## Lab 7

## Application of Linked List(Open Ended Lab)

Polynomial may be represented as a linked list as follows: for every term in the polynomial there is one entry in the linked list consisting of the term's coefficient and degree. The entries are ordered according to ASCENDING values of degree; zero- coefficient terms are not stored. For example, the following polynomial (the symbol '^' is used to mean 'raised to the power'): 4x^5 - 2x^3 + 2x +3 can be represented as the linked list of terms: (3,0) -> (2,1) -> (-2,3) -> (4,5) where each term is a (coefficient, degree) pair. Write a C++ class called Polynomial with the following functionality:

* + - **Read the polynomials from a file.**
    - **Addition of two polynomials.**
    - **Multiplication of two polynomials.**
    - **Evaluation of a polynomial at a given point.**

##### Sample Output:

Enter the name of the polynomial file => ptest1 4.0x^5 + -2.0x^3 + 2.0x + 3.0

1. ADD polynomial
2. MULTIPLY polynomial
3. EVALUATE polynomial
4. QUIT

Enter choice # => 1

Enter the file containing the polynomial to add => ptest2 8.0x^4 + 4.0x^3 + -3.0x + 9.0

Sum: 4.0x^5 + 8.0x^4 + 2.0x^3 + -1.0x + 12.0

1. ADD polynomial
2. MULTIPLY polynomial
3. EVALUATE polynomial
4. QUIT

Enter choice # => 2

Enter the file containing the polynomial to multiply => ptest2 8.0x^4 + 4.0x^3 + -3.0x + 9.0

Product: 32.0x^9 + 16.0x^8 + -16.0x^7 + -20.0x^6 + 52.0x^5 + 38.0x^4 + -6.0x^3 + - 6.0x^2 + 9.0x + 27.0