



Project Report

PROJECT : Library Management System (SMARTLIB)

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1. Introduction

SmartLib is a web-based Library Management System designed to automate and simplify library operations. The system allows students, faculty members, and librarians to interact with the library through a single online platform. It manages book records, issuing and returning of books, user requests, fines, and reports efficiently.

2. Objectives of the System

The main objectives of SmartLib are:

- To automate manual library processes
- To maintain accurate records of books and users
- To provide role-based access (Student, Faculty, Librarian)
- To manage book issuing, returning, and overdue tracking
- To reduce paperwork and human errors

3. Software and Tools Used

- Visual Studio Code (Code Editor)
- XAMPP (Apache Server & MySQL)
- PHP (Server-side scripting)
- MySQL / phpMyAdmin (Database)
- HTML, CSS (User Interface Design)

4. User Roles in SmartLib

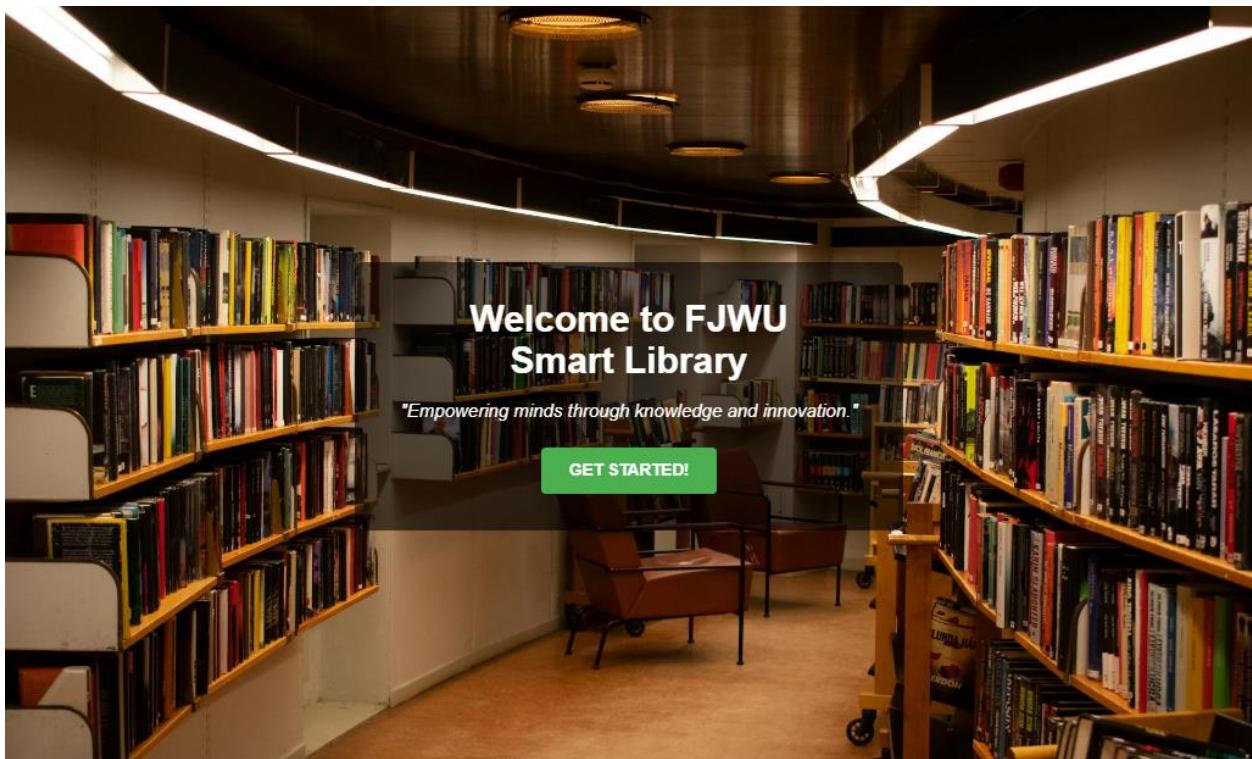
SmartLib supports three main user roles:

- Student
- Faculty
- Librarian

5. Functional Requirements

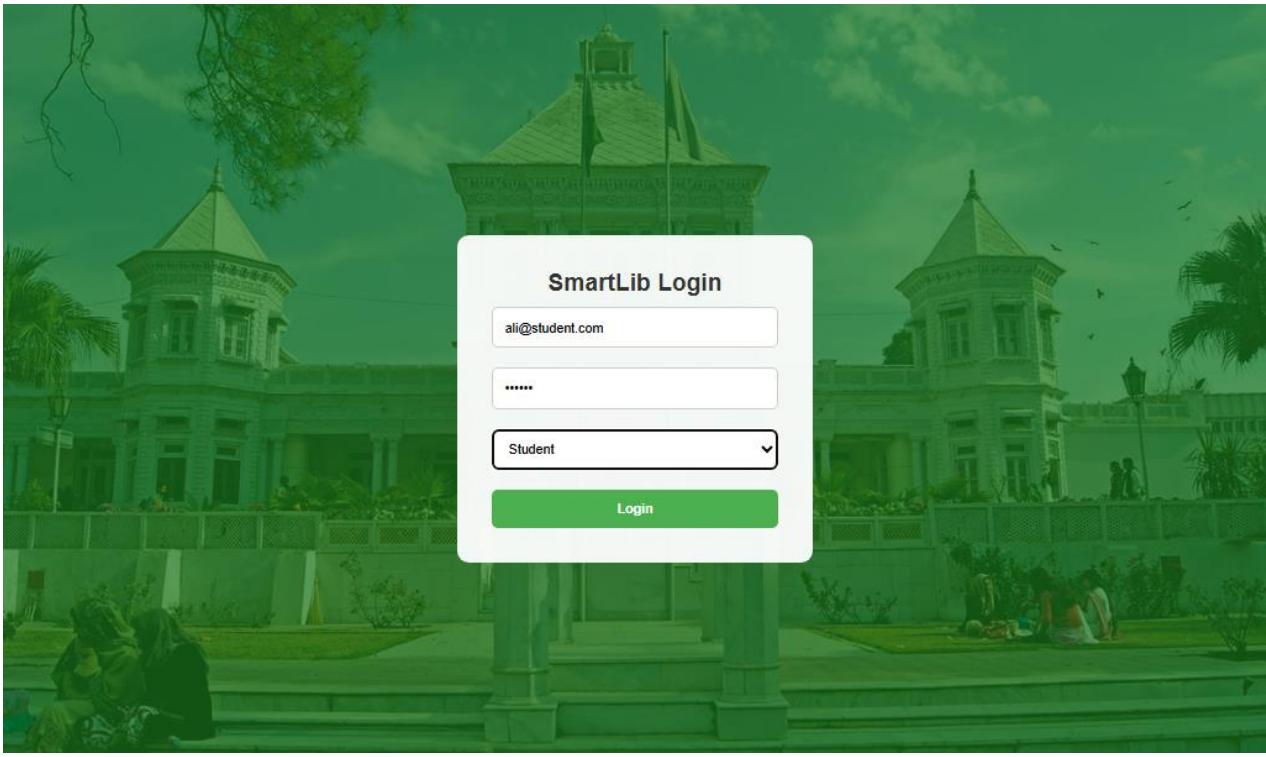
5.1 Welcome Page

The welcome page is the first interface of the system. It displays a brief introduction to SmartLib and provides a **Get Started** button that redirects users to the login page.



5.2 Login System

Users log in using their email, password, and role selection. After successful authentication, the system redirects them to their respective dashboards.



5.3 Session and Cookie Management

The SmartLib system uses **PHP Sessions** and **Cookies** to manage user authentication and improve user experience.

Sessions are used to store secure information such as member_id and user role after login. This ensures that only authorized users can access their respective dashboards. Session data is stored on the server and is destroyed on logout or browser close.

Cookies are used for non-sensitive purposes such as remembering the user's email address and storing last visit information. Cookies remain stored on the user's browser for a limited time to improve usability without compromising security.

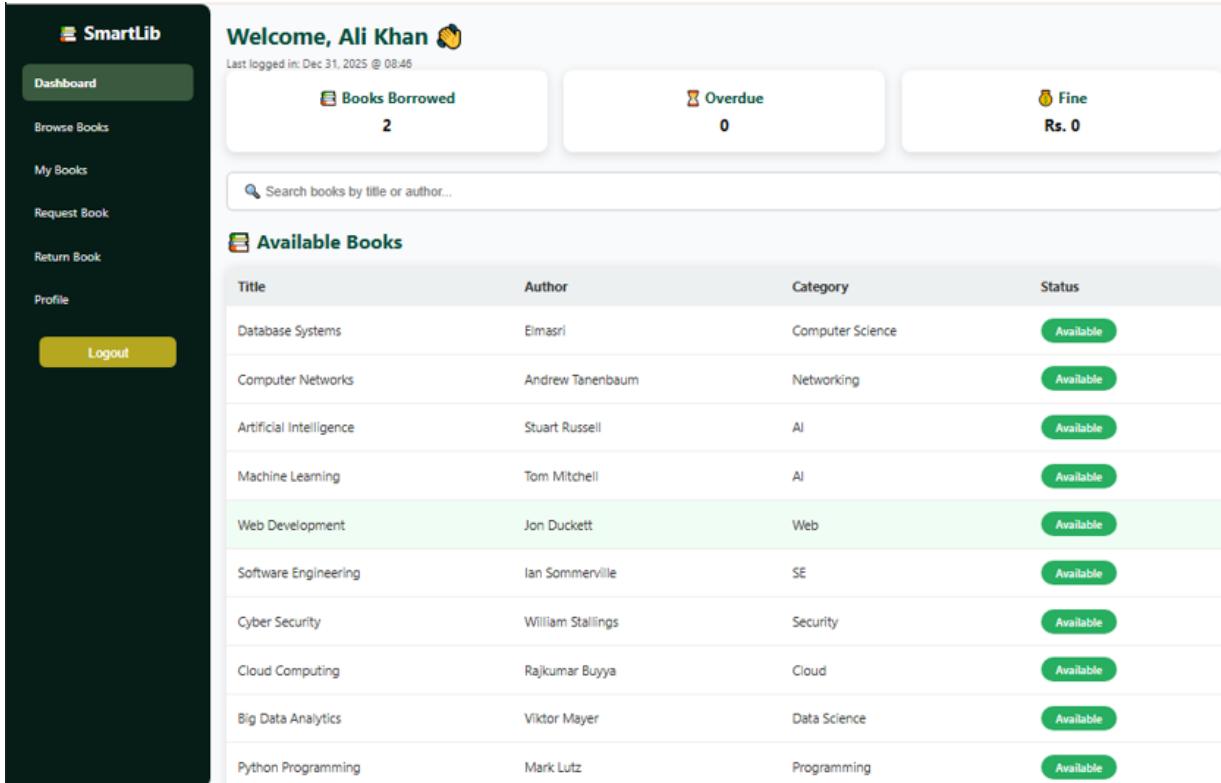
5.4 Student Module

5.4.1 Student Dashboard

The Student Dashboard is the main screen after login. It provides an overview of the student's library activity.

Features shown on dashboard:

- Welcome message with last login time
- Total Books Borrowed
- Overdue Books Count
- Total Fine Amount



The screenshot shows the SmartLib dashboard for a user named Ali Khan. The sidebar on the left contains links for Dashboard, Browse Books, My Books, Request Book, Return Book, Profile, and Logout. The main area has a welcome message "Welcome, Ali Khan" with a yellow profile icon, showing the last log in was on Dec 31, 2025 at 08:46. It displays three summary boxes: "Books Borrowed" (2), "Overdue" (0), and "Fine" (Rs. 0). Below these is a search bar with placeholder text "Search books by title or author...". The main content area is titled "Available Books" and lists ten books with columns for Title, Author, Category, and Status (all marked as "Available").

Title	Author	Category	Status
Database Systems	Elmasri	Computer Science	Available
Computer Networks	Andrew Tanenbaum	Networking	Available
Artificial Intelligence	Stuart Russell	AI	Available
Machine Learning	Tom Mitchell	AI	Available
Web Development	Jon Duckett	Web	Available
Software Engineering	Ian Sommerville	SE	Available
Cyber Security	William Stallings	Security	Available
Cloud Computing	Rajkumar Buyya	Cloud	Available
Big Data Analytics	Viktor Mayer	Data Science	Available
Python Programming	Mark Lutz	Programming	Available

This dashboard helps students quickly understand their current library status.

5.4.2 Browse Books

The Browse Books page allows students to:

- Search books by title, author, or ISBN
- Filter books by category and availability
- View book details such as title, author, category, ISBN, copies, and status
- Submit a request for available books

Browse Books

Find books by searching or filtering below

Title	Author	Category	ISBN	Copies	Status	Action
Artificial Intelligence	Stuart Russell	AI	ISBN004	0	AVAILABLE	Unavailable
Big Data Analytics	Viktor Mayer	Data Science	ISBN011	1	AVAILABLE	Request
Cloud Computing	Rajkumar Buyya	Cloud	ISBN009	3	AVAILABLE	Request
Compiler Design	Aho Ullman	Computer Science	ISBN015	1	REQUESTED	Request
Computer Networks	Andrew Tanenbaum	Networking	ISBN003	3	AVAILABLE	Request
Cyber Security	William Stallings	Security	ISBN008	3	AVAILABLE	Request
Data Mining	Han & Kamber	Data Science	ISBN010	2	REQUESTED	Request
Database Systems	Elmasri	Computer Science	ISBN001	5	AVAILABLE	Request
Discrete Mathematics	Kenneth Rosen	Mathematics	ISBN014	3	AVAILABLE	Request
Java Complete Reference	Herbert Schildt	Programming	ISBN013	4	REQUESTED	Request

5.4.3 My Books

This section displays the complete book history of the student, including:

- Issued books
- Returned books
- Due dates
- Status (Issued / Returned / Overdue)
- Fine (if applicable)

My Books

Track your borrowed books and request status

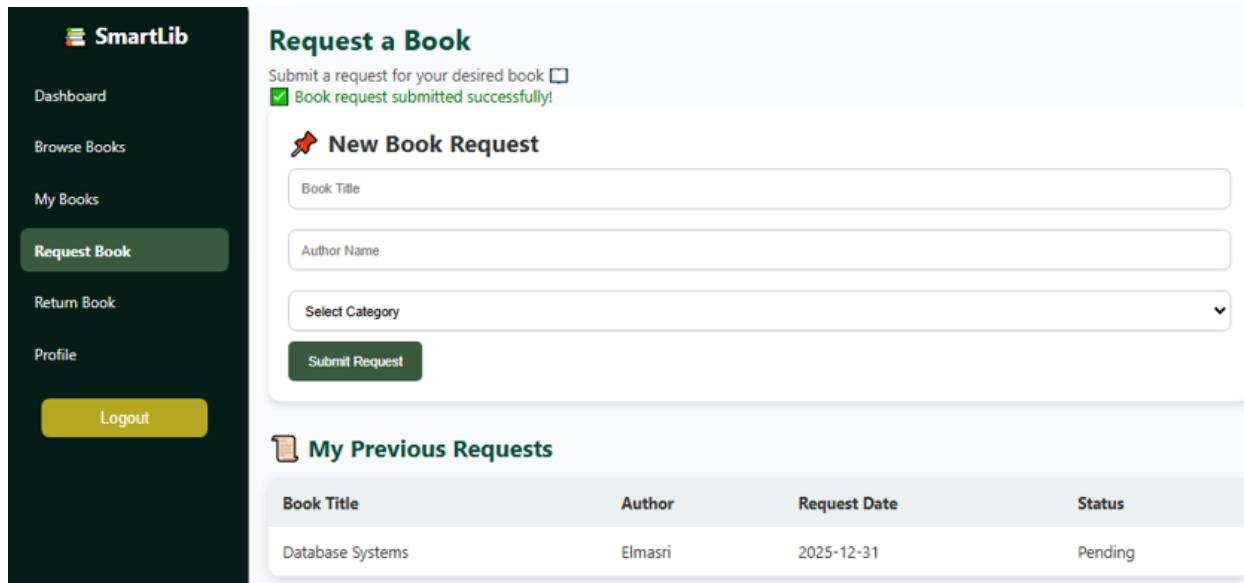
Title	Author	Issue Date	Due Date	Status	Fine
Machine Learning	Tom Mitchell	2025-12-31	2026-01-14	RETURNED	-
Python Programming	Mark Lutz	2025-12-31	2026-01-14	RETURNED	-
Java Complete Reference	Herbert Schildt	2025-12-31	2026-01-14	ISSUED / ON TIME	-
Operating Systems	Silberschatz	2025-12-31	2026-01-14	ISSUED / ON TIME	-
Artificial Intelligence	Stuart Russell	2025-02-01	2025-02-20	RETURNED	-
Database Systems	Elmasri	2025-01-01	2025-01-15	RETURNED	-

5.4.4 Request Book

Students can submit a book request by providing:

- Book title
- Author name
- Category

After submission, the request appears in **My Previous Requests** with status **Pending** until approved by the librarian. If both a student and a faculty request the same book, the faculty request is given priority.



The screenshot shows the SmartLib application interface. On the left is a dark sidebar with white text and icons for Dashboard, Browse Books, My Books, Request Book (which is highlighted in green), Return Book, Profile, and Logout. The main content area has a light background. At the top, it says "Request a Book" and "Submit a request for your desired book". A green success message "Book request submitted successfully!" with a checkmark icon is displayed. Below this is a form titled "New Book Request" with fields for "Book Title", "Author Name", "Select Category" (a dropdown menu), and a "Submit Request" button. At the bottom, there's a section titled "My Previous Requests" with a table showing one row: "Database Systems" by Elmasri, requested on "2025-12-31", with a status of "Pending".

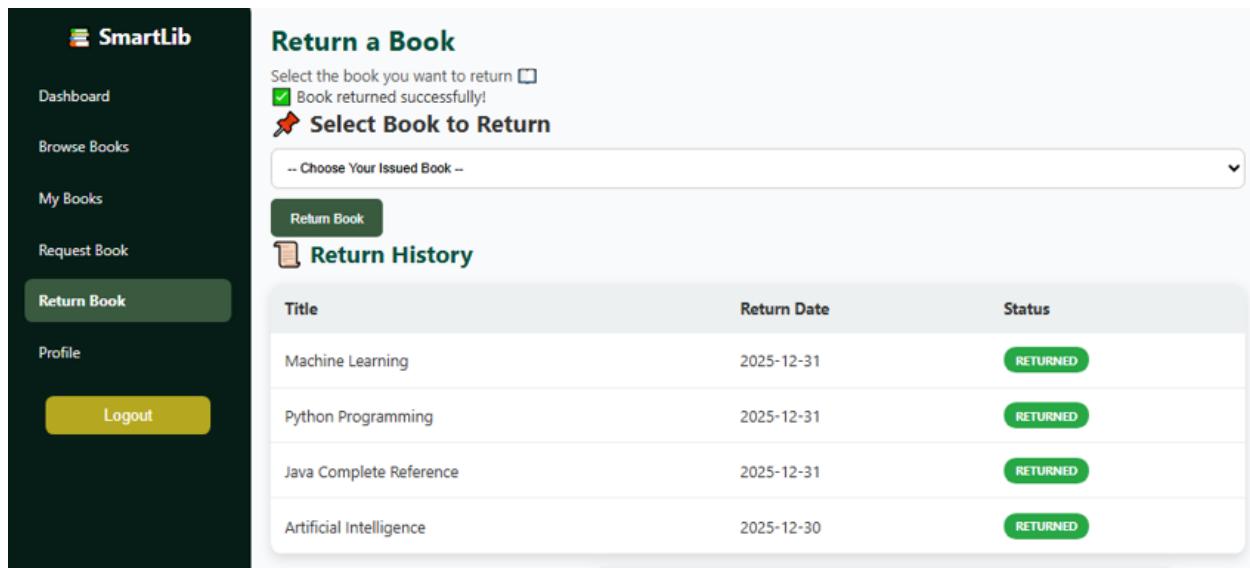
Book Title	Author	Request Date	Status
Database Systems	Elmasri	2025-12-31	Pending

5.4.5 Return Book

Students can return issued books from this section.

Functions:

- Select issued book from dropdown
- Submit return request
- Automatically update return date and status
- View return history



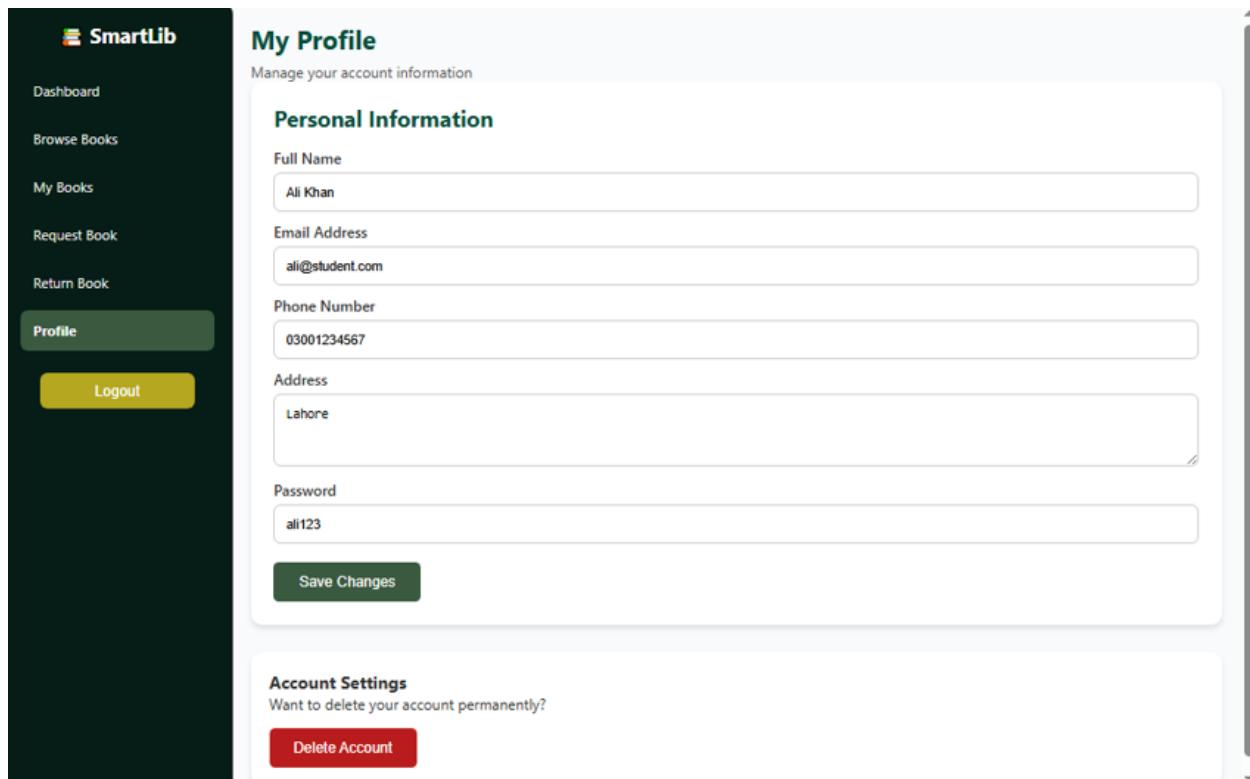
The screenshot shows the 'Return a Book' section of the SmartLib application. On the left, a dark sidebar menu includes 'Dashboard', 'Browse Books', 'My Books', 'Request Book', 'Return Book' (which is highlighted in green), and 'Profile'. Below these are 'Logout' and 'Logout' buttons. The main content area has a header 'Return a Book' with a success message: 'Select the book you want to return' and 'Book returned successfully!'. A red star icon is next to the message. A dropdown menu titled 'Select Book to Return' contains the placeholder 'Choose Your Issued Book...'. Below it is a green 'Return Book' button. The 'Return History' section displays a table with four rows of issued books:

Title	Return Date	Status
Machine Learning	2025-12-31	RETURNED
Python Programming	2025-12-31	RETURNED
Java Complete Reference	2025-12-31	RETURNED
Artificial Intelligence	2025-12-30	RETURNED

5.4.6 Profile Management

Students can:

- Update personal information (name, email, phone, address)
- Change password
- Delete account permanently



The screenshot shows the 'My Profile' section of the SmartLib application. The sidebar menu is identical to the previous screen. The main content area has a header 'My Profile' with a sub-instruction 'Manage your account information'. A section titled 'Personal Information' contains five input fields: 'Full Name' (Ali Khan), 'Email Address' (ali@student.com), 'Phone Number' (03001234567), 'Address' (Lahore), and 'Password' (ali123). Below these is a green 'Save Changes' button. At the bottom, there's an 'Account Settings' section with a warning: 'Want to delete your account permanently?' and a red 'Delete Account' button.

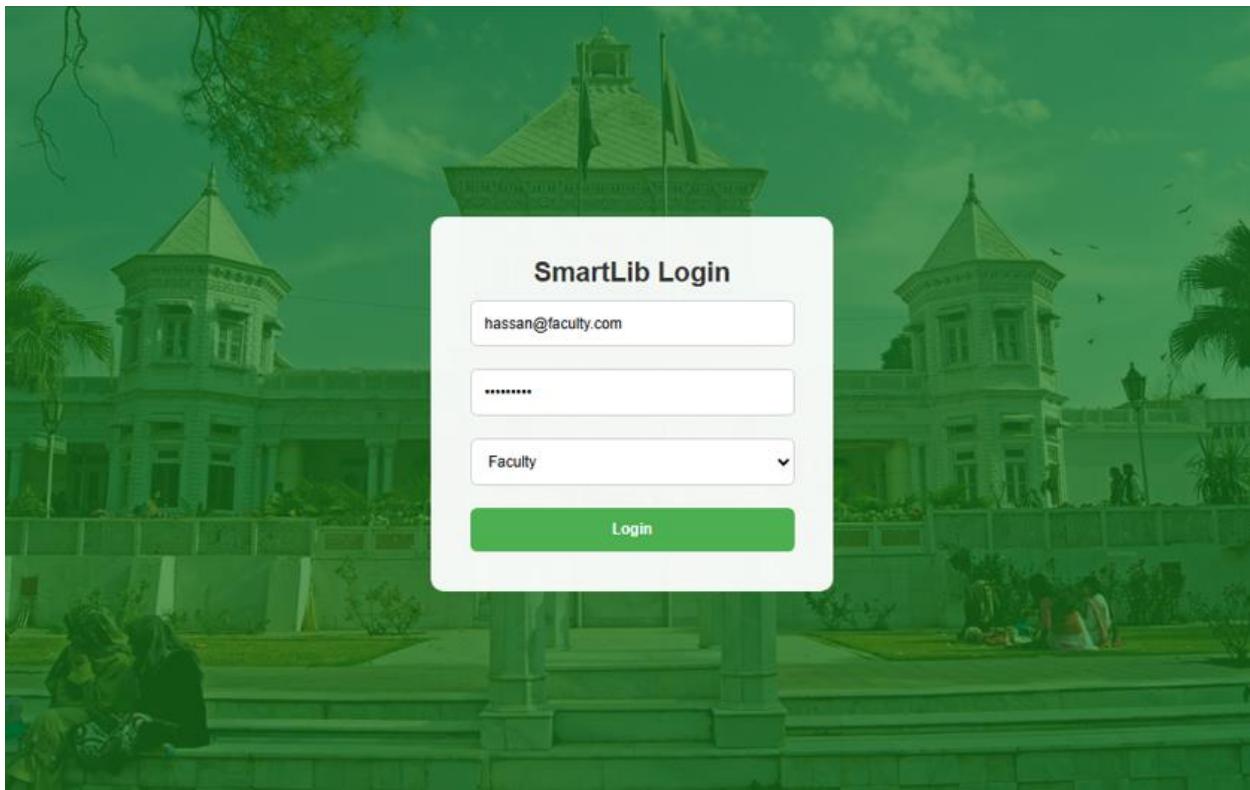
5.5 Faculty Module

Faculty members have similar features to students but with additional privileges:

- Priority access in book requests
- Extended issue duration (up to 30 days)
- No overdue fine policy
- Book recommendation feature

5.5.1 Faculty Dashboard

After successful login, faculty members are redirected to the **Faculty Dashboard**.



Dashboard Features:

- Welcome message with last login time
- Quick access buttons for:
 - Issue Books
 - Return Books
 - Recommended Books
 - Priority Requests

- Reports
- Display of faculty privileges

The screenshot shows the SmartLib Faculty Dashboard. On the left, a dark sidebar menu lists: Dashboard, Issue Books, Return Books, Recommended Books, Priority Requests, Reports, and My Profile. The main area has a light background. At the top, a welcome message says "Welcome, Dr. Hassan" and provides session details ("Last Session: Dec 31, 2025 @ 08:49"). Below this are five cards: "Issue Books" (Manage issued books), "Return Books" (Manage return history), "Recommended Books" (Recommend new books), "Priority Requests" (View book requests), and "Reports" (Check book issue summary). Under "Faculty Privileges", four features are listed: "Extended Issue Duration" (Faculty can issue books for up to 30 days), "No Late Fines" (Faculty are exempted from overdue fines), "Book Recommendations" (Faculty can suggest new titles), and "Priority Access" (Faculty requests are processed first). A "Logout" button is at the bottom left.

The dashboard acts as a central control panel for all faculty-related operations.

5.5.2 Issue Books

Faculty members can issue books directly from the **Issue Books** section.

Functional Details:

- Faculty can issue books for **up to 30 days**
- Book selection through dropdown list
- Issue duration selectable (default: 30 days)
- Issued book appears in issued history with status **Issued**

The screenshot shows the SmartLib application interface. On the left is a dark sidebar with navigation links: Dashboard, Issue Books (which is highlighted in green), Return Books, Recommended Books, Priority Requests, Reports, and My Profile. At the bottom of the sidebar is a yellow 'Logout' button. The main content area has a white background. At the top, it says 'Issue Books' and 'Faculty can issue books for up to 30 days.' Below this, a green success message box contains the text 'Book requested successfully!' with a checkmark icon. There are two dropdown menus: 'Book ID' with 'Select Book' and 'Issue Duration (Days)' with '30 Days'. A green 'Issue Book' button is located below these. To the right is a table titled 'Issued Books' with columns: Title, Author, Issue Date, Due Date, Return Date, and Status. The table lists seven books, all of which have a status of 'Returned'. At the bottom right of the main content area is a small yellow 'Logout' button.

Title	Author	Issue Date	Due Date	Return Date	Status
Cyber Security	William Stallings	2025-12-31	2026-01-30	2025-12-31	Returned
Big Data Analytics	Viktor Mayer	2025-12-31	2026-01-30	2025-12-31	Returned
Web Development	Jon Duckett	2025-12-31	2026-01-30	—	Issued
Discrete Mathematics	Kenneth Rosen	2025-12-31	2026-01-30	—	Requested
Artificial Intelligence	Stuart Russell	2025-12-30	2026-01-29	2025-12-30	Returned
Artificial Intelligence	Stuart Russell	2025-12-30	2026-01-29	2025-12-30	Returned
Web Development	Jon Duckett	2025-02-05	2025-02-25	2025-12-30	Returned

This feature allows faculty members extended access to books compared to students.

5.5.3 Return Books

Faculty members can return issued books at any time using the **Return Books** section.

Functions:

- Select issued book from dropdown
- Submit return request
- Automatically update return date
- Book status changes to **Returned**
- Return history is updated instantly

The screenshot shows the SmartLib application interface. On the left is a dark sidebar with a yellow header 'SmartLib' containing a book icon. Below the header are several menu items: 'Dashboard', 'Issue Books', 'Return Books' (which is highlighted in green), 'Recommended Books', 'Priority Requests', 'Reports', and 'My Profile'. At the bottom of the sidebar is a yellow 'Logout' button. The main content area has a light gray background. At the top, it says 'Return Books' and 'Faculty members can return issued books anytime'. A green checkmark indicates 'Book returned successfully!'. Below this is a 'Select Issued Book' section with a dropdown menu labeled '-- Select Issued Book --' and a 'Return Book' button. The main table lists books with columns for 'Book Title' and 'Return Date'. The table contains the following data:

	Book Title	Return Date
1	Web Development	2025-12-31
2	Cyber Security	2025-12-31
3	Big Data Analytics	2025-12-31
4	Web Development	2025-12-31
5	Artificial Intelligence	2025-12-30
6	Artificial Intelligence	2025-12-30

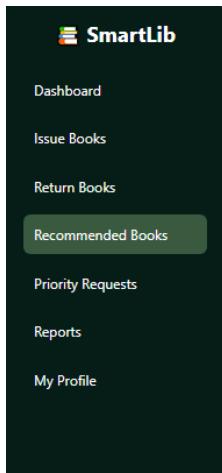
Faculty members are **exempted from late fines**, even if the book is returned after the due date.

5.5.4 Recommended Books

Faculty members can suggest new books to be added to the library collection.

Recommendation Form Includes:

- Book title
- Author name
- Reason for recommendation



SmartLib

Dashboard

Issue Books

Return Books

Recommended Books

Priority Requests

Reports

My Profile

Recommend a New Book

Suggest a book you'd like the library to add

Book Title

Author Name

Reason for Recommendation

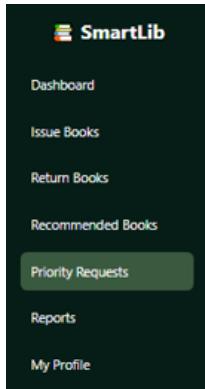
This feature helps improve the quality of the library collection.

5.5.5 Priority Book Requests

Faculty members have access to a **Priority Requests** section.

Priority Logic:

- Faculty book requests are marked as **Priority**
- If both a student and a faculty request the same book:
 - Faculty request is processed first



SmartLib

Dashboard

Issue Books

Return Books

Recommended Books

Priority Requests

Reports

My Profile

Priority Book Requests

Your priority requests only.

ID	Book Title	Author	Priority	Status	Request Date	Requested By
18	Discrete Mathematics	Kenneth Rosen	priority	pending	2025-12-31	Dr. Hassan

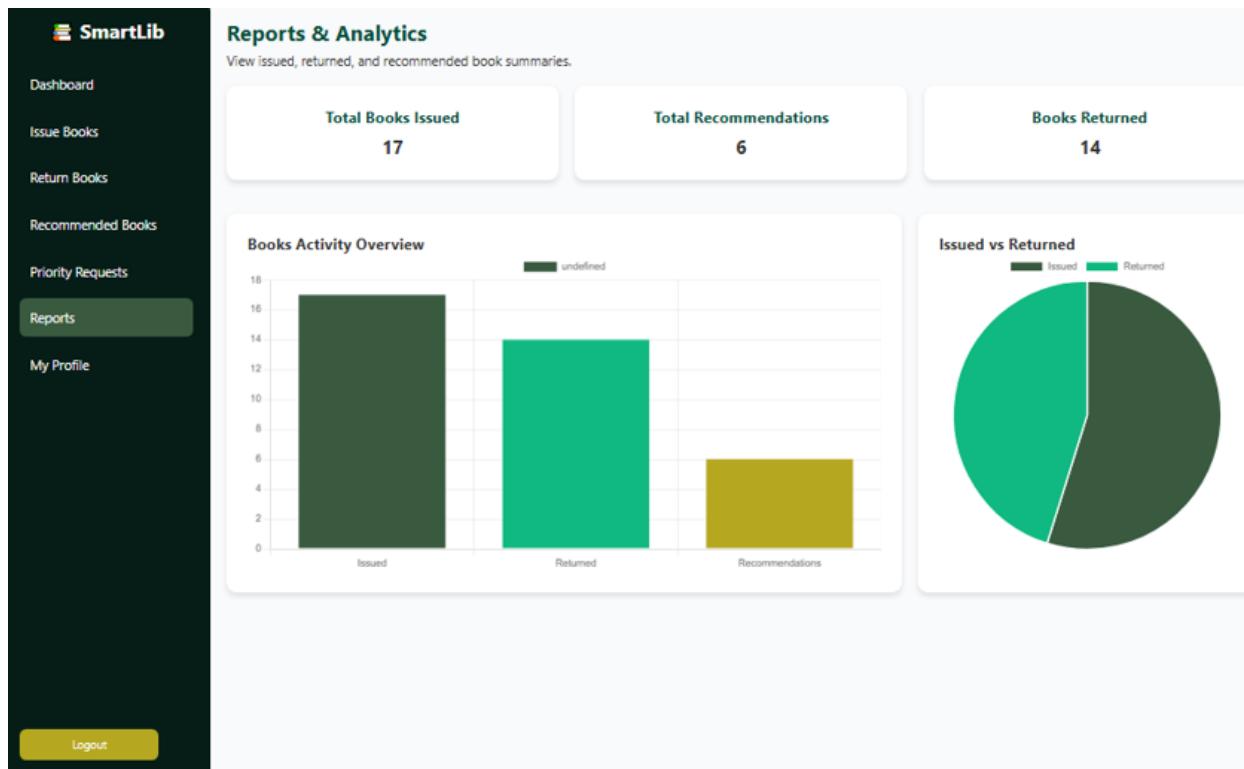
This ensures faculty members receive faster access to required books.

5.5.6 Reports

Faculty members can view analytical reports related to their library activity.

Reports Include:

- Total books issued
- Total books returned
- Total recommendations submitted
- Graphical representation (bar charts & pie charts)



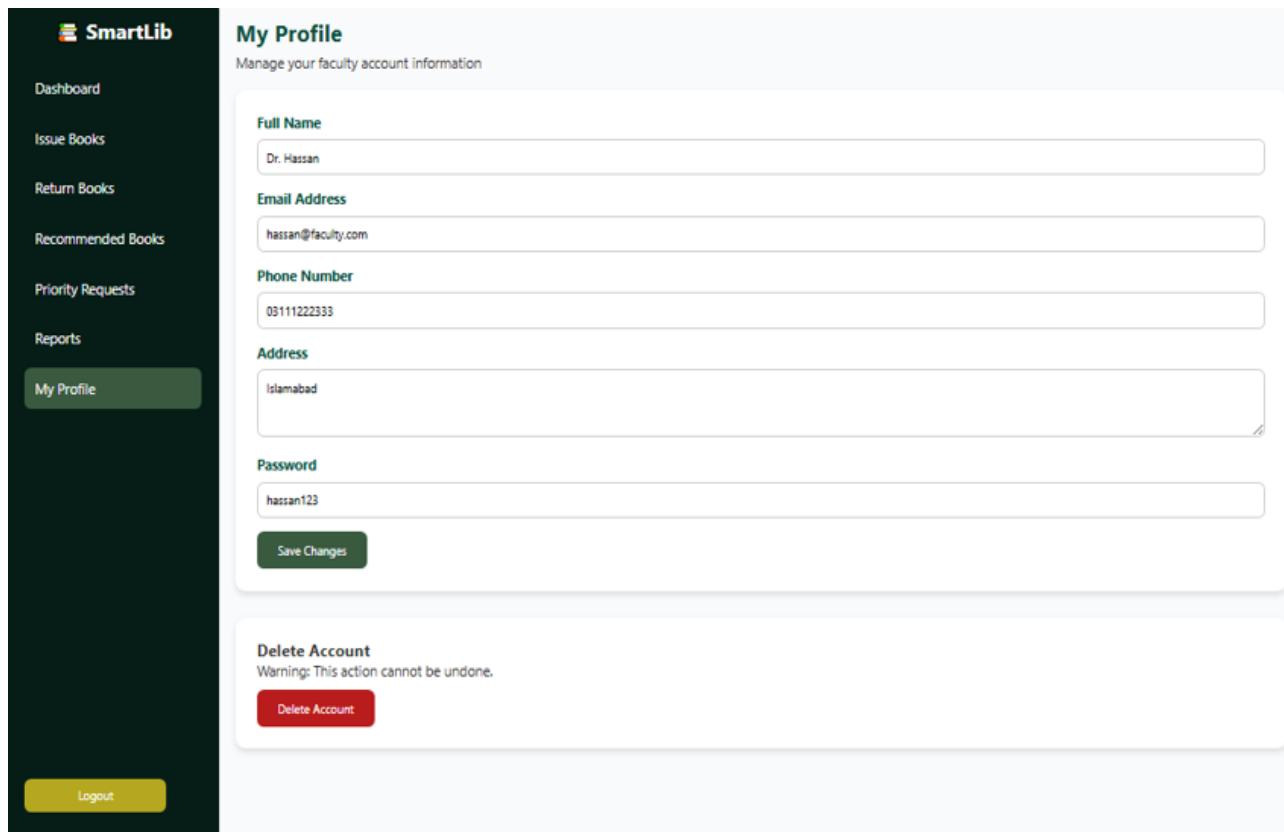
Reports help faculty track their usage and contribution to the library.

5.5.7 Faculty Profile Management

Faculty members can manage their personal profile information.

Profile Features:

- Update name, email, phone number, and address
- Change password
- Delete account permanently (irreversible action)



The screenshot shows the 'My Profile' section of the SmartLib application. On the left, a dark sidebar lists navigation options: Dashboard, Issue Books, Return Books, Recommended Books, Priority Requests, Reports, and My Profile (which is highlighted with a green background). At the bottom of the sidebar is a yellow 'Logout' button. The main content area has a light gray header 'My Profile' and a sub-header 'Manage your faculty account information'. It contains five input fields with placeholder text: 'Full Name' (Dr. Hassan), 'Email Address' (hassan@faculty.com), 'Phone Number' (03111222333), 'Address' (Islamabad), and 'Password' (hassan123). Below these fields is a green 'Save Changes' button. A separate section titled 'Delete Account' with a warning message 'Warning: This action cannot be undone.' contains a red 'Delete Account' button.

My Profile
Manage your faculty account information

Full Name
Dr. Hassan

Email Address
hassan@faculty.com

Phone Number
03111222333

Address
Islamabad

Password
hassan123

Save Changes

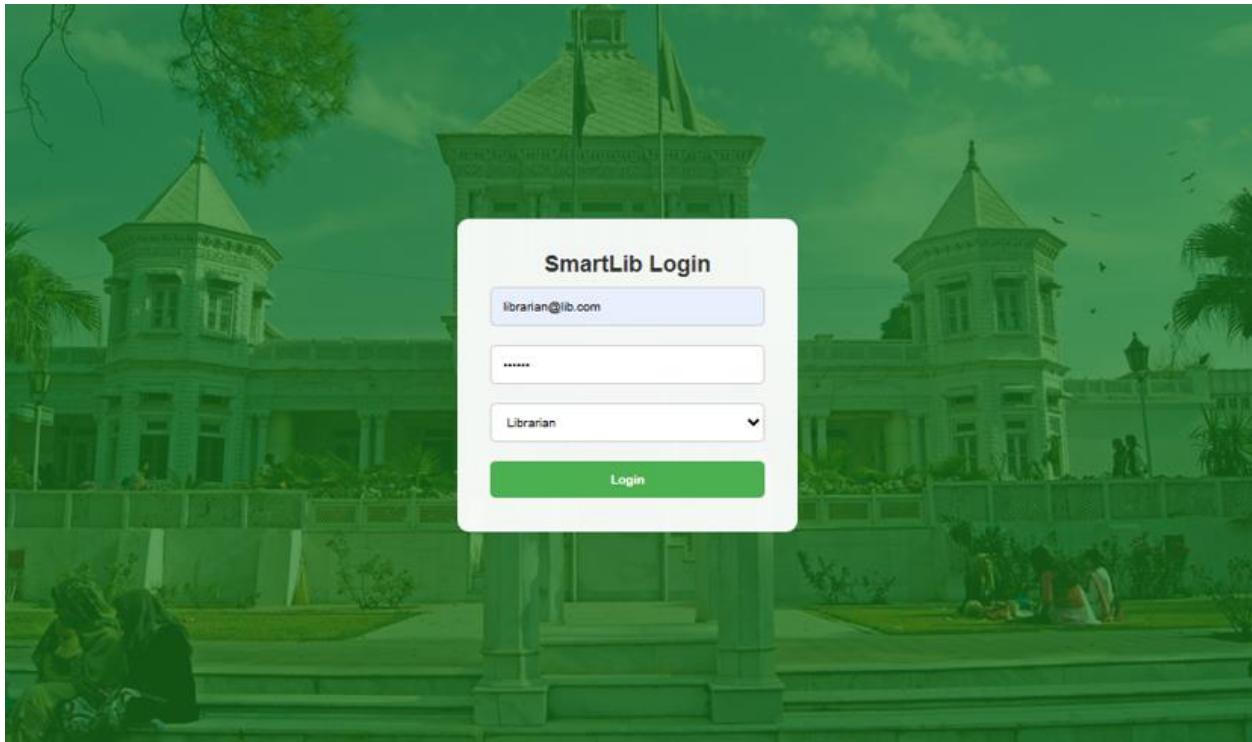
Delete Account
Warning: This action cannot be undone.

Delete Account

5.6 Librarian Module

The librarian dashboard provides complete control over the system

The librarian accesses the system through the SmartLib Login page by selecting the **Librarian** role and entering valid credentials.

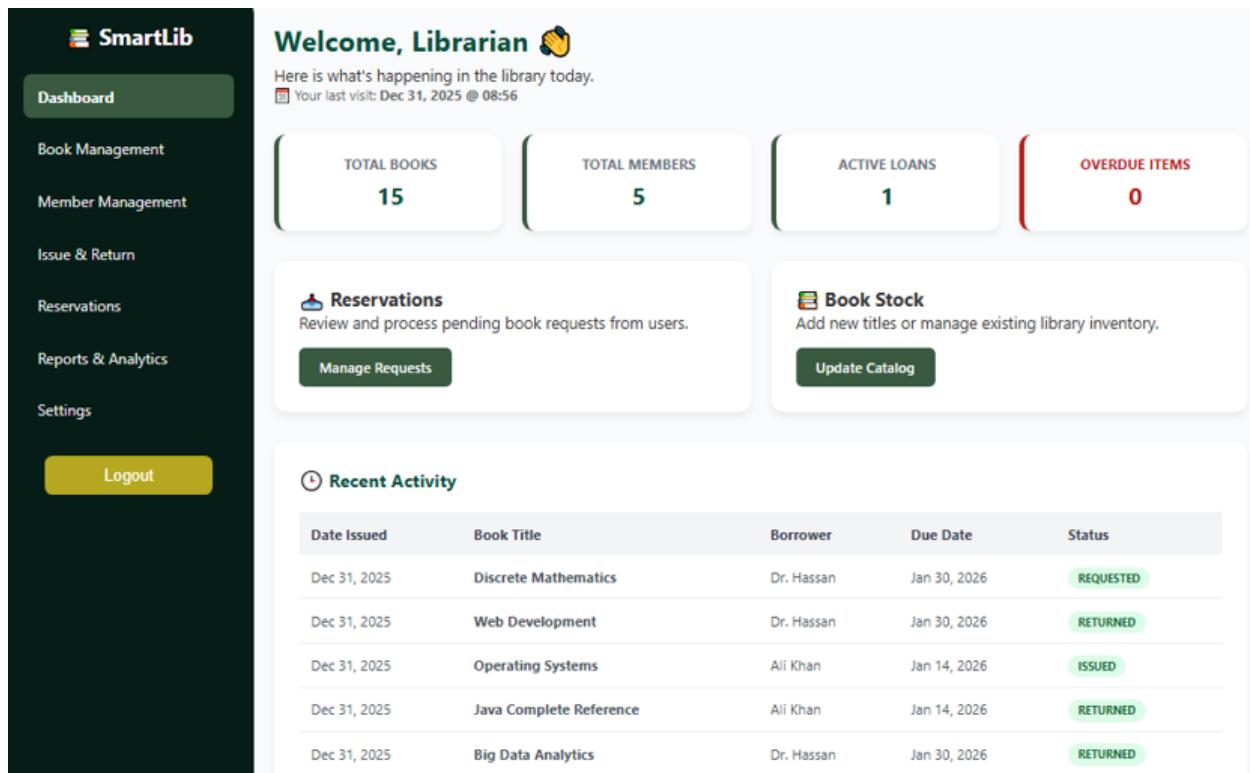


5.6.1 Librarian Dashboard

The Librarian Dashboard provides a real-time overview of library activity.

Dashboard Information Cards:

- Welcome message with last login time
- Total Books
- Total Members
- Active Loans
- Overdue Items
- Quick access buttons for Reservations and Book Stock
- Recent Activity table showing issued, returned, and requested books



The screenshot shows the SmartLib Librarian Dashboard. On the left is a dark sidebar with the SmartLib logo at the top, followed by a green 'Dashboard' button and several white buttons for 'Book Management', 'Member Management', 'Issue & Return', 'Reservations', 'Reports & Analytics', and 'Settings'. At the bottom of the sidebar is a yellow 'Logout' button. The main content area has a light gray header with the text 'Welcome, Librarian' and a yellow hand icon. Below it, a message says 'Here is what's happening in the library today.' and 'Your last visit: Dec 31, 2025 @ 08:56'. There are four summary boxes: 'TOTAL BOOKS 15', 'TOTAL MEMBERS 5', 'ACTIVE LOANS 1', and 'OVERDUE ITEMS 0'. Below these are two sections: 'Reservations' (with a 'Manage Requests' button) and 'Book Stock' (with a 'Update Catalog' button). At the bottom is a section titled 'Recent Activity' with a table showing five recent transactions:

Date Issued	Book Title	Borrower	Due Date	Status
Dec 31, 2025	Discrete Mathematics	Dr. Hassan	Jan 30, 2026	REQUESTED
Dec 31, 2025	Web Development	Dr. Hassan	Jan 30, 2026	RETURNED
Dec 31, 2025	Operating Systems	Ali Khan	Jan 14, 2026	ISSUED
Dec 31, 2025	Java Complete Reference	Ali Khan	Jan 14, 2026	RETURNED
Dec 31, 2025	Big Data Analytics	Dr. Hassan	Jan 30, 2026	RETURNED

This dashboard helps the librarian monitor library status at a glance.

5.6.2 Book Management

The Book Management module allows librarians to manage the library inventory.

Functions:

- Add new books (Title, Author, Category, ISBN, Copies)
- Modify existing book details
- Delete books from the catalog
- Search books by Title, Author, or ISBN
- View availability status (Available / Requested)

The screenshot shows the SmartLib Book Management system. On the left is a dark sidebar with navigation links: Dashboard, Book Management (which is selected and highlighted in green), Member Management, Issue & Return, Reservations, Reports & Analytics, Settings, and Logout. The main area has a light background with a header "Book Management" and a sub-header "Add, Modify, or Delete books from the system." Below are three buttons: "+ Add Book" (green), "Modify Book" (blue), and "Delete Book" (red). A search bar with placeholder text "Search by Title, Author, or ISBN..." and a "Search" button are also present. A table lists 11 books with the following data:

ID	Title	Author	Category	ISBN	Copies	Status
1	Database Systems	Elmasri	Computer Science	ISBN001	5	Requested
2	Operating Systems	Silberschatz	Computer Science	ISBN002	4	Requested
3	Computer Networks	Andrew Tanenbaum	Networking	ISBN003	3	Available
4	Artificial Intelligence	Stuart Russell	AI	ISBN004	0	Available
5	Machine Learning	Tom Mitchell	AI	ISBN005	2	Available
6	Web Development	Jon Duckett	Web	ISBN006	5	Available
7	Software Engineering	Ian Sommerville	SE	ISBN007	3	Available
8	Cyber Security	William Stallings	Security	ISBN008	3	Available
9	Cloud Computing	Rajkumar Buyya	Cloud	ISBN009	3	Available
10	Data Mining	Han & Kamber	Data Science	ISBN010	2	Requested
11	Big Data Analytics	Viktor Mayer	Data Science	ISBN011	1	Available

5.6.3 Member Management

The Member Management module is used to manage users of the system.

Functions:

- Add new members
- Modify member details (Name, Email, Role)
- Delete members from the system
- View complete member registry
- Search members by Name, Email, or ID

The screenshot displays the Member Management module of the SmartLib library management system. On the left, a dark sidebar menu lists various modules: Dashboard, Book Management, Member Management (which is currently selected and highlighted in green), Issue & Return, Reservations, Reports & Analytics, and Settings. A yellow 'Logout' button is at the bottom of the sidebar.

The main content area is titled 'Member Management' and includes the following sections:

- Add New Member:** A form with fields for Full Name, Email, Phone, Address, and a dropdown for Role (set to 'Student'). A green 'Add Member' button is present.
- Modify Member:** A form with fields for ID, New Name, New Email, and Change Role (Optional). An 'Update' button is located below the form.
- Delete Member:** A form with a single input field for 'Enter Member ID' and a red 'Delete' button.
- Member Registry:** A table listing member details. The columns are ID, Name, Email, Role, and Date Joined. The data is as follows:

ID	Name	Email	Role	Date Joined
#5	Librarian	librarian@lib.com	LIBRARIAN	Dec 30, 2025
#4	Dr. Alina	alina@faculty.com	FACULTY	Dec 30, 2025
#3	Dr. Hassan	hassan@faculty.com	FACULTY	Dec 30, 2025
#2	Sara Ahmed	sara@student.com	STUDENT	Dec 30, 2025
#1	Ali Khan	ali@student.com	STUDENT	Dec 30, 2025

This module helps librarians control access and maintain user records.

5.6.4 Issue & Return Books

This module handles book issuing and returning operations.

Issue Books:

- View currently issued books
- Track borrower details
- Monitor issue date and due date

The screenshot shows the SmartLib library management system. On the left is a dark sidebar with white text and icons. The 'Issue & Return' option is highlighted with a green background. The main content area has a light gray header with the title 'Issue & Return Books' and a subtitle 'Track active loans and process library returns'. Below this is a section titled 'Currently Issued Books' with a table. The table has columns for Issue ID, Borrower, Book Title, Issue Date, Due Date, and Action. One row is shown: Issue ID #15, Borrower Ali Khan (ID: 1), Book Title Operating Systems, Issue Date Dec 31, 2025, Due Date Jan 14, 2026, and Action 'Process Return'.

Return Books:

- Process book returns
- Automatically update book status to Available
- Update return history
- Display success confirmation messages

This screenshot shows the same SmartLib interface after a book has been returned. A green success message at the top right says 'Book has been successfully returned and marked as available.' The 'Currently Issued Books' table below shows a single entry: 'No books are currently issued.'

5.6.5 Reservations (Book Requests)

The Reservations module manages pending book requests.

Features:

- View all pending book requests
- Faculty requests are marked as **High Priority**
- Approve or reject requests

- Automatically assign due dates upon approval

Pending Book Requests

Review and process incoming book reservations. High priority items are listed first.

Priority	Member Info	Book Title	Request Date	Actions
FACULTY	Dr. Hassan Member ID: #3	Discrete Mathematics	Dec 31, 2025	<button>Approve</button> <button>Reject</button>
STUDENT	Ali Khan Member ID: #1	Database Systems	Dec 31, 2025	<button>Approve</button> <button>Reject</button>

Pending Book Requests

Review and process incoming book reservations. High priority items are listed first.

Request Approved. Due Date: 2026-01-14

Priority	Member Info	Book Title	Request Date	Actions
All clear! No pending requests to process.				

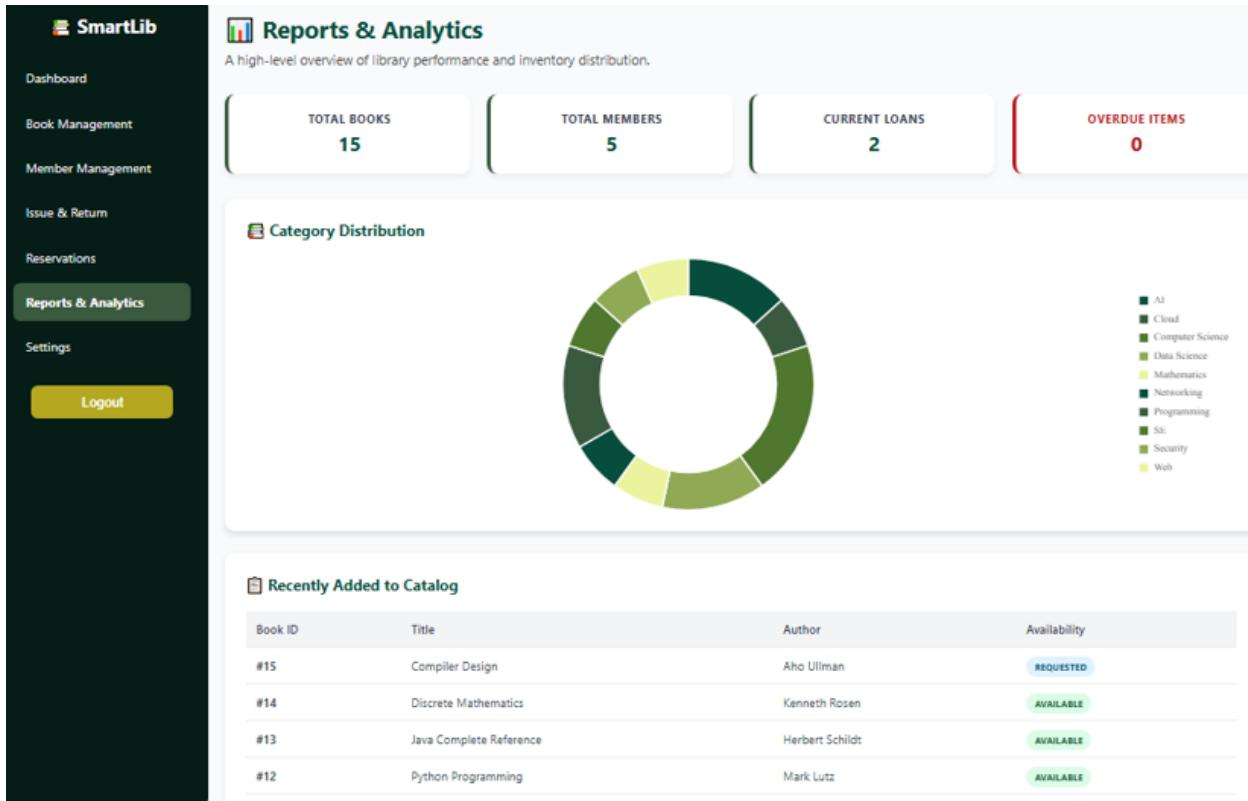
Priority Rule: If both a Student and a Faculty member request the same book, the Faculty request is processed first.

5.6.6 Reports & Analytics

The Reports & Analytics module provides insights into library performance.

Reports Include:

- Total Books
- Total Members
- Current Loans
- Overdue Items
- Category-wise book distribution (graphical view)
- Recently added books



This module helps librarians analyze usage patterns and inventory distribution.

5.6.7 Account Settings

The Settings module allows librarians to manage their account.

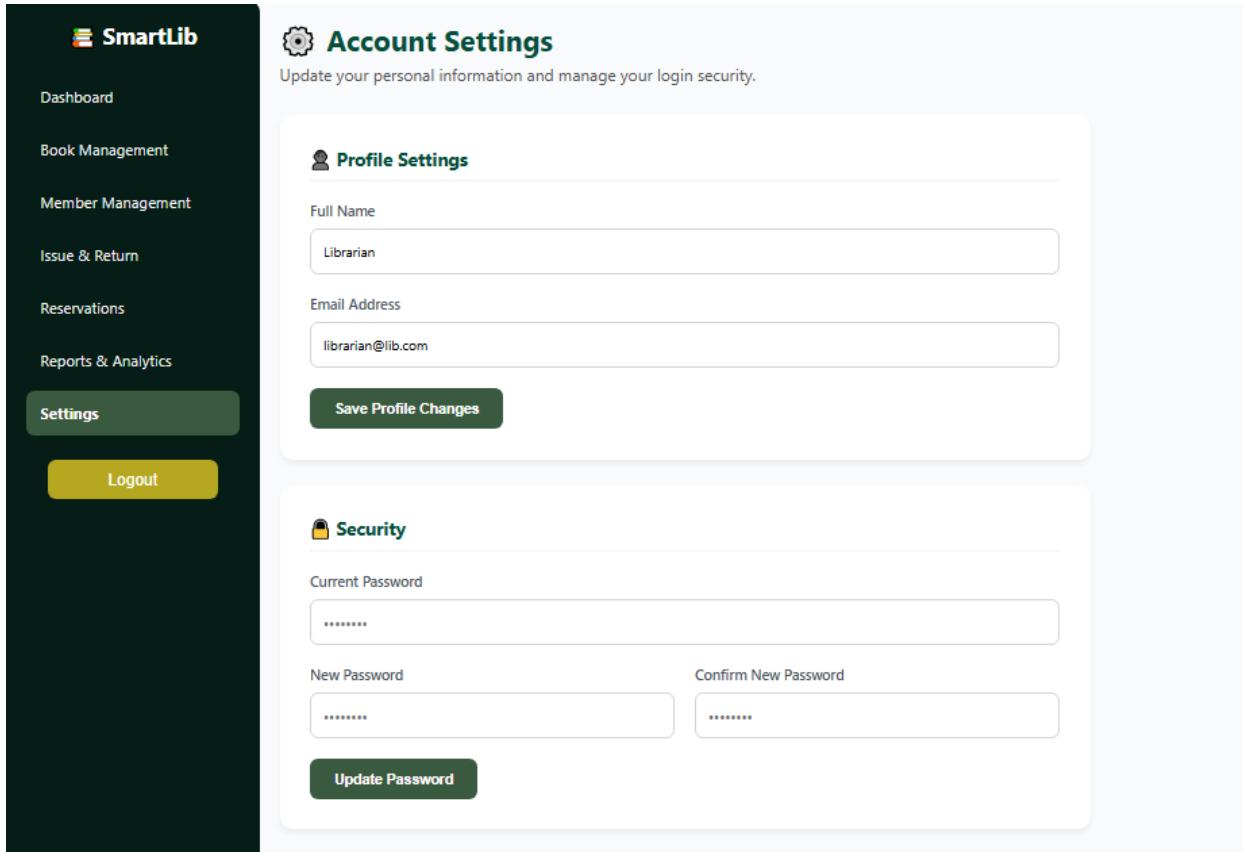
Profile Settings:

- Update full name
- Update email address

Security Settings:

- Change password
- Confirm password update securely

This ensures account security and updated personal information.



6. Non-Functional Requirements

Non-functional requirements describe how the system performs its functions rather than what functions it performs. These requirements ensure that the SmartLib system is reliable, secure, and easy to use.

6.1 User-Friendly Interface

The SmartLib system provides a clean, simple, and well-organized user interface. Dashboards are designed according to user roles (Student, Faculty, Librarian), allowing users to easily understand and navigate the system. Clear buttons, readable fonts, and meaningful labels help users perform tasks without technical knowledge or training.

6.2 Secure Login and Session Management

Security is a key requirement of the SmartLib system. User authentication is handled through a secure login mechanism using email, password, and role selection. PHP sessions are used to maintain user login states and prevent

unauthorized access. Users cannot access restricted pages without proper authentication, and session termination occurs on logout to ensure safety.

In addition to sessions, cookies are used for non-sensitive data such as last login information and remembered email address. This combination of sessions and cookies ensures strong security while providing a better user experience.

6.3 Role-Based Access Control

SmartLib implements strict role-based access control to protect system data. Each user role has specific permissions:

- Students can only access student-related features.
 - Faculty members have additional privileges such as priority requests and extended issue duration.
 - Librarians have full administrative access.
- This separation of roles ensures data integrity and prevents misuse of system resources.

6.4 Fast Response Time

The system is designed to respond quickly to user actions such as searching books, submitting requests, and loading dashboards. Efficient database queries and optimized backend logic help reduce delays, ensuring a smooth user experience even with multiple users accessing the system simultaneously.

6.5 Data Accuracy and Consistency

SmartLib ensures accurate and consistent data by using a centralized MySQL database. All records related to books, users, issues, returns, and fines are stored and updated in real time. Validation checks are applied to avoid incorrect data entry, ensuring reliable reports and correct system behavior.

7. Conclusion

SmartLib is a complete and efficient web-based Library Management System designed to automate and simplify library operations. The system successfully replaces manual processes with a digital platform that improves accuracy, saves time, and reduces paperwork.

By providing role-based access for students, faculty, and librarians, SmartLib ensures secure and organized management of library activities. Features such as book requests, priority handling for faculty, issue and return management, fine calculation, and reporting make the system practical and effective for real-world use.

Overall, SmartLib enhances the productivity of librarians, improves accessibility for users, and offers a reliable solution for modern library management.