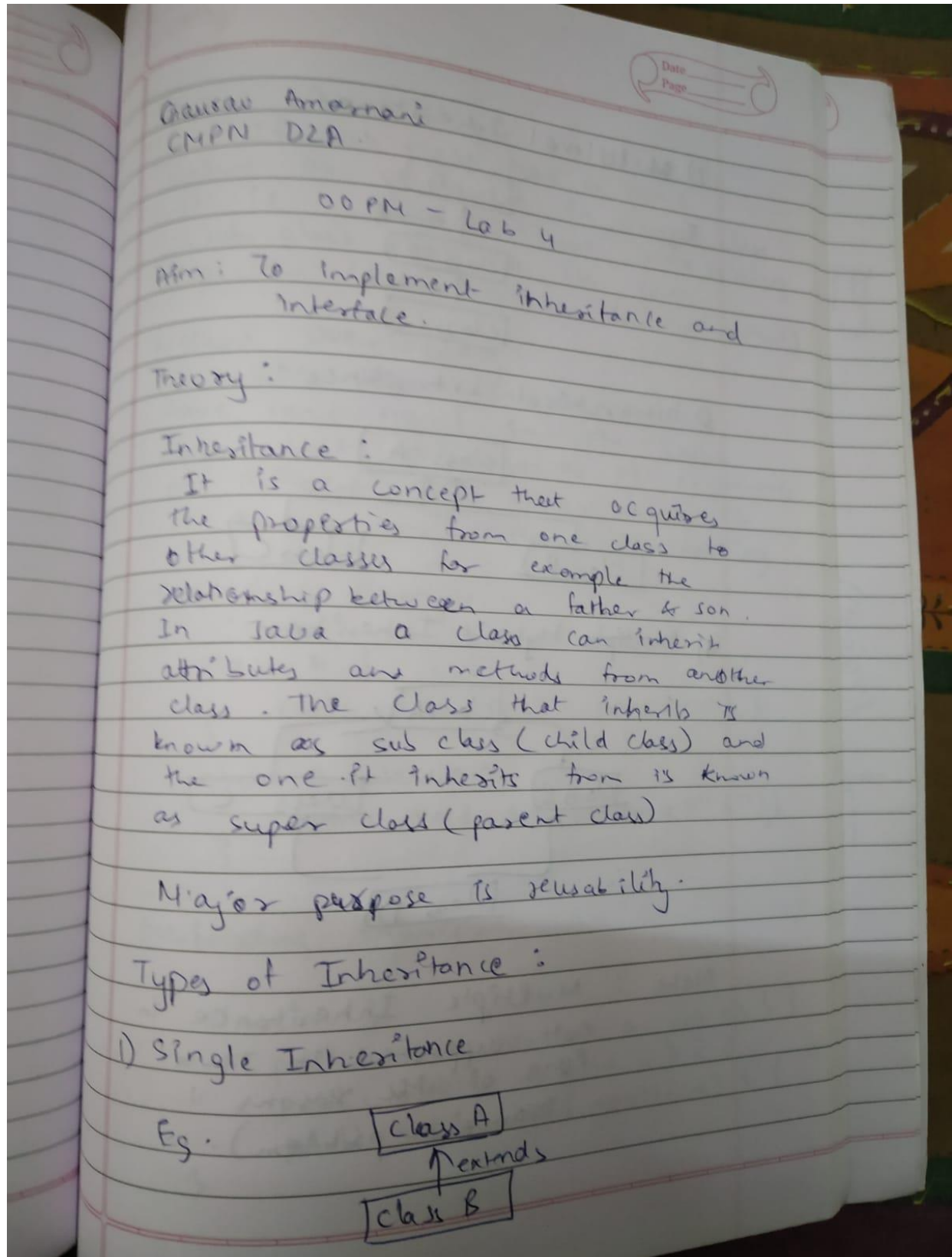




COMPUTER ENGINEERING

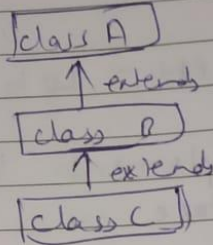
OOPM ODD SEM 2021-22/EXPERIMENT 4

NAME:- GAURAV AMARNANI (D7A. 67)

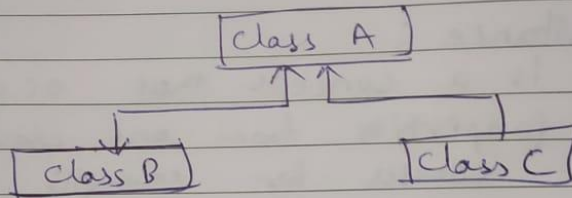


2) Multilevel Inheritance :

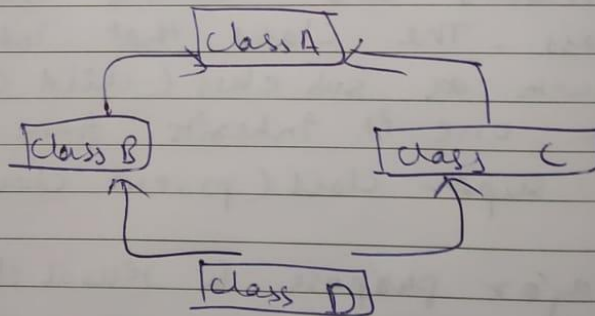
Eg.



3) Hierarchical Inheritance :



4) Multiple Hybrid Inheritance :



Note : Multiple Inheritance is not supported in Java. (One of the reasons is Diamond problem).

Method Overriding:

If sub class has a same method as declared in super class it is called method overriding. (sub class provides its own specific implementation for that method)

Method Overloading:

When more than one method have same name in the same class but different no. of arguments or different types of arguments it is known as method overloading.

Overriding Example:

```
class A {  
    public void do() { print("A"); }  
}  
class B extends A {  
    public void do() { print("B"); }  
}
```

Overloading Example:

```
class A {  
    public void do(int a, int b) {}  
    public void do(int a) {}  
    public void do(double a) {}  
}
```


Interface:

An interface in Java programming language is an abstract type that is used to specify a behaviour that classes must implement.

Reasons:

- 1) Abstraction.
- 2) Multiple Inheritance.
- 3) Loose coupling.

Eg.

Interface A { }

Class B implements A { }

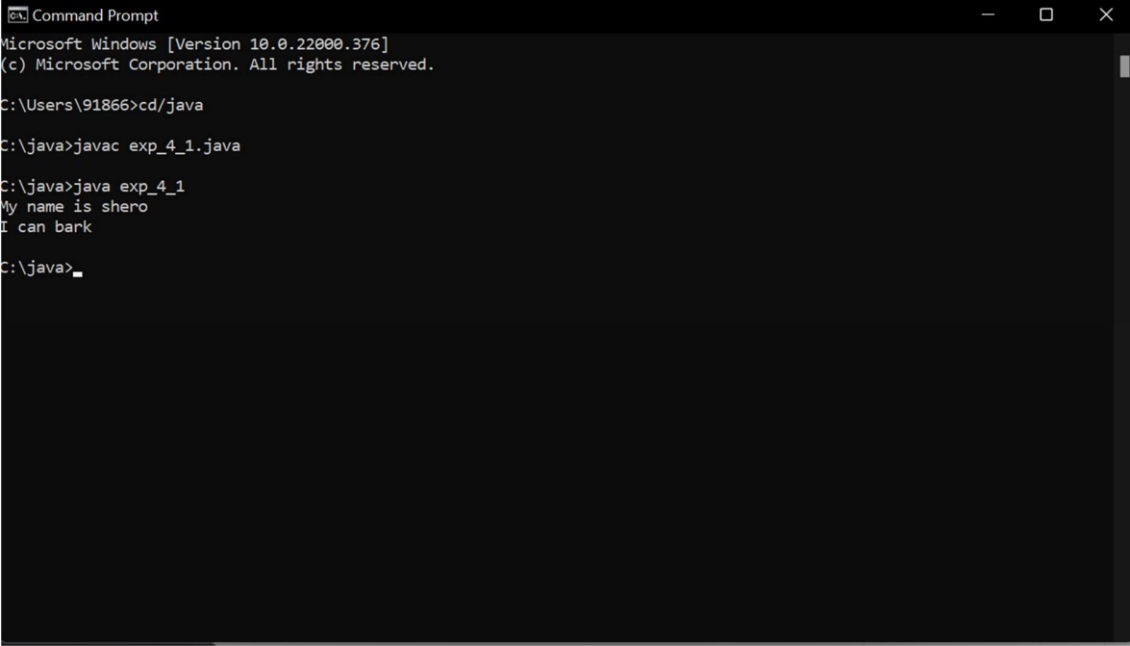
Conclusion:

I understood the concept of Inheritance, Method overloading & overriding along with Interface and how to implement it.

Program 1

```
class Animal {  
    String name;  
    public void eat() {  
        System.out.println("I can bark");  
    }  
}  
  
class Dog extends Animal {  
    public void display() {  
        System.out.println("My name is " + name);  
    }  
}  
  
class exp_4_1 {  
    public static void main(String[] args) {  
        Dog labrador = new Dog();  
        labrador.name = "shero";  
        labrador.display();  
        labrador.eat();  
    }  
}
```

Output:



```
Command Prompt  
Microsoft Windows [Version 10.0.22000.376]  
(c) Microsoft Corporation. All rights reserved.  
  
C:\Users\91866>cd/java  
  
C:\java>javac exp_4_1.java  
  
C:\java>java exp_4_1  
My name is shero  
I can bark  
  
C:\java>_
```

Program 2

```
class Shape {  
    public void display() {  
        System.out.println("display");  
    }  
}  
  
class Rectangle extends Shape {  
    public void area() {  
        System.out.println("area");  
    }  
}  
  
class Cube extends Rectangle {  
    public void volume() {  
        System.out.println("volume");  
    }  
}  
  
public class exp_4_2 {  
    public static void main(String[] arguments) {  
        Cube cube = new Cube();  
        cube.display();  
        cube.area();  
        cube.volume();  
    }  
}
```

Output:

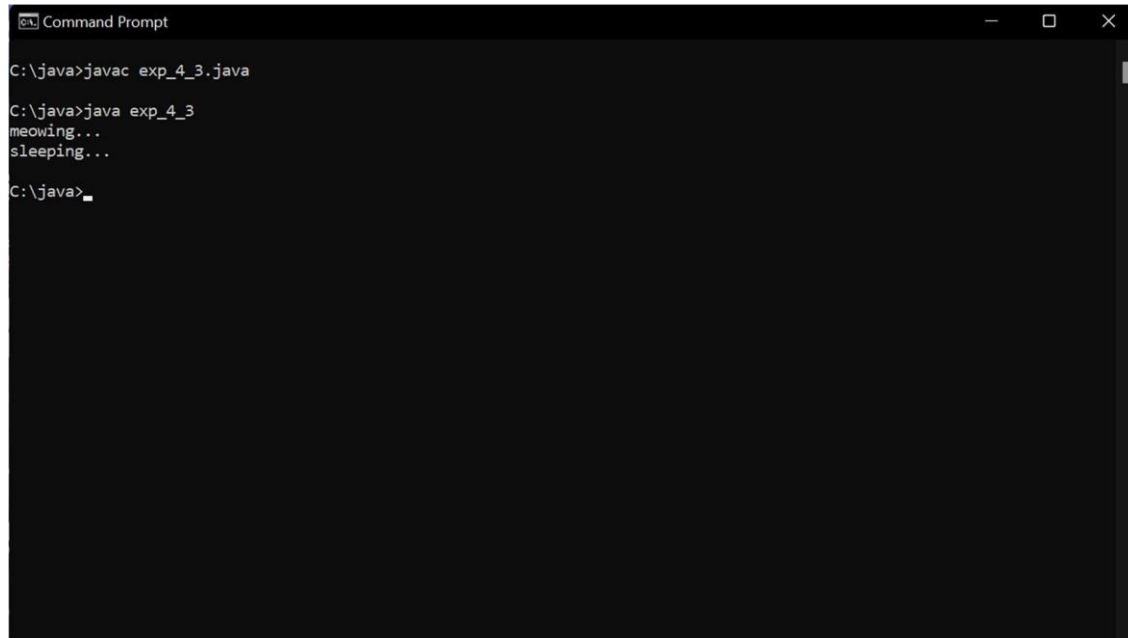


```
Command Prompt  
C:\java>javac exp_4_2.java  
C:\java>java exp_4_2  
display  
area  
volume  
C:\java>
```

Program 3

```
class Animal {  
    void eat(){  
        System.out.println("sleeping...");  
    }  
}  
  
class Dog extends Animal {  
    void bark(){  
        System.out.println("eating...");  
    }  
}  
  
class Cat extends Animal {  
    void meow(){  
        System.out.println("meowing...");  
    }  
}  
  
public class exp_4_3 {  
    public static void main(String args[]){  
        Cat c=new Cat();  
        c.meow();  
        c.eat();  
    }  
}
```

Output:



```
Command Prompt  
C:\java>javac exp_4_3.java  
C:\java>java exp_4_3  
meowing...  
sleeping...  
C:\java>_
```

Program 4

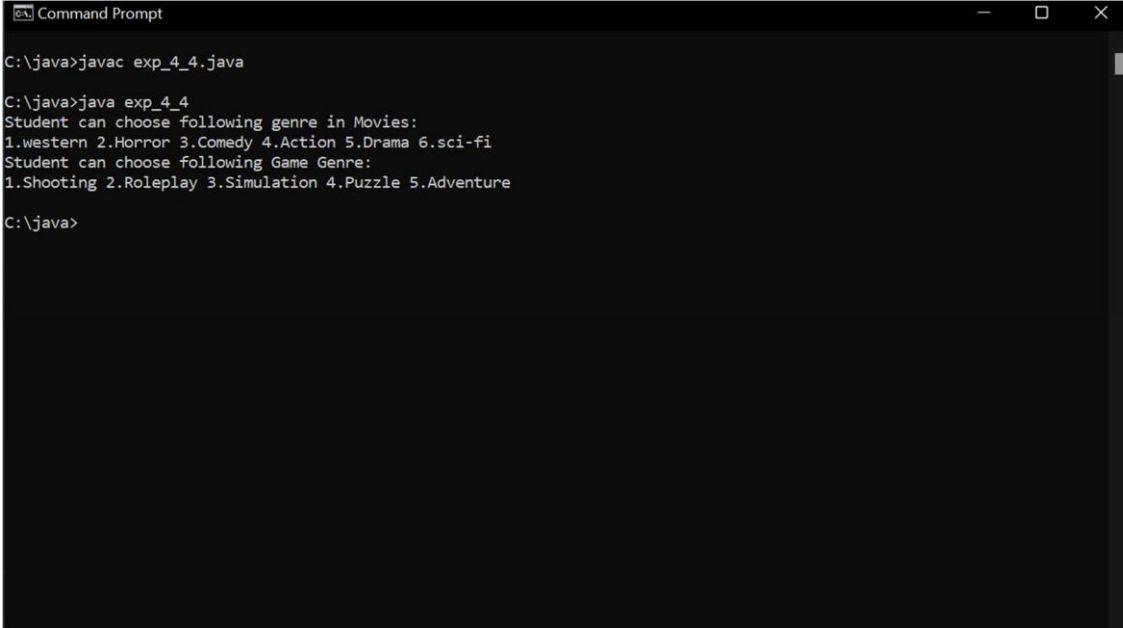
```
interface Genre {
default void show() {
System.out.println("Student can choose following genre in Movies:");
System.out.println("1.western 2.Horror 3.Comedy 4.Action 5.Drama 6.sci-fi");
}
}

interface Game {
default void show() {
System.out.println("Student can choose following Game Genre:");
System.out.println("1.Shooting 2.Roleplay 3.Simulation 4.Puzzle 5.Adventure ");
}
}

class exp_4_4 implements Genre, Game {
public void show(){
Genre.super.show();
Game.super.show();
}

public static void main(String args[]){
exp_4_4 e = new exp_4_4();
e.show();
}
}
```

Output:



```
Command Prompt
C:\java>javac exp_4_4.java
C:\java>java exp_4_4
Student can choose following genre in Movies:
1.western 2.Horror 3.Comedy 4.Action 5.Drama 6.sci-fi
Student can choose following Game Genre:
1.Shooting 2.Roleplay 3.Simulation 4.Puzzle 5.Adventure
C:\java>
```