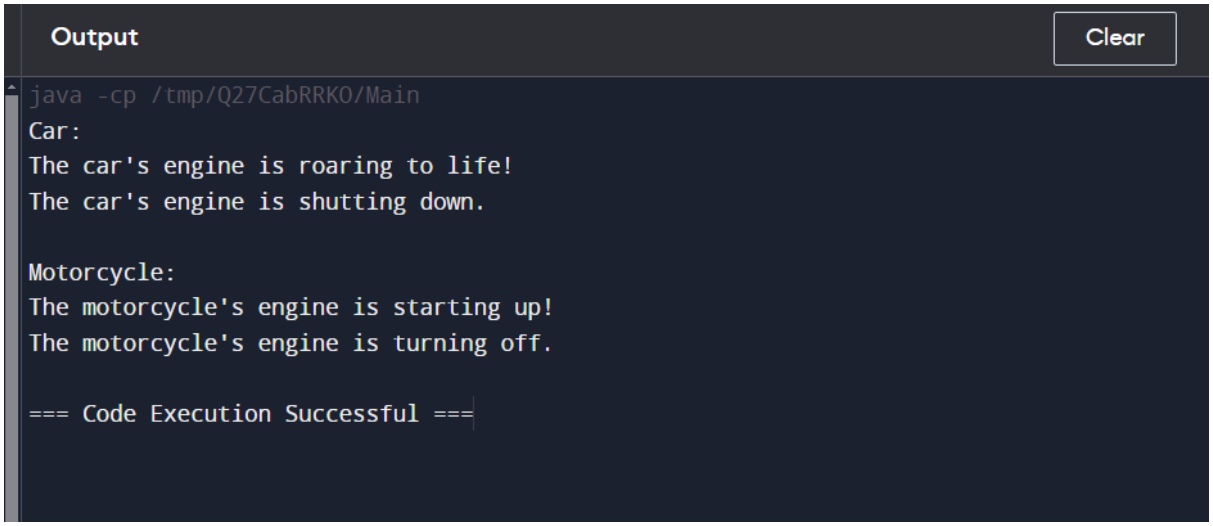
1. Write a java program to create base class vechicle with start engine and stop engine method . create subclasses car and motorcycle override the start engine and stop engine method in each subclass to start and stop the engine differently

CODE:

```
class Vehicle {
    public void startEngine() {
        System.out.println("The vehicle's engine is starting.");
    }
    public void stopEngine() {
        System.out.println("The vehicle's engine is stopping.");
    }
}
class Car extends Vehicle {
    @Override
    public void startEngine() {
        System.out.println("The car's engine is roaring to life!");
    }
    @Override
    public void stopEngine() {
        System.out.println("The car's engine is shutting down.");
    }
}
class Motorcycle extends Vehicle {
    @Override
    public void startEngine() {
        System.out.println("The motorcycle's engine is starting up!");
    }
    @Override
    public void stopEngine() {
        System.out.println("The motorcycle's engine is turning off.");
    }
```

```
}
public class Main {
    public static void main(String[] args) {
        Vehicle myCar = new Car();
        Vehicle myMotorcycle = new Motorcycle();
        System.out.println("Car:");
        myCar.startEngine();
        myCar.stopEngine();
        System.out.println("\nMotorcycle:");
        myMotorcycle.startEngine();
        myMotorcycle.stopEngine();
    }
}
```

OUTPUT:



2. Create a java program to generate abstract class A also class B Inherits class B Generates object for class B and display the text call me from B

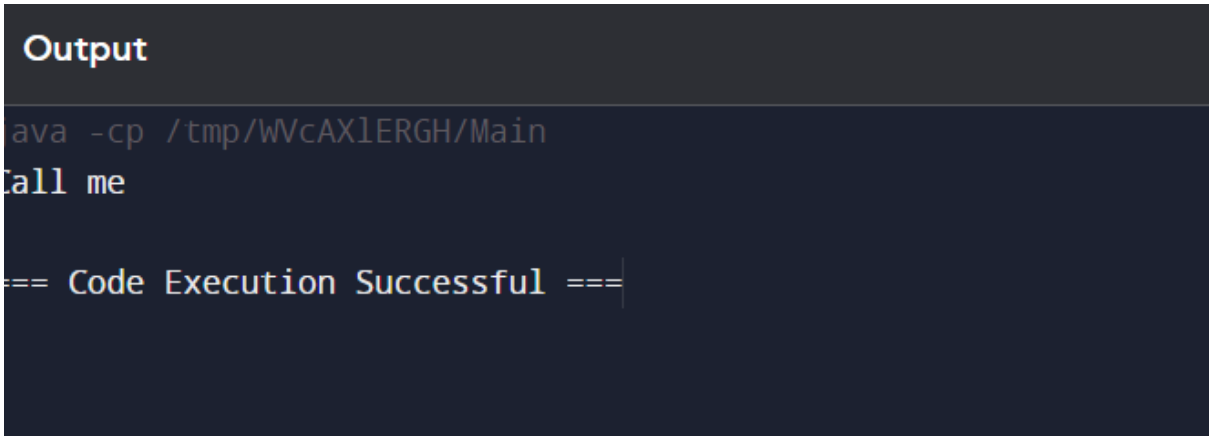
CODE:

```
abstract class A {
    public abstract void displayMessage();
}
```

```
class B extends A {
    @Override
    public void displayMessage() {
        System.out.println("Call me");
    }
}

public class Main {
    public static void main(String[] args) {
        B b = new B();
        b.displayMessage();
    }
}
```

OUTPUT:



3. write a java program to generate abstract class A also class B inherits for class B generate object for class B and display the text call me from B

CODE:

```
import java.util.Scanner;
class OutOfRangeException extends Exception {
    public OutOfRangeException(String message) {
        super(message);
    }
}
```

```
public class Main {
    public static void checkAndSquare(int number) throws OutOfRangeException {
        if (number < 10 || number > 50) {
            throw new OutOfRangeException("Number out of range: " + number);
        } else {
            int square = number * number;
            System.out.println("The square of " + number + " is " + square);
        }
    }

    public static void main(String[] args) {
        Scanner scanner = new Scanner(System.in);
        System.out.print("Enter a number: ");
        int number = scanner.nextInt();

        try {
            checkAndSquare(number);
        } catch (OutOfRangeException e) {
            System.out.println("Exception: " + e.getMessage());
        } finally {
            scanner.close();
        }
    }
}
```

OUTPUT: