Program: Write a program in java to design a class using abstract method and classes

import java.util.Scanner;

// Abstract class definition

abstract class Shape {

// Abstract method

abstract double calculateArea();

// Concrete method

void display() {

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

}

}

// Subclass 1: Circle

class Circle extends Shape {

private double radius;

// Constructor

Circle(double radius) {

this.radius = radius;

}

// Implementation of abstract method

@Override

double calculateArea() {

return Math.PI \* radius \* radius;

}

}

// Subclass 2: Rectangle

class Rectangle extends Shape {

private double length;

private double width;

// Constructor

Rectangle(double length, double width) {

this.length = length;

this.width = width;

}

// Implementation of abstract method

@Override

double calculateArea() {

return length \* width;

}

}

// Main class

public class Main {

public static void main(String[] args) {

Scanner scanner = new Scanner(System.in);

// Input for Circle

System.out.print("Enter the radius of the circle: ");

double radius = scanner.nextDouble();

Shape circle = new Circle(radius);

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

// Input for Rectangle

System.out.print("Enter the length of the rectangle: ");

double length = scanner.nextDouble();

System.out.print("Enter the width of the rectangle: ");

double width = scanner.nextDouble();

Shape rectangle = new Rectangle(length, width);

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

scanner.close();

}

}