Programming for Problem Solving Lab. (CS24102)

Assignment-1

1. **Draw a flowchart to find the sum of N natural numbers.**
2. **Draw a flowchart to find the factorial of a number.**
3. **Draw a flowchart to find the smallest among 3 numbers.**
4. **Find all the real roots of a quadratic equation $ax^2+bx+c=0$**
5. **Draw a flowchart to find the odd and even numbers in a range.**
6. **Draw a flowchart to solve the following series**
   $S=x-x^3+x^5\ldots\ldots x^n$
7. **A major retail showroom has announced festival discounts based on cost of items purchased given below.**

Total Cost	Discount
Up to 2000	5%
2001 to 5,000	10%
5001 to 10,000	15%
Above 10,000	20%

Draw a flowchart to input total cost, compute and display the discounts and amount to paid by the customer after discount.

Assignment-2

1. **Write a C program to calculate the simple and compound interest using formula I=PNR/100**
   Where, P=Principal amount; N=Number of years; R=Rate of interest

2. Write a C program to find the sum and average of 4 floating point numbers through user input.

3. Write a C program to take your name as user input and print hello with that name.

4. Write a C program to find the area of a triangle using 3 sides.

5. Write a program to swap 2 numbers using a third variable.

6. Write a program to take input of name, rollno and marks obtained by a student in three subjects of 100 marks each and display the name, rollno with percentage score secured.

Assignment-3

1. **Write a C program to check whether a year is leap year or not. [check the result with the year,1996,1900,2000,2004]**
2. **Write a program to find the real roots of quadratic equation.**
3. **Write a C program to find the factorial of a number.**
4. **Write a C program to calculate the commission for sales as per the sales amount given below.**

if sales≤ Rs. 500, commission is 5%
if sales> 500 but ≤2000, commission is Rs.35 plus 10 % above Rs.500
if sales> 2000 but ≤ 5000, commission is Rs. 185 plus 12% above Rs. 2000
if sales>5000, commission is 12.5%

5. **Write a C program to find the value of Y by using**
   Y(x,n)=1+x when n=1
   1+x/n when n=2
   $1+x^n$ when n=3
   1+nx when n>3 or n<1
6. **The formula $y=1.36\sqrt{1+x+x^3}+x^{1/4}+e^x$ is to be evaluated for x which varies from 1.0 to 3.0 in steps of 0.2. Write a C program to perform this and print a table for various values of x with proper headings.**

Assignment-4

1. **Write a Program to Check Whether a Number is Prime or not.**
2. **Write a program to check number is Armstrong or not. [A number is Armstrong if the sum of cubes of individual digits of a number is equal to the number itself]**
3. **Write a C program to find the GCD of two numbers.**
4. **Write a C program to sum the following series**
   S=1+(1+2)+(1+2+3)+.....+(1+2+3+....+N)
5. **Write a C program to find the sum of digits of any given positive number.**
6. **Write a C program to reverse a given integer.**
7. **Write a C program to generate the Fibonacci series**
   0 1 1 2 3 5 8... up to n

Assignment-5

1. **Write a C program to evaluate the series**
   S=1+1/2+1/3+...+1/N
2. **Write a program to find whether a character is consonant or vowel using switch statement.**
3. **Write a C program to check whether a number is perfect number or not.**
4. **Write a program to check whether a number is positive, negative or zero using switch case.**
5. **Write a C program to find the biggest of given n numbers.**
6. **Write a C program to find the sum and average of n numbers.**

Assignment-6

1. **Write a C program to read a list of test marks (integers in the range 0-100) of 50 students. Calculate the mean of marks and print a list of marks greater than the mean.**
2. **Write a C program to sort n numbers using ascending order.**
3. **Write a C program to add two matrices of order m×n**
4. **Write a C program to determine whether a given matrix is symmetric or not.**
5. **Write a C program to find and print the transpose of a given matrix.**

Assignment-7

1. **Write a C program to count the occurrence of a particular character in a given string.**
2. **Write a C program to count the number of vowels present in a sentence.**
3. **Write a C program to read an array of names and sort them in alphabetical order.**
4. **Write a program to display the following pattern.**

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

5. **Write a C program to check whether a string is palindrome or not.**

6. **Write a C program to accept a string from keyboard and display the characters of the string on monitor in each line.**

Assignment-8

1. **Write a program to add, subtract, multiply and divide two integers using user defined type function with return type.**
2. **Write a program to calculate sum of first 20 natural numbers using recursive function.**
3. **Write a program to generate Fibonacci series using recursive function.**
4. **Write a program to swap two integers using call by value and call by reference methods of passing arguments to a function.**
5. **Write a C program to apply binary search to a set of N numbers using a function.**

Assignment-9

1. **Write a program to find the sum of all the elements of an array using pointers.**
2. **Write a program to find the arithmetic mean of a given list of n real values using pointer.**
3. **Write a program using a pointer to read an array of integers and print its elements in the reverse order.**
4. **Write a C program using pointers to check whether the s\given string is a palindrome.**
5. **Declare a structure of a student with details like roll number, student name and total marks. Using this declare an array with 50 students. Write a C program to read**

details of ‘n’ students and print the list of students who have scored 75 marks and above.