Assignment 1

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//Problem Statement::
/*
Design a class 'Complex 'with data members for real and imaginary part.
Provide default and Parameterized constructors. Write a program to
perform
arithmetic operations of two complex numbers.
*/

import java.util.*;
 class Complex_No{
        float real,img;//data  member
        public Complex_No(){
                //default constructor
                real=0;
                img=0;
        }
        public Complex_No(float a ,float b){
                //parameterized constructor
                real=a;
                img=b;
        }

        public void Display(Complex_No C1,Complex_No C2) {
                System.out.println("First Complex Numbers
=("+C1.real+")+("+C1.img+")i");
                //printing first complex number
                System.out.println("Second Complex Numbers
=("+C2.real+")+("+C2.img+")i");
                //printing second complex number
        }

        public void AddNumbers(Complex_No C1,Complex_No C2) {
                //addition of two complex number
                float real,img;
                real=(C1.real+C2.real);
                //real part of complex number
                img=(C1.img+C2.img);
                //img part of complex number
                System.out.println("Addition of Complex Numbers
=("+real+")+("+img+")i");
                //printing addition of two complex number
        }

        public void SubNumbers(Complex_No C1,Complex_No C2) {
                //substraction of two complex number
                float real,img;
                real=(C1.real-C2.real);
                //real part of complex number
                img=(C1.img-C2.img);
                //img part of complex number
                System.out.println("Substraction of Complex Numbers
=("+real+")+("+img+")i");
                //priting substraction of two complex number
        }

        public void MultiNumbers(Complex_No C1,Complex_No C2) {
                //multiplication of two complex number
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                float real,img;
                real=(C1.real*C2.real-C1.img*C2.img);
                //real part of complex number
                img=(C1.real*C2.img+C1.img*C2.real);
                //img part of complex number
                System.out.println("Multiplication of Complex Numbers
=("+real+")+("+img+")i");
                //printing multiplication of two complex number
        }

        public void DivNumbers(Complex_No C1,Complex_No C2) {
                //division of two complex number
                float real,img;

        real=(C1.real*C2.real+C1.img*C2.img)/(C2.real*C2.real+C2.img*C2.
img);
                //real part of complex number
                img=(C1.img*C2.real-
C1.real*C2.img)/(C2.real*C2.real+C2.img*C2.img);
                //img part of complex number
                System.out.println("Division of Complex Numbers
=("+real+")+("+img+")i");
                //printing division of two complex number
        }

}

//======================= CLASS Main =======================//
public class Main {

        public static void main(String[] args) {
                float num1,num2;
                Complex_No cal=new Complex_No();
                Scanner Sc=new Scanner(System.in);
                System.out.println("Enter the Complex number in a+bi
format : ");

                //taking input for First Number
                System.out.print("Enter real part of First Number: a :
");
                num1=Sc.nextFloat();
                System.out.print("Enter img part of First Number: b : ");
                num2=Sc.nextFloat();
                Complex_No Com1=new Complex_No(num1,num2);

                //taking input for Second Number
                System.out.print("Enter real part of Second Number: a :
");
                num1=Sc.nextFloat();
                System.out.print("Enter img part of Second Number: b :
");
                num2=Sc.nextFloat();
                Complex_No Com2=new Complex_No(num1,num2);
                Sc.close();//clsing scanner close

                System.out.print("\n");
                cal.Display(Com1,Com2);
                //calling display function
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                System.out.print("\n");
                cal.AddNumbers(Com1,Com2);
                //calling addition function
                cal.SubNumbers(Com1,Com2);
                //calling substraction function
                cal.MultiNumbers(Com1,Com2);
                //calling multiplication function
                cal.DivNumbers(Com1, Com2);
                //calling division function

        }

}


/*

OUTPUT

Enter the Complex number in a+bi format :
Enter real part of First Number: a : 4
Enter img part of First Number: b : 5.3
Enter real part of Second Number: a : 2.7
Enter img part of Second Number: b : -6.4

First Complex Numbers =(4.0)+(5.3)i
Second Complex Numbers =(2.7)+(-6.4)i

Addition of Complex Numbers =(6.7)+(-1.0999999)i
Substraction of Complex Numbers =(1.3)+(11.700001)i
Multiplication of Complex Numbers =(44.72)+(-11.29)i
Division of Complex Numbers =(-0.479171)+(0.82715017)i

*/
```