import java.util.Scanner;

// Interface Vehicle

interface Vehicle {

void changeGear(int gear);

void speedUp(int increment);

void applyBrakes(int decrement);

}

// Bicycle class implementing Vehicle

class Bicycle implements Vehicle {

private int gear;

private int speed;

public Bicycle() {

this.gear = 1; // Default gear

this.speed = 0; // Default speed

}

@Override

public void changeGear(int gear) {

if (gear &gt; 0 &amp;&amp; gear &lt;= 6) { // Bicycles usually have 6 gears

this.gear = gear;

System.out.println(&quot;Bicycle gear changed to: &quot; + this.gear);

} else {

System.out.println(&quot;Invalid gear for Bicycle. Please select between 1 and 6.&quot;);

}

}

@Override

public void speedUp(int increment) {

speed += increment;

System.out.println(&quot;Bicycle speed increased by &quot; + increment + &quot; km/h. Current speed: &quot; + speed + &quot; km/h.&quot;);

}

@Override

public void applyBrakes(int decrement) {

speed -= decrement;

if (speed &lt; 0) speed = 0;

System.out.println(&quot;Bicycle speed decreased by &quot; + decrement + &quot; km/h. Current speed: &quot; + speed + &quot; km/h.&quot;);

}

}

// Bike class implementing Vehicle

class Bike implements Vehicle {

private int gear;

private int speed;

public Bike() {

this.gear = 1; // Default gear

this.speed = 0; // Default speed

}

@Override

public void changeGear(int gear) {

if (gear &gt; 0 &amp;&amp; gear &lt;= 5) { // Bikes usually have 5 gears

this.gear = gear;

System.out.println(&quot;Bike gear changed to: &quot; + this.gear);

} else {

System.out.println(&quot;Invalid gear for Bike. Please select between 1 and 5.&quot;);

}

}

@Override

public void speedUp(int increment) {

speed += increment;

System.out.println(&quot;Bike speed increased by &quot; + increment + &quot; km/h. Current speed: &quot; + speed + &quot; km/h.&quot;);

}

@Override

public void applyBrakes(int decrement) {

speed -= decrement;

if (speed &lt; 0) speed = 0;

System.out.println(&quot;Bike speed decreased by &quot; + decrement + &quot; km/h. Current speed: &quot; + speed + &quot; km/h.&quot;);

}

}

// Car class implementing Vehicle

class Car implements Vehicle {

private int gear;

private int speed;

public Car() {

this.gear = 1; // Default gear

this.speed = 0; // Default speed

}

@Override

public void changeGear(int gear) {

if (gear &gt; 0 &amp;&amp; gear &lt;= 6) { // Cars usually have 6 gears

this.gear = gear;

System.out.println(&quot;Car gear changed to: &quot; + this.gear);

} else {

System.out.println(&quot;Invalid gear for Car. Please select between 1 and 6.&quot;);

}

}

@Override

public void speedUp(int increment) {

speed += increment;

System.out.println(&quot;Car speed increased by &quot; + increment + &quot; km/h. Current speed: &quot; + speed + &quot; km/h.&quot;);

}

@Override

public void applyBrakes(int decrement) {

speed -= decrement;

if (speed &lt; 0) speed = 0;

System.out.println(&quot;Car speed decreased by &quot; + decrement + &quot; km/h. Current speed: &quot; + speed + &quot; km/h.&quot;);

}

}

// Main class to run the program

public class VehicleTest {

public static void main(String[] args) {

Scanner scanner = new Scanner(System.in);

Vehicle vehicle = null;

System.out.println(&quot;Select a vehicle: 1. Bicycle 2. Bike 3. Car&quot;);

int vehicleChoice = scanner.nextInt();

// Vehicle selection validation

switch (vehicleChoice) {

case 1:

vehicle = new Bicycle();

break;

case 2:

vehicle = new Bike();

break;

case 3:

vehicle = new Car();

break;

default:

System.out.println(&quot;Invalid choice! Please select a valid vehicle.&quot;);

return;

}

boolean exit = false;

while (!exit) {

System.out.println(&quot;\nSelect operation: 1. Change Gear 2. Speed Up 3. Apply Brakes 4. Exit&quot;);

int operationChoice = scanner.nextInt();

switch (operationChoice) {

case 1: // Change Gear

System.out.println(“Enter the gear number:”);

int gear = scanner.nextInt();

vehicle.changeGear(gear);

break;

case 2: // Speed Up

System.out.println(&quot;Enter the speed increment:&quot;);

int increment = scanner.nextInt();

vehicle.speedUp(increment);

break;

case 3: // Apply Brakes

System.out.println(&quot;Enter the speed decrement:&quot;);

int decrement = scanner.nextInt();

vehicle.applyBrakes(decrement);

break;

case 4: // Exit

exit = true;

System.out.println(&quot;Exiting...&quot;);

break;

default:

System.out.println(&quot;Invalid operation! Please select a valid option.&quot;);

break;

}

}

scanner.close();

}

}