# Library Information System Requirements

## Functional Requirements :

1. **User Management**
   * **User Registration and Login**: Allows users (members and staff) to create accounts and log in.
   * **User Profiles**: Stores user details, including membership type, borrowing limits, and contact information.
   * **Role-Based Access Control**: Assign different access levels for members, librarians, and administrators.
2. **Catalog Management**
   * **Add, Edit, and Delete Books**: Allows librarians to manage book records, including title, author, ISBN, genre, and availability status.
   * **Search and Filter Books**: Enables users to search for books by title, author, genre, ISBN, and other criteria.
   * **View Book Details**: Displays information about a selected book, including availability.
3. **Borrowing and Returning Books**
   * **Borrow Books**: Allows users to check out available books based on their membership status and borrowing limits.
   * **Return Books**: Allows users to return books, updating the system’s availability records.
   * **Reserve Books**: Allows users to reserve books currently on loan.
4. **Fine and Fee Management**
   * **Calculate Overdue Fines**: Automatically calculates fines for overdue books based on library policies.
   * **Fine Payment Processing**: Allows users to view and pay fines through the system.
5. **Notifications and Alerts**
   * **Due Date Reminders**: Sends alerts for upcoming due dates to reduce overdue books.
   * **Reservation Notifications**: Notifies users when a reserved book becomes available.
   * **Fine Notifications**: Sends alerts about pending or paid fines.
6. **Reports and Analytics**
   * **Borrowing Trends**: Provides insights on popular books, genres, and authors.
   * **User Activity Reports**: Generates reports on user borrowing and fines history.
   * **Inventory Reports**: Displays the library’s catalog, available stock, and books on loan.
7. **Digital Content Access (if applicable)**
   * **E-Book and Digital Media Access**: Allows members to borrow or view digital content directly from the system.
8. **System Administration**
   * **Database Backup and Recovery**: Provides options for regular data backup and recovery to prevent data loss.
   * **Audit Logs**: Records user activities for security and troubleshooting.

## Non-Functional Requirements :

1. **Performance**
   * **Response Time**: The system should respond to user actions (e.g., search, checkout) within 2 seconds.
   * **Scalability**: The system should handle increasing numbers of users and books without performance degradation.
2. **Usability**
   * **User-Friendly Interface**: Should be intuitive for all user levels, with clear navigation and accessible design.
   * **Multi-Language Support**: Optional but useful for libraries in diverse communities.
3. **Reliability**
   * **High Availability**: The system should be available 99.9% of the time, with minimal downtime.
   * **Data Integrity**: Ensures data consistency, such as avoiding duplicate book records or data loss during transactions.
4. **Security**
   * **Data Privacy**: Protect user data with encryption for sensitive information (e.g., user credentials, payment details).
   * **Access Control**: Prevent unauthorized access using secure authentication and role-based permissions.
5. **Maintainability**
   * **Modularity**: Code should be modular to allow for easy updates or expansion of features.
   * **Documentation**: Comprehensive documentation for users, administrators, and developers.
6. **Compatibility**
   * **Cross-Browser Support**: Compatible with all major web browsers.
   * **Device Compatibility**: Optimized for desktop and mobile devices.
7. **Compliance**
   * **Regulatory Compliance**: Adheres to applicable data protection regulations.