# **Data Structures and Algorithms Laboratory**

**(18CSL205A)**

1. Experiment 1
2. Write a program to input two integer numbers and display the sum of even numbers between these two input numbers.
3. Write a program to find GCD (greatest common divisor or HCF) and LCM (least common multiple) of two numbers.
4. Write a program to display Fibonacci series up to given limit.
5. Experiment 2
6. Write a program to read and perform addition and multiplication of two matrices of order m \* n, add them and display the resultant matrix using functions.
7. Write a program to read a string and check for palindrome without using string related function (a string is palindrome if its half is mirror by itself eg: abcdcba).
8. Write a program to perform binary search. Use recursion.
9. Experiment 3
10. Write a program to find biggest among three numbers using pointer.
11. Write a program to find the sum of all the elements of an array using pointers
12. Write a program to sort a list of string words using an array of pointers.
13. Experiment 4
14. Create a structure named company which has name, address, phone and noOfEmployee as member variables. Read name of company, its address, phone and noOfEmployee. Finally display these members’ value
15. Create a structure TIME with members hours, minutes and seconds. Write a C program to add two time objects by passing structure variables to function and display result in H: M: S format.
16. Write a program to read RollNo, Name, Address, Age & average-marks of ‘n’ students in a class. Print the list of students and the youngest and eldest student in the class.
17. Experiment 5
18. Implement the PUSH, POP and PRINT operations on stack
19. Write a C program to convert infix to postfix notation using stack
20. Write a C program to evaluate a postfix expression.
21. Experiment 6
22. Implement the INSERT, DELETE and PRINT operations on queue.
23. Implement a priority queue using suitable application.
24. Experiment 7
25. Implement a linked list and illustrate the following operations.
26. Insert a node at the beginning
27. Insert a node at the end
28. Print the linked list
29. Write a program to create a linked list and delete the element entered by a user.
30. Experiment 8
31. Implement a linked list and perform following operations.
32. Insert a node before and after a given node
33. Delete a node before and after a given node
34. Implement a linked list to create and print a binary tree.
35. Experiment 9
36. Write a C program to construct a binary search tree and perform the Preorder, post order and in order traversal.
37. Write a C program to implement a linked list to construct a tree and count the number of leaves in a tree.
38. Experiment 10
39. Write a C program to implement sorting of numbers using bubble sort, selection sort and quick sort techniques. Calculate the time required for each approach.