E.B.SUWATHI [15L247]

ECE-B

# JAVA ASSIGNMENT DAY 6

## //COMPLEX NUMBER

## SOURCE CODE :

```
class Complex {
    public double real;
    public double imaginary;
    public Complex () {
         real = 1.0;
         imaginary = 1.0;
    }
    public Complex ( double real, double imaginary) {
        this.real=real;
        this.imaginary=imaginary;

   }
   public Complex add ( Complex another ) {
        double  real =   this.real + another.real ;
        double imaginary = this.imaginary + another.imaginary ;
        Complex result = new Complex(real , imaginary);
        return result;
   }
   public Complex subtract ( Complex another ) {
        double  real =   this.real -another.real  ;
        double imaginary = this.imaginary - another.imaginary ;
        Complex result = new Complex(real , imaginary);
        return result;
   }

   public Complex multiplyWith ( Complex another) {
        double real = (this.real * another.real) - (this.imaginary *
another.imaginary) ;
        double imaginary = ( another.imaginary * this.real) + (another.real
*this.imaginary)  ;
        Complex result = new Complex(real , imaginary);
        return result ;
```

```
    }

   public Complex divideBy ( Complex another) {

        double real = Math.round (( (another.real * this.real) +
(another.imaginary * this.imaginary) ) /  ( (this.real * this.real) +
(this.imaginary * this.imaginary) ) );
        double imaginary= Math.round ( ( (-this.imaginary * another.real) +
(this.real * another.imaginary) ) / ( (this.real * this.real) + (this.imaginary *
this.imaginary) ) );
        Complex result = new Complex(real , imaginary);
        return result ;
    }

    public boolean isImaginary () {
    if (this.real==0  && this.imaginary!=0)
        return true ;
    else
        return false ;
    }

    public boolean isReal() {
    if (this.real!=0  && this.imaginary==0)
        return true ;
    else
        return false ;
   }


  public  String toString() {
      return this.real + ((this.real > 0 ) ? " +" :"" )+this.imaginary+"j";
  }
}
```

Solution.java

```
public class Solution {
    public static void main(String[] args ) {
        boolean check;
        Complex complex = new Complex(2,3);
        Complex complex1 = new Complex (5,2) ;
        System.out.println("ADDITION          :"+complex.add(complex1));
        System.out.println("SUBTRACTION       :"+complex.subtract(complex1));
        System.out.println("MULTIPLICATION    :"+complex.multiplyWith(complex1));
```

```
        System.out.println("DIVISION          :"+complex.divideBy(complex1));
        check=complex.isReal() ;
        System.out.println("ISREAL            :"+check);
        check=complex.isImaginary() ;
        System.out.println("ISIMAGINARY       :"+check);
    }
}
```

OUTPUT:

```
C:\Users\students\Documents\javaasisgnment>javac Complex.java

C:\Users\students\Documents\javaasisgnment>javac Solution.java

C:\Users\students\Documents\javaasisgnment>java Solution
ADDITION          :7.0 +5.0j
SUBTRACTION       :-3.01.0j
MULTIPLICATION    :4.0 +19.0j
DIVISION          :1.0 +-1.0j
ISREAL            :false
ISIMAGINARY       :false

C:\Users\students\Documents\javaasisgnment>
```