

Data Structures and Algorithms

Lab Assessment 4:

Mark: 10

Deadline: 24-10-2024

1. Write a C program to add two polynomials using Linked List

- The first line contains an integer n, the number of terms in the polynomials
- Each of the next n lines contain two integers, first integer represents the coefficient and second integer represents exponent for each term of the polynomial.

Input:

FIRST POLYNOMIAL

n=4

3 4

7 3

5 1

8 0

SECOND POLYNOMIAL

n=5

7 5

6 4

8 2

8 1

2 0

Output:

$7(x^5) + 9(x^4) + 7(x^3) + 8(x^2) + 14(x^1) + 10(x^0)$

2. Write a C program to sort the elements using Quick sort

- The first line contains an integer n, the number of elements to be sorted.
- Each of the next n lines contain one integer, the elements of an array.

Input:

n=5

3

7

5

8

4

Output:

3 4 5 7 8

3. Write a C program to sort the elements using Counting sort

- The first line contains an integer n, the number of elements to be sorted.
- Each of the next n lines contain one integer, the elements of an array.

Input:

n=5

3

7

5

8

4

Output:

3 4 5 7 8

4. You are given a pointer to the root of a binary search tree and values to be inserted into the tree. Apply the insert, delete and display operation in the binary search tree.
5. Write a C program to implement the following binary tree traversals using switch statement.
- a. Inorder Traversal
 - b. Preorder Traversal
 - c. Postorder Traversal
6. Write a C program to implement the following Graph traversals
- a. BFS
 - b. DFS