

# Programming Project / C++ - Library Management System

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## I. Description

Student 1 is responsible for managing the library database:

- Adding, removing, and editing books (title, author, stock)
- Viewing the history of borrowed books

Student 2 is responsible for user interaction:

- Adding/removing books from a borrowing cart
- Returning books to the library
- Borrowing books, which decreases stock and logs the operation

The project allows bidirectional interaction: changes made by the client are visible to the librarian and vice versa.

## II. Data Structures

Classes used:

- Book: string isbn, string title, string author, int stock
- CartItem: string isbn
- Date: int day, month, year

Relationships:

- The Borrowing functionality uses both Book and Date.
- CartItem represents the connection between a user and a Book.

## III. File Structures

books.txt:

```
<number of books>
<isbn>\n<title>\n<author>\n<stock>
...
```

borrow\_cart.txt:

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<isbn>

<isbn>

...

borrow\_history.txt:

<date>

<isbn1> <isbn2> ...

<date>

<isbn3> ...

...

### IV. Application Commands

App 1 (Librarian):

./app\_1.exe list\_books

./app\_1.exe add\_book <isbn> <title> <author> <stock>

./app\_1.exe remove\_book <isbn>

./app\_1.exe edit\_book <isbn> <new\_stock>

./app\_1.exe view\_borrowed

App 2 (Client):

./app\_2.exe view\_cart

./app\_2.exe add\_to\_cart <isbn>

./app\_2.exe remove\_from\_cart <isbn>

./app\_2.exe borrow

./app\_2.exe return\_book <isbn>