Assignment No.05

Aim: To understand Interface in Java

Problem Statement:- 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.

1) Vehicle Class

```
public interface Vehicle
{
void changeGear(int x);
void speedUp(int x);
void applyBrakes(int x);
}
```

2) Bicycle Class

```
public class Bicycle implements Vehicle
{
int speed;
int gear;
@Override
public void changeGear(int Gear)
{
gear=Gear;
}
@Override
public void speedUp(int increment)
{
speed=speed+increment;
}
@Override
public void applyBrakes(int decrement)
{
speed=speed-decrement;
```

```
}
public void statusDisplay()
{
System.out.println("Gear:"+gear+"   speed : "+speed);
}
}
```

3) Bike Class

```
public class Bike implements Vehicle
{
int speed;
int gear;
@Override
public void changeGear(int Gear)
{
gear=Gear;
}
@Override
public void speedUp(int increment)
{
speed=speed+increment;
}
@Override
public void applyBrakes(int decrement)
{
speed=speed-decrement;
}
public void statusDisplay()
{
System.out.println("Gear:"+gear+"  speed : "+speed);
}
}
```

4) Car Class

```
public class Car implements Vehicle
{
int speed;
int gear;
@Override
public void changeGear(int Gear)
{
gear=Gear;
}
@Override
public void speedUp(int increment)
```

```
{
speed=speed+increment;
}
@Override
public void applyBrakes(int decrement)
{
speed=speed-decrement;
}
public void statusDisplay()
{
System.out.println("Gear:"+gear+"   speed : "+speed);
}
}
```

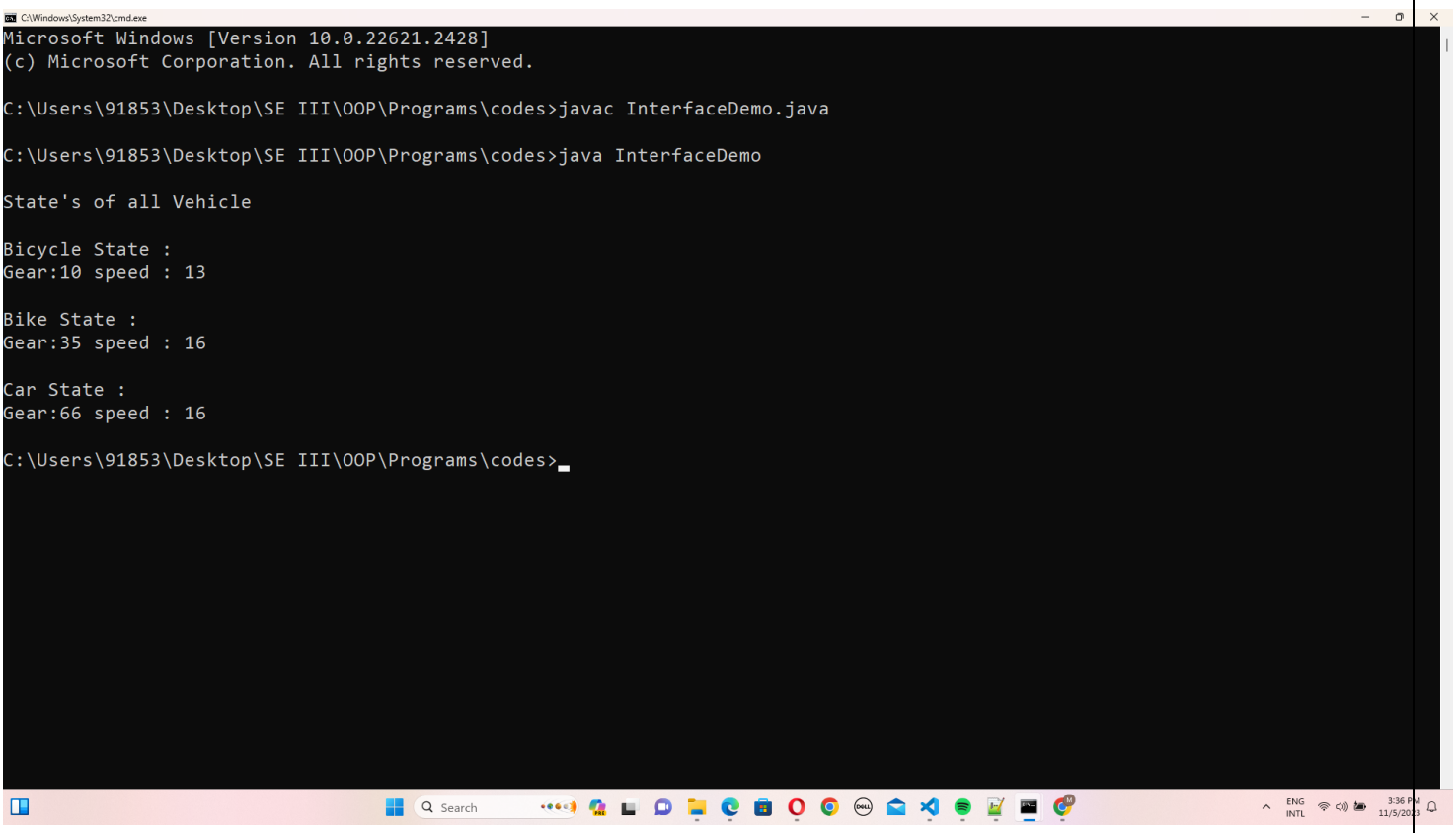
5) InterfaceDemo Class

```
public class InterfaceDemo
{
public static void main(String[] args)
{
System.out.println("\nState's of all Vehicle");
Bicycle b=new Bicycle();
b.changeGear(10)
;b.speedUp(15);
b.applyBrakes(2);
System.out.println("\nBicycle State : ");
b.statusDisplay();

Bike bk=new Bike();
bk.changeGear(35);
bk.speedUp(50);
bk.applyBrakes(34);
System.out.println("\nBike State : ");
bk.statusDisplay();

Car c=new Car();
c.changeGear(66);
c.speedUp(52);
c.applyBrakes(36);
System.out.println("\nCar State : ");
c.statusDisplay();
}
}
```

Output


C:\Windows\System32\cmd.exe
Microsoft Windows [Version 10.0.22621.2428]
(c) Microsoft Corporation. All rights reserved.
C:\Users\91853\Desktop\SE III\OOP\Programs\codes>javac InterfaceDemo.java
C:\Users\91853\Desktop\SE III\OOP\Programs\codes>java InterfaceDemo
State's of all Vehicle
Bicycle State :
Gear:10 speed : 13
Bike State :
Gear:35 speed : 16
Car State :
Gear:66 speed : 16
C:\Users\91853\Desktop\SE III\OOP\Programs\codes>
Search
ENG
INTL
3:36 PM
11/5/2023