Name of the Course : Java 9 Core principles

Level : Moderate

Tool Stack : Multiple Interfaces, abstract method, Encapsulation and access specifiers

Problem Statement :

Universal Loan and Insurance Providers is one of the fastest growing organization.It needs to automate the transactions performed in the organization.

They need to automate the process of issuing loan and insurance coverage for vehicles.

Description : You are provided with a public class Vehicle with private attributes :

String vehicleNumber

String modelName

String vehicleType

double price

Appropriate public getters and setters are already written.

You are also provided with a 4 argument constructor with arguments –vehicleNumber, modelName, vehicleType and price.

Note that the vehicleType can take the values as “4 wheeler” or “3wheeler” or “2wheeler”.

Write a public interface Loan with an abstract method “double issueLoan()”.

Write a public interface Insurance with an abstract method “double takeInsurance ()”.

The above class Vehicle should implement the Interfaces Loan and Insurance.

Provide the implementation for issueLoan method based on the type of Vehicle.

If the vehicleType is “4 wheeler”, the eligible loan amount is 80% of its price.

If the vehicleType is “3 wheeler”, the eligible loan amount is 75% of its price.

If the vehicleType is “2 wheeler”, the eligible loan amount is 50% of its price.

Provide the implementation for takeInsurance based on price of vehicle.

If the vehicle price is less than or equal to 150000 insurance amount is 3500.

If the vehicle price is greater than 150000 and less than or equal to 300000 insurance amount is 4000.

If the vehicle price is greater than 300000 insurance amount is 5000.

You are provided with a public class Main which has the main method.

Check the correctness of the methods written in these classes.

**Code:**

**package** main.java.yaksha;

**public** **interface** Loan {

**abstract** **double** issueLoan();

}

**package** main.java.yaksha;

**public** **interface** Insurance {

}

**package** main.java.yaksha;

**public** **class** Vehicle **implements** Insurance,Loan{

**private** String vehicleNumber;

**private** String modelName;

**private** String vehicleType;

**private** **double** price;

**public** String getVehicleNumber() {

**return** vehicleNumber;

}

**public** **void** setVehicleNumber(String vehicleNumber) {

**this**.vehicleNumber = vehicleNumber;

}

**public** String getModelName() {

**return** modelName;

}

**public** **void** setModelName(String modelName) {

**this**.modelName = modelName;

}

**public** String getVehicleType() {

**return** vehicleType;

}

**public** **void** setVehicleType(String vehicleType) {

**this**.vehicleType = vehicleType;

}

**public** **double** getPrice() {

**return** price;

}

**public** **void** setPrice(**double** price) {

**this**.price = price;

}

**public** Vehicle( String vehicleNumber,String modelName,String vehicleType,**double** price) {

**this**.vehicleNumber=vehicleNumber;

**this**.modelName=modelName;

**this**.vehicleType=vehicleType;

**this**.price=price;

}

@Override

**public** **double** issueLoan() {

**double** loanAmount;

**if**(getVehicleType().equals("4 wheeler")) {

loanAmount=price\*0.8;

}**else** **if**(getVehicleType().equals("3 wheeler")) {

loanAmount=price\*0.75;

}**else**

{

loanAmount=price\*0.5;

}

**return** loanAmount;

}

**public** **double** takeInsurance() {

**double** insuranceAmount=0;

**if**(price<=150000) {

insuranceAmount=3500;

}**else** **if**(price>150000 && price<=300000) {

insuranceAmount=4000;

}**else** **if**(price>300000) {

insuranceAmount=5000;

}

**return** insuranceAmount;

}

}

**package** main.java.yaksha;

**import** java.util.Scanner;

**public** **class** Main {

**public** **static** **void** main(String[] args) {

Scanner sc=**new** Scanner(System.***in***);

System.***out***.println("Enter the vehicle number :");

String vehicleNumber=sc.next();

System.***out***.println("Enter the model name :");

String modelName=sc.next();

System.***out***.println("Enter the vehicle type[4wheeler/3wheeler/2wheeler] :");

String vehicleType=sc.next();

System.***out***.println("Enter the price of vehicle :");

**double** price=sc.nextDouble();

Vehicle v=**new** Vehicle( vehicleNumber, modelName, vehicleType, price) ;

**double** loanAmount=v.issueLoan();

**double** insuranceAmount=v.takeInsurance();

System.***out***.println(" Loan issuing for Vehicle number "+v.getVehicleNumber()+" is "+loanAmount+" of type "+v.getVehicleType());

System.***out***.println(" Insurance Amount eligible for Vehicle number "+v.getVehicleNumber()+" is "+insuranceAmount );

}

}

Junit Testing

**package** test.java.yaksha;

**import** **static** org.junit.jupiter.api.Assertions.\*;

**import** org.junit.jupiter.api.Test;

**import** main.java.yaksha.Vehicle;

**class** MainTest {

@Test

**void** testIssueLoan() {

Vehicle v=**new** Vehicle( "12345", "Honda", "4wheeler", 300000) ;

*assertEquals*(150000.0, v.issueLoan());

}

@Test

**void** testTakeInsurance() {

Vehicle v=**new** Vehicle( "12345", "Honda", "4wheeler", 300000) ;

*assertEquals*(4000.0, v.takeInsurance());

}

}

Test Data1

Enter the vehicle number :

12345

Enter the model name :

Honda

Enter the vehicle type[4wheeler/3wheeler/2wheeler] :

4wheeler

Enter the price of vehicle :

300000

Loan issuing for Vehicle number 12345 is 150000.0 of type 4wheeler

Insurance Amount eligible for Vehicle number 12345 is 4000.0

Learning outcome: Participant could able to learn how to use Multiple Interfaces, abstract method, Encapsulation and access specifiers.