Assignment No: 01

Code:

```
abstract class Shape {
    abstract double calculateArea();
}

class Circle extends Shape {
    double radius;
    Circle(double radius) {
        this.radius = radius;
    }
    @Override
    double calculateArea() {
        return 3.14159 * radius * radius;
    }
}
class Rectangle extends Shape {
    double length;
    double width;
    Rectangle(double length, double width) {
        this.length = length;
        this.width = width;
    }
    @Override
    double calculateArea() {
        return length * width;
    }
}
public class calarea {
    public static void main(String[] args) {
        Circle circle = new Circle(5);
        Rectangle rectangle = new Rectangle(4, 6);
        System.out.printf("Area of the Circle: %.2f\n",
circle.calculateArea());
        System.out.printf("Area of the Rectangle: %.2f\n",
rectangle.calculateArea());
    }
}
```

Output:

```
W:\Tranning\lab codes>java calarea
Area of the Circle: 78.54
Area of the Rectangle: 24.00
```

Assignment No: 02

Code:

```
import java.util.Scanner;
class Animal {
    void makeSound() {
        System.out.println("The animal makes a sound.");
    }
}
class Dog extends Animal {
    @Override
    void makeSound() {
        System.out.println("The dog barks.");
    }
}
class Cat extends Dog {
    @Override
    void makeSound() {
        System.out.println("The cat meows.");
    }
}
public class methodovrr {
    public static void main(String[] args) {
        Scanner scanner = new Scanner(System.in);
        int choice;

        do {
            System.out.println("\nChoose an animal:");
            System.out.println("1. Animal");
            System.out.println("2. Dog");
            System.out.println("3. Cat");
            System.out.println("0. Exit");
            System.out.print("Enter your choice: ");
            choice = scanner.nextInt();

            Animal animal;
            switch (choice) {
                case 1:
                    animal = new Animal();
                    animal.makeSound();
                    break;
                case 2:
                    animal = new Dog();
                    animal.makeSound();
                    break;
                case 3:
                    animal = new Cat();
                    animal.makeSound();
```

```
                    break;
                case 0:
                    System.out.println("Exiting program.");
                    break;
                default:
                    System.out.println("Invalid choice. Try again.");
            }
        } while (choice != 0);
        scanner.close();
    }
}
```

Output:

```
W:\Tranning\lab codes>java methodovrr

Choose an animal:
1. Animal
2. Dog
3. Cat
0. Exit
Enter your choice: 2
The dog barks.

Choose an animal:
1. Animal
2. Dog
3. Cat
0. Exit
Enter your choice: 1
The animal makes a sound.

Choose an animal:
1. Animal
2. Dog
3. Cat
0. Exit
Enter your choice: 0
Exiting program.
```