

1. What is the difference between multilevel and hierarchical inheritance. Write a program to implement multilevel inheritance by applying various access controls to its data members and methods.

Ans -

Multilevel inheritance - A class inherits properties from a class which again has inherits properties.

```
package com.OOP.Assignment6;
class Animal {
    public void display() {
        System.out.println("I like cats");
    }
    public void look() {
    }
    public void eat() {
    }
}
class Cat extends Animal {
    public void look() {
        System.out.println("Cat's are cute");
    }
}
class Food extends Animal {
    public void eat() {
        System.out.println("Cat love fishes");
    }
}
public class Hello {
    public static void main(String[] arguments) {
        Animal a1 = new Animal();
        Animal a2 = new Cat();
        Animal a3 = new Food();
        a1.display();
        a2.look();
        a3.eat();
    }
}
```

Hierarchical inheritance - More than one derived class inherits the properties of the same base class , There are multiple child classes and a single parent class

2 Explain different access modifiers with examples.

```
package com.OOP.Assignment6;
```

```
class Human{

    // public : declaration are visible everywhere
    // access from anywhere
    public void name(){
        System.out.println("I'm Devansh");
    }

    //Default : If we do not explicitly specify any access modifier
    // for classes, methods, variables, etc, then by default the
    // default access modifier is considered.
    void hobby(){
        System.out.println("Piano");
    }

    // private : variables and methods are cannot be
    // accessed outside of the class.
    private void age(){
        System.out.println("18");
    }

    //protected : When methods and data members are declared
    //protected, we can //access them within the same package as
    //well as from subclasses.
    protected void nickname(){
        System.out.println("Dev");
    }
}

public class MainClass {
    public static void main(String[] args) {
        Human human = new Human();
        human.name();
        human.hobby();
        human.age(); // private so can not be accessed
        human.nickname();
    }
}
```

What is the output of following program:

```
class X
{
protected int i = 1221;

void methodOfX()
{
System.out.println(i);
}
}
public class MainClass
{
public static void main(String []args)
{

X x = new X();
System.out.println(x.i);
x.methodOfX();

}
}
```

Output : There is an error in code of (,) in main statement.

After correction (x.i) it will print

1221

1221

3 Correct the code for overloading methods:

```
public class Figure
{
public String draw(String s) //1
{
return " Figure Drawn";
}
public void draw(String s) {} //2
public void draw(double f) {}
}
```

Correction : There is two function of same name and arguments, so compiler will give error
so if we comment out either one of the function 1 or 2 it will resolve the problem

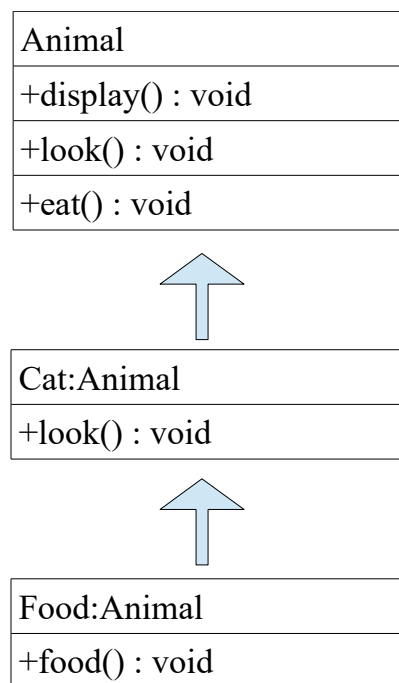
```

public class Figure
{
public String draw(String s)
{
return “ Figure Drawn”;
}
public void draw(double f) {}
}

```

4. Create class diagram for Q1 and Q2 of this assignment.

Q-1)multilevel inheritance



Q-2)Access modifiers

