Instructions

Please develop class "Polynomial". The internal representation of a polynomial is an array of terms. Each term contains a coefficient and an exponent. For example, term $2x^4$ has the coefficient 2 and the exponent 4.

Develop a complete class containing proper constructor and destructor functions as well as 'set' and 'get' functions. The class should also provide the following overloaded operator capabilities:

a) Overload the addition operator (+) to add two polynomials.

b) Overload the subtraction operator (-) to subtract two polynomials

c) Overload the assignment operator to assign one polynomial to another

d) Overload the multiplication operator (*) to multiply two polynomials.

e) Overload the addition assignment operator (+=), subtraction assignment operator (-=) and multiplication assignment operator (*=)

f) Overload the output operator (<<) so that it can display the polynomials. For example, if in the main function we have:

```
Polynomial poly1;
//more code
cout<<poly1;
```

It would print out the polynomial (for example: 2x^2 + 3x^3).

Please use 3 files for this assignment. The header file that contains the class declaration (.h file) should be named "Polynomial_YourName.h". The class definition file (.cpp file) should be named "Polynomial_YourName.cpp" and the class implementation should be named "Main_YourName.cpp" file.

A sample output of the program:

```
Enter the number of polynomial terms: 2
Enter coefficient and exponent : 2 2
Enter coefficient and exponent: 3 3

Enter number of polynomial terms 3:
Enter coefficient and exponent : 1 1
Enter coefficient and exponent : 2 2
Enter coefficient and exponent : 3 3

(please print out the polynomial in the following two lines out using the overloaded output operator)
First Polynomial is : 2x^2 + 3x^3
Second Polynomial is : 1x + 2x^2 + 3x^3
```

Adding polynomial yields: 1x + 4x^2 + 6x^3
+= the polynomial yields: 1x + 4x^2 + 6x^3

Subtracting the polynomial yield : -1x
-= the polynomials yields : -1x

Multiplying the polynomials yields: 2x^3 + 7x^4 + 12x^5 + 9x^6
*= the polynomial yields: 2x^3 + 7x^4 + 12x^5 + 9x^6

Assume that the greatest degree of an input polynomial will be 6 so that you can use a fixed size for the arrays. **Make sure to take into account the size of an array necessary when you multiply two polynomials.**