Object Oriented Programming
Spring 2023
Assignment#2

Submission date: Monday March 13, 2023

Redo the assignment 1 using the concept of classes. Make a class polynomial that has two dynamic arrays for coefficients and exponents, one integer for their size as data members.

Define the following functions as members of class polynomial.

Constructors: Define default, copy and overloaded constructors for the class polynomial.

Input polynomial: first ask the number of terms in the polynomial and then dynamically allocate two arrays to store exponent and coefficient of each term using the operator new. Next, for each term input the exponent and coefficient of each term. Note to store the polynomial in decreasing order of exponent. Also exponents must be unique. For example `3x^3 + 4x + 5 + 3x must be stored as 3x^3 + 7x + 5`.

Output polynomial: This function must output the polynomial in the standard format.

Add polynomials: This function must take a polynomial as parameter and compute and return the sum of polynomials (caller polynomial and the one passed as parameter).

Multiply polynomials: This function must take a polynomial as parameter and compute and return the product of polynomials (caller polynomial and the one passed as parameter).

Destructor: Define the destructor for the class polynomial.

Assignment operator: Overload the assignment operator for the class polynomial that uses deep copy.

Constraints:

- The exponents are non-negative whole numbers.
- The coefficients can be positive/negative real numbers.
- Do not use class/struct to implement this calculator

The size of dynamically allocated arrays must be exactly equal to the number of terms in the polynomial. There must not be any logical errors (memory leak and dangling pointers)

Important Note:
Submit your code files at google classroom as one single file. If you have more than one files compress them and submit them as single file. The name of file must your complete roll number. Your code must be properly commented.
This is an individual assignment and the code submitted must be your own contribution. Any sort of plagiarism will be dealt seriously and may lead to severe consequences including negative marking.