Functional and Non-Functional Requirements

Functional Requirements

1. **User Management**

   o Users should be able to register, login, and logout.

   o Admins should be able to manage user roles (e.g., librarians, members).

2. **Book Management**

   o Admins and librarians should be able to add, update, delete, and search for books.

   o Members should be able to search for available books.

3. **Borrowing and Returning Books**

   o Members can borrow and return books.

   o The system should track the due date for borrowed books.

   o Notifications should be sent to members about due dates.

4. **Reservation of Books**

   o Members should be able to reserve books if they are currently unavailable.

5. **Fine Management**

   o The system should calculate fines for overdue books.

   o Members can view and pay fines online.

6. **Reports**

   o Admins can generate reports on borrowed books, fines, and overdue books.

7. **Inventory Management**

   o Track the inventory of books in the library, including damaged or lost books.

Non-Functional Requirements

1. **Performance**:

   o The system should handle up to 1000 concurrent users without performance degradation.

2. **Security**:

   o Implement role-based access control (RBAC) to restrict functionalities based on user roles.

   o Data should be encrypted in transit and at rest.

3. **Usability**:

   o The system should have a user-friendly interface accessible on various devices (responsive design).

4. **Scalability**:

   o The system should be designed to scale horizontally as the number of users increases.

5. **Reliability**:

   o The system should have 99.9% uptime, with proper error handling and logging.

6. **Maintainability**:

   o The codebase should follow coding standards, be well-documented, and modular to facilitate updates and maintenance.

7. **Compliance**:

   o The system should comply with data protection regulations, such as GDPR.