ASSIGNMENT NO:05

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subject:oop

Interface
Design and develop a context for given case study and implement an interface for Vehicles Consider the example of vehicles like bicycle, car and bike. All Vehicles have common functionalities such as Gear Change, Speed up and apply breaks. Make an interface and put all these common functionalities. Bicycle, Bike, Car classes should be implemented for all these functionalities in their own class in their own way

**********PROGRAM**********

```
import java.util.Scanner;
interface Vehicle {
	void speed_up();
	void apply_break();
	void gear_change(int g);
}
class Car implements Vehicle {
	int speed=10;
	int gear=1;
	public void speed_up() {
		System.out.println("****CAR****");
		if (speed>0 && speed<120) {
			speed = speed + 30 ;
			System.out.println("Speed of Car is increased to " + speed);
		}
		else
		{
			System.out.println("Car is at MAXIMUM speed");
		}
	}
	public void gear_change(int g) {
		if (gear>0 && gear<5) {
			gear = g ;
			System.out.println("Car Gear is "+gear);
		}
		else
		{
			System.out.println("Car is at last Gear");
		}
	}
	public void apply_break() {
		int ch;
		System.out.println("\n1.Decrease speed");
		System.out.println("\n2.Stop");
		Scanner sc = new Scanner(System.in);
		System.out.println("Enter your Choice:-");
		ch=sc.nextInt();
		if (ch == 1) {
			speed = speed - 25 ;
			System.out.println("Speed of Car is "+speed);
		}
		if (ch == 2) {
```

```
                gear = 0 ;
                speed = 0 ;
                System.out.println("Car is Stopped ");
            }
            System.out.println();
        }
    }
    class Bike implements Vehicle {
        int speed=10;
        int gear=1;
        public void speed_up() {
            System.out.println("****BIKE****");
            if (speed>0 && speed<80) {
                speed = speed + 20 ;
                System.out.println("Speed of Bike is increased to " + speed);
            }
            else
            {
                System.out.println("Bike is at MAXIMUM speed");
            }
        }
        public void gear_change(int g) {
            if (gear>0 && gear<4) {
                gear = g ;
                System.out.println("Bike Gear is "+gear);
            }
            else
            {
                System.out.println(" Gear cannot be change");
            }
        }
        public void apply_break() {
            int ch;
            System.out.println("\n1.Decrease speed");
            System.out.println("\n2.Stop");
            Scanner sc = new Scanner(System.in);
            System.out.println("Enter your Choice:-");
            ch=sc.nextInt();
            if (ch == 1) {
                speed = speed - 15 ;
                System.out.println("Speed of Bike is "+speed);
            }
            if (ch == 2) {
                gear = 0 ;
                speed = 0 ;
                System.out.println("Bike is Stopped ");
            }
            System.out.println();
        }
    }
    class Bicycle implements Vehicle {
        int speed=5;
        int gear=1;
        public void speed_up() {
            System.out.println("****BICYCLE****");
            if (speed>0 && speed<15) {
```

```
                speed = speed + 5 ;
                System.out.println("Speed of Bicycle is increased to " + speed);
            }
            else
            {
                System.out.println("Bicycle is at MAXIMUM speed");
            }
        }
        public void gear_change(int g) {
            if (gear>0 && gear<21) {
                gear = g ;
                System.out.println("Bicycle Gear is "+gear);
            }
            else
            {
                System.out.println(" Gear cannot be change");
            }
        }
        public void apply_break() {
            int ch;
            System.out.println("\n1.Decrease speed");
            System.out.println("\n2.Stop");
            Scanner sc = new Scanner(System.in);
            System.out.println("Enter your Choice:-");
            ch=sc.nextInt();
            if (ch == 1) {
                speed = speed - 5 ;
                System.out.println("Speed of Bicycle is "+speed);
            }
            if (ch == 2) {
                gear = 0 ;
                speed = 0 ;
                System.out.println("Bicycle has Stopped ");
            }
            System.out.println();
        }
    }
    public class Interface_Demo {
        public static void main(String[] args) {
    // TODO Auto-generated method stub
    //Scanner sc = new Scanner(System.in);
    //System.out.println("Information of Vehicle");
            Car c =new Car();
            c.speed_up();
            c.gear_change(3);
            c.apply_break();
            Bike b =new Bike();
            b.speed_up();
            b.gear_change(4);
            b.apply_break();
            Bicycle b1 =new Bicycle();
            b1.speed_up();
            b1.gear_change(21);
            b1.apply_break();
        }
    }
```

```
********************OUTPUT***************
****CAR****
Speed of Car is increased to 40
Car Gear is 3
1.Decrease speed
2.Stop
Enter your Choice:-
1
Speed of Car is 15
****BIKE****
Speed of Bike is increased to 30
Bike Gear is 4
1.Decrease speed
2.Stop
Enter your Choice:-
2
Bike is Stopped
****BICYCLE****
Speed of Bicycle is increased to 10
Bicycle Gear is 21
1.Decrease speed
2.Stop
Enter your Choice:-
1
Speed of Bicycle is 5
```