Test Cases – LMS

# TC-01: Search Books - Valid Keyword

Objective: Verify that searching with a valid title or author returns results.

Test Steps:

1. Login as Student.  
2. Enter 'Database Systems' in search box.  
3. Click Search.

Expected Result: Results show all books with 'Database Systems' in title/author, within 3s.

# TC-02: Search Books - No Results

Objective: Verify system behavior when no matches are found.

Test Steps:

1. Login as Student.  
2. Enter 'Unknown Title' in search box.  
3. Click Search.

Expected Result: System displays 'No results found' message.

# TC-03: Borrow Book - Valid Case

Objective: Verify borrowing when student has less than 3 active loans.

Test Steps:

1. Login as Student.  
2. Search 'Clean Code'.  
3. Click Borrow.  
4. Confirm borrowing.

Expected Result: System creates loan with 14-day due date and updates status to 'Checked Out'.

# TC-04: Borrow Book - Exceed Limit

Objective: Verify system prevents borrowing when student already has 3 active loans.

Test Steps:

1. Login as Student with 3 active loans.  
2. Attempt to borrow another book.

Expected Result: Borrow button disabled and error message shown.

# TC-05: Return Book - On Time

Objective: Verify return before due date.

Test Steps:

1. Librarian logs in.  
2. Scans borrowed book before due date.

Expected Result: System updates return date and sets status to 'Available'. No fine applied.

# TC-06: Return Book - Overdue

Objective: Verify fine calculation when return is late.

Test Steps:

1. Librarian logs in.  
2. Scans borrowed book 5 days after due date.

Expected Result: System updates return date, applies fine = $5, and updates status to 'Available'.

# TC-07: Pay Fine - Successful

Objective: Verify fine payment through online gateway.

Test Steps:

1. Student logs in with outstanding fines.  
2. Select fine and click Pay.  
3. Enter valid credit card details.  
4. Submit.

Expected Result: System confirms payment, updates fine to 'Paid', and notifies finance.

# TC-08: Pay Fine - Failed Payment

Objective: Verify system behavior on payment failure.

Test Steps:

1. Student logs in with outstanding fines.  
2. Attempt payment with expired card.  
3. Submit.

Expected Result: System rejects payment, fine remains 'Unpaid', error message displayed.

# TC-09: Manage Catalog - Add Book

Objective: Verify librarian can add new book with valid details.

Test Steps:

1. Librarian logs in.  
2. Open Add Book form.  
3. Enter valid Title, Author, ISBN.  
4. Save.

Expected Result: System saves book, status set to 'Available'. Entry visible in catalog.

# TC-10: Manage Catalog - Duplicate ISBN

Objective: Verify system prevents adding a book with duplicate ISBN.

Test Steps:

1. Librarian logs in.  
2. Add book with existing ISBN.  
3. Save.

Expected Result: System rejects entry with 'Duplicate ISBN' error.

# TC-11: Generate Reports - Overdue

Objective: Verify overdue report generation.

Test Steps:

1. Librarian logs in.  
2. Select 'Overdue Report'.  
3. Click Generate.

Expected Result: System displays list of overdue books with Student ID, Book ID, Days Overdue, Fine. Export available in PDF/Excel.

# TC-12: Generate Reports - Performance

Objective: Verify performance when generating large report.

Test Steps:

1. Librarian logs in.  
2. Select 'Overdue Report'.  
3. Dataset > 10,000 records.  
4. Click Generate.

Expected Result: System generates report within 10s.