ASSIGNMENT-8

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PACKAGE

1..

\btech\Student.java

```
package btech;
public class Student{
        int roll;
        String name;
        int m1,m2,m3;
        public Student(int roll,String name,int m1,int m2,int m3){
            this.roll=roll;
            this.name=name;
            this.m1=m1;
            this.m2=m2;
            this.m3=m3;
        }
        public void display(){
            System.out.println("Roll_no : "+roll);
            System.out.println("Name : "+name);
            System.out.println("-----MARKS-----");
            int sum=m1+m2+m3;
            System.out.println("Sub 1    : "+m1);
            System.out.println("Sub 2    : "+m2);
            System.out.println("Sub 3    : "+m3);
            // int per=sum/3;
            System.out.println("percentage : "+sum/3);
        }
    }
```

\StudentDriver.java

```
import java.util.Scanner;
import btech.Student;
class StudentDriver {
    public static void main(String[] args) {
        Scanner sc = new Scanner(System.in);
        int roll;
        int m1,m2,m3;
        String name;
        System.out.print("Enter roll no : ");
        roll = sc.nextInt();
        System.out.print("Enter name: ");
        sc.nextLine();
```

```
        name = sc.nextLine();
        System.out.print("Enter the marks of 3 subjects: ");
        m1 = sc.nextInt();
        m2 = sc.nextInt();
        m3 = sc.nextInt();
        Student s1 = new Student(roll,name,m1,m2,m3);
        s1.display();
    }
}
```

2..

\btech\arithmetic\MyMath.java

```
package btech.arithmetic;
public class MyMath{
    int a,b;
    public MyMath(int a,int b){
        this.a=a;
        this.b=b;
    }
    public int doSum(){
        return a+b;
    }
    public int dosub(){
        return a-b;
    }
    public int domul(){
        return a*b;
    }
    public int dodiv(){
        return a/b;
    }
    public int dorem(){
        return a%b;
    }
}
```

\MyMathDriver.java

```
import java.util.Scanner;
import btech.arithmetic.MyMath;
class MyMathDriver {
    public static void main(String[] args) {
        Scanner sc = new Scanner(System.in);
        int a,b,ans;
        System.out.print("Enter the two no.s : ");
        a = sc.nextInt();
        b = sc.nextInt();
```

```
        MyMath m1 = new MyMath(a,b);
        System.out.println("the sum of both the no.s is : "+m1.doSum());
    }
}
```

3..

\org\shape\Circle.java

```
package shape;
import java.util.Scanner;

public class Circle {
    int radius;

    public Circle() {
    }

    public Circle(int radius) {
        this.radius = radius;
    }

    public void input()
    {
        Scanner sc = new Scanner(System.in);
        System.out.print("Enter the radius: ");
        radius = sc.nextInt();
    }

    public void area()
    {
        System.out.println("Area of the circle = "+3.14*radius*radius);
    }

    public void perimeter()
    {
        System.out.println("Perimeter of the circle = "+3.14*radius*2);
    }
}
```

\org\shape\Triangle.java

```
package shape;
import java.util.Scanner;

public class Triangle {
```

```
    int base, height, left, right;


    public Triangle() {
    }

    public Triangle(int base, int height, int left, int right) {
        this.base = base;
        this.height = height;
        this.left = left;
        this.right = right;
    }

    public void input()
    {
        Scanner sc = new Scanner(System.in);
        System.out.print("Enter the base, height, side1 and side2 : ");
        base = sc.nextInt();
        height = sc.nextInt();
        left = sc.nextInt();
        right = sc.nextInt();
    }

    public void area()
    {
        System.out.println("Area of the triangle = "+0.5*base*height);
    }

    public void perimeter()
    {
        System.out.println("Perimeter of the triangle = "+base+left+right);
    }
}
```

\org\shape\Square.java

```
package shape;
import java.util.Scanner;
public class Square
{
    int side;

    public Square() {
    }

    public Square(int side) {
        this.side = side;
    }
```

```
    public void input()
    {
        Scanner sc = new Scanner(System.in);
        System.out.print("Enter the side : ");
        side = sc.nextInt();
    }

    public void area()
    {
        System.out.println("Area of the square = "+side*side);
    }

    public void perimeter()
    {
        System.out.println("Perimeter of the square = "+4*side);
    }

}
```

\org\CircleDriver.java

```
import java.util.Scanner;
import shape.Circle;
import shape.Triangle;
import shape.Square;

public class CircleDriver {
    public static void main(String[] args) {
        // Scanner sc = new Scanner(System.in);
        Circle c = new Circle();
        c.input();
        c.area();
        c.perimeter();

        Square s = new Square();
        s.input();
        s.area();
        s.perimeter();
    }
}
```

INTERFACE

1..

Movable.java

```java
public interface Movable{
    public void moveUp();
    public void moveDown();
    public void moveLeft();
    public void moveRight();
}
```

MovablePoint.java

```java
public class MovablePoint implements Movable {
    // instance variables
    int x, y, xSpeed, ySpeed; // package access

    // Constructor
    public MovablePoint(int x, int y, int xSpeed, int ySpeed) {
        this.x = x;
        this.y = y;
        this.xSpeed = xSpeed;
        this.ySpeed = ySpeed;
    }

    // Implement abstract methods declared in the interface Movable
    @Override
    public void moveUp() {
        y -= ySpeed;
    }

    @Override
    public void moveDown() {
        y += ySpeed;
    }

    @Override
    public void moveLeft() {
        x -= xSpeed;
    }

    @Override
    public void moveRight() {
        x += xSpeed;
    }

    public String toString(){
        return "x coordinate = "+x+", y co-ordinate = "+y;
    }

}
```

MovableCircle.java

```
public class MovableCircle implements Movable { // saved as "MovableCircle.java"
    // instance variables
    private int radius;
    private MovablePoint center;


    // Constructor
    public MovableCircle(int x, int y, int xSpeed, int ySpeed, int radius)
    {
        this.radius = radius;
        center = new MovablePoint(x, y, xSpeed, ySpeed);
    }


    // Implement abstract methods declared in the interface Movable
    @Override
    public void moveUp() {
        center.y -= center.ySpeed;
    }

    @Override
    public void moveDown(){
        center.y += center.ySpeed;
    }

    @Override
    public void moveRight(){
        center.x -= center.xSpeed;
    }

    @Override
    public void moveLeft(){
        center.x += center.xSpeed;
    }

    public String toString(){
        return "A movable circle: radius = "+radius+" center is a point = "+center;
    }

}



public class TestPointCircle {
    public static void main(String[] args) {
        Movable m1 = new MovablePoint(5, 6, 10, 15); // upcast
        System.out.println(m1);
```

```
        m1.moveLeft();
        System.out.println(m1);
        Movable m2 = new MovableCircle(1, 2, 3, 4, 20); // upcast
        System.out.println(m2);
        m2.moveRight();
        System.out.println(m2);
    }
}
```

2..

MovableRectange.java

```
public class MovableRectange implements Movable{
    private MovablePoint topLeft;
    private MovablePoint bottomRight;

    public MovableRectange(int x1,int y1, int x2, int y2, int xsp, int ysp)
    {
        topLeft = new MovablePoint(x1,y1,xsp,ysp);
        bottomRight = new MovablePoint(x2,y2,xsp,ysp);
    }

    public String toString(){
        return "A movable rectangle with top left point= "+topLeft+" bottom right
point="+bottomRight;
    }

    @Override
    public void MoveUp(){
        topLeft.MoveUp();
        bottomRight.MoveUp();
    }

    @Override
    public void MoveDown(){
        topLeft.MoveDown();
        bottomRight.MoveDown();
    }

    @Override
    public void MoveLeft(){
        topLeft.MoveLeft();
        bottomRight.MoveLeft();
    }

    @Override
    public void MoveRight(){
        topLeft.MoveRight();
```

```
            bottomRight.MoveRight();
        }

    }
```