

# AAA Battery

## Library Management System

### Software Requirements Specification

### (SRS)

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# 1. Functional Requirements

## 1.1. User Account Management

- **Registration:**  
The system shall allow a user to register an account by providing the required information (e.g., username, email, and password) to access the system.
- **Validation:**  
The system shall validate the registration data to ensure its correctness and uniqueness.
- **Login/Logout:**  
The system shall allow a registered user to log in and log out securely.

## 1.2. Password Management

- **Change Password:**  
The system shall enable a user to change their password.
- **Password Recovery:**  
The system shall provide a password recovery mechanism to assist users in resetting forgotten passwords.

## 1.3. Activity Logging and Monitoring

- **Logging:**  
The system shall record all website activity logs for user actions and system events.
- **Librarian Monitoring:**  
The system shall provide an librarian interface that allows an librarian to monitor and filter activity logs to assess system functionality.
- **Librarian Log Details:**  
The system shall record and maintain log details relevant to librarian activities for effective management.

## 1.4. Content Management

- **Add Content:**  
The system shall allow a librarian to add new content (e.g., books or other library materials) to the library database.
- **Update Content:**  
The system shall allow a librarian to update existing content in the library to ensure it remains current.
- **Content Request Decisions:**  
The system shall allow a librarian to accept or reject content requests based on content availability.

## 1.5. Fine Management

- **5.1 Calculate Fines:**

The system shall calculate fines for overdue borrowed content based on borrowing timestamps.

- **Charge Fines:**

The system shall allow a librarian to charge the calculated fines to the respective borrowers.

- **Fine Payment:**

The system shall enable a borrower to pay any charged fines through an integrated payment mechanism.

## 1.6. Subscription Management

- **Manage Subscriptions:**

The system shall allow a librarian to add and cancel user subscriptions.

- **Subscription Feature:**

The system shall enable a borrower to subscribe to specified services or products (e.g., AAA battery subscription).

- **Availability Notification:**

The system shall notify a subscriber when requested content becomes available.

## 1.7. Borrowing and Returning Content

- **Display Content:**

The system shall display a list of all available content in the library.

- **Request Content:**

The system shall allow a borrower to request available content for borrowing at a specified time.

- **Return Content:**

The system shall enable a borrower to return borrowed content and update the content's availability status accordingly.

## 1.8. Deadline Extension Requests

- **Extension Request:**

The system shall allow a borrower to request an extension on the borrowing deadline to avoid incurring fines.

## 1.9. New Book Requests

- **New Book Request:**

The system shall allow a borrower to request the addition of new books that are not currently available in the library.

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## 2. Non-Functional Requirements

### 2.1. Product Requirements

- **Performance**
  - The system shall respond to user requests (e.g., logging in, searching for books) within a few seconds under normal conditions.
- **Security**
  - The system shall store user passwords in an encrypted format.
  - The system shall use secure connections (e.g., HTTPS) for all sensitive data transfers.
- **Usability**
  - The system shall have a clear and simple interface that is easy for new users to understand.
  - The system should include basic on-screen instructions or help tips for important features.
- **Reliability**
  - The system shall be available most of the time during library operating hours.
- **Maintainability**
  - The system shall use consistent coding practices and naming conventions to make updates easier.
  - The system shall allow parts (e.g., the payment module) to be changed or upgraded without affecting the rest of the system too much.
- **Scalability**
  - The system shall handle an increase in the number of users or books without major modifications.
  - The system should be designed so that adding more servers or resources is straightforward if user traffic grows.

### 2.2. Organizational Requirements

- **Standards and Guidelines**
  - The system shall follow any coding and design standards set by the library or school.
  - The system should use the library's color scheme and logo in its interface.
- **Development Environment**
  - The system shall be developed with tools chosen by the library or school (e.g., a specific programming language or framework).
  - The development team shall keep the project in a shared version control system (e.g., Git).
- **Documentation and Training**
  - The system shall include a simple user guide for librarians and staff.
  - The library shall provide short training sessions to help staff learn the new system.

## 2.3. External Requirements

### ■ Legal and Regulatory Compliance

- The system shall respect copyright laws when handling digital or physical materials.

### ■ Interoperability

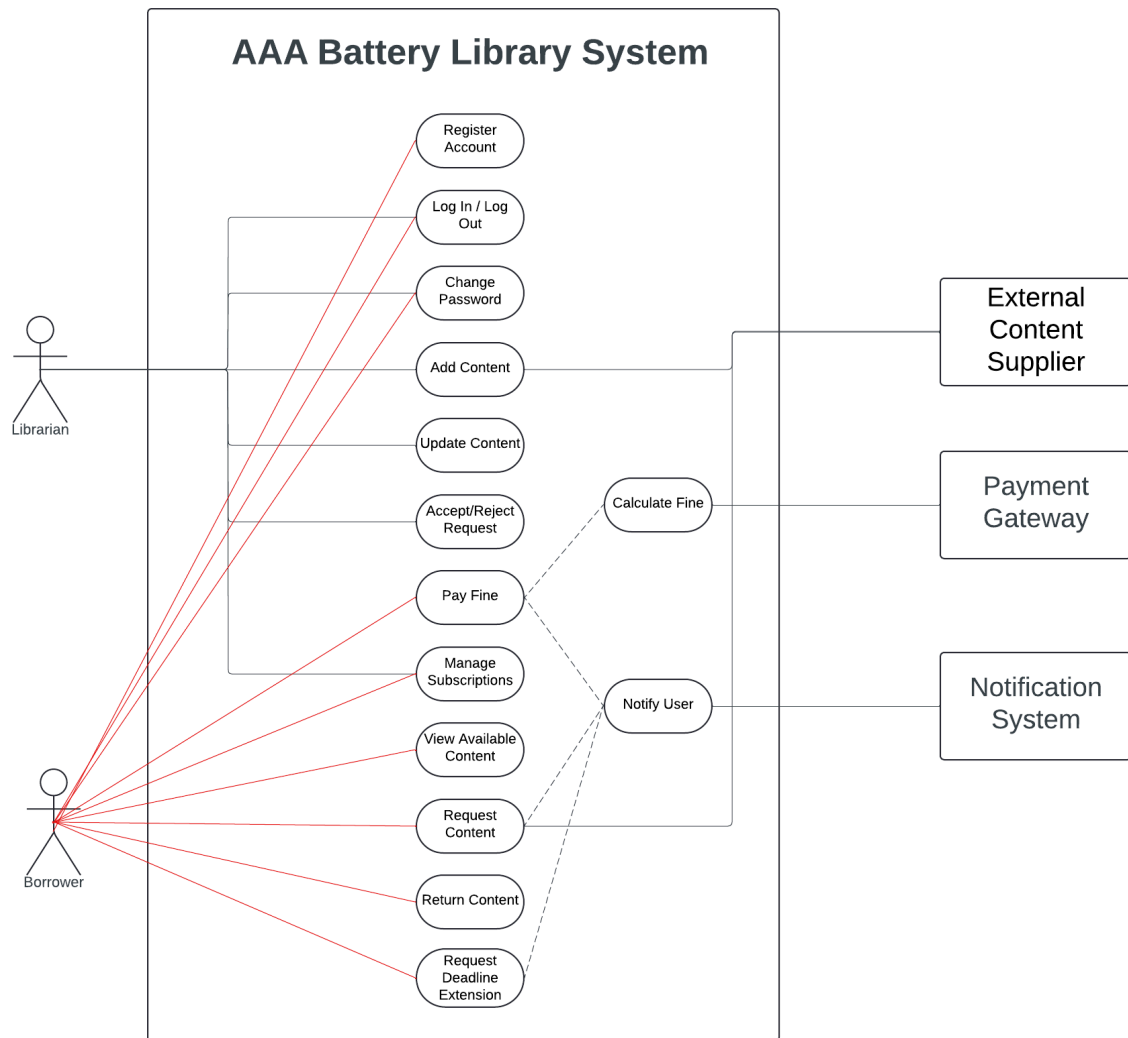
- The system should be able to connect with other services (e.g., payment gateways, eBook providers) if needed.
- The system shall use standard data formats (e.g., JSON, XML) when sharing information with other systems.

### ■ Accessibility

- The system shall consider basic accessibility guidelines so that users with disabilities can use it.
  - The system should minimize unnecessary data collection to protect user privacy.
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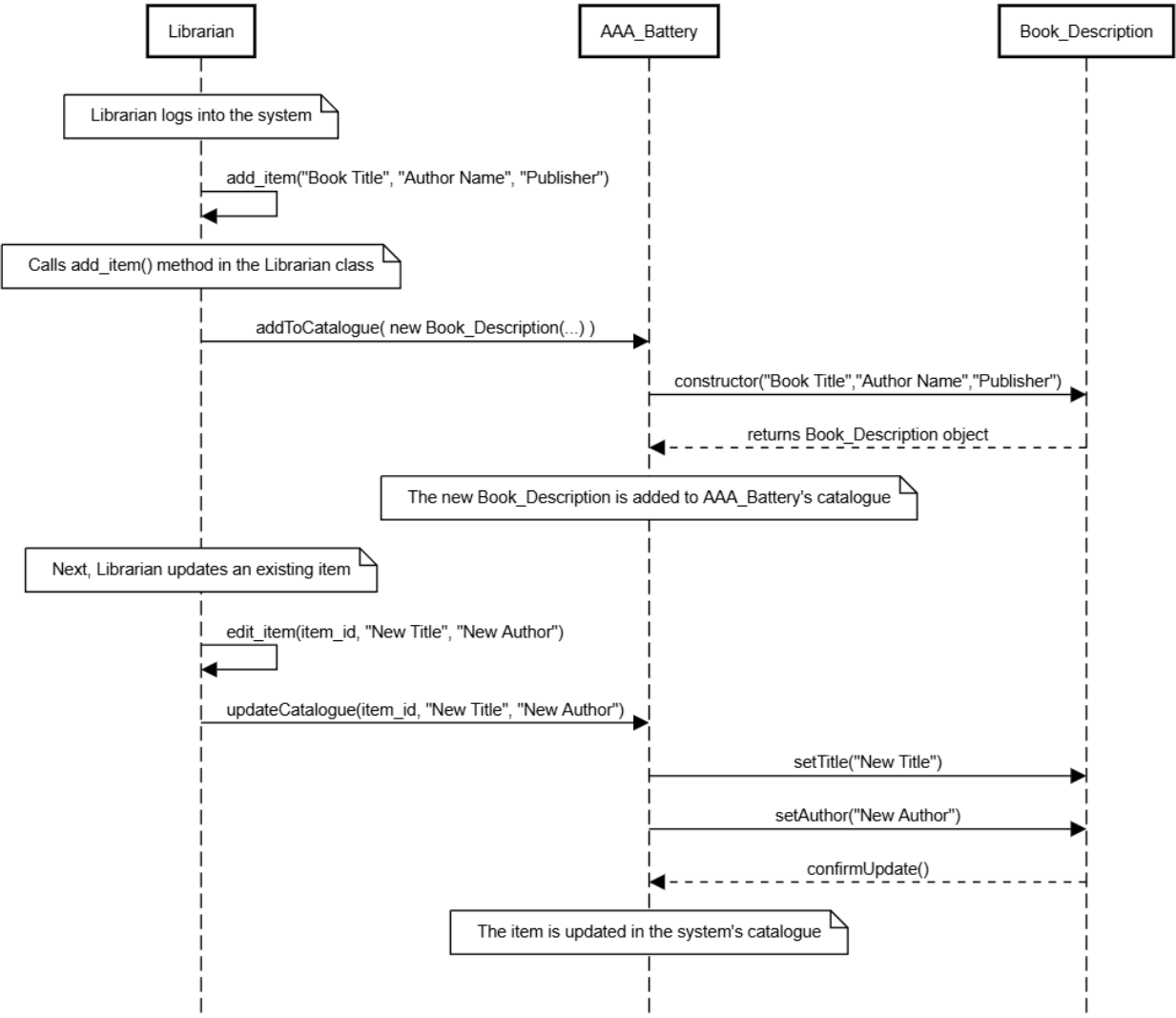
## 3. Diagrams

### 3.1. Use Case Diagram



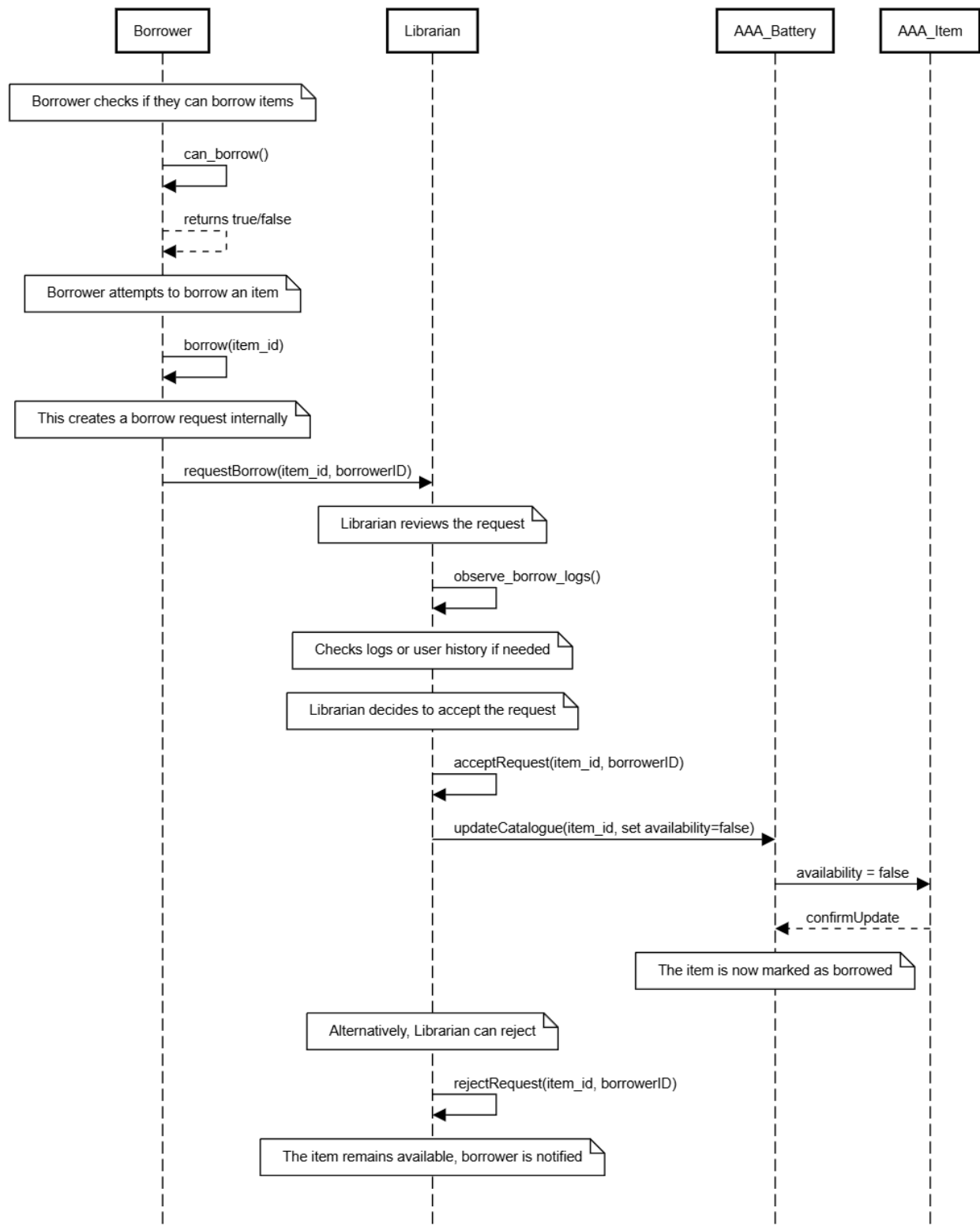
### 3.2. Sequence Diagrams

Add and Update Content

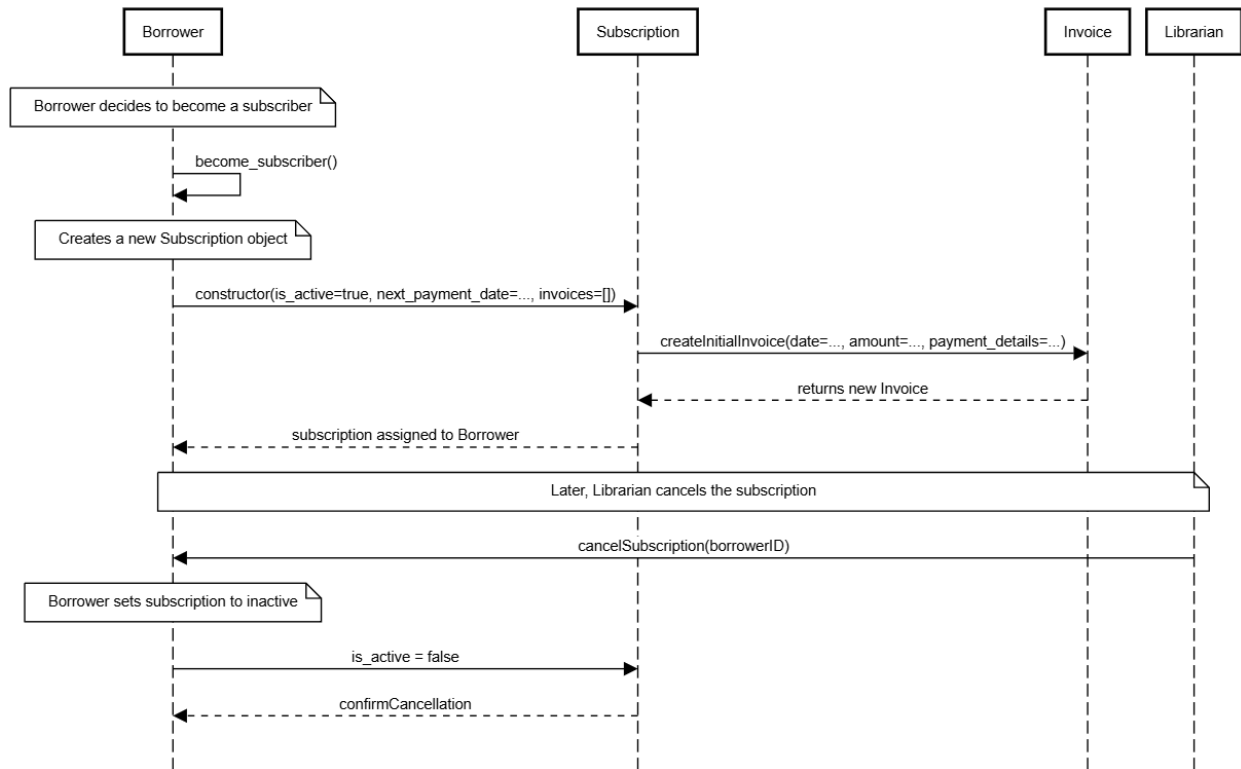




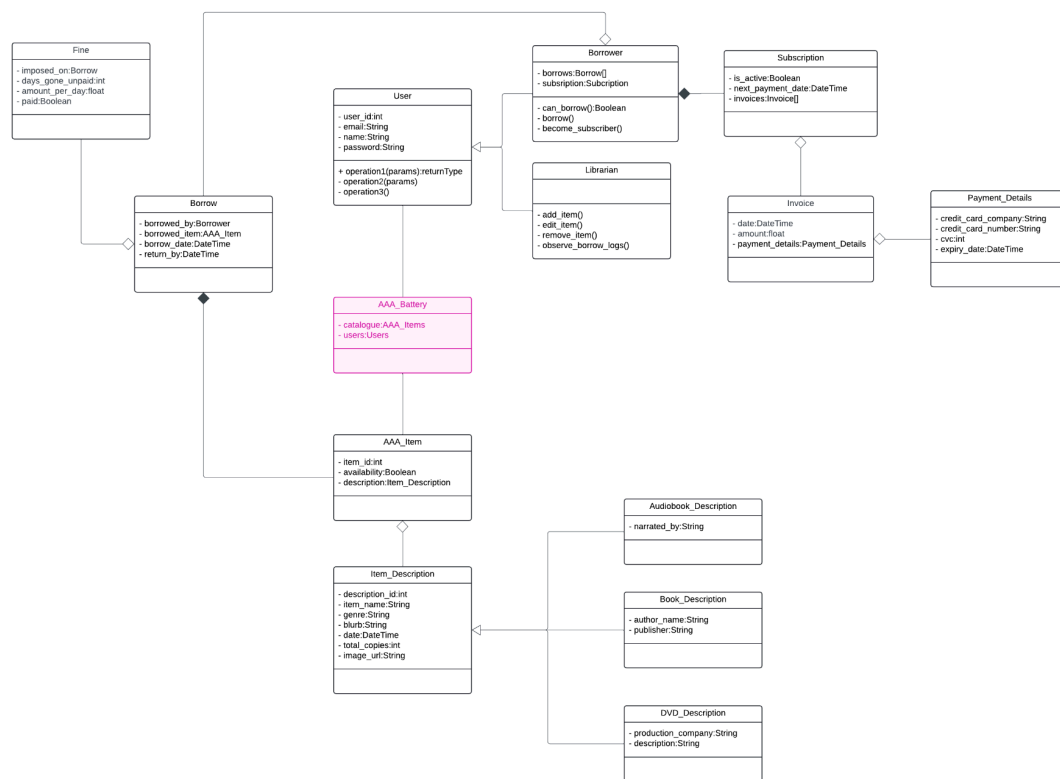
## Accept and Reject Content Requests



## Add/Cancel User Subscriptions



### 3.3. Class Diagram



## 4. User Stories

### 4.1. Register Account

#### ■ One-Line User Story:

“As a User, I want to register an account, so that I can access the library system.”

#### ■ Detailed Breakdown:

- **Role:** User
- **Goal:** Register an account
- **Reason:** To gain access to the library management system
- **Pre-conditions:**
  - The user is not already registered.
  - The system is online and accepting new registrations.
- **Post-conditions:**
  - The user's account is created and stored in the system.
  - The user can log in using their new credentials.

## 4.2. Track Activity Logs

### ■ One-Line User Story:

“As a Librarian, I want to monitor activity (borrowing, requests, fines, borrower registration, etc) logs, so that I can keep track of the system’s functionality.”

### ■ Detailed Breakdown:

- **Role:** Admin
- **Goal:** Monitor website activity logs
- **Reason:** To keep track of system functionality and spot any issues
- **Pre-conditions:**
  - The librarian is logged in with valid librarian privileges.
  - The system is capturing activity logs.
- **Post-conditions:**
  - The librarian can view detailed logs of user actions and system events.
  - The librarian can identify and address any unusual activities or errors.

## 4.3. Change Password

### ■ One-Line User Story:

“As a User, I want to change my password, so that I can reset it if I forget or suspect it’s compromised.”

### ■ Detailed Breakdown:

- **Role:** User
- **Goal:** Change password
- **Reason:** To update or reset credentials when forgotten or compromised
- **Pre-conditions:**
  - The user already has an account.
  - The user can access the “Change Password” or “Forgot Password” feature.
- **Post-conditions:**
  - The user’s password is updated in the system.
  - The user can log in with the new password.

## 4.4. Add and Update Content

### ■ One-Line User Story:

“As a Librarian, I want to add and update library content, so that the library’s catalog remains accurate and current.”

### ■ Detailed Breakdown:

- **Role:** Librarian
- **Goal:** Add and update content (books, media, etc.)
- **Reason:** To keep the library’s catalog current and accurate

### ■ Pre-conditions:

- The librarian is logged in with valid librarian privileges.
- The system is online and ready to accept content changes.
- **Post-conditions:**
  - New or updated content is recorded in the library database.
  - Users can see the latest content information when searching or browsing.

## 4.5. Accept and Reject Content Requests

- **One-Line User Story:**

“As a Librarian, I want to accept or reject content requests, so that users can borrow items based on availability.”
- **Detailed Breakdown:**
  - **Role:** Librarian
  - **Goal:** Accept or reject content requests
  - **Reason:** To manage borrowing requests based on content availability
- **Pre-conditions:**
  - The librarian is logged in with valid librarian privileges.
  - There are pending content requests in the system.
- **Post-conditions:**
  - Accepted requests move to a “reserved” or “borrowed” status.
  - Rejected requests are updated in the system, and the user is notified.

## 4.6. Charge Fines

- **One-Line User Story:**

“As a Librarian, I want to charge fines to borrowers, so that overdue items are managed and library rules are enforced.”
- **Detailed Breakdown:**
  - **Role:** Librarian
  - **Goal:** Charge fines to borrowers
  - **Reason:** To enforce due dates and manage overdue items
- **Pre-conditions:**
  - The librarian is logged in with valid librarian privileges.
  - The system has records of overdue items.
- **Post-conditions:**
  - The borrower’s account is updated with a fine.
  - The fine amount is stored for payment and reporting purposes.

## 4.7. Manage User Subscriptions

- **One-Line User Story:**

“As a Librarian, I want to manage (add/cancel) Borrower subscriptions, so that I can ensure system integrity and security.”
- **Detailed Breakdown:**
  - **Role:** Librarian
  - **Goal:** Add or cancel user subscriptions

- **Reason:** To manage subscription-based services offered by the library
- **Pre-conditions:**
  - The librarian is logged in with valid librarian privileges.
  - The user's account is eligible for subscription changes.
- **Post-conditions:**
  - The user's subscription status is updated (added or canceled).
  - The system reflects the current subscription details for that user.

## 4.8. Get Availability Notifications

- **One-Line User Story:**  
 "As a Subscriber, I want to get notified about the availability of requested content, so that I can borrow it as soon as it's available."
- **Detailed Breakdown:**
  - **Role:** Subscriber (Borrower)
  - **Goal:** Receive notifications when requested content becomes available
  - **Reason:** So the subscriber can borrow or re-request the content immediately
- **Pre-conditions:**
  - The user has an active subscription.
  - The user previously requested content that was unavailable.
- **Post-conditions:**
  - The subscriber receives a notification (email or system alert).
  - The user can proceed to borrow or request the newly available content.

## 4.9. Subscribe to AAA Battery

- **One-Line User Story:**  
 "As a Borrower, I want to subscribe to an AAA battery service, so that I can access 100% charging at the library."
- **Detailed Breakdown:**
  - **Role:** Borrower
  - **Goal:** Subscribe to an AAA battery plan
  - **Reason:** To access 100% charging services at the library
- **Pre-conditions:**
  - The borrower has a valid account with no outstanding fines (if required by policy).
  - The borrower is eligible for subscription services.
- **Post-conditions:**
  - The borrower's account includes the AAA battery subscription.
  - The borrower can now use the charging service as per the plan.

## 4.10. View Available Content

- **One-Line User Story:**

“As a Borrower, I want to view all available content, so that I can decide which items to borrow.”
- **Detailed Breakdown:**
  - **Role:** Borrower
  - **Goal:** View all available content
  - **Reason:** To decide which items to borrow
- **Pre-conditions:**
  - The borrower is logged in.
  - The library’s catalog is up-to-date with current availability.
- **Post-conditions:**
  - The borrower sees a list of available items.
  - The borrower can choose specific items to request or borrow.

## 4.11. Request Content

- **One-Line User Story:**

“As a Borrower, I want to request content not yet available in the library, so that I can borrow it.”
- **Detailed Breakdown:**
  - **Role:** Borrower
  - **Goal:** Request available content
  - **Reason:** To borrow the content at a specified time
- **Pre-conditions:**
  - The borrower is logged in.
  - The content is marked as available in the system.
- **Post-conditions:**
  - The content is reserved or checked out to the borrower.
  - The system updates the availability status for other users.

## 4.12. Return Content

- **One-Line User Story:**

“As a Borrower, I want to return borrowed content, so that I can free my account for other items and avoid fines.”
- **Detailed Breakdown:**
  - **Role:** Borrower
  - **Goal:** Return borrowed content
  - **Reason:** To free up the borrower’s account and avoid further fines
- **Pre-conditions:**
  - The borrower has an item checked out.
  - The item is within the return deadline (or possibly overdue).
- **Post-conditions:**

- The content is marked as returned in the system.
- The borrower's account is updated; any overdue fines are calculated.

#### 4.13. Pay Charged Fine

- **One-Line User Story:**

“As a Borrower, I want to pay my charged fines, so that I can clear my account and continue borrowing.”

- **Detailed Breakdown:**

- **Role:** Borrower
- **Goal:** Pay a charged fine
- **Reason:** To clear the account and continue borrowing other content

- **Pre-conditions:**

- The borrower has an outstanding fine on their account.
- A payment method (e.g., online payment gateway) is available.

- **Post-conditions:**

- The borrower's fine is marked as paid in the system.
- The borrower's account status is cleared for future borrowing.

#### 4.14. Request Extended Deadline

- **One-Line User Story:**

“As a Borrower, I want to request an extended deadline, so that I can avoid or reduce overdue fines.”

- **Detailed Breakdown:**

- **Role:** Borrower
- **Goal:** Request an extended borrowing deadline
- **Reason:** To reduce or avoid overdue fines

- **Pre-conditions:**

- The borrower has a borrowed item that is not yet severely overdue.
- The library policy allows deadline extension requests.

- **Post-conditions:**

- The item's due date is updated if the extension is approved.
- The borrower is notified of the new due date or rejection.

#### 4.15. Request New Books

- **One-Line User Story:**

“As a Borrower, I want to request new books, so that I can borrow titles that are not currently in the library.”

- **Detailed Breakdown:**

- **Role:** Borrower
- **Goal:** Request new books not currently in the library
- **Reason:** To suggest or borrow items that the library doesn't have yet

- **Pre-conditions:**

- The borrower is logged in.



- The library system allows user requests for new materials.

■ **Post-conditions:**

- The system logs the request for new books.
- The librarian can review and potentially add the requested books to the library catalog.