CCSC:MW 2021 Programming Competition

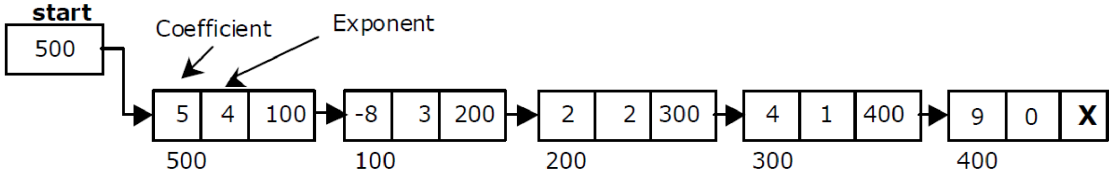
Polynomial addition

A polynomial is of the form: $\sum_{i=0}^{n} c_i \, x^i$

Where, c_i is the coefficient of the i^{th} term and n is the degree of the polynomial. Some examples are:

$5x^2 + 3x + 1$
$12x^3 - 4x$
$5x^4 - 8x^3 + 2x^2 + 4x^1 + 9x^0$

It is not necessary to write terms of the polynomials in decreasing order of degree. But for this assignment, we will input in this decreasing order. The computer implementation requires implementing polynomials as a list of pairs of coefficients and exponent. Each of these pairs will constitute a structure, so a polynomial will be represented as a list of structures. A linked list structure that represents polynomials $5x^4 - 8x^3 + 2x^2 + 4x^1 + 9x^0$ illustrates in the following figure:



You need to take two polynomials as input, add them, and display the resultant polynomial.

Input

You will first take input from the user regarding the number of nodes (n1) for the first polynomial. Then you will take n1 pairs (coefficient, exponent) of input from the user to create the first polynomial. Then, you will do the same to create the second polynomial.

Output

It should display the input polynomials and the resultant polynomial.

Example 1

The following is sample input for this problem:

2

4 3 2 2

4

4 4 -2 3 2 2 2 0

The following is the correct output for the input above:

```
Displaying Polynomial 1: 4X^3-->2X^2-->END

Displaying Polynomial 2: 4X^4-->-2X^3-->2X^2-->2X^0-->END

Resultant Polynomial : 4X^4-->2X^3-->4X^2-->2X^0-->END
```

Example 2

The following is sample input for this problem:

3

-3 2 -2 1 2 0

2

3 3 3 2

The following is the correct output for the input above:

```
Displaying Polynomial 1: -3X^2-->-2X^1-->2X^0-->END

Displaying Polynomial 2: 3X^3-->3X^2-->END

Resultant Polynomial : 3X^3-->0X^2-->-2X^1-->2X^0-->END
```