Assignment 2 Dead line: 25-11-2024

Task 1:

Restaurant and Menu Items

In a restaurant management system, a **Restaurant** has a menu containing various **MenuItem** objects. Each **MenuItem** has a name, price, and type (e.g., appetizer, main course, dessert). The **Restaurant** has a name and address.

- Create a **MenuItem** class with attributes for name, price, and type.
- Create a **Restaurant** class that holds a collection of **MenuItem** objects as its menu. Write methods to:
    - Add items to the restaurant's menu.
    - Display the menu for the restaurant.
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- Demonstrate composition by creating a **Restaurant** object with a menu of **MenuItem** .

Task 2:

University System

A university wants to maintain information about its departments and students. Each **Department** has a name, code, and a list of **Student** objects enrolled in that department. Each **Student** has details like name, roll number, and program.

- Create a **Student** class with appropriate attributes and methods.
- Create a **Department** class that contains a collection of **Student** objects as a private attribute, along with methods to:
    - Add a student to the department.
    - Display all students in the department.

Demonstrate composition by creating a **Department** object and adding **Student** objects to it, then displaying all student details in that department.

Task 3:

Order and Product

Imagine you're creating an ordering system where each **Order** contains multiple **Product** items. The **Product** class should have attributes like productName, price, and quantity. The **Order** class should contain a list of **Product** objects and an **orderID**.

- Implement the **Product** class with attributes for the product's name, price, and quantity.
- Implement the **Order** class that includes a collection of **Product** objects as part of each order. Write methods to:
    - Add a product to the order.
    - Calculate the total cost of all products in the order.

Demonstrate composition by creating an **Order** object, adding several **Product** objects, and calculating the total order cost.

Task 4:

You are developing a simple customer registration system for a shop. Each customer has a unique ID, a name, and an email. Additionally, you need to track the total number of customers registered in the system.

Task 5:

Library System for Book Management

You are tasked with building a simple library system that manages books. Each **Book** has attributes like bookTitle, authorName, and isbnNumber. Additionally, you need to keep track of the total number of books in the library.

- Create a **Book** class that includes:
    - A non-static data member for the book details like bookTitle, authorName, and isbnNumber.
    - A static data member totalBooks to keep track of the total number of books in the library.
    - A static member function getTotalBooks() that returns the current count of books in the library.
    - A constructor that initializes the book's details and increments the totalBooks each time a new book is added.
    - A member function displayBook() to display the book details.

Instruction Guidelines:

- You need to submit 5 cpp files in a folder. Name of folder should be your roll number. Name of tasks should be task1, task2 etc.

- Assignment should be submitted in both forms code and handwritten.

- Handwritten assignment should be submitted ion class.