Library Management System

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The Problem :

Small teams need a quick and easy way to keep track of books without any complicated setup.

Traditional systems can be heavy, requiring installations, databases, and a long time to learn.

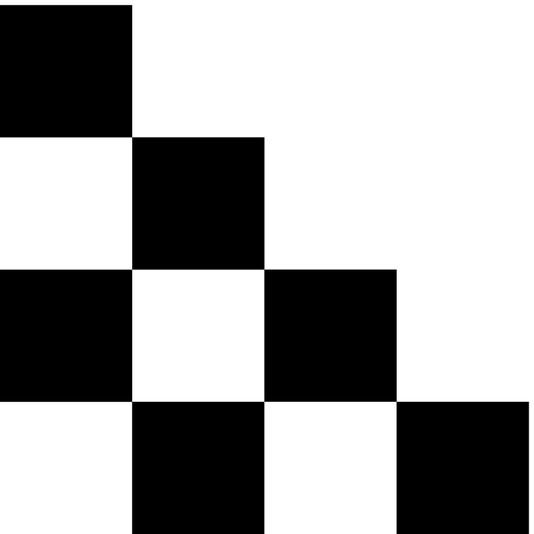
For class demos, features like persistent storage or multi-user support are usually overkill

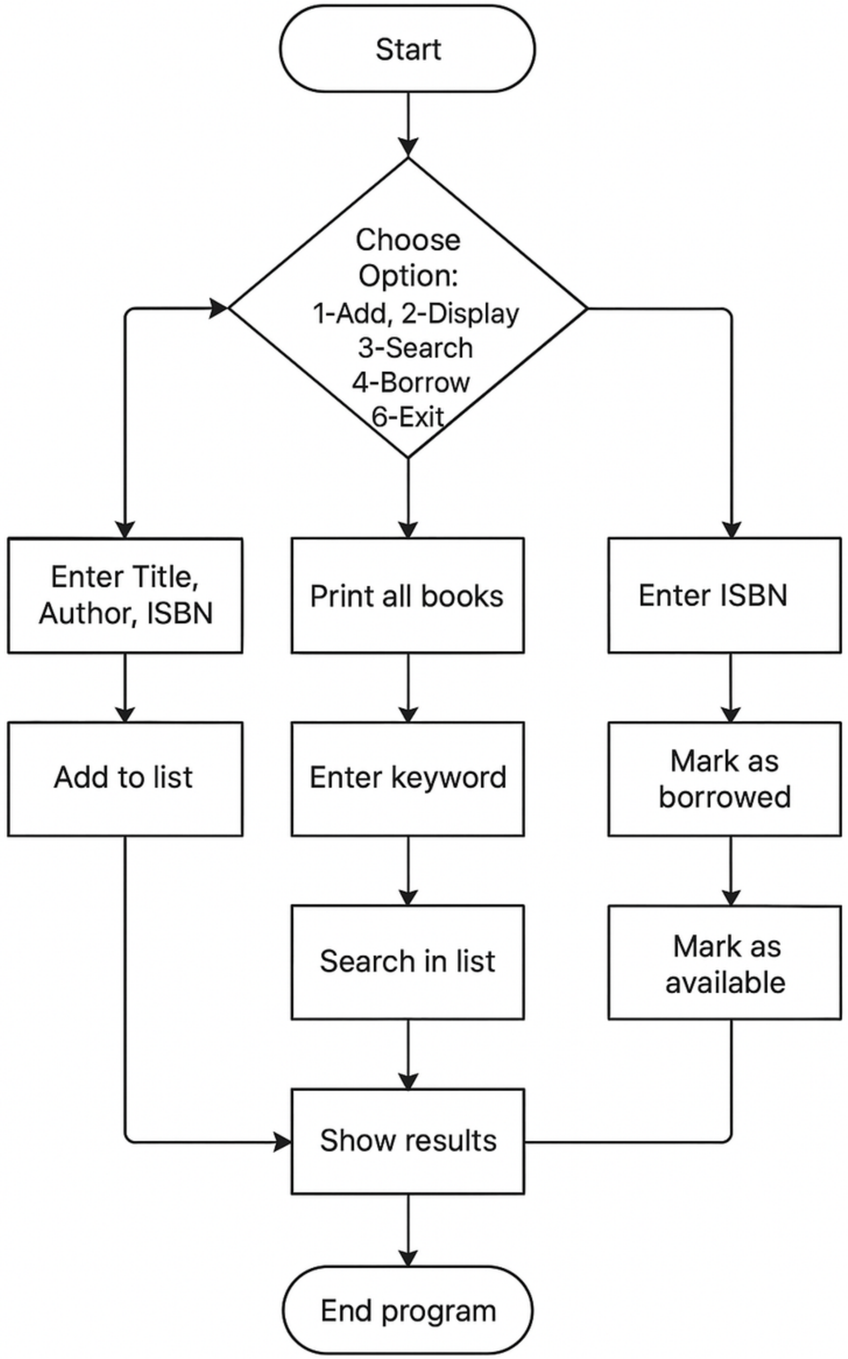
the solution:

A lightweight command-line app you can run anywhere no fuss, just open a terminal.
Everything happens instantly in memory using a simple linked list.
Easy-to-follow menu lets you: Add, Search, Borrow, Return, List, or Exit super straightforward.

:Key Features

Add Book: just enter the title, author, and ISBN—books get added instantly at the top of the list.
Search: quickly find books by title or author, even partial matches.
Borrow / Return: easily switch a book’s availability.
List Books: see a neat, readable summary of all books in the catalog.
Code Structure: clean and modular with main.c, library.c, and library.h.




Start
Choose Option:
1-Add, 2-Display
3-Search
4-Borrow
6-Exit
Enter Title, Author, ISBN
Print all books
Enter ISBN
Add to list
Enter keyword
Mark as borrowed
Search in list
Mark as available
Show results
End program

Flow Chart

Main Functions

1. addBook() → add new book to the list
2. displayBooks() → show all books
3. searchBook() → find book by title or author
4. borrowBook() → mark a book as borrowed
5. returnBook() → mark a book as returned

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r your choice: 1
r book title: intelligence
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it
r your choice: 4

r ISBN of the book to borrow: 11
 borrowed successfully
d Book
```

Console Output

```
Book added successfully!
1.add Book
2.Display Books
3.Search Book
4.Borrow Book
5.Return Book
6.Exit
Enter your choice: 4

Enter ISBN of the book to borrow: 112
Book with ISBN 112 not found.
1.add Book
2.Display Books
3.Search Book
4.Borrow Book
5.Return Book
6.Exit
Enter your choice: 5

Enter ISBN of the book to return: 11
Book was not borrowed.
1.add Book
2.Display Books
3.Search Book
4.Borrow Book
5.Return Book
6.Exit
Enter your choice: 3

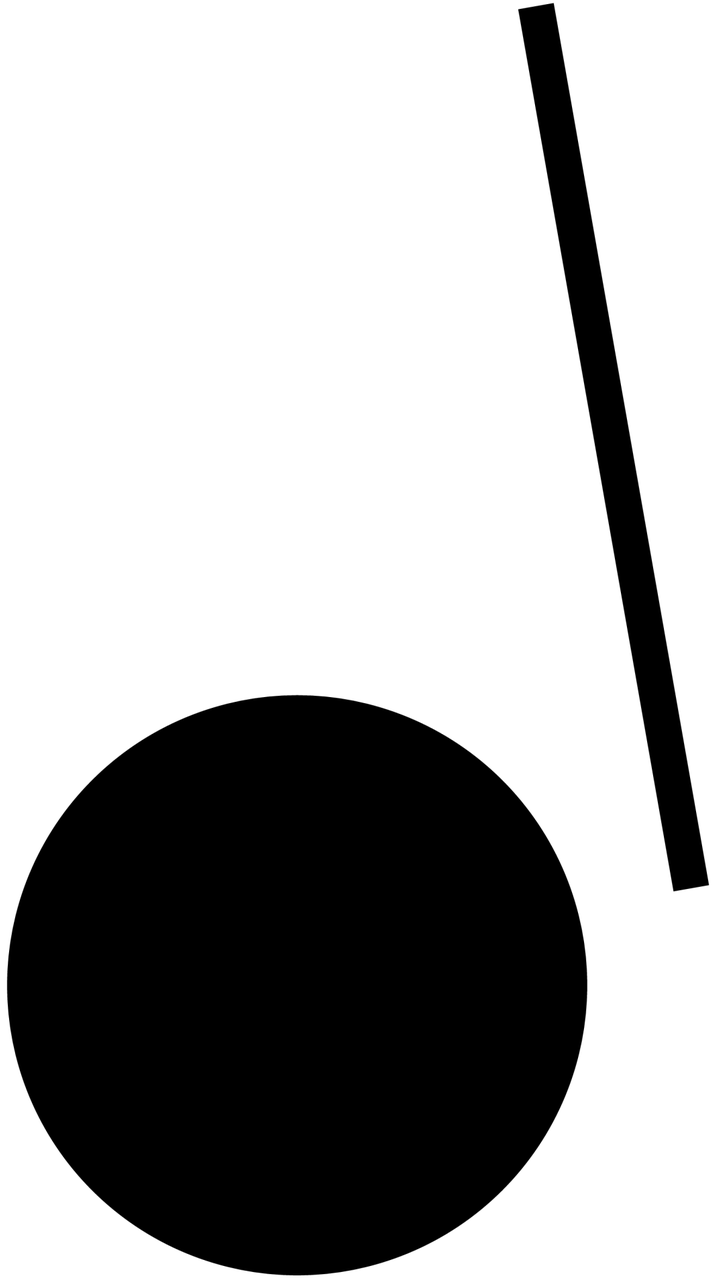
Enter title or author to search: youssef

Title: intelligence
Author: youssef
ISBN: 11
Status: Available
1.add Book
2.Display Books
3.Search Book
4.Borrow Book
5.Return Book
6.Exit
Enter your choice:
```

These checks make sure that the program does not crash and guides the user to take correct actions.
This also ensures the integrity of the data in our linked list, so we always know which books are available and which are borrowed also safe

```c
while (temp != NULL) {
    if (strstr(temp->title, keyword) != NULL || strstr(temp->author, keyword) != NULL)
    {
        printf("\nTitle: %s\nAuthor: %s\nISBN: %s\nStatus: %s\n",
            temp->title,
            temp->author,
            temp->isbn,
            temp->isBorrowed ? "Borrowed" : "Available");
        found = 1;
    }
    temp = temp->next;
}
```

Here strstr checks if the keyword exists in either the title or the author
The temp->isBorrowed ? Borrowed : Available line is a conditional operator that shows the current status of the book
Finally, we move to the next node in the linked list using temp = temp->next.
This small snippet shows how we efficiently traverse the linked list and display the matching books to the useers



So, thats our Library Management System
Why do I think it’s a good product?
First, it’s really easy to use. You don’t need to be a programmer to add a book, search for one, borrow it, or return it—everything is clear in the menu.
Second, it handles data dynamically. That means no matter how many books you have, the program can deal with them without wasting memory or slowing down.
Third, it’s reliable. If someone makes a mistake—like typing the wrong ISBN—the program won’t crash. It just tells you what went wrong