Object Oriented Programming
Spring 2023
Assignment#1

Submission date: Tuesday February 21, 2023

A univariate polynomial can be represented as a collection of coefficients and exponents, such as `3x^3 + 4x + 5`. Write a polynomial calculator in C++. Your program must implement the following tasks (Write a function for each task):

1. **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`.
2. **Output polynomial:** This function must output the polynomial in the standard format.
3. **Add polynomials:** This function must take two polynomials (exponents, coefficients, number of terms) as parameters and compute and return the sum of polynomials.
4. **Multiply polynomials:** This function must take two polynomials (exponents, coefficients, number of terms) as parameters and compute and return the product of polynomials.

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.