# Library Management System (C++)

## Overview

This project is a simple Library Management System implemented in C++. It allows users to add books, search for books, borrow, and return books while handling exceptions to ensure smooth functionality.

## Features

* 📚 Manage Books – Add and display books in the library.
* 🔍 Search Books – Find books by title.
* 🏷️ Borrow & Return Books – Users can borrow and return books.
* ⚠️ Exception Handling – Prevents borrowing unavailable books.
* 📂 Scalability – Uses vectors to store books dynamically.

## Project Structure

1. Class `Book` – Represents a book (title, author, availability).
2. Class `Library` – Manages book storage and search functionality.
3. Class `User` – Allows borrowing and returning books.
4. Exception Handling – Ensures books are not borrowed if unavailable.

## Enhancements & Next Steps

* ✅ File Handling – Save & load book data.
* ✅ User Interaction – Add a menu-driven system.
* ✅ Multiple Users – Allow multiple user accounts.
* ✅ GUI Integration – Implement using Qt for C++.

## Project Timeline (3 Days)

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| --- | --- |
| Day | Tasks |
| Day 1 | Implement `Book`, `Library`, and `User` classes. Add books and search functionality. |
| Day 2 | Implement borrowing/returning books and exception handling. |
| Day 3 | Enhance user interaction, add optional file handling, and test edge cases. |

## Conclusion

This project provides a hands-on way to practice classes, vectors, and exception handling in C++. It simulates a real-world system with structured logic and extensibility for future improvements.

🚀 Happy Coding!