**LAB - 5**

**1)Area of circle and rect using abstract.**

abstract class Shape{

abstract double area();

}

class Circle extends Shape{

double radius;

Circle(double radius){

this.radius=radius;

} @Override

double area(){

return 3.14\*radius\*radius; }

}

class Rectangle extends Shape{

double l;

double b;

Rectangle( double l, double b ){

this.l=l;

this.b=b;

}

@Override

double area(){

return l\*b;

}}

class Main{

public static void main(String[]args){

Circle c=new Circle(5);

System.out.println("Area of circle:" +c.area());

Rectangle r =new Rectangle(6,7);

System.out.println("Area of rectangle:" +r.area());

}

}

**Area of circle:78.5**

**Area of rectangle:42.0**

**2)Displaying sub classes;**

class Shape {

void display() {

System.out.println("This is a shape.");

}

}

class Circle extends Shape {

@Override

void display() {

super.display();

System.out.println("This is a circle.");

}

}

class Rectangle extends Shape {

@Override

void display() {

super.display();

System.out.println("This is a rectangle.");

}

}

public class Main {

public static void main(String[] args) {

Shape shape = new Shape();

Circle circle = new Circle();

Rectangle rectangle = new Rectangle();

System.out.println("Calling display() on Shape:");

shape.display();

System.out.println("\nCalling display() on Circle:");

circle.display();

System.out.println("\nCalling display() on Rectangle:");

rectangle.display();

}

}

3)

abstract class ShapeDynamic {

abstract double area();

}

class CircleDynamic extends ShapeDynamic {

double radius;

CircleDynamic(double radius) {

this.radius = radius;

}

@Override

double area() {

return Math.PI \* radius \* radius;

}

}

class RectangleDynamic extends ShapeDynamic {

double length, width;

RectangleDynamic(double length, double width) {

this.length = length;

this.width = width;

}

@Override

double area() {

return length \* width;

}

}

public class DynamicBindingTest {

public static void main(String[] args) {

ShapeDynamic shape;

shape = new CircleDynamic(3);

System.out.println("Circle Area (Dynamic): " + shape.area());

shape = new RectangleDynamic(4, 5);

System.out.println("Rectangle Area (Dynamic): " + shape.area());

}

}