B.Tech(III Sem)
Term Work - Data structure
using 'c' –language

Date of Submission: 5-12-2023

INSTRUCTIONS:
 1.The programs should have source code and its output separately, print outs should be on DMP sheets.
 2. Programs in the file should be numbered as given in the term work.
 3. All programs should be menu driven
 4. Thick chart paper (green for UG courses)
     binding for the file is required.
 5. The file should have 4 pages initially in black and white in the given order
       a. front page-In Submitted To ..
       b. certificate
       c. Acknowledgement
       d. Index
 6. Use A4 size bond paper for algorithm.
 7. Do not use global pointers/variables.

Q1. Write a C program to implement priority queue using doubly linked list (Priority depends on identity number. Small identity number has greater priority. If identity numbers are equal. Then FIFO rules are used) with following functions:
  1) insert   2) serve   3) display

Q2.Write a C program to craeate a single linked list , like L0 -> L1 -> … -> Ln-1 -> Ln. Write another C fucntion to rearrange the nodes in the list so that the new formed list is : L0 -> Ln -> L1 -> Ln-1 -> L2 -> Ln-2 .You are required to do this in place without altering the nodes' values.

Q3.Write a C program to create a single linked list then input a value V, partition it such that all nodes less than V come before nodes greater than or equal to V.

Q4.Write a C program to create two link lists positive and negative from a Original linked list, so that positive linked list contains all positive elements and negative linked list contains negative elements. Positive and negative linked lists should use the node of existing original linked list.

Q5.Let A and B be two structures of type Linked List. Write a 'C ' program to create a new Linked List 'S' that contains elements alternately from A and B beginning with the first element of A. If you run out of elements in one of the lists, then append the remaining

Q6. Write a C program to create two single linked lists, and then write another function to subtract two numbers represented as linked list.
   List1->; 5->6->8->NULL   (First Number: 568)
   List2->: 2->3->4->NULL   (Second Number: 234)
   Output->:334

Q7. W.A.P. to create a binary search tree and perform following operations:
　　1) Search a particular key.
　　2) Delete a node from the tree.
　　3) Find total number of leaf nodes
　　4) Find height of a binary search tree
　　5) Count total numbers of nodes from right hand side of root node

Q8. Write a program to add of two polynomials of degree n, using linked list

　　For example $p1 = a_n x^n + a_{n-1} x^{n-1} + a_{n-2} x^{n-2} + \ldots\ldots a^0 x^0$
　　　　　　　　　$P2 = b_n x^n + b_{n-1} x^{n-1} + b_{n-2} x^{n-2} + \ldots\ldots b^0 x^0$

　p1 = first   polynomial

　p2 = second polynomial

　　Find out   p3 = p1 + p2

Q9. Write a C program to sort a sequence of characters given by user in an array, using Merge sort
　　technique.

Q10. Using circular linked list allocate time slots of 10ms for given processes in time sharing
　　Environment and then print which process will be completed in how much time.

Q11. Write a C program to store the details of a weighted graph (Use array of pointers concept).

Q12. Write a C program to implement DFS.