Practical 05: Encapsulation & Inheritance

Exercise 01:

Recall the following scenario discussed during the class. Develop a code base to represent the scenario. Add a test class to invoke Lecturer and Student class by creating atleast one object from each.

Note: All the common attributes and behavior stored in the super class and only the specific fields and behavior stored in subclasses.

Student
- name
- id
- course
+ setName()/getName()
+ setID()/getID()
+ setCourse()/getCourse()

Lecturer
- name
- id
- programme
+ setName()/getName()
+ setID()/getID()
+ setProg()/getProg()

Person
Identify field and attributes to be stored in this class

```
public class Person
{
   //data
   private int id;
   private String name;

   //setter methods
   public void setId(int id)
   {
      this.id=id;
   }
   public void setName(String n)
   {
      name=n;
   }
   //getter methods
```

```
    public int getId()
    {
        return id;
    }
    public String getName()
    {
        return name;
    }
}

public class Students extends Person
{
    //data
    private String course;

    //setter methods
    public void setCourse(String c)
    {
        course=c;
    }
    //getter methods
    public String getCourse()
    {
        return course;
    }
```

```
}

public class Lecturer extends Person
{
   //data
   private String programme;

   //setter methods
   public void setProgramme(String p)
   {
      programme=p;
   }
   //getter methods
   public String getProgramme()
   {
      return programme;
   }
}



public class Test
{
   public static void main(String[] args)
   {
      Students s1=new Students();
```

```
        s1.setId(28921);
        s1.setName("Fazla Fiyas");
        s1.setCourse("Java");
        System.out.println("Student ID: "+s1.getId());
        System.out.println("Student Name: "+s1.getName());
        System.out.println("Student Course: "+s1.getCourse());

        Lecturer L1=new Lecturer();
        L1.setId(123);
        L1.setName("Mohomed Shafraz");
        L1.setProgramme("Programming with Java");
        System.out.println("Lecturer ID: "+L1.getId());
        System.out.println("Lecturer Name: "+L1.getName());
        System.out.println("Lecturer Programme: "+L1.getProgramme());
    }
}
```

Exercise 02

Develop the following class execute and discuss the answer: Please note that each public class stored in separate files. Write down the answer.

```
public class Animal{}

public class Mammal extends Animal{}

public class Reptile extends Animal{}


public class Dog extends Mammal{
   public static void main(String args[]){
```

```
    Animal a = new Animal();
    Mammal m = new Mammal();
    Dog d = new Dog();
    System.out.println(m instanceof Animal);
    System.out.println(d instanceof Mammal);
    System.out.println(d instanceof Animal);
  }
}
```

Output:

```
true
true
true
```