OOP

Assignment 01

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```cpp
/*
    Question 1. Create a class called Invoice that an AL-Jannat Store might use to represent an invoice
    for an item sold at the store. An Invoice should include six data members:
    1. item number (string)
    2. item description (string),
    3. quantity of the item being purchased (int)
    4. price per item (int)
    5. value-added tax (VAT) rate as a decimal (double)
    6. discount rate as a decimal (double).
    Your class should have a constructor that initializes the six data members. The constructor should
    initialize the first four data members with values from parameters and the last two data members
    to default values of 0.20 per cent and zero respectively.
    Provide a set and a get functions for each data members. In addition, provide a member function
    named Get_Invoice_Amount that calculates the invoice amount (i.e., multiplies the quantity by the
    price per item and applies the text and discount amounts), then returns the amount.
    Write a test program to demonstrate Invoice’s capabilities.
*/
#include <iostream>
using namespace std;

class Invoice{
    private:
        string itemNum, itemDescription;
        int itemQuantity,itemPrice;
        double itemTax, itemDiscount;
    public:
        Invoice(string num, string desc, int quantity, int price, double tax=0.20,double
disc=0.0){
            itemNum = num;
            itemDescription = desc;
            itemQuantity = quantity;
            itemPrice = price;
            itemTax = tax;
            itemDiscount = disc;
        }
        // Set Functions
        void setNumber(string num){
            itemNum = num;
        }
        void setDescription(string description){
            itemDescription = description;
        }
        void setQuantity(int quantity){
            itemQuantity = quantity;
        }
        void setPrice(int price){
            itemPrice = price;
        }
        void setTax(int tax){
            itemTax = tax;
        }
        void setDiscount(int discount){
            itemDiscount = discount;
        }
        // Get functions
        string getNumber(){
            return itemNum;
        }
        string getDescription(){
            return itemDescription;
        }
        int getQuantity(){
            return itemQuantity;
        }
        int getPrice(){
            return itemPrice;
        }
        double getTax(){
            return itemTax;
        }
        double getDiscount(){
            return itemDiscount;
        }
        // Get Invoice Amount function
        double getInvoiceAmount(){
            double price = itemQuantity * itemPrice,
                   calTax = itemQuantity * itemPrice * itemTax,
                   finalAmount = price + calTax - itemDiscount;

            return finalAmount;
        }
};
int main(){
    Invoice purchases[3] =  {
                                Invoice("25485", "HP mouse", 25, 600),
                                Invoice("25482", "DELL Keyboard", 24, 1024, 0.4, 900),
                                Invoice("25484", "Red Dragon Headphones", 5, 2015, 0.1, 5
0)
                            };
    for(int i=0; i<3; i++){
        cout << "####### Item " << i+1 << " #######" << endl;
        cout << "Item Number: " << purchases[i].getNumber() << endl;
        cout << "Description: " << purchases[i].getDescription() << endl;
        cout << "Quantity: " << purchases[i].getQuantity() << endl;
        cout << "Price of 1 item: " << purchases[i].getPrice() << endl;
        cout << "Tax: " << (purchases[i].getTax()*100) << "%" << endl;
        cout << "Discount: " << purchases[i].getDiscount() << endl;
        cout << "Total Price: " << purchases[i].getInvoiceAmount() << endl;
    }
    return 0;
}
```

```
/*
Question 2. Create a class called MotorVehicle that represents a motor vehicle using: make
(string), fuelType (type string), yearOfManufacture (int), color (string), and engineCapacity (int).
Your class should have a constructor that initializes the three data members. Provide a set and a
get function for each data member. Add a member function called displayCardDetails that displays
the five data members in five separate lines in the form “member name: member value”.
Write a test program to demonstrate MotorVehicle’s capabilities.
*/
#include <iostream>
using namespace std;

class MotorVehicle{
    private:
        string name, fuelType, color;
        int yearOfManufacture, engineCapacity;
    public:
        MotorVehicle(string vechName,int engCapacity, int year, string vechColor="Red", string fType="Petrol"){
            name = vechName;
            fuelType = fType;
            color = vechColor;
            yearOfManufacture = year;
            engineCapacity = engCapacity;
        }
        // Set functions
        void setName(string vechName){
            name = vechName;
        }
        void setFuelType(string vechFuelType){
            fuelType = vechFuelType;
        }
        void setyear(int vechYear){
            yearOfManufacture = vechYear;
        }
        void setColor(string vechColor){
            color = vechColor;
        }
        void setEngCapacity(int vechEngCapacity){
            engineCapacity = vechEngCapacity;
        }
        // Get function
        string getName(){
            return name;
        }
        string getFuelType(){
            return fuelType;
        }
        string getColor(){
            return color;
        }
        int getyear(){
            return yearOfManufacture;
        }
        int getEngCapacity(){
            return engineCapacity;
        }
        void displayCardDetails(){
            cout << "########################################" << endl;
            cout << "Name: " << getName() << endl;
            cout << "Fuel Type: " << getFuelType() << endl;
            cout << "Color: " << getColor() << endl;
            cout << "Year of Manufacture: " << getyear() << endl;
            cout << "Engine Capacity: " << getEngCapacity() << "cc" << endl;
            cout << "########################################" << endl;
        }
};

int main(){
    MotorVehicle v1("Honda 125", 124, 2020),
                 v2("Honda 70", 72, 2017, "Black"),
                 v3("Civic", 1799, 2018, "White", "Unleaded Gasoline");
    v1.displayCardDetails();
    v2.displayCardDetails();
    v3.displayCardDetails();

    return 0;
}
/*
Question 3. Create a class called Date that includes three data members: a month (int), a
 day (int),
and a year (int). Your class should have a constructor with three parameters that uses th
e
parameters to initialize the three data members. For the purpose of this question, assume
 that the
values provided for the year and day are correct, but ensure that the month value in the
range 1-
12; if it isn’t, set the month to 1.
Provide a set and a get function for each data member. Provide a member function displayD
ate
that displays the month, day and year separated by forward slashes (/).
Write a test program that demonstrates class Date’s capabilities.
*/
#include <iostream>
using namespace std;

class Date{
    private:
        int day,month,year;
    public:
        Date(int m, int d, int y){
            day=d;
            year = y;
            month = (m>=1 && m<=12)? m : 1;
        }
        // Set functions
        void setDay(int d){
            day = d;
        }
        void setYear(int y){
            year = y;
        }
        void setMonth(int m){
            month = (m>=1 && m<=12)? m : 1;
        }
        // Get functions
        int getDay(){
            return day;
        }
        int getMonth(){
            return month;
        }
        int getYear(){
            return year;
        }
        // Display Date
        void displayDate(){
            cout << getMonth() << "/" << getDay() << "/" << getYear() << endl;
        }
};

int main(){
    Date d1(3, 25, 2017),
         d2(12, 15, 2020),
         d3(15, 8, 2021);

    d1.displayDate();
    d2.displayDate();
    d3.displayDate();
    return 0;
}
/*
Question 4. Create a class called Distance that includes two pieces of information as data
members---feet (int), inches (int). Your class should have a constructor which initializes the two
data members.
Provide a set and a get function for each data member. Provide a member function
Display_Distance that displays the feet and inches in the form of 5’6’’.
Write a test program that demonstrates class Distance’s capabilities.
*/
#include <iostream>
using namespace std;

class Distance{
    private:
        int feet, inches;
    public:
        Distance(int f, int i){
            feet = f;
            inches = i;
        }
        // Set functions
        void setFeet(int f){
            feet = f;
```

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        }
        void setInches(int i){
            inches = i;
        }
        // Get functions
        int getFeet(){
            return feet;
        }
        int getInches(){
            return inches;
        }
        // Display distance
        void displayDistance(){
            cout << getFeet() << "`" << getInches() << "``" << endl;
        }

};

int main(){
    Distance d1(2,6),
             d2(5,8);
    d1.displayDistance();
    d2.displayDistance();
    return 0;
}
```