

**Course:** SE 506 Design Patterns  
**Lab 07:** Miscellaneous  
**Time:** 2 hours

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Design and implement a library management system using the **Factory**, **Proxy**, and **Singleton** patterns. In this system, Users can borrow different types of library items (e.g., Books, Magazines, etc.). The access to restricted items is controlled through a proxy. A singleton configuration manager handles library-wide settings like late fees and opening hours. You can start with the following steps:

- Define a `LibraryItem` interface with methods like `getDetails()` and `borrowItem()`.
- Implement concrete classes `Book`, `Magazine`, and other types.
- Create a `LibraryItemFactory` class to generate the appropriate `LibraryItem` object based on user input.
- Define a `LibraryAccess` interface with a method `accessItem(String itemID, User user)`.
- Implement a concrete class `RealLibraryAccess` to provide direct access to library items.
- Create a `LibraryAccessProxy` class that checks user permissions before allowing access to restricted items.
- Create a `LibraryConfigManager` class to store system-wide settings like late fees, borrowing limits, and library hours.
- Ensure only one instance of `LibraryConfigManager` exists and provide methods to retrieve and update settings.