Assignment No 01

Aim: Classes and object:

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.

```
//*************************** 1. Complex_Op.java ****************************//

class Complex_Op
{
        float real,imag;
        Complex_Op()
        {
        real=0;
        imag=0;
        }
        Complex_Op(float Comp1,float Comp2)
        {
        real=Comp1;
        imag=Comp2;
        }
        public void AddNumbers(COmplex_Op C1,ComplexOp C2)
        {
        float real,imag;
        real=(C1.real+C2.real);
        imag=(C1.imag+C2.imag);
        System.out.println("Addition is:("+real+")+("+imag+")i");


        }
        public void SubNumbers(COmplex_Op C1,ComplexOp C2)
```

```java
        {
        float real,imag;

        real=(C1.real-C2.real);

        imag=(C1.imag-C2.imag);

        System.out.println("Subtraction is:("+real+")+("+imag+")i");


        }
        public void MulNumbers(COmplex_Op C1,ComplexOp C2)

        {

        float real,imag;

        real=(C1.real*C2.real)-(C1.imag*C2.imag);

        imag=(C1.imag*C2.real)+(C1.real*C2.imag);

        System.out.println("Multiplication is:("+real+")+("+imag+")i");


        }
        public void DivNumbers(COmplex_Op C1,ComplexOp C2)

        {

        float real,imag;

        float den;

        den=C2.real*C2.real+C2.imag;

        real=((C1.real*C2.real)+(C1.imag*C2.imag))/den;

        imag=((C1.imag*C2.real)-(C1.real*C2.imag))/den;

        System.out.println("Division is:("+real+")+("+imag+")i");


        }
}


//*************************** 2. Complex.java **************************//
import java.util.Scanner;


public class Complex
```

```java
{
    public static void main(String[] args)
    {
        int ch=0,m;
        char n;
        float num1 , num2 ,answer;

        Complex_Op cal = new Complex_Op();
        Scanner input = new Scanner(System.in);

        System.out.print("Enter the first no.\n");
        num1 = input.nextInt(); //Real part
        num2 = input.nextInt(); //imaginary part
        Complex_Op Object1 = new Complex_Op(num1,num2);

        System.out.print("Enter the second no.\n");
        num1 = input.nextInt(); //Real part
        num2 = input.nextInt(); //imaginary part
        Complex_Op Object2 = new Complex_Op(num1,num2);

        do
        {
        System.out.print("\nMENU:\n1.Addition\n2.Subtraction\n3.Multiplication\n4.Division\nEnter Your Choice= ");
        m= input.nextInt();
        switch(m)
        {
        case 1: cal.AddNumbers(Object1 , Object2);
            break;
```

```
        case 2: cal.SubNumbers(Object1 , Object2);

            break;

        case 3: cal.MulNumbers(Object1 , Object2);

            break;

        case 4: cal.DivNumbers(Object1 , Object2);

            break;

    }

    System.out.print("\nDo you want to continue-y/n : ");

    n=input.next().charAt(0);

    }while(n=='y');

    }

}
```

OUTPUT:

Enter the first no.

8

9

Enter the second no.

6

7

MENU:

1.Addition

2.Subtraction

3.Multiplication

4.Division

Enter Your Choice= 1

Addition is:(14.0) + (16.0)i

Do you want to continue-y/n : y

MENU:

1.Addition

2.Subtraction

3.Multiplication

4.Division

Enter Your Choice= 2

Subtraction is:(2.0) + (2.0)i

Do you want to continue-y/n : y

MENU:

1.Addition

2.Subtraction

3.Multiplication

4.Division

Enter Your Choice= 3

Multiplication is:(-15.0) + (110.0)i

Do you want to continue-y/n : y

MENU:

1.Addition

2.Subtraction

3.Multiplication

4.Division

Enter Your Choice= 4

Division is:(1.3058823) + (-0.023529412)i