

SE1020 – Object Oriented Programing
Assignment: Project
Sample for Workload Distribution

Project Title: Online Library Management System

Component 01: User Management

Description: Manages user-related functionalities, allowing registration, updates, and deletion of user accounts.

CRUD Operations:

- **Create:** Register a new user and store their details in users.txt.
- **Read:** Search for a user by username or ID and display their information.
- **Update:** Modify user details like email, password, or membership type.
- **Delete:** Remove a user account from the system.

UI Components:

- User Registration Page (HTML, JSP, Bootstrap/Tailwind CSS)
- User Login Page
- User Profile Update Page
- User List Page (Admin View)

OOP Concepts Applied:

- **Encapsulation:** Secure user data in a User class with getters/setters.
- **Inheritance:** AdminUser and RegularUser classes inherit from User.
- **Polymorphism:** Different user authentication mechanisms.

Component 02: Book Management

Description: Handles the addition, modification, and removal of books in the library's catalog.

CRUD Operations:

- **Create:** Add new books to books.txt with details like title, author, genre, and ISBN.
- **Read:** Search for books by title, author, or category and display results.
- **Update:** Edit book details (e.g., updating stock quantity or correcting information).
- **Delete:** Remove books that are no longer available or relevant

UI Components:

- Book Addition Form
- Book Search Page
- Book Edit Page
- Book Listing Page

OOP Concepts Applied:

- **Encapsulation:** Book class stores book details.
- **Inheritance:** EBook and PrintedBook inherit from Book.
- **Polymorphism:** Different display methods for e-books and printed books.

Component 03: Borrowing & Returning

Description: Manages the borrowing and returning of books by users, tracking due dates and availability.

CRUD Operations:

- **Create:** Record a new borrowing transaction in borrowed_books.txt.
- **Read:** View all borrowed books and check their due dates.
- **Update:** Update the return status and calculate fines if the book is returned late.
- **Delete:** Remove completed transactions from the system once books are returned.

UI Components:

- Borrow Book Page
- Return Book Page
- Borrowed Books List

OOP Concepts Applied:

- **Encapsulation:** Transaction class for managing borrow/return records.
- **Abstraction:** Methods to check book availability before borrowing.
- **Polymorphism:** Different fine calculation methods for regular and premium users.

Component 04: Admin Management

Description: Manages administrative users and their privileges in the system, allowing the creation and management of admin accounts

CRUD Operations:

- **Create:** Register a new admin account in admins.txt.
- **Read:** View a list of all admins and their activity logs.

- **Update:** Modify admin details, such as permissions or profile updates.
- **Delete:** Remove admin accounts from the system.

UI Components:

- Admin Dashboard
- Admin Registration Page
- Admin Management Panel

OOP Concepts Applied:

- **Encapsulation:** Secure admin data in an Admin class.
- **Inheritance:** AdminUser inherits from User.
- **Abstraction:** Admin-only methods abstracted from regular users.

Component 05: Author Management

Description: Manages authors who contribute books to the library system.

CRUD Operations:

- **Create:** Add new author details (name, bio, books written) to authors.txt.
- **Read:** Search and view authors by name or book title.
- **Update:** Modify author details such as biography or book list.
- **Delete:** Remove authors who are no longer relevant from the system.

UI Components:

- Author Registration Page
- Author List Page
- Author Profile Edit Page

OOP Concepts Applied:

- **Encapsulation:** Author class to store author details.
- **Inheritance:** Different classes for GuestAuthor and PermanentAuthor.
- **Polymorphism:** Display books differently based on author type.

Component 06: Feedback and Review Management

Description: This module allows users to submit feedback and reviews for books they have borrowed. It manages the collection, display, and moderation of user reviews.

CRUD Operations:

- **Create:** Users can submit new reviews or feedback for books, stored in reviews.txt.
- **Read:** Display existing reviews for specific books to other users.
- **Update:** Allow users to edit their submitted reviews or ratings.
- **Delete:** Provide users and admins the option to delete inappropriate or outdated reviews.

UI Components:

- Book Review Submission Page
- View Book Reviews Page
- Admin Review Moderation Panel

OOP Concepts Applied:

- **Encapsulation:** Review class secures feedback data.
- **Inheritance:** PublicReview and VerifiedReview classes.
- **Polymorphism:** Different display methods for admin and regular users.