1. **Shape, Circle, and Rectangle:**

// Abstract class Shape

abstract class Shape {

// Abstract method calculateArea

abstract double calculateArea();

}

// Subclass Circle extending Shape

class Circle extends Shape {

double radius;

// Constructor

Circle(double radius) {

this.radius = radius;

}

// Implementing calculateArea method for Circle

@Override

double calculateArea() {

return Math.PI \* radius \* radius;

}

}

// Subclass Rectangle extending Shape

class Rectangle extends Shape {

double length;

double width;

// Constructor

Rectangle(double length, double width) {

this.length = length;

this.width = width;

}

// Implementing calculateArea method for Rectangle

@Override

double calculateArea() {

return length \* width;

}

}

// Main class to run the program

public class Main {

public static void main(String[] args) {

// Creating instances of Circle and Rectangle

Circle circle = new Circle(5.0);

Rectangle rectangle = new Rectangle(4.0, 6.0);

// Calculating and printing the areas

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

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

}

}

OUTPUT:

Area of Circle: 78.53981633974483

Area of Rectangle: 24.0

1. **Animal, Dog, and Cat:**

// Superclass Animal

class Animal {

// Method makeSound in Animal class

public void makeSound() {

System.out.println("The animal makes a sound.");

}

}

// Subclass Dog extending Animal

class Dog extends Animal {

// Overriding the makeSound method for Dog

@Override

public void makeSound() {

System.out.println("The dog barks.");

}

}

// Subclass Cat extending Animal

class Cat extends Animal {

// Overriding the makeSound method for Cat

@Override

public void makeSound() {

System.out.println("The cat meows.");

}

}

// Main class to run the program

public class Main {

public static void main(String[] args) {

// Creating instances of Dog and Cat

Dog dog = new Dog();

Cat cat = new Cat();

// Calling makeSound method for both Dog and Cat

dog.makeSound();

cat.makeSound();

}

}

OUTPUT:

The dog barks.

The cat meows.