CTA-ASSIGNMENT

Course Code: 22UCSC300 Course Title: Data Structures and Applications

Max Marks: 5 Sem:3 A

1.	Write a C program to convert a valid parenthesized infix expression to prefix expression. (Expression includes operators +, -, * and /)
2.	Write a C program to evaluate a given valid prefix expression. (Expression includes operators +, -, * and /)
3.	Write a C program to convert a given postfix expression to infix expression. (Expression includes operators +, -, * and /)
4.	Define an input restricted deque as a Deque[A deque is an ordered set of items from which items may be deleted at either end, (remvleft,remvright) and into which items may be inserted at either end(insertleft,insertright)] for which only the operations remvleft,remright and insertleft are valid. Show how each of this can be used to represent both stack and queues respectively.
5.	Write a C program to implement descending priority queue. **Note:** An descending priority queue is a collection of elements where an element is inserted such that the largest value element is always at the front of the queue.
6.	Write a C program to implement an ascending priority queue. **Note:** An ascending priority queue is a collection of elements where an element is inserted such that the smallest element is always at the front of the queue.
7.	Let A and B are two lists representing the two polynomials with single variable. Write a C program to implement the following operation. C=A+B; where Cis also a list representing a polynomial and is obtained by adding A and B.
8.	Let A and B are two lists representing the two polynomials with single variable. Write a C program to implement the following operation. C=A*B; where C is also a list representing a polynomial and is obtained by adding A and B.

9.	Write a C program to store a given sparse matrix using linked lists and search for a given element in the matrix. If it is present display row and column index of the element otherwise print appropriate error message..
10.	Two binary trees are similar if they are both empty or if they are both nonempty, their left subtrees are similar, and right subtrees are similar. Write an algorithm to determine if two binary tress are similar or not.
11	Write a C program to construct BST for a given set of elements and perform the following operations on it: i. Search a given element ii. Insert the given element if not present iii. Delete an element
12.	Write a C program to construct an expression tree for a given postfix expression and evaluate the expression and print the result.
13.	Write a C program to construct BST and check whether it is height balanced tree (AVL) or not. If not convert it into AVL tree.
14.	Write a C program to construct 2-3 trees for the given set of data and perform the following operations. i.insert() ii. search() iii. delete()
15.	Write a C program to construct 2-3-4 trees for the given set of data and perform the following operations. i.insert() ii. search() iii. delete()