

# LIBRARY MANAGEMENT SYSTEM



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## Features Required

- Add Book details (Book ID, Title, Author, Quantity)
- Add Member details (Member ID, Name)
- Issue and Return Books
- Search book details by:
  - Book ID
  - Book Title
- Store library records permanently using file handling

## Concepts to be Used

- Structures
- Arrays
- Loops
- Conditional Statements
- Functions
- File Handling

## Technology Used

- C Programming Language

## Output

- Console-based formatted LIBRARY MANAGEMENT SYSTEM
- Permanent data storage in files (books.txt, members.txt)

# LIBRARY MANAGEMENT SYSTEM

A C PROGRAMMING FILE-HANDLING BASED MINI PROJECT

## 1. INTRODUCTION

The Library Management System is a simple C-language based mini project designed to manage library records efficiently.

It helps in storing book information, member details, and issue/return transactions using file handling concepts.

This project is developed for academic learning purposes and demonstrates how structured programming concepts can be applied to real-world library systems.

## 2. OBJECTIVES

- To maintain library records digitally
- To store book and member details using structures and files
- To automate book issue and return process
- To reduce manual work and errors
- To provide quick search facilities

## **3.SYSTEM FEATURES**

### **3.1 Add Book details**

The librarian can add book details such as:

- Book ID
- Book Title
- Author Name
- Quantity

All book records are stored permanently using file handling.

### **3.2 Add Member details**

Member details like

- Member ID and
- Member Name are stored securely in a file.

### **3.3 Issue and Return Books**

- Books can be issued to members and returned after use.
- The available quantity is updated automatically.

### **3.4 Search book records**

- Books can be searched using:

- Book ID
- Book Title

Matching book details are displayed clearly.

### 3.5 Display Library Records

- The system displays all available books with complete details in formatted output.

## 4.TECHNOLOGY & CONCEPTS USED

### 4.1 C Programming Concepts

- Structures
- Arrays & Strings - to store book names
- Loops – for repeated Menu handling
- Conditional Statement – to check books
- Functions – for modular design

### 4.2 File Handling

File handling is used to store library data permanently.

- Files Used:
  - books.txt – Stores book records
  - members.txt – Stores member records

## 5.DATA STRUCTURE

- Copy code

C

```
struct Book {  
    int id;  
    char title[50];  
    char author[50];  
    int quantity;  
};
```

## 6.WORKFLOW

- Enter book and member details
- Store data in files
- Issue or return books
- Search and display records

## 7.FILE HANDLING APPROACH

- Records are written to files using write mode
- Data is retrieved using read mode
- Data remains stored even after program termination

## 8.SAMPLE OUTPUT (CONSOLE)

Copy code

```
=====
```

LIBRARY MANAGEMENT SYSTEM

```
=====
```

Book ID : 101

Title : C Programming

Author : Dennis Ritchie

Quantity : 5

---

## 9.ADVANTAGES

➤ Time Saving

The system reduces the time required to maintain records manually.

➤ Easy Record Management

Book and member details can be stored, searched, and updated easily.

➤ Accuracy

Automated operations reduce human errors in record keeping.

➤ Quick Search Facility

Books can be searched quickly using Book ID or Book Title

## 10. LIMITATIONS

- Console Based Interface
- Limited Security
- File Size Limitation
- Single User Access

## 11. FUTURE ENHANCEMENTS

- Graphical User Interface (GUI)

The system can be enhanced with a GUI for better user interaction.

- Login and Security Features

User authentication can be added to improve data security.

- Database Integration

File handling can be replaced with a database for better performance.

- Online Access

The system can be upgraded to support network or web-based access.

## 12.APPLICATIONS

- School Libraries

Used to maintain book and student records efficiently.

- College and University Libraries

Helps in managing large collections of books and issuing systems.

- Public Libraries

Used for maintaining member details and book availability.

- Digital Learning Classes

Helps in tracking learning resources and reference materials.

- Private Institutions and Training Classes

Used to manage study materials and library resources.

## 13.CONCLUSION

The Library Management System is a simple yet effective C-based mini project.

It demonstrates the use of file handling and structured programming concepts.

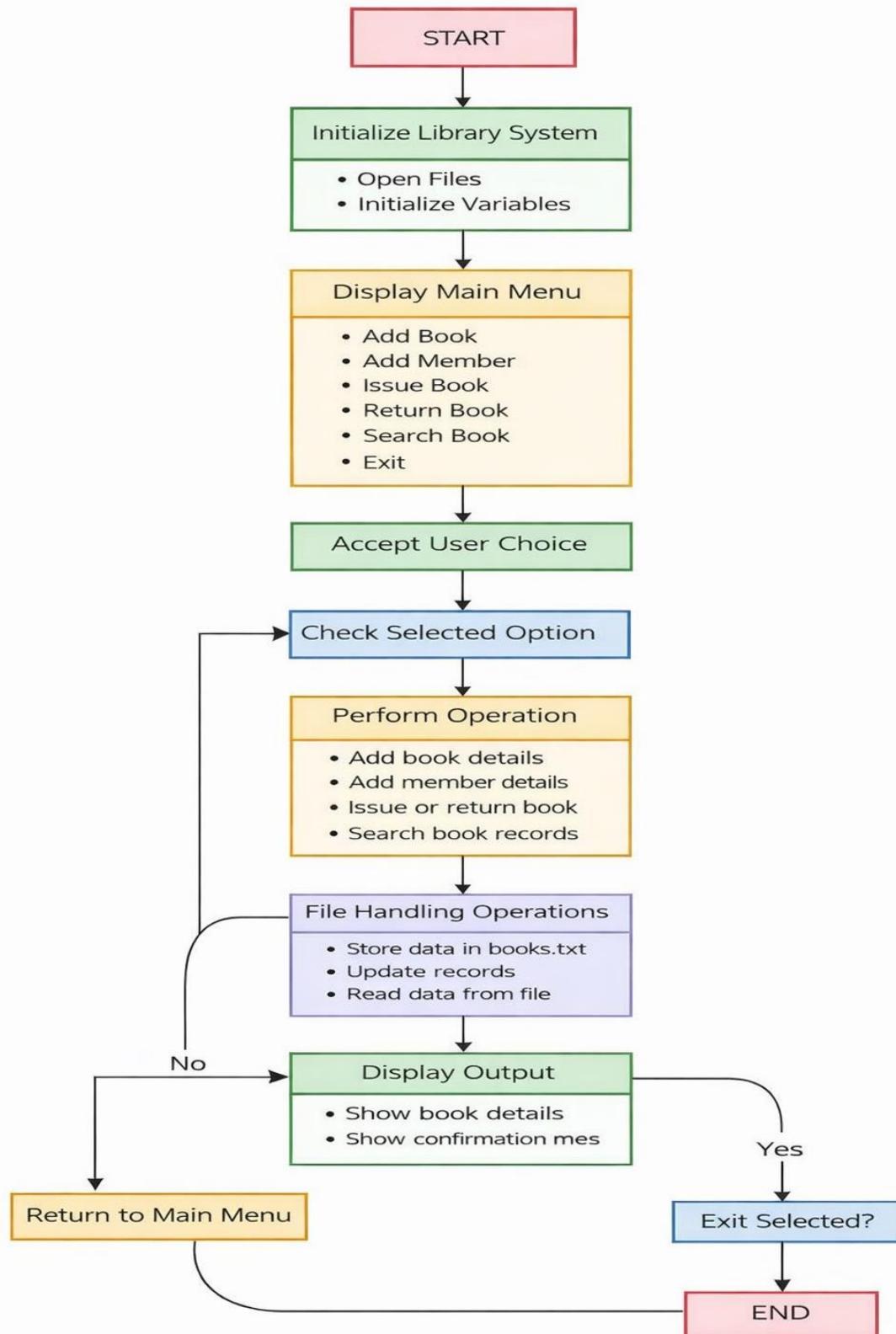
This project reduces manual work, accuracy and is suitable for beginners.

**Project Name:** LIBRARY MANAGEMENT SYSTEM

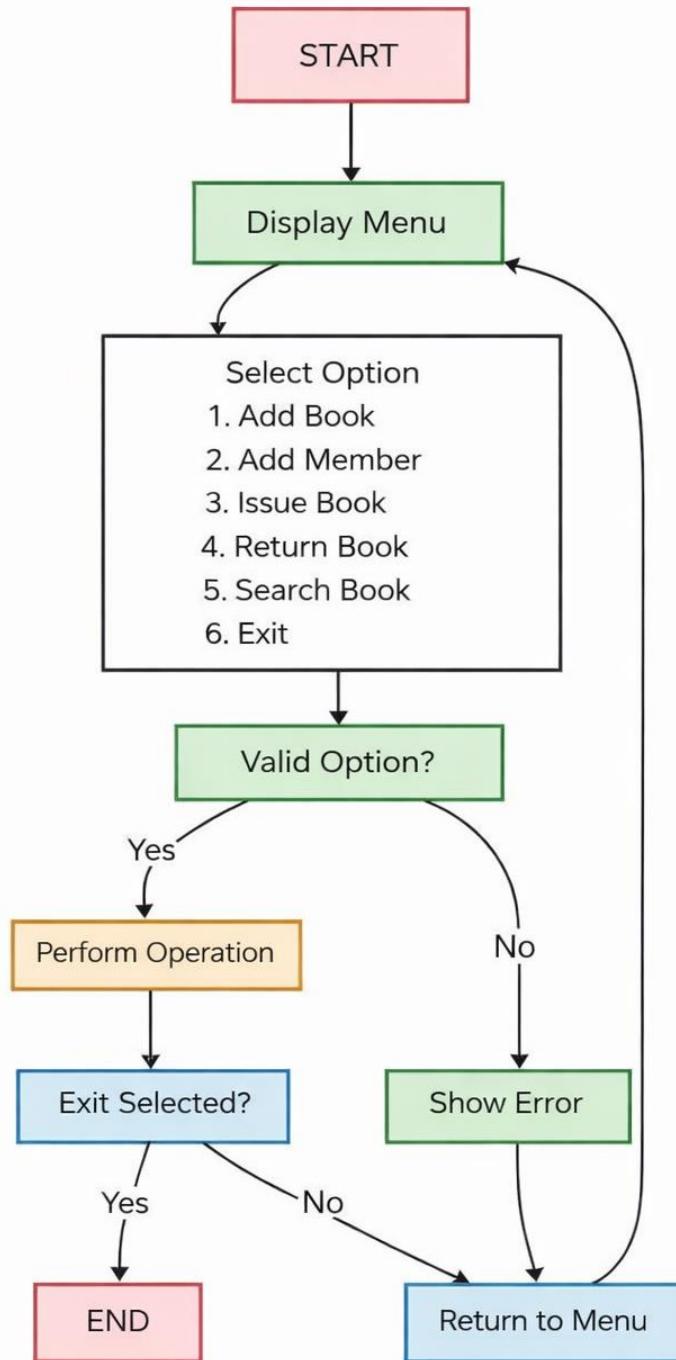
**Technology:** C Programming Language

**Type:** Console Based Mini Project

# PROCESS



# WORK FLOW



# Sample Code

```
#include <stdio.h>

#include <string.h>

struct book {
    int id;
    char name[50];
    char author[50];
    int issued;
};

struct book b[50];
int count = 0;

void addBook() {
    printf("Enter Book ID: ");
    scanf("%d", &b[count].id);
    printf("Enter Book Name: ");
    scanf("%s", b[count].name);
    printf("Enter Author Name: ");
```

```
    scanf("%s", b[count].author);

    b[count].issued = 0;

    count++;

    printf("Book added successfully!\n");

}
```

```
void displayBooks() {

    int i;

    if (count == 0) {

        printf("No records found!\n");

        return;
    }

    printf("\nID\tBook Name\tAuthor\tStatus\n");

    for (i = 0; i < count; i++) {

        printf("%d\t%s\t%s\t%s\n",
               b[i].id, b[i].name, b[i].author,
               b[i].issued ? "Issued" : "Available");
    }
}

int main() {
```

```
int ch;

while (1) {

    printf("\n===== LIBRARY MANAGEMENT SYSTEM
=====\\n");

    printf("1. Add Book\\n2. Display All Books\\n3. Exit\\n");

    printf("Enter your choice: ");

    scanf("%d", &ch);

    if (ch == 1) addBook();

    else if (ch == 2) displayBooks();

    else if (ch == 3) break;

    else printf("Invalid choice\\n");

}

return 0;
}
```