

Library Management System in C++

```
#include <iostream>
#include <string>
#include <vector>
using namespace std;
class Book {
public:
    int id;
    string title;
    string author;
    bool isIssued;

    Book(int id, string title, string author) {
        this->id = id;
        this->title = title;
        this->author = author;
        this->isIssued = false;
    }

    void displayBook() const {
        cout << "Book ID: " << id << endl;
        cout << "Title: " << title << endl;
        cout << "Author: " << author << endl;
        cout << "Status: " << (isIssued ? "Issued" : "Available") << endl;
        cout << "-----" << endl;
    }
};

class Library {
private:
    vector<Book> books;

public:
    void addBook(int id, string title, string author) {
        Book newBook(id, title, author);
        books.push_back(newBook);
        cout << "Book added successfully!" << endl;
    }

    void searchBookById(int id) const {
        for (size_t i = 0; i < books.size(); ++i) {
            if (books[i].id == id) {
                books[i].displayBook();
            }
        }
    }
};
```

```

        return;
    }
}
cout << "Book not found!" << endl;
}

void displayAllBooks() const {
    if (books.empty()) {
        cout << "No books available in the library." << endl;
        return;
    }
    for (size_t i = 0; i < books.size(); ++i) {
        books[i].displayBook();
    }
}

void issueBook(int id) {
    for (size_t i = 0; i < books.size(); ++i) {
        if (books[i].id == id && !books[i].isIssued) {
            books[i].isIssued = true;
            cout << "Book issued successfully!" << endl;
            return;
        }
    }
    cout << "Book not available or already issued!" << endl;
}

void returnBook(int id) {
    for (size_t i = 0; i < books.size(); ++i) {
        if (books[i].id == id && books[i].isIssued) {
            books[i].isIssued = false;
            cout << "Book returned successfully!" << endl;
            return;
        }
    }
    cout << "Book not found or not issued!" << endl;
}

};

int main() {
    Library library;
    int choice, id;
    string title, author;

```

```

while (true) {
    cout << "\n--- Library Management System ---\n";
    cout << "1. Add Book\n2. Search Book by ID\n3. Display All Books\n4. Issue Book\n5.
Return Book\n6. Exit\n";
    cout << "Enter your choice: ";
    cin >> choice;

    switch (choice) {
    case 1:
        cout << "Enter Book ID: ";
        cin >> id;
        cout << "Enter Book Title: ";
        cin.ignore();
        getline(cin, title);
        cout << "Enter Book Author: ";
        getline(cin, author);
        library.addBook(id, title, author);
        break;
    case 2:
        cout << "Enter Book ID: ";
        cin >> id;
        library.searchBookById(id);
        break;
    case 3:
        library.displayAllBooks();
        break;
    case 4:
        cout << "Enter Book ID to issue: ";
        cin >> id;
        library.issueBook(id);
        break;
    case 5:
        cout << "Enter Book ID to return: ";
        cin >> id;
        library.returnBook(id);
        break;
    case 6:
        cout << "Exiting the system." << endl;
        return 0;
    default:
        cout << "Invalid choice! Try again." << endl;
    }
}
}

```

