LAB 5

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BRANCH: IT

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| S No. | Title | Date Of Implementation | Remarks |
| 1 | Program that randomly generates complex numbers and write two numbers per line along with an operator(+,-,\*,/) .The numbers are written in the format (a+ib) | 07-02-2021 |  |

Program that randomly generates complex numbers and write two numbers per line along with an operator(+,-,\*,/) .The numbers are written in the format (a+ib)

OBJECTIVE:

The following program sets real and imaginary parts of 2 complex numbers randomly using the Random library and hence creates a random Complex number. It then performs addition, subtraction, multiplication and division operations on the numbers and prints the result.

CODE:

import java.util.Random;

public class Lab5 {

    public class Complex{

        double re, im;

        Random rand = new Random();

        Complex(){

            this.re = rand.nextDouble(99);

            this.im = rand.nextDouble(99);

        }

        void printComplex(){

            System.out.printf("%.2f + i%.2f", this.re, this.im);

        }

        void add(Complex c1){

            Complex c = new Complex();

            c.re = this.re+c1.re;

            c.im = this.im+c1.im;

            System.out.print("(");

            this.printComplex();

            System.out.print(") + (");

            c1.printComplex();

            System.out.print(") = ");

            c.printComplex();

        }

        void sub(Complex c1){

            Complex c = new Complex();

            c.re = this.re-c1.re;

            c.im = this.im-c1.im;

            System.out.print("(");

            this.printComplex();

            System.out.print(") - (");

            c1.printComplex();

            System.out.print(") = ");

            c.printComplex();

        }

        void multiply(Complex c1){

            Complex c = new Complex();

            c.re = this.re\*c1.re - this.im\*c1.im;

            c.im = this.re\*c1.im - this.im\*c1.re;

            System.out.print("(");

            this.printComplex();

            System.out.print(") \* (");

            c1.printComplex();

            System.out.print(") = ");

            c.printComplex();

        }

        void divide(Complex c1){

            Complex c = new Complex();

            c.re = (this.re\*c1.re - this.im\*c1.im)/(c1.re\*c1.re+c1.im\*c1.im);

            c.im = (this.re\*c1.im - this.im\*c1.re)/(c1.re\*c1.re+c1.im\*c1.im);

            System.out.print("(");

            this.printComplex();

            System.out.print(") / (");

            c1.printComplex();

            System.out.print(") = ");

            c.printComplex();

        }

    }

    public static void main(String args[]){

        Lab5 l = new Lab5();

        Complex c1 = l.new Complex();

        Complex c2 = l.new Complex();

        System.out.print("c1 = ");

        c1.printComplex();

        System.out.println("");

        System.out.print("c2 = ");

        c2.printComplex();

        System.out.println("");

        c1.add(c2);

        System.out.println("");

        c1.sub(c2);

        System.out.println("");

        c1.multiply(c2);

        System.out.println("");

        c1.divide(c2);

    }

}

OUTPUT:

