Exercise 01:

Create a class called “Employee” which has 3 private variables (empID, empName, empDesignation) and create getters and setters for each field. Please note that this has no main method since this is just a blueprint not a application. Now crate a test class to invoke the Employee class. Create two objects for Mr.Bogdan and Ms.Bird and set required values using setters and print them back on the console using getters.

**package com.mycompany.practical4;**

**public class Employee {**

**private int empid;**

**private String empname;**

**private String empdesignation;**

**//getter method**

**public int getempid(){**

**return empid;**

**}**

**public String getempname(){**

**return empname;**

**}**

**public String getempdesignation(){**

**return empdesignation;**

**}**

**//setter method**

**public void setempid(int empid){**

**this.empid=empid;**

**}**

**public void setempname(String empname){**

**this.empname=empname;**

**}**

**public void setempdesignation(String empdesignation){**

**this.empdesignation=empdesignation;**

**}**

**}**

**.....................................................................**

**package com.mycompany.practical4;**

**public class Practical4 {**

**public static void main(String[] args) {**

**Employee m1=new Employee();**

**Employee m2=new Employee();**

**m1.setempid(123);**

**m1.setempname("'Mr.Bogdan");**

**m1.setempdesignation("Netwotking Enginner");**

**m2.setempid(124);**

**m2.setempname("Mr.Brid");**

**m2.setempdesignation("Computer scientist");**

**System.out.println("Employee Id"+m1.getempid());**

**System.out.println("Employee Name"+m1.getempname());**

**System.out.println("Employee Dsignation"+m1.getempdesignation());**

**System.out.println("Employee Id"+m2.getempid());**

**System.out.println("Employee Name"+m2.getempname());**

**System.out.println("Employee Dsignation"+m1.getempdesignation());**

**}}**

**OUTPUT====>**

**Employee Id123**

**Employee Name'Mr.Bogdan**

**Employee DsignationNetwotking Enginner**

**Employee Id124**

**Employee NameMr.Brid**

**Employee DsignationNetwotking Enginner**

Exercise 02:

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

class SuperB {

int x;

void setIt (int n) { x=n;}

void increase () { x=x+1;}

void triple () {x=x\*3;};

int returnIt () {return x;}

}

class SubC extends SuperB {

void triple () {x=x+3;} // override existing method

void quadruple () {x=x\*4;} // new method

}

public class TestInheritance {

public static void main(String[] args) {

SuperB b = new SuperB();

b.setIt(2);

b.increase();

b.triple();

System.out.println( b.returnIt() );

SubC c = new SubC();

c.setIt(2);

c.increase();

c.triple();

System.out.println( c.returnIt() ); }

}

**OUT PUT====>9**

**6**

Exercise 03:

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 |

**package com.mycompany.practical5;**

**public class person {**

**private String name;**

**private int id;**

**// getter method**

**public String getname(){**

**return name;**

**}**

**public int getid(){**

**return id;**

**}**

**//setter method**

**public void setname(String name){**

**this.name=name;**

**}**

**public void setid(int id){**

**this.id=id;**

**}**

**}**

**..............................................................**

**package com.mycompany.practical5;**

**public class student extends person{**

**private String course;**

**//getter and setter method**

**public String getcourse(){**

**return course;**

**}**

**public void setcourse(String course){**

**this.course=course;**

**}**

**}**

**..............................................................**

**package com.mycompany.practical5;**

**public class lecture extends person {**

**private String programme;**

**//getter and setter method**

**public String getprogramm(){**

**return programme;**

**}**

**public void setprogramme(String programme){**

**this.programme=programme;**

**}**

**}**

**.......................................................**

**package com.mycompany.practical5;**

**public class Practical5 {**

**public static void main(String[] args) {**

**student s1=new student();**

**s1.setname=("vimukthi bowattage");**

**s1.setid=(111);**

**s1.setcourse("compuer science");**

**lecture l1=new lecture();**

**l1.setname("Ashani gamage");**

**l1.setid=(1111);**

**l1.setprogramme("Data science");**

**System.out.println("Student Name:"+s1.getname());**

**System.out.println("Student Id:"+s1.getid());**

**System.out.println("Student course:"+s1.getcourse());**

**System.out.println("Lecture Name:"+l1.getname());**

**System.out.println("Lecture Id:"+l1.getid());**

**System.out.println("Lecture programme:"+l1.getprogramme());**

**}**

**}**

**OUTPUT======>Student Name:Vimukthi bowattage**

**Student Id:111**

**Student course:Comuter science**

**Lecture Name:Ashani Gamage**

**Lecture Id:1111**

**Lecture proramme:Data science**

Exercise 04

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);**

**}**

**}**

**package com.mycompany.main;**

**public class Animal {**

**private boolean vegetarian;**

**private String eats;**

**private int noofleg;**

**public Animal(boolean veg,String food,int leg){**

**this.vegetarian=veg;**

**this.eats=food;**

**this.noofleg=noofleg;**

**}**

**public boolean isvegetarian(){**

**return vegetarian;**

**}**

**public void setvegetarian(boolean vegetarian){**

**this.vegetarian=vegetarian;**

**}**

**public String geteats(){**

**return eats;**

**}**

**public void seteats(String eats){**

**this.eats=eats;**

**}**

**public int getnoofleg(){**

**return noofleg;**

**}**

**public void setnoofleg(int noofleg){**

**this.noofleg=noofleg;**

**}**

**}**

**............................................................**

**package com.mycompany.main;**

**public class Mammal extends Animal {**

**public Mammal(boolean veg, String food, int leg) {**

**super(veg, food, leg);**

**}**

**}**

**................................................................**

**package com.mycompany.main;**

**public class Reptile extends Animal {**

**public Reptile(boolean veg, String food, int leg) {**

**super(veg, food, leg);**

**}}**

**.................................................................**

**package com.mycompany.main;**

**public class Dog extends Mammal {**

**private String name;**

**public Dog(boolean veg, String food, int leg,String name) {**

**super(veg, food, leg);**

**this.name=name;**

**}**

**public String getname(){**

**return name;**

**}**

**public void setname(String name){**

**this.name=name;**

**}}**

**................................................................**

**package com.mycompany.main;**

**public class Main {**

**public static void main(String[] args) {**

**Dog c =new Dog(false,"milk",4,"piky");**

**System.out.println("Dog is vegetarian?"+c.isvegetarian());**

**System.out.println("DOg eat:"+c.geteats());**

**System.out.println("Dod number of leg:"+c.getnoofleg());**

**System.out.println("Dog name:"+c.getname());**

**}}**

**...................................................................**

**Animal is the superclass of Mammal class.**

**Animal is the superclass of Reptile class.**

**Mammal and Reptile are subclasses of Animal class.**

**Dog is the subclass of both Mammal and Animal classes.**

**Mammal IS-A Animal**

**Reptile IS-A Animal**

**Dog IS-A Mammal**

**Hence : Dog IS-A Animal as well**