace all the occurrences of the ‘find’ character with the ‘replace’ character.

For example:

string: “I love programming”

*find character*: ‘m’

*replace character*: ‘n’

Output String : “I love progranning”

1. Write a function that takes as input only a character array (again do not specify the size of the string). The function should replace the string so that all leading spaces are removed.

Input String: “ hello how are you?”

Output String: “ hello how are you?”

1. Write a function (refined version of find and replace) that replaces a substring with another substring and creates a new string. Now the function prototype changes to:

void findAndReplace(char originalStr[],char findStr[],char replaceStr[], char newStr[])

*Sample Input/Output:*

OriginalStr = “this lab is amazing and fascinating”

findStr = “ing”

replaceStr = “es me”

then the function should construct the new string as:

“this lab is amazes me and fascinates me”

**Problem 8:** Write a function “GetStringLenght” which takes a string and returns its length. For example:

String: “I love programming.”

Length: 19

**Problem 9:** Write a function that takes as parameters a string (char array), a ‘find’ character and a ‘replace’ character. The function should replace all the occurrences of the ‘find’ character with the ‘replace’ character. For example:

string: “I love programming”

find character: ‘m’

replace character: ‘n’

then the string should become “I love progranning”

char arr[25] = { 'a', 'g', 'T', '@', '5', 'h', '%', '1', 'k', 'R', 'B', '7', '&', 'l', 'V', 'j', '#', 'n', 'Q', '3', '!', ')', '}', 'W', 'y' };

Write a program that converts the upper case letters to lower case letters and lower case letters to upper case letters. The numbers should be replaced with N + 5, where N is the number. If this number exceeds single digit, replace it with the unit digit of that number. Other characters should remain as they are. Display the altered array.

**Problem 1:** Write a function that takes as input only a character array (again do not specify the size of the string). The function should replace the string so that all leading spaces are removed. For example if the initial string is: “ hello how are you?”

Then the function should replace the original string with “hello how are you?”

String Before TrimStart: “ Hello How are you?”

String After TrimStart: “Hello How are you?”

**Problem 2:** This function should remove all the trailing spaces from a string. For example, if the initial string is:

“hello how are you “

Then the function should modify the string as “hello how are you”

Test your function with following string:

String Before Trim End: “I love programmin g. ”

String After Trim End: “I love programmin g.”

**Problem 3:** Write a function that takes a string, replaces a Find substring with a Replace substring and creates a new string. For example:

String: “I am Pakistani so I support Pakistani Cricket team in Pak-India matches.”

Find Substring: Pak

Replace Substring: Afghan

New String: “I am Afghanistani so I support Afghanistani Cricket team in Afghan-India matches.”

String: “I am Pakistani so I support Pakistani Cricket team in Pak-India matches.”

Find Substring: Pakii

Replace Substring: Afghan

New String: “I am Pakistani so I support Pakistani Cricket team in Pak-India matches.” (as Pakii does not exist in the string).

**Problem 4:** Write a function that takes two strings i.e. string1 and string2 and appends string2 at the end of string1. For example

String 1: “Happy Birthday”

String 2: “ to you !”

After StringConcat, String 1: “Happy Birthday to you !”

**Problem 5:** Write a function which takes a string and prints words in it. For example:

String: I am a student of ITC in FAST-NU.

Tokens**:**

I

am

a

student

of

ITC

In

FAST-NU.

Hint: words are separated by spaces.

**Problem 6:** Write a function that takes a string and a substring and returns index of string where it finds first occurrence of substring. If it does not find the substring in string, it will return -1. For example,

String: “I am a Pakistani so I support Pakistani Cricket team in Pak-India matches.”

Substring: Pak

Index Returned: 7

Substring: Pakii

Index Returned: -1

**Problem 7:** Write a program that takes two strings i.e. string1 and string2 and returns true if string1 ends with string2. For example,

String1: “I am a Pakistani so I support Pakistani Cricket team in Pak-India matches.”

String2: “matches”

Returned Value: false (there is a dot at the end)

String2: “matches.”

Returned Value: true

**Problem 8:** A palindrome is a string that is spelled the same way forwards and backwards. Some examples are “radar”, “able was I ere I saw elba” and (if blanks and punctuations are ignored) “a man a plan a canal panama.” Write a function IsPalindrome that returns true is the string stored in the array is a palindrome and false otherwise. The function should ignore spaces and punctuation in the string.