E.B.SUWATHI [15L247]

ECE –B

JAVA ASSIGNMENT DAY 7

//ENCAPSULATION

Employee details [program 1]

Employee.java

```java
public class Employee {
        private String firstName,lastName;
        private String dateOfBirth;
        private String gender;
        private float houseRentalAllowance,travelAllowance;
        private float dearlyAllowance,providentFund;
        private float basicPay,houseRental,travel,dearly,provident;
        private float netPay;

        public void setFirstName(String firstName) {
            this.firstName = firstName ;
        }
        public String getFirstName() {
            return firstName ;
        }
        public void setLastName(String lastName) {
            this.lastName = lastName ;
        }
        public String getLastName() {
            return lastName ;
        }
        public void setGender(String gender) {
            this.gender = gender ;
        }
        public String getGender() {
            return gender ;
        }
        public void setDateOfBirth(String dateOfBirth) {
            this.dateOfBirth = dateOfBirth ;
        }
        public String getDateOfBirth() {
            return dateOfBirth ;
        }
```

```java
        public void setHouseRentalAllowance(float houseRentalAllowance) {
            this.houseRentalAllowance = houseRentalAllowance ;
        }
        public float getHouseRentalAllowance() {
            return houseRentalAllowance ;
        }
        public void setTravelAllowance(float travelAllowance) {
            this.travelAllowance = travelAllowance ;
        }
        public float getTravelAllowance() {
            return travelAllowance ;
        }
        public void setDearlyAllowance(float dearlyAllowance) {
            this.dearlyAllowance = dearlyAllowance ;
        }
        public float getDearlyAllowance() {
            return dearlyAllowance ;
        }
        public void setProvidentFund(float providentFund) {
            this.providentFund = providentFund ;
        }
        public float getProvidentFund() {
            return providentFund ;
        }

        public float netPay() {
        houseRental = (houseRentalAllowance/100)*basicPay;
        travel = (travelAllowance/100)*basicPay;
        dearly = (dearlyAllowance/100)*basicPay;
        provident = (providentFund/100)*basicPay;
        netPay= houseRentalAllowance + travelAllowance + dearlyAllowance -
providentFund;
        return netPay;
        }
}
```

Solution.java

```java
public class Solution {
    public static void main(String[] args) {
        Employee employee = new Employee () ;
        employee.setFirstName("swathi") ;
        employee.setLastName("bhuvaneswaran");
        employee.setGender("female") ;
        employee.setDateOfBirth("10-5-1998") ;
        employee.setHouseRentalAllowance(4.1f) ;
        employee.setTravelAllowance(2.2f) ;
        employee.setDearlyAllowance (3.1f) ;
        employee.setProvidentFund(1.2f) ;
        System.out.println("FIRST NAME            :"+employee.getFirstName());
        System.out.println("LAST NAME             :"+employee.getLastName());
        System.out.println("GENDER                :"+employee.getGender());
        System.out.println("DATE OF BIRTH         :"+employee.getDateOfBirth());
        System.out.println("HOUSERENTALALLOWANCE  :"+
employee.getHouseRentalAllowance());
        System.out.println("TRAVEL ALLOWANCE      :"+
employee.getTravelAllowance());
        System.out.println("DEARLY ALLOWANCE
:"+employee.getDearlyAllowance());
        System.out.println("PROVIDENT FUND        :"+
employee.getProvidentFund());
        System.out.println("NETPAY                :"+employee.netPay());
}
}
```

OUTPUT:

```
C:\Users\students\Documents\swathi>javac Employee.java

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

C:\Users\students\Documents\swathi>java Solution
FIRST NAME             :swathi
LAST NAME              :bhuvaneswaran
GENDER                 :female
DATE OF BIRTH          :10-5-1998
HOUSERENTALALLOWANCE   :4.1
TRAVEL ALLOWANCE       :2.2
DEARLY ALLOWANCE       :3.1
PROVIDENT FUND         :1.2
NETPAY                 :8.2

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

//Complex number [program 2]

Complex.java'

```java
public class Complex {
    private int real=0;
    privatec int imaginary=0;

    public void setReal(int real) {
        this.real = real;
    }
    public int getReal() {
        return real;
    }
    public void setImaginary(int imaginary) {
        this.imaginary = imaginary ;
    }
    public int getImaginary() {
        return imaginary;
    }

    public String add ( int real , int imaginary) {
        return (this.real + real)+((this.imaginary+imaginary)  >0 ? "+"
:"")+(this.imaginary +imaginary)+"j";
    }
    public String subtract ( int real , int imaginary) {

        return (this.real - real)+((this.imaginary-imaginary)  >0 ? "+"
:"")+(this.imaginary -imaginary)+"j";
    }
    public String multiplyWith ( int real , int imaginary) {
        double tempReal=(this.real * real) - (this.imaginary *imaginary);
        double tempImaginary = (this.imaginary * real) + (this.real * imaginary)
;
        return tempReal + ( (tempImaginary) >=0 ? "+" :"" ) + tempImaginary +"j";
    }
    public String divideBy ( int re , int img) {

        double realPart = ( (real * re) + (imaginary * img) ) / ( (re * re) +
(img * img) ) ;
        double imaginaryPart= ( (-img * real) + (re * imaginary) ) / ( (re * re)
+(img * img) ) ;
        return realPart + ( (imaginaryPart) >0 ? "+" : "" ) + imaginaryPart +"j";

    }
```

```java
    public boolean isReal () {
        if (real!=0 && imaginary==0)
            return true ;
        else
            return false ;
        }
   public boolean isImaginary () {
        if (real==0 && imaginary!=0)
            return true ;
        else
            return false ;
        }
 }
```

Solution.java

```java
public class Solution1 {
    public static void main(String[] args){
        boolean check,check1;
        Complex cmp = new Complex();
        cmp.setReal(3);
        cmp.setImaginary(4) ;
        System.out.println(" COMPLEX ADDITION        :"+ cmp.add( 2,3));
        System.out.println(" COMPLEX SUBTRACTION     :"+cmp.subtract(1,4));
        System.out.println(" COMPLEX MULTIPLICATION  :"+cmp.multiplyWith(2,3));
        System.out.println(" COMPLEX DIVISION        :"+cmp.divideBy(2,1));
        System.out.println(" COMPLEX ISREAL          :"+cmp.isReal());
        System.out.println(" COMPLEX ISIMAGINARY     :"+cmp.isImaginary());
    }

}
```

OUTPUT:

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

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

C:\Users\students\Documents\ll>java Solution
 COMPLEX ADDITION          :5+7j
 COMPLEX SUBTRACTION       :20j
 COMPLEX MULTIPLICATION    :-6.0+17.0j
 COMPLEX DIVISION          :2.0+1.0j
 COMPLEX ISREAL            :false
 COMPLEX ISIMAGINARY       :false

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

//distance between axis [program -3]

Point.java

```java
public class Point {
    private int xAxis=0;
    private int yAxis=0;
    private void setXAxis(int xAxis) {
        this.xAxis = xAxis ;
    }
    public int getXAxis() {
        return xAxis ;
    }
    public void setYAxis (int yAxis) {
        this.yAxis = yAxis ;
    }
    public int getYAxis () {
        return yAxis;
    }
    public double distance(int xAxis,int yAxis) {
        System.out.println("X-AXIS   :"+xAxis+"          Y-AXIS  :"+yAxis);
        return Math.sqrt(Math.pow (( xAxis-this.xAxis ) ,2) + Math.pow ( (yAxis-
this.yAxis ) , 2) );
    }

}
```

Solution.java

```java
public class Solution {
    public static void main (String[] args) {
        Point point = new Point();
        point.setXAxis(3) ;
        point.setYAxis(4) ;
        System.out.println("\nX-AXIS1  :"+point.getXAxis()+"           Y-AXIS1
:"+point.getYAxis());
        System.out.println("\nDISTANCE   :"+point.distance(2,3)) ;
    }
}
```

OUTPUT:

```
C:\Users\students\Documents\ll>javac Point.java

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

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

X-AXIS1  :3           Y-AXIS1 :4
X-AXIS   :2           Y-AXIS  :3

DISTANCE    :1.4142135623730951

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