Rajagiri School of Engineering and Technology

Department of Computer Science and Engineering

Lab Cycle

101903 CO322S Data Structures Lab

Day 1

Revision of programs done during the C Programming Lab focussing on one dimensional and two dimensional arrays, structures, pointers and pointer to structure

1. Write a menu driven C program to implement polynomials using arrays and perform polynomial addition.

Day 2

2. Write a menu driven C program to implement sparse matrix using arrays and perform the following operations
   a. Sparse Matrix Addition
   b. Sparse Matrix Transpose

Day 3

3. Write a menu driven C program to implement stack using arrays and perform the operations on the stack (i) Push (ii) Pop (iii) Is empty (iv) Isfull (v) Display
4. Write a menu driven C program to covert infix to postfix expression and evaluate it using stack.

Day 4

5. Write a menu driven C program to implement circular queue using array and perform the following operations
   (i) Enqueue (ii) Dequeue (iii) Is empty () (iv) Is full () (v) Display

6. Write a menu driven C program to implement Double Ended Queue using array and perform the following operations
   a. Insert from the front
   b. Insert from rear
   c. Delete from front
   d. Delete from rear
   e. Display
7. Write a menu driven C program to implement Queue using arrays and perform the following operations (i) Insert (ii) Delete (iii)Is empty() (iv) Is full() (v) Display

(HA1)

Day 5

8. Write a menu driven C program to implement the following operations on a singly linked list
   (i) Insertion
      a. Insert at the beginning
      b. Insert at the end
      c. Insert after a specified node
   (ii) Deletion
      a. Delete from the beginning
      b. Delete from the end
      c. Delete a specified node
   (iii) Display
9. Write a menu driven C program to implement stack and queue using singly linked list (HA2)

Day 6

10. Write a menu driven C program to represent polynomials using linked list and perform (i) polynomial addition and (ii) polynomial multiplication.

11. Write a menu driven C program to implement a doubly linked list and perform the following operations on it
    a. Insertion (at the beginning, at the end, after a specified node)
    b. Deletion (at the beginning, at the end , a specified node)
    c. Display (Forward and Backward) (HA3)

Day 7

12. Write a menu driven C program to implement a binary search tree (BST) using singly linked list and perform the following operations
    a. Insertion
    b. Deletion
    c. Traversals
    d. Search for a specified node

Day 8

13. Write a menu driven C program to implement the following sorting techniques
    a. Bubble Sort
    b. Insertion Sort
    c. Selection Sort

14. Write a C program to implement Quick Sort

Day 9

15. Write a menu driven C program to implement Merge sort
16. Write a menu driven C program to implement searching algorithms –
    a. Linear search
    b. Binary search. (HA4)

Day 10

17. Write a C program to implement heap sort
18. Write a menu driven C program to implement hash table and the following collision resolution techniques-(i) Linear Probing (ii) Quadratic Probing (HA5)

Day 11

19. Write a menu driven C program to perform the following operations on a directed graph
    (i) DFS
    (ii) BFS
    (iii) Display (using Adjacency List and Adjacency Matrix).

**HA –Home Assignment (The programs have to be done from home and output to be verified in the lab on the date specified by the Lab In Charge. They are to be included in the record also.)*

Prepared by

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