**RegNo**: 23MCA1030 **Name**: Vinayak Kumar Singh

**Java Programming Lab (PMCA502P)**

## 1. Error fixing (Code)

```
abstract class Shape { // Abstract superclass Shape
    private String color;
    // Constructor for Shape class
    public Shape(String color) {
        this.color = color;
    }
    // Method for color
    public String getColor() {
        return color;
    }
    // Abstract method to get the area
    abstract double getArea();
}
// Subclass Circle inheriting from Shape
class Circle extends Shape {
    private double radius;
    // Constructor for Circle class
    public Circle(String color, double radius) {
        super(color);
        this.radius = radius;
```

```
    }
    // Implementing abstract method to calculate area
    @Override
    double getArea() {
        return Math.PI * Math.pow(radius, 2);
    }
}
// Subclass Rectangle inheriting from Shape
class Rectangle extends Shape {
    private double width;
    private double length;
    // Constructor for Rectangle class
    public Rectangle(String color, double width, double length) {
        super(color);
        this.width = width;
        this.length = length;
    }
    // Implement abstract method to calculate area
    @Override
    double getArea() {
        return width * length;
    }
```

```
}
// Main class
class Main {
    public static void main(String[] args) {
        // Create objects of Circle and Rectangle
        Circle circle = new Circle("Red", 5);
        Rectangle rectangle = new Rectangle("Blue", 4, 6);
        // Printing color and area of each shape
        System.out.println("Vinayak Kumar Singh 23MCA1030");
        System.out.println("Color of Circle: " + circle.getColor());
        System.out.println("Area of Circle: " + circle.getArea());
        System.out.println("Color of Rectangle: " + rectangle.getColor());
        System.out.println("Area of Rectangle: " + rectangle.getArea());
    }
}
```

## Output:

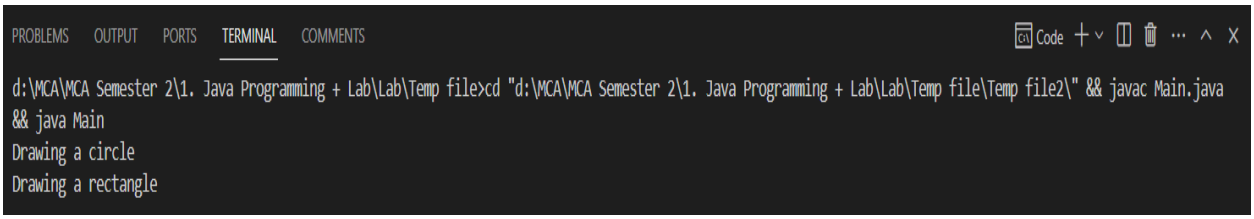
```
PROBLEMS  OUTPUT  PORTS  TERMINAL  COMMENTS                                    Code

Microsoft Windows [Version 10.0.22631.3235]
(c) Microsoft Corporation. All rights reserved.

D:\MCA\MCA Semester 2\1. Java Programming + Lab\Lab>cd "d:\MCA\MCA Semester 2\1. Java Programming + Lab\Lab\Temp file\" && javac Main.java && java Main
Vinayak Kumar Singh 23MCA1030
Color of Circle: Red
Area of Circle: 78.53981633974483
Color of Rectangle: Blue
Area of Rectangle: 24.0
```

2.

```
abstract class Shape {
    // Abstract method to draw a shape
    abstract void draw();
}
class Circle extends Shape {
    // Correctly overridden draw() method for Circle
    void draw() {
        System.out.println("Drawing a circle");
    }
}
class Rectangle extends Shape {
    // Correctly overridden draw() method for Rectangle
    void draw() {
        System.out.println("Drawing a rectangle");
    }
}
class Main {
    public static void main(String[] args) {
        // Creating objects of Circle and Rectangle
        Shape shape1 = new Circle();
        Shape shape2 = new Rectangle();
```

```
        // Calling draw() method for each shape
        shape1.draw();
        shape2.draw();
    }
}
```

**Output:**




3.

```
class Vehicle {
    protected String color; // Change the access modifier to protected
    Vehicle(String color) {
        this.color = color;
    }
    public String getColor() {
        return color;
    }
}
class Car extends Vehicle {
    private int numOfDoors;
```

```
    Car(String color, int numOfDoors) {
        super(color);
        this.numOfDoors = numOfDoors;
    }
    public int getNumOfDoors() {
        return numOfDoors;
    }
}
public class Main {
    public static void main(String[] args) {
        Car car = new Car("Blue", 4);
        System.out.println("Color of the car: " + car.getColor());
        System.out.println("Number of doors: " + car.getNumOfDoors());
    }
}
```

**Output:**

```
PROBLEMS  OUTPUT  PORTS  TERMINAL  COMMENTS                                   Code

Microsoft Windows [Version 10.0.22631.3235]
(c) Microsoft Corporation. All rights reserved.

D:\MCA\MCA Semester 2\1. Java Programming + Lab\Lab>cd "d:\MCA\MCA Semester 2\1. Java Programming + Lab\Lab\Temp file\Temp file2\Temp file3\" && javac Main.java
 && java Main
Color of the car: Blue
Number of doors: 4
```

**4.**

```
class Animal {
    private String name;
    Animal(String name) {
        this.name = name; // Correctly assign the name attribute in the
constructor
    }
    public String getName() {
        return name;
    }
}
class Dog extends Animal {
    Dog(String name) {
        super(name);
    }
}
public class Main {
    public static void main(String[] args) {
        Dog dog = new Dog("Buddy");
        System.out.println("Name of the dog: " + dog.getName());
    }
}
```

# Output:


PROBLEMS
OUTPUT
PORTS
TERMINAL
COMMENTS
Code
d:\MCA\MCA Semester 2\1. Java Programming + Lab\Lab\Temp file\Temp file2\Temp file3>cd "d:\MCA\MCA Semester 2\1. Java Programming + Lab\Lab\Temp file\Temp file2\Temp file3\Temp file4\" && javac Main.java && java Main
Name of the dog: Buddy