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CSE A

185001028

Inheritance Ex3B\_Q1 \*/

import java.util.\*;

class Person{

private int aadhar;

private String name;

private String address;

private char gender;

public Person(int aadhar,String name,String address,char gender){

this.aadhar = aadhar;

this.name = name;

this.address = address;

this.gender=gender;

}

public String getName(){

return name;

}

public String getAddress(){

return address;

}

public void setAddress(String add){

address = add;

}

public char getGender(){

return gender;

}

}

class Student extends Person{

private String program;

private int year;

private float totalmark;

public Student(int aadhar,String name,String address,char gender,String program,int year,float total){

super(aadhar,name,address,gender);

this.program = program;

this.year = year;

totalmark = total;

}

public String getProgram(){

return program;

}

public int getYear(){

return year;

}

public void setYear(int year){

this.year = year;

}

public float getTotal(){

return totalmark;

}

public void setTotal(float total){

totalmark = total;

}

public float calGPA(){

return (getTotal() / 50);

}

}

class Faculty extends Person{

private String designation;

private String department;

private float basicpay;

public Faculty(int aadhar,String name,String address,char gender,String designation,String dept,float pay){

super(aadhar,name,address,gender);

this.designation = designation;

department = dept;

basicpay = pay;

}

public String getDesig(){

return designation;

}

public void setDesig(String desig){

designation = desig;

}

public String getDept(){

return department;

}

public void setBasic(float basic){

basicpay = basic;

}

public float getBasic(){

return basicpay;

}

public float calSalary(){

float gross\_sal = basicpay + (0.6f \* basicpay) + (0.1f \* basicpay);

float ded = (0.085f \* basicpay) + (0.08f \* basicpay);

float net\_sal = gross\_sal - ded;

return net\_sal;

}

}

class TestInheritance

{

public static void main(String[]ar)

{

Scanner sc=new Scanner(System.in);

int adhno,ch,year,ch1,ch2;

float tot,basic;

String name,addr,pro,des,dept;

char gen;

Student s=null;

Faculty f=null;

System.out.println("Enter data for\n1.Student\n2.Faculty");

System.out.print("Enter your choice: ");

ch=sc.nextInt();

System.out.print("Enter Aadhar Number: ");

adhno=sc.nextInt();

sc.nextLine();

System.out.print("Enter the Name: ");

name=sc.nextLine();

System.out.print("Enter Address: ");

addr=sc.nextLine();

System.out.print("Enter the Gender: ");

gen=sc.next().charAt(0);

if(ch==1){

System.out.print("Enter the program: ");

sc.nextLine();

pro=sc.nextLine();

System.out.print("Enter year: ");

year=sc.nextInt();

System.out.print("Enter total marks: ");

tot=sc.nextFloat();

s=new Student(adhno,name,addr,gen,pro,year,tot);

}

else if(ch==2){

System.out.print("Enter the designation: ");

sc.nextLine();

des=sc.nextLine();

System.out.print("Enter the deartment: ");

sc.nextLine();

dept=sc.nextLine();

System.out.print("Enter the basic pay: ");

basic=sc.nextFloat();

f=new Faculty(adhno,name,addr,gen,des,dept,basic);

}

do{

System.out.println("\nOPTIONS\n1.Edit record\n2.Display record\n3.Exit");

System.out.print("Enter your choice: ");

ch1=sc.nextInt();

if(ch1==1){

switch(ch){

case 1: System.out.println("1.Address\n2.Year\n3.Total");

System.out.print("Enter your choice: ");

ch2=sc.nextInt();

if(ch2==1){

System.out.print("Enter the new address: ");

sc.nextLine();

s.setAddress(sc.nextLine());

}

else if(ch2==2){

System.out.print("Enter Year: ");

s.setYear(sc.nextInt());

}

else if(ch2==3){

System.out.print("Enter Total Marks: ");

s.setTotal(sc.nextFloat());

}

break;

case 2: System.out.println("1.Address\n2.Designation\n3.Basic Pay");

System.out.print("Enter your choice: ");

ch2=sc.nextInt();

if(ch2==1){

System.out.print("Enter the new address: ");

sc.nextLine();

f.setAddress(sc.nextLine());

}

else if(ch2==2){

System.out.print("Enter Designation: ");

sc.nextLine();

f.setDesig(sc.nextLine());

}

else if(ch2==3){

System.out.print("Enter the new basic pay: ");

f.setBasic(sc.nextFloat());

}

break;

default : System.err.println("Choose either 1 or 2");

break;

}

}

if(ch1==2){

System.out.println("------------------------------------------------------------------");

switch(ch){

case 1: System.out.printf("Name:%s\nGender:%c\nAddress:%s\n",s.getName(),s.getGender(),s.getAddress());

System.out.printf("Program:%s\nYear:%d\nTotal:%.2f\nGPA:%.2f\n",s.getProgram(),s.getYear(),s.getTotal(),s.calGPA());

break;

case 2: System.out.printf("Name:%s\nGender:%c\nAddress:%s\n",f.getName(),f.getGender(),f.getAddress());

System.out.printf("Designation:%s\nDepartment:%s\nBasic Pay:%.2f\nSalary:%.2f\n",f.getDesig(),f.getDept(),f.getBasic(),f.calSalary());

break;

default : System.err.println("Choose either 1 or 2");

break;

}

System.out.println("------------------------------------------------------------------");

}

}while(ch1!=3);

}

}

/\*OUTPUT

Enter data for

1.Student

2.Faculty

Enter your choice: 1

Enter Aadhar Number: 3456

Enter the Name: John

Enter Address: SSN college, Chennai

Enter the Gender: M

Enter the program: EEE

Enter year: 2

Enter total marks: 198

OPTIONS

1.Edit record

2.Display record

3.Exit

Enter your choice: 2

------------------------------------------------------------------

Name:John

Gender:M

Address:SSN college, Chennai

Program:EEE

Year:2

Total:198.00

GPA:3.96

------------------------------------------------------------------

OPTIONS

1.Edit record

2.Display record

3.Exit

Enter your choice: 1

1.Address

2.Year

3.Total

Enter your choice: 1

Enter the new address: Kelambakkam, Tamil Nadu

OPTIONS

1.Edit record

2.Display record

3.Exit

Enter your choice: 1

1.Address

2.Year

3.Total

Enter your choice: 2

Enter Year: 3

OPTIONS

1.Edit record

2.Display record

3.Exit

Enter your choice: 1

1.Address

2.Year

3.Total

Enter your choice: 3

Enter Total Marks: 200

OPTIONS

1.Edit record

2.Display record

3.Exit

Enter your choice: 2

------------------------------------------------------------------

Name:John

Gender:M

Address:Kelambakkam, Tamil Nadu

Program:EEE

Year:3

Total:200.00

GPA:4.00

------------------------------------------------------------------

OPTIONS

1.Edit record

2.Display record

3.Exit

Enter your choice: 3

Enter data for

1.Student

2.Faculty

Enter your choice: 2

Enter Aadhar Number: 5678

Enter the Name: Peter

Enter Address: Kelambakkam, Tamil Nadu

Enter the Gender: M

Enter the designation: Prof.

Enter the deartment: IT

Enter the basic pay: 4500

OPTIONS

1.Edit record

2.Display record

3.Exit

Enter your choice: 2

------------------------------------------------------------------

Name:Peter

Gender:M

Address:Kelambakkam, Tamil Nadu

Designation:Prof.

Department: IT

Basic Pay:4500.00

Salary:6907.50

------------------------------------------------------------------

OPTIONS

1.Edit record

2.Display record

3.Exit

Enter your choice: 1

1.Address

2.Designation

3.Basic Pay

Enter your choice: 1

Enter the new address: SSN college, Chennai

OPTIONS

1.Edit record

2.Display record

3.Exit

Enter your choice: 1

1.Address

2.Designation

3.Basic Pay

Enter your choice: 2

Enter Designation: HOD

OPTIONS

1.Edit record

2.Display record

3.Exit

Enter your choice: 1

1.Address

2.Designation

3.Basic Pay

Enter your choice: 3

Enter the new basic pay: 20000

OPTIONS

1.Edit record

2.Display record

3.Exit

Enter your choice: 2

------------------------------------------------------------------

Name:Peter

Gender:M

Address:SSN college, Chennai

Designation:HOD

Department: IT

Basic Pay:20000.00

Salary:30700.00

------------------------------------------------------------------

OPTIONS

1.Edit record

2.Display record

3.Exit

Enter your choice: 3

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/\*Inheritance Ex3B\_Q2 \*/

import java.util.\*;

class Shape{

protected String color = "red";

public Shape(){}

public Shape(String color){

this.color = color;

}

public String getColor(){

return color;

}

public void setColor(String color){

this.color = color;

}

int shape(){

return -1;

}

}

class Circle extends Shape{

protected float radius = 1.0f;

public Circle(){}

public Circle(float radius){

this.radius = radius;

}

public Circle(float radius,String color){

this.radius = radius;

this.color = color;

}

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 peri = 2 \* 3.14f \* radius;

return peri;

}

int shape(){

return 0;

}

}

class Rectangle extends Shape{

protected float width = 1.0f;

protected float length = 1.0f;

public Rectangle(){}

public Rectangle(float width,float length){

this.width = width;

this.length = length;

}

public Rectangle(float width,float length,String color){

this.width = width;

this.length = length;

this.color = color;

}

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 peri = 2 \* (length + width);

return peri;

}

int shape(){

return 1;

}

}

class Square extends Rectangle{

public Square(){}

public Square(float side){

length = side;

width = side;

}

public Square(float side,String color){

length = side;

width = side;

this.color = color;

}

public float getSide(){

return length;

}

public void setSide(float side){

length = side;

width = side;

}

int shape(){

return 2;

}

}

class TestShape{

public static void main(String args[]){

Scanner sc = new Scanner(System.in);

int num,choice,ch1;

System.out.print("Enter the number of shapes: ");

num = sc.nextInt();

Shape []s = new Shape[3\*num];

for(int i = 0 ; i < 3\*num ; i++){

System.out.println("\nSHAPES\n1: Circle\n2: Rectangle\n3: Square");

System.out.print("Enter your choice: ");

choice = sc.nextInt();

switch(choice){

case 1: s[i] = new Circle();

s[++i] = new Circle(3);

s[++i]= new Circle(3,"Red");

System.out.println("Three circles created");

break;

case 2: s[i] = new Rectangle();

s[++i] = new Rectangle(3,6);

s[++i]= new Rectangle(3,6,"Red");

System.out.println("Three rectangles created");

break;

case 3: s[i] = new Square();

s[++i] = new Square(6);

s[++i]= new Square(6,"Red");

System.out.println("Three squares created");

break;

}

}

System.out.println("\nOPERATIONS\n1: Diaplay\n2: Edit");

System.out.print("Enter your choice: ");

ch1 = sc.nextInt();

do{

switch(ch1){

case 1: display(s,num);

break;

case 2: System.out.print("Enter the serial no. of the shape you want to edit: ");

int snum = sc.nextInt();

switch(s[snum-1].shape()){

case 0: System.out.print("Enter Radius: ");

((Circle)s[snum-1]).setRadius(sc.nextFloat());

break;

case 1: System.out.print("Enter Length and Width: ");

((Rectangle)s[snum-1]).setLength(sc.nextFloat());

((Rectangle)s[snum-1]).setWidth(sc.nextFloat());

break;

case 2: System.out.print("Enter Side: ");

((Square)s[snum-1]).setSide(sc.nextFloat());

break;

}

break;

}

System.out.println("\nOPERATIONS\n1: Display\n2: Edit");

System.out.print("Enter your choice(To stop enter -1): ");

ch1 = sc.nextInt();

}while(ch1 != -1);

sc.close();

}

static void display(Shape []s,int num){

System.out.println("S.No.\tShape\t\tRadius\tLength\tWidth\tPerimeter\tArea");

for(int i=0;i<3\*num;i++){

switch(s[i].shape()){

case 0: System.out.printf("%d\tCircle\t\t%.2f\t-\t-\t%.2f\t\t%.2f\n",(i+1),((Circle)s[i]).getRadius(),((Circle)s[i]).getPerimeter(),((Circle)s[i]).getArea());

break;

case 1: System.out.printf("%d\tRectangle\t-\t%.2f\t%.2f\t%.2f\t\t%.2f\n",(i+1),((Rectangle)s[i]).getLength(),((Rectangle)s[i]).getWidth(),((Rectangle)s[i]).getPerimeter(),((Rectangle)s[i]).getArea());

break;

case 2: System.out.printf("%d\tSquare\t\t-\t%.2f\t-\t%.2f\t\t%.2f\n",(i+1),((Square)s[i]).getSide(),((Square)s[i]).getPerimeter(),((Square)s[i]).getArea());

break;

}

}

}

}

/\*OUTPUT

Enter the number of shapes: 3

SHAPES

1: Circle

2: Rectangle

3: Square

Enter your choice: 1

Three circles created

SHAPES

1: Circle

2: Rectangle

3: Square

Enter your choice: 2

Three rectangles created

SHAPES

1: Circle

2: Rectangle

3: Square

Enter your choice: 3

Three squares created

OPERATIONS

1: Display

2: Edit

Enter your choice: 1

S.No. Shape Radius Length Width Perimeter Area

1 Circle 1.00 - - 6.28 3.14

2 Circle 3.00 - - 18.84 28.26

3 Circle 3.00 - - 18.84 28.26

4 Rectangle - 1.00 1.00 4.00 1.00

5 Rectangle - 6.00 3.00 18.00 18.00

6 Rectangle - 6.00 3.00 18.00 18.00

7 Square - 1.00 - 4.00 1.00

8 Square - 6.00 - 24.00 36.00

9 Square - 6.00 - 24.00 36.00

OPERATIONS

1: Display

2: Edit

Enter your choice(To stop enter -1): 2

Enter the serial no. of the shape you want to edit: 4

Enter Length and Width: 2.5 4.9

OPERATIONS

1: Display

2: Edit

Enter your choice(To stop enter -1): 1

S.No. Shape Radius Length Width Perimeter Area

1 Circle 1.00 - - 6.28 3.14

2 Circle 3.00 - - 18.84 28.26

3 Circle 3.00 - - 18.84 28.26

4 Rectangle - 2.50 4.90 14.80 12.25

5 Rectangle - 6.00 3.00 18.00 18.00

6 Rectangle - 6.00 3.00 18.00 18.00

7 Square - 1.00 - 4.00 1.00

8 Square - 6.00 - 24.00 36.00

9 Square - 6.00 - 24.00 36.00

OPERATIONS

1: Display

2: Edit

Enter your choice(To stop enter -1): 1

S.No. Shape Radius Length Width Perimeter Area

1 Circle 1.00 - - 6.28 3.14

2 Circle 3.00 - - 18.84 28.26

3 Circle 3.00 - - 18.84 28.26

4 Rectangle - 2.50 4.90 14.80 12.25

5 Rectangle - 6.00 3.00 18.00 18.00

6 Rectangle - 6.00 3.00 18.00 18.00

7 Square - 1.00 - 4.00 1.00

8 Square - 6.00 - 24.00 36.00

9 Square - 6.00 - 24.00 36.00

OPERATIONS

1: Display

2: Edit

Enter your choice(To stop enter -1): 2

Enter the serial no. of the shape you want to edit: 1

Enter Radius: 22.19

OPERATIONS

1: Display

2: Edit

Enter your choice(To stop enter -1): 2

Enter the serial no. of the shape you want to edit: 9

Enter Side: 40

OPERATIONS

1: Display

2: Edit

Enter your choice(To stop enter -1): 1

S.No. Shape Radius Length Width Perimeter Area

1 Circle 22.19 - - 139.35 1546.12

2 Circle 3.00 - - 18.84 28.26

3 Circle 3.00 - - 18.84 28.26

4 Rectangle - 2.50 4.90 14.80 12.25

5 Rectangle - 6.00 3.00 18.00 18.00

6 Rectangle - 6.00 3.00 18.00 18.00

7 Square - 1.00 - 4.00 1.00

8 Square - 6.00 - 24.00 36.00

9 Square - 40.00 - 160.00 1600.00

OPERATIONS

1: Display

2: Edit

Enter your choice(To stop enter -1): -1

\*/