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 asDA, 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.

**Program:**

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("venkat","4057","darapuneni","venkatdarapuneni@gmail.com",86887,22500);

Associate\_professor ap1 = new Associate\_professor("venkatesh","4093","gorantla","venkateshgorantla@gmail.com",83921,33520);

Professor p = new Professor("amarthiya","4086","geethan","umaamarthiya@gmail.com",82297,25913);

ap.payslip();

ap1.payslip();

p.payslip();

}

}

**Output:**

**the gross salary is24075.0**

**the net salary is21352.5**

**the gross salary is35866.4**

**the net salary is31810.479**

**the gross salary is27726.912**

**the net salary is24591.44**

**Process finished.**

1. 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&#39;s area from Circle. In addition to the members inherited from Circle, Sector and Segment

have some specific members as follows:

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 members.

Note :Area\_of\_circle =π r 2

Area\_of\_Sector=r 2 θ/2

Area\_of\_segment= ½ \* r 2 ( θ – sin θ)

**Program:**

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 Main

{

public static void main(String[] args) {

Circle c = new Circle(10);

float cir = c.cirArea();

System.out.println("the circle area is "+ cir);

Sector s = new Sector(10,50);

float sec = s.secArea();

System.out.println("the sector area is "+ sec);

Segment sg = new Segment(14,35);

float seg = sg.segArea();

System.out.println("the segment area is "+ seg);

}

}

**Output:**

**the circle area is 314.0**

**the sector area is 2500.0**

**the segment area is 3471.962**

**Process finished.**

3.A program for Rectangle using abstract class

**Program:**

abstract class Figure{

double dim1,dim2;

Figure(double a,double b){

dim1 = a;

dim2 = b;

}

abstract double area();

}

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 Main

{

public static void main(String[] args) {

Rectangle r = new Rectangle(5,9);

Triangle t= new Triangle(6,8);

Figure superref;

superref = r;

System.out.println("area is "+ superref.area());

superref = t;

System.out.println("area is "+ superref.area());

}

}

**Output:**

**area is 77.0**

**area is 16.0**