INDIAN INSTITUTE OF INFORMATION TECHNOLOGY, NAGPUR
Department of Computer Science and Engineering

CSL 210 – Data Structures with Applications

Assignment 1

Date: 30 July 2024

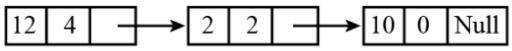
Applications of Linked List- Polynomial representation and arithmetic operations

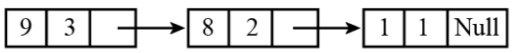
Q. Write a C program to add 2 polynomials which are represented using linked list and store the result in the resultant linked list.

Description:

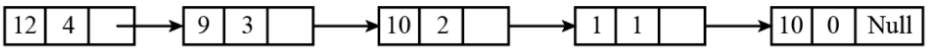
1. Consider two polynomials A & B, take inputs *n1* & *n2* from the user which indicates the number of terms present in polynomial A & polynomial B.
2. Create two sorted linked lists for A & B using coefficient and exponent values input from the user.
3. Add polynomial A & B and represent the result in the resultant linked list.
4. Example:

Polynomials-

A = $12x^4 + 2x^2 + 10$ 

B = $9x^3 + 8x^2 + x$ 

The resultant liked list :-



Print the values as below:
Polynomial A
12, 4, Address of Next node
2, 2, Address of Next node
10, 0, NULL

Polynomial B
9, 3, Address of Next node
8, 2, Address of Next node
1, 1, NULL

Resultant Linked List:
12, 4, Address of Next node
9, 3, Address of Next node
10, 2, Address of Next node

1, 1, Address of Next node
10, 0, NULL

Submission Instructions:

Prepare a single document containing code, output and screenshots of your outputs. Save the document with Assignment#_RollNo. (Eg: **Assignment 1_BT20CSE001**)

Homework

Write a C program to add two polynomials where for the first polynomial is required to be represented using a linked list. For the 2nd polynomial instead of creating a new linked list, add coefficients as soon as you get it as an input from the user.

In this entire process you will create only one linked list for two polynomials and for result also.