Sequence Diagram

Librarian

SmartLib

Database

SMTP Server

Login →

Validate User →

← return validation response

← Login Successful/Failed

Add/Update/Delete Book →

Update Record →

← Operation Status

← Operation Successful/Failed

Add/Update/Delete Borrowers →

Update Record →

← Operation Status

← Operation Successful/Failed

Issue Book →

Update Record →

← Operation Status

← Operation Successful/Failed

Return Book →

Update Record →

← Operation Status

← Operation Successful/Failed

Renew Book →

Update Record →

← Operation Status

← Operation Successful/Failed

Send Reminders →

Get Emails →

← Email List

Send Emails →

← Reminders Status

← Successful/Failed

Logout →

← Session Ended
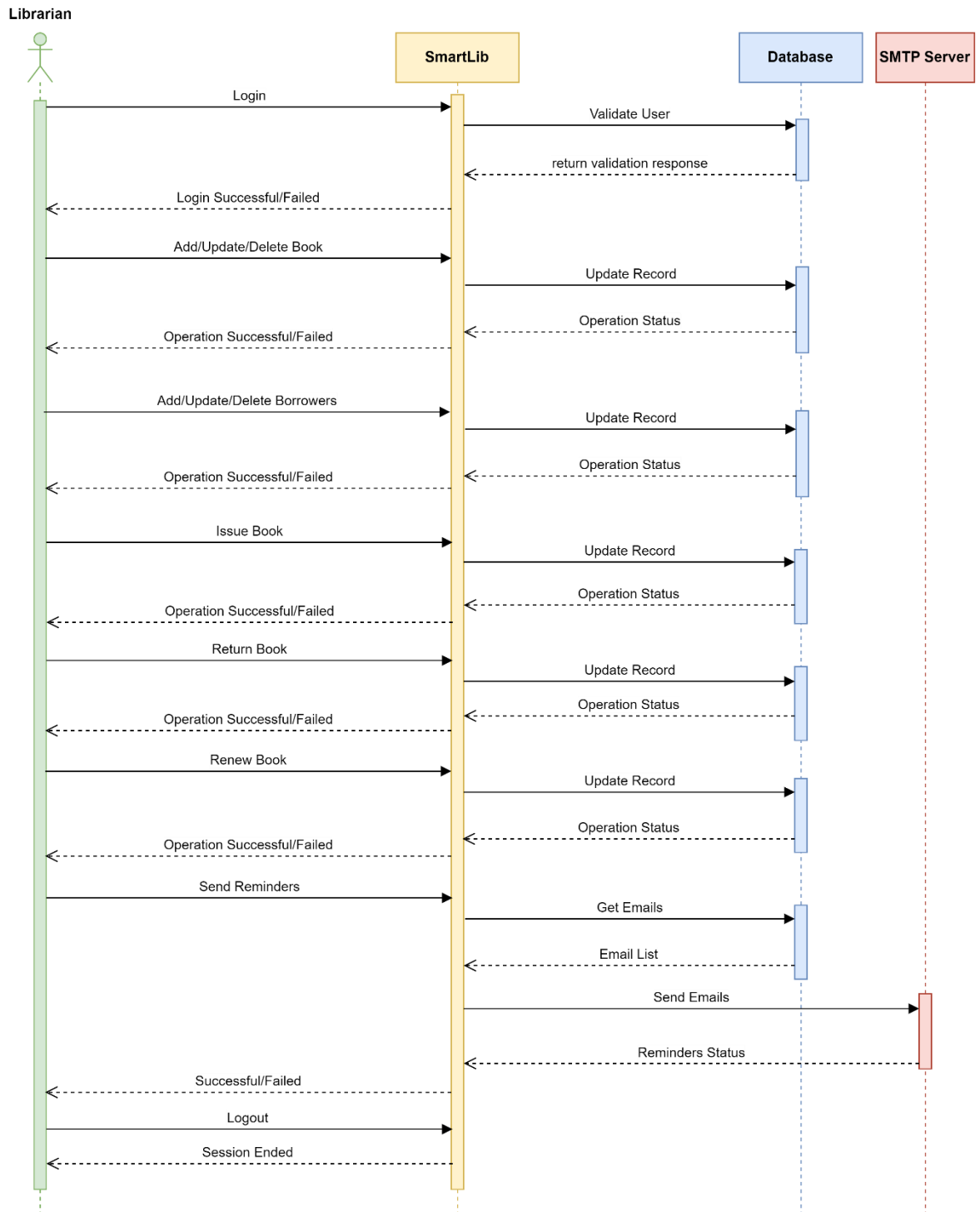
This sequence diagram represents the interactions between a user, the SmartLib system, the database, and the SMTP server in a SmartLib application context.

1. **User Login:**
   o The user initiates a login request to the SmartLib system.
   o SmartLib sends a request to the database to validate the user.
   o The database returns a validation response (either successful or failed) to SmartLib.
   o SmartLib communicates the login status back to the user.
2. **Add/Update/Delete Book:**
   o The user sends a request to add, update, or delete a book.
   o SmartLib processes the request and sends it to the database to update the record.
   o The database performs the operation and returns the operation status to SmartLib.
   o SmartLib then communicates the success or failure of the operation back to the user.
3. **Add/Update/Delete Borrowers:**
   o Similar to the book operations, the user requests to add, update, or delete borrower information.
   o SmartLib forwards this request to the database.
   o The database updates the borrower record and returns the status of the operation.
   o SmartLib informs the user of the operation's success or failure.
4. **Issue Book:**
   o The user requests to issue a book.
   o SmartLib sends a request to the database to update the necessary records regarding the issued book.
   o The database updates the record and returns the operation status.
   o SmartLib communicates the success or failure of the book issuance back to the user.
5. **Return Book:**
   o The user initiates a book return request.
   o SmartLib requests the database to update the book's status to indicate it has been returned.
   o The database updates the record and returns the operation status.
   o SmartLib informs the user of the return operation's success or failure.
6. **Renew Book:**
   o The user requests to renew a borrowed book.
   o SmartLib sends a request to the database to update the book's renewal status.
   o The database updates the record and returns the status of the renewal operation.
   o SmartLib communicates the success or failure of the renewal operation to the user.
7. **Send Reminders:**
   o The user or system sends a request to send reminders.
   o SmartLib queries the database to get a list of emails for sending reminders.
   o The database returns the email list to SmartLib.
   o SmartLib interacts with the SMTP server to send the reminder emails.
   o The SMTP server sends the emails and returns the status of the reminders sent.
   o SmartLib communicates the reminder status to the user.
8. **User Logout:**
   o The user sends a logout request to SmartLib.
   o SmartLib processes the logout, and the session is ended.