class Node:

    def \_\_init\_\_(self, coeff, power):

        self.coeff = coeff

        self.power = power

        self.next = None

def insert\_term(head, coeff, power):

    new\_node = Node(coeff, power)

    if head is None or power > head.power:

        new\_node.next = head

        return new\_node

    temp = head

    while temp.next and temp.next.power >= power:

        if temp.next.power == power:

            temp.next.coeff += coeff

            return head

        temp = temp.next

    if temp.power == power:

        temp.coeff += coeff

    else:

        new\_node.next = temp.next

        temp.next = new\_node

    return head

def add\_poly(p1, p2):

    result = None

    while p1 and p2:

        if p1.power == p2.power:

            result = insert\_term(result, p1.coeff + p2.coeff, p1.power)

            p1 = p1.next

            p2 = p2.next

        elif p1.power > p2.power:

            result = insert\_term(result, p1.coeff, p1.power)

            p1 = p1.next

        else:

            result = insert\_term(result, p2.coeff, p2.power)

            p2 = p2.next

    while p1:

        result = insert\_term(result, p1.coeff, p1.power)

        p1 = p1.next

  while p2:

        result = insert\_term(result, p2.coeff, p2.power)

        p2 = p2.next

    return result

def display\_poly(head):

    if head is None:

        print("0")

        return

    temp = head

    while temp:

        print(f"{temp.coeff}x^{temp.power}", end=" ")

        if temp.next:

            print("+", end=" ")

        temp = temp.next

    print()

def get\_polynomial():

    head = None

    n = int(input("Enter number of terms: "))

    for \_ in range(n):

        coeff = int(input("Enter coefficient: "))

        power = int(input("Enter power: "))

        head = insert\_term(head, coeff, power)

    return head

# --- Main Program ---

print("Enter first polynomial:")

poly1 = get\_polynomial()

print("Enter second polynomial:")

poly2 = get\_polynomial()

print("\nFirst Polynomial:")

display\_poly(poly1)

print("Second Polynomial:")

display\_poly(poly2)

sum\_poly = add\_poly(poly1, poly2)

print("Sum of Polynomials:")

display\_poly(sum\_poly)

OUTPUT:

Enter first polynomial:

Enter number of terms: 3

Enter coefficient: 2

Enter power: 0

Enter coefficient: -4

Enter power: 1

Enter coefficient: 5

Enter power: 2

Enter second polynomial:

Enter number of terms: 3

Enter coefficient: 1

Enter power: 0

Enter coefficient: 2

Enter power: 1

Enter coefficient: -3

Enter power: 3

First Polynomial:

5x^2 + -4x^1 + 2x^0

Second Polynomial:

-3x^3 + 2x^1 + 1x^0

Sum of Polynomials:

-3x^3 + 5x^2 + -2x^1 + 3x^0