**JAVA POLYMORPHISM ASSIGNMENT - 2**

Question :

Write a class named Commission with the following features: ● It extends the Hourly class. ● It has two instance variables (in addition to those inherited): one is the total sales the employee has made (type double) and the second is the commission rate for the employee (the commission rate will be type double and will represent the percent (in decimal form) commission the employee earns on sales (so .2 would mean the employee earns 20% commission on sales)). ● The constructor takes 6 parameters: the first 5 are the same as for Hourly (name, address, phone number, social security number, hourly pay rate) and the 6th is the commission rate for the employee. The constructor should call the constructor of the parent class with the first 5 parameters then use the 6th to set the commission rate. ● One additional method is needed: public void addSales (double totalSales) that adds the parameter to the instance variable representing total sales. ● The pay method must call the pay method of the parent class to compute the pay for hours worked then add to that the pay from commission on sales. (See the pay method in the Executive class.) The total sales should be set back to 0 (note: you don't need to set the hoursWorked back to 0—why not?). ● The toString method needs to call the toString method of the parent class then add the total sales to that. To test your class, update Staff.java as follows: ● Increase the size of the array to 8. ● Add two commissioned employees to the staffList—make up your own names, addresses, phone numbers and social security numbers. Have one of the employees earn $6.25 per hour and 20% commission and the other one earn $9.75 per hour and 15% commission. ● For the first additional employee you added, put the hours worked at 35 and the total sales $400; for the second, put the hours at 40 and the sales at $950. Compile and run the program. Make sure it is working properly.

Solution:

public class Commission extends Hourly

{

private double totalSales;private double commissionRate;

public Commission(String name, String address, String phone, String ssn,double payRate, int hours, double commissionRate)

{

super(name, address, phone, ssn, payRate, hours);

this.commissionRate = commissionRate;

}

public void setSales(double totalSales)

{

this.totalSales = totalSales;

}

public double pay()

{

return super.pay() + commissionRate;

}

public String toString()

{

return super.toString() + " , commission rate is " + commissionRate;

}

}

public class Employee extends StaffMember

{

private String ssn;private double payRate;public Employee(String name, String address, String phone, String ssn,double payRate)

{

super(name, address, phone);this.ssn = ssn;this.payRate = payRate;

}

public String toString(){return super.toString() + ", ssn is " +ssn+ " , payrate is " +payRate;

}

public double pay(){return payRate;

}

}

public class Executive extends Employee

private double bonus;public Executive(String name, String address, String phone, String ssn,double payRate, double bonus)

{

super(name, address, phone, ssn, payRate);

this.bonus = bonus;

}

public void setBonus(double b)

{

bonus = b;

}

public String toString()

{

return super.toString() + " , bonus is " + bonus;

}

public double pay()

{

return super.pay() + bonus;

}

}

public class Hourly extends Employee

{

private int hours;public Hourly(String name, String address, String phone, String ssn,double payRate, int hours)

{

super(name, address, phone, ssn, payRate);this.hours = hours;

}

public double pay()

{

return super.pay() \* hours;

}

public String toString()

{

return super.toString() + " , the number of hours are " + hours;

}

}

public class PayStub

{

public static void main(String[] args)

{

StaffMember [] list = new StaffMember[4];list[0] = new Executive("Tom", "123 Plaza", "111-123-1234", "012-45-1111", 5000, 2000);list[1] = new Hourly("Jim", "111 Fort Hamilton Parkway", "347-322-8664", "123-12-1223", 50, 40);list[2] = new Volunteer("Ezana", "915 E 7th Street", "646-479-7748");list[3] = new Volunteer("Merjema", "8801 Shore Road", "347-831-8464");for (int i=0; i<=5; i++)

{

System.out.println(list[i]);System.out.println(list[i].pay());

}

}

}

public class Staff

{

StaffMember[] staffList;

Sets up the list of staff members.

public Staff ()

{

staffList = new StaffMember[9];

staffList[0] = new Executive ("Sam", "123 Main Line","555-0469", "123-45-6789", 2423.07, 0);

staffList[1] = new Employee ("Carla", "456 Off Line","555-0101", "987-65-4321", 1246.15);

staffList[2] = new Employee ("Woody", "789 Off Rocker","555-0000", "010-20-3040", 1169.23);

staffList[3] = new Hourly ("Diane", "678 Fifth Ave.","555-0690", "958-47-3625", 10.55, 0);

staffList[4] = new Volunteer ("Norm", "987 Suds Blvd.","555-8374") ;

staffList[5] = new Volunteer ("Cliff", "321 Duds Lane","555-7282");

staffList[6] = new Commission ("Ezana", "1221 Pace Plaza", "347-322-8664", "123-11-1111", 6.25, 0, (6.25\*0.2));

staffList[7] = new Commission ("Meri", "13421 Plaza", "212-233-8264", "083-11-1331", 9.75, 0, (9.75\*0.2));

staffList[8] = new Employee ("Najla", "809 Lane","212-222-2121","000-99-2323", 1169.23);((Executive)staffList[0]).setBonus (500.00);

}

Pays all staff members.

public void payday ()

{

double amount;

for (int count=0; count < staffList.length; count++)

{

System.out.println (staffList[count]);

amount = staffList[count].pay();

System.out.println ("Thanks!");

elseSystem.out.println ("Paid: " + amount);

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

}

}

}

public abstract class StaffMember

{

protected String name;

protected String address;

protected String phone;

public StaffMember(String name, String address, String phone)

{

this.name = name;this.address = address;

this.phone = phone;

}

public String toString()

{

return "Name is " +name + " , address is " + address+ " , phone is "+phone;

}

public abstract double pay();

}

public class Volunteer extends StaffMember

{

public Volunteer(String name, String address, String phone)

{

super(name, address, phone);

}

public double pay()

{

return 0.0;

}

}