Assignment 1

```
// Abstract base class
abstract class Shape2 {
    // Abstract method to calculate area
    abstract void calculateArea();
}

// Circle2 class extends Shape2
class Circle2 extends Shape2 {
    double radius;

    // Constructor to initialize radius
    Circle2(double radius) {
        this.radius = radius;
    }

    // Override to calculate and display area of the circle
    @Override
    void calculateArea() {
        double area = Math.PI * radius * radius;
        System.out.println("Area of Circle: " + area);
    }
}

// Square2 class extends Shape2
class Square2 extends Shape2 {
    double length;

    // Constructor to initialize length
    Square2(double length) {
```

```
        this.length = length;
    }

    // Override to calculate and display area of the square
    @Override
    void calculateArea() {
        double area = length * length;
        System.out.println("Area of Square: " + area);
    }
}

// Main class
class Shape2Main {
    public static void main(String[] args) {
        Circle2 circle = new Circle2(5);
        Square2 square = new Square2(4);

        circle.calculateArea(); // Calculate and display area of the circle
        square.calculateArea(); // Calculate and display area of the square
    }
}
```

OUTPUT:

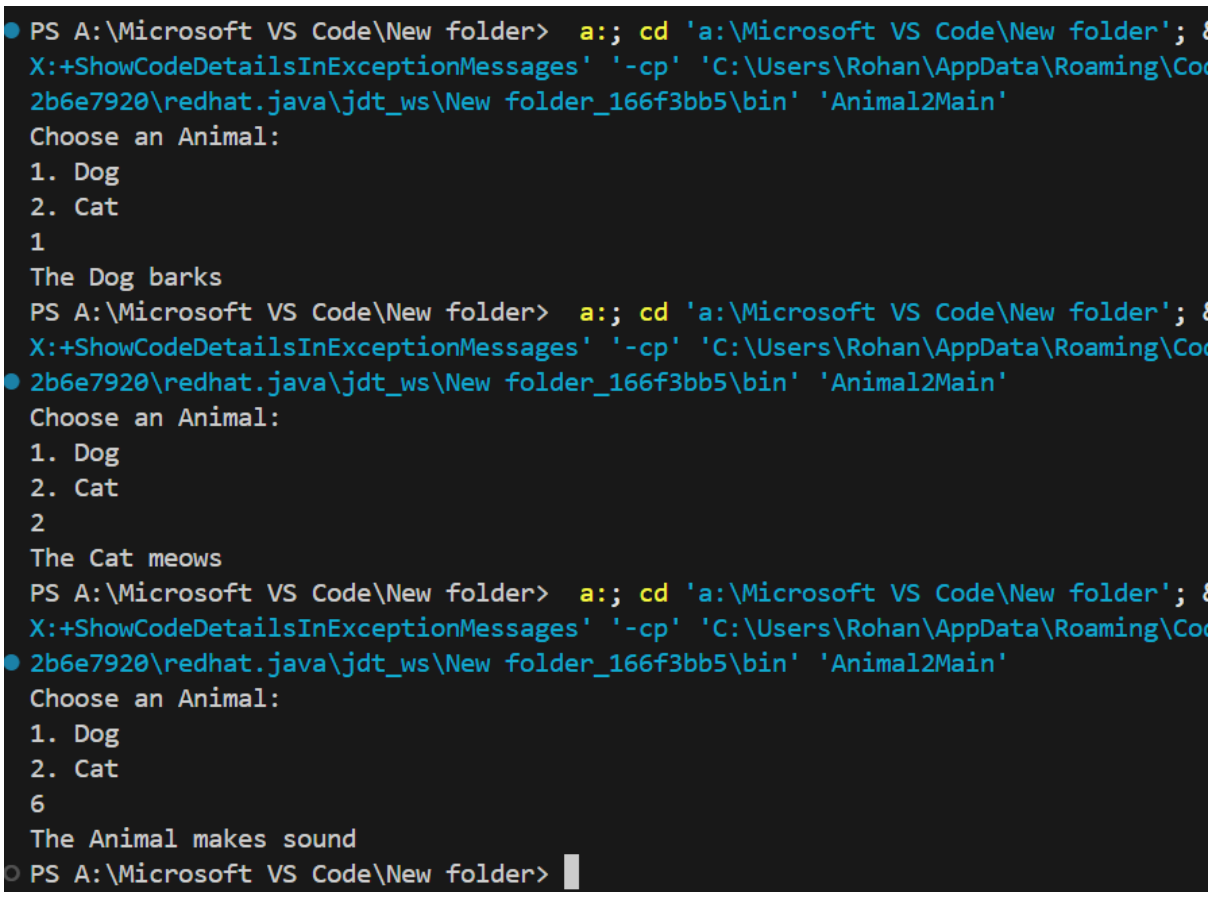
```
PS A:\Microsoft VS Code\New folder>  & 'C:\Program Files\Jav
es' '-cp' 'C:\Users\Rohan\AppData\Roaming\Code\User\workspac
New folder_166f3bb5\bin' 'Shape2Main'
Area of Circle: 78.53981633974483
Area of Square: 16.0
PS A:\Microsoft VS Code\New folder>
```

Assignment 2

```
import java.util.Scanner;

// Base class
public class Animal2 {
    // Method to make animal sound
    void makeSound() {
        System.out.println("The Animal makes sound");
    }
}

// Dog2 class inherits from Animal2 and overrides makeSound
class Dog2 extends Animal2 {
    @Override
    void makeSound() {
        System.out.println("The Dog barks");
    }
}

// Cat2 class inherits from Animal2 and overrides makeSound
class Cat2 extends Animal2 {
    @Override
    void makeSound() {
        System.out.println("The Cat meows");
    }
}

// Main class
```

```
class Animal2Main {
    public static void main(String[] args) {
        // Display menu to user
        System.out.println("Choose an Animal:");
        System.out.println("1. Dog");
        System.out.println("2. Cat");

        Scanner scanner = new Scanner(System.in);
        int choice = scanner.nextInt(); // Read user choice

        switch(choice) {
            case 1:
                Dog2 dog = new Dog2();
                dog.makeSound();
                break;
            case 2:
                Cat2 cat = new Cat2();
                cat.makeSound();
                break;
            default:
                Animal2 animal = new Animal2();
                animal.makeSound();
                break;
        }
        scanner.close(); // Close the scanner
    }
}
```

OUTPUT:


PS A:\Microsoft VS Code\New folder> a:; cd 'a:\Microsoft VS Code\New folder'; &
X:+ShowCodeDetailsInExceptionMessages' '-cp' 'C:\Users\Rohan\AppData\Roaming\Co
2b6e7920\redhat.java\jdt_ws\New folder_166f3bb5\bin' 'Animal2Main'
Choose an Animal:
1. Dog
2. Cat
1
The Dog barks
PS A:\Microsoft VS Code\New folder> a:; cd 'a:\Microsoft VS Code\New folder'; &
X:+ShowCodeDetailsInExceptionMessages' '-cp' 'C:\Users\Rohan\AppData\Roaming\Co
2b6e7920\redhat.java\jdt_ws\New folder_166f3bb5\bin' 'Animal2Main'
Choose an Animal:
1. Dog
2. Cat
2
The Cat meows
PS A:\Microsoft VS Code\New folder> a:; cd 'a:\Microsoft VS Code\New folder'; &
X:+ShowCodeDetailsInExceptionMessages' '-cp' 'C:\Users\Rohan\AppData\Roaming\Co
2b6e7920\redhat.java\jdt_ws\New folder_166f3bb5\bin' 'Animal2Main'
Choose an Animal:
1. Dog
2. Cat
6
The Animal makes sound
PS A:\Microsoft VS Code\New folder>