Metropolitan University, Sylhet

Department of Computer Science and Engineering
Summer Term Lab Assignment– 2023
Program: B.Sc. in CSE; **Batch: 58**
Course: CSE 121: Structured Programming

<mark>Submission deadline: 31th October</mark>

CONDITIONAL STATEMENT

You need to submit these below problems within <mark>13th October</mark>
Mandatory problems: 2, 3, 6, 7, 11.
You have to solve at least 9 problems including mandatory problems.

1) Write a C program to accept two integers and check whether they are equal or not.

2) Write a C program to check whether a given number is even or odd. 3) Write a C program to check whether a given number is positive or negative.

4) Write a C program to read the age of a candidate and determine whether he is eligible to cast his/her own vote.

5) Write a C program to find the largest of three numbers.

6) Write a C program to check whether a character is an alphabet, digit or special character.

7) Write a C program to check whether an alphabet is a vowel or a consonant.

8) Write a C program to read any day number in integer and display the day name in word format.

Sample Input:	
	Sample Output:
4	
	Thuesday

9) Write a program in C to read any digit and display it in the word.

Sample Input:

9

Sample Output:

Nine

10) Write a program in C to read any Month Number in integer and display the number of days for this month.

Sample Input:

11

Sample Output:

30 days

11) Write a C program to check whether an alphabet is capital or small. If the letter is in capital form, make it small and vice versa.

LOOP

You need to submit these below problems within <mark>19th October</mark>
Mandatory problems: 3, 5, 6, 7, 12, 14, 16, 17, 18, 20
You have to solve at least 17 problems including mandatory problems.

1) Take an input **n**. Print 1^2 to n^2.

2) Write a program in C to display the multiplication table for a given integer. 3)

Write a C program to display the n terms of odd numbers and their sum 4)

Write a C program to display the sum of n terms of even numbers. 5) Write a C

program to calculate the factorial of a given number. 6) Write a program in C to

display the first n terms of the Fibonacci series. 7) Write a C program to

determine whether a given number is prime or not 8) Write a C program to

check whether a number is a palindrome or not.

9) Write a C program to check whether a given number is an Armstrong
number or not.

10) Write a program in C to find the LCM of any two numbers.

11) Write a program in C to display the n terms of a harmonic series and their
sum.

$$1 + 1/2 + 1/3 + 1/4 + 1/5+ ... +1/n \text{ terms}$$

Sample Input:

Sample Output :

Input the number of terms : 5

1/1 + 1/2 + 1/3 + 1/4 + 1/5
Sum of Series up to 5 terms :
2.283334

12) Print the following pattern:
```
*
**
***
****
```

13) Write a C program to display a pattern like a right angle triangle with a
number.
Sample Output :
```
1
12
123
1234
```

14) Print the following pattern:
```
****
***
```

```
**
*
```

15) Print the following pattern:
```
*
**
***
****
*****
****
***
**
*
```

16) Print the following pattern:
```
    *
   **
  ***
 ****
*****
```

17) Print the following pattern:
```
   *
  * *
 * * *
* * * *
```

18) Print the following pattern:
```
****
 ***
  **
   *
```

19) Print the following pattern:
```
    *
   * *
  * * *
 * * * *
* * * * *
 * * * *
  * * *
   * *
    *
```

20) Write a program in C to print Floyd's Triangle.

21) Write a program in C to display a pattern like a diamond.

```
    *
   ***
  *****
 *******
*********
 *******
  *****
   ***
    *
```

ARRAY(One Dimensional)

You need to submit these below problems within <mark>30th October</mark>
Mandatory problems: 1, 2, 3, 4, 9, 10, 11, 13, 15
You have to solve at least 14 problems including mandatory problems.

1) Write a program in C to store elements in an array and print them.

2) Write a program in C to read n number of values in an array and display them in reverse order.

3) Write a program in C to find the sum of all elements of the array. 4) Write a program in C to copy the elements of one array into another array.

5) Write a program in C to count the total number of duplicate elements in an array.

6) Write a program in C to print all unique elements in an array.

7) Write a program in C to merge two arrays of the same size sorted in descending order.

8) Write a program in C to count the frequency of each element of an array.

9) Write a program in C to find the maximum and minimum elements in an array.

10) Write a program in C to separate odd and even integers into separate arrays.

11) Write a program in C to sort elements of an array in ascending order. 12)

Write a program in C to sort the elements of the array in descending order. 13)

Write a program in C to insert the values with a specific index in the array

14) Write a program in C to delete an element at a desired position from an array.

15) Write a program in C to find the second largest element in an array.

16) Write a program in C to find the second smallest element in an array.

17) Write a program in C to find a pair with a given sum in the array.

Sample Input:
 	
The given array : 6 8 4 -5 7 9
 	
The given sum : 15   *Sample Output* :
 	
           Pair of elements can make the
 	
      given sum by
      6 and 9

18) Write a program in C to find the all pairs with a given sum in the array.

Sample Input:
 	
The given array : 6 8 4 -5 7 9
 	
The given sum : 15   *Sample Output* :
 	
           Pair of elements can make the
 	
      given sum by
      6 and 9
      8 and 7

19) Write a program in C to find the number occurring an odd number of times in an array.

Sample Input: The given array is : 8 2 8 5 4 2 4 2 5 7 1	*Sample Output* : The element is: 2 Occurrence odd number of times is : 3

ARRAY(Two Dimensional)

You need to submit these below problems within **31th October**

Mandatory problems: 1, 2, 4, 6, 9, 10

You have to solve at least 7 problems including mandatory problems.

1) Write a program in C for a 2D array of size 3x3 and print the matrix. 2)

Write a program in C for adding two matrices of the same size. 3) Write

a program in C for the subtraction of two matrices.

4) Write a program in C for the multiplication of two square matrices. 5)

Write a program in C to find the transpose of a given matrix.

6) Write a program in C to find the sum of the right diagonals of a matrix.

Sample Input: The matrix is : 1 6 3 4	*Sample Output* : Addition of the right Diagonal elements is :5

7) Write a program in C to find the sum of rows and columns of a matrix.

Sample Input :

The matrix is :

5 6

7 8

Sample Output :

The sum or rows and columns of

the matrix is :

1st Row: 11
2nd Row: 15

1st Column: 12
2nd Column: 14

8) Write a program in C to calculate the determinant of a 3 x 3 matrix.

9) Write a program in C to accept two matrices and check whether they are equal.

10) Write a program in C to check whether a given matrix is an identity matrix.

STRING

You need to submit these below problems within 28th October

Mandatory problems: 1, 2, 4, 7, 9

You have to solve at least 7 problems including mandatory problems.

1) Write a program in C to input a string and print it.

2) Write a program in C to find the length of a string without using library functions.

3) Write a program in C to count the total number of words in a string.

4) Write a program in C to compare two strings without using string library functions.

5) Write a program in C to count the total number of alphabets, digits and special characters in a string.

6) Write a program in C to copy one string to another string without using string

library functions.

7) Write a program in C to count the total number of vowels or consonants in a string.

8) Write a C program to sort a string array in ascending order(according to english alphabet order).

9) Write a program in C to read a sentence and replace lowercase characters with uppercase and vice versa.