East West University

Department of Computer science and Engineering

Course Code: CSE103- Structured Programming (LAB)

Section No: 03

Lab Assignment: 05

Date of submission: 15-04-2023

Submitted To: Sumona Yeasmin

Student's Name: Mohammad Hasan Azhar

Student's ID: 2020-1-60-080

Lab5Task1_080.c | Lab5Task2_080.c | Lab5Task3_080.c | *Lab5Task4_08

```c
#include <stdio.h>
int main()
{
    char str[30];
    int i, len = 0;
    printf("Enter string: ");
    fgets(str, sizeof(str), stdin);
    for(i=1; str[i] != '\0'; i++){
        len++;
    }
    printf("Length of the string: %d", len);
    return 0;
}
```

```
"D:\EWU Books And Files\10th Semester\CSE 103\Lab5\Lab5Task1_080.exe"
Enter string: Mohammad Hasan
Length of the string: 14
Process returned 0 (0x0)   execution time : 15.774 s
Press any key to continue.
```

Lab5Task2_080.c | Lab5Task3_080.c | *Lab5Task4_080.c | *Lab5Task7_(

```c
#include <stdio.h>
int main()
{
    char str[30];
    int i, word = 1;
    printf("Enter string: ");
    fgets(str, sizeof(str), stdin);
    printf("Number of words: ");
    for(i=1; str[i] != '\0'; i++){
        if(str[i] == ' '){
            word++;
        }
    }
    printf("%d", word);
    return 0;
}
```

```
"D:\EWU Books And Files\10th Semester\CSE 103\Lab5\Lab5Task2_080.exe"
Enter string: Mohammad Hasan Azhar
Number of words: 3
Process returned 0 (0x0)   execution time : 22.216 s
Press any key to continue.
```

Lab5Task3_080.c | Lab5Task4_080.c | Lab5Task7_080.c

```c
#include <stdio.h>
int main()
{
    char str[30];
    int i, word = 1;
    printf("Enter string: ");
    fgets(str, sizeof(str), stdin);
    int len = strlen(str);
    printf("Reverse: ");
    for(i = len-1; i>=0; i--){
        printf("%c", str[i]);
    }
    return 0;
}
```

```
"D:\EWU Books And Files\10th Semester\CSE 103\Lab5\Lab5Task3_080.exe"
Enter string: Mohammad Hasan
Reverse:
nasaH dammahoM
Process returned 0 (0x0)   execution time : 10.826 s
Press any key to continue.
```

Lab5Task4_080.c | Lab5Task5_080.c | Lab5Task6_080.c | Lab5Task7_080.c

```c
#include <stdio.h>
int main()
{
    char str1[30], str2[30];
    int i, flag = 0;
    printf("Input the 1st string: ");
    fgets(str1, sizeof(str1), stdin);
    printf("Input the 2nd string: ");
    fgets(str2, sizeof(str2), stdin);
    printf("String1: %s", str1);
    printf("String2: %s", str2);

    i = 0;
    while (str1[i] != '\0')
    {
       if (str1[i] != str2[i])
       {
          flag = 1;
          break;
       }
       i++;
    }

    if (flag == 0 && str2[i] == '\0')
       printf("The strings are equal.\n");
    else
       printf("The strings are not equal.\n");
    return 0;
}
```

```
"D:\EWU Books And Files\10th Semester\CSE 103\Lab5\Lab5Task4_080.exe"
Input the 1st string: aabbcc
Input the 2nd string: aabbcc
String1: aabbcc
String2: aabbcc
The strings are equal.

Process returned 0 (0x0)   execution time : 9.036 s
Press any key to continue.
```

Lab5Task5_080.c | Lab5Task6_080.c | Lab5Task7_080.c

```c
#include <stdio.h>
int main()
{
    char str[100];
    int i, a=0, n=0, c=0;
    printf("Input the string: ");
    fgets(str, sizeof(str), stdin);

    for(i=0; str[i]!='\0'; i++){
        if((str[i]>='a' && str[i]<='z') || (str[i]>='A' && str[i]<='Z')){
            a++;
        }
        else if(str[i]>='0' && str[i]<='9'){
            n++;
        }
        else
            c++;
    }

    printf("Total Alphabets: %d\n", a);
    printf("Total Digits: %d\n", n);
    printf("Total Special Characters: %d\n", c);
    return 0;
}
```

```
Select "D:\EWU Books And Files\10th Semester\CSE 103\Lab5\Lab5Task5_080.exe"
Input the string: dfag654r#$&*(26ds
Total Alphabets: 7
Total Digits: 5
Total Special Characters: 6

Process returned 0 (0x0)   execution time : 26.409 s
Press any key to continue.
```

Lab5Task6_080.c | Lab5Task7_080.c | Lab5Task8_080.c

```c
#include <stdio.h>
int main()
{
    char str[100];
    int i, a=0, n=0, c=0;
    printf("Input the string: ");
    fgets(str, sizeof(str), stdin);

    for(i=0; str[i]!='\0'; i++){
        if(str[i]=='a' || str[i]=='e' || str[i]=='i' || str[i]=='o'||
           str[i]=='u' || str[i]=='A' || str[i]=='E' ||
           str[i]=='I' || str[i]=='O' || str[i]=='U'){
            a++;
        }
        else if((str[i]>='a' && str[i]<='z') || (str[i]>='A' && str[i]<='Z'))
            c++;
    }

    printf("Total vowels: %d\n", a);
    printf("Total consonants: %d\n", c);
    return 0;
}
```

```
"D:\EWU Books And Files\10th Semester\CSE 103\Lab5\Lab5Task6_080.exe"
Input the string: Hasan
Total vowels: 2
Total consonants: 3

Process returned 0 (0x0)   execution time : 16.483 s
Press any key to continue.
```

Lab5Task7_080.c | Lab5Task8_080.c

```c
#include <stdio.h>
int main()
{
    char str[100];
    int freq[255];
    int i=0, max=0, ascii;
    printf("Input the string: ");
    fgets(str, sizeof(str), stdin);
    for(i=0; i<255; i++){
        freq[i]=0;
    }
    for(i=0; str[i] != '\0'; i++){
        ascii = (int)str[i];
        freq[ascii]++;
    }
    for(i=0; i<255; i++){
        if(freq[i]>freq[max])
            max = i;
    }
    printf("Maximum is '%c' = %d times.", max, freq[max]);
    return 0;
}
```

```
"D:\EWU Books And Files\10th Semester\CSE 103\Lab5\Lab5Task7_080.exe"
Input the string: Hasan
Maximum is 'a' = 2 times.
Process returned 0 (0x0)   execution time : 35.900 s
Press any key to continue.
```

Lab5Task8_080.c

```c
#include <stdio.h>
int main()
{
    char str[100], str1[100];
    int i, n=1, s;
    printf("Input the string: ");
    fgets(str, sizeof(str), stdin);
    printf("Input the position to start extraction: ");
    scanf("%d", &n);
    printf("Input the length of substring: ");
    scanf("%d", &s);
    for(i=n; i<n+s; i++){
        str1[i-n] = str[i];
    }
    str1[i-n] = '\0';
    printf("The extracted substring is: %s\n", str1);
    return 0;
}
```

```
"D:\EWU Books And Files\10th Semester\CSE 103\Lab5\Lab5Task8_080.exe"
Input the string: this is test string
Input the position to start extraction: 8
Input the length of substring: 4
The extracted substring is: test

Process returned 0 (0x0)   execution time : 5.367 s
Press any key to continue.
```

Lab5Task9_080.c

```c
#include <stdio.h>
int main()
{
    char str[80], search[80];
    int count1 = 0, count2 = 0, i, j, flag;

    printf("Input the string: ");
    fgets(str, sizeof(str), stdin);
    printf("Input the Sub-string: ");
    fgets(search, sizeof(search), stdin);
    while (str[count1] != '\0')
        count1++;
    while (search[count2] != '\0')
        count2++;
    for (i = 0; i <= count1 - count2; i++)
    {
        for (j = i; j < i + count2; j++)
        {
            flag = 1;
            if (str[j] != search[j - i])
            {
                flag = 0;
                break;
            }
        }
        if (flag == 1)
            break;
    }
    if (flag == 1)
        printf("The substring exists in the string.");
    else
        printf("The substring is not exists in the string.");

    return 0;
}
```

```
"D:\EWU Books And Files\10th Semester\CSE 103\Lab5\Lab5Task9_080.exe"
Input the string: This is a test string.
Input the Sub-string: search
The substring is not exists in the string.
Process returned 0 (0x0)   execution time : 12.292 s
Press any key to continue.
```

Lab5Task10_080.c

```c
#include <stdio.h>
int main()
{
    char str[80];
    int i;

    printf("Input the string: ");
    fgets(str, sizeof(str), stdin);
    printf("The given sentence is: %s", str);

    for(i = 0; str[i] != '\0'; i++)
    {
        if(islower(str[i])){
            str[i] = toupper(str[i]);
        }
        else if(isupper(str[i])){
            str[i] = tolower(str[i]);
        }
    }
    printf("After Case changed the string is:: %s", str);

    return 0;
}
```

"D:\EWU Books And Files\10th Semester\CSE 103\Lab5\Lab5Task10_080.exe"

```
Input the string: This Is A Test String.
The given sentence is: This Is A Test String.
After Case changed the string is:: tHIS iS a tEST sTRING.

Process returned 0 (0x0)   execution time : 12.598 s
Press any key to continue.
```

Lab5Task11_080.c

```c
#include <stdio.h>
#include <string.h>

int main()
{
    char str[100], word[]="the";
    int i, count = 0;

    printf("Enter a string: ");
    fgets(str, 100, stdin);

    for(i = 0; str[i] != '\0'; i++){
        if(str[i] == 'T' || str[i] == 't'){
            if(strncmp(&str[i], word, 3) == 0){
                count++;
            }
        }
    }
    printf("The word 'the' appears %d times in the string.", count);

    return 0;
}
```

```
"D:\EWU Books And Files\10th Semester\CSE 103\Lab5\Lab5Task11_080.exe"
Enter a string: The string where the word the present more than once.
The word 'the' appears 2 times in the string.
Process returned 0 (0x0)   execution time : 10.836 s
Press any key to continue.
```

re | Lab5Task12_080.c | *Lab5Task13_080.c

```c
#include <stdio.h>

int main()
{
    char str[100], ch;
    int i, freq = 0;

    printf("Enter a string: ");
    fgets(str, sizeof(str), stdin);

    printf("Enter a character to find its frequency: ");
    scanf("%c", &ch);

    for(i = 0; str[i] != '\0'; i++){
        if(str[i] == ch){
            freq++;
        }
    }
    printf("The frequency of '%c' in the string is %d.", ch, freq);

    return 0;
}
```

```
"D:\EWU Books And Files\10th Semester\CSE 103\Lab5\Lab5Task12_080.exe"
Enter a string: This is a test string
Enter a character to find its frequency: i
The frequency of 'i' in the string is 3.
Process returned 0 (0x0)   execution time : 23.044 s
Press any key to continue.
```

Lab5Task13_080.c

```c
#include <stdio.h>

int main()
{
    char str[100], str2[100], result[200];
    int i, j;

    printf("Enter the first string: ");
    fgets(str, sizeof(str), stdin);

    printf("Enter the second string: ");
    fgets(str2, sizeof(str2), stdin);

    for(i = 0; str[i] != '\0'; i++){
        result[i] = str[i];
    }

    for(j = 0; str2[j] != '\0'; j++){
        result[i+j] = str2[j];
    }
    result[i+j] = '\0';
    printf("The combined string is: %s", result);

    return 0;
}
```

```
"D:\EWU Books And Files\10th Semester\CSE 103\Lab5\Lab5Task13_080.exe"
Enter the first string: this is string one
Enter the second string: this is string two
The combined string is: this is string one
this is string two

Process returned 0 (0x0)   execution time : 16.678 s
Press any key to continue.
```

Lab5Task14_080.c

```c
#include <stdio.h>

int factorial(int n) {
    int i, fact = 1;
    for(i = 1; i <= n; i++) {
        fact = fact * i;
    }
    return fact;
}

int main() {
    int n, i, fact;
    float sum = 0.0;

    printf("Enter the value of n: ");
    scanf("%d", &n);

    for(i = 1; i <= n; i++) {
        fact = factorial(i);
        sum += (float)fact / i;
    }

    printf("The sum of the series is: %.2f\n", sum);

    return 0;
}
```

```
"D:\EWU Books And Files\10th Semester\CSE 103\Lab5\Lab5Task14_080.exe"
Enter the value of n: 5
The sum of the series is: 34.00

Process returned 0 (0x0)   execution time : 11.653 s
Press any key to continue.
```

*Lab5Task15_080.c

```c
#include <stdio.h>

int isArmstrong(int num) {
    int orig_num = num, rem, sum = 0, num_digits = 0;
    while (orig_num != 0) {
        num_digits++;
        orig_num /= 10;
    }
    orig_num = num;
    while (orig_num != 0) {
        rem = orig_num % 10;
        sum += pow(rem, num_digits);
        orig_num /= 10;
    }
    if (sum == num) {
        return 1;
    } else {
        return 0;
    }
}

int isPerfect(int num) {
    int i, sum = 0;
    for (i = 1; i <= num / 2; i++) {
        if (num % i == 0) {
            sum += i;
        }
    }
    if (sum == num) {
        return 1;
    } else {
        return 0;
    }
}
```

```c
int main() {
    int num;

    printf("Enter a positive integer: ");
    scanf("%d", &num);

    if (isArmstrong(num)) {
        printf("%d is an Armstrong number.\n", num);
    } else {
        printf("%d is not an Armstrong number.\n", num);
    }

    if (isPerfect(num)) {
        printf("%d is a Perfect number.\n", num);
    } else {
        printf("%d is not a Perfect number.\n", num);
    }

    return 0;
}
```

```
"D:\EWU Books And Files\10th Semester\CSE 103\Lab5\Lab5Task15_080.exe"
nter a positive integer: 371
71 is an Armstrong number.
71 is not a Perfect number.

rocess returned 0 (0x0)   execution time : 6.108 s
ress any key to continue.
```

Lab5Task16_080.c

```c
#include <stdio.h>

int isPerfect(int num)
{
    int sum = 0;
    for (int i = 1; i < num; i++){
        if (num % i == 0){
            sum += i;
        }
    }
    if (sum == num){
        return 1;
    }
    else{
        return 0;
    }
}
int main()
{
    int start, end;
    printf("Input lowest search limit of perfect numbers: ");
    scanf("%d", &start);
    printf("Input highest search limit of perfect numbers: ");
    scanf("%d", &end);
    printf("The perfect numbers between %d and %d are: \n", start, end);
    for (int i = start; i <= end; i++){
        if (isPerfect(i)){
            printf("%d\n", i);
        }
    }
    return 0;
}
```

```
"D:\EWU Books And Files\10th Semester\CSE 103\Lab5\Lab5Task16_080.exe"
Input lowest search limit of perfect numbers: 1
Input highest search limit of perfect numbers: 100
The perfect numbers between 1 and 100 are:
6
28

Process returned 0 (0x0)   execution time : 14.394 s
Press any key to continue.
```

Lab5Task17_080.c

```c
#include <stdio.h>
void checkAnagram(char str1[], char str2[])
{
    int len1 = strlen(str1);
    int len2 = strlen(str2);
    int flag = 0;
    if (len1 != len2){
        printf("The two strings are not anagrams.\n");
        return;
    }
    for (int i = 0; i < len1; i++){
        int j;
        for (j = 0; j < len2; j++){
            if (str1[i] == str2[j]){
                break;
            }
        }
        if (j == len2){
            flag = 1;
            break;
        }
    }

    if (flag == 1){
        printf("The two strings are not anagrams.\n");
    }
    else{
        printf("The two strings are anagrams.\n");
    }
}
int main()
{
    char str1[100], str2[100];
    printf("Enter string 1: ");
    fgets(str1, sizeof(str1), stdin);
    printf("Enter string 2: ");
    fgets(str2, sizeof(str2), stdin);
    checkAnagram(str1, str2);
    return 0;
}
```

```
"D:\EWU Books And Files\10th Semester\CSE 103\Lab5\Lab5Task17_080.exe"
Enter string 1: spare
Enter string 2: pears
The two strings are anagrams.

Process returned 0 (0x0)   execution time : 16.591 s
Press any key to continue.
```

Lab5Task18_080.c

```c
#include <stdio.h>
int findMax(int arr[], int n){
    int max = arr[0];
    for (int i = 1; i < n; i++){
        if (arr[i] > max){
            max = arr[i];
        }
    }
    return max;
}
int findMin(int arr[], int n){
    int min = arr[0];
    for (int i = 1; i < n; i++){
        if (arr[i] < min){
            min = arr[i];
        }
    }
    return min;
}

int main()
{
    int arr[100], n, max, min;
    printf("Enter the number of elements: ");
    scanf("%d", &n);
    printf("Enter %d elements: ", n);
    for (int i = 0; i < n; i++){
        scanf("%d", &arr[i]);
    }
    max = findMax(arr, n);
    min = findMin(arr, n);

    printf("The maximum element is %d.\n", max);
    printf("The minimum element is %d.\n", min);

    return 0;
}
```

```
"D:\EWU Books And Files\10th Semester\CSE 103\Lab5\Lab5Task18_080.exe"
Enter the number of elements: 5
Enter 5 elements: 25 11 35 65 20
The maximum element is 65.
The minimum element is 11.

Process returned 0 (0x0)   execution time : 18.973 s
Press any key to continue.
```