PROGRAM:

```python
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=" ")
```

```python
        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)
```

```
File  Edit  Shell  Debug  Options  Window  Help
     Python 3.10.9 (tags/v3.10.9:1dd9be6, Dec   6 2022, 2
     Type "help", "copyright", "credits" or "license()"
>>>
     ================== RESTART: C:\Users\24ucs008\Desk
     Enter first polynomial:
     Enter number of terms: 2
     Enter coefficient: 1
     Enter power: 2
     Enter coefficient: 3
     Enter power: 2
     Enter second polynomial:
     Enter number of terms: 2
     Enter coefficient: 3
     Enter power: 2
     Enter coefficient: 5
     Enter power: 2

     First Polynomial:
     4x^2
     Second Polynomial:
     8x^2
     Sum of Polynomials:
     12x^2
>>>
```