#include <iostream>

#include <vector>

#include <string>

using namespace std;

class Book {

public:

int id;

string title;

string author;

bool isBorrowed;

Book(int id, string title, string author)

: id(id), title(title), author(author), isBorrowed(false) {}

void displayInfo() {

cout << "ID: " << id << ", Title: " << title << ", Author: " << author

<< ", Status: " << (isBorrowed ? "Borrowed" : "Available") << endl;

}

};

class Library {

private:

vector<Book> books;

public:

void addBook(int id, string title, string author) {

books.push\_back(Book(id, title, author));

cout << "Book added successfully!" << endl;

}

void displayBooks() {

if (books.empty()) {

cout << "No books in the library." << endl;

return;

}

for (auto &book : books) {

book.displayInfo();

}

}

void borrowBook(int id) {

for (auto &book : books) {

if (book.id == id) {

if (!book.isBorrowed) {

book.isBorrowed = true;

cout << "You have borrowed: " << book.title << endl;

} else {

cout << "Sorry, the book is already borrowed." << endl;

}

return;

}

}

cout << "Book not found." << endl;

}

void returnBook(int id) {

for (auto &book : books) {

if (book.id == id) {

if (book.isBorrowed) {

book.isBorrowed = false;

cout << "You have returned: " << book.title << endl;

} else {

cout << "The book was not borrowed." << endl;

}

return;

}

}

cout << "Book not found." << endl;

}

};

int main() {

Library library;

int choice, id;

string title, author;

do {

cout << "\nLibrary Management System\n";

cout << "1. Add Book\n2. Display Books\n3. Borrow Book\n4. Return Book\n5. Exit\n";

cout << "Enter your choice: ";

cin >> choice;

switch (choice) {

case 1:

cout << "Enter Book ID: ";

cin >> id;

cin.ignore(); // To ignore newline character after ID input

cout << "Enter Book Title: ";

getline(cin, title);

cout << "Enter Book Author: ";

getline(cin, author);

library.addBook(id, title, author);

break;

case 2:

library.displayBooks();

break;

case 3:

cout << "Enter Book ID to borrow: ";

cin >> id;

library.borrowBook(id);

break;

case 4:

cout << "Enter Book ID to return: ";

cin >> id;

library.returnBook(id);

break;

case 5:

cout << "Exiting the program.\n";

break;

default:

cout << "Invalid choice. Try again.\n";

}

} while (choice != 5);

return 0;

}