

Rajalakshmi Engineering College

Name: Phaveen S
Email: 240701383@rajalakshmi.edu.in
Roll no: 240701383
Phone: null
Branch: REC
Department: I CSE FD
Batch: 2028
Degree: B.E - CSE

Scan to verify results



NeoColab_REC_CS23231_DATA STRUCTURES

REC_DS using C_week 1_CY

Attempt : 1
Total Mark : 30
Marks Obtained : 0

Section 1 : Coding

1. Problem Statement

Akila is a tech enthusiast and wants to write a program to add two polynomials. Each polynomial is represented as a linked list, where each node in the list represents a term in the polynomial.

A term in the polynomial is represented in the format ax^b , where a is the coefficient and b is the exponent.

Akila needs your help to implement a program that takes two polynomials as input, adds them, and stores the result in ascending order in a new polynomial-linked list. Write a program to help her.

Input Format

The input consists of lines containing pairs of integers representing the

coefficients and exponents of polynomial terms.

Each line represents a single term, with the coefficient and exponent separated by a space.

The input for each polynomial ends with a line containing "0 0".

Output Format

The output consists of three lines representing the first, second, and resulting polynomial after the addition operation, with terms sorted in ascending order of exponents.

Each line contains terms of the polynomial in the format "coefficientx^exponent", separated by " + ".

If the resulting polynomial is zero, the output is "0".

Refer to the sample output for the formatting specifications.

Sample Test Case

Input: 3 4

2 3

1 2

0 0

1 2

2 3

3 4

0 0

Output: $1x^2 + 2x^3 + 3x^4$

$1x^2 + 2x^3 + 3x^4$

$2x^2 + 4x^3 + 6x^4$

Answer

-

Status : Skipped

Marks : 0/10

2. Problem Statement

Timothy wants to evaluate polynomial expressions for his mathematics homework. He needs a program that allows him to input the coefficients of a polynomial based on its degree and compute the polynomial's value for a given input of x . Implement a function that takes the degree, coefficients, and the value of x , and returns the evaluated result of the polynomial.

Example

Input:

degree of the polynomial = 2

coefficient of x^2 = 13

coefficient of x^1 = 12

coefficient of x^0 = 11

$x = 1$

Output:

36

Explanation:

Calculate the value of $13x^2$: $13 * 1^2 = 13$.

Calculate the value of $12x^1$: $12 * 1^1 = 12$.

Calculate the value of $11x^0$: $11 * 1^0 = 11$.

Add the values of x^2 , x^1 , and x^0 together: $13 + 12 + 11 = 36$.

Input Format

The first line of input consists of an integer representing the degree of the polynomial.

The second line consists of an integer representing the coefficient of x^2 .

The third line consists of an integer representing the coefficient of x^1 .

The fourth line consists of an integer representing the coefficient of x^0 .

The fifth line consists of an integer representing the value of x , at which the

polynomial should be evaluated.

Output Format

The output is an integer value obtained by evaluating the polynomial at the given value of x.

Refer to the sample output for formatting specifications.

Sample Test Case

Input: 2

13

12

11

1

Output: 36

Answer

-

Status : Skipped

Marks : 0/10

3. Problem Statement

Lisa is studying polynomials in her class. She is learning about the multiplication of polynomials.

To practice her understanding, she wants to write a program that multiplies two polynomials and displays the result. Each polynomial is represented as a linked list, where each node contains the coefficient and exponent of a term.

Example

Input:

4 3

y

3 1

y

1 0

n

2 2

y

3 1

y

2 0

n

Output:

$$8x^5 + 12x^4 + 14x^3 + 11x^2 + 9x + 2$$

Explanation

1. Poly1: $4x^3 + 3x + 1$

2. Poly2: $2x^2 + 3x + 2$

Multiplication Steps:

1. Multiply $4x^3$ by Poly2:

$$\rightarrow 4x^3 * 2x^2 = 8x^5$$

$$\rightarrow 4x^3 * 3x = 12x^4$$

$$\rightarrow 4x^3 * 2 = 8x^3$$

2. Multiply $3x$ by Poly2:

$$\rightarrow 3x * 2x^2 = 6x^3$$

$$\rightarrow 3x * 3x = 9x^2$$

$$\rightarrow 3x * 2 = 6x$$

3. Multiply 1 by Poly2:

$$\rightarrow 1 * 2x^2 = 2x^2$$

$$\rightarrow 1 * 3x = 3x$$

$$\rightarrow 1 * 2 = 2$$

Combine the results: $8x^5 + 12x^4 + (8x^3 + 6x^3) + (9x^2 + 2x^2) + (6x + 3x) + 2$

The combined polynomial is: $8x^5 + 12x^4 + 14x^3 + 11x^2 + 9x + 2$

Input Format

The input consists of two sets of polynomial terms.

Each polynomial term is represented by two integers separated by a space:

- The first integer represents the coefficient of the term.
- The second integer represents the exponent of the term.

After entering a polynomial term, the user is prompted to input a character indicating whether to continue adding more terms to the polynomial.

If the user inputs 'y' or 'Y', the program continues to accept more terms.

If the user inputs 'n' or 'N', the program moves on to the next polynomial.

Output Format

The output consists of a single line representing the resulting polynomial after multiplying the two input polynomials.

Each term of the resulting polynomial is formatted as follows:

- The coefficient and exponent are separated by 'x^' if the exponent is greater than 1.

- If the exponent is 1, only 'x' is displayed without the exponent.
- If the exponent is 0, only the coefficient is displayed.

Refer to the sample output for the formatting specifications.

Sample Test Case

Input: 4 3

y

3 1

y

1 0

n

2 2

y

3 1

y

2 0

n

Output: $8x^5 + 12x^4 + 14x^3 + 11x^2 + 9x + 2$

Answer

-

Status : Skipped

Marks : 0/10