/\*

\*Sample Program that creates Polynomials from inputs of the coefficients and exponents.

The sample inputs in this case creates two polynomials that are nodes in linked lists.

\*/

import java.util.\*;

class GFG

{

// Node structure containing powerer

// and coefficient of variable

static class Node {

int coeff, power;

Node next;

};

// Function add a new node at the end of list

static Node addnode(Node start, int coeff, int power)

{

// Create a new node

Node newnode = new Node();

newnode.coeff = coeff;

newnode.power = power;

newnode.next = null;

// If linked list is empty

if (start == null)

return newnode;

// If linked list has nodes

Node ptr = start;

while (ptr.next != null)

ptr = ptr.next;

ptr.next = newnode;

return start;

}

// Functionn To Display The Linked list

static void printList( Node ptr)

{

while (ptr.next != null) {

System.out.print( ptr.coeff + "x^" + ptr.power + " + ");

ptr = ptr.next;

}

System.out.print( ptr.coeff +"\n");

}

// Function to add coefficients of

// two elements having same powerer

static void removeDuplicates(Node start)

{

Node ptr1, ptr2, dup;

ptr1 = start;

/\* Pick elements one by one \*/

while (ptr1 != null && ptr1.next != null) {

ptr2 = ptr1;

// Compare the picked element

// with rest of the elements

while (ptr2.next != null) {

// If powerer of two elements are same

if (ptr1.power == ptr2.next.power) {

// Add their coefficients and put it in 1st element

ptr1.coeff = ptr1.coeff + ptr2.next.coeff;

dup = ptr2.next;

ptr2.next = ptr2.next.next;

}

else

ptr2 = ptr2.next;

}

ptr1 = ptr1.next;

}

}

public static void main(String args[])

{

Node poly1 = null, poly2 = null;

// Creation of 1st Polynomial: 3x^2 + 5x^1 + 6

poly1 = addnode(poly1, 3, 2);

poly1 = addnode(poly1, 5, 1);

poly1 = addnode(poly1, 6, 0);

// Creation of 2nd polynomial: 6x^1 + 8

poly2 = addnode(poly2, 6, 1);

poly2 = addnode(poly2, 8, 0);

// Displaying 1st polynomial

System.out.print("1st Polynomial:- ");

printList(poly1);

// Displaying 2nd polynomial

System.out.print("2nd Polynomial:- ");

printList(poly2);

}

}