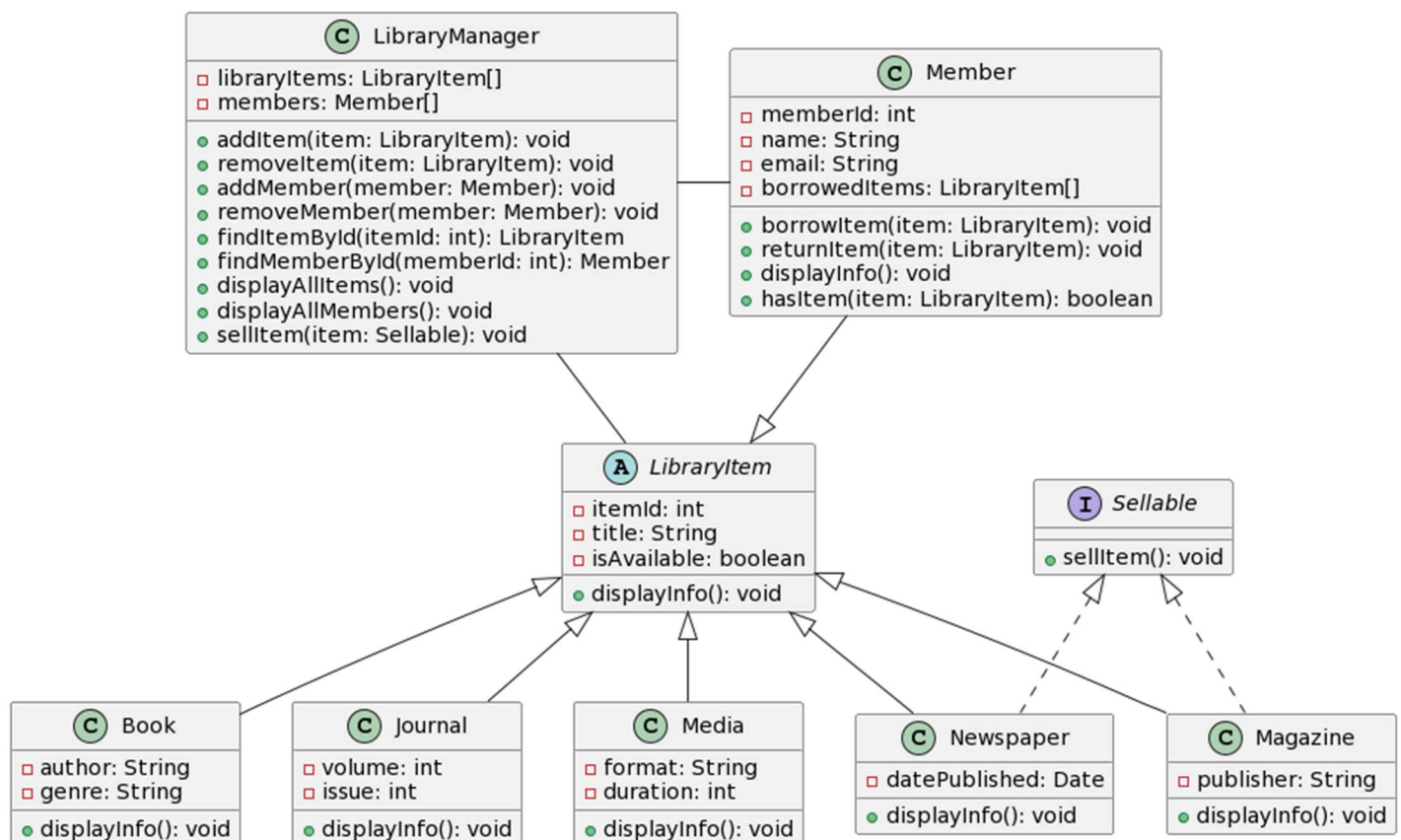# CSE 231s Advanced Computer Programming Project

Select one of the following applications ideas then design and implement an application that follows the Object-Oriented Programming Paradigm:

- Online-Course system: with different types of **courses**, users, quizzes, ...
- Online-Shopping system: with different types of **products**, users, orders, offers, ...
- Restaurant Management System**:** Managing menus **items**, orders, tables, and payments.

Your design should follow the class design guidelines. The design should show your ability to use inheritance and polymorphism using concrete or abstract super classes. In addition, you should have at least one interface. The **bold** objects in your implementation should be sorted using the generic sort method.

Here is a possible design for a library management system for you to understand how to start (do not use this design or this application):

C LibraryManager
- libraryItems: LibraryItem[]
- members: Member[]
- addItem(item: LibraryItem): void
- removeItem(item: LibraryItem): void
- addMember(member: Member): void
- removeMember(member: Member): void
- findItemById(itemId: int): LibraryItem
- findMemberById(memberId: int): Member
- displayAllItems(): void
- displayAllMembers(): void
- sellItem(item: Sellable): void

C Member
- memberId: int
- name: String
- email: String
- borrowedItems: LibraryItem[]
- borrowItem(item: LibraryItem): void
- returnItem(item: LibraryItem): void
- displayInfo(): void
- hasItem(item: LibraryItem): boolean

A LibraryItem
- itemId: int
- title: String
- isAvailable: boolean
- displayInfo(): void

I Sellable
- sellItem(): void

C Book
- author: String
- genre: String
- displayInfo(): void

C Journal
- volume: int
- issue: int
- displayInfo(): void

C Media
- format: String
- duration: int
- displayInfo(): void

C Newspaper
- datePublished: Date
- displayInfo(): void

C Magazine
- publisher: String
- displayInfo(): void

- Number of students per group: up to 5 students
- Grading Criteria:
    - The presentation of your design
    - The application of all required OOP concepts required in the project description.
    - Explaining your role in the project and how you applied the OOP concepts in the project.
    - Being able to answer questions about extensions that can be added to the projects with minimal changes in the code.
    - The correctness of the project functionality
- Grading Scheme
    - Grade 3: Implementation and proper discussion of the applied OOP concepts and design guidelines
    - Grade 4: Grade 3 requirements + Implementation and proper discussion of the exception handling
    - Grade 5: Grade 4 requirements + Implementation and proper discussion of the UI (User interface)
- More details about the presentation and demo requirements will come later.
- Deadline: Last week before exams (More details will come later)