NKXGEN™
Next Generation Paradigms

Practice Exercise on Classes & Inheritance

1. Create the TrainTicket class with the following members and methods. Write a class TestTicket to demonstrate the use of the TrainTicket methods

Members

-TicketNo
-TrainNo
-TravelDate
-Source
-Destination
-Passengers (Array/Collection of Passenger Class)
-Name
-Age
-Gender

Methods

-void displayTicketDetails() -To display ticket info

-float calculateFinalFare(double basefare) -should calculate the actual fare based on the base fare per passenger given and return it. While calculating the fare, the following conditions to be taken.

a. Passengers with below 5 years age will be given 100% discount
b. Passengers with 5-12 will be given 50% discount
c. Male Passengers with 65 above or female passengers with 58 above to be given 25% discount.

2. Write a class 'Employee' with the following Data Members and Methods

Data Members

int empno
string name
string job
double salary

Constructors : Write Overloaded constructors to accept the following combinations

1. All fields
2. empno & Salary
3. Empno,name & Salary

Methods/functions

void displayProfile() -Display employee details
double calMonthlyPayroll(int nod,int attend,int noh) -calculate the payroll based on the following criteria and return the salary per month.

No of Leaves (nol) = nod -noh -attend
no of payroll days (nopd) = nod-nol
payroll = salary per month/30 * nopd

Write Main Method to demonstrate the usage of the object and method calls on that.

3. Bank offers various types of loans like Gold Loan, Vehicle Loan, and Mortgage Loan to customers. Write an abstract class to represent Loan class with the following properties and methods

Properties:

-AccountNo
-AccountTitle
-Address
-LoanType
-LoanRemarks
-LoanAmount
-NoOfInstallments
-InstallmentsPaid
-TotalToBePaid
-TotalPaid
-Nominee
-LoanTerm (no of Months)
-StartDate
-RateOfInt (static & readonly)

Methods:

-PayEMI(doube amt) -to add the amount to Loan's totalPaid
-CalEMI() -to Calculate the EMI for the given principal amount, rate of interest and loan term.
-CalTotalToBePaid() -abstract method

4. Write 3 concrete classes for GoldLoan, VehicleLoan, MortguageLoan inheriting the Loan class by overriding CalTotalToBePaid() method and CalEMI(). Try to put meaningful implementation for CalEMI() and CalTotalToBePaid() in each of the sub class.

5. Write a class EMICalculator with a method GenerateEMI(..) with the following specification to calculate the EMI for the given Loan account type and other details

static void GenerateEMI(Loan ln,double prnpleamt,double rateofint,int term)

6. Write a class TotalToPayCalculator with a method CalTotalToPay(..) with the following specification to calculate the total amount to be paid for the given Loan account type and other details

static void CalTotalToPay(Loan ln,double prnpleamt,int term)

7. Write a class with an entry point to demonstrate the usage of EMICalcultor class method GenerateEMI() and TotalToPayCalculator method CalTotalToPay(..)