21CSC201T – Object Oriented Design and Programming

Week - 3 – Tutorial Questions

Classes and Objects, Access Specifiers, Methods

1. Bank Account Management: Develop a banking system that manages customers' accounts.
    - Define a BankAccount class with attributes: accountNumber, accountHolderName, and balance.
    - Implement member functions for depositing (deposit), withdrawing (withdraw), and displaying account details (display).
    - Ensure that the withdraw function does not allow overdrafts (i.e., balance should not go negative).

    Write the class definition and demonstrate how an object of this class can be used.

2. Student Grade Management: A school needs a system to manage student grades.
    - Create a class names 'Student' with attributes: studentID, name, and marks (array) for storing marks of 5 subjects.
    - Implement a function calculateAverage() to return the student's average marks.
    - Implement another function displayDetails() to show the student's details along with their average marks.

    Demonstrate how multiple student objects can be created and their details are displayed.

3. Online Shopping Cart: Design an online shopping system.
    - Create a class Product with attributes: productID, productName, price, and quantity.
    - Add a function calculateTotalPrice() that calculates the total cost based on quantity.
    - Get the product details using productDetails() function.
    - Create an array of Product objects and write a function to display the details of all products in the cart.

    Write the C++ code to show how multiple product objects can be used.

4. Car Showroom Inventory: Develop an inventory system for a car showroom.
    - Define a Car class with attributes: brand, model, price, and year.
    - Implement a constructor to initialize these attributes.
    - Add a static data member totalCars to keep track of the number of cars created.

- Implement a function displayCarInfo() to show car details.
- Demonstrate the working of the class by creating multiple objects and displaying total cars in inventory.

[NOTE: Use Private access specifier for Data Members and public access specifier for member functions in all the above questions]

5. Design a Class Diagram for e-voting system. Create your own classes and list the attributes and methods for each of them.