Software Design and Analysis

Final Deliverable

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1. Introduction

1.1 Purpose

The RAS Leisure Club Management System is designed to streamline the operations of a modern leisure club by integrating member services, facility bookings, staff management, and administrative tasks into one cohesive platform. It provides role-specific interfaces to cater to members, staff, and administrators, ensuring efficient workflows and enhanced user satisfaction.

1.2 Product Scope

The system provides solutions for:

- *Member registration and profile management.*
- *Facility booking, viewing, and cancellation.*
- *Staff-assisted bookings and facility maintenance.*
- *Administrative management of staff, facilities, and club operations.*
- *Comprehensive integration with a database for data persistence and security.*

1.3 Title

<u>RAS Leisure Club Management System</u>

1.4   Objectives

1. ***Provide an intuitive and secure interface*** *for all user roles, ensuring smooth navigation and role-specific accessibility across the platform.*

2. ***Streamline facility booking and availability management*** *by automating scheduling and providing real-time status updates for members and staff.*

3. ***Ensure accurate and centralized staff and facility recordkeeping*** *to reduce administrative overhead and enhance operational efficiency.*

4. ***Enable real-time reporting for administrators****, offering insights into system usage, facility utilization, and overall club performance.*

5. ***Facilitate robust backend integration*** *to ensure consistent data handling, secure transactions, and scalability for future enhancements.*

6. ***Enhance user satisfaction*** *by providing a visually appealing and functional interface, coupled with reliable backend support for a seamless experience.*

1.5   Problem Statement

Leisure clubs face numerous challenges in efficiently managing operations due to reliance on manual processes. These challenges include frequent errors in booking management, leading to double bookings or underutilized facilities, delays in communication between staff and members, and a lack of robust member engagement tools. Additionally, administrators struggle to maintain accurate records and generate timely reports for operational oversight. This system addresses these inefficiencies by automating core processes such as bookings, member management, and facility scheduling, ensuring seamless integration of all activities and fostering an improved user experience.

2.   Overall Description

2.1   Product Perspective

The RAS Leisure Club Management System functions as a standalone platform integrating member services, facility booking, and staff operations. It ensures role-based access to features, maintaining security and clarity in user interactions.

2.2   Product Functions

01. ***Member Interface***:
    a. *Register, login, view, and update profile.*
    b. *Book, cancel, and view facilities.*
    c. *View membership details and pay pending dues*

02. **Staff Interface***:*
     a. *Assist members with bookings.*
     b. *Maintain facility schedules and oversee operations.*

03. **Administrator Interface***:*
     a. *Manage staff records and roles.*
     b. *Maintain facility schedules and capacity.*
     c. *Generate and analyze operational reports.*

2.3   List of Use Cases

   I.   Create a New Account
  II.   Make Booking
 III.   View Bookings
 IV.   Cancel Booking
  V.   Maintain Facilities
 VI.   Generate Reports
VII.   Manage Membership
VIII.   Make Payment
 IX.   Request Refund
  X.   Update Profile
 XI.   Manage Staff

2.4   Extended Use Cases

USE CASE 1

Use case name: Create a New Account

Scope: RAS Leisure Club Management System

Level: User Goal

Primary Actor: Member

Stakeholders and interests:

- **Member:** Wants to become a member, access club services, and manage their account.
- **RAS Leisure Club:** Wants to acquire new members, track member data, and ensure accurate billing.

Preconditions:

- The Member has accessed the RAS Leisure Club registration page (website or mobile app).

PostConditions:

- The Member's account is created successfully in the system.
- The Member is logged into their new account.
- A confirmation email is sent to the Member's provided email address.

Main Success:

Actor Action	System Response
1. The Member navigates to the "Create Account" or "Register" page.	2. The system displays a registration form, prompting for required information (e.g., name, email, password, membership type).

3. The Member enters all the required information into the form.	4. The system validates the entered information.
5. The Member reviews the provided information and agrees to the club's terms of service and privacy policy.	
6. The Member submits the registration form.	7. The system processes the initial membership fee (if applicable) through the Payment Gateway.
	8. The system creates a new Member account with a unique ID and stores the provided information in the database.
	9. The system automatically logs the Member into their newly created account.
	10. The system sends a confirmation email to the Member's registered email address, including a welcome message and account details.

Extensions:

3a. Validation Error:

- If any required information is missing or invalid (e.g., incorrect email format), the system displays an error message indicating the issue. The Member corrects the errors and resubmits the form (back to step 5).

7a. Payment Failure:

- If the initial payment fails, the system displays an error message to the Member. The Member is given options to retry payment or contact customer support. The account creation may be put on hold until successful payment (depending on club policy).

9a. Email Sending Failure:

- If the confirmation email cannot be sent (e.g., incorrect email address), the system logs the error but still creates the account. The Member may be prompted to verify their email address later to ensure they can receive future communications.

USE CASE 2

Use case name: Make Booking

Scope: RAS Leisure Club Management System

Level: User Goal

Primary Actor: Member

Stakeholders and interests:

- **Club Member:**
  - Wants to book an available time slot for a facility or activity (e.g., gym, swimming).
  - Needs confirmation that their booking has been successfully processed.
- **Club Administrator:**

- ○ Wants members to use the system efficiently to prevent overbooking and manage facility usage.
- **Staff:**
  - ○ Needs to manage the booking schedule efficiently and ensure facilities are not overbooked or underutilized.

Preconditions:

- The member must be logged into the system.
- The member's account must be active with valid membership.
- The facility or activity must have available time slots.

PostConditions:

- The booking is recorded in the system.
- The member receives an email confirmation with the booking details.
- The facility schedule is updated to reflect the new booking.

Main Success:

Actor Action	System Response
1. The Member navigates to the booking section of the leisure club system.	2. The system displays available time slots for the selected facility or activity.
3. The Member selects a time slot and provides any additional required information (e.g., number of people, specific service).	4. The system verifies availability and confirms the booking.

	5. The system confirms the booking and confirms the booking.
6. The Member sees the confirmation on the screen, and the booking is added to their schedule.	

Extensions:

1a. Member tries to book without an active membership:

- The system displays an error message indicating that the member's membership is inactive and cannot make bookings.
- The member is prompted to renew their membership.

2a. No available time slots:

- The system displays a message indicating no time slots are available for the selected activity or facility.
- The member may choose another facility or a different time slot.

5a. Booking fails due to system error:

- The system shows an error message, and the booking is not processed.
- The member is asked to retry after some time or contact support

USE CASE 3

Use case name: View Bookings

Scope: RAS Leisure Club Management System

Level: User Goal

Primary Actor: Member

Stakeholders and interests:

- **Club Member:**
  - Wants to see their upcoming and past bookings to plan their schedule and manage their time.
- **Club Administrator:**
  - Needs members to access their bookings to ensure timely attendance and avoid booking conflicts.
- **Staff:**
  - Needs access to view member bookings for operational support and to manage facility usage.

Preconditions:

- The member must be logged into the system.
- The member must have an active account with valid membership.
- The member must have at least one past or upcoming booking to view.

PostConditions:

- The system displays the member's current, upcoming, and past bookings.
- The member can optionally print or export booking details.
- The member is aware of their scheduled activities and can make any adjustments if necessary.

Main Success:

Actor Action	System Response
1. The Member logs into the leisure club system.	
2. The Member navigates to the "My Bookings" section.	3. The system retrieves the Member's current, upcoming, and past bookings.
	4. The system displays the bookings in a structured list, showing details like activity type, date, time, and facility.
5. The Member reviews their bookings and optionally filters them (e.g., by date or facility).	
6. The Member can view detailed information about each booking (e.g., booking number, participants, cost, etc.).	
7. If desired, the Member can print the booking details or export them to a file (optional feature).	8. The system confirms that the Member has successfully viewed their bookings.

Extensions:

3a. No bookings found:

- The system displays a message: "No bookings found for your account."
- The member is offered the option to make a new booking or explore available activities.

4a. The system fails to retrieve bookings:

- The system shows an error message: "Unable to retrieve your bookings at this time. Please try again later."
- The member is prompted to retry after some time or contact support.

5a. Member wants to cancel a booking:

- The member selects an upcoming booking to cancel.
- The system redirects the member to the "Cancel Booking" use case flow.
- Upon successful cancellation, the booking is removed from the view.

7a. Member requests email confirmation for a booking:

- The member selects an option to receive the booking details via email.
- The system sends the booking details to the member's registered email address.

USE CASE 4

Use case name: Cancel Booking

Scope: RAS Leisure Club Management System

Level: User Goal

Primary Actor: Member, Staff

Stakeholders and interests:

- **Club Member:**
  - Wants to cancel a booking they no longer intend to use and possibly free

　　　up the spot for others.
- ○ Expects confirmation that the booking has been successfully canceled.
- **Staff:**
  - ○ May need to cancel a booking on behalf of a member or in case of a facility issue.
  - ○ Needs to ensure that cancellations are processed efficiently to keep availability records accurate.
- **Club Administrator:**
  - ○ Wants to ensure booking cancellations are handled in a timely manner to optimize facility usage.
- **Payment Gateway (if payment was made):**
  - ○ May need to handle refunds or credit adjustments if a paid booking is canceled.

Preconditions:

- The member must be logged in with an active account.
- The booking must exist and still be eligible for cancellation (e.g., within a predefined cancellation window).
- If a payment was made, cancellation may require refund processing.

PostConditions:

- The booking is successfully canceled and removed from the member's schedule.
- The facility schedule is updated to reflect the canceled slot as available.
- The member receives a cancellation confirmation via email.
- If applicable, a refund process is initiated.

Main Success:

Actor Action	System Response
1. The Member logs into the leisure club system.	
2. The Member navigates to the "My Bookings" section and selects an upcoming booking to cancel.	3. The system displays the booking details and asks for confirmation to proceed with cancellation.
4. The Member confirms the cancellation.	5. The system verifies if the booking is still eligible for cancellation (based on club policies).
	6. If applicable, the system triggers a refund process via the payment gateway.
7. The booking is successfully canceled and removed from the Member's list of upcoming bookings.	
8. The Member receives a cancellation confirmation email.	9. The system updates the facility schedule to reflect the newly available time slot.

Extensions:

2a. Staff cancels a booking:

- The staff member accesses the booking management section.
- The staff selects a booking to cancel (on behalf of a member or for operational reasons).

- The rest of the flow follows steps 3-9, with the staff acting as the primary actor.

5a. Booking is not eligible for cancellation:

- The system displays an error message: "This booking is no longer eligible for cancellation."
- The member is given the option to contact support or leave the booking unchanged.

6a. Payment-related issues during cancellation:

- If the booking involves a paid service, and the payment gateway is unable to process the refund, the system displays an error: "Unable to process the refund at this time."
- The member is informed and directed to contact support, while the booking remains canceled.

9a. System error during cancellation:

- If a system error occurs during the cancellation process, the system notifies the member or staff: "Unable to cancel the booking at this time. Please try again later."
- The booking remains unchanged, and the member may retry later.

USE CASE 5

Use case name: Maintain Facilities

Scope: RAS Leisure Club Management System

Level: User Goal

<u>Primary Actor:</u> Administrator

<u>Stakeholders and interests:</u>

- **Administrator:**
  - Wants to ensure that all facilities are properly maintained and available for member use, minimizing downtime and enhancing member satisfaction (e.g., swimming pool, gym, sauna, golf course).

- **Members:**
  - Expect well-maintained facilities for their activities, contributing to a positive club experience.

- **Club Management:**
  - Aims to maintain a reputation for high-quality services and facilities to attract and retain members.

<u>Preconditions:</u>
- The Admin/Staff has logged into the RAS Leisure Club Management System.

- The facilities' current status and maintenance records are accessible in the system.

<u>PostConditions:</u>
- The facility's maintenance tasks are updated in the system.

- Maintenance records are stored for future reference and reporting.

- Members are notified (if applicable) about facility availability or scheduled maintenance.

Main Success:

Actor Action	System Response
1. The Administrator navigates to the "Facilities Management" section in the system.	2. The system displays a list of facilities along with their current status (e.g., available, under maintenance).
3. The Administrator selects a facility that requires maintenance.	4. The system presents options for maintenance tasks (e.g., cleaning, repairs, inspections).
5. The Administrator chooses the required maintenance task(s) and enters relevant details (e.g., description, scheduled date, assigned staff).	
6. The Administrator submits the maintenance request.	7. The system logs the maintenance request and updates the facility status accordingly.
	8. The system may notify members of any scheduled downtime or changes in facility availability.
9. The Administrator can view and manage ongoing and completed maintenance tasks.	

Extensions:

4a. Invalid Task Selection:

- If the Admin/Staff selects an invalid maintenance task, the system displays an error message indicating the issue. The Admin/Staff selects a valid task and resubmits (back to step 5).

6a. Insufficient Permissions:

- If the Admin/Staff does not have the necessary permissions to schedule maintenance, the system displays an access denied message and prompts the user to contact a higher authority for assistance.

8a. Notification Failure:

- If the notification to members fails (e.g., due to system issues), the system logs the error but still updates the maintenance request. Admin/Staff may be prompted to manually inform members of any significant changes.

USE CASE 6

Use case name: Generate Reports

Scope: RAS Leisure Club Management System

Level: User Goal

Primary Actor: Administrator

Stakeholders and interests:

- **Administrator:**
  - Needs insights on membership activity, payments, facility bookings, and

service usage to make informed management decisions.

- ○ Expects clear, accurate, and up-to-date reports on club operations.
- **Staff:**
  - ○ May assist in report generation or view specific reports for operational purposes (e.g., managing daily bookings).
- **Club Management:**
  - ○ Uses reports to assess the club's financial health, resource allocation, and customer satisfaction metrics.

Preconditions:

- The administrator must be logged into the system with the necessary permissions to generate reports.
- The system must have sufficient data (membership, bookings, payments, etc.) to generate meaningful reports.

PostConditions:

- The requested reports are generated and displayed to the administrator.
- The administrator can save, export, or print the reports.
- The system ensures the reports are stored for future access.

Main Success:

Actor Action	System Response
1. The Administrator logs into the system and navigates to the "Reports" section.	2. The system displays a list of available report types (e.g., membership statistics, booking reports, payment reports, facility usage, revenue reports).

3. The Administrator selects the desired report type and specifies any filters (e.g., date range, specific facility, membership status).	4. The system retrieves and compiles the relevant data based on the Administrator's input.
	5. The system generates the report and displays it to the Administrator in a readable format (e.g., table, charts).
6. The Administrator reviews the report and decides to either save, export, or print it.	7. The system confirms that the report has been saved or exported successfully, or sends it to the printer.
8. The Administrator can return to the report dashboard or exit the system.	

Extensions:

3a. Administrator selects additional filters:

- The administrator can choose additional filters, such as sorting by member type, facility, or staff, to generate more detailed reports.
- The system applies the filters and updates the report accordingly.

4a. System encounters insufficient data for the selected report:

- If the system finds that insufficient data is available (e.g., no bookings in the selected date range), it displays a message: "No data available for the selected report."
- The administrator can adjust the filters or choose another report type.

6a. Report contains large data set:

- If the report contains a large amount of data, the system may take longer to generate it and show a progress bar to the administrator.
- Once complete, the administrator can proceed as usual with saving or exporting the report.

6b. Administrator exports report in a different format:

- The system offers options to export the report in various formats (e.g., PDF, CSV, Excel).
- The administrator selects the desired format, and the system saves the report accordingly.

7a. Printer unavailable for printing:

- If the administrator chooses to print the report but the printer is unavailable, the system shows an error message: "Printer unavailable."
- The administrator can retry printing later or save the report in digital format.

8a. System encounters an error during report generation:

- If the system encounters an error during report generation, it displays a message: "Unable to generate report at this time. Please try again later."
- The administrator can retry after some time or contact technical support.

USE CASE 7

Use case name: Manage Membership

Scope: RAS Leisure Club Management System

Level: User Goal

Primary Actor: Administrator

Stakeholders and interests:

- **Club Member:**
  - Wants to manage their membership status (view, renew, or cancel) to maintain access to club facilities.
  - Expects confirmation of any changes in membership status.
- **Administrator:**
  - Oversees membership operations, including adding new memberships, updating terms, or deactivating them.
  - Needs the system to reflect current membership status accurately to avoid conflicts.
- **Staff:**
  - Assists members in updating or renewing their memberships.
  - Ensures members' access aligns with their membership status.

Preconditions:

- The member must be logged in if they are managing their own membership.
- The administrator must have the necessary permissions to manage memberships.
- The member's membership must exist in the system.
- The payment gateway must be available if renewal involves payment.

PostConditions:

- The member's membership status is updated (activated, renewed, suspended, or canceled).
- The member receives an email confirmation of the membership status change.

- If a renewal payment is made, the system processes the transaction and reflects the updated membership term.
- The member's access to club services is updated based on the new membership status.

Main Success:

Actor Action	System Response
1. The Administrator logs into the system and navigates to the "Manage Membership" section.	
2. The Administrator selects the membership they wish to manage.	3. The system displays the current membership status and details.
4. The Administrator chooses to update the membership (renew, suspend, or cancel).	
	5. If renewal is chosen, the system prompts the user for payment processing through the payment gateway.
6. The payment gateway processes the membership renewal fee successfully.	7. The system updates the membership status accordingly (e.g., renewed, canceled).
8. A confirmation email is sent to the Member detailing the changes.	9. The Member's access to club services is updated based on the new status.

Extensions:

4a. Membership renewal is not due:

- If the membership is not up for renewal, the system displays a message indicating the current membership is still active.

5a. Payment failure during renewal:

- If the payment gateway fails to process the renewal, the system notifies the user and allows them to retry or use a different payment method.
- The membership status remains unchanged until successful payment.

5b. No payment required for certain membership types:

- Some memberships (e.g., complimentary or lifetime memberships) don't require payment, so the system skips the payment step and directly updates the status.

7a. System error during status update:

- If the system encounters an error during the update, it displays an error message: "Unable to update membership at this time."
- The user can retry later or contact support.

USE CASE 8

Use case name: Make Payment

Scope: RAS Leisure Club Management System

Level: User Goal

Primary Actor: Member

Stakeholders and interests:

- **Club Member:**
  - Wants to make payments for membership renewals, booking services, or purchasing additional services.
  - Expects a smooth and secure payment process with confirmation of the successful transaction.
- **Administrator:**
  - Oversees the payment processing and needs assurance that all payments are recorded correctly.
- **Payment Gateway:**
  - Processes the payments securely and ensures proper transaction handling between the member's account and the club.

Preconditions:

- The member must be logged into the system.
- There must be a pending payment (e.g., for membership renewal or booking).
- The payment gateway must be available and functioning.

PostConditions:

- The payment is successfully processed, and the system updates the relevant records (e.g., membership status, booking confirmation).
- The member receives a payment receipt via email.
- The system reflects the updated financial status and service access for the member.

Main Success:

Actor Action	System Response
1. The Member logs into the system and navigates to the "Payments" section.	2. The system displays any pending payments (e.g., for booking a facility or renewing membership).
3. The Member selects a pending payment and proceeds to make the payment.	4. The system prompts the Member to enter payment details (e.g., credit card, debit card, or select a saved payment method).
	5. The system securely forwards the payment information to the payment gateway.
	6. The payment gateway processes the transaction and returns a success response to the system.
	7. The system updates the Member's account, confirming the successful payment (e.g., renewing membership or confirming booking).
8. The Member receives a confirmation email with the payment receipt.	
	9. The system updates the financial records and service access based on the payment (e.g., unlocks access to facilities, extends membership).

Extensions:

4a. Member chooses to pay via an alternate payment method:

- If the member opts for a different payment method (e.g., bank transfer or PayPal), the system provides the necessary instructions for completing the payment externally.
- The system updates the member's status once the external payment is confirmed.

6a. Payment gateway fails to process the payment:

- If the payment gateway fails, the system displays an error: "Payment processing failed. Please try again later."
- The member may retry or choose a different payment method.

6b. Payment is partially successful:

- In rare cases, if the payment is only partially successful, the system informs the member and temporarily holds the transaction until it's resolved.
- The system allows the member to retry the transaction.

USE CASE 9

Use Case Name: Request Refund

Scope: RAS Leisure Club Management System

Level: User Goal

Primary Actor: Member, Administrator

Stakeholders and Interests:

- **Member:**
  - Wants to request a refund for a canceled booking or incorrect billing and

receive their money back.

- **Admin/Staff:**
    - ○ Needs to verify the refund request and process it according to club policies.
- **RAS Leisure Club:**
    - ○ Aims to maintain fair and efficient financial operations, ensuring valid refunds are processed while avoiding fraudulent claims.

Preconditions:

- The Member must be logged into their account.
- The booking in question must be eligible for a refund as per club policy (e.g., within the refund period).

Postconditions:

- The refund request is logged in the system and pending review by Admin/Staff.
- The Member is notified of the refund status (submitted and awaiting processing).
- The refund is processed (once approved), and the system updates the member's balance.

Main Success Scenario:

Actor Action	System Response
1. The Member logs into the leisure club system.	
2. The Member navigates to the "My Bookings" section.	
3. The Member selects a booking that is	4. The system presents the "Request

eligible for a refund.	Refund" option for that booking.
5. The Member clicks "Request Refund" and is prompted to provide a reason for the refund.	
6. The Member submits the refund request with the required information (e.g., reason for cancellation).	7. The system logs the refund request and marks the booking as "Refund Pending."
8. Admin/Staff reviews the refund request and validates the details.	
9. Admin/Staff approves or denies the refund based on club policies.	10. If approved, the system processes the refund through the payment gateway.
11. The system updates the booking status to "Refunded" and notifies the Member of the refund status (approved/denied).	

Extensions:

5a. Booking Not Eligible for Refund:

- If the selected booking is not eligible for a refund (e.g., beyond the refund window), the system displays a message explaining the reason for ineligibility. The member can either return to the booking list or contact customer support.

6a. Incomplete Refund Request:

- If the Member fails to provide a reason or necessary information, the system prompts the member to complete the missing fields and resubmit.

10a. Payment Gateway Failure:

- If the payment gateway fails to process the refund, the system logs the error, notifies Admin/Staff, and marks the refund request as pending. Admin/Staff can retry the payment manually or resolve the issue with the payment gateway.

9a. Refund Denied:

- If Admin/Staff denies the refund, the system updates the booking status as "Refund Denied" and sends a notification to the member with the reason for the denial.

USE CASE 10

Use case name: Update Profile

Scope: RAS Leisure Club Management System

Level: User Goal

Primary Actor: Member

Stakeholders and interests:

- **Member:** Wants to keep their personal information up-to-date, potentially change membership options, and manage their preferences.
- **RAS Leisure Club:** Needs accurate member information for communication,

billing, and personalized services.

Preconditions:

- The Member is logged into their account in the RAS Leisure Club Management System.

PostConditions:

- The Member's profile information is updated in the system.
- The Member is notified of successful changes (e.g., on-screen confirmation or email).

Main Success:

Actor Action	System Response
1. The Member navigates to the "My Profile" or "Account Settings" section of the system.	2. The system displays the Member's current profile information, including editable fields.
3. The Member makes desired changes to their information (e.g., name, contact details, email address, password, membership type, notification preferences, emergency contact).	4. The system validates the entered information (similar to the registration use case).
5. The Member reviews the updated information.	
6. The Member submits the changes by clicking a button like "Save Changes" or "Update Profile."	7. The system updates the Member's profile information in the database.

	8. The system displays a confirmation message that the profile has been updated successfully.

Extensions:

- 6a. Validation Error:

  If any updated information is invalid (e.g., incorrect email format), the system displays an error message indicating the issue. The Member corrects the errors and resubmits the changes (back to step 5).

- 7a. Membership Change:

  If the Member changes their membership type, the system may:

  - Display a confirmation dialog, outlining the changes in fees and benefits.
  - Process a prorated charge or refund, if applicable.
  - Update the Member's billing cycle.
- 7b. Password Change:

  If changing the password:

  - The system may require the Member to enter their current password for security.
  - The system will enforce strong password requirements.

- 7c. Email Change:

  If changing the email address:

    ○ The system may send a verification email to the new address for confirmation.

    ○ The Member might have limited account access until the new email is verified.

USE CASE 11

Use case name: Manage Staff

Scope: RAS Leisure Club Management System

Level: User Goal

Primary Actor: Administrator

Stakeholders and interests:

- **Administrator:**
  - Wants to efficiently manage staff accounts, including adding, updating, or removing staff members.
  - Needs to ensure that staff roles, permissions, and personal information are accurate and up-to-date.
- **Staff:**
  - Wants clarity in their roles and access to the system based on their assigned permissions.
  - Expects timely updates to their profiles and responsibilities.
- **Club Management:**
  - Relies on the accurate assignment of staff roles and permissions to ensure

smooth club operations.

Preconditions:

- The administrator must be logged into the system with the necessary permissions to manage staff.
- The system must have an existing staff database.

PostConditions:

- The staff database is updated (e.g., new staff added, existing staff modified, or removed).
- The updated staff information is reflected across the system, ensuring accurate role assignments and access levels.

Main Success:

1. The administrator logs into the system and navigates to the "Manage Staff" section.
2. The system displays a list of existing staff members and options to add, update, or remove staff.
3. The administrator selects an option:
   a. To add staff, the administrator enters the new staff member's details (e.g., name, contact info, role, permissions) and submits the form.
   b. To update staff, the administrator selects an existing staff member, modifies their information (e.g., role, contact info), and submits the changes.
   c. To remove staff, the administrator selects a staff member and confirms the removal.
4. The system validates the input and processes the request.

5. The staff database is updated accordingly, and any changes in roles or permissions are reflected in the system.

6. The administrator receives a confirmation message.

7. If the staff member is added or updated, an email notification is sent to the staff member with their updated details and system access information.

Actor Action	System Response
1. The Administrator logs into the system and navigates to the "Manage Staff" section.	
	2. The system displays a list of existing staff members and options to add, update, or remove staff.
3. The Administrator selects an option:	
a. To add staff, the Administrator enters the new staff member's details (e.g., name, contact info, role, permissions) and submits the form.	4. The system validates the input and processes the request.
b. To update staff, the Administrator selects an existing staff member, modifies their information (e.g., role, contact info), and submits the changes.	
c. To remove staff, the Administrator selects a staff member and confirms the removal.	5. The Member's access to club services is updated based on the new status.
	6. The staff database is updated accordingly, and any changes in roles or

	permissions are reflected in the system.
7. The Administrator receives a confirmation message.	
8. If the staff member is added or updated, an email notification is sent to the staff member with their updated details and system access information.	

Extensions:

3a. Administrator assigns custom roles and permissions:

- The administrator can define custom roles and permissions when adding or updating a staff member.
- The system verifies that the custom role aligns with the necessary access levels and permissions.

4a. System encounters invalid staff information:

- If the administrator enters invalid or incomplete staff details, the system displays an error message: "Invalid input. Please check the details and try again."
- The administrator corrects the input and resubmits the form.

4b. Staff member already exists in the system:

- If the administrator attempts to add a staff member who is already in the system, the system notifies the administrator: "Staff member already exists."
- The administrator can update the existing staff member's information instead.

5a. System error during staff update:

- If the system encounters an error while processing the staff update, it displays an error message: "Unable to update staff information at this time."
- The administrator can retry the update or contact support.

6a. Removal of staff with active responsibilities:

- If the administrator tries to remove a staff member with active bookings or assignments, the system displays a warning: "This staff member has active responsibilities. Please reassign or complete their tasks before removal."
- The administrator can choose to either proceed with the removal (if allowed) or reassign the tasks before removing the staff member.

2.5   Use Case Diagram

RAS Leisure Club Management System

Use case shape key
- Actor
- Use case
- Use case extension
- System

Use case shape bank

Member

Staff

Admin

Payment Gateway

Database

Email System

Create a new account

Update Profile

Make Booking

View Booking

Cancel Booking

Request Refund

Manage Membership

Make Payment

Generate Reports

Manage Staff

Maintain Facilities
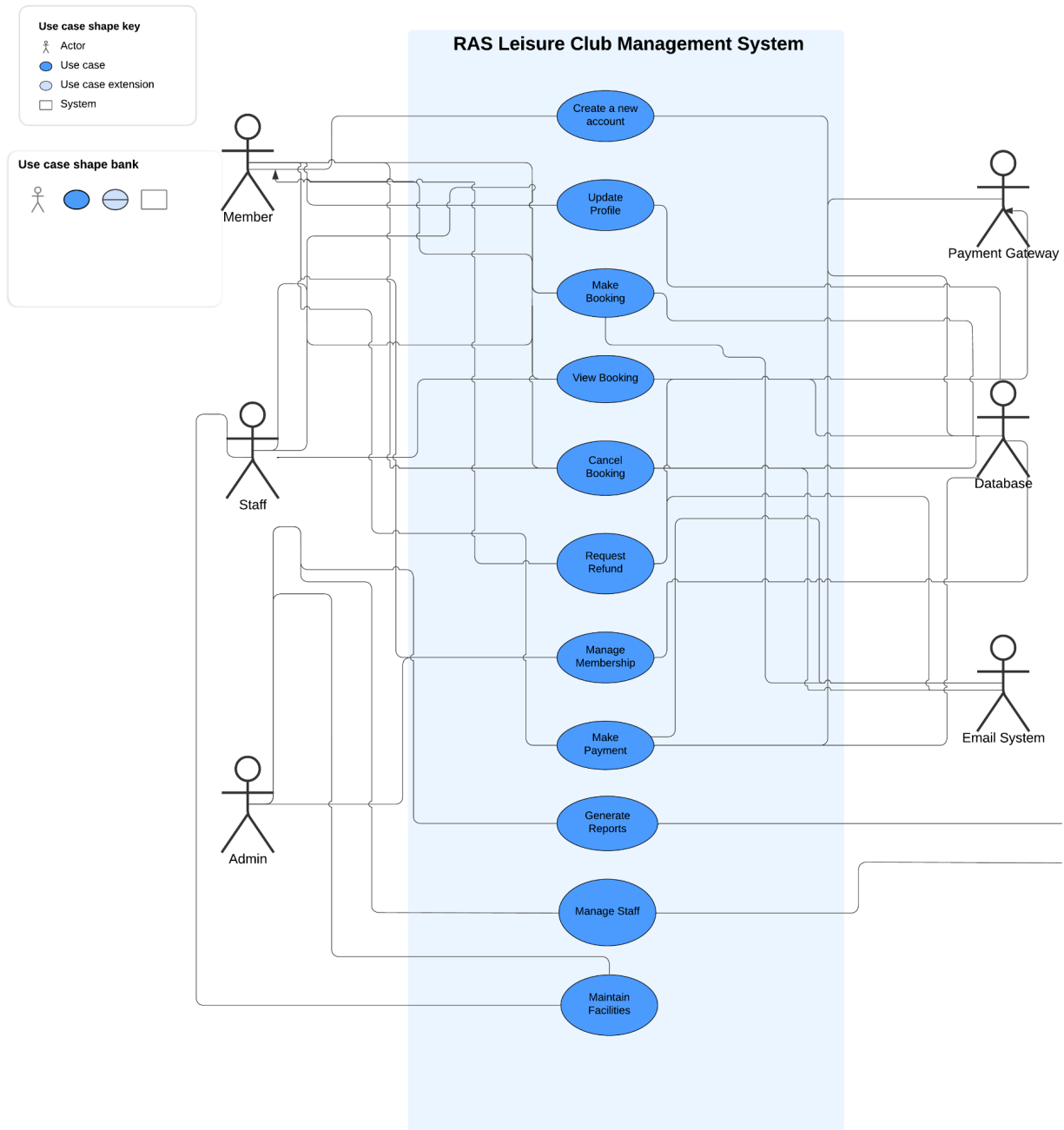
3. Other Nonfunctional Requirements

3.1 Performance Requirements

- *Handle simultaneous logins and bookings without lag.*
- *Respond to user actions within 2 seconds.*

3.2 Safety Requirements

- Regular backups to prevent data loss.
- Fail-safe mechanisms for database transactions.

3.3 Security Requirements

- Encrypted user credentials and secure database connections.
- Role-based access control to restrict unauthorized actions.

3.4 Software Quality Attributes

- **Reliability**: The system handles operational exceptions gracefully.
- **Scalability**: Designed to accommodate future feature expansions.
- **Usability**: Intuitive UI design tailored to each user role.

3.5 Business Rules

1. *Only active members can book facilities.*
2. *Staff can override bookings in special cases.*
3. *Administrators have full access to system features.*

3.6 Operating Environment

- ***Frontend:*** *JavaFX*
- ***Backend:*** *MySQL, JDBC*
- ***Platform:*** *Windows/Linux with Java Runtime Environment (JRE).*

3.7   User Interfaces

Home Page:
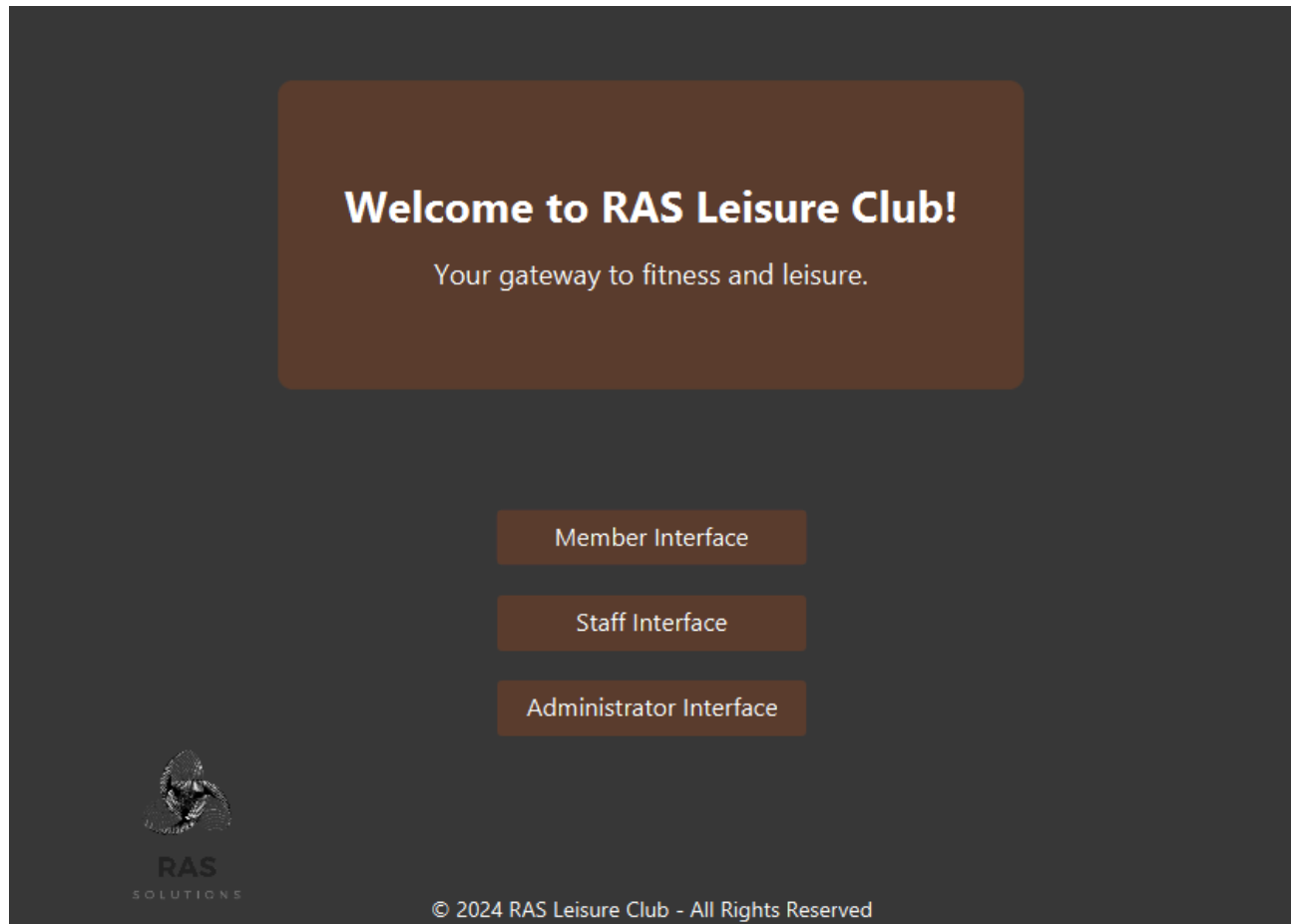
Register Member:

RAS Leisure Club

Create Your Account

<-- Back

Full Name: Enter your full name

Email: Enter your email address

Password: Enter your password

Phone Number: Enter your phone number

Membership Type: Select membership type ▼

Register   Cancel

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Member Login:

RAS Leisure Club

Member Login

<-- Back

Email

Password:

Enter your password

Reset   Login

Create New Account   Register

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Member Dashboard:

RAS Leisure Club

Welcome Rehan Tariq

<-- Back

View Bookings

Make Booking

Cancel Booking

Pay Bills

Request Refund

Update Profile

Membership Details

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Staff Login:

Staff Dashboard:

Admin Login:

RAS Leisure Club
Admin Login

<-- Back

Email

Password: Enter your password

Reset   Login

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Admin Dashboard:
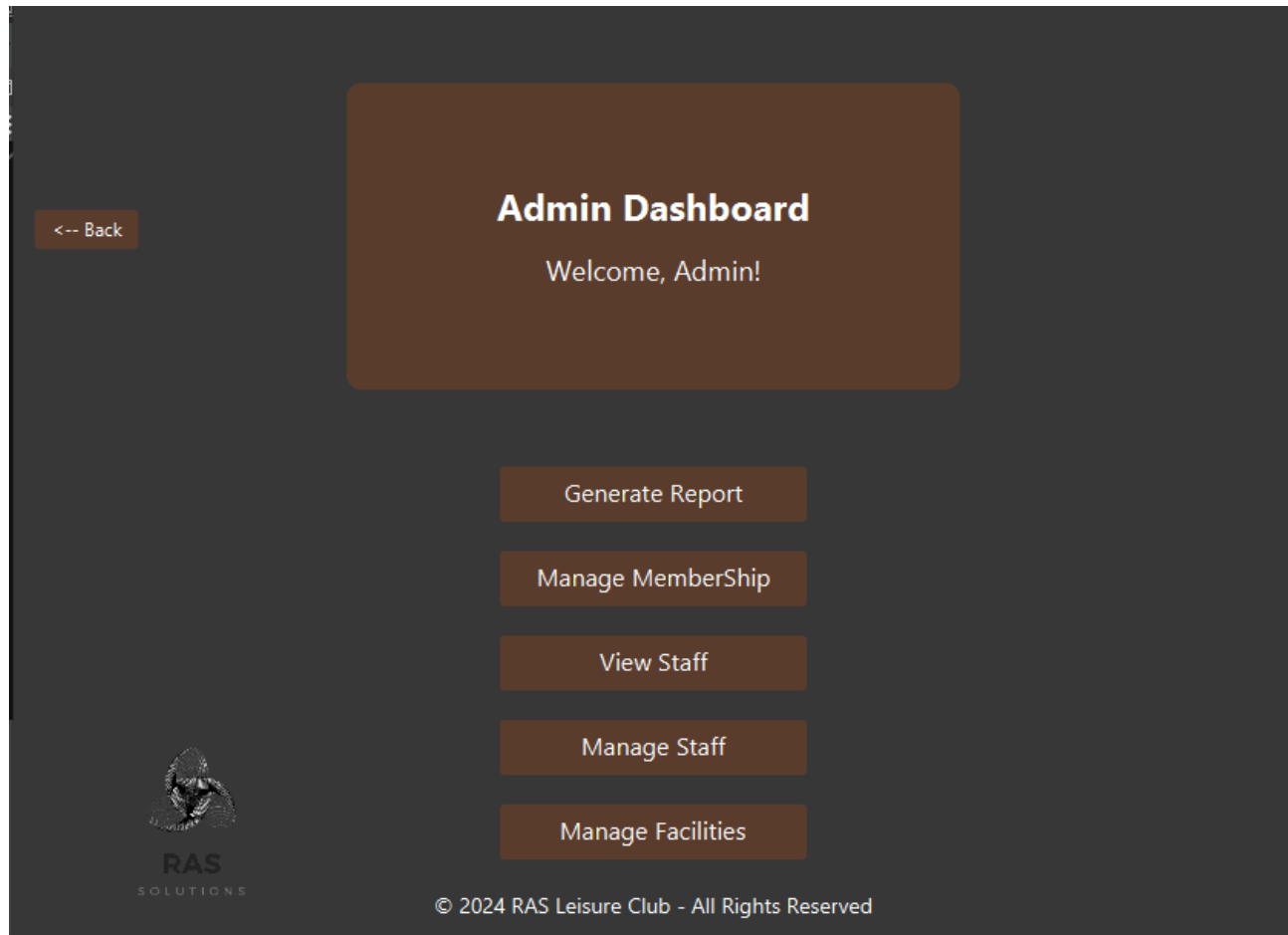
Generate Reports (for Admin):

Generate Report

Select an option below to proceed.

<-- Back

Display All Active Members

List All Bookings for a Specific Facility

View Facilities with Their Current Availability

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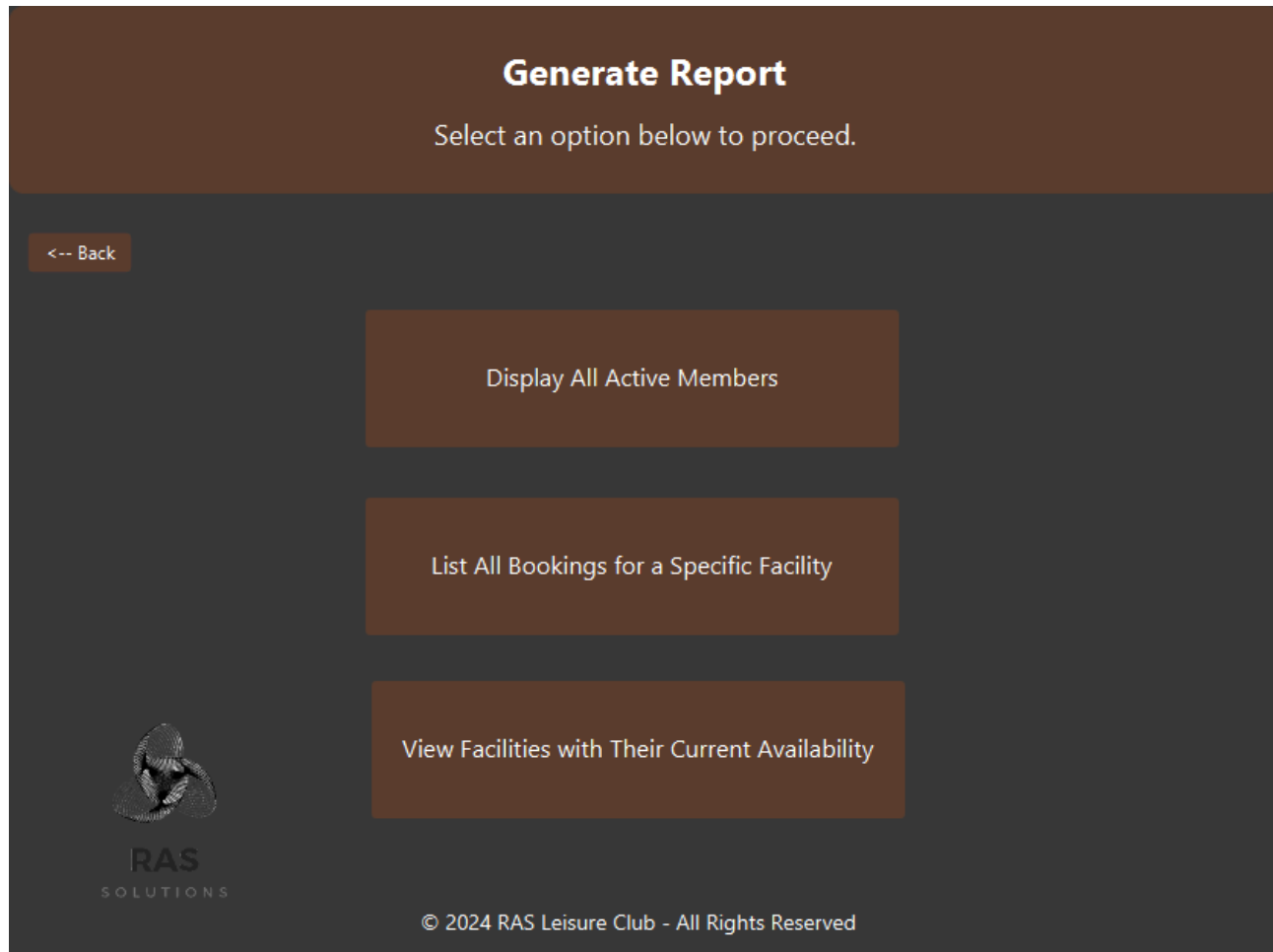
Display All Active Members (Report):

RAS Leisure Club
Membership Report

<-- Back

Search by Member ID   [Enter Member ID]   Search

Member ID	Member Name	Email	Phone Number	Membership Type	
1	Ali Khan	ali.khan@example.com	03111222333	Premium	
4	Sara Shah	sara.shah@example.com	03155667788	Premium	
5	Usman Javed	usman.javed@example.c...	03217894567	Basic	
6	Zainab Ali	zainab.ali@example.com	03149988776	Standard	
8	Fatima Noor	fatima.noor@example.com	03451234566	Standard	
9	Hamza Malik	hamza.malik@example.c...	03334566789	Premium	
11	Adeel Ansari	adeel.ansari@example.com	03441122334	Standard	
12	Anum Zehra	anum.zehra@example.com	03149876545	Basic	
14	Mahnoor Tariq	mahnoor.tariq@example....	03457891234	Standard	
15	Hina Iqbal	hina.iqbal@example.com	03217788901	Premium	
17	Rabia Khan	rabia.khan@example.com	03156677890	Premium	

Download

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4.   Domain Model
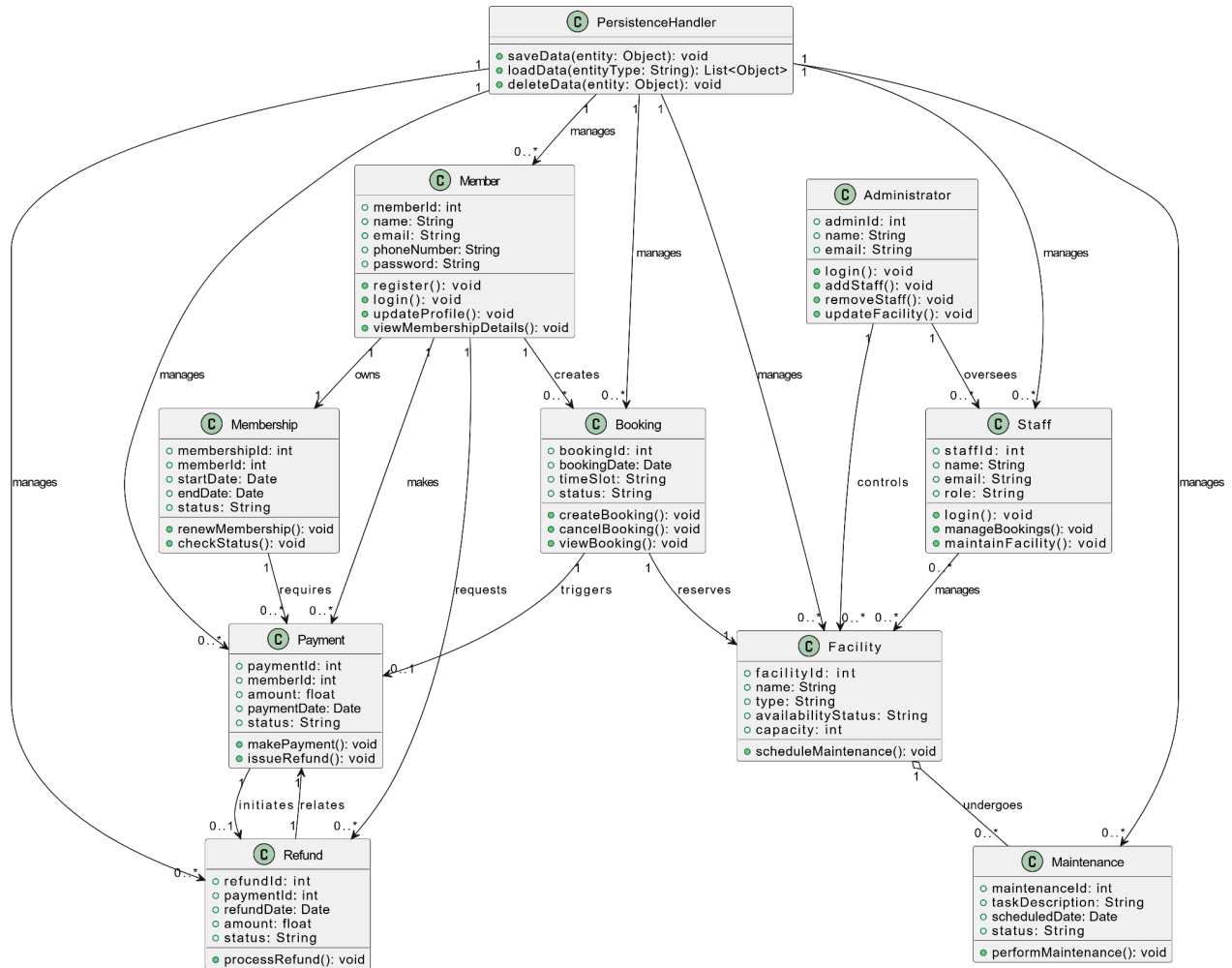
5. System Sequence Diagram

Use case name: Create a New Account

Main Success SSD:
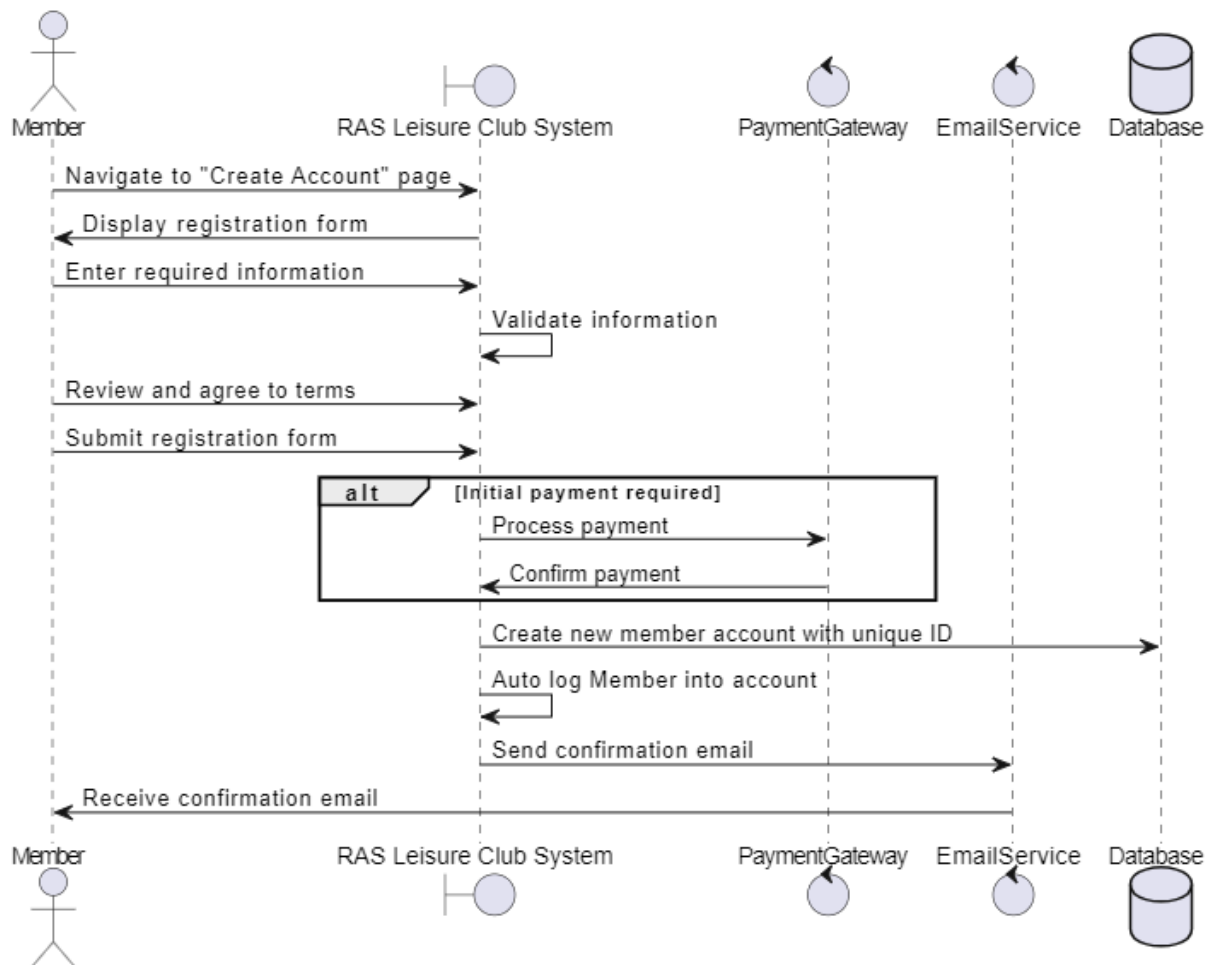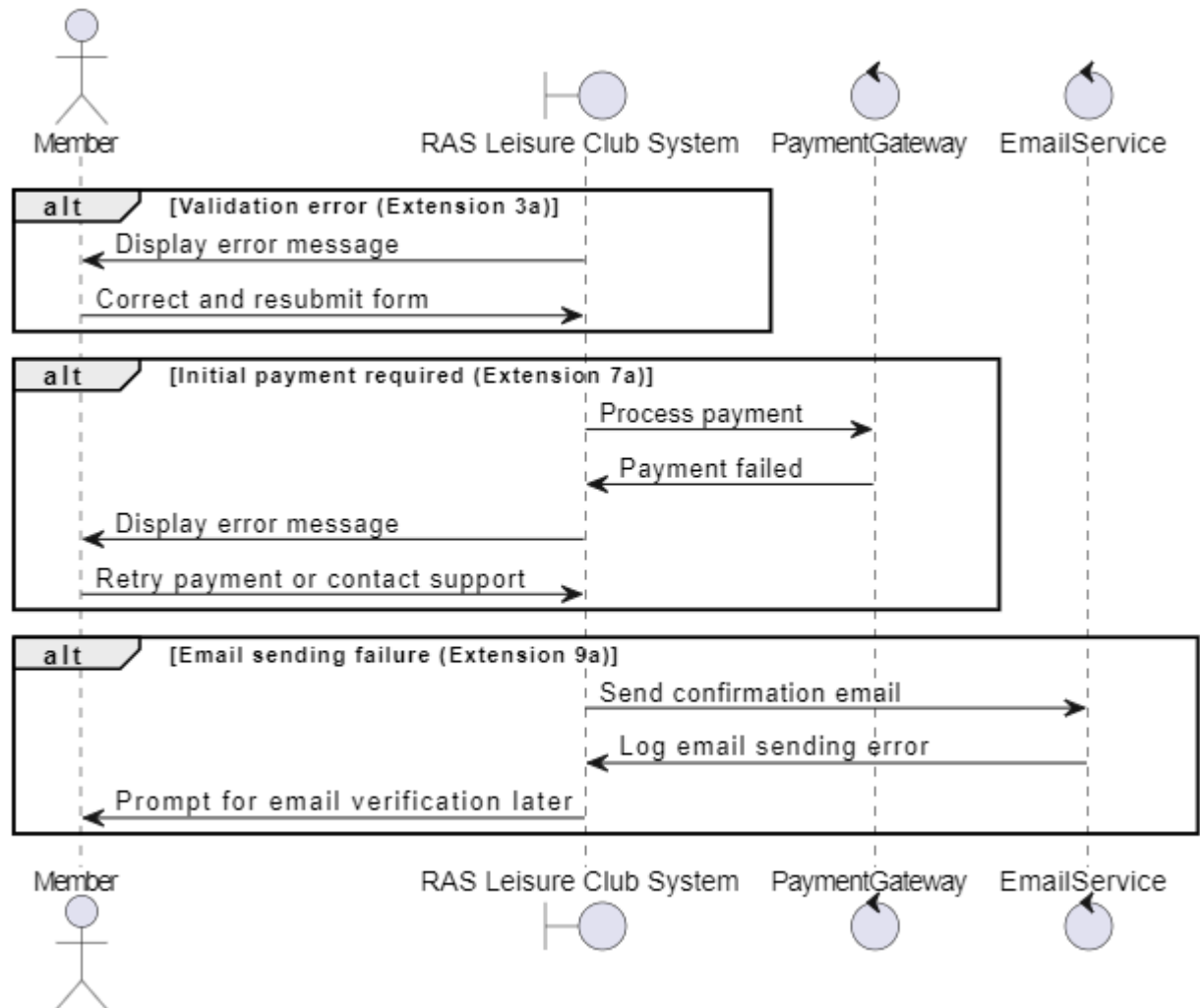
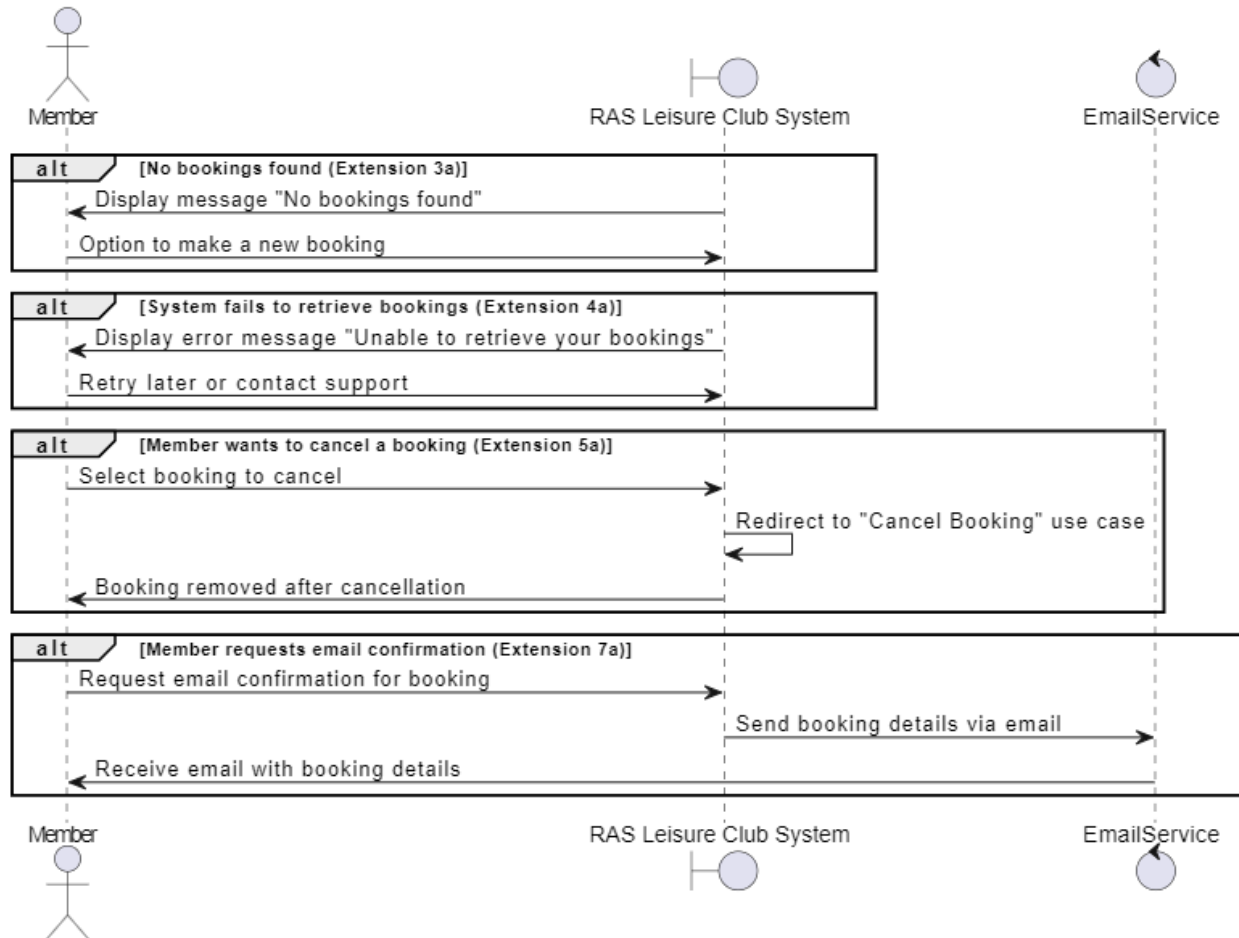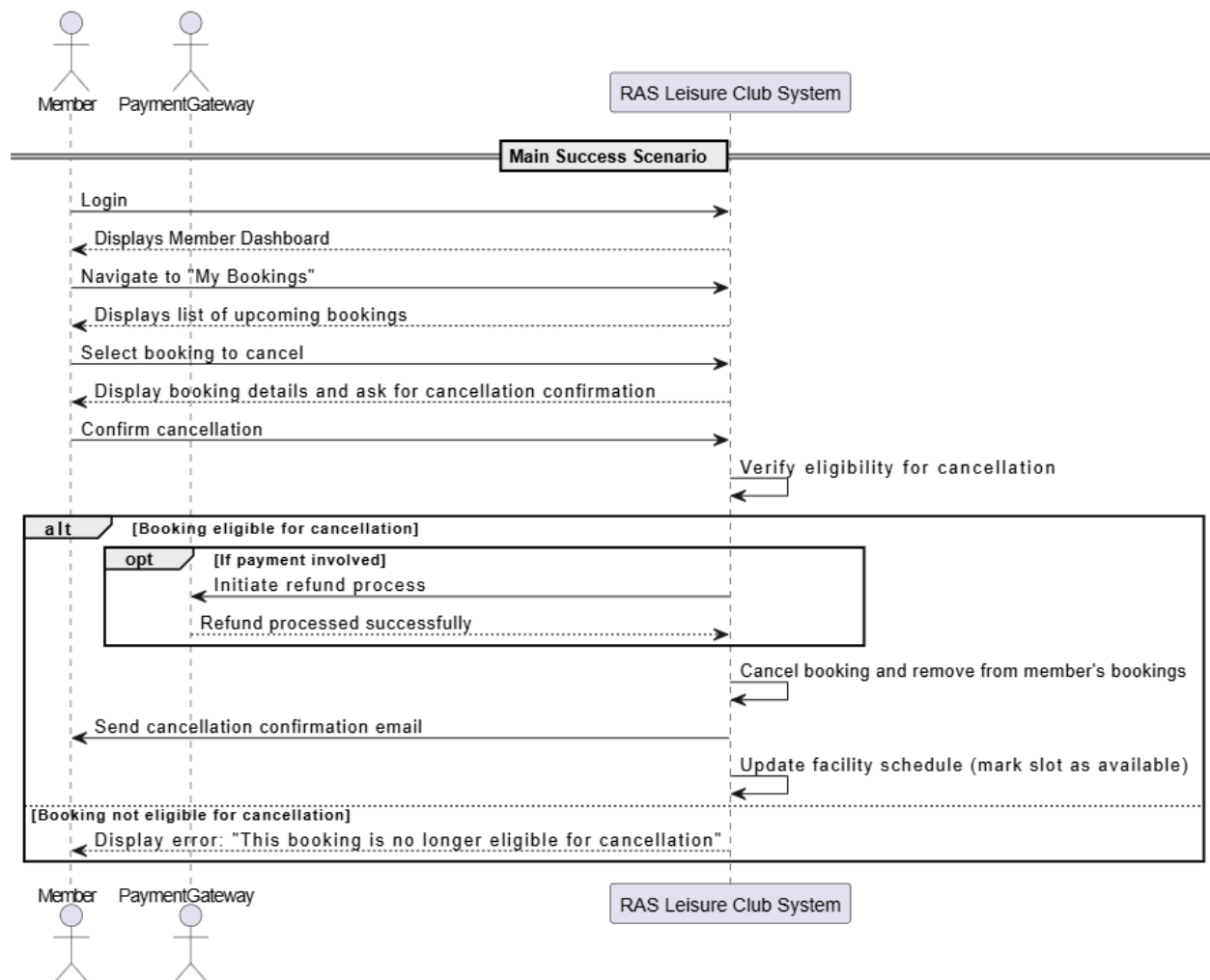## Extensions SSD:

Use case name: Update Profile

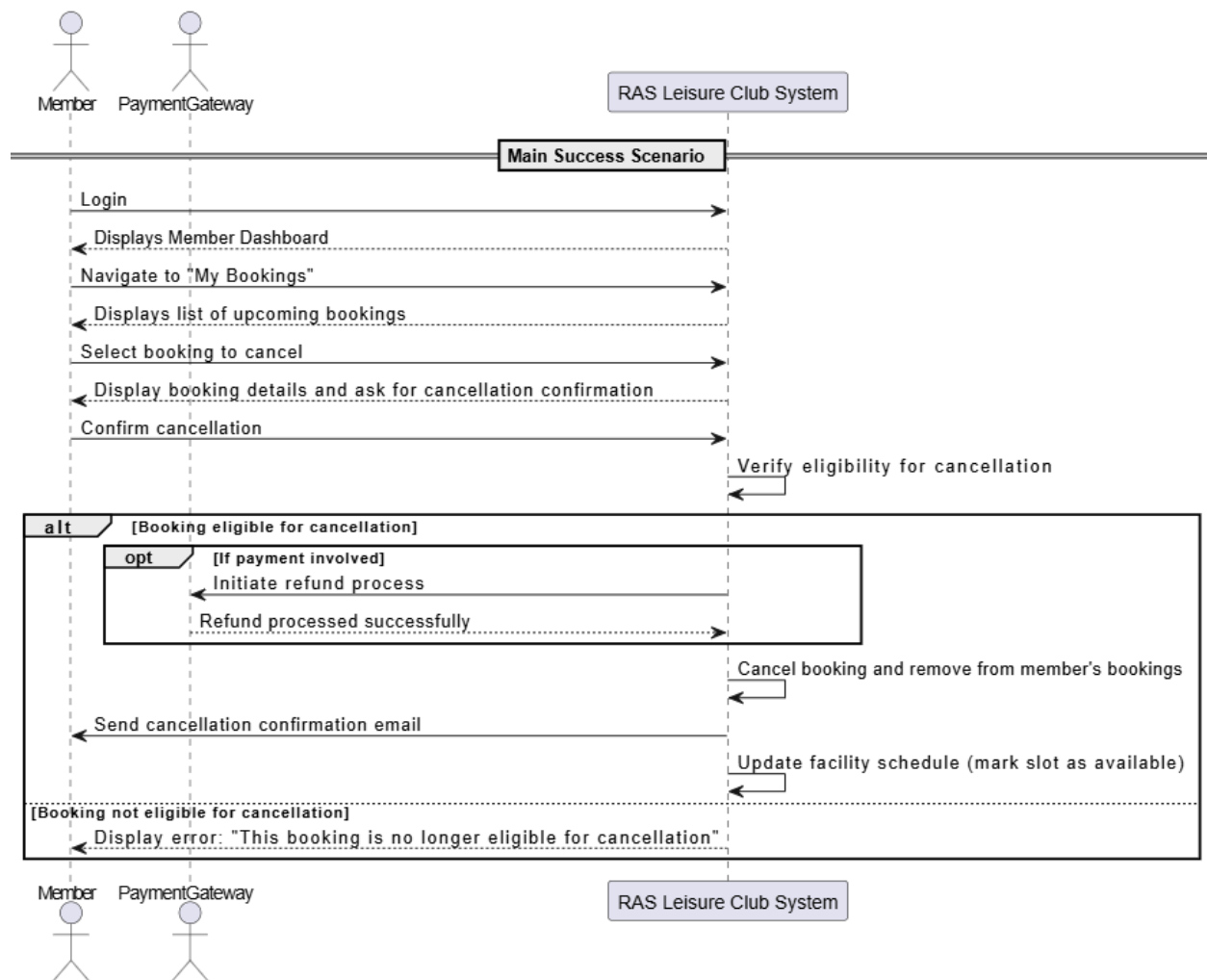**Main Success SSD:**
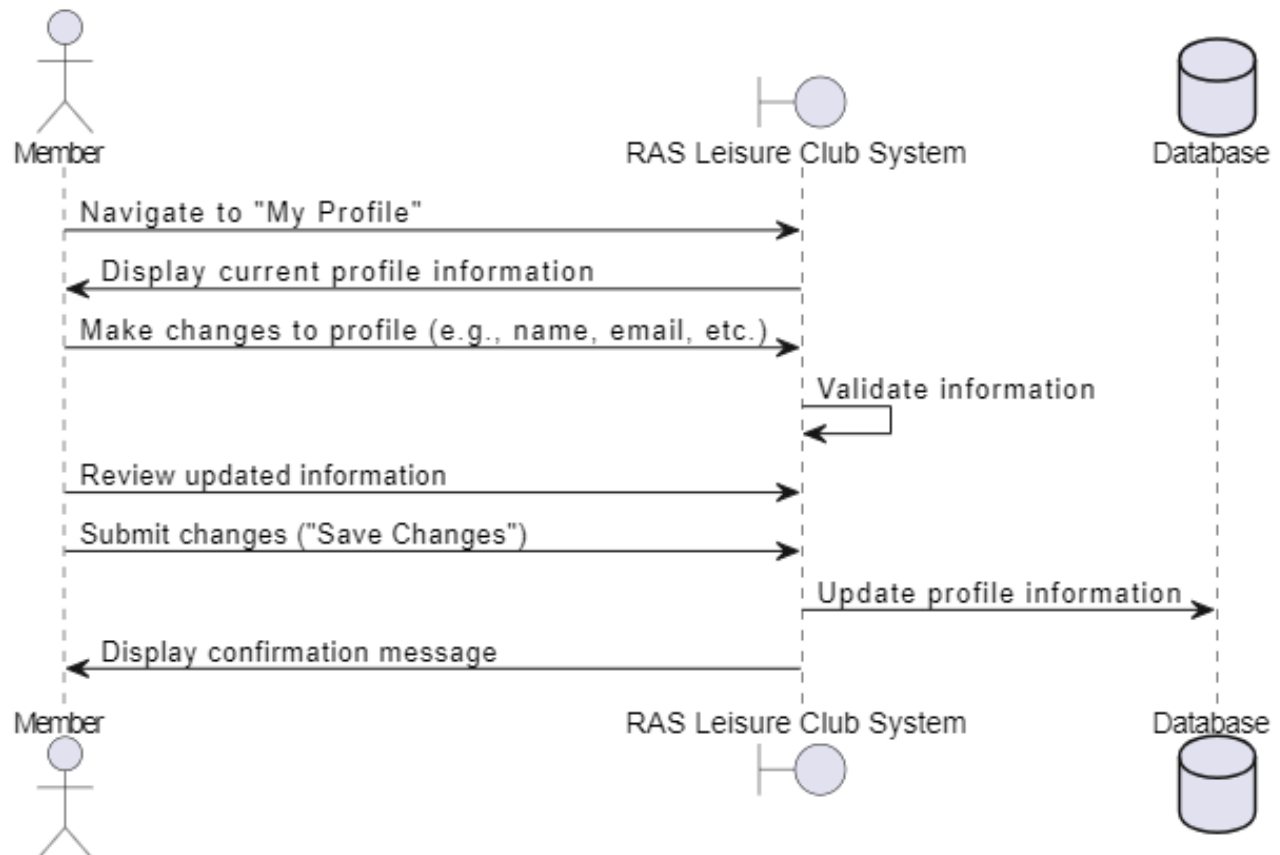
Extensions SSD:
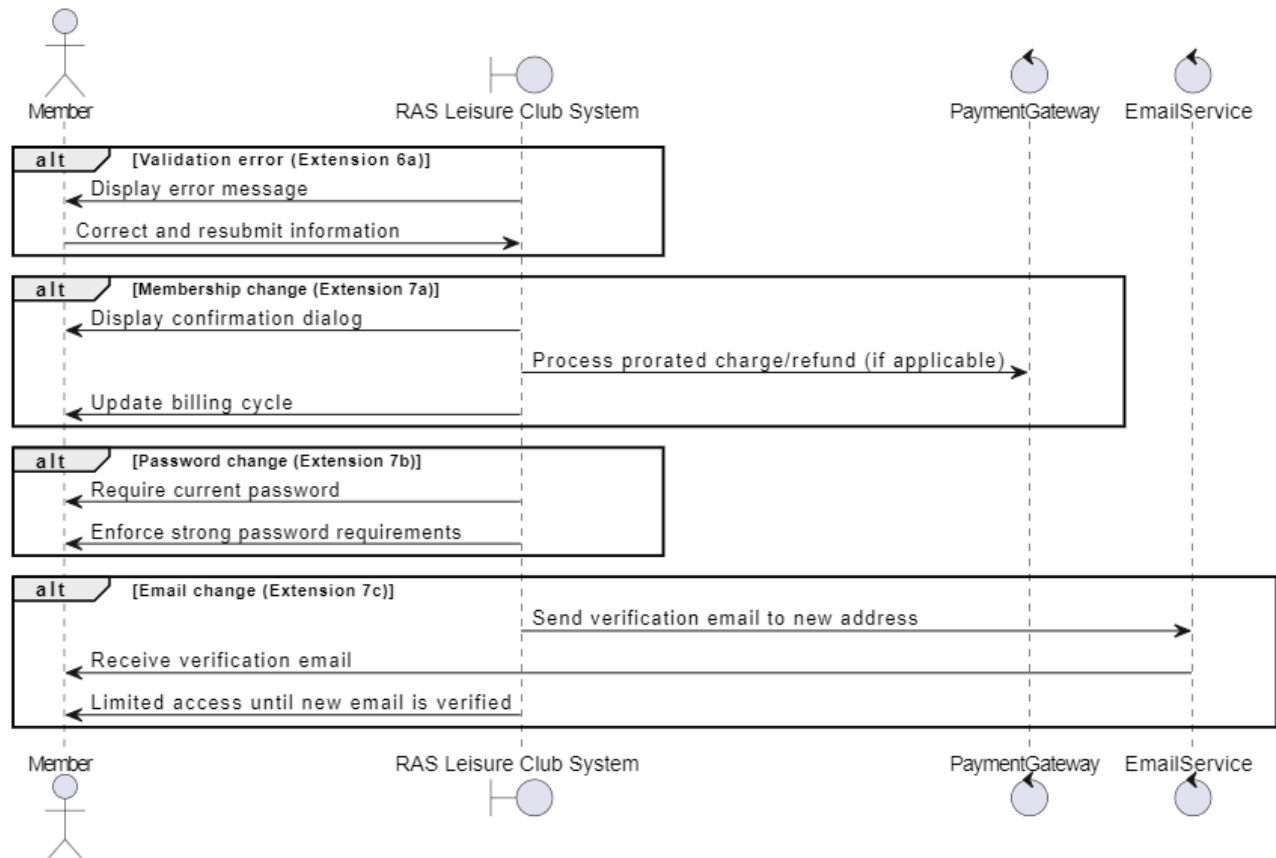
Use case name: Make Booking
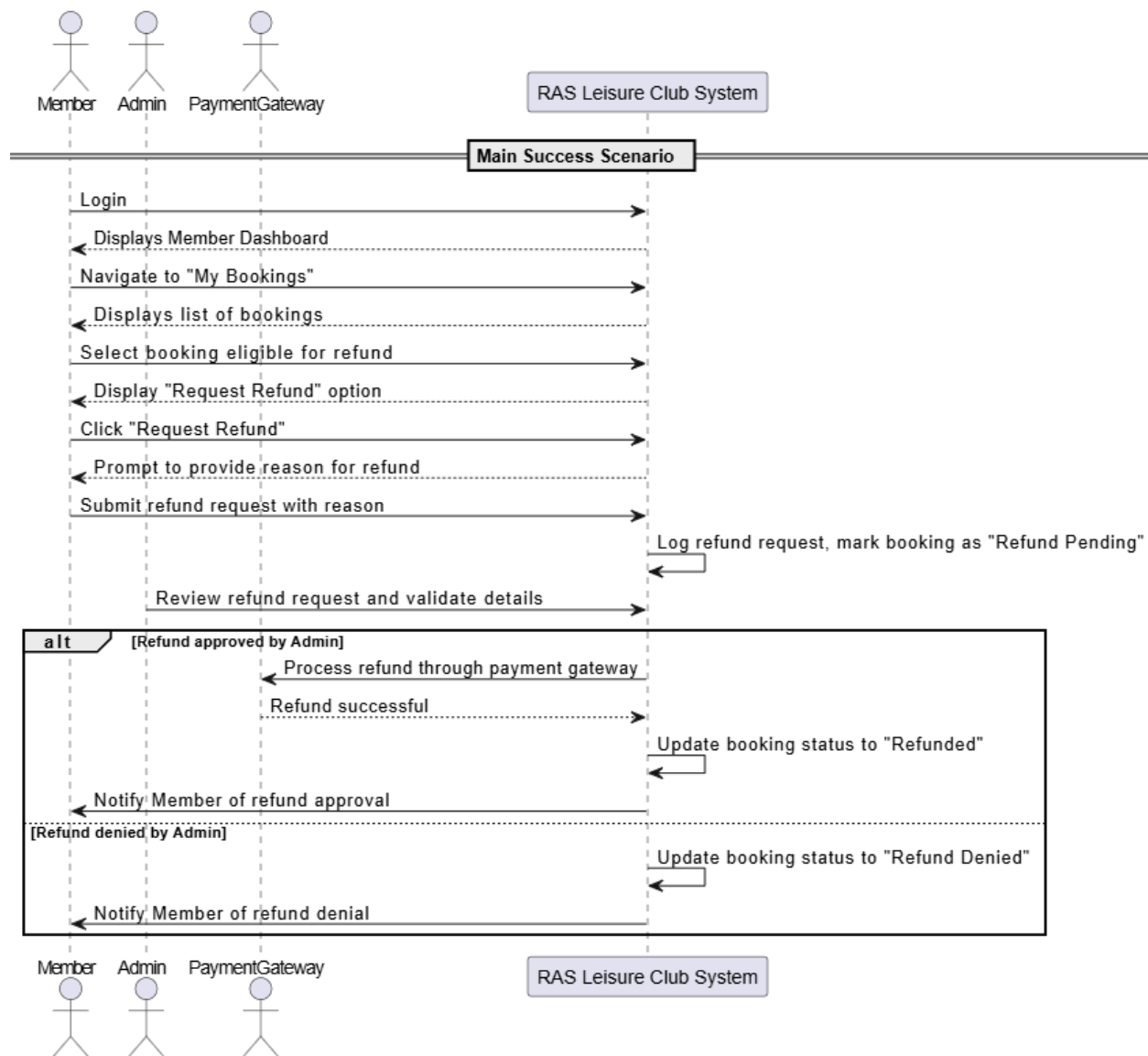
Main Success SSD:
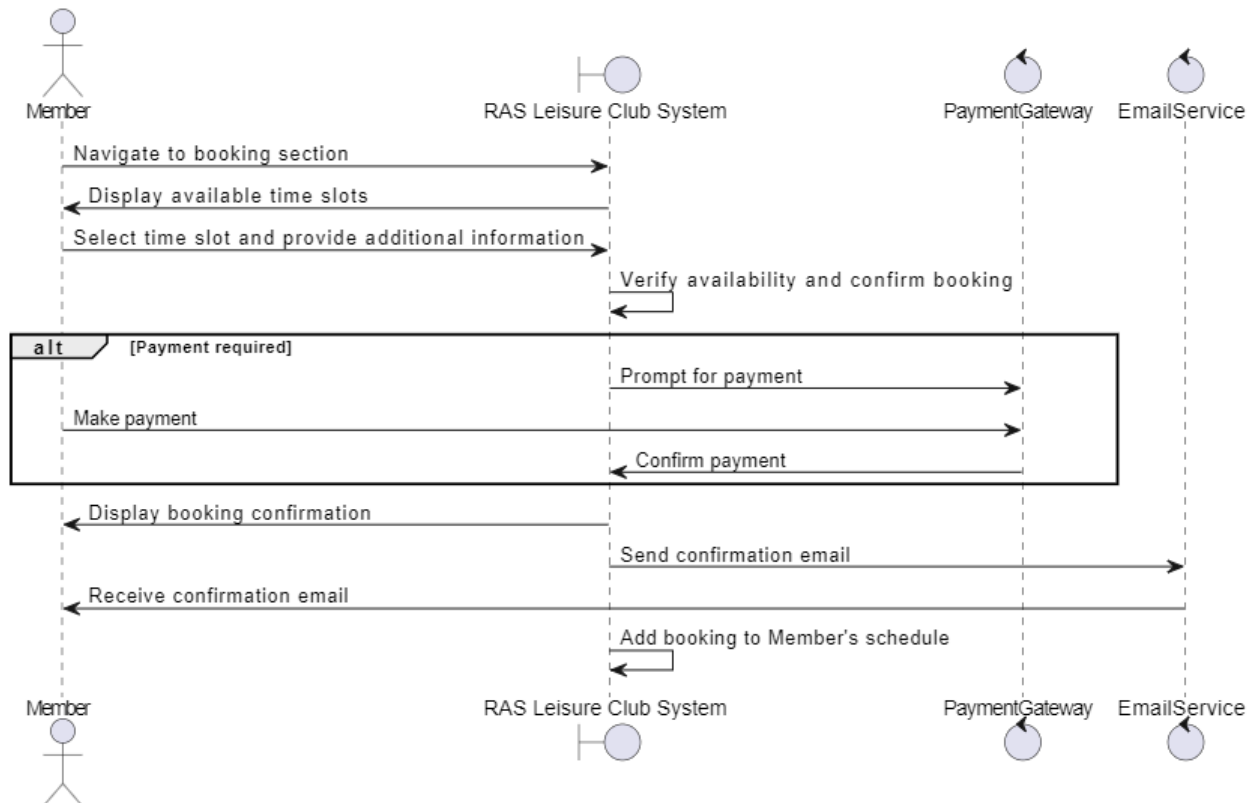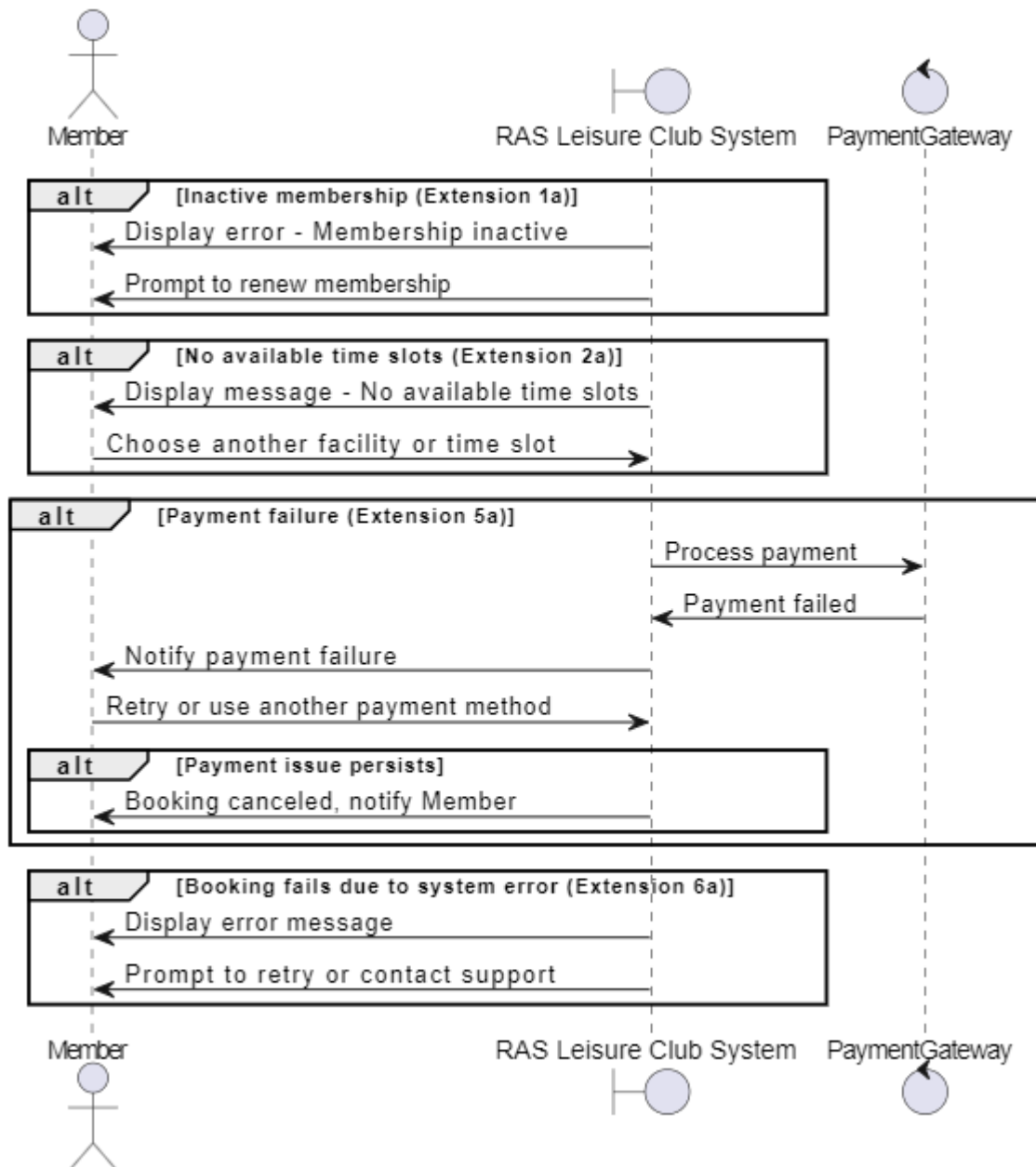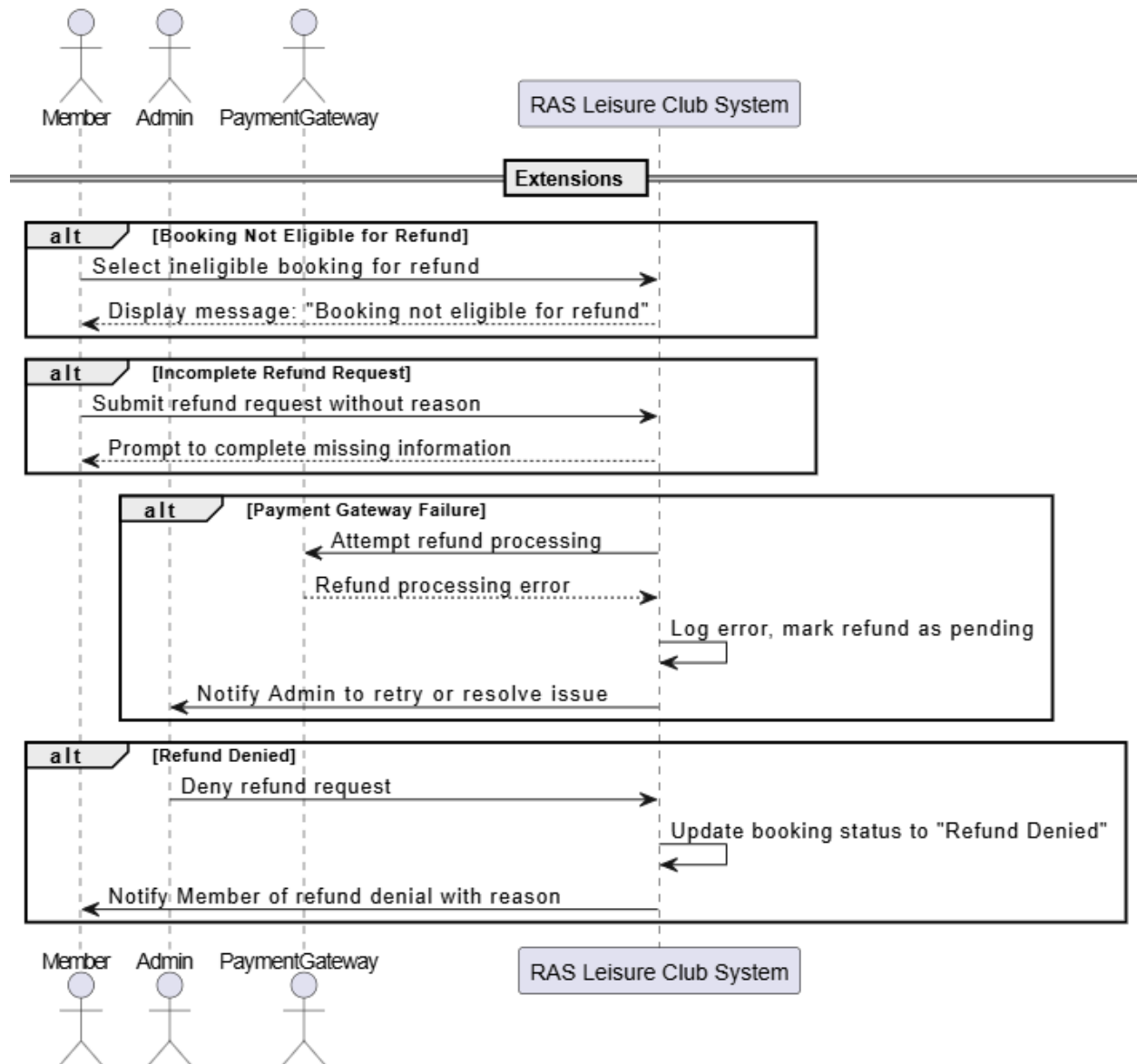
Extensions SSD:

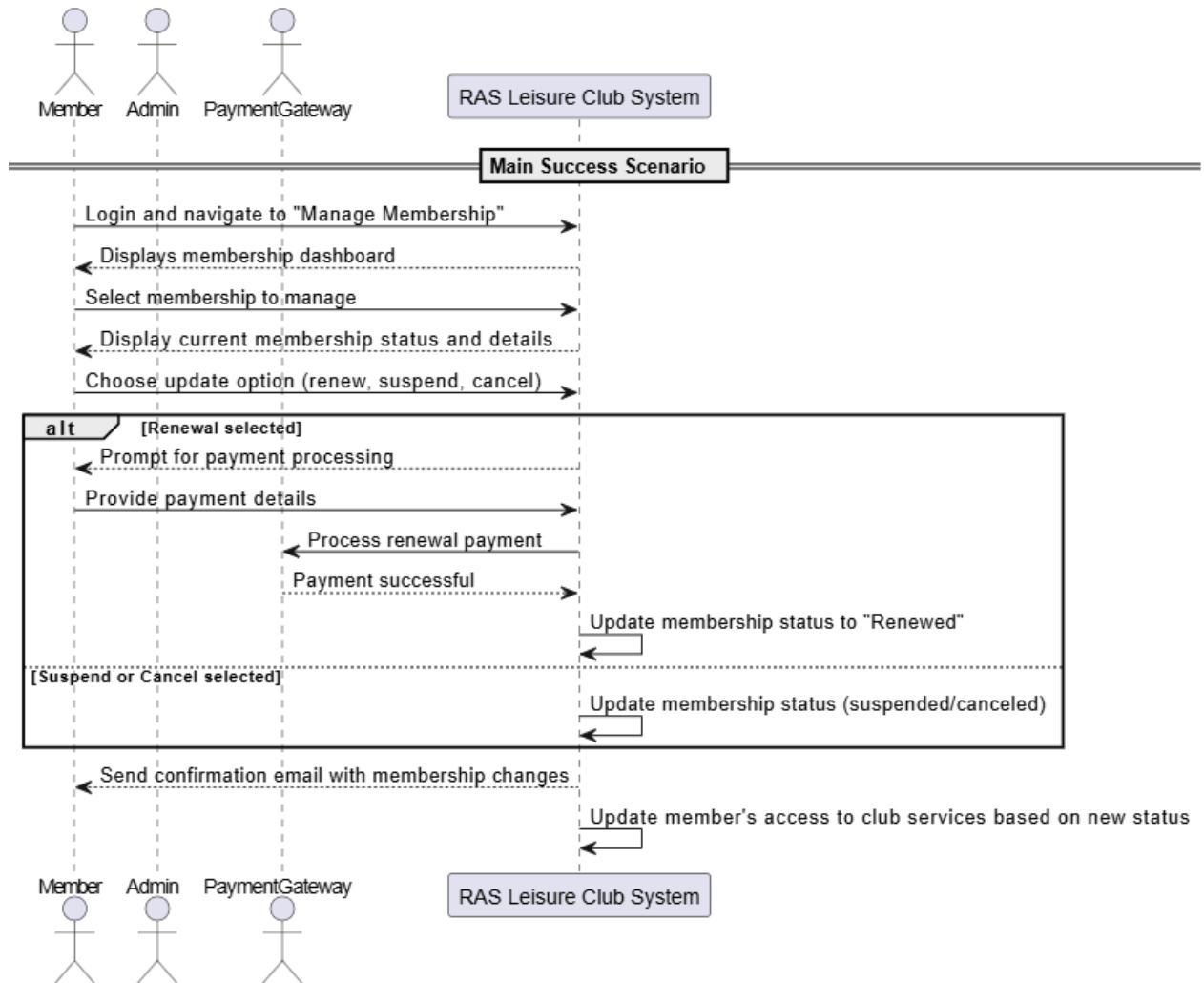## Use case name: View Bookings
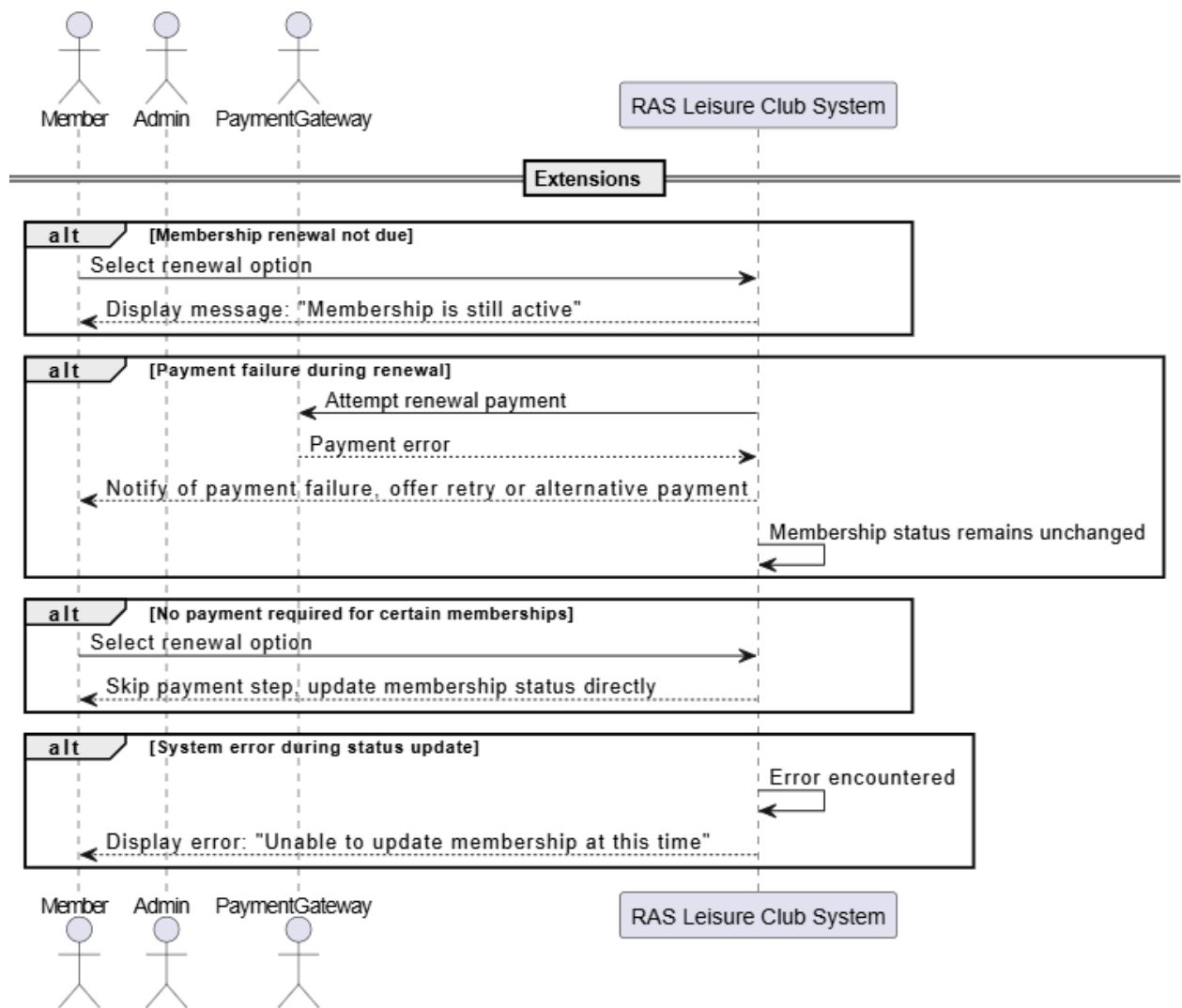
Main Success SSD:

Extensions SSD:

Use case name: Cancel Booking

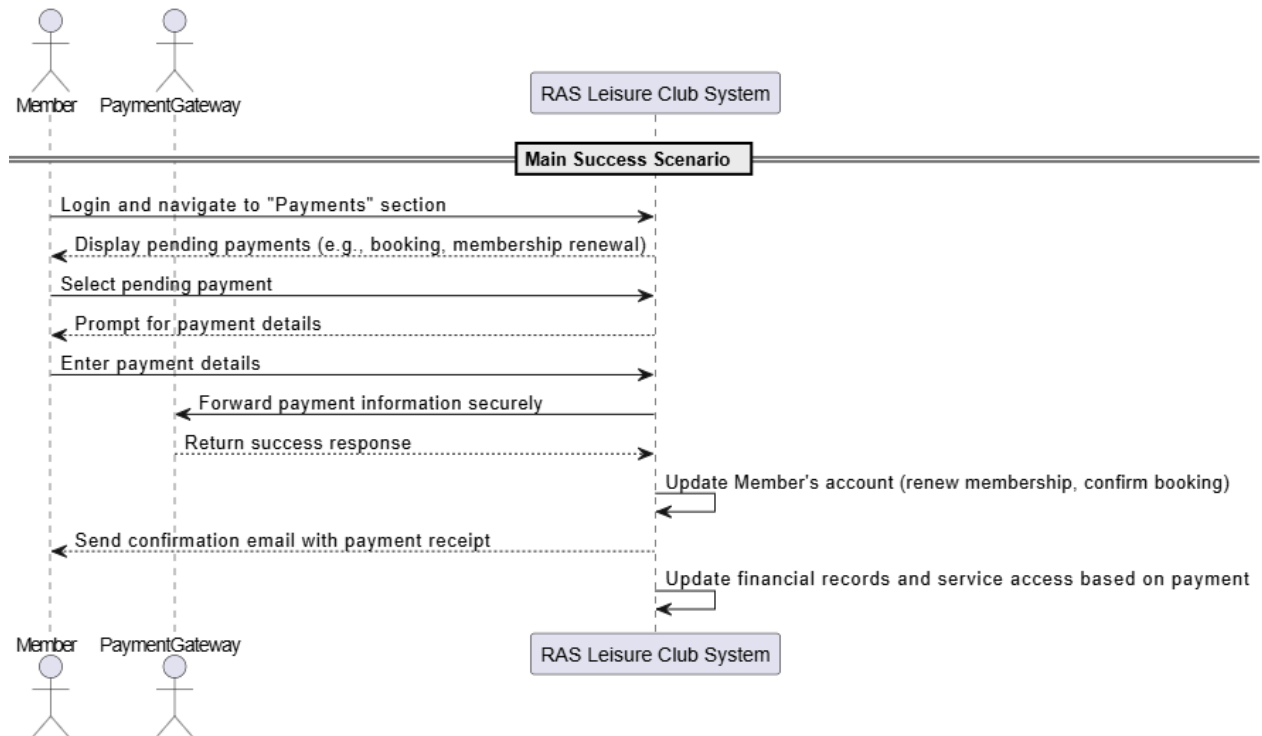## Main Success SSD:
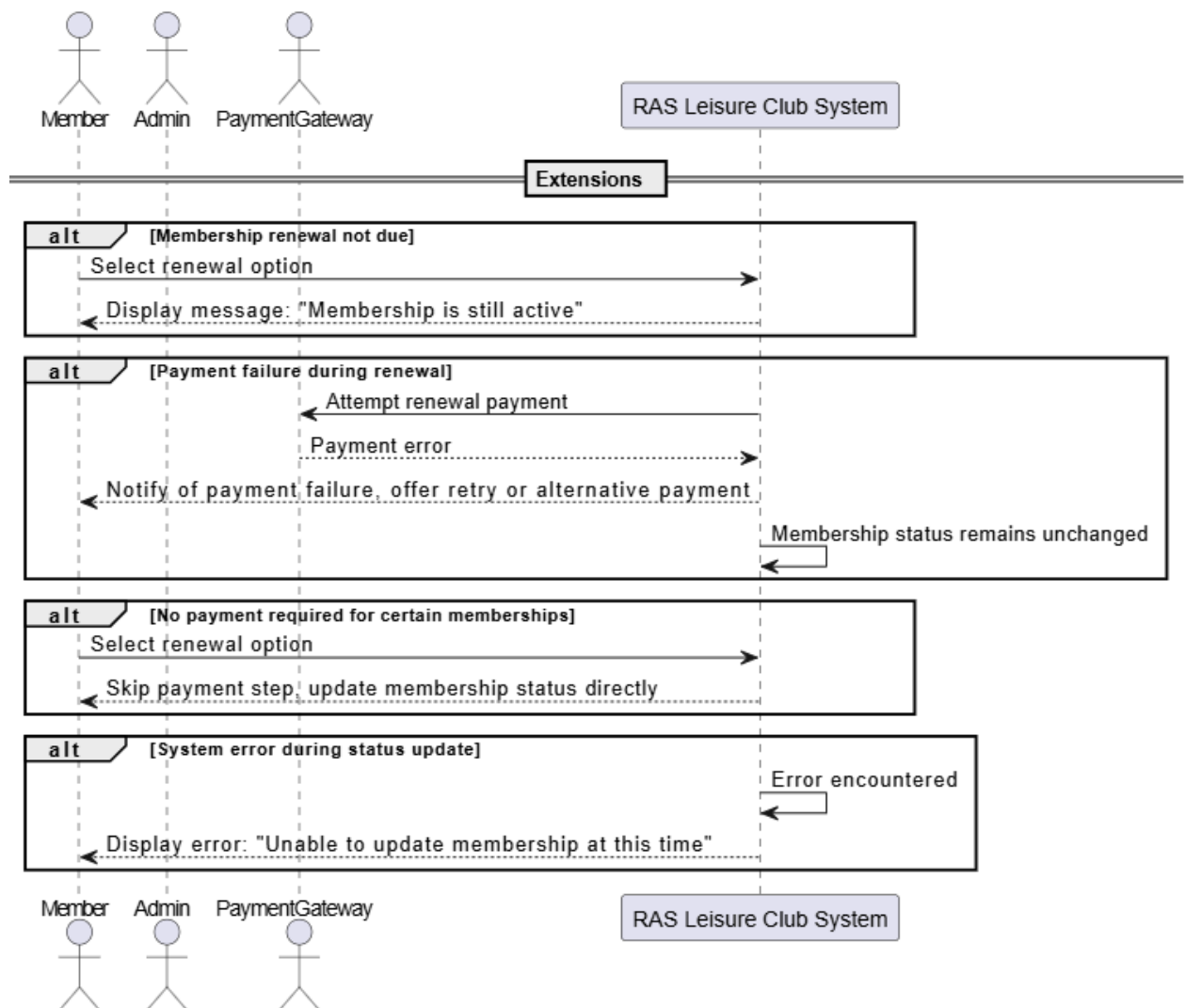
Extensions SSD:

<u>Use Case Name:</u> Request Refund
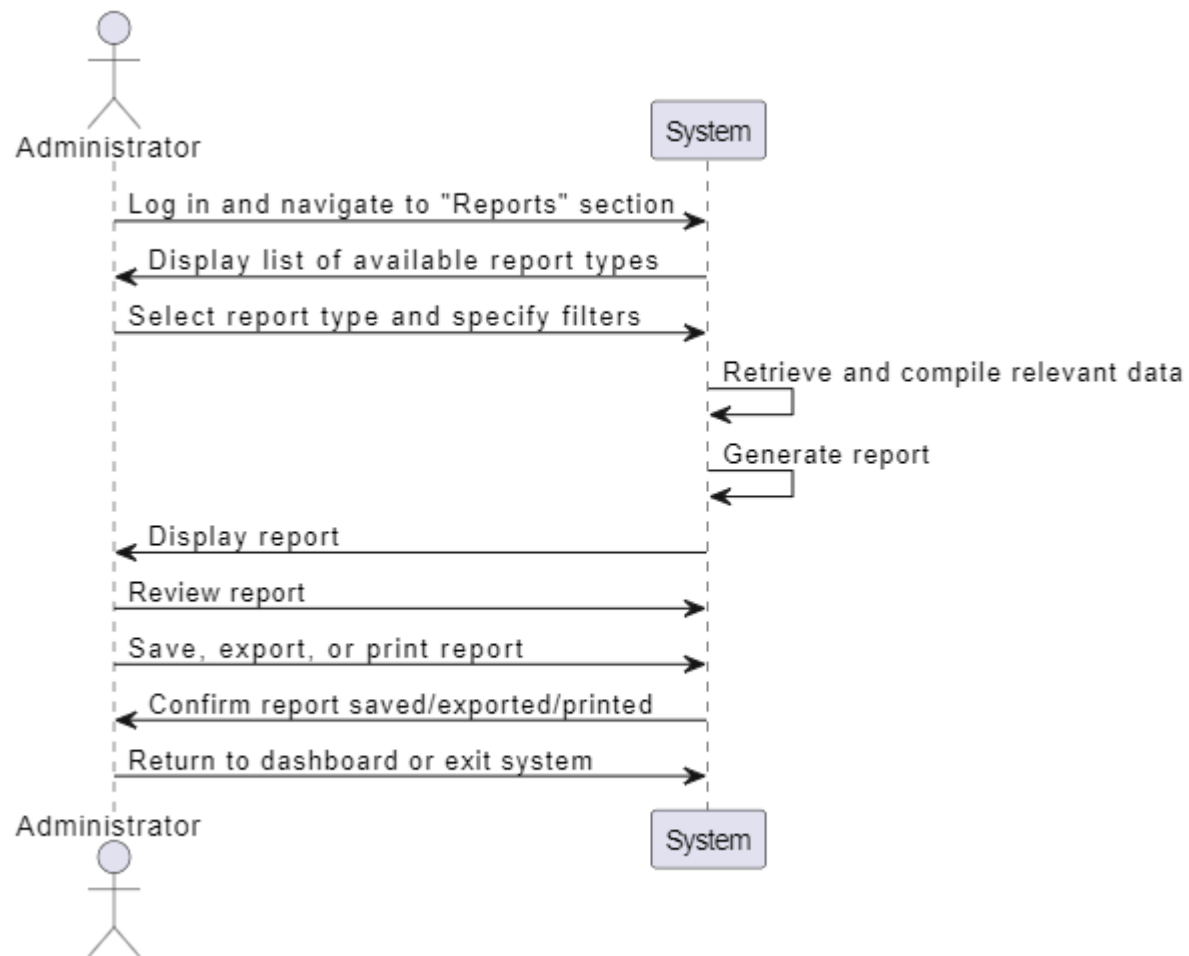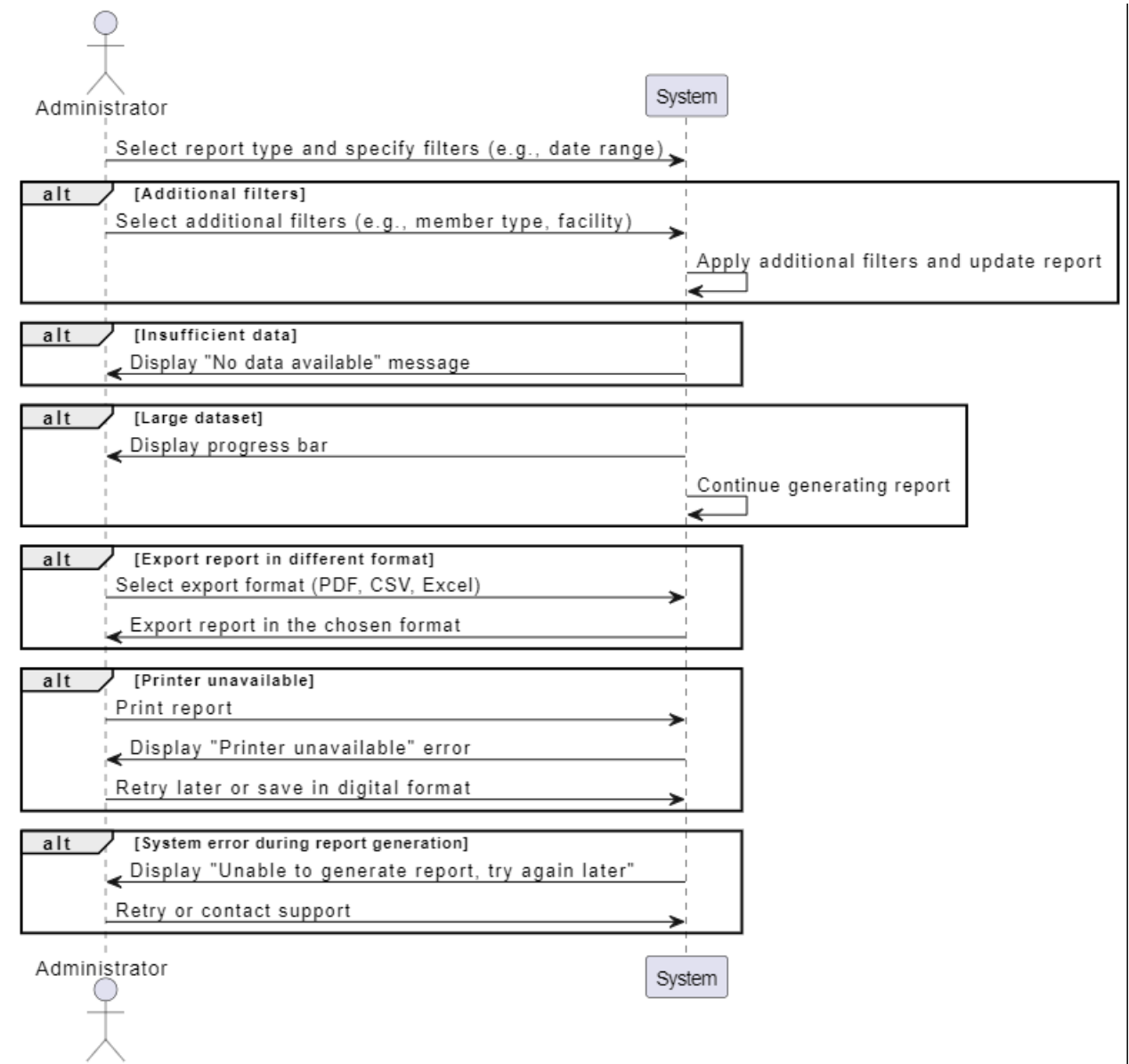
<u>Main Success SSD:</u>

Extensions SSD:

Use case name: Manage Membership

Main Success SSD:

Extensions SSD:

Use case name: Make Payment

Main Success SSD:
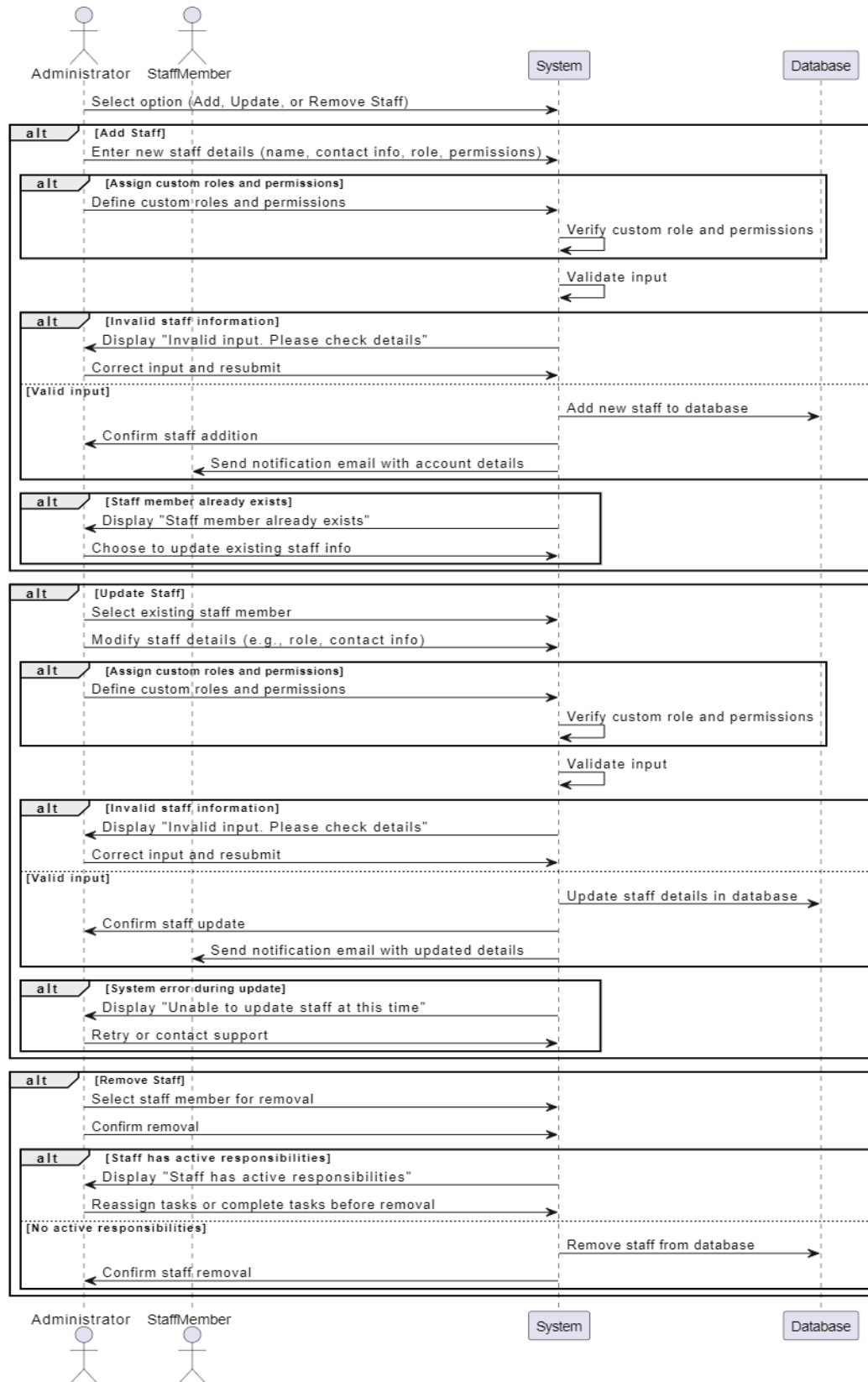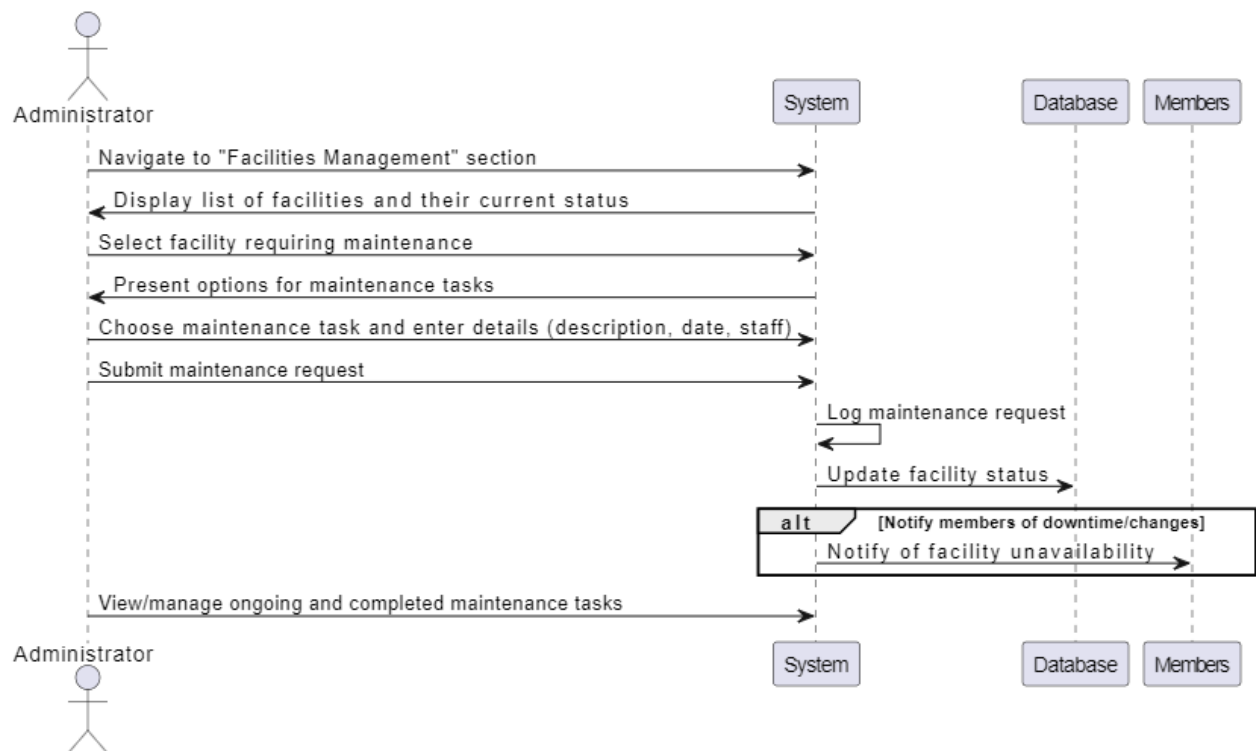
Extensions SSD:

Member   Admin   PaymentGateway   RAS Leisure Club System

Extensions

alt   [Membership renewal not due]

Select renewal option

Display message: "Membership is still active"

alt   [Payment failure during renewal]

Attempt renewal payment

Payment error

Notify of payment failure, offer retry or alternative payment

Membership status remains unchanged

alt   [No payment required for certain memberships]

Select renewal option

Skip payment step, update membership status directly

alt   [System error during status update]

Error encountered

Display error: "Unable to update membership at this time"

Member   Admin   PaymentGateway   RAS Leisure Club System

Use case name: Generate Reports

Main Success SSD:

Administrator → System: Log in and navigate to "Reports" section
System → Administrator: Display list of available report types
Administrator → System: Select report type and specify filters
System → System: Retrieve and compile relevant data
System → System: Generate report
System → Administrator: Display report
Administrator → System: Review report
Administrator → System: Save, export, or print report
System → Administrator: Confirm report saved/exported/printed
Administrator → System: Return to dashboard or exit system

Extensions SSD:

Administrator — System

Select report type and specify filters (e.g., date range)

alt [Additional filters]
Select additional filters (e.g., member type, facility)
Apply additional filters and update report

alt [Insufficient data]
Display "No data available" message

alt [Large dataset]
Display progress bar
Continue generating report

alt [Export report in different format]
Select export format (PDF, CSV, Excel)
Export report in the chosen format

alt [Printer unavailable]
Print report
Display "Printer unavailable" error
Retry later or save in digital format

alt [System error during report generation]
Display "Unable to generate report, try again later"
Retry or contact support

Administrator — System

Use case name: Manage Staff

Main Success SSD:

Extensions SSD:

Administrator   StaffMember   System   Database

Select option (Add, Update, or Remove Staff)

alt   [Add Staff]
Enter new staff details (name, contact info, role, permissions)

alt   [Assign custom roles and permissions]
Define custom roles and permissions

Verify custom role and permissions

Validate input

alt   [Invalid staff information]
Display "Invalid input. Please check details"
Correct input and resubmit

[Valid input]

Add new staff to database

Confirm staff addition

Send notification email with account details

alt   [Staff member already exists]
Display "Staff member already exists"
Choose to update existing staff info

alt   [Update Staff]
Select existing staff member
Modify staff details (e.g., role, contact info)

alt   [Assign custom roles and permissions]
Define custom roles and permissions

Verify custom role and permissions

Validate input

alt   [Invalid staff information]
Display "Invalid input. Please check details"
Correct input and resubmit

[Valid input]

Update staff details in database

Confirm staff update

Send notification email with updated details

alt   [System error during update]
Display "Unable to update staff at this time"
Retry or contact support

alt   [Remove Staff]
Select staff member for removal
Confirm removal

alt   [Staff has active responsibilities]
Display "Staff has active responsibilities"
Reassign tasks or complete tasks before removal

[No active responsibilities]

Remove staff from database

Confirm staff removal

Administrator   StaffMember   System   Database

Use case name: Maintain Facilities

Main Success SSD:

Extensions SSD:

6.   Sequence Diagram

register() Method

Associated use Case: Create a New Account

login() Method

Associated Use Case: Create Account
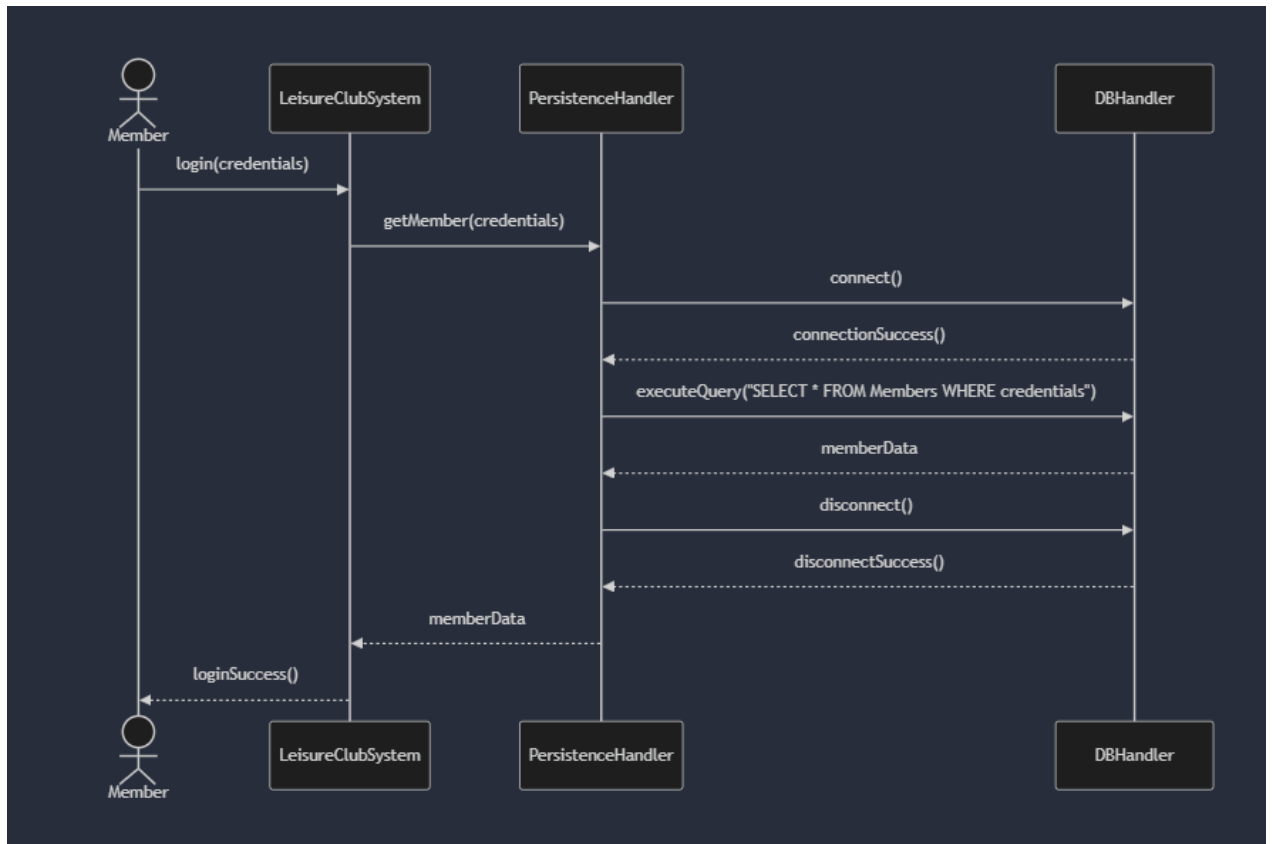
makeBooking() Method

Associated Use Case: Make Booking
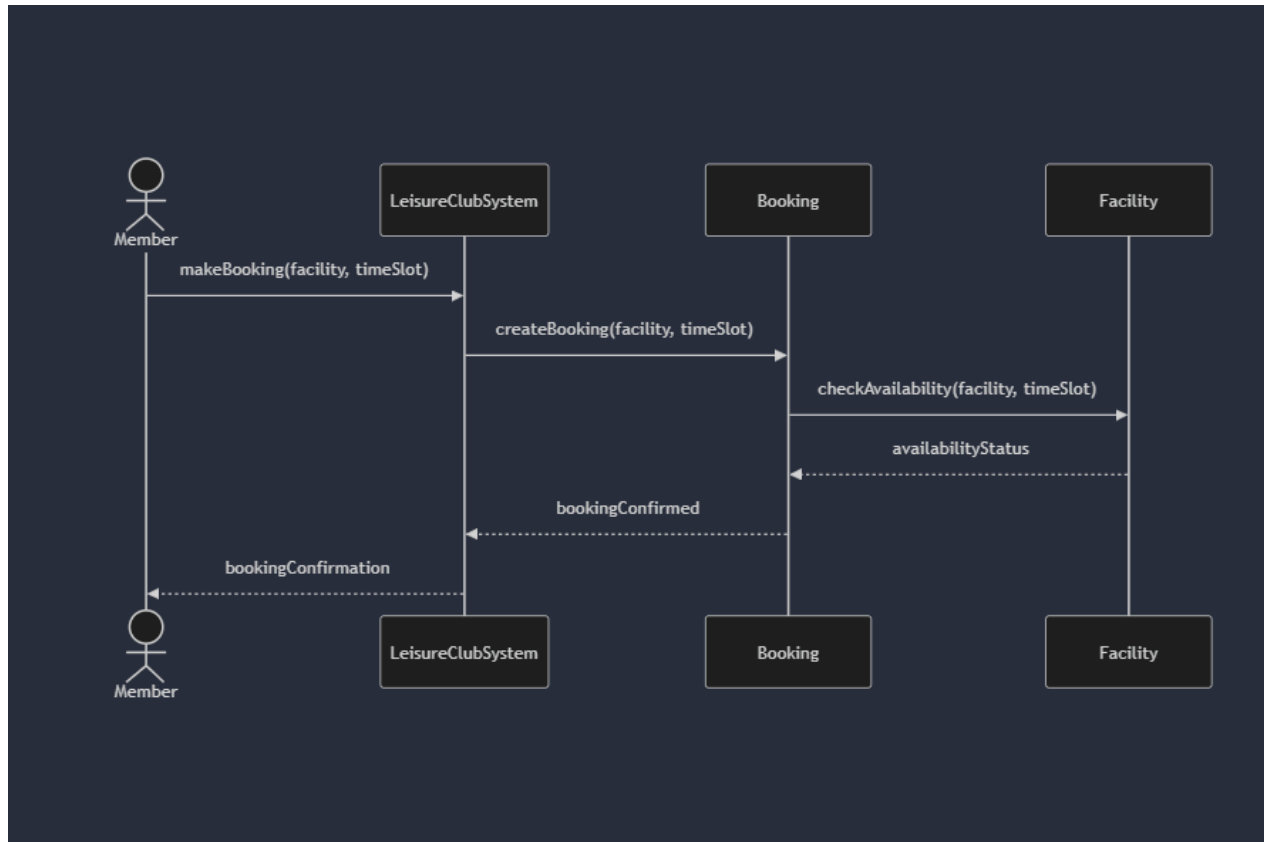
cancelBooking() Method

Associated Use Case: Cancel Booking
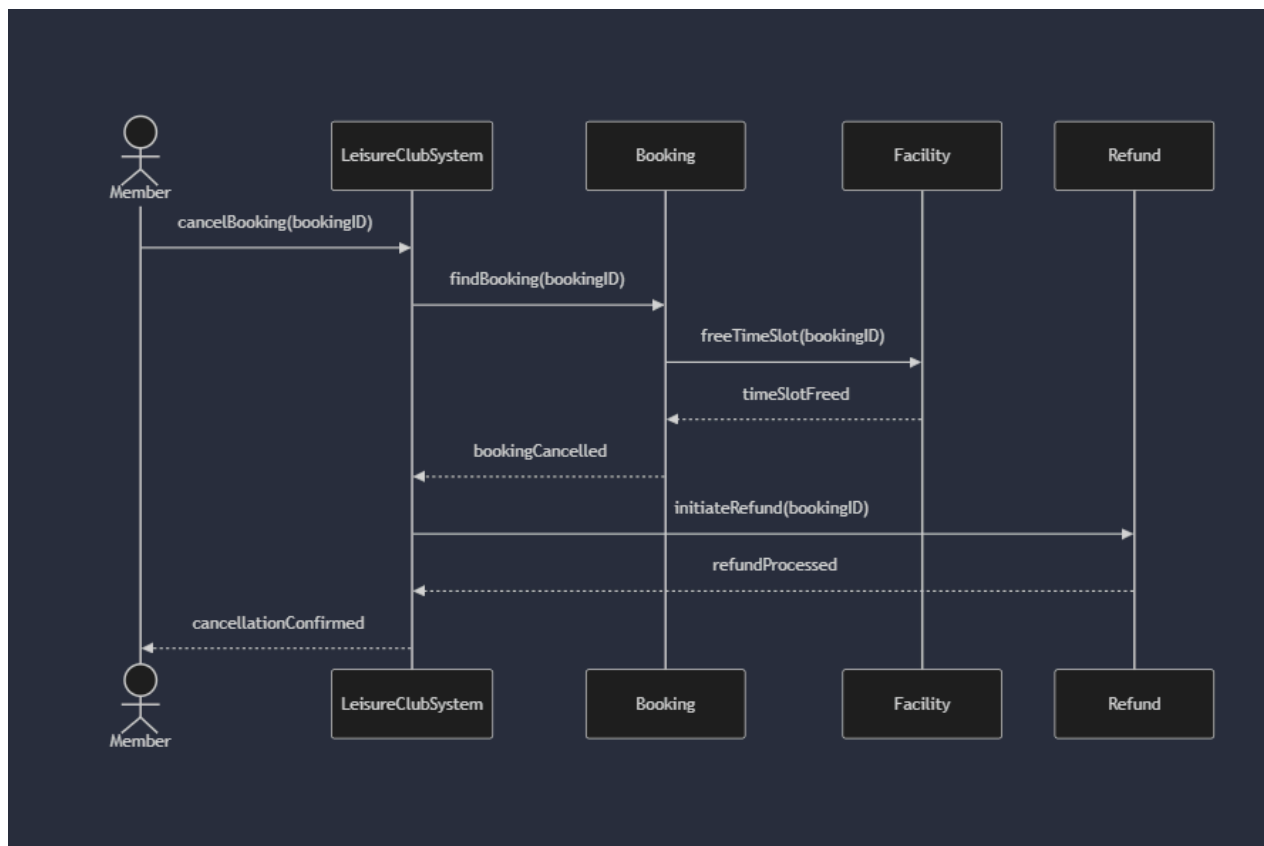
makePayment() Method
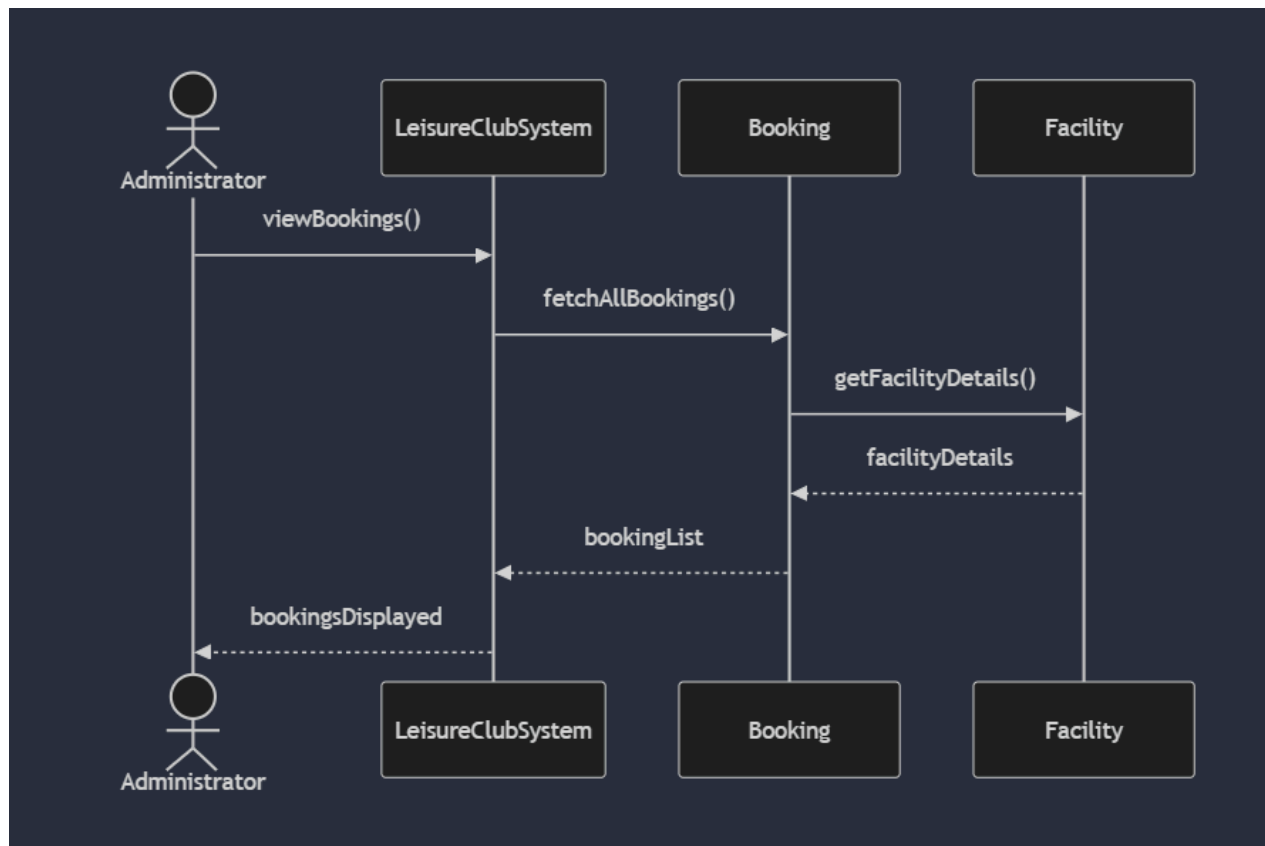
Associated Use Case: Make Payment
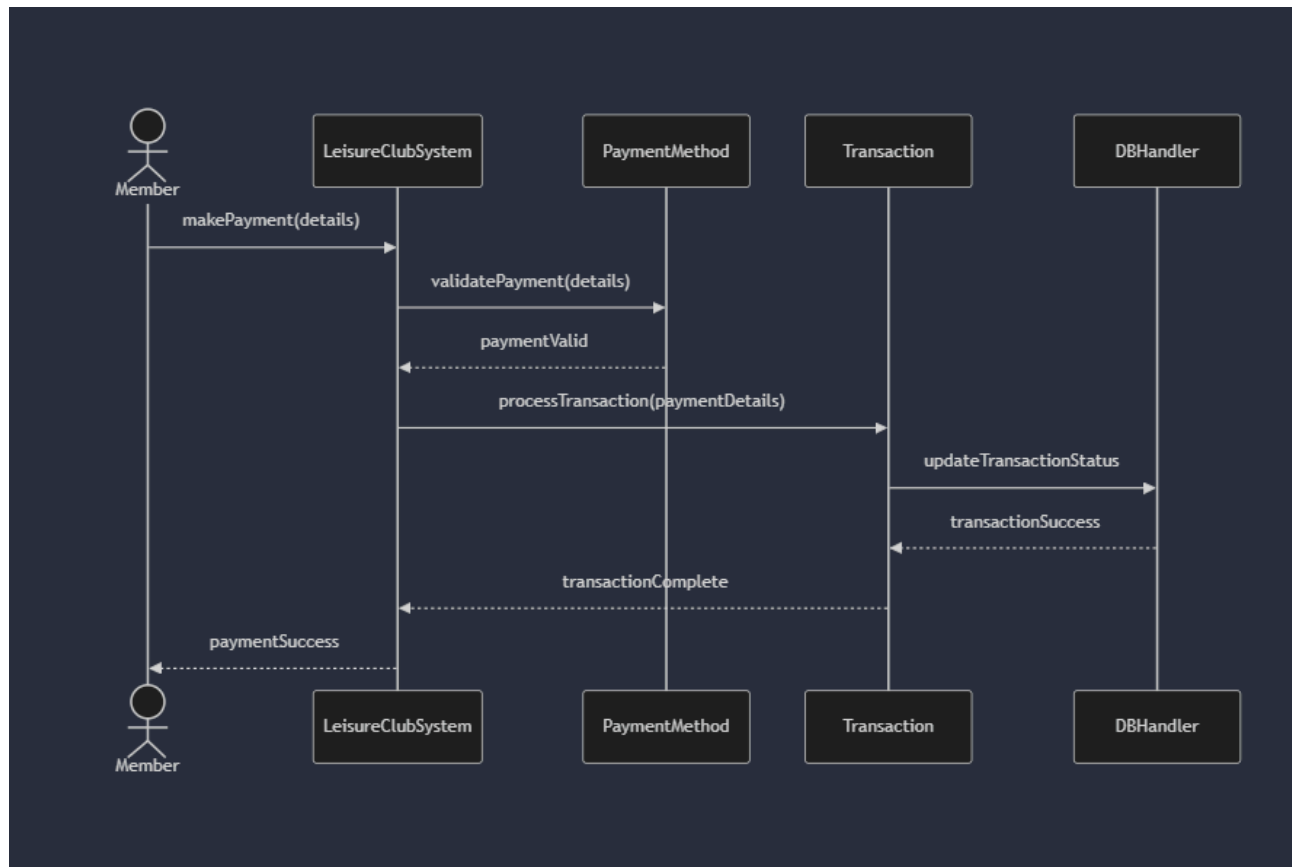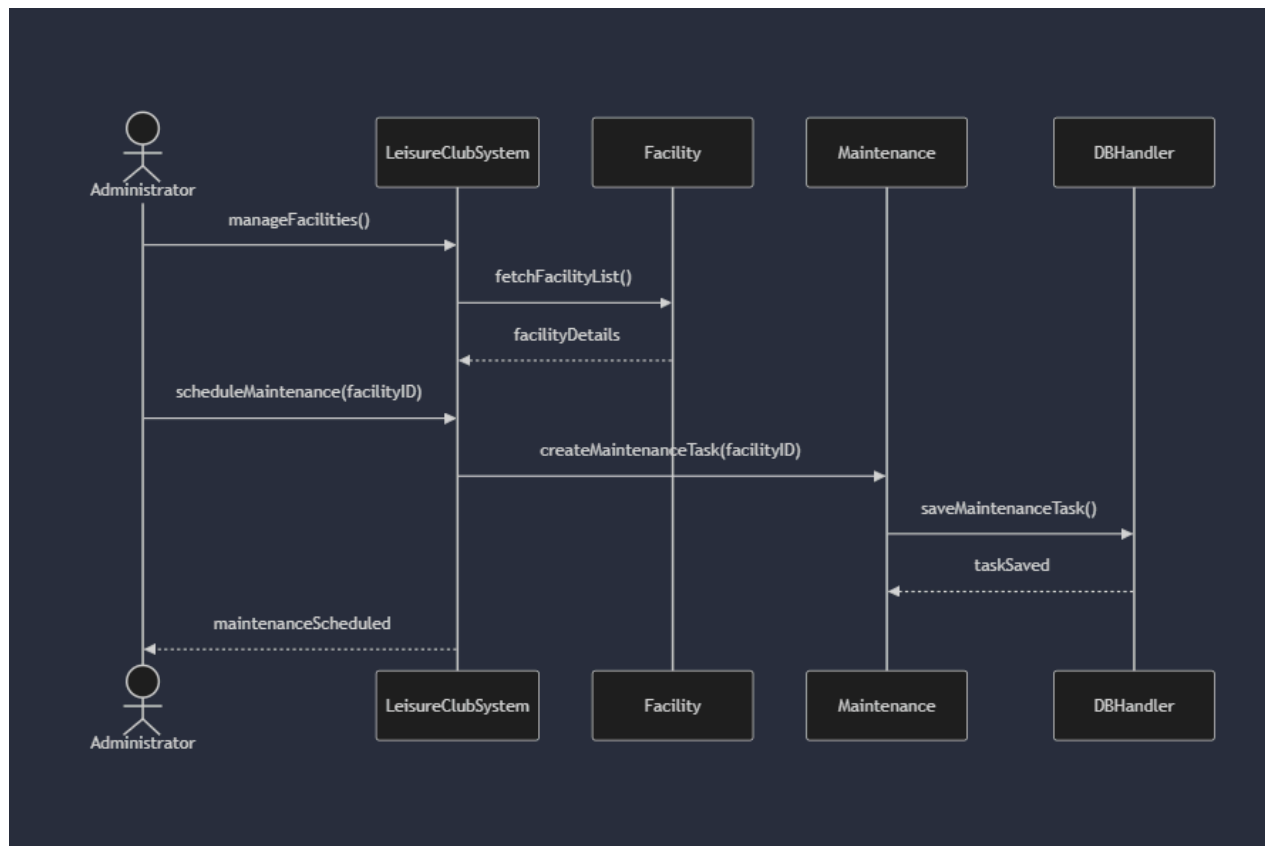
requestRefund() Method

Associated Use Case: Request Refund
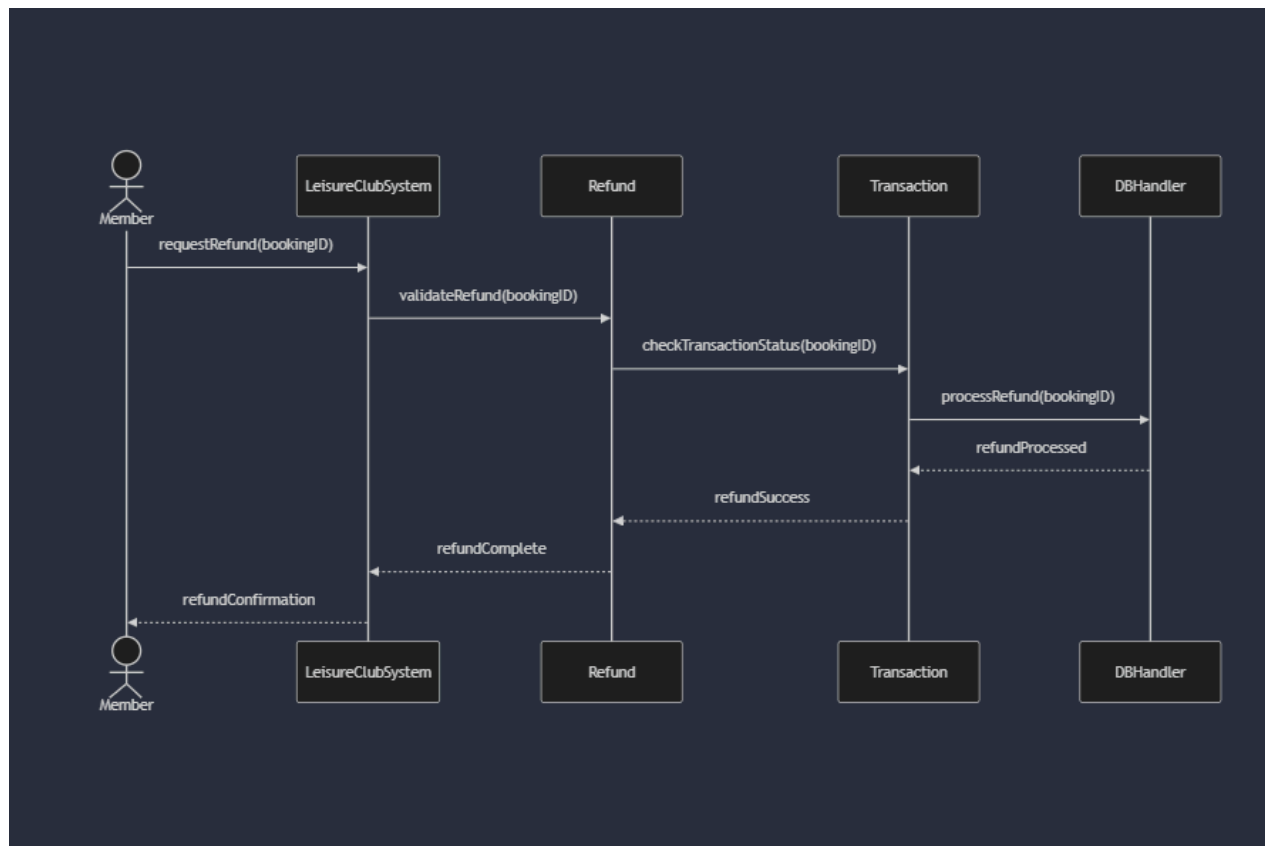
manageBookings() Method (Administrator)

Associated Use Case: Manage Bookings

manageFacilities() Method (Administrator)

Associated Use Case: Maintain Facilities

generateReport() Method (Administrator)

Associated Use Case: Generate Reports
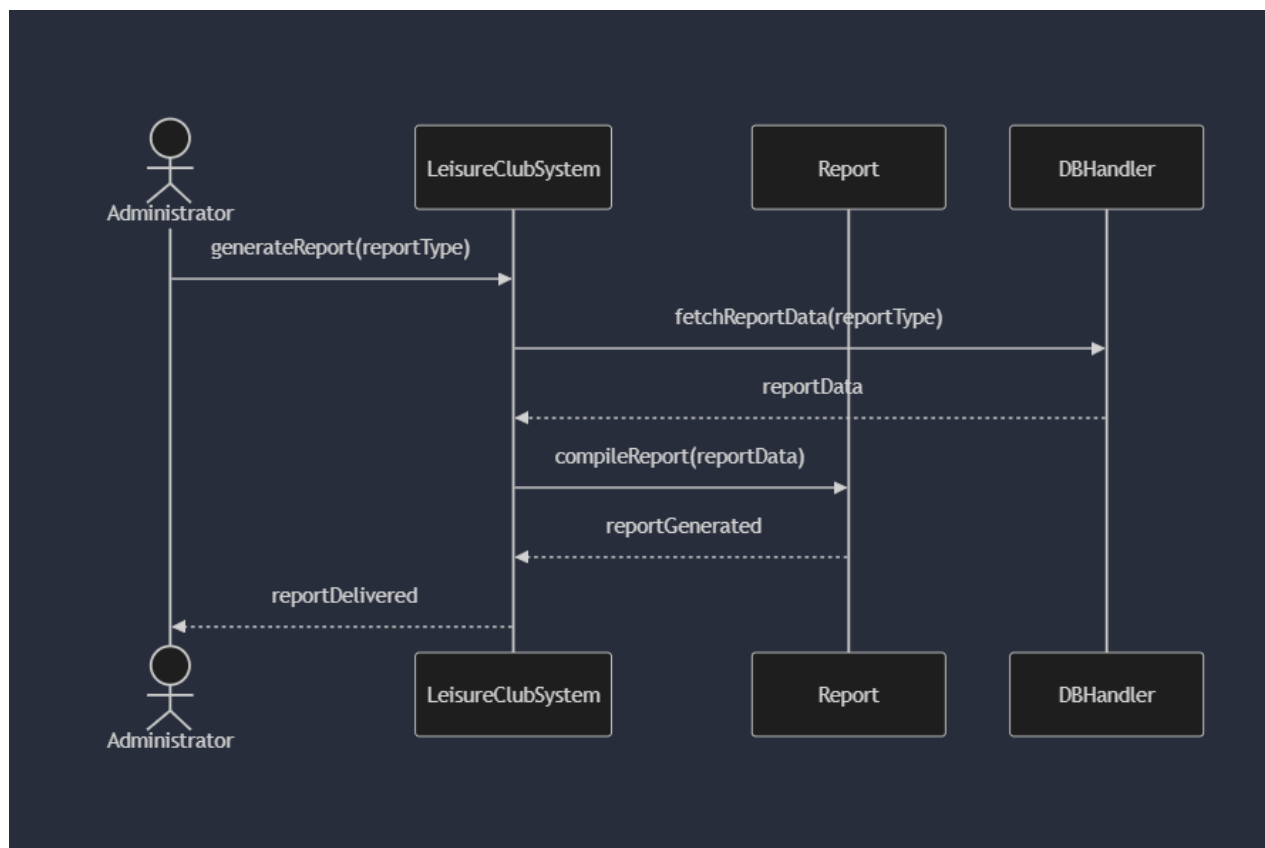
renewMembership() Method

Associated Use Case: Manage Membership
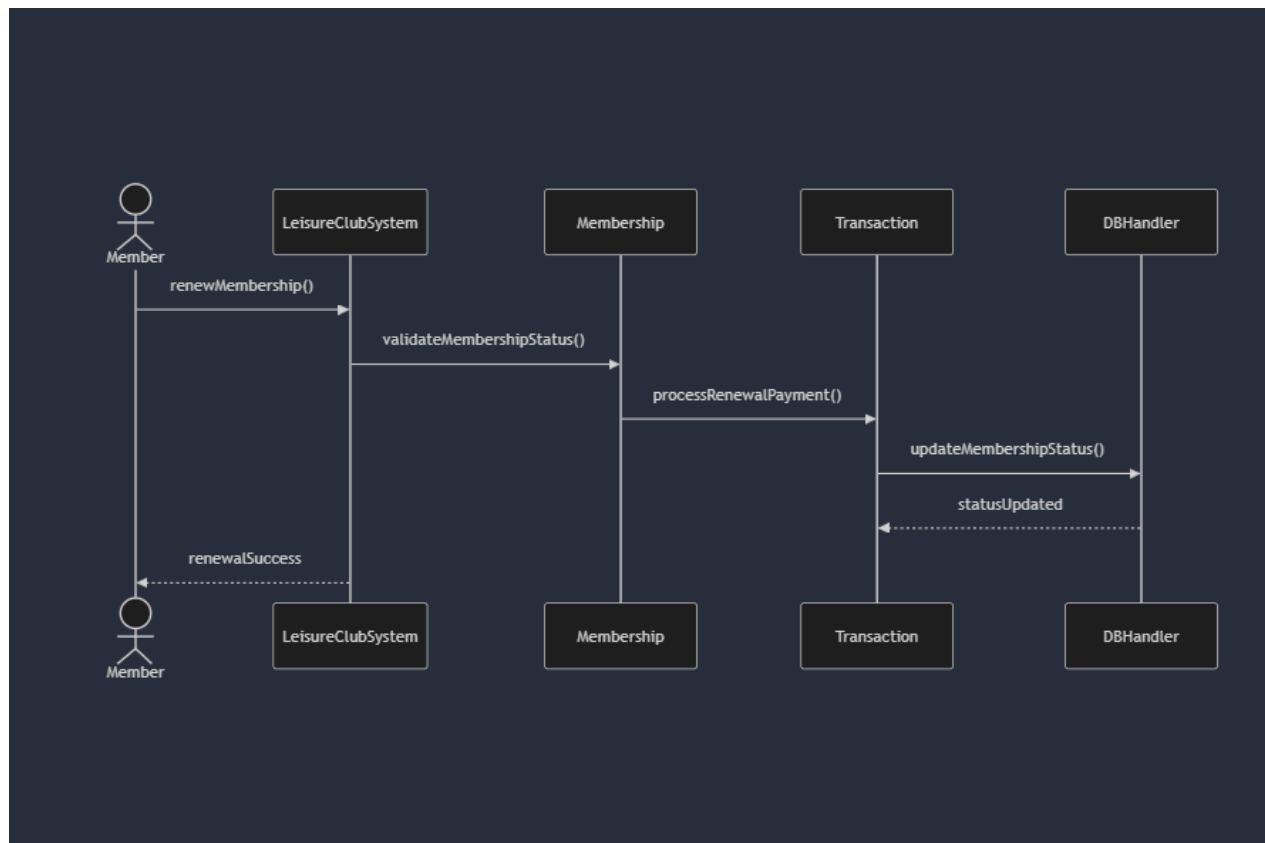
viewBookings() Method

Associated Use Case: View Bookings
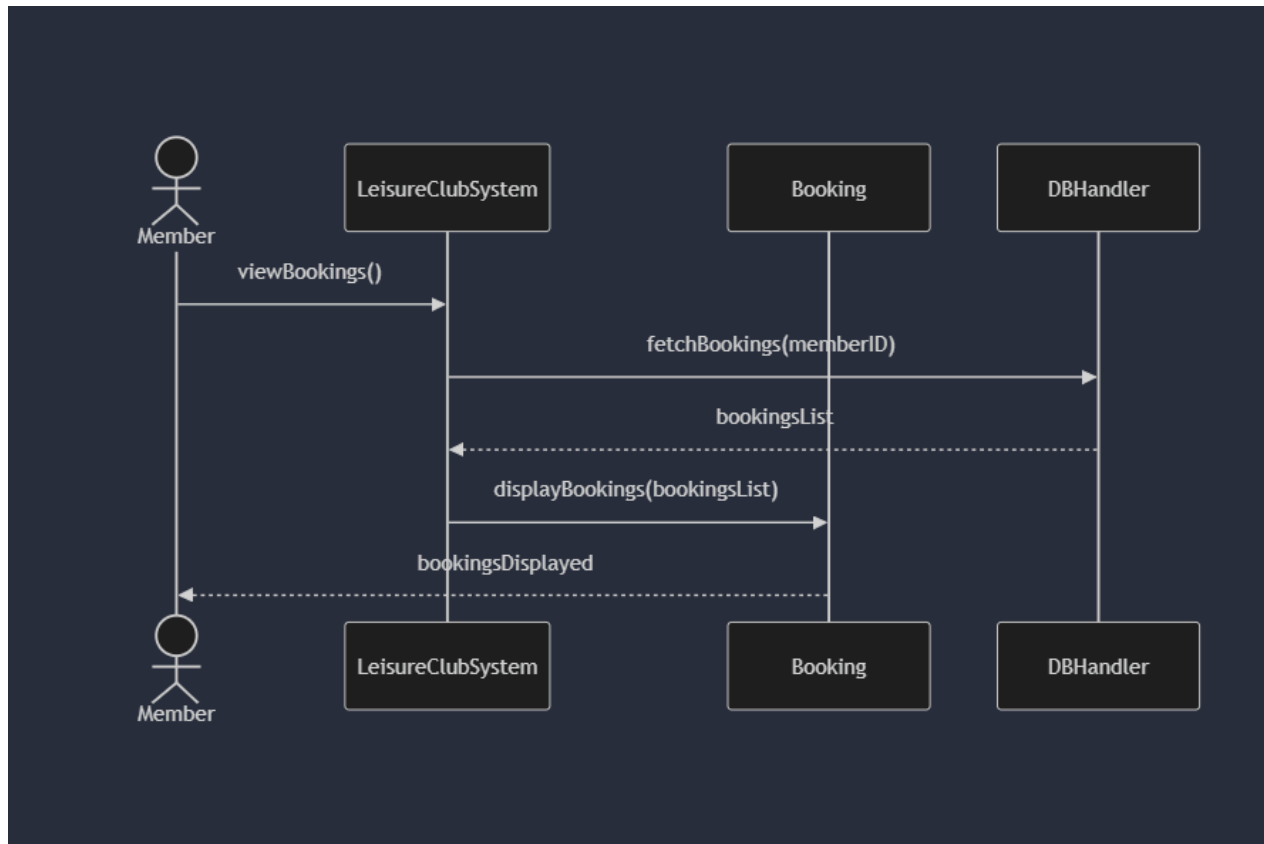
performMaintenance() Method

Associated Use Case: Maintain Facilities
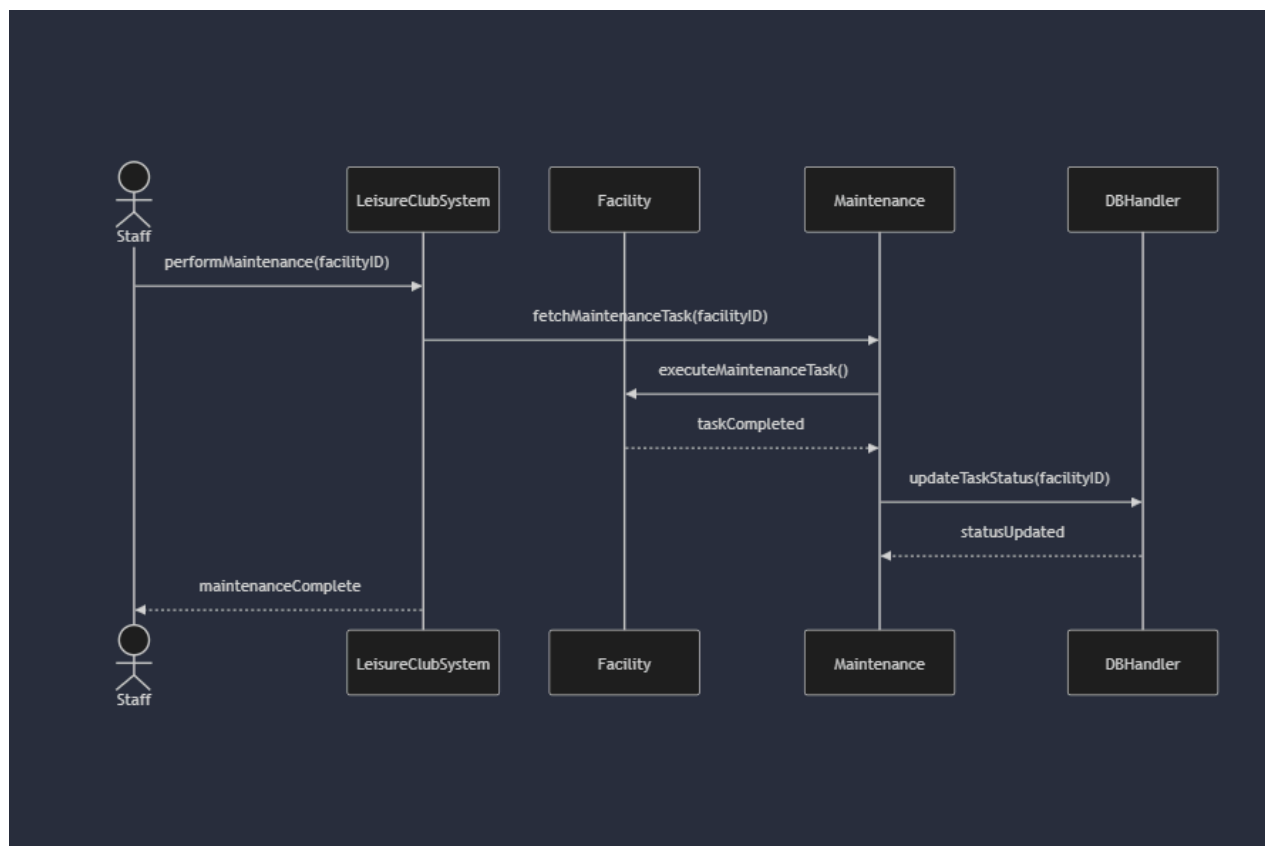
scheduleMaintenance() Method

Associated Use Case: Maintain Facilities
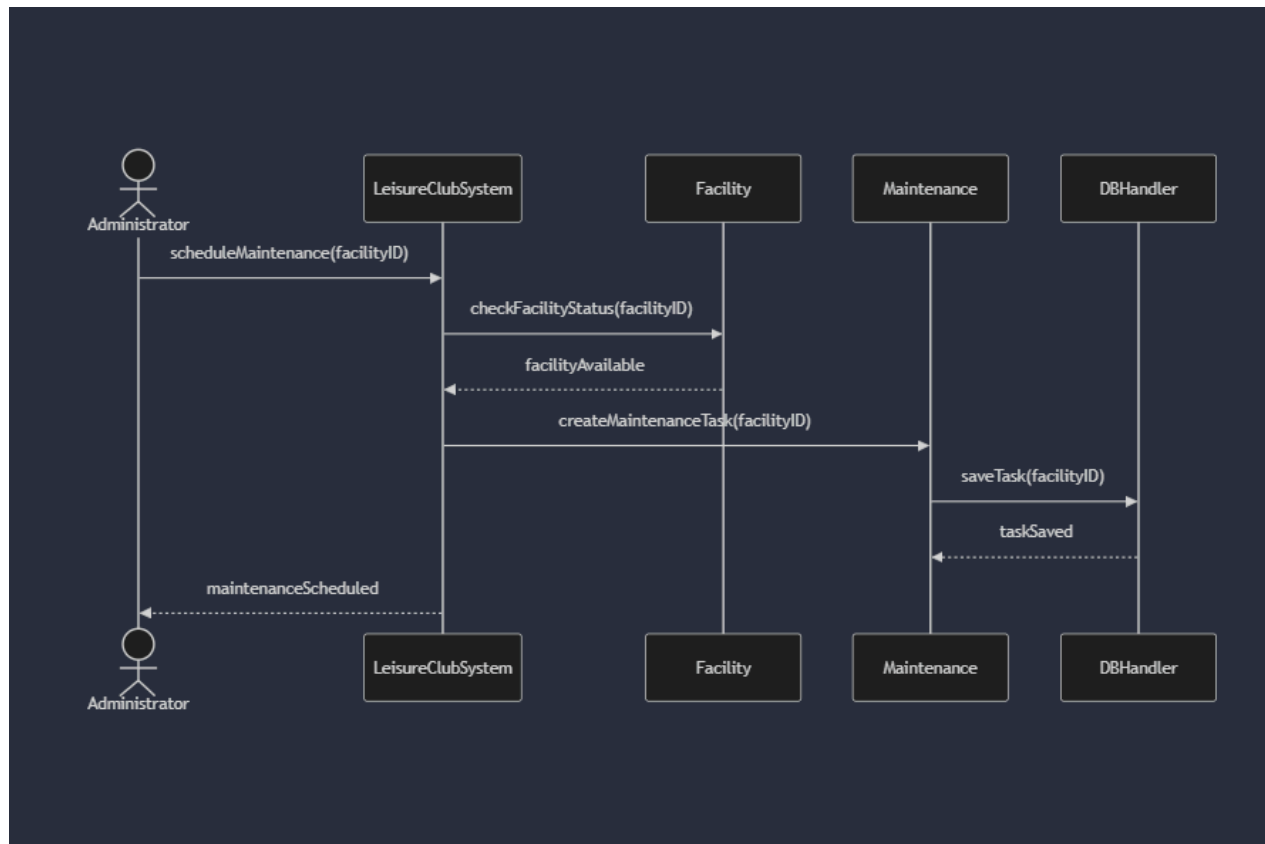
updateMembershipStatus() Method

Associated Use Case: Manage Membership
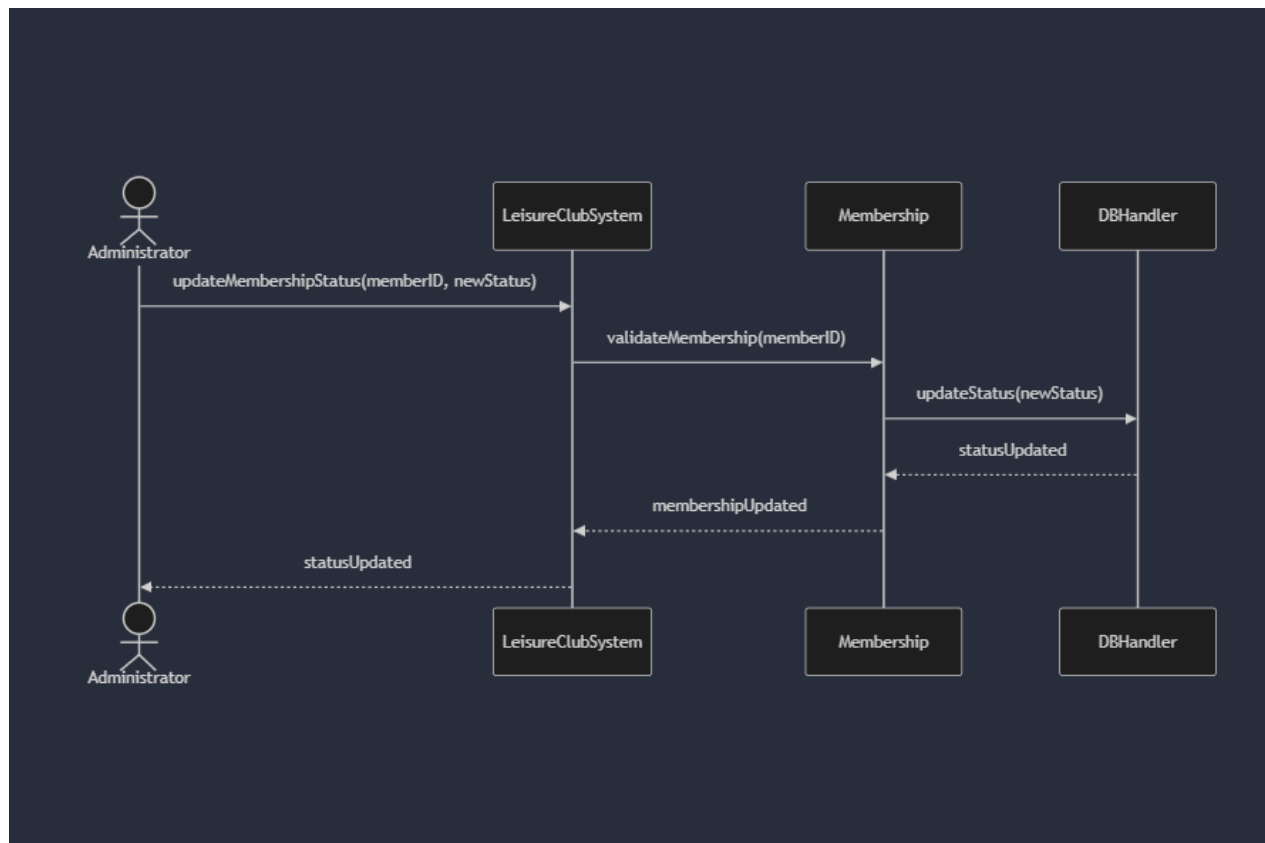
manageRefunds() Method
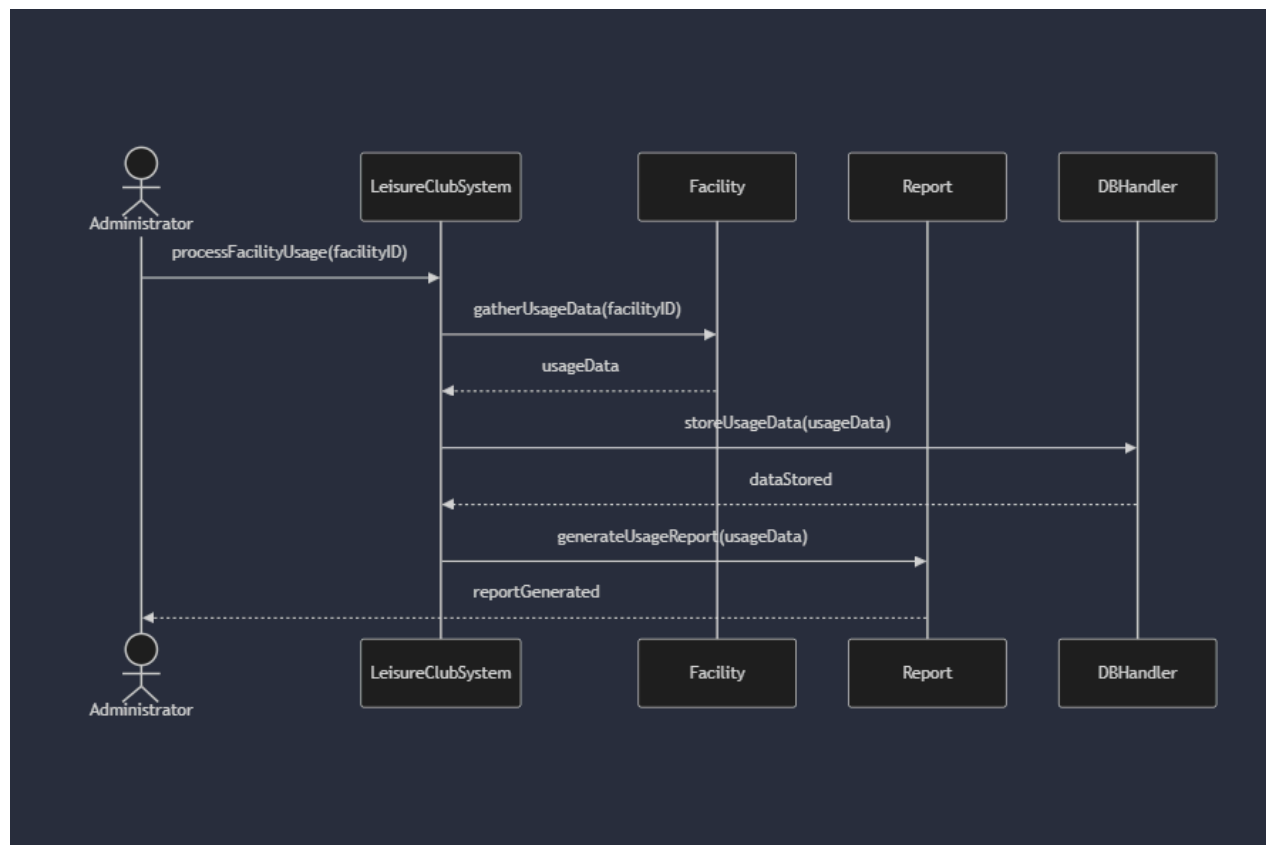
Associated Use Case: Request Refund
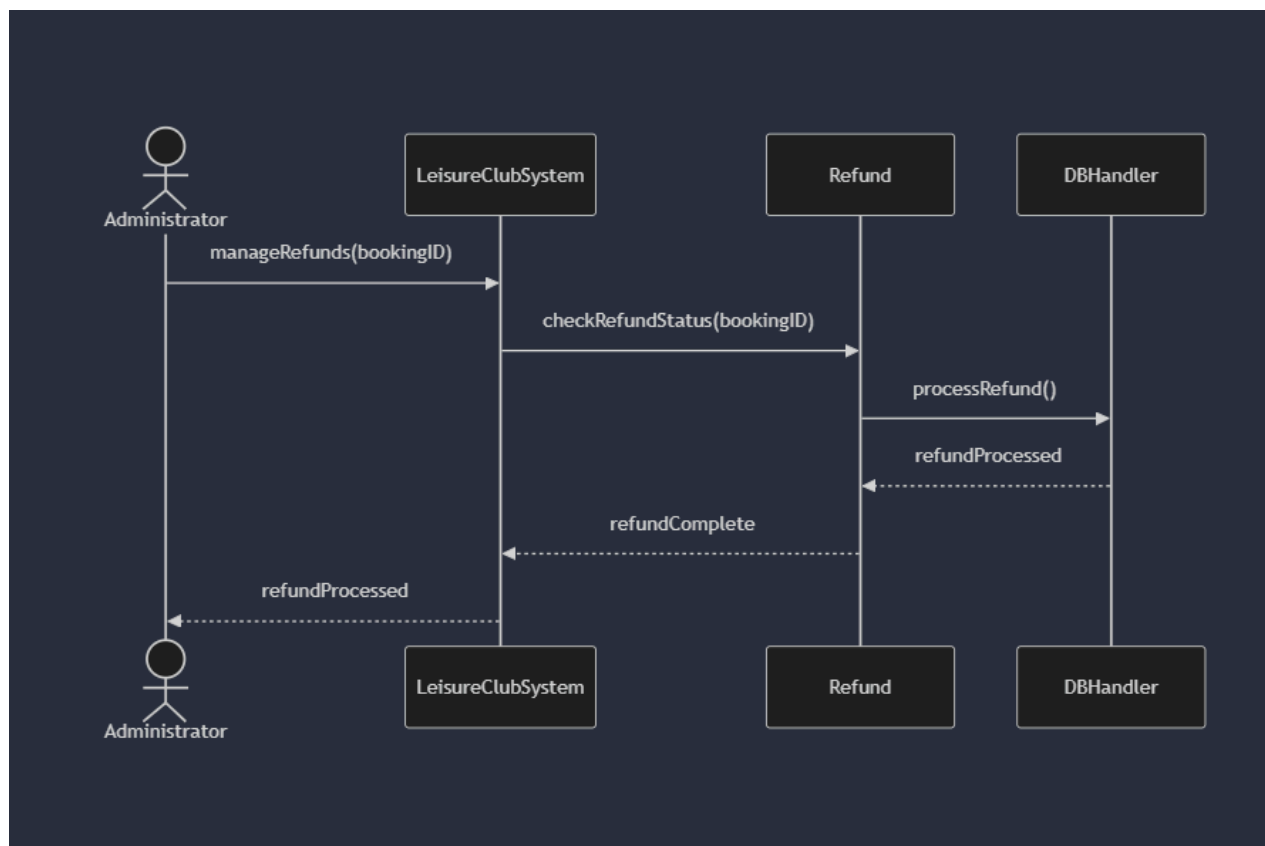
assignStaff() Method

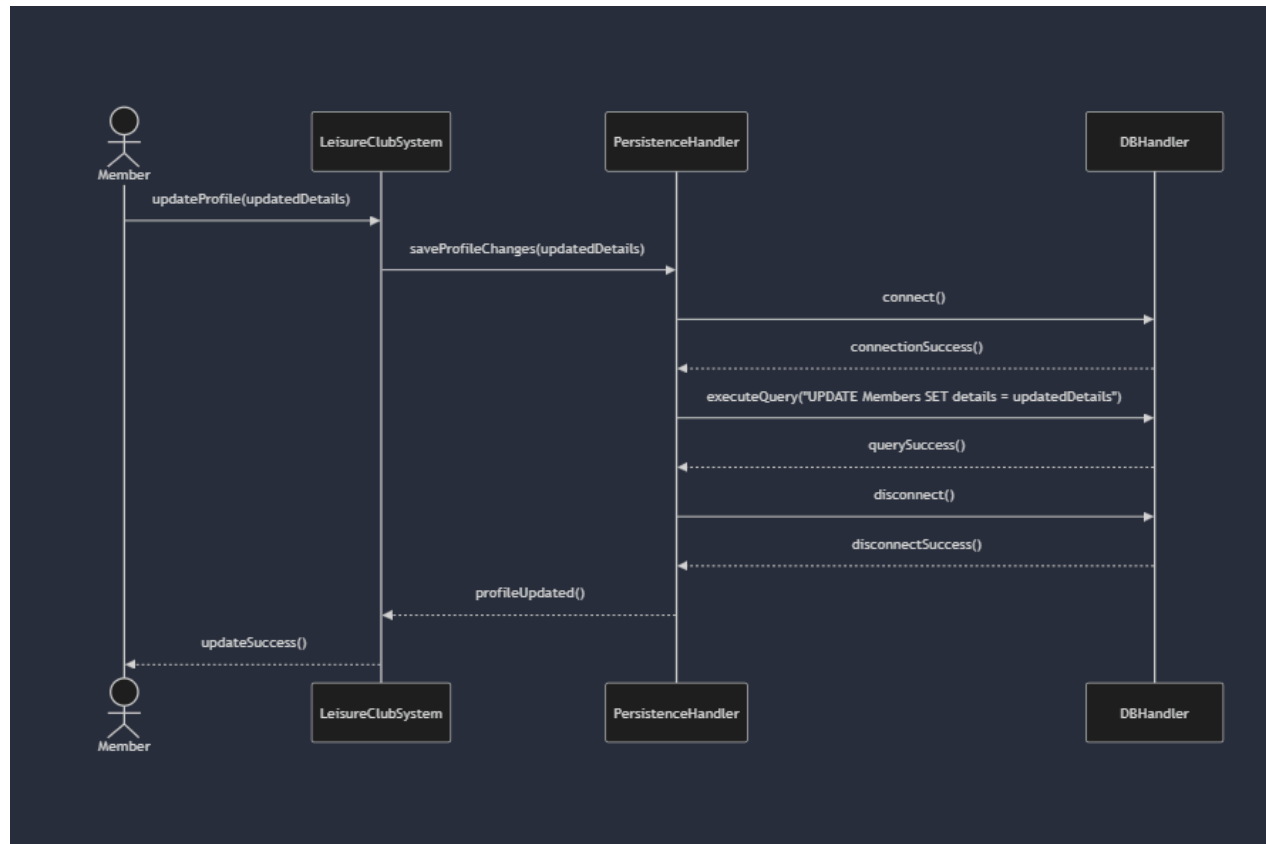## Associated Use Case: Manage Staff
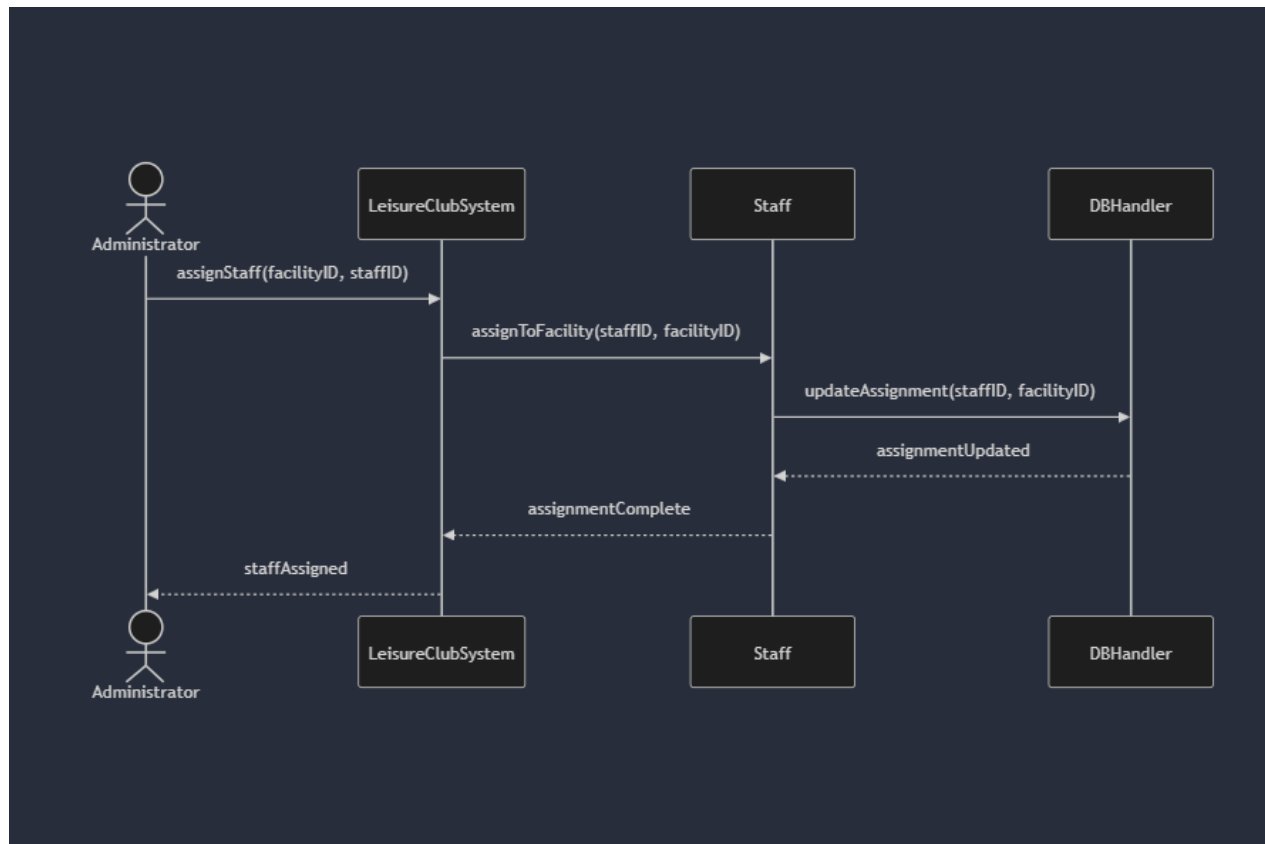
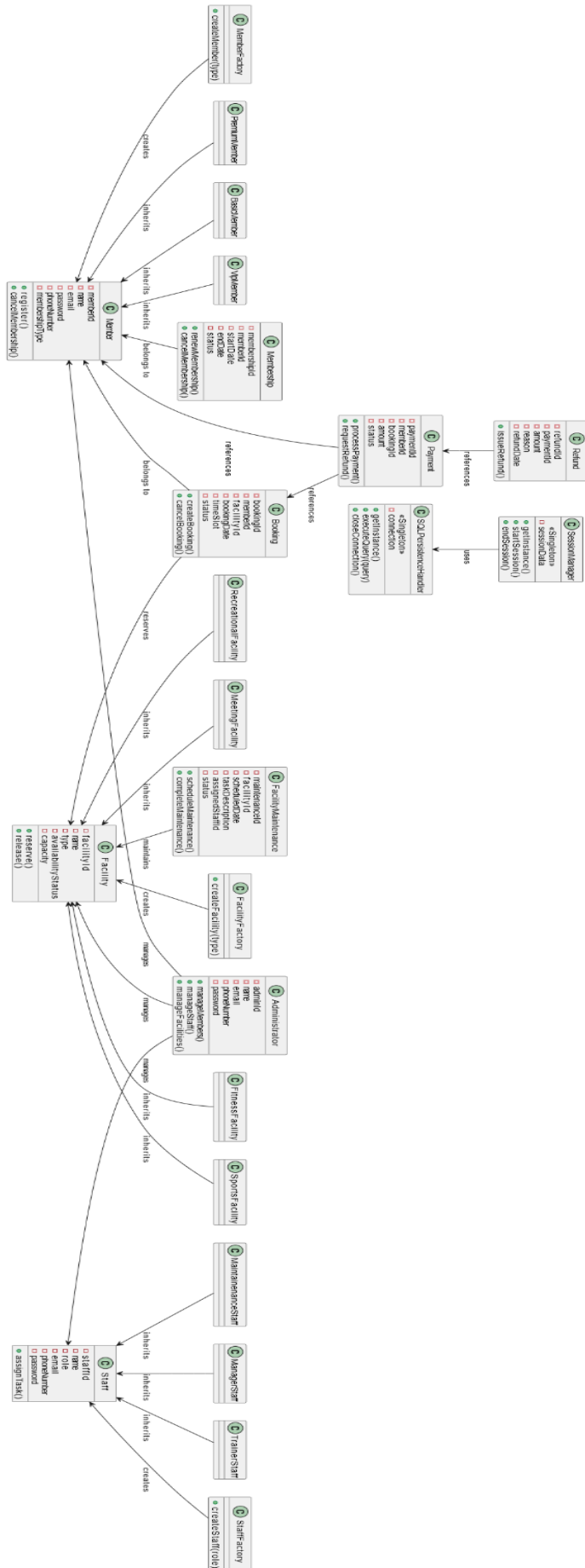# processFacilityUsage() Method

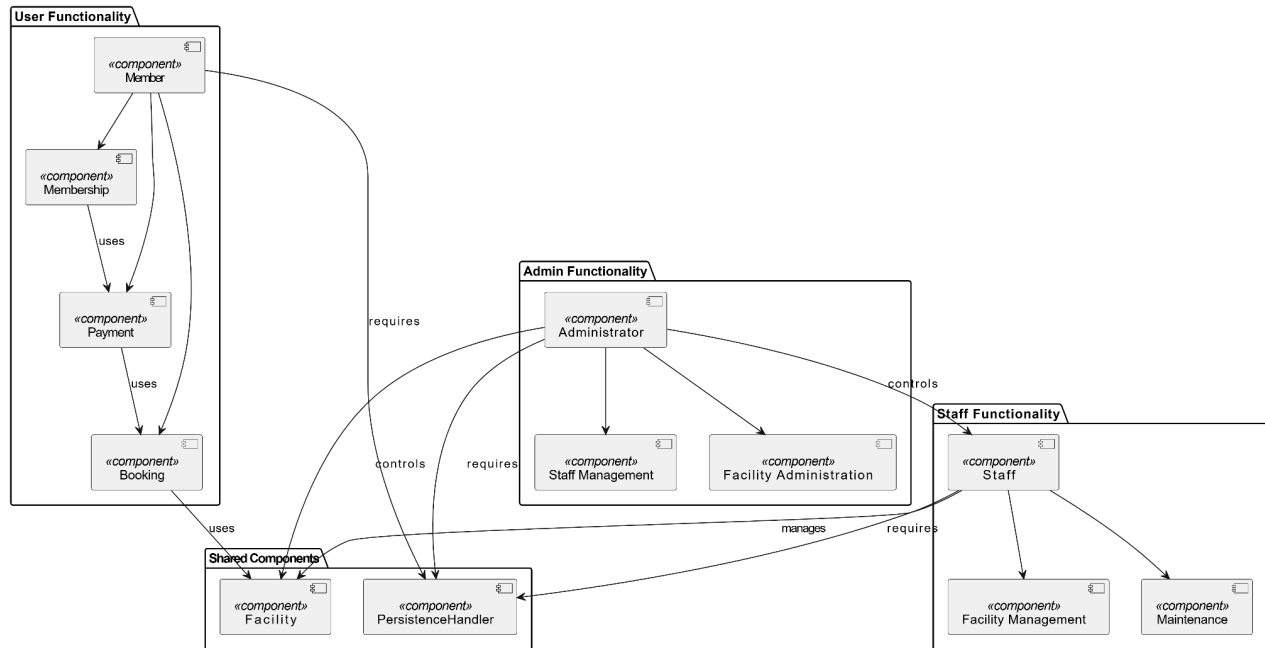## Associated Use Case: Maintain Facilities

updateProfile() Method

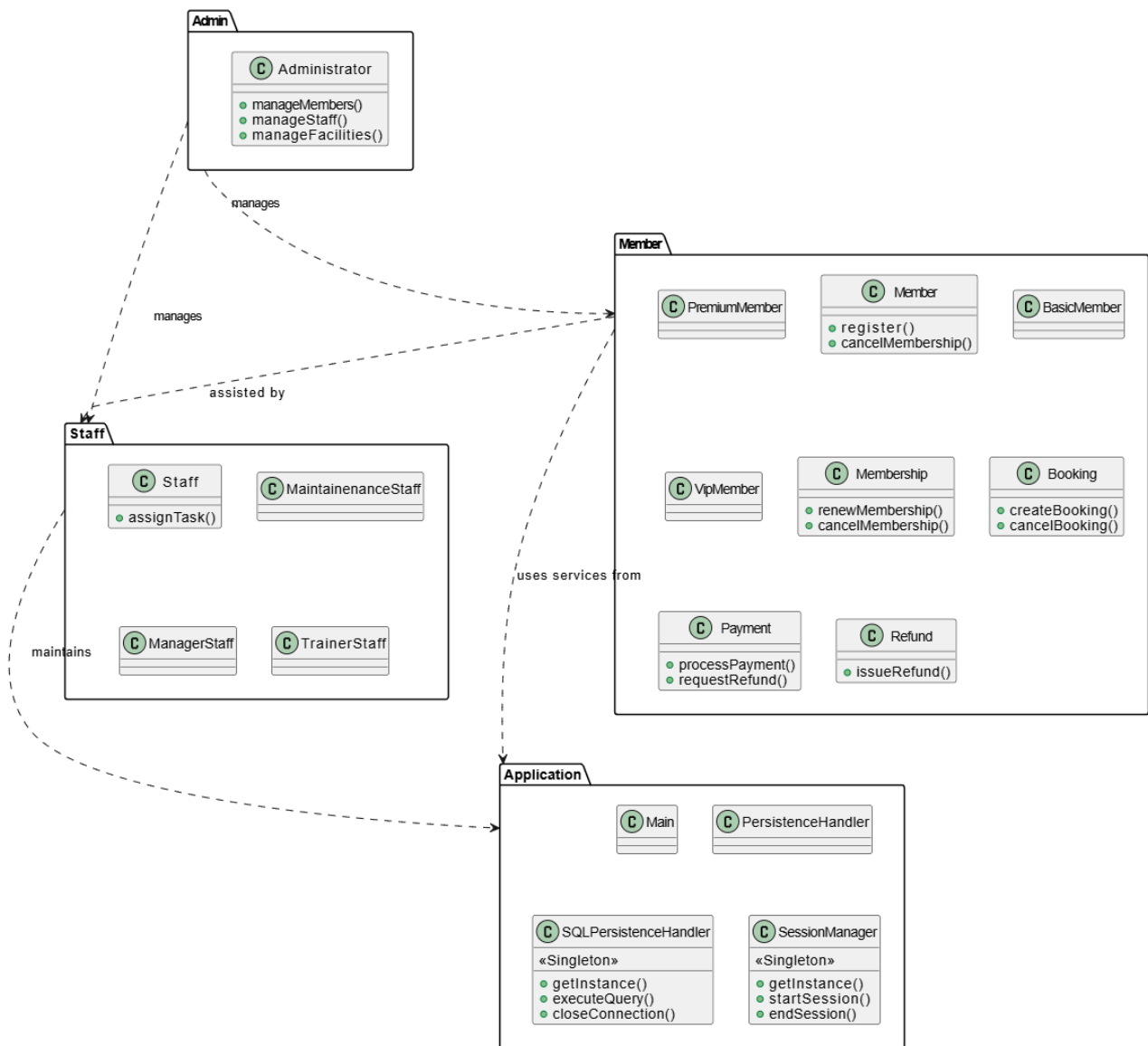## Associated use Case: Update Profile

7. Class Diagram

8. Component Diagram

9.   Package Diagram

10. Deployment Diagram

«device»
Client PC

«artifact»
App.jar

Loaded at Runtime

«component»
User Interface

Main.fxml

JDBC

HTTP/HTTPS

«device»
Database Server

«artifact»
MySQL Database

«device»
GitHub Repository

«artifact»
main.java

«artifact»
documentation.pdf

«artifact»
application.exe