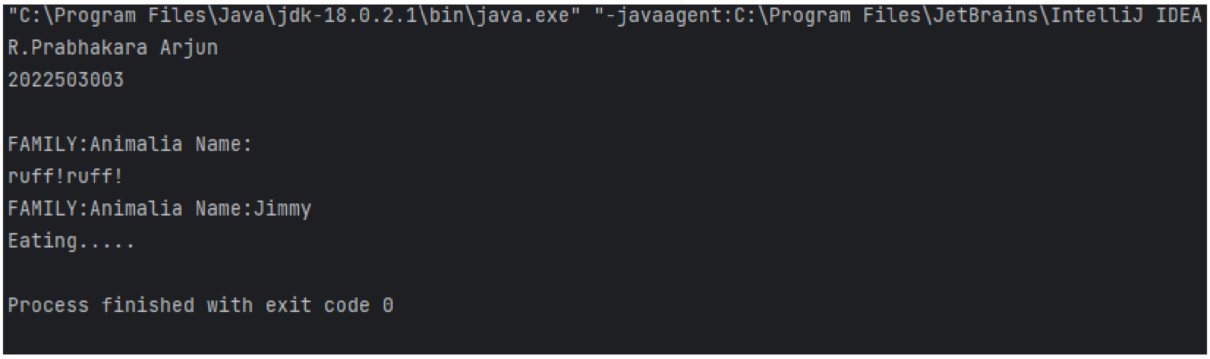
202250300
WEEK-7
ASSIGNMENT-6

Q1.Single Inheritance:

CODE:

```
class animal{
    String family="Animalia";
    String name="";
    public void eat(){
        System.out.println("Eating.....");
    }
    void details(){
        System.out.println("FAMILY:"+family+" Name:"+name);
    }
    public void sound(){}
}
class dog extends animal{

    public void sound(){
        System.out.println("ruff!ruff!");
    }

}
public class single_inheritance_3003 {
    public static void main(String[] args) {
        System.out.println("R.Prabhakara Arjun\n2022503003\n");
        dog a=new dog();
        a.details();
        a.name="Jimmy";
        a.sound();
        a.details();
        a.eat();
    }
}
```



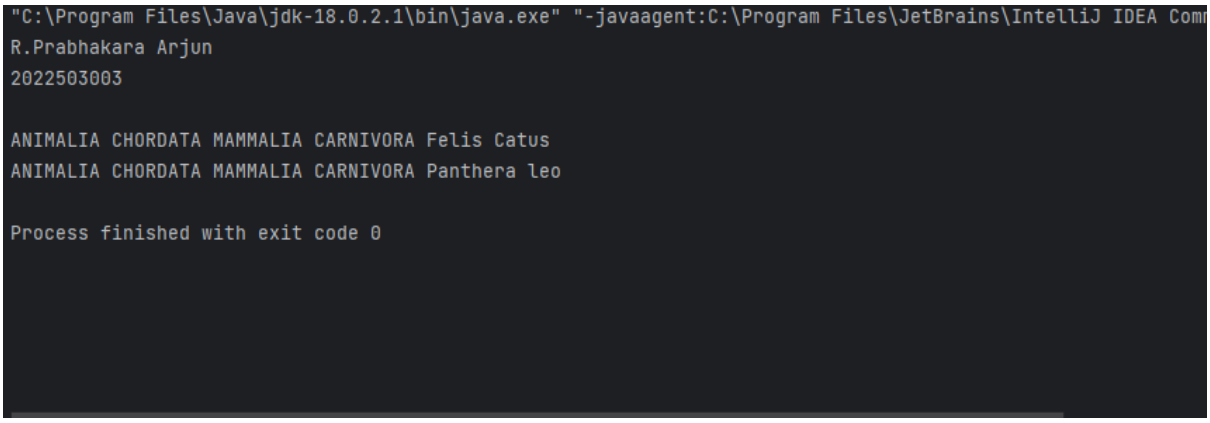
```
"C:\Program Files\Java\jdk-18.0.2.1\bin\java.exe" "-javaagent:C:\Program Files\JetBrains\IntelliJ IDEA
R.Prabhakara Arjun
2022503003

FAMILY:Animalia Name:
ruff!ruff!
FAMILY:Animalia Name:Jimmy
Eating.....

Process finished with exit code 0
```

Q2.Multiple inheritance

CODE:

```
class Kingdom{
   String Kname="ANIMALIA";
}
class Phylum extends Kingdom{
   String Pname="CHORDATA";
}
class Classs extends Phylum{
   String Cname="MAMMALIA";
}
class Order extends Classs{
   String Oname="CARNIVORA";
}
class Family extends Order{
   String Fname="FELIDAE";
}
class Genus extends Family{
   String Gname;
   public void setGname(String n){
      Gname=n;
   }
}
class Species extends Genus{
   String Sname;
   public void setSname(String n){
      Sname=n;
   }
   void Printehh(){
      System.out.println(Kname+" "+Pname+" "+Cname+" "+Oname+" "+Gname+"
"+Sname);
   }
}
class multiple_inheritance_3003{
   public static void main(String[] args){
      System.out.println("R.Prabhakara Arjun\n2022503003\n");
      Species Cat=new Species();
      Cat.setGname("Felis");
      Cat.setSname("Catus");
      Cat.Printehh();

      Species Lion=new Species();
      Lion.setGname("Panthera");
      Lion.setSname("leo");
      Lion.Printehh();
```

```
    }
}
```

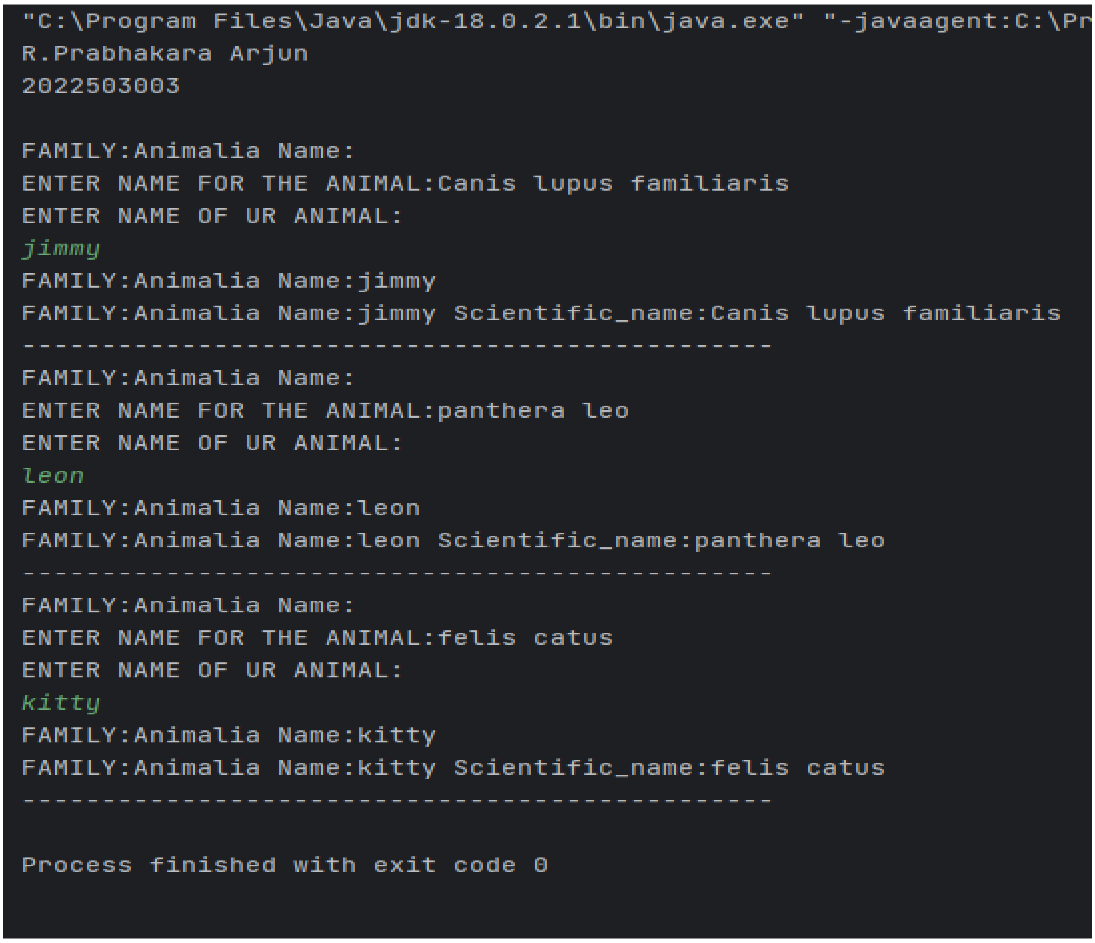


```
"C:\Program Files\Java\jdk-18.0.2.1\bin\java.exe" "-javaagent:C:\Program Files\JetBrains\IntelliJ IDEA Comm
R.Prabhakara Arjun
2022503003

ANIMALIA CHORDATA MAMMALIA CARNIVORA Felis Catus
ANIMALIA CHORDATA MAMMALIA CARNIVORA Panthera leo

Process finished with exit code 0
```

Q3..Hierarchical Inheritance

CODE:

```
import java.util.*;
class animal{
    String scientific_name="";
    String family="Animalia";
    String name="";
    public void eat(){
        System.out.println("Eating.....");
    }
    void details(){
        System.out.println("FAMILY:"+family+" Name:"+name);
    }
    void details(Boolean a){
        if(a){
            System.out.println("FAMILY:"+family+" Name:"+name+"
Scientific_name:"+scientific_name);
        }
    }
    void theMethod(){
        details();
        Scanner input=new Scanner(System.in);
        System.out.println("ENTER NAME FOR THE ANIMAL:"+scientific_name+"\nENTER
NAME OF UR ANIMAL:");
        name=input.nextLine();
        details();
        details(true);
        System.out.println("---------------------------------------------");
    }
    public void sound(){}
}
class cat extends animal{
    cat(){
        scientific_name="felis catus";
    }
    public void sound(){
        System.out.println("meow!meow!!");
    }
}
class lion extends animal{
    lion(){
        scientific_name="panthera leo";
    }
    public void sound(){
        System.out.println("ROARS!!");
    }
}
public class heirarchy_3003 {
    public static void main(String[] args) {
        System.out.println("R.Prabhakara Arjun\n2022503003\n");
        dog a=new dog();
        a.theMethod();
        lion b=new lion();
        b.theMethod();
        cat c=new cat();
        c.theMethod();
    }
}
```

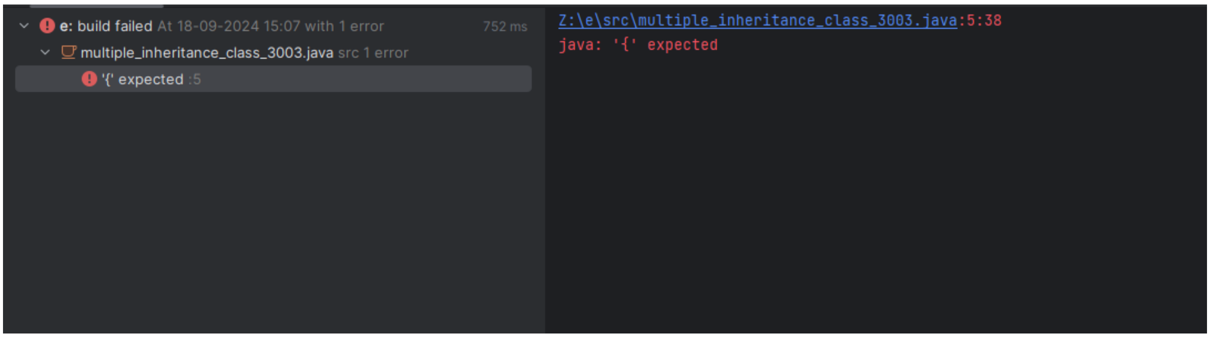


```
"C:\Program Files\Java\jdk-18.0.2.1\bin\java.exe" "-javaagent:C:\Pr
R.Prabhakara Arjun
2022503003

FAMILY:Animalia Name:
ENTER NAME FOR THE ANIMAL:Canis lupus familiaris
ENTER NAME OF UR ANIMAL:
jimmy
FAMILY:Animalia Name:jimmy
FAMILY:Animalia Name:jimmy Scientific_name:Canis lupus familiaris
-----------------------------------------------
FAMILY:Animalia Name:
ENTER NAME FOR THE ANIMAL:panthera leo
ENTER NAME OF UR ANIMAL:
leon
FAMILY:Animalia Name:leon
FAMILY:Animalia Name:leon Scientific_name:panthera leo
-----------------------------------------------
FAMILY:Animalia Name:
ENTER NAME FOR THE ANIMAL:felis catus
ENTER NAME OF UR ANIMAL:
kitty
FAMILY:Animalia Name:kitty
FAMILY:Animalia Name:kitty Scientific_name:felis catus
-----------------------------------------------

Process finished with exit code 0
```

Q4.Multiple Inheritance (class? Vs Interface)

<u>CODE:</u>

```
class plants{
   String scientificName="";
   String modeOfNutrietent="";
}
class organsism_combo  extends animal,plants{
   void display(){
      System.out.println("This won't even run!!");
   }
}
public class multiple_inheritance_class_3003{
   public static void main(String[] args){
      organsism_combo org=new organsism_combo();
      org.display();
      System.out.println("This won't even run!!");
   }
}
```

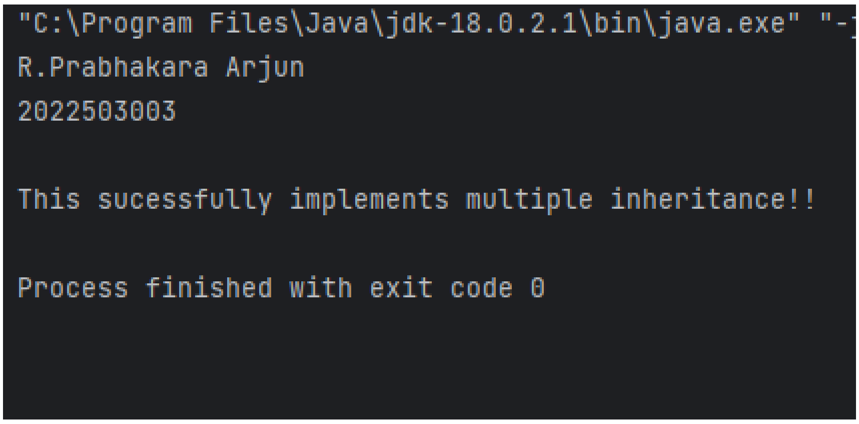


```
e: build failed At 18-09-2024 15:07 with 1 error          752 ms
  multiple_inheritance_class_3003.java src 1 error
    '{' expected :5

Z:\e\src\multiple_inheritance_class_3003.java:5:38
java: '{' expected
```

Multiple Inheritance (class? Vs *<u>Interface)</u>*

```
import java.util.Scanner;

interface animal1{
   String scientific_name="";
   String family="Animalia";
   String name="";
   public void eat();

   void details();
   void details(Boolean a);
   public void sound();
}
interface plant {
   String scientific_name="";
   String family="plantae";
   String mode_of_nutritent="";
}
```

```
class organisms implements plant,animal1 {//if implements it should redfine all the
methods!!!
    public void eat(){
        System.out.println("Eating.....");
    }
    public void details(){}
    public void details(Boolean a){//should be public

    }
    public void sound(){}

}

public class multiple_inheritance_interface_3003 {
    public static void main(String[] args){
        System.out.println("R.Prabhakara Arjun\n2022503003\n");
        System.out.println("This sucessfully implements multiple inheritance!!");
    }
}
```

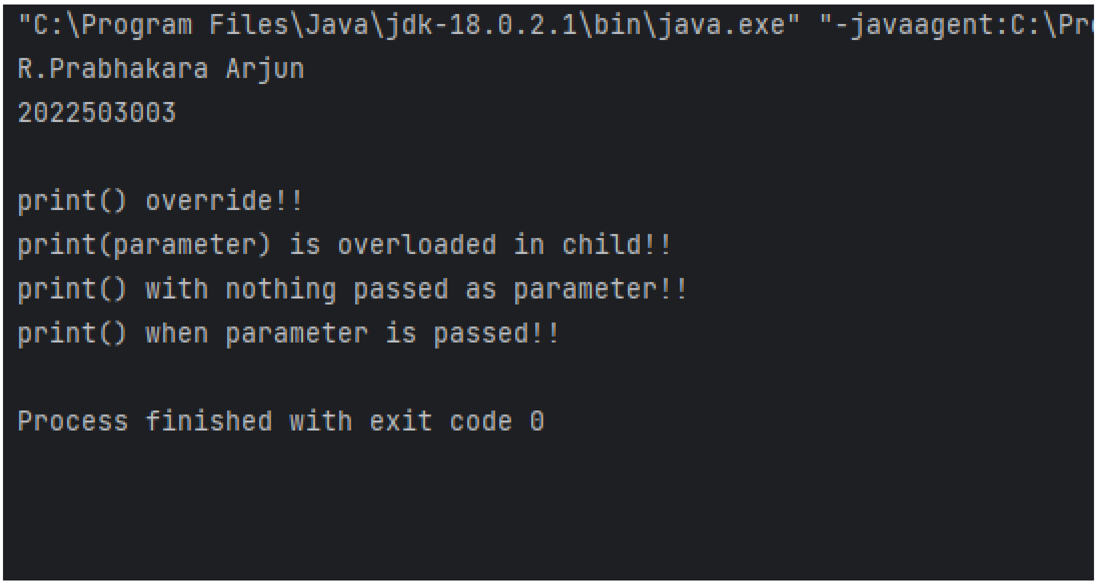


```
"C:\Program Files\Java\jdk-18.0.2.1\bin\java.exe" "-
R.Prabhakara Arjun
2022503003

This sucessfully implements multiple inheritance!!

Process finished with exit code 0
```

Q5.Polymorphism

CODE:

```
class parent {
    void print() {
        System.out.println("print() with nothing passed as parameter!!");
    }
    void print(int a) {
        System.out.println("print() when parameter is passed!!");
    }
}
class child{
    void print(){
        System.out.println("print() override!!");
    }
    void print(int a){
        System.out.println("print(parameter) is overloaded in child!!");
    }
}

public class polymorphism_3003 {
    public  static  void  main(String[] args) {
        System.out.println("R.Prabhakara Arjun\n2022503003\n");
        child a=new child();
        a.print();
        a.print(1);
        parent b=new parent();
        b.print();
        b.print(1);
    }
}
```



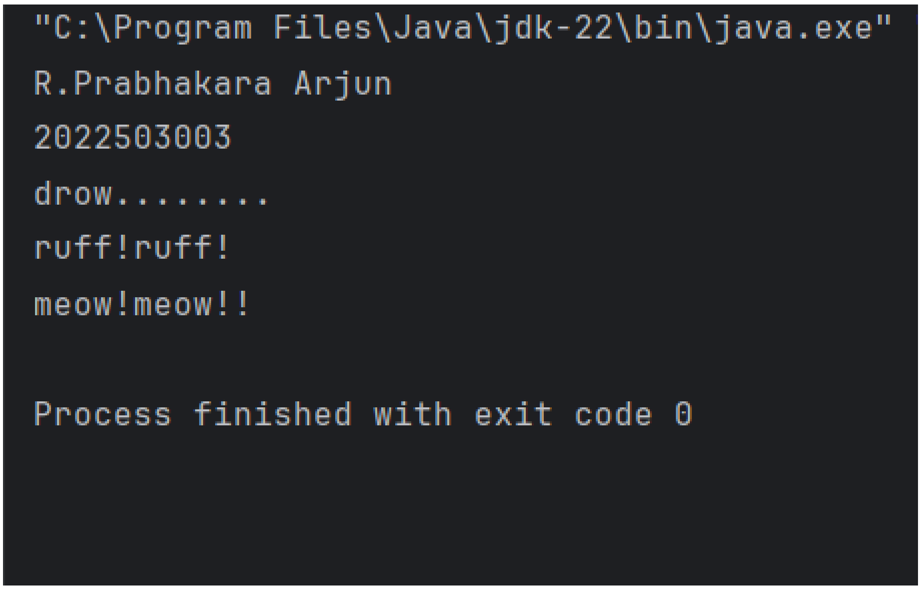
```
"C:\Program Files\Java\jdk-18.0.2.1\bin\java.exe" "-javaagent:C:\Pr
R.Prabhakara Arjun
2022503003

print() override!!
print(parameter) is overloaded in child!!
print() with nothing passed as parameter!!
print() when parameter is passed!!

Process finished with exit code 0
```

Q6.Polymorphism,Constructor in inheritance,package

CODE:

```
package p1;
import p1.p2.*;
class poly_3003{
    public static void main(String[] args){
        System.out.println("R.Prabhakara Arjun\n2022503003");
        animal abc=new animal();
        animal xyz=new dog();
        animal pqr=new cat();
        abc.sound();
        xyz.sound();
        pqr.sound();
    }
```

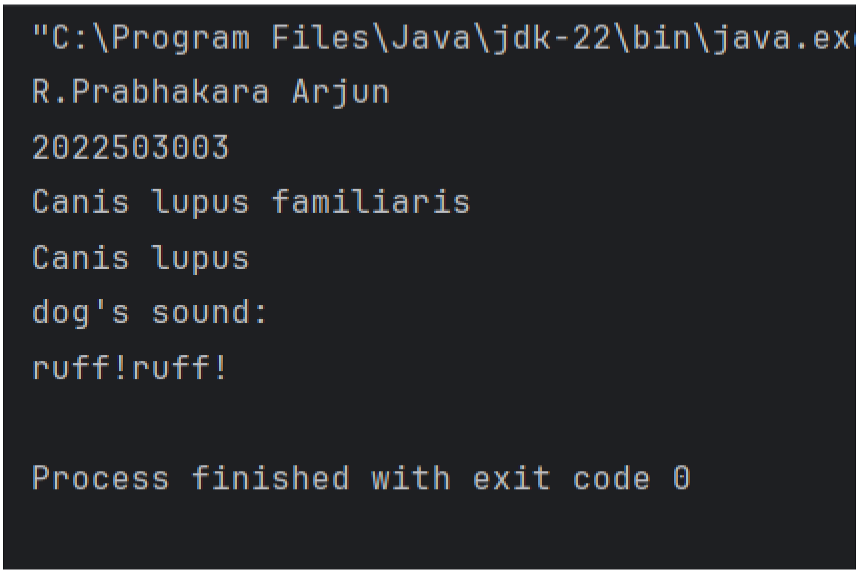
```
}
package p1.p2;
import java.util.*;
public class animal{
    String scientific_name="";
    String family="Animalia";
    String name="";
    public void eat(){
        System.out.println("Eating.....");
    }
    void details(){
        System.out.println("FAMILY:"+family+" Name:"+name);
    }
    public void sound(){
        System.out.println("drow........");
    }

    void details(Boolean a){
        if(a){
            System.out.println("FAMILY:"+family+" Name:"+name+"
Scientific_name:"+scientific_name);
        }
    }
    void theMethod(){
        details();
        Scanner input=new Scanner(System.in);
        System.out.println("ENTER NAME FOR THE ANIMAL:"+scientific_name+"\nENTER
NAME OF UR ANIMAL:");
        name=input.nextLine();
        details();
        details(true);
        System.out.println("---------------------------------------------");
    }
}
package p1.p2;
import p1.p2.*;
public class cat extends animal{
   public cat(){
        scientific_name="felis catus";
    }
    public void sound(){
        System.out.println("meow!meow!!");
    }
}package p1.p2;
import p1.p2.*;
public class dog extends animal{
    publicdog(){
        scientific_name="Canis lupus familiaris";
    }
    public void sound(){
        System.out.println("ruff!ruff!");
    }

}
package p1.p2;
import p1.p2.*;
public class dog extends animal{
    public dog(){
        scientific_name="Canis lupus familiaris";
    }
    public void sound(){
        System.out.println("ruff!ruff!");
    }

}
```



```
"C:\Program Files\Java\jdk-22\bin\java.exe"
R.Prabhakara Arjun
2022503003
drow........
ruff!ruff!
meow!meow!!

Process finished with exit code 0
```

Super usage in inheritance

```
package p1;
import p1.p2.*;
class hybrid_dog extends dog{
    hybrid_dog(){
        super();
        System.out.println(scientific_name);
        scientific_name="Canis lupus ";
        System.out.println(scientific_name);
    }
    public void sound(){
        System.out.println("dog's sound:");
        super.sound();
    }
}
class poly_3003{
    public static void main(String[] args){
        System.out.println("R.Prabhakara Arjun\n2022503003");
        animal abc=new animal();
        animal xyz=new dog();
        animal pqr=new cat();
        /*abc.sound();
        xyz.sound();
        pqr.sound();*/
        hybrid_dog diddy=new hybrid_dog();
        diddy.sound();
    }
}
```

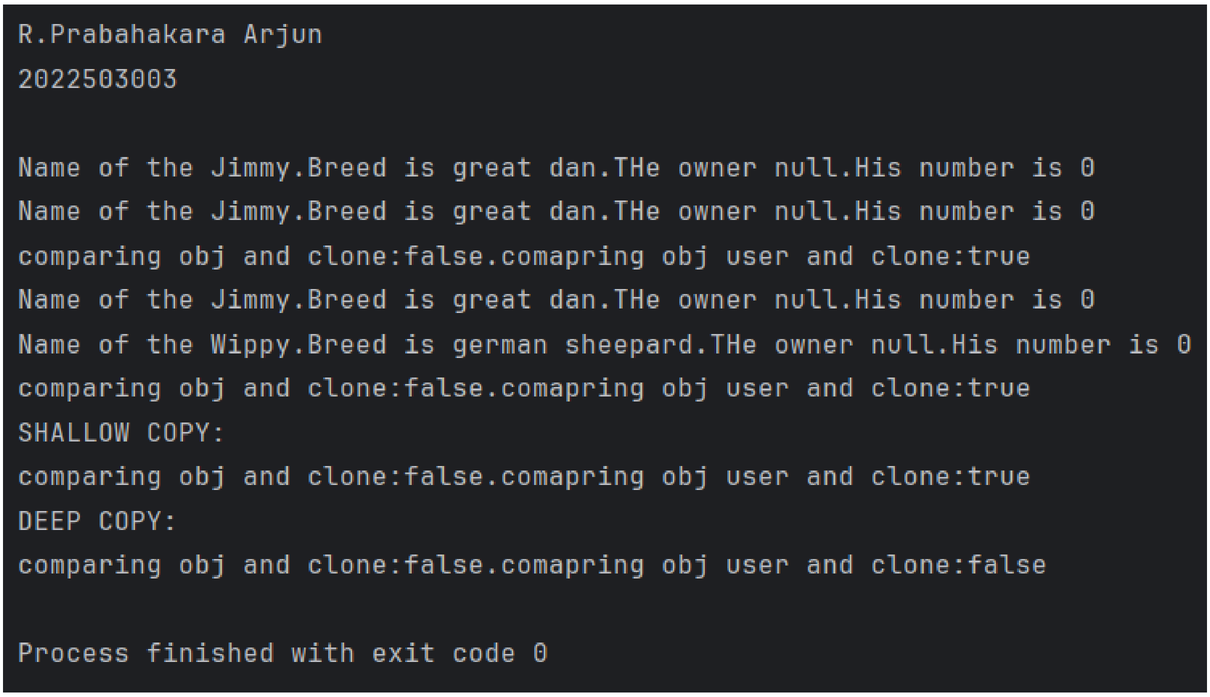


```
"C:\Program Files\Java\jdk-22\bin\java.ex
R.Prabhakara Arjun
2022503003
Canis lupus familiaris
Canis lupus
dog's sound:
ruff!ruff!

Process finished with exit code 0
```

Q7.Shallow Vs Deep Copy

CODE:

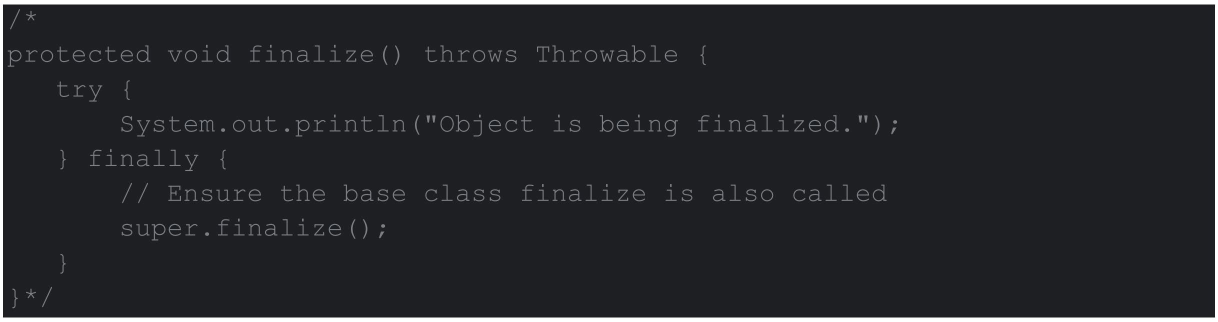
```
import java.lang.*;
class dog implements Cloneable{
    String name="";
    String breed="";
    User user_thing=new User();
    dog(String name, String breed){
        this.name=name;
        this.breed=breed;
    }
    protected Object clone() throws CloneNotSupportedException{
        return super.clone();
    }
    void displayDetails(){
        System.out.println("Name of the "+name+".Breed is "+breed+".THe owner 
"+user_thing.name+".His number is "+user_thing.number);
    }
}
class User implements Cloneable{
    String name;
    int number;
    protected Object clone() throws CloneNotSupportedException{
        return super.clone();
    }
}
public class shallow_deep_copy_3003 {
    public  static  void main(String[] args){
        System.out.println("R.Prabahakara Arjun\n2022503003\n");
        try {
            dog d1 = new dog("Jimmy","great dan" );
            dog d2 = (dog) d1.clone();
            d1.displayDetails();
            d2.displayDetails();
            System.out.println("comparing obj and clone:"+(d1==d2)+".comapring obj user and 
clone:"+(d1.user_thing==d2.user_thing));
            d2.name="Wippy";d2.breed="german sheepard";
            d1.displayDetails();
            d2.displayDetails();
            System.out.println("comparing obj and clone:"+(d1==d2)+".comapring obj user and 
clone:"+(d1.user_thing==d2.user_thing));
            System.out.println("SHALLOW COPY:\ncomparing obj and 
clone:"+(d1==d2)+".comapring obj user and clone:"+(d1.user_thing==d2.user_thing));
            d2.user_thing=(User) d2.user_thing.clone();
            System.out.println("DEEP COPY:\ncomparing obj and clone:"+(d1==d2)+".comapring 
obj user and clone:"+(d1.user_thing==d2.user_thing));
        } catch (CloneNotSupportedException e) {
            e.printStackTrace();
        }



    }
}
```



```
R.Prabahakara Arjun
2022503003

Name of the Jimmy.Breed is great dan.THe owner null.His number is 0
Name of the Jimmy.Breed is great dan.THe owner null.His number is 0
comparing obj and clone:false.comapring obj user and clone:true
Name of the Jimmy.Breed is great dan.THe owner null.His number is 0
Name of the Wippy.Breed is german sheepard.THe owner null.His number is 0
comparing obj and clone:false.comapring obj user and clone:true
SHALLOW COPY:
comparing obj and clone:false.comapring obj user and clone:true
DEEP COPY:
comparing obj and clone:false.comapring obj user and clone:false

Process finished with exit code 0
```

Q8.FINALIZE

<u>CODE:</u>



```
/*
protected void finalize() throws Throwable {
   try {
       System.out.println("Object is being finalized.");
   } finally {
       // Ensure the base class finalize is also called
       super.finalize();
   }
}*/
```

Finalize is deprecated!!!