Assignment-VI

National Institute of Technology Silchar

Subject Code: CS-201 | Subject: Data Structures
Semester: 3rd B.Tech. | Department: CSE
Section: A | Due Date: 29^{th} September 2023

Answers should be submitted in a scanned copy of the handwritten format. Also, submit the source code of the corresponding questions in a zip folder.
Write functions for all questions given below.

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1. Write a program to implement polynomial expression using a singly linked list.
2. Write a program to add two polynomial expressions that are represented using a singly linked list.
3. Write a program to multiply two polynomial expressions that are represented using a singly linked list.
4. Write a program to insert in a doubly linked list as given below
   (a) Insert at front
   (b) Insert at last
   (c) Insert after a given node
   (d) Insert before a given node
5. Write a program to delete from a doubly linked list as given below-
   (a) Delete from front
   (b) Delete from the last
   (c) Delete a given number
6. Write a program to reverse a doubly linked list.
7. Write a program to make a special linked list called a multi-linked list. The pointers are defined as follows- i) the next pointer points to the next items, ii) the prev pointer points to the previous items, iii) the random pointer points to random nodes, iv) the asc pointer points to the next larger number, and v) the dsc pointer points to the next smaller number.
   (a) Write a program to insert many items into the multi-linked list such that we can display a) ascending order, b) descending order, and c) random order in O(n) time complexity.

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