

### C PROGRAMMING LAB

#### Exercise 1

- a) Write a C Program to calculate the area of triangle using the formula  

$$\text{area} = (s(s-a)(s-b)(s-c))^{1/2}$$
 where  $s = (a+b+c)/2$
- b) Write a C program to find the largest of three numbers using ternary operator.
- c) Write a C Program to swap two numbers without using a temporary variable.

#### Exercise 2

- a) 2's complement of a number is obtained by scanning it from right to left and complementing all the bits after the first appearance of a 1. Thus 2's complement of 11100 is 00100. Write a C program to find the 2's complement of a binary number.
- b) Write a C program to find the roots of a quadratic equation.
- c) Write a C program, which takes two integer operands and one operator from the user, performs the operation and then prints the result. (Consider the operators +, -, \*, /, % and use Switch Statement)

#### Exercise 3

- a) Write a C program to find the sum of individual digits of a positive integer and find the reverse of the given number.
- b) A Fibonacci sequence is defined as follows: the first and second terms in the sequence are 0 and 1. Subsequent terms are found by adding the preceding two terms in the sequence. Write a C program to generate the first n terms of the sequence.
- c) Write a C program to generate all the prime numbers between 1 and n, where n is a value supplied by the user.

#### Exercise 4

- a) Write a C Program to print the multiplication table of a given number n up to a given value, where n is entered by the user.
- b) Write a C Program to enter a decimal number, and calculate and display the binary equivalent of that number.
- c) Write a C Program to check whether the given number is Armstrong number or not.

#### Exercise 5

- a) Write a C program to interchange the largest and smallest numbers in the array.
- b) Write a C program to implement a liner search.
- c) Write a C program to implement binary search

#### Exercise 6

- a) Write a C program to implement sorting of an array of elements .
- b) Write a C program to input two m x n matrices, check the compatibility and perform addition and multiplication of them

#### Exercise 7

Write a C program that uses functions to perform the following operations:

- i. To insert a sub-string in to given main string from a given position.
- ii. To delete n Characters from a given position in a given string.
- iii. To replace a character of string either from beginning or ending or at a specified location

#### Exercise 8

Write a C program that uses functions to perform the following operations using Structure:

- |                                      |   |
|--------------------------------------|---|
| i) Reading a complex number          | ii) Writing a complex number              |
| iii) Addition of two complex numbers | iv) Multiplication of two complex numbers |

#### Exercise 9

Write C Programs for the following string operations without using the built in functions

- to concatenate two strings
- to append a string to another string
- to compare two strings

#### Exercise 10

Write C Programs for the following string operations without using the built in functions

- to find the length of a string

- to find whether a given string is palindrome or not

**Exercise 11**

- a) Write a C functions to find both the largest and smallest number of an array of integers.
- b) Write C programs illustrating call by value and call by reference concepts.

**Exercise 12**

Write C programs that use both recursive and non-recursive functions for the following

- i) To find the factorial of a given integer.
- ii) To find the GCD (greatest common divisor) of two given integers.
- iii) To find Fibonacci sequence

**Exercise 13**

- a) Write C Program to reverse a string using pointers
- b) Write a C Program to compare two arrays using pointers

**Exercise 14**

- a) Write a C program consisting of Pointer based function to exchange value of two integers using passing by address.
- b) Write a C program to swap two numbers using pointers

**Exercise 15**

Examples which explores the use of structures, union and other user defined variables

**Exercise 16**

- a) Write a C program which copies one file to another.
- b) Write a C program to count the number of characters and number of lines in a file.
- c) Write a C Program to merge two files into a third file. The names of the files must be entered using command line arguments.