Assignment-2

Data Structure CS-123

1. What is doubly linked list? How it is advantageous over singly linked list?
2. Give algorithm for Search(X) and InsertFirst(Y) in a doubly linked list.
3. Write a function to add two polynomials represented by two singly linked lists, A and B and returns the new polynomial, C.
4. Give the algorithm for level order traversal of a binary tree. Explain the algorithm with an example.
5. Define the following terms and illustrate with an example:
6. Binary Search tree
7. Height Balanced tree
8. Strictly Binary tree
9. Height of a Binary tree
10. What is an expression tree? Write a function to create a binary tree for given postfix expression.
11. Explain with algorithm and example, the following tree traversal techniques:
12. Inorder
13. Preorder
14. Postorder
15. Given two singly linked lists A and B, representing 2 sorted lists, give the algorithm to create a new linked list C, by merging these two lists so that the resultant list should be a sorted list.
16. Given two polynomials, write an algorithm to perform polynomial addition.
17. Illustrate the linked list representation of binary trees by taking an example.
18. Write a C++ program to insert the record of a student(name, rollno, age) in a doubly linked list at a node specified by position.
19. Write a C++ program to implement a linked stack.
20. Given a list of numbers 22, 7, 6, 1, 60, 11, 77, 59, 19, 20, 17. Show each phase of creating a Binary search tree using them, starting from 22.
21. Suggest a suitable method to get a sorted list from a Binary search tree without using any sorting algorithm.
22. Write algorithm for level order traversal of a binary tree.
23. What do you mean by a doubly linked list? Give the structure of a doubly linked list in C++.

Also write an algorithm to delete a node before a given node in a doubly linked list.

1. Implement stack operations using doubly linked list.
2. Define complete binary tree and binary search tree with an example for each.
3. Write algorithm for depth first search. Explain with an example.
4. Write a program to create a binary tree for a given in-order and post-order traversal.
5. Write a program to find intersection of two doubly lists.
6. Obtain a tree traversals for the expression tree of the following Fig.





