

LIBRARY MANAGEMENT SYSTEM

Submitted By-Aastha Singh

Uid:-24BCA10483

Branch:- BCA

Section:- 7A

Semester:-2nd

Subject code:-24CAP-152

Subject name:- Data structure using C
Monika

Submitted To- Mrs

AIM :- To Develop Library Management System Using
Data Structure in C

Procedure Code:-

```
#include <stdio.h>
```

```
#include <string.h>
```

```
#define MAX_BOOKS 10
```

```
#define MAX_MEMBERS 10
```

```
typedef struct {
```

```
    char title[50];
```

```
    int bookID;
```

```
    int isBorrowed; // 0: not borrowed, 1: borrowed
} Book;

typedef struct {
    char name[50];
    int memberID;
    int borrowedBookID; // Only one book borrowed at a time for simplicity
} Member;

Book books[MAX_BOOKS];
Member members[MAX_MEMBERS];
int numBooks = 0;
int numMembers = 0;

void addBook() {
    if (numBooks < MAX_BOOKS) {
        printf("Enter book title: ");
        scanf("%[^\n]", books[numBooks].title);
        printf("Enter book ID: ");
        scanf("%d", &books[numBooks].bookID);
        books[numBooks].isBorrowed = 0;
        numBooks++;
        printf("Book added.\n");
    } else {
        printf("Library is full.\n");
    }
}
```

```
}
```

```
void addMember() {  
    if (numMembers < MAX_MEMBERS) {  
        printf("Enter member name: ");  
        scanf("%[^\n]", members[numMembers].name);  
        printf("Enter member ID: ");  
        scanf("%d", &members[numMembers].memberID);  
        members[numMembers].borrowedBookID = 0; // 0 means no book  
        borrowed  
        numMembers++;  
        printf("Member added.\n");  
    } else {  
        printf("Maximum members reached.\n");  
    }  
}
```

```
void borrowBook() {  
    int memberID, bookID;  
    printf("Enter member ID: ");  
    scanf("%d", &memberID);  
    printf("Enter book ID: ");  
    scanf("%d", &bookID);  
  
    int memberIndex = -1, bookIndex = -1;  
    for (int i = 0; i < numMembers; i++) {  
        if (members[i].memberID == memberID) {
```

```

        memberIndex = i;
        break;
    }
}
for (int i = 0; i < numBooks; i++) {
    if (books[i].bookID == bookID) {
        bookIndex = i;
        break;
    }
}

```

```

    if (memberIndex != -1 && bookIndex != -1 && books[bookIndex].isBorrowed
== 0 && members[memberIndex].borrowedBookID == 0) {
        books[bookIndex].isBorrowed = 1;
        members[memberIndex].borrowedBookID = bookID;
        printf("Book borrowed.\n");
    } else {
        printf("Book not available, or member already borrowed a book, or
member/book not found.\n");
    }
}

```

```

void returnBook() {
    int memberID;
    printf("Enter member ID: ");
    scanf("%d", &memberID);
}

```

```

int memberIndex = -1, bookIndex = -1;
for (int i = 0; i < numMembers; i++) {
    if (members[i].memberID == memberID) {
        memberIndex = i;
        break;
    }
}

if (memberIndex != -1 && members[memberIndex].borrowedBookID != 0) {
    for (int i = 0; i < numBooks; i++) {
        if (books[i].bookID == members[memberIndex].borrowedBookID) {
            bookIndex = i;
            break;
        }
    }
    if (bookIndex != -1)
    {
        books[bookIndex].isBorrowed = 0;
        members[memberIndex].borrowedBookID = 0;
        printf("Book returned.\n");
    }

} else {
    printf("Member has not borrowed any book, or member not found.\n");
}
}

```

```
void displayBooks() {  
    printf("--- Books ---\n");  
    for (int i = 0; i < numBooks; i++) {  
        printf("Title: %s, ID: %d, Borrowed: %s\n", books[i].title, books[i].bookID,  
books[i].isBorrowed ? "Yes" : "No");  
    }  
}
```

```
void displayMembers() {  
    printf("--- Members ---\n");  
    for (int i = 0; i < numMembers; i++) {  
        printf("Name: %s, ID: %d, Borrowed Book ID: %d\n", members[i].name,  
members[i].memberID, members[i].borrowedBookID);  
    }  
}
```

```
int main() {  
    int choice;  
    do {  
        printf("\nLibrary Management System\n");  
        printf("1. Add Book\n");  
        printf("2. Add Member\n");  
        printf("3. Borrow Book\n");  
        printf("4. Return Book\n");  
        printf("5. Display Books\n");  
        printf("6. Display Members\n");  
        printf("7. Exit\n");
```

```
printf("Enter your choice: ");  
scanf("%d", &choice);  
  
switch (choice) {  
    case 1: addBook(); break;  
    case 2: addMember(); break;  
    case 3: borrowBook(); break;  
    case 4: returnBook(); break;  
    case 5: displayBooks(); break;  
    case 6: displayMembers(); break;  
    case 7: printf("Exiting.\n"); break;  
    default: printf("Invalid choice.\n");  
}  
} while (choice != 7);  
return 0;  
}
```

OUTPUT

```
Library Management System
```

1. Add Book
2. Add Member
3. Borrow Book
4. Return Book
5. Display Books
6. Display Members
7. Exit

```
Enter your choice: 1
```

```
Enter book title: tuesdays with morrie
```

```
Enter book ID: 1234
```

```
Book added.
```

```
Library Management System
```

1. Add Book
2. Add Member
3. Borrow Book
4. Return Book
5. Display Books
6. Display Members
7. Exit

```
Enter your choice: 2
```

```
Enter member name: Aastha singh
```

```
Enter member ID: 1234
```

```
Member added.
```


Library Management System

1. Add Book
2. Add Member
3. Borrow Book
4. Return Book
5. Display Books
6. Display Members
7. Exit

Enter your choice: 3

Enter member ID: 1234

Enter book ID: 4321

Book not available, or member already borrowed a book, or member/book not found.

Library Management System

1. Add Book
2. Add Member
3. Borrow Book
4. Return Book
5. Display Books
6. Display Members
7. Exit

Enter your choice: 4

Enter member ID: 1234

Member has not borrowed any book, or member not found.

Library Management System

1. Add Book
2. Add Member
3. Borrow Book
4. Return Book
5. Display Books
6. Display Members
7. Exit

Enter your choice: 6

--- Members ---

Name: Aastha singh, ID: 1234, Borrowed Book ID: 0

Library Management System

1. Add Book
2. Add Member
3. Borrow Book
4. Return Book
5. Display Books
6. Display Members
7. Exit

Enter your choice: 7

Exiting.

=== Code Execution Successful ===