Assignment: Applying Object-Oriented Programming (OOP)

In this assignment, you will practice applying Object-Oriented Programming (OOP) concepts by analyzing and implementing user stories for a library management system.

User Stories

- As a **user**, I want to have a **library card** so that I can **borrow books** from the library.
- As a **librarian**, I want to **add new books** to the library's collection so that they can be available for borrowing.
- As a **librarian**, I want to **remove books** from the library's collection so that we can keep the collection up-to-date.
- As a **librarian**, I want to **display a list** of all the books in the library's collection so that users can easily find books they are interested in.

Instructions

- **Identify the main classes** that can be created from the above user stories.
    - Example: `Library`, `Book`, `User`, `Librarian`, `LibraryCard`.

- **Define attributes and methods** for each class.
    - Example: `Book` class should have attributes like `Title`, `Author`, `ISBN`, `IsAvailable`.
    - Methods may include `Borrow()`, `Return()`, `DisplayInfo()`.

- **Draw a UML Class Diagram** using Draw.io that shows:
    - Classes and their attributes/methods.
    - Relationships (Association, Inheritance, Aggregation).

- **Implement the system in C#**:
    - Create the classes in **Visual Studio** or **.NET environment**.
    - Implement the methods so that the program can:
        - Add new books to the library.
        - Remove books from the library.
        - Display all available books.
        - Allow a user with a library card to borrow books.

- **Submission Requirements**:
    - UML Diagram (exported from Draw.io as an image or PDF).
    - Working C# project files (`.cs` files or zipped Visual Studio project).