**Java lab sheet-7**

**1).**

**Build failure**. Because cannot inherit from final student class . Solve this error need to remove the extends stidents part from the undergraduate class, as we cannot create a subclass of a final class.

2).

// Shape class (super class)

abstract class Shape {

// Abstract method to calculate the area (to be implemented by subclasses)

abstract double calculateArea();

// Non-abstract method to display information about the shape

void display() {

System.out.println("Shape: " + getClass().getSimpleName());

System.out.println("Area: " + calculateArea());

}

}

// Circle class (subclass)

class Circle extends Shape {

private double radius;

// Constructor to initialize the radius of the circle

Circle(double radius) {

this.radius = radius;

}

// Implementation of the abstract method to calculate the area of the circle

@Override

double calculateArea() {

return Math.PI \* radius \* radius;

}

}

// Rectangle class (subclass)

class Rectangle extends Shape {

private double length;

private double width;

// Constructor to initialize the length and width of the rectangle

Rectangle(double length, double width) {

this.length = length;

this.width = width;

}

// Implementation of the abstract method to calculate the area of the rectangle

@Override

double calculateArea() {

return length \* width;

}

}

public class TestShapes {

public static void main(String[] args) {

// Create a Circle object and calculate/display its area

Circle circle = new Circle(5.0);

circle.display();

// Create a Rectangle object and calculate/display its area

Rectangle rectangle = new Rectangle(4.0, 6.0);

rectangle.display();

}

}