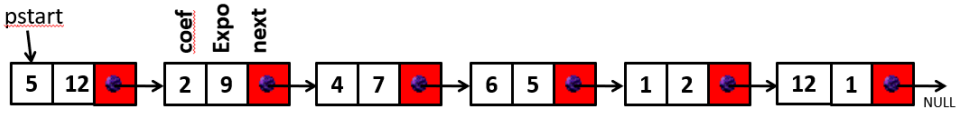
Lab 5

1. Represent a polynomial using a linked list. Each node contains three parts: **Coefficient**, **Exponent**, **Next Pointer**. For example, a polynomial

$$5\ x^{12} + 2\ x^{9} + 4x^{7} + 6x^{5} + \ x^{2} + 12\ x$$

will be represented as



Write a program to:

   a. Write a function to create a linked list for two polynomials given by the user.
   b. Write a function to print the linked list
   c. Write a function add, that adds two polynomials and store the result in a new linked list. This function should traverse both linked lists and add the terms with the same exponents.
   d. Call the print function

2. Represent a sparse matrix as a linked list. Consider the matrix given below

$\begin{bmatrix} 0 & 0 & 1 \\ 0 & 3 & 0 \\ 0 & 0 & 2 \end{bmatrix}$ the only elements of interest are at index (0,2), (1,1) and (2.2). Thus, create a linked list where each node has the following elements:

$typedef\ struct\{int\ \boldsymbol{row}, int\ \boldsymbol{col}, int\ \boldsymbol{value}, struct\ node * \boldsymbol{next}\}$ node;

Your program must do the following:

   a. Take the n*n sparse matrix from the user.
   b. Store only non-zero elements of the matrix in the linked list.
   c. Print the linked list.