Data Structure Laboratory Experiment

1. Implement the Algorithm for Reversing elements of an Array.
2. Implement the Algorithm for Linear Search
3. Implement the Algorithm for Binary Search.
4. Implement the Algorithm for Bubble Sort.
5. Implement the Algorithm for Selection Sort.
6. Implement the Algorithm for Insertion Sort
7. Implement the Algorithm for Factorial using Recursion.
8. Implement the Algorithm for Inserting a Node at the beginning and end of a Linked List.
9. Implement the Algorithm for Inserting a Node at the Given Location of a Linked List.
10. Implement the Algorithm for Deleting a Node of a Linked List.
11. Implement the Algorithm for Inserting a Node at the beginning of a Doubly Linked List.
12. Implement the Algorithm for Inserting a Node by data field of a Doubly Linked List.
13. Implement the Algorithm to Insert a new Node in a Circular Linked List after a Node whose data field is Given.
14. Implement the Algorithm for Operations to be performed on Stack DS using Linked List.
15. Implement the Algorithm to Delete first Node of a Circular Linked List.
16. Implement the Algorithm for Operations to be performed on Queue DS using Array.
17. Implement the Algorithm for Circular Queue DS using Liked List.
18. Implement the Algorithm for Post Order Traversal of a BST.
19. Implement the Algorithm for Pre Order Traversal of a BST.
20. Implement the Algorithm for In Order Traversal of a BST.

Computer Programming Laboratory Experiment

1) Write a program in C++ to swap values of two variables without using third variables.
2) Write a program in C++ using *Structure* that contains following variables *Full Name, Roll Number, Gender and weight* (float type). Store detail of 5 students.
3) Write a program in C++ using *Class* that adds three numbers and displays total.
4) Write a program in C++ using *Class* (without using constructor) that contains following variables *Full Name, Roll Number, Gender, Ph No and weight* (float type). The variables *Ph Number and weight* are *Privet*. Store detail of 5 students and print the detail of every student.
5) Write a program in C++ using *Class* (Using constructor) that contains following variables *Full Name, Roll Number, Gender, Ph No and weight* (float type). The variables *Ph Number and weight* are *Privet*. Store detail of 20 students.
6) Write a C++ program to find the area of circle using *Class* circle which have following details: a. Accept radius from the user b. Calculate the area c. Display the result
7) Write a C++ program to define a class employee having members Emp-id, Emp-name, basic salary and functions accept () and display(). Calculate DA=25% of basic salary, HRA=800, I-tax=15% of basic salary. Display the payslip using appropriate output format.
8) Define a class to represent a bank account of 5 persons. Include the following members:

   Data members:
   1) Name of the depositor
   2) Account number
   3) Type of account
   4) Balance amount in the account. .

   Account number and Balance are Privet member variables. Write a main program that will display the name, Account number and balance after depositing or withdrawing an amount.

9) Write a program in C++ to demonstrate the *Function overloading* feature of C++.
10) Write a program in C++ using Class which shows function Overriding.
11) Write a program in C++ using Class which shows operator Overriding.
12) Write a program in C++ using Class that takes input the height, length, breadth of a Box and displays Volume of two different Box. (Class Box)
13) Write a program in C++ using class to show use of *Friend function* and *Friend class.*
14) Write a C++ program to create multilevel inheritance.
15) Write a C++ program to demonstrate multiple inheritance feature of a *Class.*
16) Using multilevel inheritance, write a C++ program to make a basic calculator to do following calculations a. Addition, 2. Subtraction, 3. Multiplication, 4. Division,
17) Create a class for an electricity board that charges the following rates to users

    a) For first 100 units : 50p per unit
    b) For next 200 units : 60p per unit
    c) Beyond 300 units : 80p per unit
    All users are charged a minimum of Rs.150. If the total cost is more than Rs.250.00 then an additional charges of 15% are added. Write a C++ program using class to read the names of users & number of units consumed & print out the charges with names.

18) Write C++ programs to explain the importance of Template functions and class.

19) Write a program to copy the content of one file “input.txt” to another file “output.txt”.

20) An Educational institution wishes to maintain the database of its employees. The database is divided into a number of Classes whose hierarchical relation is shown, also minimum information needed for each class is shown. Specify all classes and define functions to create the database and retrieve the individual information.