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ROLL NO:15L124

DEPT:ECE-'A'

**********JAVA PROGRAMMING**********

TASK→5

PROGRAM:

//TO IMPLEMENT THE COMPLEX NUMBER OPERATIONS

Complex.java:

SOURCE CODE:

```
class Complex{
    private int real = 0;
    private int imaginary = 0;
    public Complex() {
        real = 0;
        imaginary = 0;
    }
    public Complex(int re,int img) {
        real = re;
        imaginary = img;
    }
    public void add(int re,int img) {
        System.out.println("REAL VALUE         :" + (real + re));
        System.out.println("IMAGINARY VALUE    :" + (imaginary + img));
    }
    public void subtract(int re,int img) {
        System.out.println("REAL VALUE         :" + (real - re));
        System.out.println("IMAGINARY VALUE    :" + (imaginary - img));
    }
    public void multiplyWith(int re,int img) {
        System.out.println("REAL VALUE         :" + (( real * re ) - ( imaginary
* img )));
        System.out.println("IMAGINARY VALUE    :" + (( imaginary * re ) + ( real
* img )));
    }
    public void divideBy(int re,int img) {
        int riTemp=( re * re ) + ( img * img );
        double rReal1=(( real * re ) + ( imaginary * img ))/riTemp;
        double iImaginary1=(( - img * real ) + (re * imaginary))/riTemp;
```

```
        System.out.println("REAL VALUE         :" + Math.round(rReal1));
        System.out.println("IMAGINARY VALUE    :" + Math.round(iImaginary1));
    }
    public boolean isReal(){
        boolean val=( real != 0 && imaginary == 0) ? true : false;
        return val;
    }
    public boolean isImaginary(){
        boolean val=( real == 0 && imaginary != 0) ? true : false;
        return val;
    }


}
```

Solution.java

SOURCE CODE:

```
class Solution{
    public static void main(String args[]){
        Complex complex1,complex2;
        complex1 = new Complex();
        complex2 = new Complex(4,7);
        System.out.println("\n********COMPLEX ADDITION********");
        complex2.add(4,2);
        System.out.println("\n********COMPLEX SUBTRACTION********");
        complex2.subtract(1,2);
        System.out.println("\n********COMPLEX MULTIPLICATION********");
        complex2.multiplyWith(1,2);
        System.out.println("\n********COMPLEX DIVISION********");
        complex2.divideBy(1,1);
        System.out.println("\n********REAL ROOT********");
        System.out.println("isReal             :"+complex1.isReal());
        System.out.println("\n********IMAGINARY ROOT********");
        System.out.println("isImaginary        :"+complex1.isImaginary());
    }
}
```

OUTPUT:

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

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

C:\Users\students\Documents\karthi>java Solution

********COMPLEX ADDITION********
REAL VALUE          :8
IMAGINARY VALUE     :9

********COMPLEX SUBTRACTION********
REAL VALUE          :3
IMAGINARY VALUE     :5

********COMPLEX MULTIPLICATION********
REAL VALUE          :-10
IMAGINARY VALUE     :15

********COMPLEX DIVISION********
REAL VALUE          :5
IMAGINARY VALUE     :1

********REAL ROOT********
isReal              :false

********IMAGINARY ROOT********
isImaginary         :false

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