Library Management System

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The Library Management System is a JavaFX-based desktop application designed to manage the operations of a library, including book management, student management, book issuing, and returning processes. This system allows librarians and users to interact with the library database seamlessly, providing functionalities to add, view, issue, and return books while maintaining accurate records.

**1. User Authentication and Roles:**

- Users can log in using their credentials.

- Two roles are supported: Librarian and User. Librarians have full access to the system can add/remove anything from the database , whereas Users have restricted access.

**2. Book Management:**

- Add Book: Librarians can add new books to the library inventory by providing details such as title, author, publisher, and quantity.

- View Books: Both Librarians and Users can view the list of available books, including details like title, author, publisher, quantity, and availability status.

**3. Student Management:**

- Add Student: Librarians can add new students to the system.

- View Students: Both Librarians and Users can view the list of registered students.

**4. Book Issuing and Returning:**

- Issue Book: Librarians can issue books to students by selecting a student and a book. The same student cannot issue the multiple copies of the same book at the same time.

- Return Book: Librarians can record the return of books issued to students. The system updates the book's quantity and availability status upon return.

**5. Logs and Event Tracking:**

- View Logs: Librarians can view logs of various events, such as user logins, logouts, and book transactions, providing an audit trail for system activities.

**6. Account Management:**

- Create Account: Users can create new accounts with a default role of 'User' to access the system.

**How It Works**

*1. Login and Authentication:*

- Users log in using their username and password. The system verifies the credentials against the stored data in the MySQL database.

- Upon successful login, users are redirected to the main menu, where available functionalities are displayed based on their role.

*2. Book Management:*

- Add Book: The librarian fills out the book details and submits the form. The system inserts the new book into the database and updates the inventory.

- View Books: The system retrieves and displays the list of books from the database. Users can search for books by title.

*3. Book Issuing:*

- The librarian selects a student and a book to issue. The system checks if the book is available (quantity > 0) before allowing the transaction.

- Upon issuing, the system decreases the book's quantity and updates its availability status in the database.

*4. Book Returning:*

- The librarian selects the issued book to return. The system updates the book's quantity and marks it as available if the quantity is greater than zero.

*5. Event Logging:*

- The system logs significant events such as user logins, logouts, and book transactions to maintain an audit trail.

A computer screen with a bookcase

Description automatically generatedA computer screen shot of a library

Description automatically generated

A screenshot of a computer

Description automatically generated