Ex No: 3   Implementation of String Algorithms

In C, <string.h> includes prototype of string Library functions. The various string operations are
strlen(str) – returns the length of the string
strcpy(dst, src) – copies src string to dst string
strcat(s1, s2) – concatenates s2 to s1, one string to another
strcmp(s1, s2) – compares two strings, s1 and s2
strlwr(str) – converts string to lower case
strupr(str) – converts string to upper case
strrev(str) – returns the reverse string
strchr(str,ch) – determines the first occurrence of a given character in a string

Aim: To determine the length of the string without using library function

Procedure:
1. Start
2. Read the string using scanf() and %s format specifier
3. Loop until NULL character is reached
        Increment the count
4. Print the count value
5. End

Sample Code:
```
#include <stdio.h>
#include <string.h>
int main()
{
  char  *str;
  int i, cnt=0;
  str = (char *)malloc(10);  // str can hold max 9 characters
  printf("Enter the string\n");
  scanf("%s",str);
  for (i=0;str[i]!='\0';i++)
        cnt++;
  printf("Length of the string is %d\n",cnt);
}
```

Sample Input/Output:
Enter the string: hello
Length of the string 5

Result:
Thus the length of the string was determined without using C library function.

Aim: To determine the length of the string using strlen() library function

Procedure:
1. Start
2. Read the string using scanf() and %s format specifier
3. len = strlen(str)
4. Print len value
5. End

Sample Code:
```
#include <stdio.h>
#include <string.h>
int main()
{
  char *str;
  int len=0;
  str = (char *)malloc(10);  // str can hold max 9 characters
  printf("Enter the string\n");
  scanf("%s",str);
  len = strlen(str);
  printf("Length of the string is %d\n",len);
}
```

Sample Input/Output:
Enter the string   : hello
Length of the string   5

Result:
Thus the length of the string was determined using C strlen() library function.

Sample Questions, but not limited to
Concatenate two strings with / without using library function
Copy two strings with / without using library function
Reverse the string with / without using library function
Sort the set of strings (use bubble sort)
Check whether the given string is palindrome or not
Perform case conversion – lower to upper, upper to lower
Count the number of lines, words, characters, special characters, digits in the given string
Perform "find and replace" operation as in Editor (MS Word, Notepad, gedit, etc)
Perform string preprocessing - Remove trailing white space characters and unwanted white space characters from the given string
Convert digit to string in the given string – 1 to "one", 2 to "two", etc
In a List of student names, print all the names starting with 's', ending with 'a',etc

Assessment Rubrics for Ex 3:

Parameters	Max Marks	Actual Marks
Uniqueness of the problem selection and Flowchart drawn	10	
Code (Array, Pointers with malloc(), free())	10	
Solutions for atleast 4 different problems	10	
Viva (Online Test)	10	
Adherence to the template for documentation (Record)	10	
Total	50	
Staff Signature		