

Java Lab 2

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17-Dec-2019

Code :

```
import java.io.*;
import java.lang.*;
class Complex
{
    double realPart, imgPart;
    Complex()
    {
        realPart = 0.0;
        imgPart = 0.0;
    }
    Complex(double real, double img)
    {
        realPart = real;
        imgPart = img;
    }
    public Complex add(Complex otherNumber)
    {
        Complex ob = new Complex();
        ob.realPart = this.realPart + otherNumber.realPart;
        ob.imgPart = this.imgPart + otherNumber.imgPart;
        return(ob);
    }
    public Complex subtract(Complex otherNumber)
    {
        Complex ob = new Complex();
        ob.realPart = this.realPart - otherNumber.realPart;
        ob.imgPart = this.imgPart - otherNumber.imgPart;
        return(ob);
    }
}
```

```

public Complex multiply(Complex otherNumber)
{
    Complex ob = new Complex();
    ob.realPart = (this.realPart * otherNumber.realPart) -
    (this.imgPart * otherNumber.imgPart);
    ob.imgPart = (this.realPart * otherNumber.imgPart) + (otherNumber.
realPart * this.imgPart);
    return(ob);
}
public Complex divide(Complex otherNumber)
{
    Complex ob = new Complex();
    double s = Math.pow(otherNumber.realPart,2) + Math.pow(otherNumber
.imgPart, 2);
    ob.realPart = ((this.realPart * otherNumber.realPart) + (this.imgP
art * otherNumber.imgPart))/s;
    ob.imgPart = ((otherNumber.realPart * this.imgPart) -
(this.realPart * otherNumber.imgPart))/s;
    return(ob);
}
public void setRealPart(double realPart)
{
    this.realPart = realPart;
}
public void setImaginaryPart(double ImaginaryPart)
{
    this.imgPart = ImaginaryPart;
}
public double getRealPart()
{
    return(this.realPart);
}
public double getImaginaryPart()
{
    return(this.imgPart);
}
public String toString()
{
    String s = "";
    if(this.realPart!=0)
    {
        s = Double.toString(this.realPart);
    }
    if(this.imgPart<0)
    {

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        s = s + " - " + Double.toString(this.imgPart) + "i";
    }
    else if(this.imgPart>0)
    {
        s = s + " + " + Double.toString(this.imgPart) + "i";
    }
    return(s);
}
}

class ComplexDemo
{
    public static void main(String args[])throws IOException
    {
        Complex n1 = new Complex();
        Complex n2 = new Complex();
        Complex res = new Complex();
        String s;

        InputStreamReader read = new InputStreamReader(System.in);
        BufferedReader in = new BufferedReader(read);

        System.out.println("Enter the real and the imaginary part of the f
first number : ");
        n1.setRealPart(Double.parseDouble(in.readLine()));
        n1.setImaginaryPart(Double.parseDouble(in.readLine()));

        res.setRealPart(n1.getRealPart());
        res.setImaginaryPart(n1.getImaginaryPart());

        int cho = 0;
        do
        {
            System.out.println("-----
-----");

            System.out.println("Options : ");
            System.out.println("1) Addition");
            System.out.println("2) Subtraction");
            System.out.println("3) Multiplication");
            System.out.println("4) Division");
            System.out.println("5) Exit");
            System.out.println("Enter your Choice : ");
            cho = Integer.parseInt(in.readLine());

            if(cho!=5)

```

```

        {
            System.out.println("Enter the real and the imaginary part
of the second number : ");
            n2.setRealPart(Double.parseDouble(in.readLine()));
            n2.setImaginaryPart(Double.parseDouble(in.readLine()));
        }

        s = "";

        switch(cho)
        {
            case 1 :
                res = res.add(n2);
                s = res.toString();
                break;
            case 2 :
                res = res.subtract(n2);
                s = res.toString();
                break;
            case 3 :
                res = res.multiply(n2);
                s = res.toString();
                break;
            case 4 :
                res = res.divide(n2);
                s = res.toString();
                break;
            case 5 :
                System.out.println("System Exiting...");
                break;
            default :
                System.out.println("Enter a valid option : ");
        }
        System.out.println(s);
    }while(cho!=5);
    System.out.println("-----");
    }
}

```

```
C:\Users\student\Documents\18BCE1087\17Dec2019>javac ComplexDemo.java
```

```
C:\Users\student\Documents\18BCE1087\17Dec2019>java ComplexDemo
```

```
Enter the real and the imaginary part of the first number :
```

```
1
```

```
2
```

```
-----  
Options :
```

```
1) Addition
```

```
2) Subtraction
```

```
3) Multiplication
```

```
4) Division
```

```
5) Exit
```

```
Enter your Choice :
```

```
1
```

```
Enter the real and the imaginary part of the second number :
```

```
2
```

```
3
```

```
3.0 + 5.0i
```

```
-----  
Options :
```

```
1) Addition
```

```
2) Subtraction
```

```
3) Multiplication
```

```
4) Division
```

```
5) Exit
```

```
Enter your Choice :
```

```
2
```

```
Enter the real and the imaginary part of the second number :
```

```
-3
```

```
-5
```

```
6.0 + 10.0i  
-----
```

```
-----
Options :
1) Addition
2) Subtraction
3) Multiplication
4) Division
5) Exit
Enter your Choice :
3
Enter the real and the imaginary part of the second number :
3
4
4.0 + 54.0i
-----
```

```
Options :
1) Addition
2) Subtraction
3) Multiplication
4) Division
5) Exit
Enter your Choice :
4
Enter the real and the imaginary part of the second number :
3
4
2.8 + 5.84i
-----
```

```
Options :
1) Addition
2) Subtraction
3) Multiplication
4) Division
5) Exit
Enter your Choice :
5
System Exiting...
-----
```