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Assigment no 3:

Assignment title: Design and implement a class concept with constructors along with operator overloading

// ComplexNumber class to represent complex numbers

class ComplexNumber {

    private double real;

    private double imaginary;

    // Default constructor (initializes the complex number to 0 + 0i)

    public ComplexNumber() {

        this.real = 0;

        this.imaginary = 0;

    }

    // Parameterized constructor (initializes with given real and imaginary parts)

    public ComplexNumber(double real, double imaginary) {

        this.real = real;

        this.imaginary = imaginary;

    }

    // Method to add two complex numbers (mimicking operator overloading)

    public ComplexNumber add(ComplexNumber other) {

        double resultReal = this.real + other.real;

        double resultImaginary = this.imaginary + other.imaginary;

        return new ComplexNumber(resultReal, resultImaginary);

    }

    // Method to display complex number in the form "a + bi"

    public void display() {

        if (imaginary >= 0) {

            System.out.println(real + " + " + imaginary + "i");

        } else {

            System.out.println(real + " - " + Math.abs(imaginary) + "i");

        }

    }

}

// Main class to test ComplexNumber functionality

public class overloading {

    public static void main(String[] args) {

        // Create complex numbers using parameterized constructors

        ComplexNumber num1 = new ComplexNumber(3, 2);  // 3 + 2i

        ComplexNumber num2 = new ComplexNumber(1, 7);  // 1 + 7i

        // Display the complex numbers

        System.out.print("First Complex Number: ");

        num1.display();

        System.out.print("Second Complex Number: ");

        num2.display();

        // Add the two complex numbers

        ComplexNumber sum = num1.add(num2);

        System.out.print("Sum of the Complex Numbers: ");

        sum.display();

    }

}

