Homework 6
Object Oriented Programming
Deadline: 07/19/2024

Instructions:
Select ***ONLY ONE*** of the following exercises and solve it.
Submit your code along with explanations and test results that demonstrate the implementation of the required features.
Submit a single .pdf document in Canvas with both code and results.
Always remember, "Practice makes perfect!"

Exercise 1: Simple Library System
Background: Create a system to manage books and users within a library.
Tasks:

- Define a **Book** class with attributes for title, author, and ISBN.
- Define a **User** class with attributes for the user's name and a list of borrowed books.
- Implement methods in the **User** class for borrowing and returning books.
- Demonstrate the system's functionality with examples of several **Book** and **User** objects in action.

Exercise 2: Simple Expense Tracker
Background: Develop a system for tracking personal expenses.
Tasks:

- Define a **Category** class with attributes for the category name and a list of associated expenses.
- Define an **Expense** class with attributes for the description, amount, and date.
- Implement methods in the **Category** class for adding an expense, calculating total expenses, and listing all expenses under that category.
- Demonstrate the system's functionality by creating several expense categories and adding various expenses to them.

Exercise 3: Student Grading System
Background: Create a system to manage and track student grades.
Tasks:

- Define a **Student** class with attributes for the student's name and a dictionary of courses with associated grades.
- Define a **Course** class with attributes for course id, name and credits and methods to add new courses, update existing grades, and calculate the course grade.
- Include a method to display the student's complete course list and their current total GPA.
- Test the system with a variety of students and diverse course grades.

Exercise 4: Simple Online Store Inventory
Background: Develop a system to manage inventory for an online store.
Tasks:

- Define a **Product** class with attributes for the product ID, name, and price.
- Define an **Inventory** class that maintains a list of **Product** objects.
- Implement methods in the **Inventory** class to add, remove, and search for products within the inventory.
- Test the system by creating multiple products and managing them within the inventory system.