**Expleo JavaFullStack/Testing Track**

**Training Track** : JFS/Testing Track

**Module** : Console Based Project Development

**Project Title**  : Library Management System

**Overview:**

The Library Management System is a console-based application designed to facilitate the management of library resources, including books, patrons, and transactions. It aims to automate library operations such as book cataloguing, patron registration, borrowing and returning books, and managing fines and penalties.

**Functional Requirements**

1. **Book Management:**
   * Maintain a database of library books, including details such as title, author, ISBN, genre, and availability status.
   * Allow librarians to add, update, and delete book records, including cataloging new acquisitions and removing outdated items.
   * Implement mechanisms to track book loans, reservations, and returns.
2. **Patron Management:**
   * Maintain a database of library patrons, including personal details, contact information, and membership status.
   * Allow librarians to register new patrons, update patron records, and manage membership renewals or cancellations.
   * Implement authentication mechanisms to ensure secure patron access to library services.
3. **Book Borrowing and Returning:**
   * Enable patrons to search for available books, check out books, and request book reservations.
   * Track borrowed books, due dates, and overdue fines for each patron.
   * Implement checkout and return workflows, including barcode scanning or manual entry of book IDs.
4. **Fines and Penalties Management:**
   * Calculate and track fines for overdue books based on predefined penalty rules.
   * Notify patrons of overdue books and pending fines through reminders and notifications.
   * Allow librarians to manage fine payments, waivers, and adjustments.
5. **Catalog Search and Navigation:**
   * Provide patrons with search functionality to find books by title, author, genre, or other criteria.
   * Implement browsing features such as browsing by category, new arrivals, or popular titles.
   * Display detailed book information, including summaries, reviews, and availability status.

**User Roles:**

1. **Librarians/Library Staff:**
   * Librarians and library staff are responsible for managing the day-to-day operations of the library.
   * They use the system to catalog and organize library resources, manage patron accounts, process book loans and returns, handle fines and penalties, and generate reports on library usage and activities.
2. **Patrons/Readers:**
   * Patrons or readers are the primary users of the library who borrow and utilize library resources.
   * They use the system to search for and request books, check their account status (e.g., borrowed items, due dates, fines), renew borrowed items, place holds on items, and provide feedback or suggestions to the library.
3. **Administrators/Management:**
   * Administrators or management personnel oversee the overall management and strategic direction of the library.
   * They use the system to define and manage library policies, configure system settings, monitor system performance and usage statistics, and make decisions regarding library operations and services.