Online Library Management System - Documentation

**Project Overview**

This C++ Console Application is a Library Management System that allows users to: Add and Remove Books  
 Search for Books  
 Register Users  
 Borrow and Return Books

The project follows object-oriented programming (OOP) principles for modularity and efficiency.

**Object-Oriented Approach**

We follow OOP principles to ensure maintainability and scalability. The system has three main classes:

|  |  |
| --- | --- |
| Class | Responsibility |
| Book | Stores book details (title, author, ISBN, availability) |
| User | Stores user details and borrowed books |
| Library | Manages books, users, borrowing, and returning |

**Data Structures Used**

|  |  |
| --- | --- |
| Data Structure | Reason |
| vector<Book\*> | Allows dynamic addition/removal of books |
| vector<User\*> | Stores multiple users efficiently |
| string | Used for book details and user names |

**Memory Management**

* Dynamically Allocated Objects (new Book(...), new User(...)) ensure proper memory usage.
* Destructor (~Library) is implemented to delete allocated memory and prevent memory leaks.