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Library Management System

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<u>Introduction</u>

This Library Management System is a robust command-line application designed for efficient library management
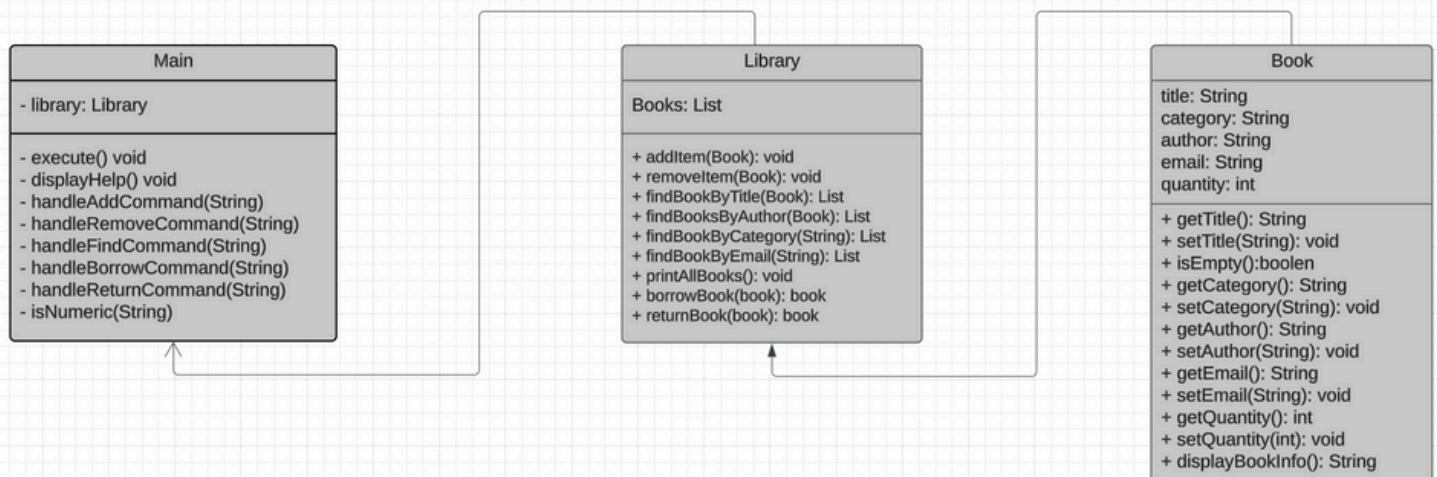
Key Features

- Complete book management: Add, remove, and update books
- .Multi-criteria search functionality: Search by title, author, category, or email.
- Borrowing and return tracking: Efficient management of book loans.
- Quantity management: Track available copies of each book.
- Data persistence: Real-time updates to the library's inventory.
- Input validation: Ensure accurate data entries.
- Error handling: Graceful handling of common user errors.

Benefits

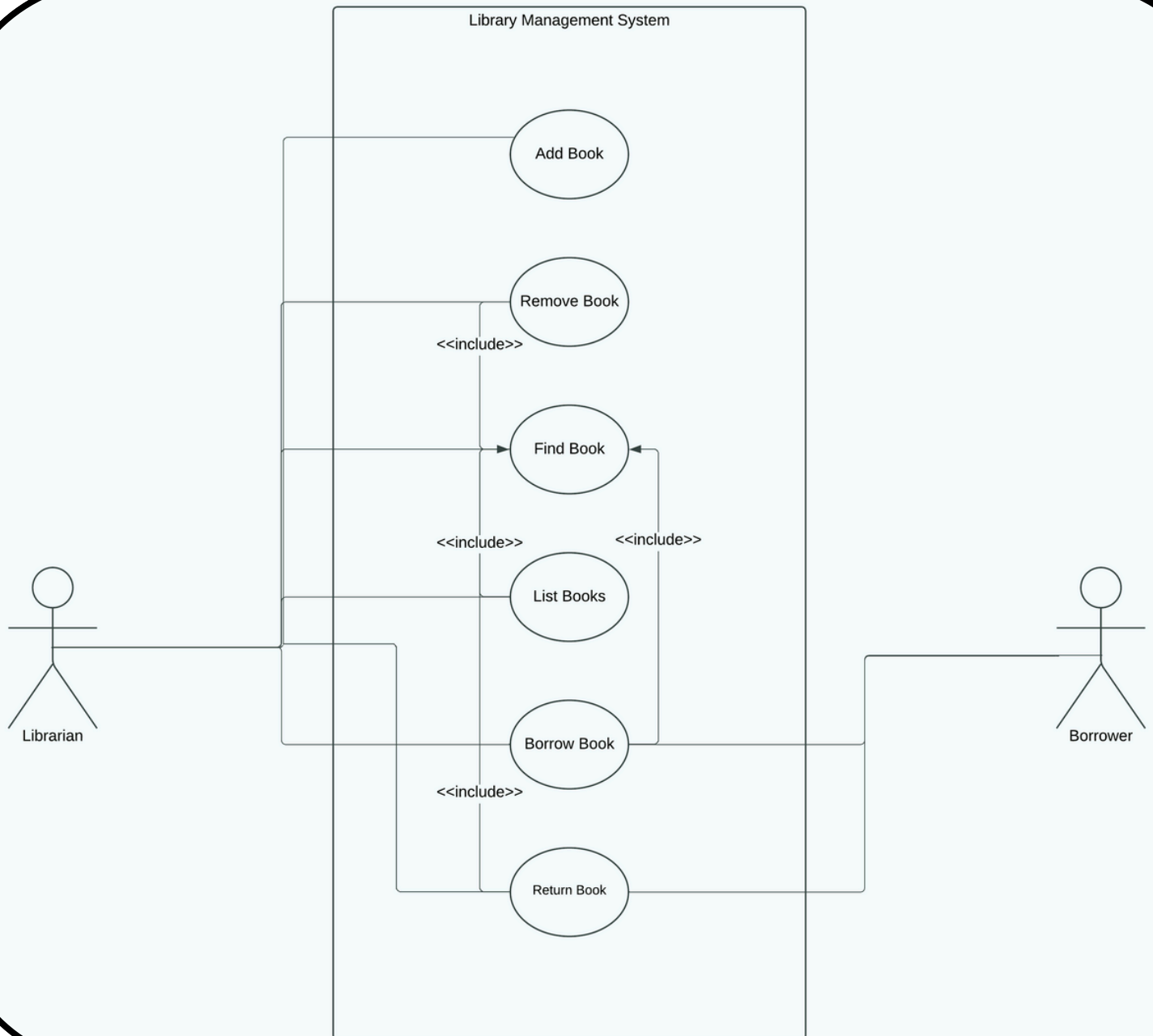- User-friendly command-line interface for seamless interactions.
- Enhanced search capabilities to locate books quickly.
- Reliable inventory management for efficient tracking.
- User accountability through email verification.

Class Diagram

Main

- library: Library

- execute() void
- displayHelp() void
- handleAddCommand(String)
- handleRemoveCommand(String)
- handleFindCommand(String)
- handleBorrowCommand(String)
- handleReturnCommand(String)
- isNumeric(String)

Library

Books: List

+ addItem(Book): void
+ removeItem(Book): void
+ findBookByTitle(Book): List
+ findBooksByAuthor(Book): List
+ findBookByCategory(String): List
+ findBookByEmail(String): List
+ printAllBooks(): void
+ borrowBook(book): book
+ returnBook(book): book

Book

title: String
category: String
author: String
email: String
quantity: int

+ getTitle(): String
+ setTitle(String): void
+ isEmpty():boolen
+ getCategory(): String
+ setCategory(String): void
+ getAuthor(): String
+ setAuthor(String): void
+ getEmail(): String
+ setEmail(String): void
+ getQuantity(): int
+ setQuantity(int): void
+ displayBookInfo(): String

Use case diagram

Commands and Usage

Command	Format	Description	Example
add/insert	add <title> <author> <category> <email> <quantity>	Add a new book to the library	add "Java Programming" "John Doe" "Programming" "john@email.com" 5
remove/delete	remove <title>	Remove a book from the library	remove "Java Programming"
find/search	find <title/author/category/email> <query>	Search for books	find by author "John Doe"
print/list	print	Display all books	print
borrow	borrow <title>	Borrow a book from the library	borrow "Java Programming"
return	return <title>	Return a book to the library	return "Java Programming"
help	help	Display available commands	help
exit/quit	exit	Exit the application	exit

Help Guide

To use the Library Management System:

- **Start the application.**
- **Use the available commands from the table above.**
- **Follow the command format precisely.**
- **User accountability through email verification.**
- **Type help at any time to view available commands.**

Error Handling

The system manages several error scenarios gracefully:

- **Invalid command format**
- **Book not found**
- **Insufficient book quantity**
- **Duplicate book entries**
- **Invalid quantity values**