

Test Report: Library Management System

Project: Library Management System

Testing Framework: JUnit 5

Testing Approach: Test-Driven Development (TDD)

Test Summary:

- **Total Test Cases:** 15
- **Test Cases Passed:** 15
- **Test Cases Failed:** 0

Test Cases:

1. **Add New Book Test**
 - **Description:** Test adding a new book to the library.
 - **Result:** Passed
2. **Duplicate ISBN Test**
 - **Description:** Ensure that adding a book with an existing ISBN throws an exception.
 - **Result:** Passed
3. **Add Null Book Test**
 - **Description:** Ensure that adding a null book throws an exception.
 - **Result:** Passed
4. **Add Invalid ISBN Test**
 - **Description:** Ensure that adding a book with an invalid ISBN throws an exception.
 - **Result:** Passed
5. **Borrow Added Book Test**
 - **Description:** Test borrowing a book that is available in the library.
 - **Result:** Passed
6. **Borrow Already Borrowed Book Test**
 - **Description:** Ensure that borrowing a book that is already borrowed throws an exception.
 - **Result:** Passed
7. **Borrow Non-Existing Book Test**
 - **Description:** Ensure that borrowing a non-existing book throws an exception.
 - **Result:** Passed
8. **Return Borrowed Book Test**
 - **Description:** Test returning a book that was borrowed.
 - **Result:** Passed
9. **Return Already Returned Book Test**
 - **Description:** Ensure that returning a book that is already returned throws an exception.
 - **Result:** Passed
10. **Return Never Borrowed Book Test**

- **Description:** Ensure that returning a book that was never borrowed throws an exception.
- **Result:** Passed
- 11. **Search Available Book Test**
 - **Description:** Test searching for an available book by its ISBN.
 - **Result:** Passed
- 12. **Search Not Available Book Test**
 - **Description:** Ensure that searching for a non-available book throws an exception.
 - **Result:** Passed
- 13. **Get Available Books Test**
 - **Description:** Test fetching all available books in the library.
 - **Result:** Passed
- 14. **Get Not Available Books Test**
 - **Description:** Test fetching all not available books in the library.
 - **Result:** Passed
- 15. **Get All Books Test**
 - **Description:** Test fetching all books in the library, regardless of availability.
 - **Result:** Passed

Conclusion:

All test cases were successfully executed and passed without any issues. The Library Management System's functionality is verified to work as expected according to the defined requirements. we can also add more test cases to make it better.