CODE FILE

PROJECT : LIBRARY MANEGMENT SYSTEM

SUB : ADVANCED DATA STRUCTURES

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CODE

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# Lists to store book details
book_ids = []
book_titles = []
book_authors = []
book_status = []  # "Available" or "Borrowed"

# Function to add a new book
def add_book():
    try:
        book_id = int(input("Enter Book ID: "))
        if book_id in book_ids:
            print(f"Error: Book ID {book_id} already exists.")
            return
        title = input("Enter Book Title: ")
        author = input("Enter Book Author: ")
        book_ids.append(book_id)
        book_titles.append(title)
        book_authors.append(author)
        book_status.append("Available")
        print(f'Book "{title}" added successfully!')
    except ValueError:
        print("Invalid input. Please enter a valid numeric Book ID.")
```

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# Function to search for a book
def search_book():
    query = input("Enter Book ID or Title to search: ")
    try:
        query = int(query)  # Convert query to integer if possible
    except ValueError:
        query = query.lower()  # Ensure case-insensitive search for title

    for i in range(len(book_ids)):
        if query == book_ids[i] or query == book_titles[i].lower():
            return i  # Return index of the found book
    return -1  # If book not found

# Function to borrow a book
def borrow_book():
    index = search_book()
    if index != -1:
        if book_status[index] == "Available":
            book_status[index] = "Borrowed"
            print(f'You have borrowed "{book_titles[index]}".')
        else:
            print(f'Book "{book_titles[index]}" is currently borrowed.')
    else:
        print("Book not found.")

# Function to return a book
def return_book():
    index = search_book()
    if index != -1:
        if book_status[index] == "Borrowed":
            book_status[index] = "Available"
            print(f'You have returned "{book_titles[index]}". Thank you!')
        else:
            print(f'Book "{book_titles[index]}" was not borrowed.')
    else:
        print("Book not found.")

# Function to display all books
def display_books():
    if len(book_ids) == 0:
        print("No books in the library.")
    else:
        print("Library Books:")
        for i in range(len(book_ids)):
            print(f'ID: {book_ids[i]}, Title: {book_titles[i]}, Author: {book_authors[i]},
Status: {book_status[i]}')
```

```
# Function to add multiple books
def add_multiple_books():
    while True:
        try:
            book_id = int(input("Enter Book ID: "))
            if book_id in book_ids:
                print(f"Error: Book ID {book_id} already exists.")
            else:
                title = input("Enter Book Title: ")
                author = input("Enter Book Author: ")
                book_ids.append(book_id)
                book_titles.append(title)
                book_authors.append(author)
                book_status.append("Available")
                print(f'Book "{title}" added successfully!')
        except ValueError:
            print("Invalid input. Please enter a valid numeric Book ID.")

        more_books = input("Do you want to add another book? (yes/no): ").lower()
        if more_books != 'yes':
            break

# Menu-driven system for library operations
def library_menu():
    while True:
        print("\nLibrary Management System")
        print("1. Add a Book")
        print("2. Add Multiple Books")
        print("3. Search a Book")
        print("4. Borrow a Book")
        print("5. Return a Book")
        print("6. Display All Books")
        print("7. Exit")

        choice = input("Enter your choice: ")
        if choice == "1":
            add_book()
        elif choice == "2":
            add_multiple_books()
        elif choice == "3":
            index = search_book()
            if index != -1:
                print(f'Book Found: ID: {book_ids[index]}, Title: {book_titles[index]}, Author:
{book_authors[index]}, Status: {book_status[index]}')
            else:
                print("Book not found.")
        elif choice == "4":
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            borrow_book()
        elif choice == "5":
            return_book()
        elif choice == "6":
            display_books()
        elif choice == "7":
            print("Exiting Library System!!")
            break
        else:
            print("Invalid choice. Please enter a valid option.")

# Run the library menu
library_menu()
```