```
//M gayathri
//1
import java.util.Scanner;
import java.lang.*;
class Person
{
 private String name,address;
 private String gender;
 private int aadhaar;
 public Person(int aadhaar,String name,String address,String gender)
 {
  this.name=name;
  this.address=address;
  this.aadhaar=aadhaar;
  this.gender=gender;
 }
 public String getName()
 {
  return name;
 }
 public String getAddress()
 {
  return address;
 }
 public void setAddress(String address)
 {
  this.address=address;
 }
 public String getGender()
 {
  return gender;
 }
 public int getAadhaar()
 {
  return aadhaar;
 }
 void display()
 {
  System.out.println("to print the details");
 }
}
class Student extends Person
{
 private String program;
 private int year;
 private float total,gpa;
 public Student(int aadhaar,String name,String address,String
gender,String program,int year,float total)
 {
  super(aadhaar,name,address,gender);
  this.program=program;
  this.year=year;
  this.total=total;
 }
 public String getProgram()
 {
  return program;
 }
 public int getYear()
 {
```

```
  return year;
 }
 void setYear(int year)
 {
  this.year=year;
 }
 public float getTotal()
 {
  return total;
 }
 void setTotal(int total)
 {
  this.total=total;
 }
 public float calGPA()
 {
  gpa=total/10F;
  return gpa;
 }
 void display()
 {
  System.out.println("\n");
  System.out.println("AADHAAR NO:"+super.getAadhaar());
  System.out.println("NAME:"+super.getName());
  System.out.println("ADDRESS:"+super.getAddress());
  System.out.println("GENDER:"+super.getGender());
  System.out.println("PROGRAM:"+program);
  System.out.println("YEAR:"+year);
  calGPA();
  System.out.println("TOTAL:"+gpa);

 }
}
class Faculty extends Person
{
 float gs,ded,sal;
 private String desig,dept;
 private float basic;
 Faculty(int aadhaar,String name,String address,String gender,String
desig,String dept,float basic)
 {
  super(aadhaar,name,address,gender);
  this.desig=desig;
  this.dept=dept;
  this.basic=basic;
 }

 public String getDesig()
 {
  return desig;
 }
 public String getDept()
 {
  return dept;
 }
 public void setDesig(String desig)
 {
  this.desig=desig;
 }
 public void setBasic(float basic)
```

```
 {
  this.basic=basic;
 }
 public float getBasic()
 {
  return basic;
 }
 public float calSalary()
 {
  gs=1.7F*basic;
  ded=0.165F*basic;
  sal=gs-ded;
  return sal;
 }
 void display()
 {
  System.out.println("\n");
  System.out.println("AADHAAR NO:"+super.getAadhaar());
  System.out.println("NAME:"+super.getName());
  System.out.println("ADDRESS:"+super.getAddress());
  System.out.println("GENDER:"+super.getGender());
  System.out.println("DESIGNATION:"+desig);
  System.out.println("DESIGNATION:"+dept);
  calSalary();
  System.out.println("NET SALARY:"+sal);
 }

}
class Main1
{
 public static void main(String arg[])
{
 String name,address,gender;
 int aadhaar,ch,year;
 String desig,dept,program;
 float basic,total;
 Scanner in=new Scanner(System.in);
 System.out.println("enter no of person");
 int n=in.nextInt();
 Person []p=new Person[n];
 int t=n,i=0;
 while(t!=0)
 {
  System.out.println("enter choice 1.student 2.faculty");
  ch=in.nextInt();
  if(ch==1)
  {
  System.out.println("enter
aadhaar,name,address,gender,program,year,total");
  aadhaar=in.nextInt();
  String temp=in.nextLine();
  name=in.nextLine();
  address=in.nextLine();
  gender=in.nextLine();
  program=in.nextLine();
  year=in.nextInt();
  total=in.nextInt();
  p[i]=new Student(aadhaar,name,address,gender,program,year,total);
  }
  else
```

```
  {
  System.out.println("enter aadhaar,name, address,
gender,desig,dept,basic");
  aadhaar=in.nextInt();
  String temp=in.nextLine();
  name=in.nextLine();
  address=in.nextLine();
  gender=in.nextLine();
  desig=in.nextLine();
  dept=in.nextLine();
  basic=in.nextFloat();
  p[i]=new Faculty(aadhaar,name,address,gender,desig,dept,basic);
  }
  t--;
  i++;
 }
 for(int j=0;j<n;j++)
 {
  p[j].display();

 }
}
}

/*SAMPLE INPUT/OUTPUT
cs1050@u13:~/Desktop$ java Main1
enter no of person
2
enter choice 1.student 2.faculty
1
enter aadhaar,name,address,gender,program,year,total
456
gayu
mogappair
female
cse
2019
99
enter choice 1.student 2.faculty
2
enter aadhaar,name, address, gender,desig,dept,basic
567
viraj
mamallapuram
male
professor
chemical
40000


AADHAAR NO:456
NAME:gayu
ADDRESS:mogappair
GENDER:female
PROGRAM:cse
YEAR:2019
TOTAL:9.9


AADHAAR NO:567
```

```
NAME:viraj
ADDRESS:mamallapuram
GENDER:male
DESIGNATION:professor
DESIGNATION:chemical
NET SALARY:61400.0


*/

//2


import java.util.Scanner;
abstract class Shape
{
 protected String color="red";
 public Shape()
 {
  color="red";
 }
 public Shape(String color)
 {
  this.color=color;
 }
 public String getColor()
 {
  return color;
 }
 public void setColor(String color)
 {
  this.color=color;
 }
 abstract public float getArea();
 abstract public float getPerimeter();
 abstract public void display();

}
class Circle extends Shape
{
 protected float radius=0.1F;
 public Circle()
 {
  radius=0.1F;
 }
 public Circle(float radius)
 {
  this.radius=radius;
 }
 public Circle(float radius,String color)
 {
  super(color);
  this.radius=radius;
 }
 public float getRadius()
 {
  return radius;
 }
 public void setRadius(float radius)
 {
```

```
  this.radius=radius;
 }
 public float getArea()
 {
  float area=3.14F*radius*radius;
  return area;
 }
 public float getPerimeter()
 {
  float perimeter=2F*3.14F*radius;
  return perimeter;
 }
 public void display()
 {
  System.out.println("the shape is circle");
  System.out.println("Color:"+super.getColor());
  System.out.println("Perimeter:"+getPerimeter());
  System.out.println("Area:"+getArea());
 }


}
class Rectangle extends Shape
{
 protected float width=0.1F,length=0.1F;
 public Rectangle()
 {
  width=0.1F;
  length=0.1F;
 }
 public Rectangle(float width,float length)
 {
  this.width=width;
  this.length=length;
 }
 public Rectangle(float width,float length,String color)
 {
  super(color);
  this.width=width;
  this.length=length;
 }
 public float getWidth()
 {
  return width;
 }
 public void setWidth(float Width)
 {
  this.width=width;
 }
 public float getLength()
 {
  return length;
 }
 public void setLength(float length)
 {
  this.length=length;
 }
 public float getArea()
 {
  float area=length*width;
```

```
  return area;
 }
 public float getPerimeter()
 {
  float perimeter=2F*(length+width);
  return perimeter;
 }
 public void display()
 {
  if(length!=width)
   System.out.println("the shape is rectangle");
  else
   System.out.println("the shape is square");
  System.out.println("Color:"+super.getColor());
  System.out.println("Perimeter:"+getPerimeter());
  System.out.println("Area:"+getArea());
 }

}
class Square extends Rectangle
{
 public Square()
 {
  super(0.1F,0.1F);
  super.display();
 }
 public Square(float side)
 {
  super(side,side);
  super.display();
 }
 public Square(float side,String color)
 {
  super(side,side,color);
  super.display();
 }
 public float getSide()
 {
  return super.getLength();
 }
 public void setSide(float side)
 {
  super.length=side;
  super.width=side;
 }
}
class Testshape
{
 public static void main(String arg[])
 {
  int n,ch,ar;
  float r,w;
  String temp,c;
  System.out.println("enter no of shapes");
  Scanner in=new Scanner(System.in);
  n=in.nextInt();
  Shape []s=new Shape[n];
  for(int i=0;i<n;i++)
  {
   System.out.println("enter choice 1.Circle 2.Rectangle 3.square");
```

```
ch=in.nextInt();
switch(ch)
{
 case 1:System.out.println("enter no of arguments 0,1,2");
   ar=in.nextInt();
   switch(ar)
   {
    case 0:s[i]=new Circle();
      s[i].display();
      break;
    case 1:System.out.println("enter radius");
      r=in.nextFloat();
      s[i]=new Circle(r);
      s[i].display();
      break;
    case 2:System.out.println("enter radius and color");
      r=in.nextFloat();
      temp=in.nextLine();
      c=in.nextLine();
      s[i]=new Circle(r,c);
      s[i].display();
      break;
   }
   break;

 case 2:System.out.println("enter no of arguments 0,2,3");
   ar=in.nextInt();
   switch(ar)
   {
    case 0:s[i]=new Rectangle();
      s[i].display();
      break;
    case 2:System.out.println("enter length and width");
      r=in.nextFloat();
      w=in.nextFloat();
      s[i]=new Rectangle(w,r);
      s[i].display();
      break;
    case 3:System.out.println("enter length width and color");
      r=in.nextFloat();
      w=in.nextFloat();
      temp=in.nextLine();
      c=in.nextLine();
      s[i]=new Rectangle(w,r,c);
      s[i].display();
      break;
   }
   break;
 case 3:System.out.println("enter no of arguments 0,1,2");
   ar=in.nextInt();
   switch(ar)
   {
    case 0:s[i]=new Square();
      break;
    case 1:System.out.println("enter side");
      r=in.nextFloat();
      s[i]=new Square(r);
      break;
    case 2:System.out.println("enter side and color");
      r=in.nextFloat();
```

```
         temp=in.nextLine();
         c=in.nextLine();
         s[i]=new Square(r,c);
         break;
      }
      break;
   }

  }
 }
}

/*SAMPLE INPUT/OUTPUT
cs1050@u13:~/Desktop$ java Testshape
enter no of shapes
4
enter choice 1.Circle 2.Rectangle 3.square
1
enter no of arguments 0,1,2
1
enter radius
4
the shape is circle
Color:red
Perimeter:25.12
Area:50.24
enter choice 1.Circle 2.Rectangle 3.square
2
enter no of arguments 0,2,3
3
enter length width and color
4
5
blue
the shape is rectangle
Color:blue
Perimeter:18.0
Area:20.0
enter choice 1.Circle 2.Rectangle 3.square
3
enter no of arguments 0,1,2
2
enter side and color
4
green
the shape is square
Color:green
Perimeter:16.0
Area:16.0
enter choice 1.Circle 2.Rectangle 3.square
2
enter no of arguments 0,2,3
0
the shape is square
Color:red
Perimeter:0.4
Area:0.010000001
*/
```