CSE18R272-LAB MANUAL

KALASALINGAM ACADEMY OF RESEARCH AND EDUCATION

COMPUTER SCIENCE AND EDUCATION

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Section: A5

Course name: java programming

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1.) Develop a java application with Employee class with Emp_name, Emp_id, Address, Mail_id, Mobile_no as members. Inherit the classes, Programmer, Assistant Professor, Associate Professor and Professor from employee class. Add Basic Pay (BP) as the member of all the inherited classes with 97% of BP as DA, 10 % of BP as HRA, 12% of BP as PF, 0.1% of BP for staff club fund. Generate pay slips for the employees with their gross and net salary

Source Code:

```
class Employee{
   String Emp_name, Emp_id,Address, Mail_id;
   long Mob_no;
   Employee(String name,String id,String addr,String mail,long phn){
      Emp_name=name;
      Emp_id=id;
      Address=addr;
      Mail_id=mail;
      Mob_no=phn;
   }

}
class Assistant_professor extends Employee{
   int bp;
   Assistant_professor(String name,String id,String addr,String mail,long phn,int pay){
      super(name,id,addr,mail,phn);
      bp = pay;
   }
   void payslip(){
      float da = bp*(0.97f);
      float hra = bp*(0.10f);
      float pf = bp*(0.12f);
      float sc = bp*(0.001f);
      float net_salary = (da + hra)- (pf+sc);
      float gross_salary = (da+hra);
```

```
        System.out.println("the gross salary is"+ gross_salary);
        System.out.println("the net salary is"+ net_salary);
    }
}
class Associate_professor extends Employee{
    int bp;
    Associate_professor(String name,String id,String addr,String mail,long phn,int pay){
        super(name,id,addr,mail,phn);
        bp = pay;
    }
    void payslip(){
        float da = bp*(0.97f);
        float hra = bp*(0.10f);
        float pf = bp*(0.12f);
        float sc = bp*(0.001f);
        float net_salary = (da + hra)- (pf+sc);
        float gross_salary = (da+hra);
        System.out.println("the gross salary is"+ gross_salary);
        System.out.println("the net salary is"+ net_salary);
    }
}
class Professor extends Employee{
    int bp;
    Professor(String name,String id,String addr,String mail,int phn,int pay){
        super(name,id,addr,mail,phn);
        bp = pay;
    }
    void payslip(){
        float da = bp*(0.97f);
        float hra = bp*(0.10f);
        float pf = bp*(0.12f);
```

```
        float sc = bp*(0.001f);
        float net_salary = (da + hra)- (pf+sc);
        float gross_salary = (da+hra);
        System.out.println("the gross salary is"+ gross_salary);
        System.out.println("the net salary is"+ net_salary);
    }
}
public class Main
{
        public static void main(String[] args) {

                Assistant_professor ap = new
Assistant_professor("prakash","4140","chirala","kgnanaprakashak47@gmail.com",86398,54689);
                Associate_professor ap1 = new
Associate_professor("Raghu","4156","rajol","raghuram@gmail.com",85481,58964);
                Professor p = new
Professor("seetha","4142","perala","seethasunny@gmail.com",56871,68712);
                ap.payslip();
                ap1.payslip();
                p.payslip();
        }
}
```

2.) Create a Circle class with following members. A data member that stores the radius of a circle A constructor function with an argument that initializes the radius A function that computes and returns are of a circle Create two derived classes Sector and Segment that inherit the Circle class. Both classes inherit radius and the function that returns the circle's area from Circle. In addition to the members inherited from Circle, Sector and Segment have some specific members as follows:

Sector

A data member that stores the control angle of a sector(in radians) A constructor function with arguments that initialize radius and angle A function that computes and returns the area of a sector Segment A data member that stores the angle of a segment in a circle A constructor function with arguments that initialize radius and angle A function that computes and returns the area of a segment Create the main () function to instantiate an object of each class and then call appropriate member functions to compute and return the area of a circle, sector and segment.

Note :Area_of_circle =π r 2

Area_of_Sector=r 2 θ/2

Area_of_segment= ½ * r 2 (θ – sin θ)

Source Code:

```
import java.lang.Math;
class Circle{
   float radius;
   public Circle(float r){
      radius = r;
   }
   float cirArea(){
      return (3.14f*radius*radius);
   }
}
class Sector extends Circle{
   float angle;
   public Sector(float r,float ang){
      super(r);
      angle = ang;
   }
   float secArea(){
      return (0.5f*(radius*radius)*angle);
   }
}
class Segment extends Circle{
   float angle;
   public Segment(float r,float ang){
      super(r);
      angle = ang;
   }
```

```
   float segArea(){
      return ((float)(0.5f*(radius*radius)*(angle-Math.sin(angle))));
   }
}
```

```
public class Test
{
        public static void main(String[] args) {
                Circle c = new Circle(6);
                float cir = c.cirArea();
                System.out.println("the circle area is "+ cir);
                Sector s = new Sector(6,48);
                float sec = s.secArea();
                System.out.println("the sector area is "+ sec);
                Segment sg = new Segment(15,48);
                float seg = sg.segArea();
                System.out.println("the segment area is "+ seg);


        }
}
```

3.) Create three classes Student, Test and Result classes. The student class contains student relevant information. Test class contains marks for five subjects. The result class contains Total and average of the marks obtained in five subjects. Inherit the properties of Student and Test class details in Result class through multilevel inheritances.

Source Code:

```
class Figure{
   double dim1,dim2;
```

```
   Figure(double a,double b){
      dim1 = a;
      dim2 = b;
   }
   double area(){
      System.out.println("figure class");
      return 0;
   }
}
class Rectangle extends Figure{
   Rectangle(double a,double b){
      super(a,b);
   }
   double area(){
      return dim1*dim2;
   }
}
class Triangle extends Figure{
   Triangle(double a,double b){
      super(a,b);
   }
   double area(){
      return (0.5*dim1*dim2);
   }
}
public class Area
{
        public static void main(String[] args) {
           Figure f = new Figure(12,10);
           Rectangle r = new Rectangle(7,11);
           Triangle t= new Triangle(8,10);
```

```
        Figure superref;
        superref = r;
        System.out.println("area is "+ superref.area());
        superref = t;
        System.out.println("area is "+ superref.area());
        superref = f;
        System.out.println("area is "+ superref.area());
    }
}
```