

Bookstore Management System Requirements Specification

Version 1.0

Jun 11, 2025

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Table of Contents

1. Executive Summary	3
1.1. Project Overview	3
1.2. Purpose and Scope of this Specification	4
2. Product/Service Description	4
2.1. Product Context	4
2.2. User Characteristics	5
2.3. Assumptions	5
2.4. Constraints	6
2.5. Dependencies	6
3. Requirements	6
3.1. Functional Requirements	6
3.2. Non-Functional Requirements	11
3.2.1. Product Requirements	11
3.2.1.1. User Interface Requirements	11
Menu Structures	12
3.2.1.2. Usability	12
3.2.1.3. Efficiency	12
3.2.1.3.1. Performance Requirements	12
Static Numerical Requirements	12
Dynamic Numerical Requirements	12
3.2.1.3.2. Space Requirements	12
3.2.1.4. Dependability	12
3.2.1.5. Security	13
3.2.2. Organizational Requirements	13
3.2.2.1. Environmental Requirements	13
3.2.2.2. Operational Requirements	13
3.2.2.3. Development Requirements	13
3.2.3. External Requirements	13
3.2.3.1. Regulatory Requirements	13
3.2.3.2. Ethical Requirements	13
3.2.3.3. Legislative Requirements	13
4. User Scenarios/Use Cases	14
2.1. UC_UFR	15
2.2. UC_ER	24
5. Activity Diagrams	66
3.1. UC_ER	66
3.2. UC_UFR	77
3.3. Admin	85
6. Class Diagram	89
7. ERD	90
8. Component diagram	91
9. Sequence diagrams	93
Employee UC Sequence Diagrams	100
Customer UC Sequence Diagrams	104

Bookstore Management System Requirements Specification

Admin UC Sequence Diagrams	112
Admin UC Sequence Diagrams	113
10. Deployment diagram	124
11. Implementation Technology	125
Technology Stack Overview	125
Backend Technologies	125
Frontend Technologies	125
Development Workflow	126
12. Project Planning	127
Network Analysis	127
Networks	128
Stage Plan (Gantt Charts):	129
APPENDIX A: Screenshots of the implementation	132

1. Executive Summary

1.1. Project Overview

The Bookstore Management System is an online platform whose purpose is to digitalize traditional physical bookstores by optimizing their operations through an integrated web solution. The system is designed to service three types of users: Administrators, who manage the entire bookstore, Employees, whose primary focus is maintaining store inventory and handling book orders and Customers, who can interact with the platform through buying/renting or even selling books, create profiles, entering events etc.

Part of the platform are a range of bookstore functionalities, such as inventory management, customer service, order processing and tracking, supplier coordination, financial management. Beyond that, the system also incorporates features such as second-hand book selling, rental services, customer loyalty program, event management, customer interactive features such as quizzes and personalized recommendations.

Technological features include secure payment processing, real-time order tracking, email notifications, and AI-powered customer assistance through a chatbot. The system is designed to support a large amount of users online at the same time, handle multiple transactions and be operational 24/7 while ensuring data security and following industry standards.

1.2. Purpose and Scope of this Specification

This specification documentation serves as a blueprint for designing a modern bookstore management system. It establishes functional and non-functional requirements that will be used as a guide for creating a scalable and user-friendly platform.

The primary purpose is to define a system that transforms traditional bookstore operations by providing digital tools for inventory management, customer engagement, and business analytics while maintaining the personal touch that customers expect from local bookstores. The specification ensures that all users, from administrators managing complex operations to customers seeking an intuitive shopping experience, have their needs thoroughly addressed.

The scope encompasses the complete customer journey from account registration through purchase completion, including advanced features like book rentals, event participation, and loyalty rewards. For business operations, the scope covers end-to-end processes including supplier management, employee coordination, financial tracking, and regulatory compliance. The system is designed to support growth with scalability requirements that accommodate expanding inventory, increasing customer bases, and evolving business needs.

2. Product/Service Description

2.1. Product Context

The Bookstore Management System is a web-based application which provides a unified platform for multiple physical bookstore locations. It facilitates bookstore operations such as customer service, inventory management, sales processing and analysing etc.

2.2. User Characteristics

1. Admin

- Maintain accurate catalog and inventory data; manage orders, suppliers, staff, events, and promotions.
- Add, modify, or remove books (new and second-hand) with full metadata (title, author, ISBN, price, stock, description, cover, language, category, publisher).
- Process supplier orders; receive shipments; update stock and supplier invoices.
- Generate sales, inventory, and activity reports (weekly, monthly, yearly).
- Configure promotions, discounts, newsletters, and customer segmentation.
- Manage staff and employee roles, assign event responsibility

2. Employee

- Prepare and complete customer orders, manage rentals and event logistics.
- View and process pending orders (mail and in-store pickup); label and post shipments.
- Update rental statuses; track availability of loaned books.
- Confirm receipt of supplier shipments and update inventory.
- Monitor event registrations; assist with on-site event management and participant check-in.

3. Customer

- Browse, purchase, rent, sell, review books, and participate in events.
- Register, log in, reset password, verify email.
- Search and filter catalog by title, author, ISBN, price, category, language.
- Manage cart (add, remove, limit by stock), checkout with saved payment and delivery preferences (home delivery or store pickup), and track order status.
- Earn and redeem loyalty points; maintain wishlist and receive restock notifications.
- Author reviews and ratings; update or delete reviews.
- Rent books for a fixed term; receive rental reminders and confirmations.
- Browse and register for events; receive calendar invites and capacity alerts.

2.3. Assumptions

- All users will receive role-based training on system features and workflows.
- Each branch has reliable internet connectivity and modern web browsers.
- Customer, staff, and supplier data are verified at entry to ensure integrity.
- External services (email, payment gateway, shipping/carrier APIs) are available and correctly configured.

2.4. Constraints

- The application requires a stable internet connection and modern browser (latest Chrome, Firefox, Safari, Edge).
- Performance targets: support up to 500 concurrent visitors and 100 concurrent customers, up to 10 transactions per second, search queries returned in under 1 second.
- System availability: 99.9% uptime, with no more than 2 hours of scheduled maintenance per week.
- Storage: database scalable to at least 1 TB; code modules must follow modular design for hot-swap updates.
- Feature limitations: reporting accuracy depends on complete and timely data entry; event registration closes 2 hours before start; restock notifications require valid email addresses.

2.5. Dependencies

- Administrator must maintain catalog and promotions; employees must update order and rental statuses.
- Email SMTP service for confirmations, newsletters, and notifications.
- Payment gateway (e.g., PayPal, credit card processor) for secure transactions.
- Supplier portals or ERP for order placement and invoicing.
- Carrier APIs for shipping label generation and tracking.
- Calendar integration for event invites (e.g., iCal, Google Calendar).

Bookstore Management System Requirements Specification

3. Requirements

3.1. Functional Requirements

ID	Priori.	Requirement Description	Rationale
FR-01	P1	The system shall provide an admin role with full bookstore management privileges.	Ensures centralized bookstore management.
FR-02	P1	The admin shall be able to add new books with title, author, ISBN, price, stock, description, cover image, language, category and publisher.	Required for maintaining an up-to-date inventory.
FR-03	P1	The admin shall be able to modify book details, including title, author, ISBN, price, stock, description, cover image, language, category and publisher and label secondhand books.	Ensures book information is accurate and supports secondhand book sales.
FR-04	P1	The admin shall be able to remove books that are out of stock and will not be reordered or have low customer interest.	Keeps the catalog relevant and manageable.
FR-05	P1	The admin shall be able to search books using ID, author, category and publisher.	Improves book management efficiency.
FR-06	P1	The admin shall be able to receive customer orders and retain necessary details such as purchase date, time, quantity, and book details.	Ensures proper order fulfillment and record-keeping.
FR-07	P1	The system shall automatically generate the bill with all the order details and send a confirmation email to the customer.	Supports accurate billing and transparency.
FR-08	P1	The system shall automatically update stock levels after the customer places the order.	Prevents overselling and ensures stock accuracy.
FR-09	P1	The admin shall be able to prepare and send orders to book suppliers to ensure stock availability.	Ensures books remain in stock.
FR-10	P1	The admin shall be able to manage supplier invoices and payments for record-keeping.	Helps in financial tracking and supplier management.
FR-11	P1	The admin shall be able to manage customer data, including full name, contact, address, points and event participation.	Supports customer relationship management.
FR-12	P1	The admin shall be able to manage employee data, including name, role, qualifications, contact, address and the branch where they work.	Facilitates employee record-keeping.
FR-13	P1	The admin shall be able to manage supplier data, including full name, phone number, email, city, country, address.	Enables structured supplier management.
FR-14	P1	The admin shall be able to handle refunds and order cancellations efficiently.	Ensures smooth refund processing for customers.

Bookstore Management System Requirements Specification

FR-15	P1	The admin shall be able to track transaction history to prevent financial discrepancies.	Reduces losses and improves financial monitoring.
FR-16	P1	The system shall generate weekly, monthly, and yearly sales reports for the admin.	Supports financial analysis and decision-making.
FR-21	P1	The system shall allow the admin to update the stock after receiving an order from the supplier.	Ensures accurate inventory management.
FR-25	P1	The system shall allow the admin to edit customer information and provide relevant details regarding their orders and loyalty points.	Ensures the admin can manage customer profiles, update information, and track loyalty program participation for better customer service and support.
UFR-1	P1	The system must allow customers to register and log in.	Ensures secure access for customers to manage their account and make purchases.
UFR-3	P1	Customers should be able to search for books using multiple criteria (e.g., title, author, ISBN, price, etc.).	Enhances customer experience by allowing them to find books easily.
UFR-4	P1	Customers should be able to add or remove books from their cart.	Basic functionality to manage shopping cart content and ensure flexibility in purchases.
UFR-5	P1	The system should calculate the total cost including transportation for the shopping cart.	Ensures transparency in pricing and accurate total cost calculation.
UFR-6	P1	Customers should be able to proceed to checkout and make secure payments.	Guarantees a smooth, secure transaction process for customers.
UFR-7	P1	Customers should receive an order confirmation via email.	Provides customers with confirmation of successful orders for peace of mind.
UFR-11	P1	The system shall send a confirmation email to the customer with a link to verify their registration.	Ensures that the customer's email is valid and helps verify their account for secure login.
UFR-12	P1	The system shall allow customers to update their profile information.	Customers should have the ability to keep their account information current for better personalization and service.
UFR-13	P1	In the customer profile, the system shall display order history, events participated, and points gained from games played on the website.	Allows customers to easily track their activities and rewards.
UFR-16	P1	Customers shall be able to add books to a wishlist and add books to the cart directly from the wishlist.	Enhances the shopping experience by making it easier to manage desired books.
UFR-17	P1	Customers shall be able to browse events by title and author and register for the event. Upon registration, they shall receive a confirmation email with an invitation and the option to add the event to their calendar.	Provides event discovery and registration functionality, improving customer engagement with events.
UFR-18	P1	Customers shall be able to sell second-hand books by providing information such as ISBN, title, author, pages, language, photo upload, and price.	Facilitates customer-to-customer sales of second-hand books, promoting sustainability and expanding the inventory.

Bookstore Management System Requirements Specification

		Customers also shall be able to choose a drop-off date for the book at a branch.	
UFR-19	P1	Customers shall have the option to pay via cash when the order is sent, or PayPal if the book is to be delivered by mail.	Provides flexible payment options based on customer preferences and order types.
UFR-20	P1	Customers shall be able to choose whether they want to pick up the book at a store or have it delivered to their home.	Offers convenience and flexibility in receiving purchased books.
UFR-21	P1	The system shall save the customer's default delivery address and payment information in their profile. When selecting the payment and delivery options, the form should be automatically pre-filled with this information.	Streamlines the checkout process, improving customer experience by saving time.
UFR-22	P1	The system shall award points to customers based on their purchases and allow them to use these points as currency for future purchases.	Encourages repeat purchases and increases customer engagement by offering rewards.
UFR-23	P1	Customers shall be allowed to create only one account per email address.	Prevents account duplication and ensures accurate customer management.
UFR-24	P1	Customers shall be able to disable their accounts if they choose to stop using the system.	Provides customers with control over their accounts, ensuring privacy and autonomy.
UFR-28	P1	The customer shall be able to track order status (pending, shipped, delivered).	Provides customers with transparency and control over their purchases, improving customer experience.
UFR-29	P1	The customer shall be able to request refunds based on specific situations (e.g., damaged goods, incorrect items).	Ensures customer satisfaction and addresses potential issues in a timely manner, building trust in the system.
ER-1	P1	The employee shall prepare orders, label them, and mark them as posted when they are mailed.	Ensures that orders are processed accurately and delivered in a timely manner.
ER-2	P1	The employee shall prepare orders for pickup at the store and mark them as completed when the customer receives the order.	Ensures that in-store pickups are handled efficiently, and order statuses are accurately tracked.
ER-4	P1	The employee shall keep track of rented books by updating their status and availability in the system.	Ensures that rented books are properly managed, reducing issues with availability and rental tracking.
ER-5	P1	The employee shall confirm the receipt of orders from suppliers at their respective branch and update the system.	Ensures that stock and inventory are accurately recorded upon receiving orders from suppliers.
SR1	P1	When the confirm order button is pressed, the cart shall be emptied.	Ensures that the customer's cart is cleared after successful order confirmation, preventing confusion for future orders.
SR2	P1	The customer shall not be able to add more books to the cart than are available in stock. The button to add more shall be disabled if the stock	Prevents customers from ordering more books than are available, improving customer experience and order accuracy.

Bookstore Management System Requirements Specification

		is less than the quantity wanted.	
SR3	P1	The system shall label books that are out of stock and disable their add to cart button.	Ensures that customers are informed about unavailable books and prevents them from attempting to add them to their cart.
FR-17	P2	The system should generate inventory reports highlighting fast-moving and low-stock books.	Helps in inventory restocking decisions.
FR-18	P2	The system should allow the admin to collect customer ratings and reviews for books.	Helps in evaluating book popularity.
FR-19	P2	The system should allow the admin to send newsletters and updates to subscribed customers.	Supports marketing and customer engagement.
FR-20	P2	The system should allow the admin to create and apply discount promotions to multiple books based on sales performance or to eliminate low-selling books.	Encourages sales of underperforming books and boosts revenue.
FR-22	P2	The system should allow the admin to confirm customer requests to sell second-hand books based on the information provided, label them by condition ("Very Good", "Good", "Not So Good"), and place them in a separate "Used Books" category.	Ensures that second-hand books are properly categorized and their condition is clearly communicated to customers, improving transparency and customer satisfaction.
FR-23	P2	The system should allow the admin to create events, assign event management to employees, and monitor participation registration for each event.	Facilitates smooth event planning and execution, ensuring accountability and tracking of participant engagement.
FR-24	P2	The system should allow the admin to move all orders labeled as "completed" by employees to a separate "Completed Orders" table, ensuring they are no longer displayed in the admin's main orders dashboard.	Keeps the admin dashboard organized and improves order management efficiency.
UFR-2	P2	Customers should be able to reset their passwords via email.	Provides an easy method for customers to regain access if they forget their password.
UFR-8	P2	Customers should be able to view their order history.	Enables customers to track past purchases and manage their orders effectively.
UFR-9	P2	Customers should be able to rate books and write reviews.	Empowers customers to share feedback and influence future book purchases.
UFR-10	P2	Customers should have the ability to edit or delete their reviews.	Provides customers with flexibility to update their opinions or correct mistakes.
UFR-25	P2	Customers shall be able to subscribe to the newsletter for receiving updates and promotional content.	Keeps customers informed about new products, promotions, and events, increasing engagement.
UFR-26	P2	Customers should be able to apply discount or promotion codes during checkout to receive	Provides an incentive for customers to make purchases, increasing sales and customer

Bookstore Management System Requirements Specification

3.2. Non-Functional Requirements

3.2.1. Product Requirements

3.2.1.1. User Interface Requirements

Screen Formats & Organization

The website shall have an **intuitive dashboard** displaying:

- **Sales reports**, inventory levels, and recent transactions (for admins).
- **A search bar, category filters, and a shopping cart** (for customers).
- **A featured books section**, highlighting bestsellers and promotions.

The system shall use a **responsive design**, ensuring compatibility with desktop and mobile devices.

Menu Structures

- Main menus shall provide access to **Inventory Management, Sales, Customer Management, Reports, and Settings** for the admins, while customers shall have access for the **Browsing, Events, Special Picks and Fun Corner**.
- Submenus shall follow a hierarchical structure for ease of navigation.

3.2.1.2. Usability

- The customer documentation and help should be complete
- The help should be context sensitive and explain how to achieve common tasks
- The system should be easy to learn
- The system shall have chatbox assistance

3.2.1.3. Efficiency

- customers shall be able to process a transaction in **less than 30 seconds**.
- Search functionality shall return results within **1 second**.
- customers shall be able to complete an order within **3 minutes**.

3.2.1.3.1. Performance Requirements

Static Numerical Requirements

- The system shall support **up to 100 concurrent customers**.
- The database shall store details for **at least 500,000 books**.
- The website shall handle **500 concurrent visitors**.

Dynamic Numerical Requirements

- The system shall handle **10 transactions per second** during peak hours.
- The system shall process book search queries in **less than 1 second**.
- Online orders shall be processed within **5 seconds**.

3.2.1.3.2. Space Requirements

- The database shall be scalable up to **1TB**.
- The website shall use **optimized images and caching** to minimize bandwidth usage.

Bookstore Management System Requirements Specification

3.2.1.4.

Dependability

Availability

- The system shall be operational **24/7**.
- Scheduled maintenance shall not exceed **2 hours per week**.
- The system shall be available **99.9% of the time**.
- The system shall not experience more than **1 failure per 1,000 transactions**

Monitoring

- System logs shall track **all customer activities** and errors for troubleshooting.
- The system shall generate **automated alerts** for critical failures.

Maintenance

- The system shall allow **modular updates** without downtime.
- Code shall follow **modular programming principles** for ease of debugging

3.2.1.5.

Security

- The system shall use **AES-256 encryption** for customer payment information.
- customer authentication shall require **multi-factor authentication (MFA)**.
- The website shall use **HTTPS for secure transactions**.
- Login attempts shall be locked after **5 failed attempts**.
- customers shall be required to **verify their email before making a purchase**.

3.2.2. Organizational Requirements

Requirements which are a consequence of organisational policies and procedures e.g. process standards used, implementation requirements, etc

3.2.2.1.

Environmental Requirements

- The system shall be accessible via **web browsers**
- The system shall function on **Windows, macOS, and Linux**.
- The website shall be **mobile-responsive**.

3.2.2.2.

Operational Requirements

- Employees shall undergo **training** before using the system.
- A **customer manual** shall be provided for administrators.

3.2.2.3.

Development Requirements

- The system shall be developed using a combination of agile and waterfall methodology.
- Code versioning shall be managed using **GitHub**.
- Automated testing shall be performed to ensure **software quality and bug-free releases**.
- The development team shall use **standard coding guidelines and design patterns** for maintainability.
- A staging environment shall be maintained for **testing before production deployment**.

3.2.3.

External Requirements

- Requirements which arise from factors which are external to the system and its development process e.g. interoperability requirements, legislative requirements, etc.

3.2.3.1.

Regulatory Requirements

- The system shall comply with **GDPR** for handling customer data.
- Sales tax calculations shall comply with **local tax regulations**.
- The website shall follow **PCI DSS** for online payments.

Bookstore Management System Requirements Specification

3.2.3.2.

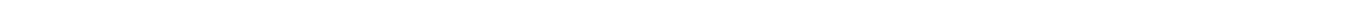
Ethical Requirements

- The system shall not collect or share customer data without consent.
- The system shall allow customers to **opt-out of data storage**.

3.2.3.3.

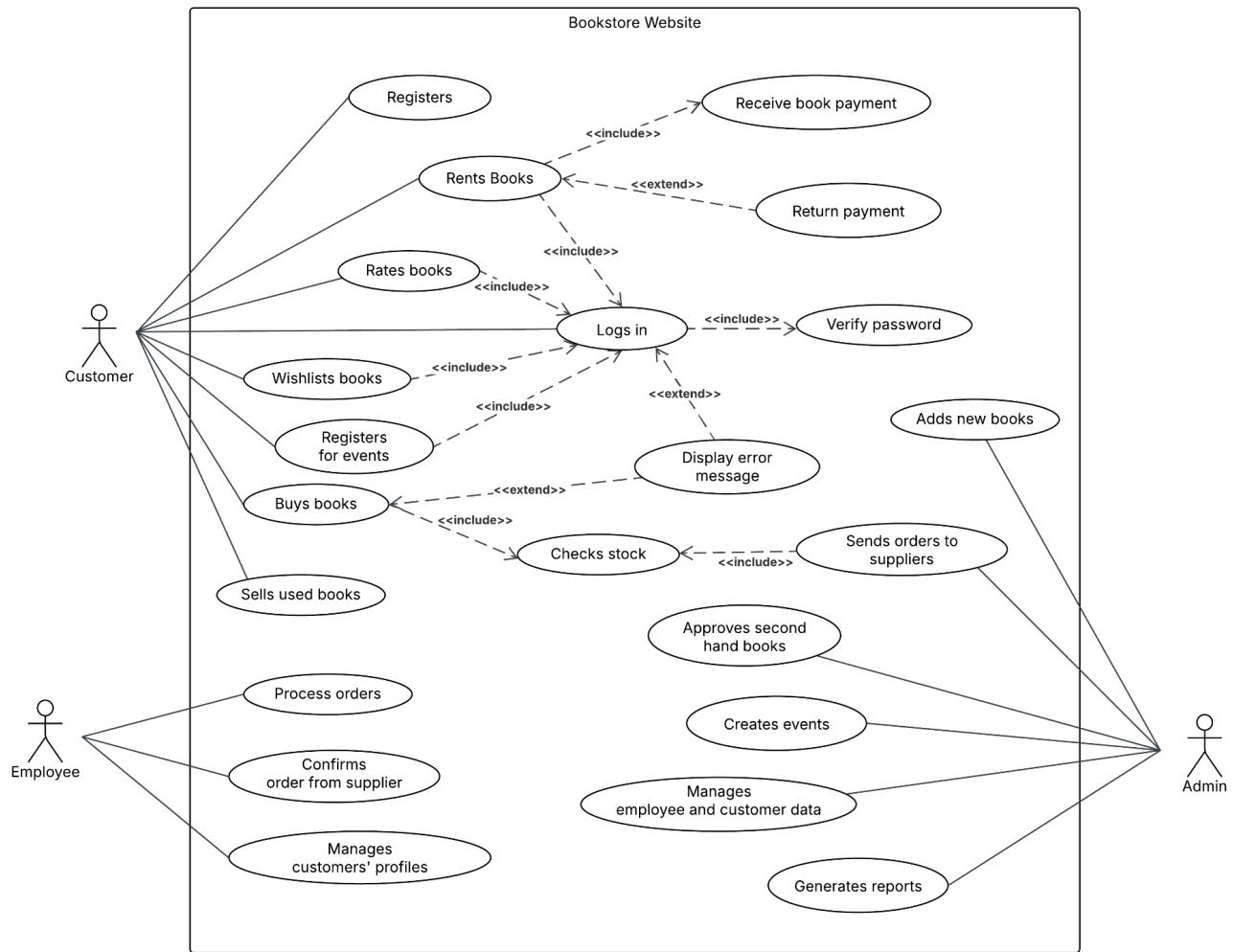
Legislative Requirements

- The system shall store financial transactions for as many years as required by law.
- The system shall generate audit reports for compliance inspections.



Bookstore Management System Requirements Specification

4. User Scenarios/Use Cases



2.1. UC_UFR

Tabular Description of UC-UFR1-Customer Registers Account

UC Name	<i>UC_UFR1-Customer registers account</i>
Summary	<i>New customer creates a new account</i>
Dependency	<i>None</i>
Actors	Primary Actor: Customer
Preconditions	<i>Valid email not already registered</i>
Description of the Main Sequence	<ul style="list-style-type: none"> ● Step 1: Customer goes to register page ● Step 2: Customer fills in register form with their credentials ● Step 3: System sends verification email ● Step 4: Customer clicks on verification link and is approved as a user
Description of the Alternative Sequence	<ul style="list-style-type: none"> ● Step 2: Submit details <ul style="list-style-type: none"> ○ Step 2.1: If Customer email is invalid the System shows an error and prompts the Customer to input a valid email ○ Step 2.2: If Customer username is unavailable the System shows an alert and prompts the Customer to choose another username ○ Step 2.3: If Customer password is considered weak by the System, an alert appears to let the Customer know they should use a stronger password
Non functional requirements	<i>Verification email within 1 minute</i>
Postconditions	<i>New account created and customer redirected to Login page.</i>

Bookstore Management System Requirements Specification

Tabular Description of UC-UFR2-Customer logs in

UC Name	UC_UFR2-Customer logs in
Summary	<i>Existing customer inputs their credentials to log in</i>
Dependency	UC-UFR2 depends on UC-UFR1
Actors	Primary Actor: Customer
Preconditions	A customer must have a valid existing account in order log in
Description of the Main Sequence	<ul style="list-style-type: none"> ● Step 1: Customer goes to the login page ● Step 2: Customer fills in their credentials ● Step 3: System verifies credentials ● Step 4: System redirects Customer to their profile
Description of the Alternative Sequence	<ul style="list-style-type: none"> ● Step 2: System verifies credentials <ul style="list-style-type: none"> ○ Step 2.1: If Customer username/email is invalid, the System displays an error ○ Step 2.2: If Customer password is wrong after multiple tries, the Customer can click on 'Forgot Password' which sends a link to reset the password ○ Step 2.3: After multiple failed attempts, the System temporarily blocks login for 10 minutes.
Non functional requirements	<i>Login response time should be under 3 seconds</i>
Postconditions	<i>Customer successfully logs into their account.</i>

UC Name	<i>UC_UFR4-20-Customer manages cart and places order</i>
Summary	<i>Customer browses books, adds or removes items to/from the cart, selects a delivery method, and confirms the order. The system handles stock validation, cost calculation (including transportation), and finalizes the order.</i>
Dependency	<i>UC_UFR4-20 depends on UFR-3: User can browse books</i>
Actors	Primary Actor: Customer
Preconditions	<i>Books are available in the catalog with updated stock levels</i>
Description of the Main Sequence	<p>Step 1: Customer browses the book catalog. Step 2: System displays all books, labeling out-of-stock books and disabling their "Add to Cart" button. Step 3: Customer clicks "Add to Cart" on an available book. Step 4: System checks the book stock:</p> <ul style="list-style-type: none"> ● If the book is already in the cart and more stock is available, it increases the quantity by 1. ● If not already in the cart, the book is added with a quantity of 1. <p>Step 5: Customer clicks the cart icon to view the cart. Step 6: System displays the full cart, showing item titles, quantities, individual prices, and subtotal. Step 7: Customer modifies the cart by:</p> <ul style="list-style-type: none"> ● Increasing or decreasing item quantity (if stock permits), or ● Removing items completely. <p>Step 8: System ensures that no item quantity exceeds available stock. If the desired quantity exceeds stock, the increase option is disabled. Step 9: Customer proceeds to checkout. Step 10: System calculates the total item cost. Step 11: Customer selects the delivery method:</p> <ul style="list-style-type: none"> ● Pickup at store – Customer chooses from 3 predefined store locations. ● Home delivery – Customer selects the city and enters address

Bookstore Management System Requirements Specification

	<p>details.</p> <p>Step 12: System calculates transportation cost:</p> <ul style="list-style-type: none"> • 0 Lekë for store pickup • 100 Lekë for delivery in Tirana • 250 Lekë for delivery in other cities <p>Step 13: System adds the transportation cost to the total and displays the final amount.</p> <p>Step 14: Customer checks that the payment will be made in delivery.</p> <p>Step 15: Customer confirms the order.</p> <p>Step 15: System processes the order, empties the cart, and shows an order confirmation message.</p>
<p>Description of the Alternative Sequence</p>	<ul style="list-style-type: none"> • Step 4.1: If the customer tries to add more books than are in stock, the "Add to Cart" button is disabled and an alert is shown. • Step 11.1: If the customer does not select a delivery method, the system prevents order confirmation and prompts them to choose one.
<p>Non functional requirements</p>	<p>Total cost (including transport) must be displayed in real-time (<1 second). Cart updates should be instant (real-time response under 2 seconds). Accurate stock validation to avoid over-ordering. Order confirmation response within 3 seconds.</p>
<p>Postconditions</p>	<p>The order is saved in the database with customer's delivery/pickup preference, their address or store where the order will be picked up, total cost and corresponding quantities for every book purchased. Customer receives confirmation notification that the order was successfully placed. The cart is emptied.</p>

Bookstore Management System Requirements Specification

UC Name	UC_UFR30-AI Chatbot
Summary	A customer can interact with an AI chatbot to get information about books in the database, ask for recommendations, get details about availability, pricing, and general bookstore services.
Dependency	None
Actors	Primary Actor: Customer
Preconditions	<ul style="list-style-type: none"> - Customer must be on the bookstore website - Chatbot service must be operational - Book database must be accessible.
Description of the Main Sequence	<ul style="list-style-type: none"> • Step 1: Customer clicks on the chatbot icon/button on the website • Step 2: Chatbot window opens with a welcome message • Step 3: Customer types a question about books or bookstore services • Step 4: AI processes the query and searches the book database • Step 5: Chatbot provides relevant information about books, recommendations, or bookstore details • Step 6: Customer can continue the conversation or close the chatbot
Description of the Alternative Sequence	<ul style="list-style-type: none"> • Step 3: Customer types a question about books <ul style="list-style-type: none"> 3.1: If the query is unclear, the chatbot asks for clarification <ul style="list-style-type: none"> 3.2: If no relevant books are found, the chatbot suggests alternative searches or popular books 3.3: If the question is outside the scope (not book-related), the chatbot politely redirects to book-related topics • Step 4: AI processes the query <ul style="list-style-type: none"> 4.1: If the chatbot service is temporarily unavailable, display an error message with alternative contact methods 4.2: If the database connection fails, provide general bookstore information instead
Non functional requirements	<ul style="list-style-type: none"> - Chat history should be maintained during the session - The chatbot should provide helpful responses 90% of the time
Postconditions	<ul style="list-style-type: none"> - Customer receives information about requested books or services - Chat conversation is logged for system improvement - Customer can proceed to browse or purchase recommended books - Chatbot remains available for further questions

Bookstore Management System Requirements Specification

UC Name	FR22 -Confirm and list second-hand books
Summary	<i>The system allows the admin to review and approve customer requests to sell second-hand books. The admin categorizes books by condition, confirms book drop-off and decides on the displayed price before listing it in the "Used Books" section.</i>
Dependency	None
Actors	Primary Actor: Admin Supporting Actor: Customer
Preconditions	<i>The admin must be logged into the system. Customers must have submitted second-hand book requests with details about the book's condition and the price they are willing to sell it.</i>
Description of the Main Sequence	<p>Step 1: Admin navigates to the Second-Hand Book Requests section. Step 2: System displays a list of pending book submissions from customers. Step 3: Admin selects a book request to review. Step 4: Admin checks the book details, including title, author, condition description, uploaded images and the customer's desired price. Step 5: Admin either approves or rejects the request:</p> <ul style="list-style-type: none"> ● Step 5.1: If approved, the admin assigns a condition label: <ul style="list-style-type: none"> ○ "Very Good" (Minimal signs of wear, almost new) ○ "Good" (Some signs of wear, fully readable) ○ "Not So Good" (Heavy wear, but still usable) ● Step 5.2: The system notifies the customer to drop off the book at the bookstore. ● Step 5.3: If rejected, the system notifies the customer with a reason. <p>Step 6: Customer drops off the book at the bookstore and gets paid Step 7: Admin inspects the book in person to verify its condition. Step 8: Admin confirms the book drop-off in the system. Step 9: Admin sets a final selling price for the book Step 10: System lists the book in the "Used Books" section with the final price</p>
Description of the Alternative Sequence	<p>Step 6.1: If the book is not dropped off within a certain timeframe, the system reminds the customer.</p> <p>Step 8.1: If the book's actual condition differs significantly from what was</p>

Bookstore Management System Requirements Specification

	<i>submitted, the admin updates the condition label before listing.</i>
Non functional requirements	<i>The system should allow bulk approval of multiple second-hand book requests. The system should send emails for approval, drop-off reminders, and listing confirmation.</i>
Postconditions	<i>The book appears in the "Used Books" section with the assigned condition label and final price.</i>

Bookstore Management System Requirements Specification

Tabular Description of UC_UFR30-Rent Books

UC Name	UC_UFR30-Rent Books
Summary	A customer can rent any available books for a limited time period. After successful payment, the book is added to the customer's purchase history with the rental duration.
Dependency	None
Actors	Primary Actor: Customer
Preconditions	A customer cannot rent a book if they haven't registered on the Bookstore website
Description of the Main Sequence	<ul style="list-style-type: none"> ● Step 1: Customer goes to the Browse page of the Bookstore ● Step 2: Customer selects the book they want to rent ● Step 3: Customer fills in their shipping information ● Step 4: System displays the orders total cost ● Step 5: Customer fills in their payment information ● Step 6: System confirms the order and sends an email containing the order receipt and tracking information
Description of the Alternative Sequence	<ul style="list-style-type: none"> ● Step 2: Customer selects the book they want to rent <ul style="list-style-type: none"> ○ 2.1: System disables the add to cart button if the book is not available for rent ● Step 3: Customer fills in their shipping information <ul style="list-style-type: none"> ○ 3.1: System displays all available city locations ● Step 5: Customer fills in their payment information <ul style="list-style-type: none"> ○ 5.1: System displays an alert if there is an error in the payment information ○ 5.2: Customer re-enters the correct information
Non functional requirements	The system shall follow PCI DSS for online payments.
Postconditions	After the System approves the transaction, an email is sent to the Customer containing the order information. The book is added to the Customer's Purchase history and a reminder will be sent via email before the rental period is over.

Bookstore Management System Requirements Specification

Tabular Description of UC_UFR9-UFR10-Rate Books

UC Name	UC_UFR9-UFR10-Rate Books
Summary	A user can submit a rating and optionally write a review for books they have purchased or rented. This rating will be displayed alongside the book for all users to see.
Dependency	<i>UC_UFR9-URF10-Rate Books depends on UC_URF3-URF7-Buy Books/UC_URF30-Rent Books</i>
Actors	Primary Actor: Customer
Preconditions	A customer cannot rate a book they haven't purchased or rented
Description of the Main Sequence	<ul style="list-style-type: none"> ● Step 1: Customer goes to the Purchase History page of the Bookstore ● Step 2: Customer selects the book they want to rate ● Step 3: Customer rates the book and optionally writes an review ● Step 4: System saves the book rating/review ● Step 5: System calculates the new overall book rating and shows the book review alongside the Customer's full name in the book's details page
Description of the Alternative Sequence	<ul style="list-style-type: none"> ● Step 1: Customer goes to the Purchase History page of the Bookstore <ul style="list-style-type: none"> ○ 1.1: Customer must be logged into their account to access their purchase history ● Step 3: Customer rates the book and optionally writes an review <ul style="list-style-type: none"> ○ 3.1: Customer must purchase or rent a book in order to be able to rate it ● Step 4: System saves the book rating/review <ul style="list-style-type: none"> ○ 4.1: System flags any reviews which violate Bookstore guidelines ○ 4.2: System shows a warning and gives the Customer the option to rewrite their review
Non functional requirements	None
Postconditions	After the System saves the rate/review, the new overall book rating is calculated and the review is published alongside the other reviews in the Book page

Tabular Description of UC04-Sell Used Books

UC Name	UC_UFR18-Sell Used Books
Summary	A customer can list a pre-owned book for sale by filling out a form available in their profile regarding the book conditions, price and adding pictures as proof. A bookstore manager will approve the form and purchase the book. Then it will be sold, labelled as pre-owned, at a lower price.
Dependency	None
Actors	Primary Actor: Customer
Preconditions	A customer cannot sell a book if they haven't registered on the Bookstore website
Description of the Main Sequence	<ul style="list-style-type: none"> ● Step 1: Customer goes to their Profile ● Step 2: Customer selects the form needed to fill to put a book up for sale ● Step 3: Customer puts all the needed information about the book(ISBN, title, author, pages, language ect) ● Step 4: Customer uploads pictures of the book and sets a selling price ● Step 5: An admin approves the form and the book is purchased from the Bookstore ● Step 6: An admin adds the book to the System, labelled as 'second-hand'
Description of the Alternative Sequence	<ul style="list-style-type: none"> ● Step 1: Customer goes to their Profile <ul style="list-style-type: none"> ○ 1.1: Customer must be logged into their account to access their profile ● Step 3: Customer puts all the needed information about the book(ISBN, title, author, pages, language ect) <ul style="list-style-type: none"> ○ 3.1: System displays an alert if the customer puts invalid information or hasn't filled the required fields ● Step 5: An admin approves the form and the book is purchased from the Bookstore <ul style="list-style-type: none"> ○ 5.1: Customer gets an email if the admin denies their form with the reason for rejection
Non functional requirements	Picture is uploaded within 5 seconds
Postconditions	After the admin approves the form, the Customer is paid in cash when the book is dropped off at a specified store location. The admin then adds the book to the system, with the attached 'second-hand' label.

Bookstore Management System Requirements Specification

Tabular Description of UC_UFR16-Add to Wishlist

UC Name	<i>UC_UFR16-Add to Wishlist</i>
Summary	A customer can add a book to their wishlist for future purchases. Books which are out of stock can still be added to the wishlist. The customer will be notified if the books in their wishlist are back in stock or part of any special promotions/discounts.
Dependency	None
Actors	Primary Actor: Customer
Preconditions	A customer cannot add a book to their wishlist if they haven't registered on the Bookstore website
Description of the Main Sequence	<ul style="list-style-type: none"> ● Step 1: Customer goes to the Browse page of the Bookstore ● Step 2: Customer selects the book they want and click the add to wishlist button. ● Step 3: System saves the book in the customers wishlist
Description of the Alternative Sequence	<ul style="list-style-type: none"> ● Step 2: Customer selects the book they want and click the add to wishlist button. <ul style="list-style-type: none"> ○ 2.1: Customer must be logged into their account to add books to their wishlist ○ 2.2: If the book is already part of the wishlist, the System will display an alert to the Customer
Non functional requirements	<i>The system should display a book in the wishlist within 2 seconds after it's been added</i>
Postconditions	<i>The book can be viewed in the Customer's profile. The Customer can edit their wishlist at any time. They will also be notified if books in their wishlist are part of any discounts or back in stock.</i>

Bookstore Management System Requirements Specification

Tabular Description of UC_UFR22-Earns Points

UC Name	UC_UFR22-Earns Points
Summary	A customer can earn points by purchasing/renting books. These points will be accumulated and used as currency to exchange for products in the BookStore
Dependency	UC_UFR22 depends on UC_URF3-URF7-Buy Books/UC_UFR30-Rent Books
Actors	Primary Actor: Customer
Preconditions	A customer cannot earn points if they haven't registered on the Bookstore website
Description of the Main Sequence	<ul style="list-style-type: none"> ● Step 1: Customer goes to the Browse page of the Bookstore ● Step 2: Customer selects the book they want to buy or rent ● Step 3: After the transaction is completed(UC01/UC02) the System calculates the amount of points at a rate of 1 point for 100 lek ● Step 4: System adds the points from the transaction to the balance in the Customer's profile ● Step 5: System sends an email confirming the new balance to the Customer ● Step 6: Customer can view their balance on their profile
Description of the Alternative Sequence	<ul style="list-style-type: none"> ● Step 3: After the transaction is completed(UC01/UC02) the System calculates an amount of points based on the price of the book <ul style="list-style-type: none"> ○ 3.1: Customer must be logged into their account to be eligible to earn points ● Step 6: Customer can view their balance on their profile <ul style="list-style-type: none"> ○ 6.1: Points can expire after a fixed period of time, so the System will send a reminder before they do
Non functional requirements	The System must calculate and add the earned points to Customer balance within 3 seconds after a successful transaction. Points must be accurately calculated according to the conversion rate of 1 point per 100 lek.
Postconditions	After the transaction is completed the System will calculate the new point balance. The Customer receives an email with the new amount and their total points amount

Bookstore Management System Requirements Specification

Tabular Description of UC_UFR17-Register for Events

UC Name	UC_UFR17-Register for Events
Summary	A customer can register to participate in any special events organized from the bookstore. After registering they will be notified for any details regarding the event.
Dependency	None
Actors	Primary Actor: Customer
Preconditions	A customer cannot register for events if they haven't registered on the Bookstore website
Description of the Main Sequence	<ul style="list-style-type: none"> ● Step 1: Customer goes to the Events page of the Bookstore ● Step 2: Customer selects the Event they want to register for ● Step 3: System automatically fills in the Customer's contact information ● Step 4: System adds the Customer to the event participant list ● Step 5: System sends an email confirming the Customer's registration
Description of the Alternative Sequence	<ul style="list-style-type: none"> ● Step 4: System adds the Customer to the event participant list <ul style="list-style-type: none"> ○ 4.1: Some events may have a limited number of participants. The System will disable the register button if the quota is reached. ● Step 6: System sends an email confirming the Customer's registration <ul style="list-style-type: none"> ○ 6.1: Customer will be able to cancel their participation at any time
Non functional requirements	<p>The System must add the Customer to the event participation list and send a confirmation email within 5 seconds of registration.</p> <p>Any updates regarding the event must be sent via emails within 10 minutes of any changes</p>
Postconditions	After the registration is completed the Customer will be added to the System's list of participants. They will be getting regular emails regarding the event details and a reminder a few hours before the event.

2.2. UC_ER

Tabular Description of UC-UFR1-Customer Registers Account

UC Name	-Process Orders
Summary	<i>An employee shall prepare customer orders by labeling them and marking them as posted once they are mailed. This ensures that orders are processed accurately and delivered in a timely manner.</i>
Dependency	None
Actors	Primary Actor: Employee Secondary Actor: Bookstore system
Preconditions	<i>The employee must be logged into the system and have the necessary permissions to process orders</i>
Description of the Main Sequence	<ul style="list-style-type: none"> ● Step 1: Employee logs into the bookstore system. ● Step 2: He reviews pending customer orders assigned to their specific bookstore location. <ul style="list-style-type: none"> ○ The system categorises orders in 2 types: Mail Delivery Orders and In-store Pickup Orders. ○ If an order is assigned to a bookstore location, the designated employee for that location is responsible for processing it. ○ If an order is for in-store pickup, the customer will collect it from the bookstore after it has been prepared ● Step 3: employee prepares the orders by labeling them appropriately <ul style="list-style-type: none"> ○ For Mail Delivery Orders, the employee ensures the order is packaged, labeled, and ready for shipment. ○ For In-Store Pickup Orders, the employee prepares the order and then places it in the designated pickup area. ● Step 4: Employee marks the orders as posted in the system once they are mailed or Ready for Pickup if they are collected by the customer..
Description of the Alternative Sequence	<ul style="list-style-type: none"> ● Step 4: If the order cannot be posted due to an issue (e.g., invalid address, stock issues), the system flags the order for further review.
Non functional requirements	<p><i>The system should ensure that order processing actions are logged for auditing purposes.</i></p> <p><i>Notifications should be sent to customers when their order is marked as posted.</i></p>
Postconditions	<i>The order status is updated to "Posted" in the system. Customers will receive a notification confirming that their order has been mailed</i>

UC Name	<i>Process in store pickup orders</i>
Summary	<i>An employee shall prepare customer orders for in-store pickup and mark them as completed once the customer receives the order. This ensures that in-store pickups are handled efficiently and order statuses are accurately tracked.</i>
Dependency	None
Actors	Primary Actor: Employee Secondary Actor: Bookstore system , Customer
Preconditions	<i>The employee must be logged into the system and have the necessary permissions to process orders. The customer must have placed an order with the In store pickup option selected The order must be assigned to the correct bookstore location based on customer selection.</i>
Description of the Main Sequence	<ul style="list-style-type: none"> ● Step 1: Employee logs into the bookstore system. ● Step 2: Employee reviews pending in store pickup orders assigned to their bookstore location. ● Step 3: Employee prepares the order, ensuring the correct books are selected and labeled for pickup. ● Step 4: Employee marks the order as ready for pickup in the system. ● Step 5: Customer arrives at the bookstore and provides order details. ● Step 6: Employee verifies the customer's identity and retrieves the order. ● Step 7: Employee hands over the order and marks it as Completed in the system.
Description of the Alternative Sequence	<p><i>Step 5:</i></p> <ul style="list-style-type: none"> ● If the customer does not arrive within a specified timeframe, the system will send a reminder notification ● If the customer cancels the order before picking it up, the system updates the order status to Canceled.
Non functional requirements	<i>The system should log all order processing actions for auditing purposes. Customer should receive a notification when their order is marked as Ready for pickup The system should allow employees to track uncollected orders and then send automatic reminders if necessary.</i>
Postconditions	<i>The order status is updated to Completed in the system. The customer successfully receives their order The system tracks in store pickups for reporting and inventory management.</i>

Bookstore Management System Requirements Specification

UC Name	Manage Events
Summary	<i>An employee shall manage events assigned by the admin, including monitoring participant registrations and assisting with event logistics. This ensures smooth event operations and accurate participation tracking.</i>
Dependency	Admin assigns events to employees.
Actors	Primary Actor: Employee Secondary Actor: Bookstore system, Admin, Customer
Preconditions	<i>The employee must be logged into the bookstore system. The admin must have assigned the employee to manage a specific event. The event details must be available in the system.</i>
Description of the Main Sequence	<ul style="list-style-type: none"> ● Step 1: Admin assigns an event to an employee through the system. ● Step 2: Employee logs into the system and reviews the assigned event details. ● Step 3: Employee monitors participant registrations and ensures the event capacity is managed properly. ● Step 4: Employee assists with event logistics, such as venue setup, materials preparation, and coordination with vendors if necessary. ● Step 5: Employee tracks participant check-ins and updates attendance records in the system. ● Step 6: After the event, the employee submits a report summarizing participation and event outcomes.
Description of the Alternative Sequence	<ul style="list-style-type: none"> ● Step 3: If an event reaches full capacity, the system prevents further registrations and notifies customers. ● Step 5: If a participant does not check in, their registration status remains pending unless manually updated by the employee.
Non functional requirements	<i>The system should log all event management activities for auditing purposes. Notifications should be sent to employees about event updates or changes. The system should allow employees to generate event participation reports.</i>
Postconditions	<i>Event participation data is recorded in the system. The event is successfully managed with logistical support from the assigned employee. The admin can review reports on event participation and logistics.</i>

Bookstore Management System Requirements Specification

UC Name	Manage Rented Books
Summary	<i>An employee shall keep track of rented books by updating their status and availability in the system. This ensures that rented books are properly managed, reducing issues with availability and rental tracking.</i>
Dependency	None
Actors	Primary Actor: Employee Secondary Actor: Bookstore system, Customer
Preconditions	<i>The employee must be logged into the system. Books must be available for rent in the system. Customers must have an active rental agreement.</i>
Description of the Main Sequence	<ul style="list-style-type: none"> ● Step 1: Employee logs into the bookstore system. ● Step 2: Employee reviews the list of rented books and their due dates. ● Step 3: Employee updates the status of books when they are rented out. ● Step 4: When a customer returns a rented book, the employee verifies its condition and updates its status to Available. ● Step 5: If a book is overdue, the system flags it, and the employee may send a reminder to the customer.
Description of the Alternative Sequence	<p>Step 4:</p> <ul style="list-style-type: none"> ● If a book is returned damaged, the employee marks it as Damaged and follows the bookstore's policy for damaged rentals. ● If a book is lost, the employee updates the system to reflect it as Lost, and appropriate actions are taken.
Non functional requirements	<i>The system should log all rental status changes for tracking and auditing purposes. Customers should receive automatic notifications about upcoming due dates, overdue books, or rental status changes. The system should prevent double booking of rented books</i>
Postconditions	<i>The status of rented books is updated in the system. Customers are notified of their rental status. The bookstore maintains accurate tracking of all rented books.</i>

Bookstore Management System Requirements Specification

UC Name	<i>Confirm Supplier Order Receipt</i>
Summary	<i>An employee shall confirm the receipt of orders from suppliers at their respective bookstore branch and update the system. This ensures that stock and inventory are accurately recorded upon receiving orders from suppliers.</i>
Dependency	<i>Supplier deliveries must be scheduled and assigned to the correct bookstore branch.</i>
Actors	Primary Actor: Employee Secondary Actor: Bookstore system, Supplier
Preconditions	<i>The employee must be logged into the bookstore system. A supplier must have shipped an order to the bookstore branch. The order details must be available in the system for verification.</i>
Description of the Main Sequence	<ul style="list-style-type: none"> ● Step 1: Employee logs into the bookstore system. ● Step 2: Employee reviews the list of expected supplier deliveries for their branch. ● Step 3: Upon receiving a shipment, the employee verifies the contents against the order details. ● Step 4: If the order matches the shipment, the employee marks it as Received in the system. ● Step 5: The system updates the stock and inventory accordingly.
Description of the Alternative Sequence	<p>Step 4:</p> <ul style="list-style-type: none"> ● If there are discrepancies (e.g., missing or damaged items), the employee reports the issue in the system and notifies the supplier. ● If an order is delayed or not delivered, the system flags it as Pending for follow-up.
Non functional requirements	<i>The system should log all supplier order confirmations and discrepancies for auditing purposes. Notifications should be sent to the admin if there are issues with a delivery. The system should allow employees to generate reports on supplier order history and inventory updates.</i>
Postconditions	<i>The inventory is updated with newly received stock. Any discrepancies in supplier orders are logged and addressed. The bookstore maintains accurate stock records.</i>

Bookstore Management System Requirements Specification

UC Name	UC10- Customer registers account
Summary	New customer creates a new account
Dependency	None
Actors	Primary Actor: Customer Secondary Actor: Bookstore system
Preconditions	Valid email not already registered
Description of the Main Sequence	<ul style="list-style-type: none"> ● 1. Fill registration form ● 2. Submit details ● 3. System sends verification email ● 4. Customer verifies
Description of the Alternative Sequence	<ul style="list-style-type: none"> ● 2a. Invalid email format - shows error ● 2b. Username not available - customer should choose another username ● 2c. Password not according to safety standards - warning appears to let the customer know their password should be stronger.
Non functional requirements	Verification email within 1 minute
Postconditions	New account created and customer redirected to Login page.

Bookstore Management System Requirements Specification

UC Name	UC-SR4-Prevent Overbooking an Event
Summary	If the max capacity of an event is reached, the registration button shall be disabled.
Dependency	<i>UC-SR3 depends on UC07-Register for Events</i>
Actors	Primary Actor: Customer Secondary Actor: System
Preconditions	<i>The event has a set maximum capacity.</i>
Description of the Main Sequence	<ul style="list-style-type: none"> ● Step 1: Customer navigates to the event page. ● Step 2: Customer clicks the “Register” button. ● Step 3: System checks event capacity. ● Step 4: If space is available, registration is processed.
Description of the Alternative Sequence	<ul style="list-style-type: none"> ● 4.1: If the event is full, the system disables the “Register” button.
Non functional requirements	None
Postconditions	<i>Overbooking is prevented.</i>

Bookstore Management System Requirements Specification

UC Name	UC-SR5-Notify Customers When Wishlist Book is Back in Stock
Summary	If a book is out of stock and is on a customer's wishlist, the system shall notify the customer by email when the book is back in stock.
Dependency	UC-SR5 depends on UC-05 Add to Wishlist
Actors	Primary Actor: System
Preconditions	<i>The book is on a customer's wishlist.</i>
Description of the Main Sequence	<ul style="list-style-type: none"> ● Step 1: The system detects that a book is back in stock. ● Step 2: The system checks customer wishlists. ● Step 3: The system sends an email notification to affected customers.
Description of the Alternative Sequence	<ul style="list-style-type: none"> ● 3.1: If the email fails, the system logs the failure.
Non functional requirements	None
Postconditions	<i>Customers receive an email notification.</i>

Bookstore Management System Requirements Specification

UC Name	<i>UC-SR6-Close Event Registration Before Start Time</i>
Summary	The event registration shall be closed 2 hours before the event starts.
Dependency	None
Actors	Primary Actor: System
Preconditions	<i>The event is scheduled.</i>
Description of the Main Sequence	<ul style="list-style-type: none">● Step 1: The system tracks event start times.● Step 2: 2 hours before the event, the system disables the registration button.
Description of the Alternative Sequence	<ul style="list-style-type: none">● 3.1: If the email fails, the system logs the failure.
Non functional requirements	None
Postconditions	<i>Late registrations are prevented.</i>

Bookstore Management System Requirements Specification

UC Name	<i>Supplier and Order Management</i>
Summary	<i>Allows the admin to prepare orders, manage supplier invoices, maintain supplier data, and update stock after receiving an order.</i>
Dependency	Stock Management(<i>Add,Delete, Modify Books</i>)
Actors	<i>Primary Actor: Admin</i>
Preconditions	<i>Admin must be logged in.</i>
Description of the Main Sequence	<ul style="list-style-type: none"> ● <i>Admin prepares an order for book suppliers.</i> ● <i>System records and sends the order.</i> ● <i>Supplier processes the order.</i> ● <i>Admin receives the order and updates stock.</i> ● <i>Admin manages supplier invoices and records payments.</i> ● <i>Admin adds or updates supplier details.</i> ● <i>System saves changes.</i>
Description of the Alternative Sequence	<ul style="list-style-type: none"> ● <i>Admin enters incorrect supplier information.</i> ● <i>System prompts correction.</i> ● <i>Supplier delays or cancels the order.</i> ● <i>Admin updates the order status accordingly.</i>
Non functional requirements	<i>Secure data storage, automated notifications for pending payments, response time under 3 seconds.</i>
Postconditions	<i>Orders and supplier data are updated.</i>

Bookstore Management System Requirements Specification

UC Name	<i>Customer and Employee Data Management</i>
Summary	<i>Allows the admin to manage customer and employee records and update customer order details and loyalty points.</i>
Dependency	<i>None</i>
Actors	Primary Actor: Admin
Preconditions	<i>Admin must be logged in.</i>
Description of the Main Sequence	<ul style="list-style-type: none"> ● Admin adds or updates customer details (name, contact, address, points, event participation, order details). ● Admin adds or updates employee records (name, role, qualifications, contact, branch). ● System validates and saves changes.
Description of the Alternative Sequence	<ul style="list-style-type: none"> ● Admin enters incorrect details. ● System prompts correction.
Non functional requirements	<i>Role-based access control, data integrity checks.</i>
Postconditions	<i>Customer and employee records are updated.</i>

Bookstore Management System Requirements Specification

UC Name	FR-14-Online Refunds
Summary	<i>Allows the admin to handle refunds and monitor transaction history.</i>
Dependency	None
Actors	Primary Actor: Admin
Preconditions	<i>Admin must be logged in.</i>
Description of the Main Sequence	<ul style="list-style-type: none"> • <i>Customer sends a refund request.</i> • <i>Admin verifies eligibility.</i> • <i>Refunds are approved and processed.</i> • <i>Bank transfer completes.</i> • <i>System updates transaction records.</i> • <i>Automatic e-mail is sent to customers.</i>
Description of the Alternative Sequence	<ul style="list-style-type: none"> • <i>Refund request is ineligible.</i> • <i>Automatic e-mail is sent to customer.</i>
Non functional requirements	<i>Audit logs, real-time financial tracking.</i>
Postconditions	<i>Refund is processed or denied, transactions are logged.</i>

Bookstore Management System Requirements Specification

UC Name	<i>Customer Engagement and Promotions</i>
Summary	<i>Allows the admin to collect customer ratings, send newsletters, and create promotional discounts.</i>
Dependency	None
Actors	Primary Actor: Admin
Preconditions	<i>Admin must be logged in.</i>
Description of the Main Sequence	<ul style="list-style-type: none"> • Admin collects customer ratings and reviews for books. • Admin creates and applies discount promotions to multiple books. • Admin sends newsletters and updates to subscribed customers.
Description of the Alternative Sequence	<ul style="list-style-type: none"> • Customer review violates guidelines. • System flags the review for moderation. • Admin applies a discount incorrectly. • System alerts the admin.
Non functional requirements	<i>Customer feedback moderation, email notification system, secure discount management.</i>
Postconditions	<i>Customer engagement data and promotional campaigns are updated.</i>

UC Name	<i>FR22 -Confirm and list second-hand books</i>
Summary	<i>The system allows the admin to review and approve customer requests to sell second-hand books. The admin categorizes books by condition,</i>

Bookstore Management System Requirements Specification

	<i>confirms book drop-off and decides on the displayed price before listing it in the "Used Books" section.</i>
Dependency	None
Actors	Primary Actor: Admin Supporting Actor: Customer
Preconditions	<i>The admin must be logged into the system. Customers must have submitted second-hand book requests with details about the book's condition and the price they are willing to sell it.</i>
Description of the Main Sequence	<p>Step 1: Admin navigates to the Second-Hand Book Requests section. Step 2: System displays a list of pending book submissions from customers. Step 3: Admin selects a book request to review. Step 4: Admin checks the book details, including title, author, condition description, uploaded images and the customer's desired price. Step 5: Admin either approves or rejects the request:</p> <ul style="list-style-type: none"> ● Step 5.1: If approved, the admin assigns a condition label: <ul style="list-style-type: none"> ○ "Very Good" (Minimal signs of wear, almost new) ○ "Good" (Some signs of wear, fully readable) ○ "Not So Good" (Heavy wear, but still usable) ● Step 5.2: The system notifies the customer to drop off the book at the bookstore. ● Step 5.3: If rejected, the system notifies the customer with a reason. <p>Step 6: Customer drops off the book at the bookstore and gets paid Step 7: Admin inspects the book in person to verify its condition. Step 8: Admin confirms the book drop-off in the system. Step 9: Admin sets a final selling price for the book Step 10: System lists the book in the "Used Books" section with the final price</p>
Description of the Alternative Sequence	<p>Step 6.1: If the book is not dropped off within a certain timeframe, the system reminds the customer.</p> <p>Step 8.1: If the book's actual condition differs significantly from what was submitted, the admin updates the condition label before listing.</p>
Non functional requirements	<p><i>The system should allow bulk approval of multiple second-hand book requests. The system should send emails for approval, drop-off reminders, and listing confirmation.</i></p>
Postconditions	<i>The book appears in the "Used Books" section with the assigned condition</i>

Bookstore Management System Requirements Specification

	<i>label and final price.</i>
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UC Name	UC08 - Add, Edit And Remove New Book
Summary	<i>The admin can add, edit or remove new books to the bookstore database by providing details such as title, author, ISBN, price, stock, description, cover image, language, category, and publisher.</i>
Dependency	None
Actors	Primary Actor: Admin
Preconditions	<i>The admin must be logged into the bookstore management system with the necessary permissions.</i>

Bookstore Management System Requirements Specification

Description of the Main Sequence	<p><i>The admin navigates to the "Add New Book" "Edit Book" or "Remove Book" pages in the system.</i></p> <p><i>The system displays a form requiring book details (title, author, ISBN, price, stock, description, cover image, language, category, and publisher).</i></p> <p><i>The admin fills in the required fields and uploads the book cover image.</i></p> <p><i>The admin submits the form.</i></p> <p><i>The system validates the input data (e.g., correct ISBN format, required fields filled).</i></p> <p><i>If validation passes, the system saves the new book the editing and the removal in the database.</i></p> <p><i>The system confirms that the book has been added, edited and removed successfully and redirects the admin to the book list page.</i></p>
	<ul style="list-style-type: none"> • <i>The system detects missing or invalid information (e.g., missing ISBN, negative stock, incorrect price format).</i> • <i>The system displays an error message indicating which fields need correction.</i> • <i>The admin corrects the errors and resubmits the form.</i>
	<i>The response time for adding a book should not exceed 2 seconds.</i>
	<ul style="list-style-type: none"> • <i>The book is successfully added, edited and removed from the bookstore inventory.</i> • <i>The system updates the book database with the new entry and the new features.</i> • <i>The new book with the edited features appears in the bookstore catalog for customers to browse and purchase.</i> • <i>The removed book is no longer in the database.</i>

UC Name	UC09-Search Books
Summary	<i>The admin can search for books in the bookstore system using various criteria such as book ID, author, category, and publisher.</i>
Dependency	None
Actors	Primary Actor: Admin
Preconditions	<i>The admin must be logged into the bookstore management system with the necessary permissions.</i>
Description of the Main Sequence	<ul style="list-style-type: none"> ● Step 1: <i>The admin navigates to the "Search Books" section in the system.</i> ● Step 2: <i>The system displays a search form with fields for book ID, author, category, and publisher.</i> ● Step 3: <i>The admin enters search criteria (e.g., book ID, author name, category, or publisher) and submits the search request.</i> ● Step 4: <i>The system retrieves matching books from the database based on the entered criteria.</i> ● Step 5: <i>The system displays the search results, including book details such as title, author, category, publisher, price, and stock.</i> ● Step 6: <i>The admin can select a book from the results to view more details or perform actions like editing or deleting the book.</i>
Description of the Alternative Sequence	<ul style="list-style-type: none"> ● Step 4 <i>If no matching books are found, the system displays a message stating "No books found matching the criteria."</i> ● Step 5 <i>The admin can refine the search and try again.</i>

Bookstore Management System Requirements Specification

Non functional requirements	<p><i>The response time for adding a book should not exceed 2 seconds.</i></p>
Postconditions	<ul style="list-style-type: none">● <i>The admin successfully retrieves book information from the system.</i>● <i>The system displays accurate and relevant search results.</i>

Bookstore Management System Requirements Specification

UC Name	UC10-Receive Customer Orders
Summary	<i>The admin can receive customer orders and retain necessary details such as purchase date, time, quantity, and book details.</i>
Dependency	UC20-Manages cart and places orders
Actors	Primary Actor: Admin
Preconditions	<i>A customer must successfully place an order through the bookstore system.</i>
Description of the Main Sequence	<ul style="list-style-type: none"> • Step 1 <i>A customer places an order through the bookstore system.</i> • Step 2 <i>The system records the order details, including the purchase date, time, quantity, and book details.</i> • Step 3 <i>The system notifies the admin about the new order.</i> • Step 4 <i>The admin accesses the order management section to view the order details.</i> • Step 5 <i>The admin reviews the order and updates its status (e.g., processing, shipped, completed).</i> • Step 6 <i>The system logs the order status update and retains the order details for future reference.</i>
Description of the Alternative Sequence	<ul style="list-style-type: none"> • Step 3 <i>If the admin does not receive the order notification, they can manually check the order management system.</i>

Bookstore Management System Requirements Specification

	<ul style="list-style-type: none">• <i>Step 5</i> If an order contains errors (e.g., invalid book ID or unavailable stock), the admin can contact the customer for resolution.
Non functional requirements	<i>Order data retrieval must be completed within 3 seconds.</i>
Postconditions	<ul style="list-style-type: none">• <i>The admin successfully receives and reviews customer orders.</i>• <i>The system retains all necessary order details for tracking and future reference.</i>• <i>The order status is updated accordingly in the system</i>

Bookstore Management System Requirements Specification

UC Name	UC11-Generate Bill and Send Confirmation Email
Summary	<i>The system automatically generates a bill containing all order details and sends a confirmation email to the customer after a successful purchase.</i>
Dependency	<i>UC01-Buy Books</i>
Actors	Primary Actor: System Secondary Actor: Customer, Admin
Preconditions	<i>A customer must successfully place an order through the bookstore system.</i>
Description of the Main Sequence	<ul style="list-style-type: none"> ● Step 1 A customer completes a purchase on the bookstore system. ● Step 2 The system collects order details, including purchased books, quantity, price, tax, and total amount. ● Step 3 The system generates an itemized bill (invoice) with all relevant details. ● Step 4 The system stores the invoice in the customer's order history. ● Step 5 The system sends a confirmation email to the customer with the order details and attached invoice. ● Step 6 The admin can access the order details and invoice for record-keeping and processing.
Description of the Alternative Sequence	<ul style="list-style-type: none"> ● Step 5 If the email fails to send, the system retries sending it or notifies the admin. ● Step 6 If the customer does not receive the email, they can access the invoice in their order history or request a resend.
Non functional requirements	<i>The system must generate the invoice within 2 seconds of order completion.</i>
Postconditions	<ul style="list-style-type: none"> ● The system successfully generates a bill and sends a confirmation email to the customer.

Bookstore Management System Requirements Specification

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| | <ul style="list-style-type: none">• <i>The invoice is stored in the bookstore system for both the customer and admin to access.</i> |
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Bookstore Management System Requirements Specification

UC Name	UC11-Price Of Rented Books
Summary	<i>The customer can rent books for a maximum of 7 days at 20% of the book's real price. The full price is paid upfront, and the remaining amount is refunded upon the book's return.</i>
Dependency	<i>None</i>
Actors	Primary Actor: System Secondary Actor: Admin
Preconditions	<i>The customer must have an active account on the bookstore system.</i>
Description of the Main Sequence	<ul style="list-style-type: none"> ● Step 1 <i>The customer navigates to the "Rent Books" section.</i> ● Step 2 <i>The system displays a list of available books for rent, including their rental price (20% of the real price).</i> ● Step 3 <i>The customer selects a book and proceeds to checkout.</i> ● Step 4 <i>The system calculates the rental cost and requires the customer to pay the full book price upfront.</i> ● Step 5 <i>The customer completes the payment.</i> ● Step 6 <i>The system confirms the rental transaction and records the rental period (7 days).</i> ● Step 7 <i>The customer receives a confirmation email with rental details, including return date and refund policy.</i> ● Step 8 <i>The admin can view rental transactions in the system.</i>
Description of the Alternative Sequence	<ul style="list-style-type: none"> ● Step 5 <i>If payment fails, the system notifies the customer and prompts them to retry.</i>

Bookstore Management System Requirements Specification

	<ul style="list-style-type: none">• Step 7 If the customer does not return the book within 7 days, the system automatically deducts the full price without issuing a refund.
Non functional requirements	None
Postconditions	<ul style="list-style-type: none">• The customer successfully rents a book.• The rental transaction is recorded in the system• Upon book return, the system refunds the remaining amount to the customer

Bookstore Management System Requirements Specification

UC Name	UC11-Update Stock Levels After Orders
Summary	<i>The system automatically generates a bill containing all order details and sends a confirmation email to the customer after a successful purchase.</i>
Dependency	UC01-Buy Books
Actors	Primary Actor: Customer Secondary Actor: Bookstore payment system, Admin
Preconditions	A customer must successfully place an order through the bookstore system.
Description of the Main Sequence	<ul style="list-style-type: none"> • Step 1 A customer completes a purchase on the bookstore system. • Step 2 The system retrieves the book details and quantity purchased. • Step 3 The system deducts the purchased quantity from the available stock. • Step 4 The system updates the stock levels in the database. • Step 5 The system logs the stock update for record-keeping. • Step 6 The admin can view the updated stock levels in the inventory management system.
Description of the Alternative Sequence	<ul style="list-style-type: none"> • Step 3 If stock levels are insufficient at the time of order processing, the system prevents the order from being completed and notifies the customer. • Step 4 If the stock update fails due to a system error, the system alerts the admin to manually update the stock.
Non functional requirements	<i>The system must update stock levels within 2 seconds of order completion.</i>
Postconditions	<ul style="list-style-type: none"> • The system successfully updates stock levels after the order.

Bookstore Management System Requirements Specification

- | | |
|--|--|
| | <ul style="list-style-type: none">● <i>The updated stock levels are reflected in the bookstore inventory.</i>● <i>The admin can monitor stock changes and take necessary actions if required.</i> |
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UC Name	UC11-Send Rental Confirmation And Expiry Notification
Summary	<i>The system sends a confirmation email to the customer after a successful book rental and notifies them before the rental period expires.</i>
Dependency	UC02-Rent Books
Actors	Primary Actor: System Secondary Actor: Customer
Preconditions	<i>The customer must have successfully rented a book.</i>
Description of the Main Sequence	<ul style="list-style-type: none"> • Step 1 A customer completes the rental process. • Step 2 The system generates a confirmation email with rental details (book title, rental period, return date, and refund policy). • Step 3 The system sends the confirmation email to the customer. • Step 4 The system records the rental period and schedules notifications for the customer. • Step 5 Before the rental period expires, the system sends a reminder email notifying the customer about the return deadline. • Step 6 If the book is returned on time, the system updates the rental status and processes the refund. • Step 7 If the book is not returned before the deadline, the system sends a final warning and may deduct the full book price.
Description of the Alternative Sequence	<ul style="list-style-type: none"> • Step 3 If the confirmation email fails to send, the system retries or notifies the admin. • Step 5 If the customer does not receive the reminder, they can check their rental details in their account.

Bookstore Management System Requirements Specification

Non functional requirements	<i>The system should send reminders at least 24 hours before the rental expires.</i>
Postconditions	<ul style="list-style-type: none">● <i>The customer receives a rental confirmation email.</i>● <i>The system notifies the customer before the rental period expires.</i>● <i>The rental process is tracked, and necessary actions (refund or penalty) are executed.</i>

Bookstore Management System Requirements Specification

UC Name	UC11-Mark Rented Books as Non-Refundable if Damaged
Summary	<i>The system marks rented books as non-refundable if they are returned in a damaged condition.</i>
Dependency	<i>UC13-Rent Books, UC14-Send Rental Confirmation and Expiry Notification</i>
Actors	Primary Actor: System Secondary Actor: Admin, Customer
Preconditions	<i>The customer must have rented a book, and the book must be returned for refund processing.</i>
Description of the Main Sequence	<ul style="list-style-type: none"> ● Step 1 <i>The customer returns the rented book.</i> ● Step 2 <i>The admin inspects the book for damage.</i> ● Step 3 <i>If the book is in good condition, the system processes the refund.</i> ● Step 4 <i>If the book is damaged, the admin marks it as "Damaged" in the system.</i> ● Step 5 <i>The system updates the book's status to "Non-Refundable."</i> ● Step 6 <i>The system notifies the customer that the refund will not be processed due to damage.</i> ● Step 7 <i>The admin can view and manage records of damaged books in the system.</i>
Description of the Alternative Sequence	<ul style="list-style-type: none"> ● Step 4 <i>If there is a dispute, the customer can appeal, and the admin may review the case.</i> ● Step 6 <i>If the notification fails, the system retries sending it or alerts the admin.</i>
Non functional requirements	None

Bookstore Management System Requirements Specification

Postconditions	<ul style="list-style-type: none">● <i>The system successfully marks damaged books as non-refundable.</i>● <i>The customer is notified about the refund rejection.</i>● <i>The admin can review records of damaged books for inventory management.</i>
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UC Name	UC11-Move Completed Orders to Separate Table
Summary	<i>The system allows the admin to move all orders labeled as "Completed" by employees to a separate "Completed Orders" table, ensuring they are no longer displayed in the main orders dashboard.</i>
Dependency	UC10-Receive Customer Orders
Actors	Primary Actor: Admin Secondary Actor: System
Preconditions	<i>There must be orders labeled as "Completed" in the system.</i>
Description of the Main Sequence	<ul style="list-style-type: none"> • Step 1 <i>The admin accesses the order management system dashboard.</i> • Step 2 <i>The system displays all orders, including those labeled as "Completed."</i> • Step 3 <i>The admin selects the option to move all "Completed" orders to the separate "Completed Orders" table.</i> • Step 4 <i>The system verifies that the selected orders are indeed labeled as "Completed."</i> • Step 5 <i>The system transfers all completed orders to the "Completed Orders" table.</i> • Step 6 <i>The system ensures that the transferred orders are no longer displayed in the main orders dashboard.</i> • Step 7 <i>The admin can access the "Completed Orders" table separately if needed, to review or manage the completed orders.</i>
Description of the Alternative Sequence	<ul style="list-style-type: none"> • Step 3 <i>If no completed orders are present, the system informs the admin that no action is necessary.</i> • Step 5 <i>If there is an error during the transfer, the system notifies the admin and retries or logs the error for review.</i>

Bookstore Management System Requirements Specification

Non functional requirements	<ul style="list-style-type: none">• <i>The system must process the transfer of completed orders within 2 seconds.</i>• <i>Completed orders should be clearly marked in the "Completed Orders" table and remain accessible for future reference.</i>
Postconditions	<ul style="list-style-type: none">• <i>The completed orders are successfully moved to a separate table.</i>• <i>The main orders dashboard no longer displays completed orders.</i>• <i>The admin can still access the "Completed Orders" table for further actions.</i>

Bookstore Management System Requirements Specification

UC Name	<i>UC11-Create Events, Assign Management to Employees, and Monitor Participation Registration</i>
Summary	<i>The system allows the admin to create events, assign event management responsibilities to employees, and monitor participation registration for each event.</i>
Dependency	<i>None</i>
Actors	<i>Primary Actor: Admin</i> <i>Secondary Actor: Employee, System, Customer</i>
Preconditions	The admin must be logged into the system. The system should support event creation and management features.
Description of the Main Sequence	<p><i>Step 1</i> <i>The admin navigates to the event management section of the system.</i></p> <p><i>Step 2</i> <i>The admin selects the option to create a new event and enters event details (e.g., title, date, time, description, location).</i></p> <p><i>Step 3</i> <i>The admin assigns employees to manage the event, specifying roles and responsibilities (e.g., marketing, registration).</i></p> <p><i>Step 4</i> <i>The system records the event and employee assignments.</i></p> <p><i>Step 5</i> <i>The system opens the event for participation registration and allows customers to sign up.</i></p> <p><i>Step 6</i> <i>The admin monitors the participation registration, viewing the number of participants and other relevant details (e.g., participant names, registration status).</i></p> <p><i>Step 7</i> <i>The system updates the admin on the participation count, showing any changes in real-time.</i></p>

Bookstore Management System Requirements Specification

Description of the Alternative Sequence	<p>Step 3 If there are no available employees to assign, the system notifies the admin to assign employees later.</p> <p>Step 6 If there is an issue with registration (e.g., overbooking or technical issues), the system alerts the admin.</p>
Non functional requirements	<p><i>The system must allow the admin to create and manage multiple events simultaneously.</i></p> <p><i>Employee roles and responsibilities should be easy to assign and update.</i></p>
Postconditions	<p>The event is created and assigned to employees for management.</p> <p>Participation registration opens, and customers can register.</p> <p>The admin can monitor the event's registration and manage participation efficiently.</p>

Bookstore Management System Requirements Specification

UC Name	UC-ADM1-Generate sales report
Summary	<i>The system generates weekly, monthly, and yearly sales reports for the admin.</i>
Dependency	None
Actors	Primary Actor: Admin Secondary Actor: Bookstore system
Preconditions	<i>The admin must have an account and be logged into the system. The system must have stored sales transaction data.</i>
Description of the Main Sequence	<p>Step 1: Admin navigates to the reports section.</p> <p>Step 2: Admin selects the desired report type (weekly, monthly, or yearly).</p> <p>Step 3: System retrieves the relevant sales data from the database.</p> <p>Step 4: System generates the report based on the selected time frame.</p> <p>Step 5: System displays the generated report to the admin.</p>
Description of the Alternative Sequence	<p>Step 3.1: If no sales data is available for the selected period, the system notifies the admin with a message.</p> <p>Step 4.1: If there is a system error during report generation, the system displays an error message and suggests retrying later.</p>
Non functional requirements	<i>The report should be generated within 5 seconds. The report must be downloadable in PDF and Excel.</i>
Postconditions	<i>The system successfully generates and displays the sales report to the admin, who can download or view the report.</i>

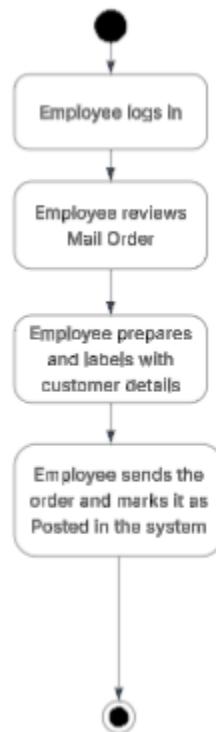
Bookstore Management System Requirements Specification

UC Name	UC-ADM1-Generate inventory report
Summary	<i>The system generates inventory reports highlighting fast-moving books, low-stock books, and books with poor sales performance.</i>
Dependency	None
Actors	Primary Actor: Admin Secondary Actor: Bookstore system
Preconditions	<i>The admin must have an account and be logged into the system. The system must have stored sales and inventory data.</i>
Description of the Main Sequence	<p>Step 1: Admin navigates to the inventory reports section.</p> <p>Step 2: Admin selects the inventory report type.</p> <p>Step 3: System retrieves inventory and sales data.</p> <p>Step 4: System calculates the selling rate of each book.</p> <p>Step 5: System categorizes books based on performance:</p> <ul style="list-style-type: none"> Step 5.1: Books with less than 1 sale per week are marked in red (low-performing). Step 5.2: High-performing books (fast-moving) are marked in green. Step 5.3: Books that need restocking are marked in yellow. <p>Step 6: System generates the inventory report.</p> <p>Step 7: System displays the report to the admin.</p>
Description of the Alternative Sequence	<p>Step 3.1: If no sales data is available for the selected period, the system notifies the admin with a message.</p> <p>Step 4.1: If there is a system error during report generation, the system displays an error message and suggests retrying later.</p>
Non functional requirements	<i>The report should be generated within 5 seconds. The report must be downloadable in PDF and Excel.</i>
Postconditions	<i>The system successfully generates and displays the inventory report to the admin, who can download or view the report.</i>

5. Activity Diagrams

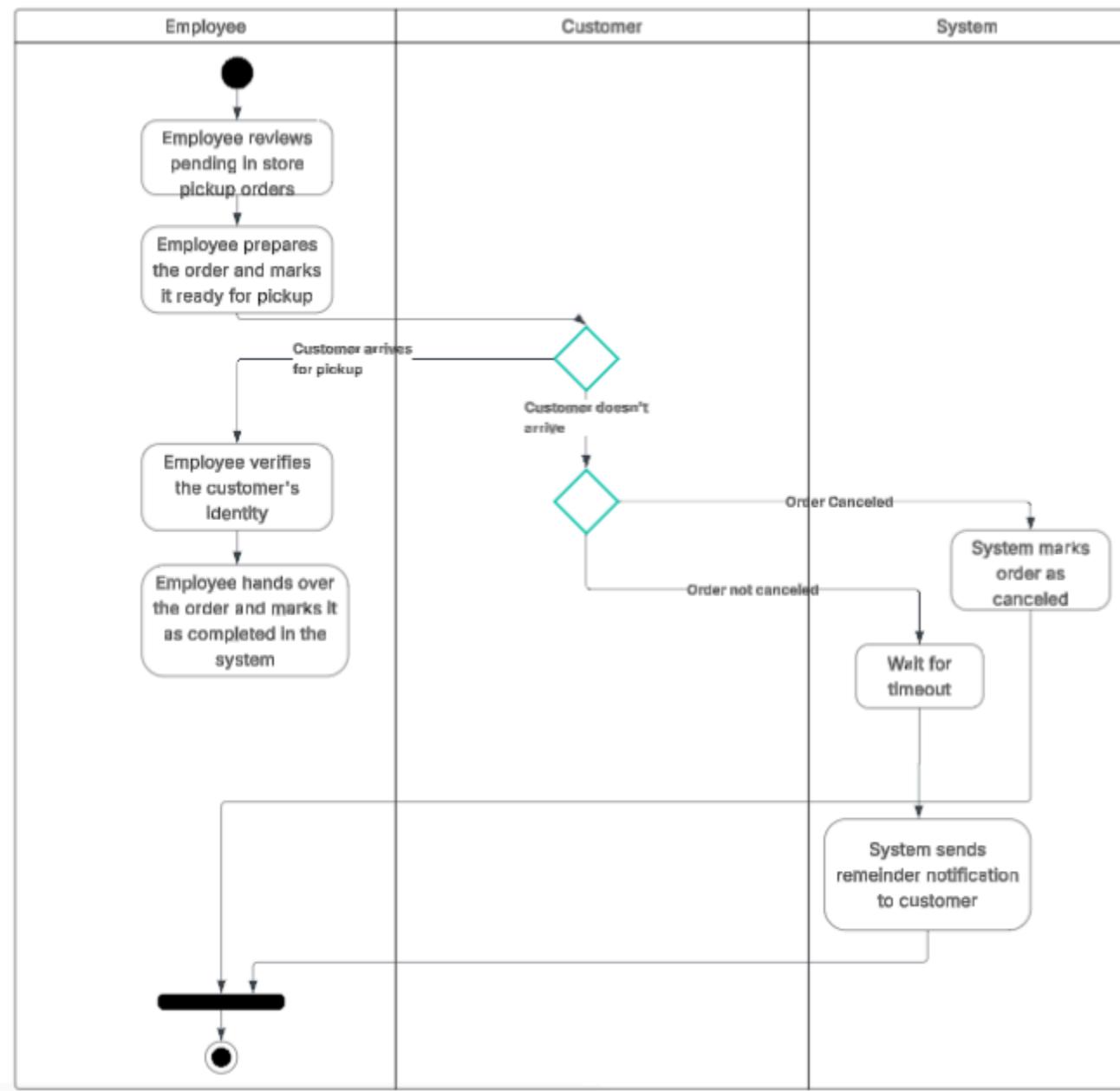
3.1. UC_ER

UC-ER1 Activity Diagram Process Mail Orders



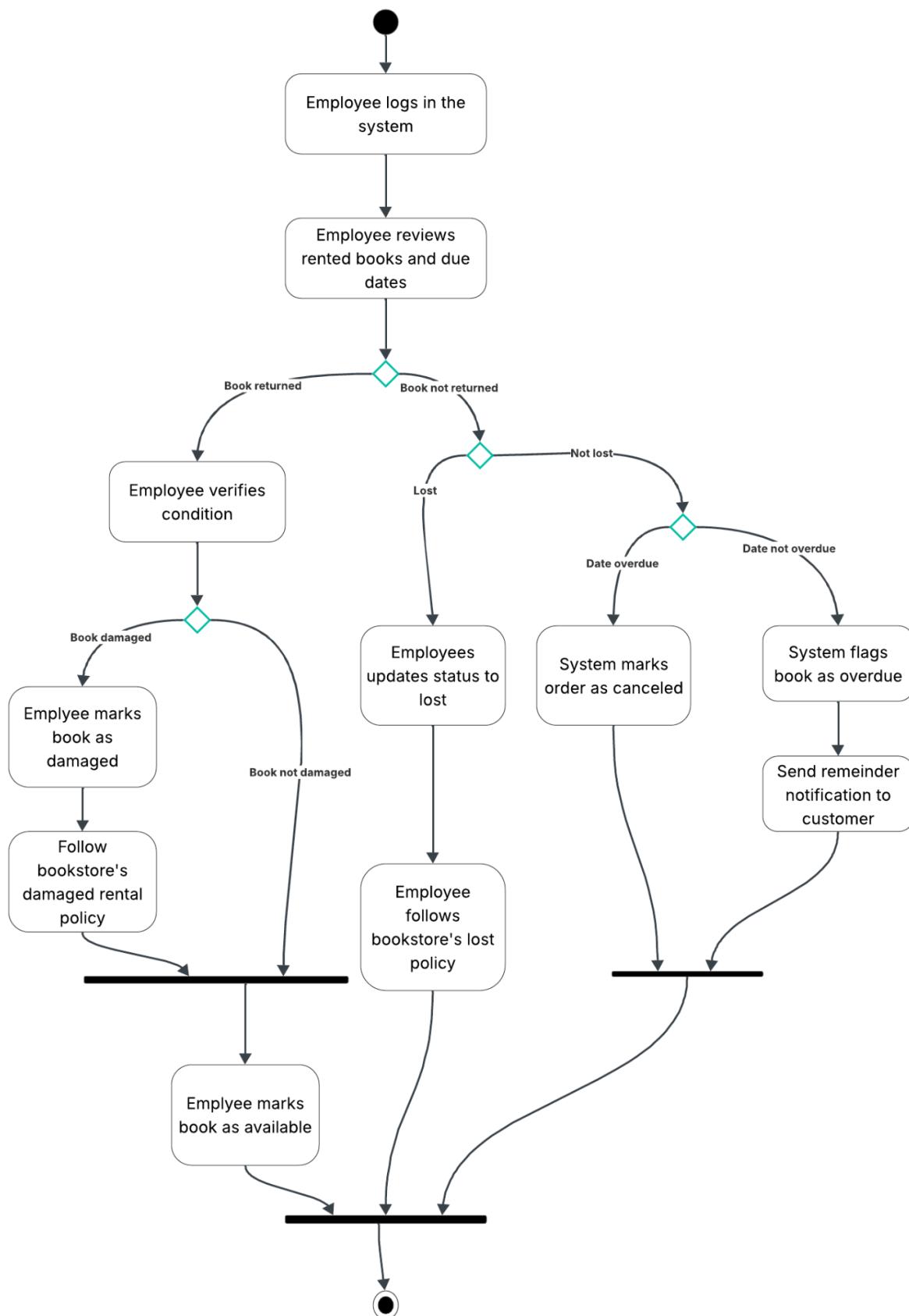
Bookstore Management System Requirements Specification

UC-ER2 Activity Diagram Process In Store Pickup Orders

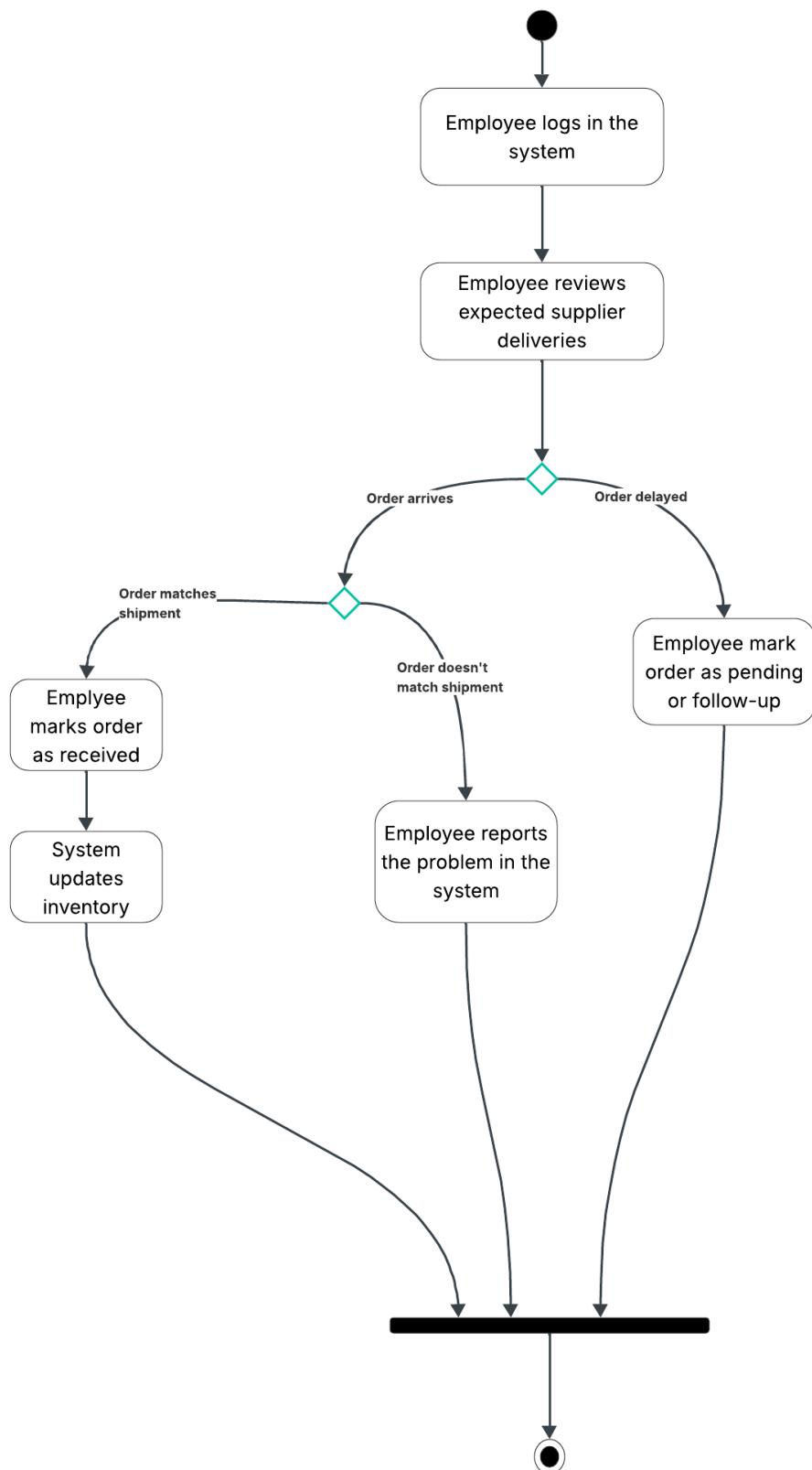


Bookstore Management System Requirements Specification

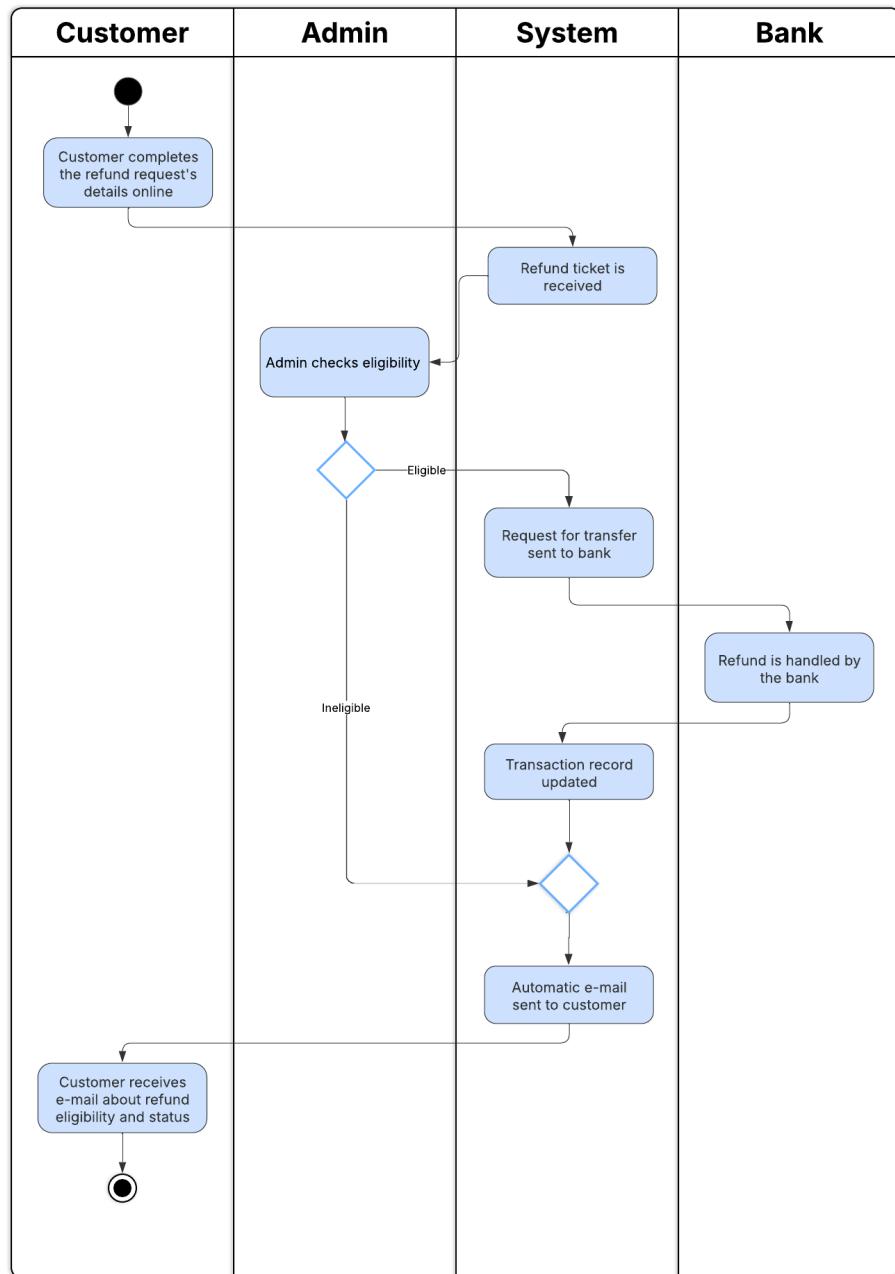
UC-ER3 Activity Diagram Process Rented Books



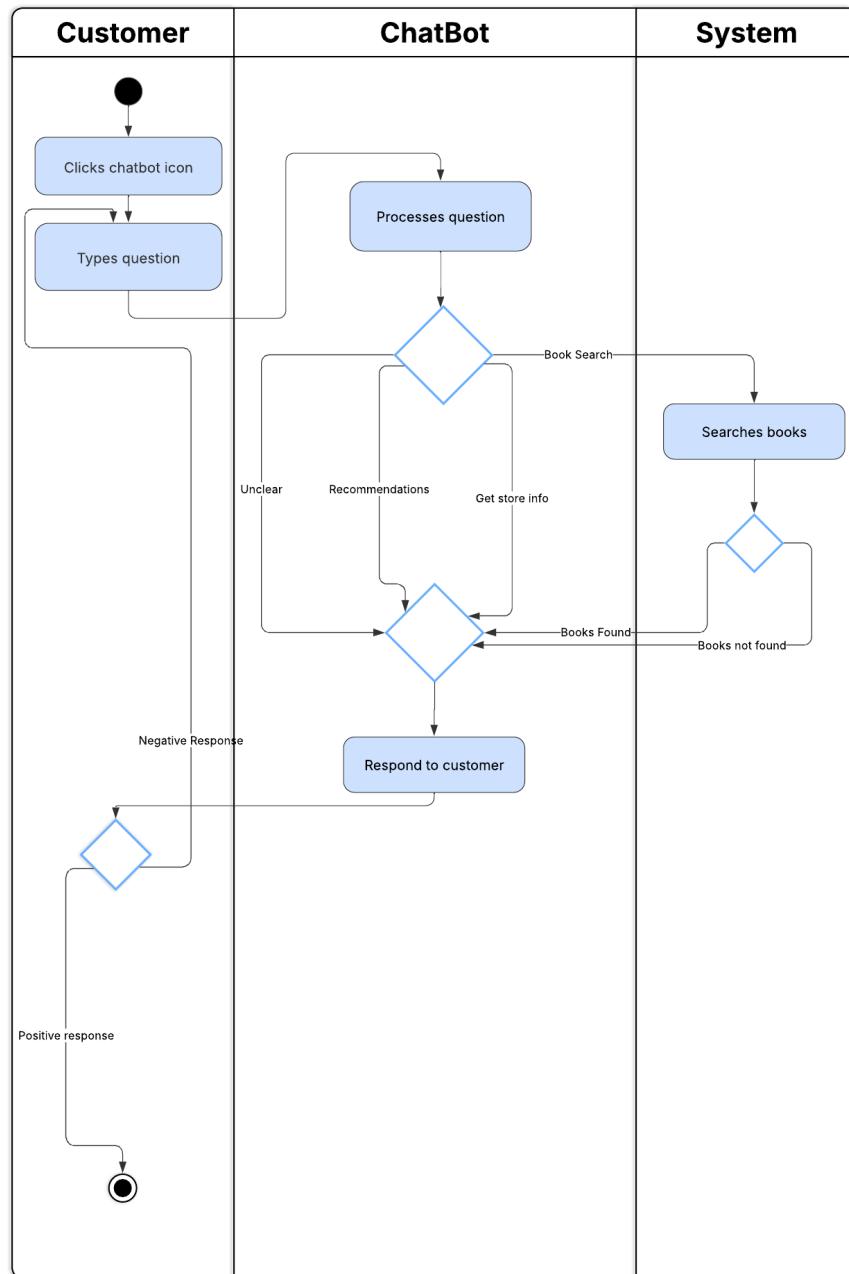
UC-ER4 Activity Diagram Manage Supply deliveries

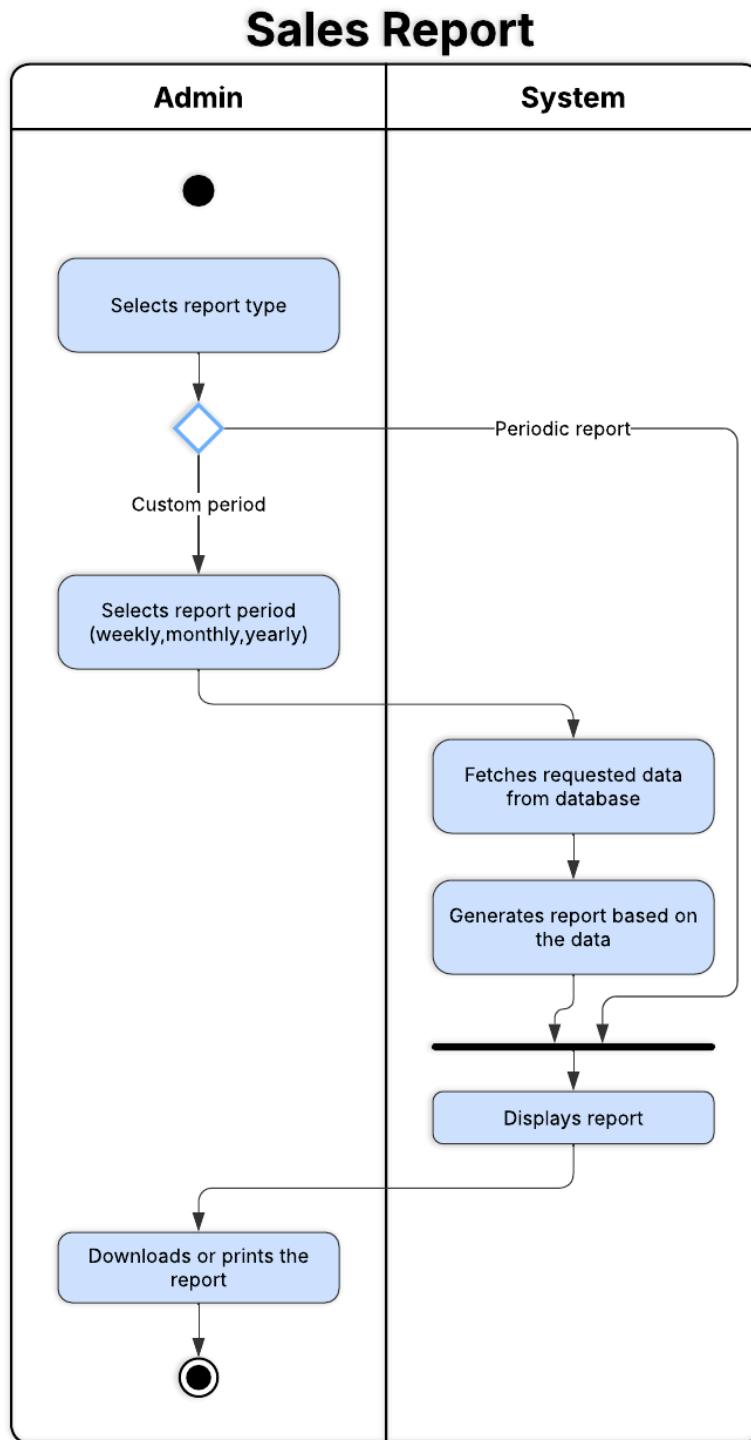


Online Refunds

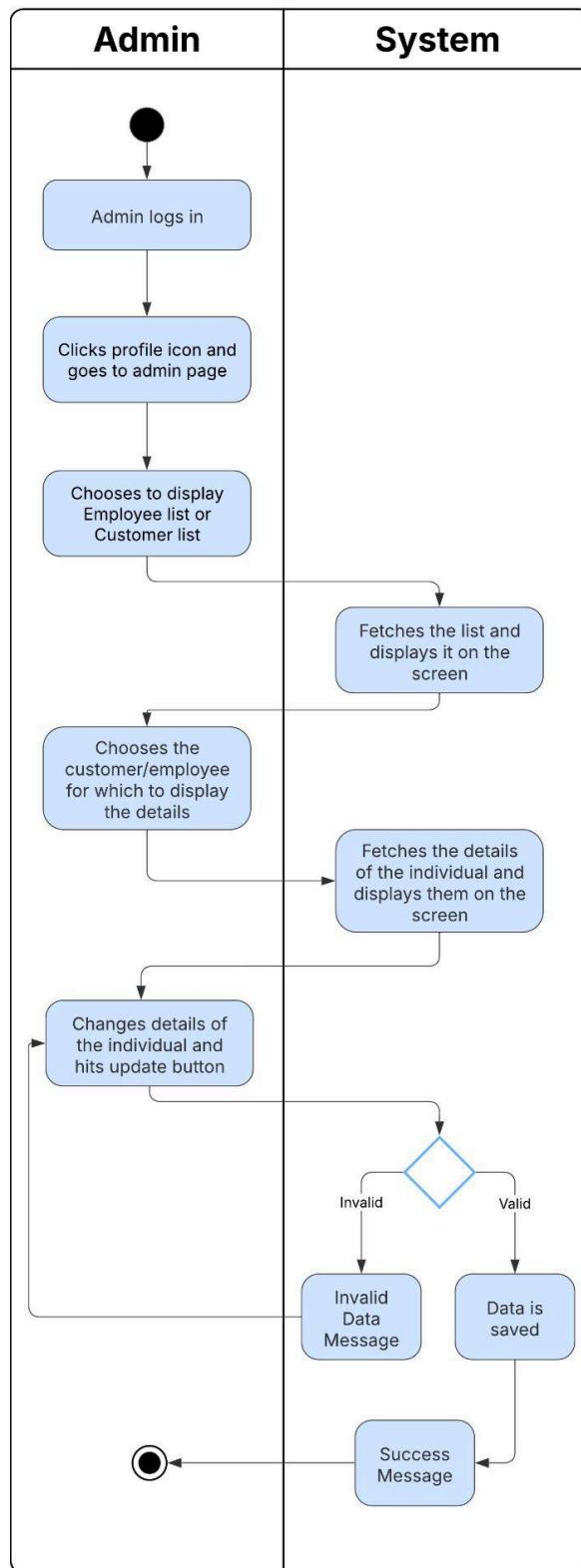


AI ChatBot

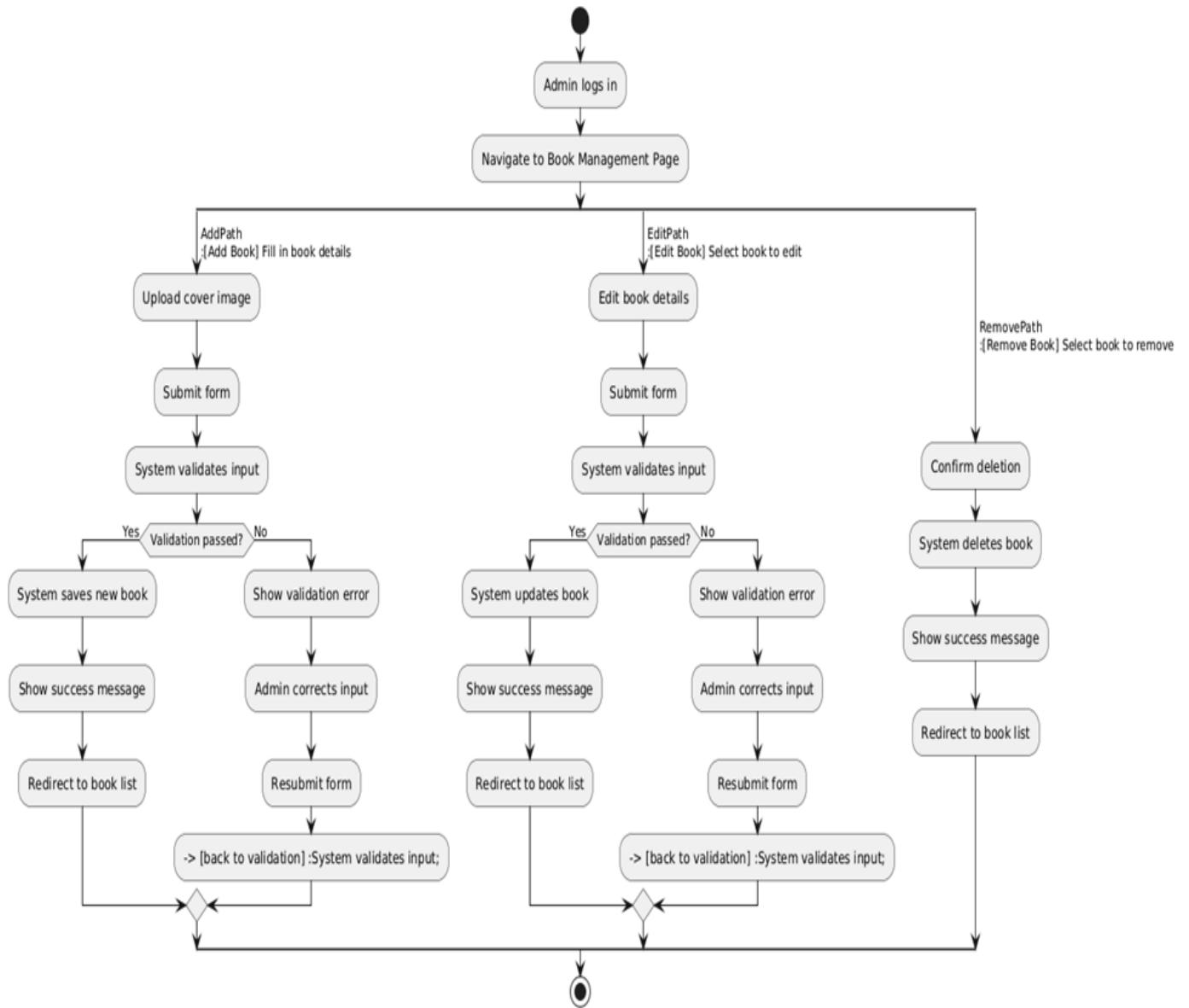




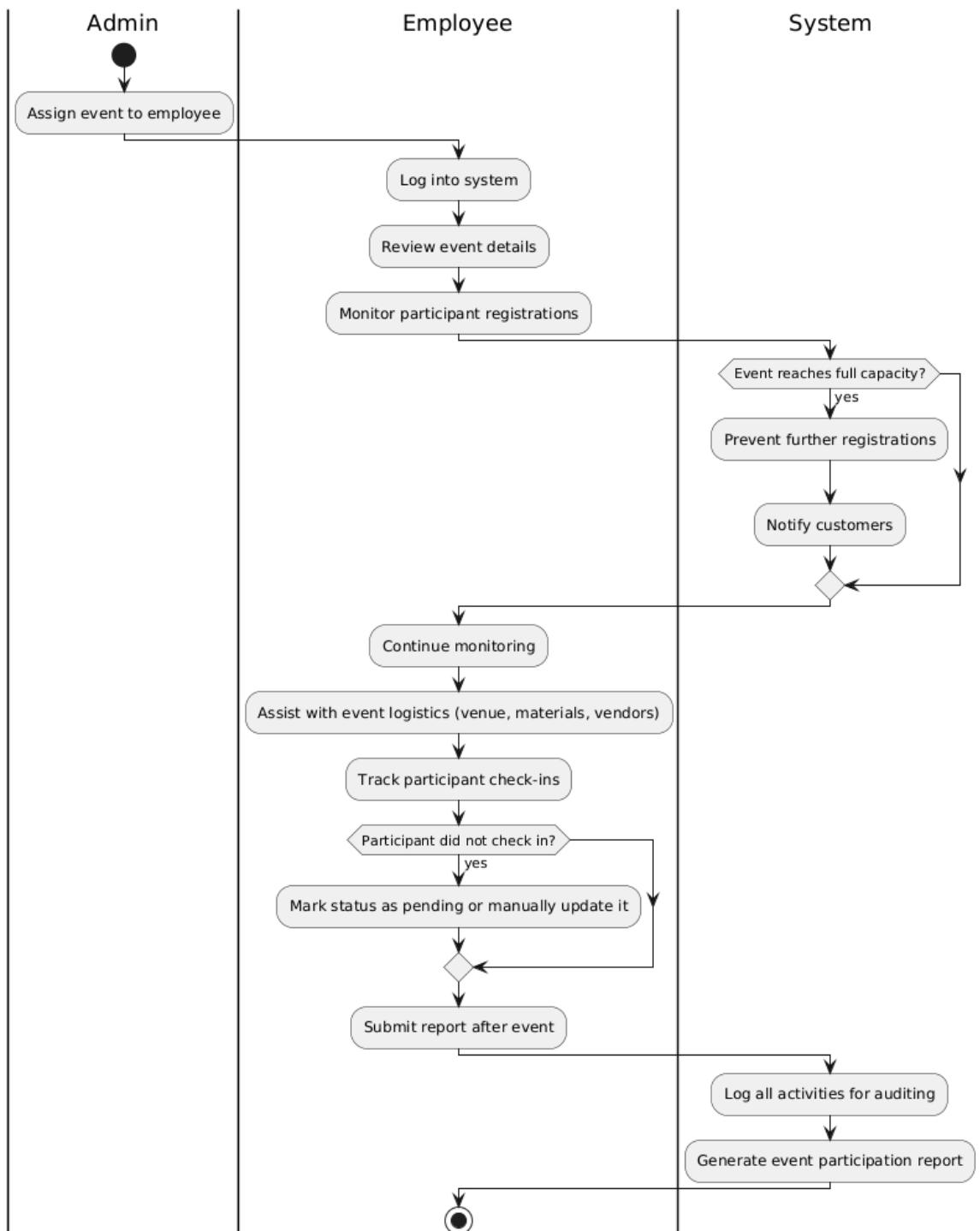
Customer and Employee Data Management



UC08 - Add, Edit Or Remove A Book

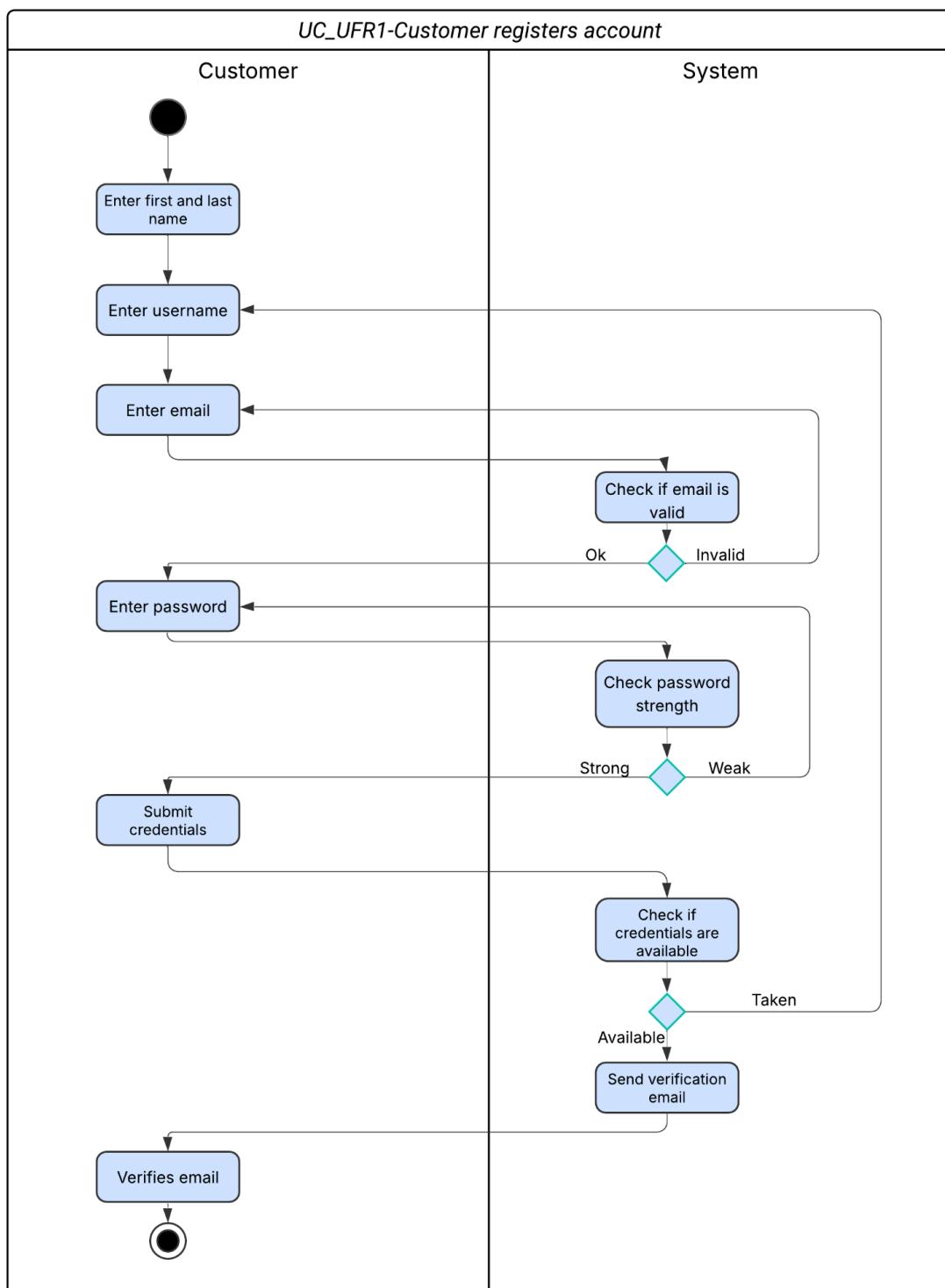


Manage Events

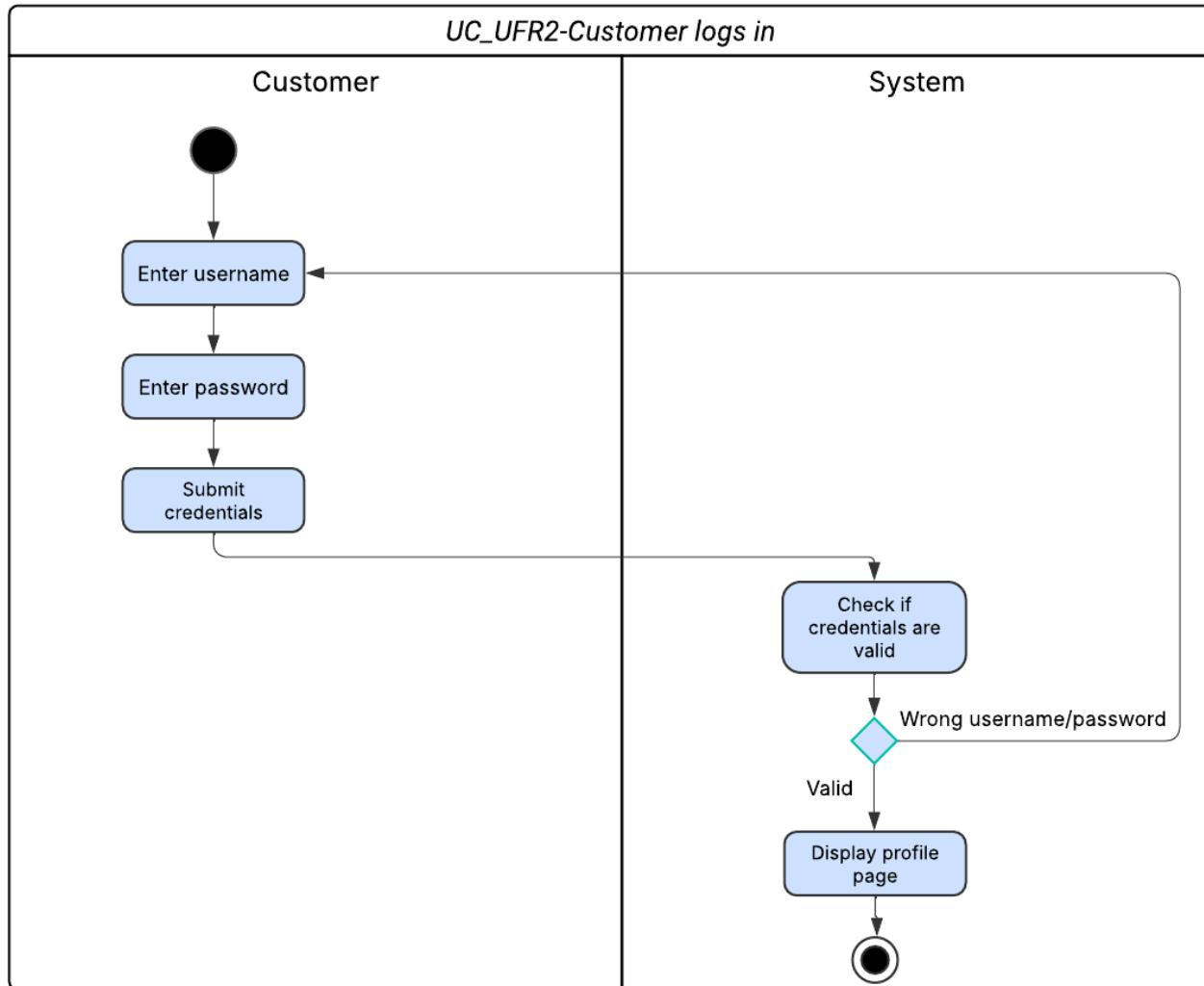


Bookstore Management System Requirements Specification

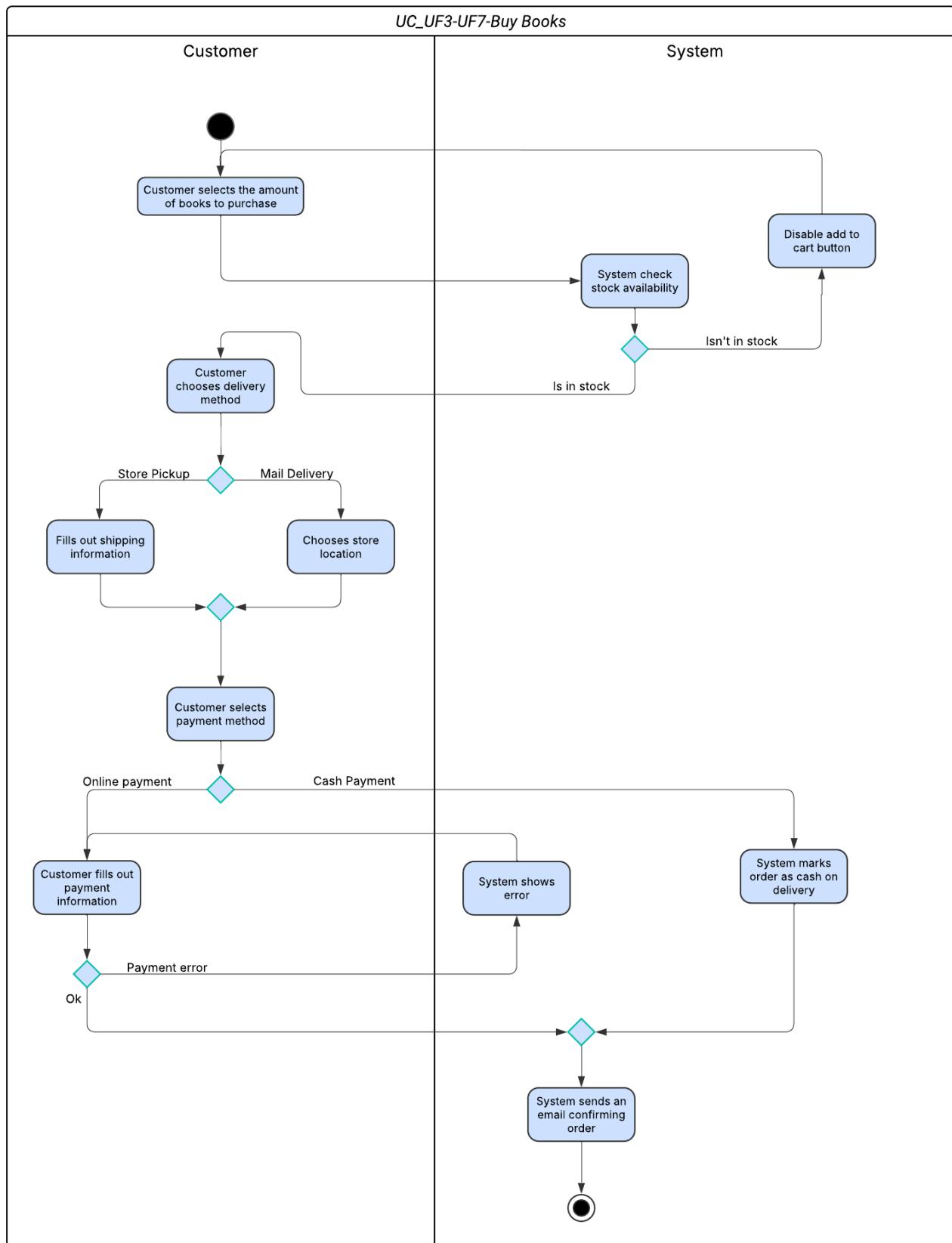
3.2. UC_UFR



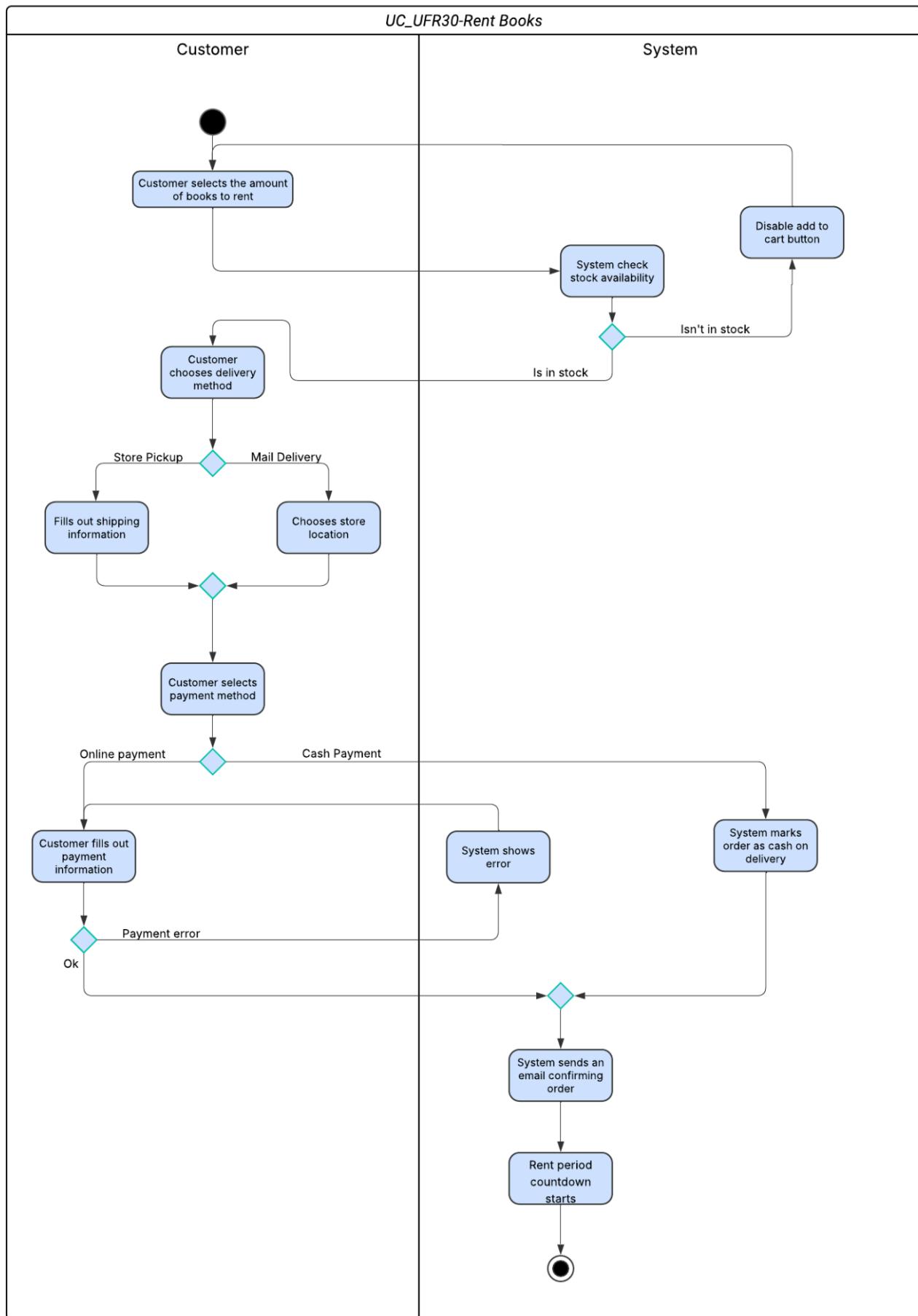
Bookstore Management System Requirements Specification



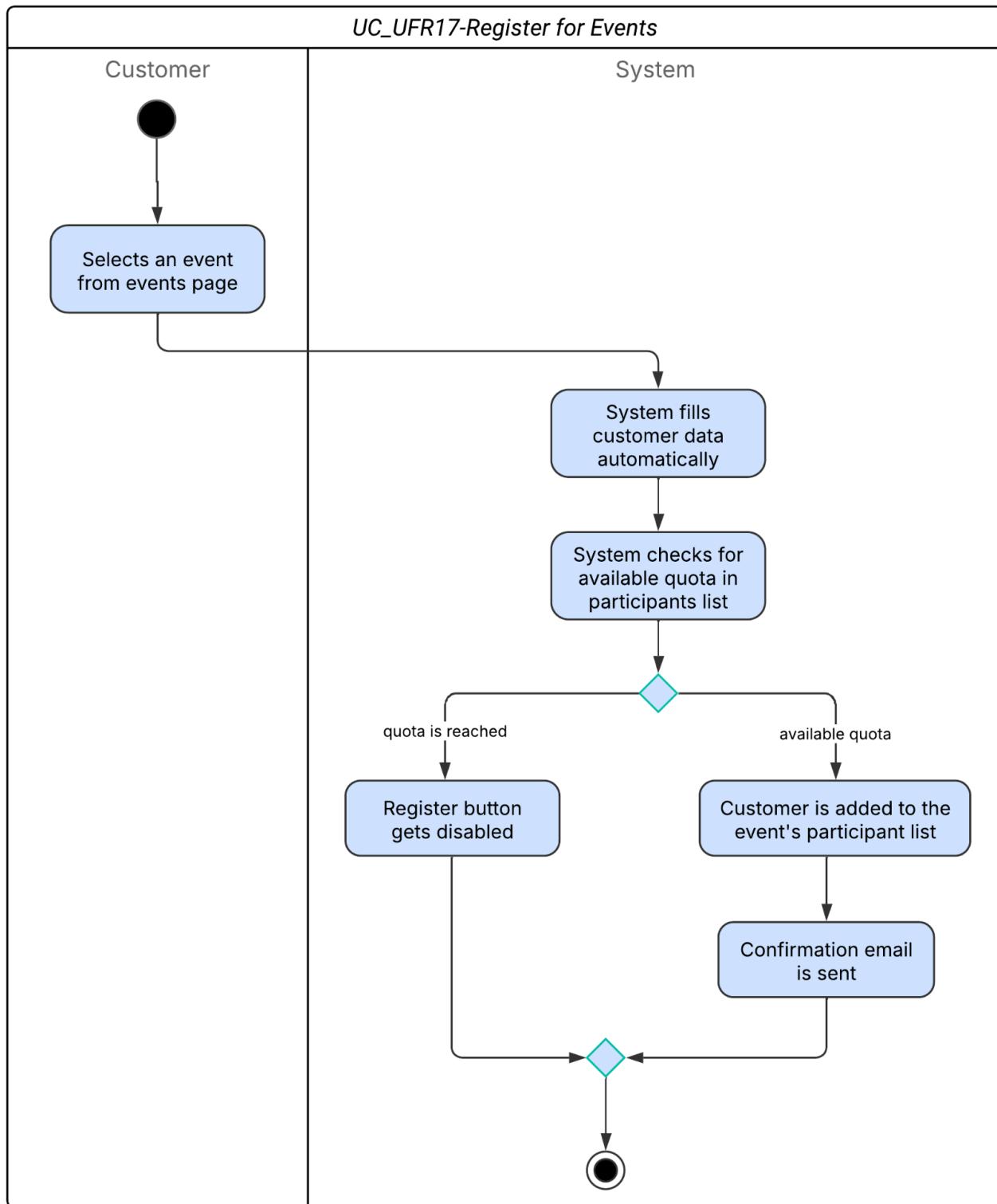
Bookstore Management System Requirements Specification



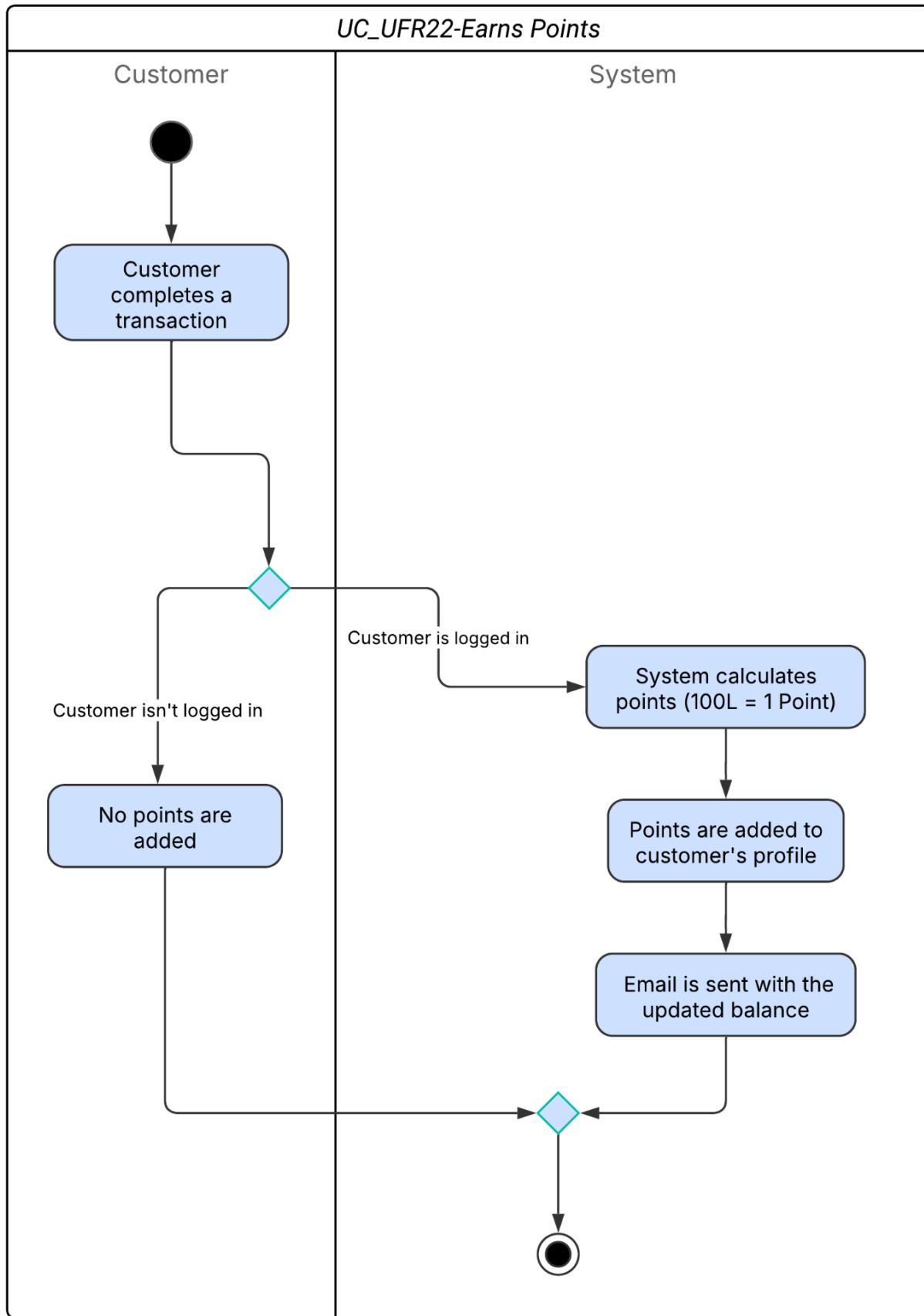
Bookstore Management System Requirements Specification



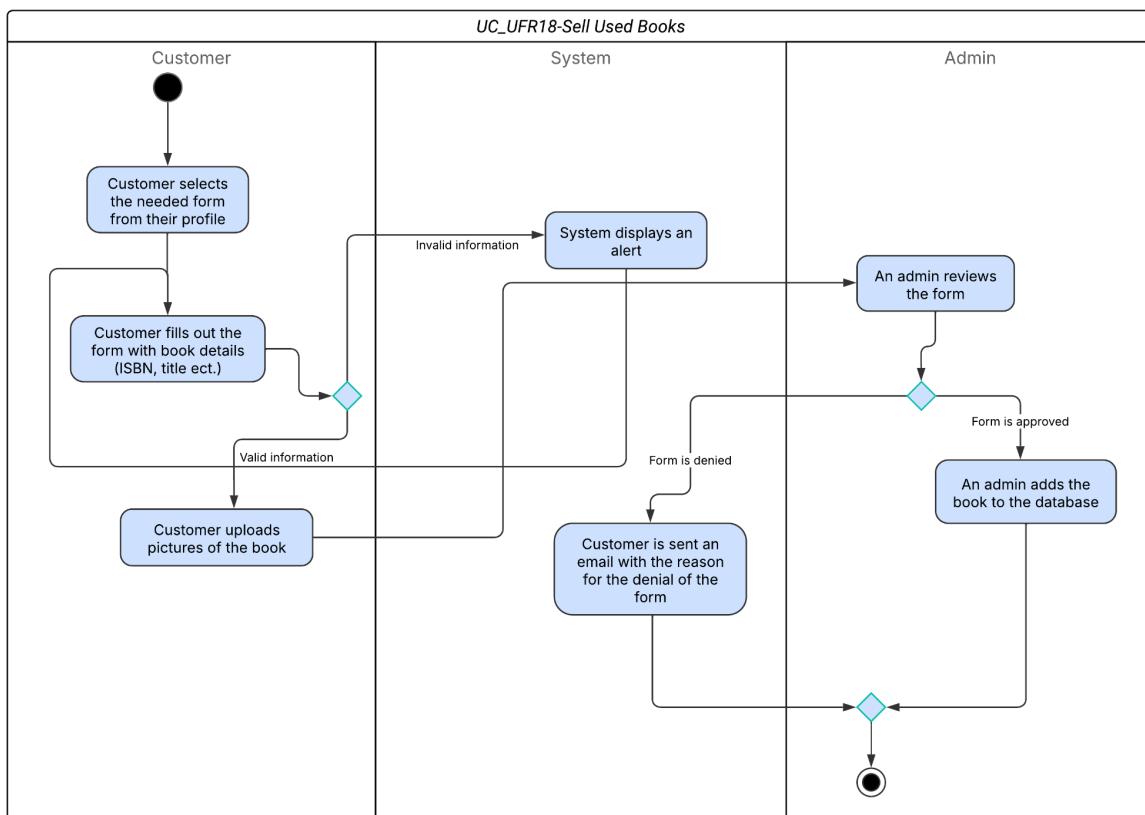
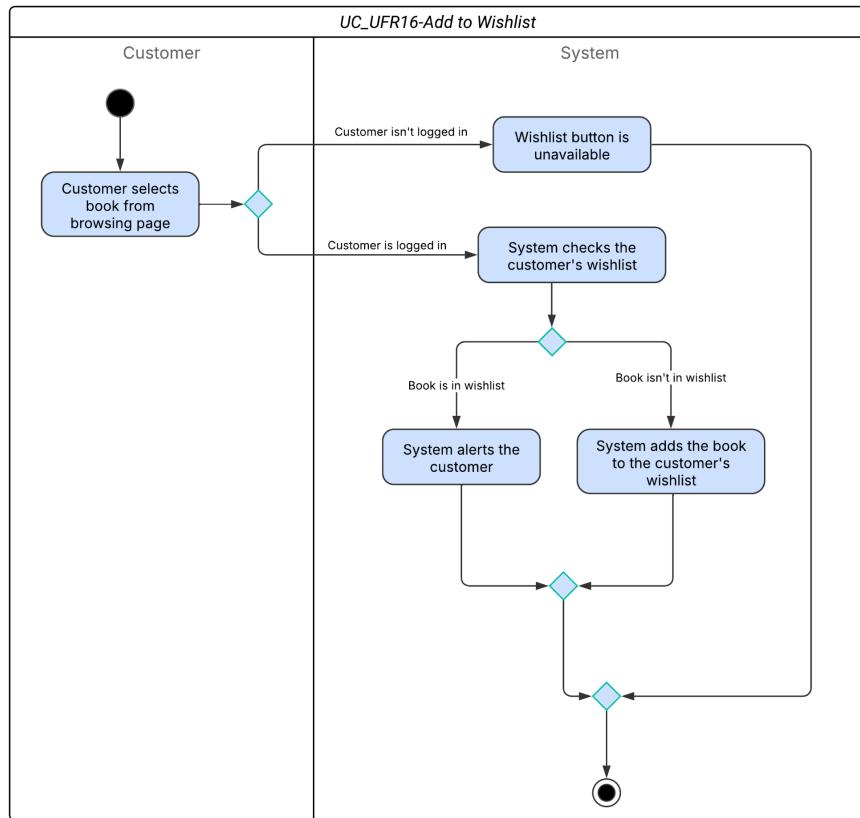
Bookstore Management System Requirements Specification



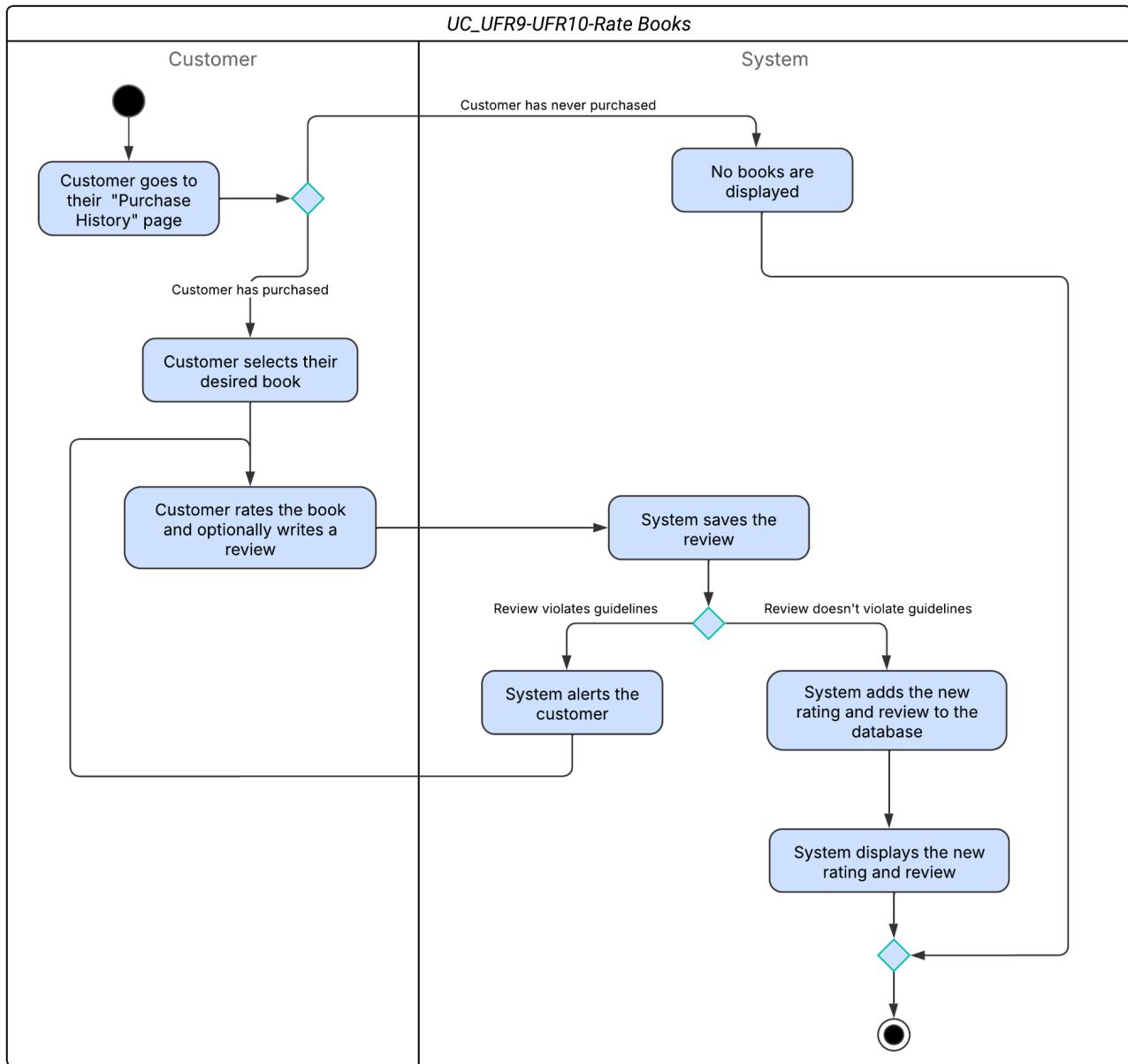
Bookstore Management System Requirements Specification



Bookstore Management System Requirements Specification

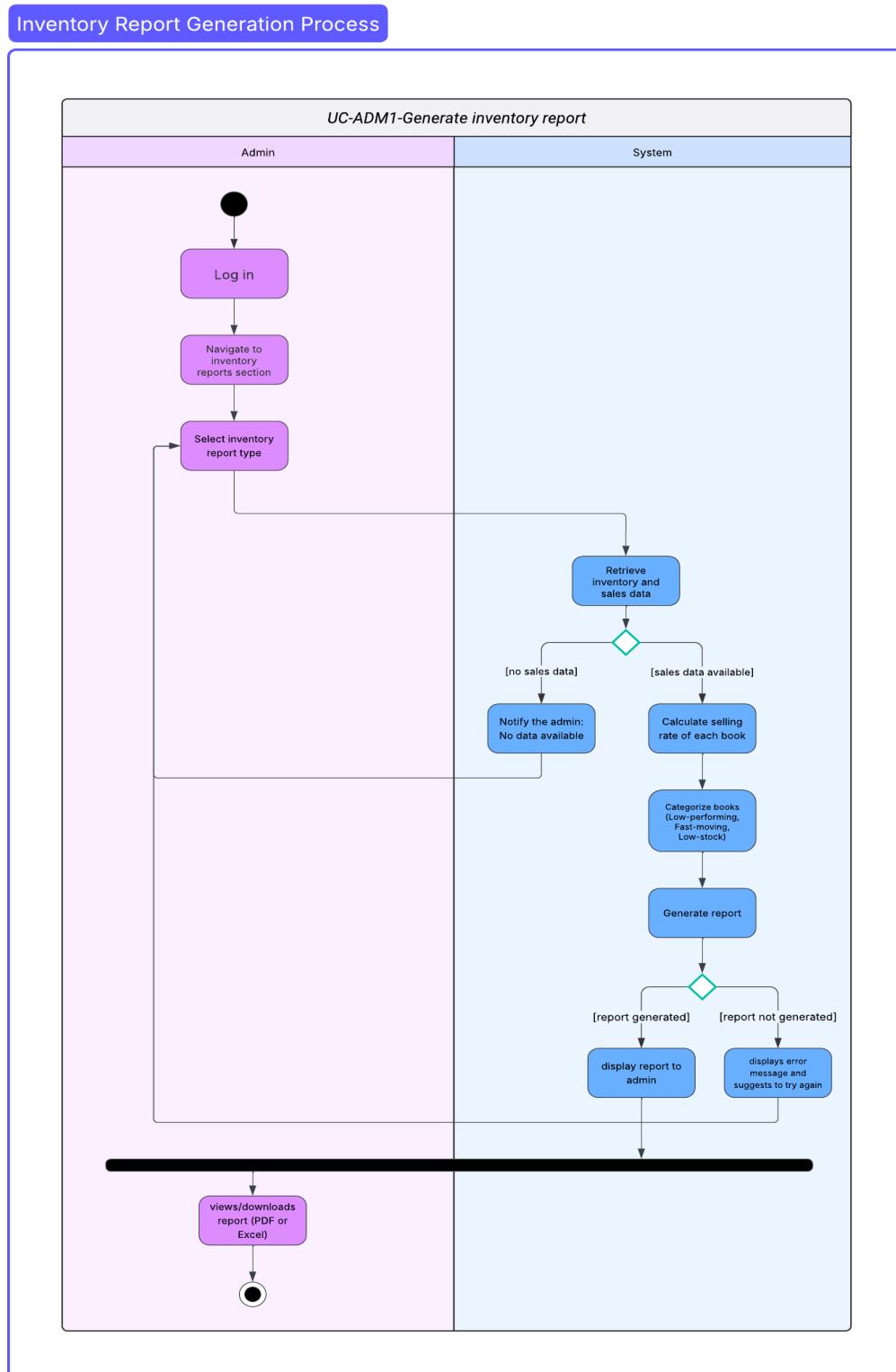


Bookstore Management System Requirements Specification



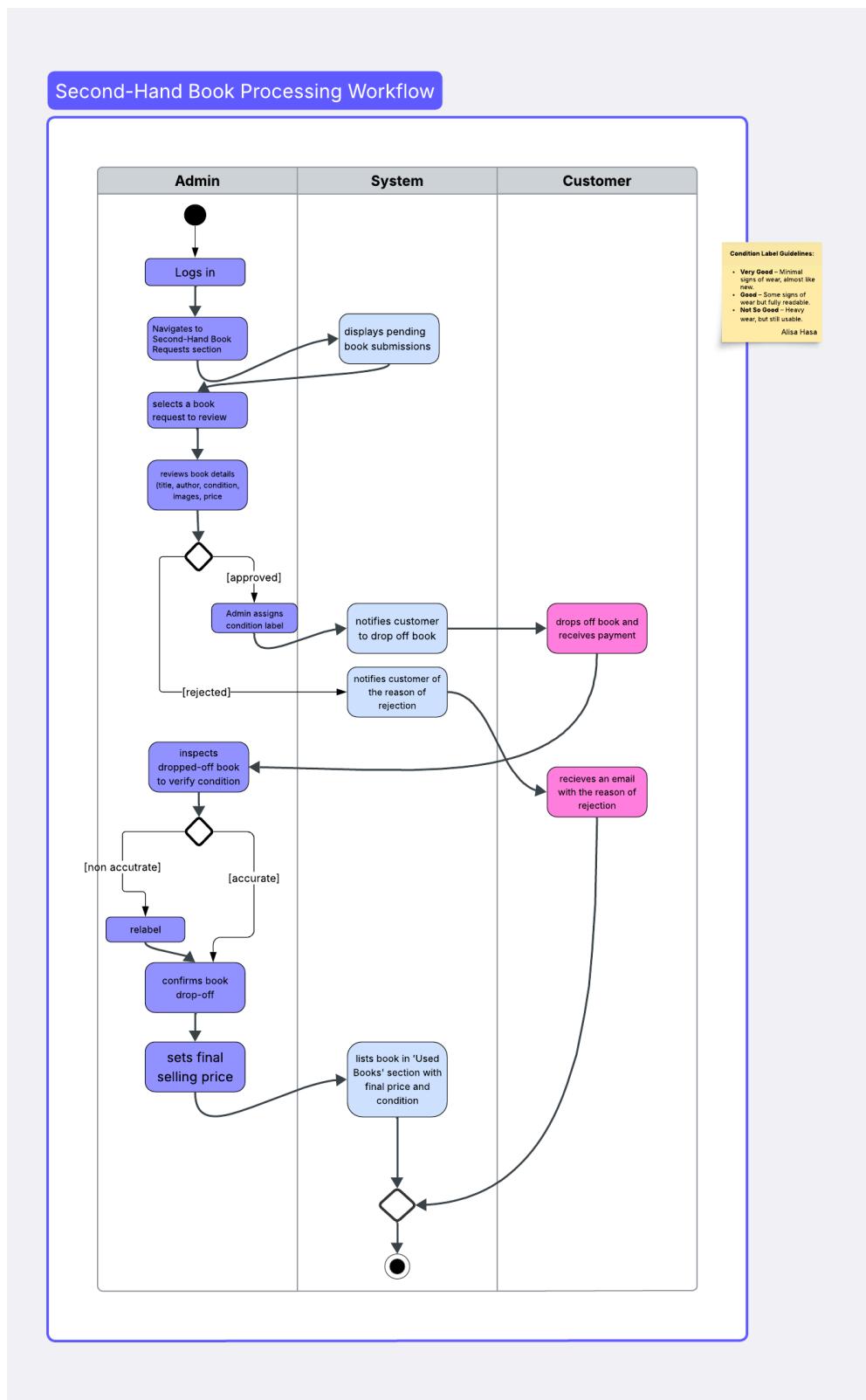
Bookstore Management System Requirements Specification

3.3. Admin?



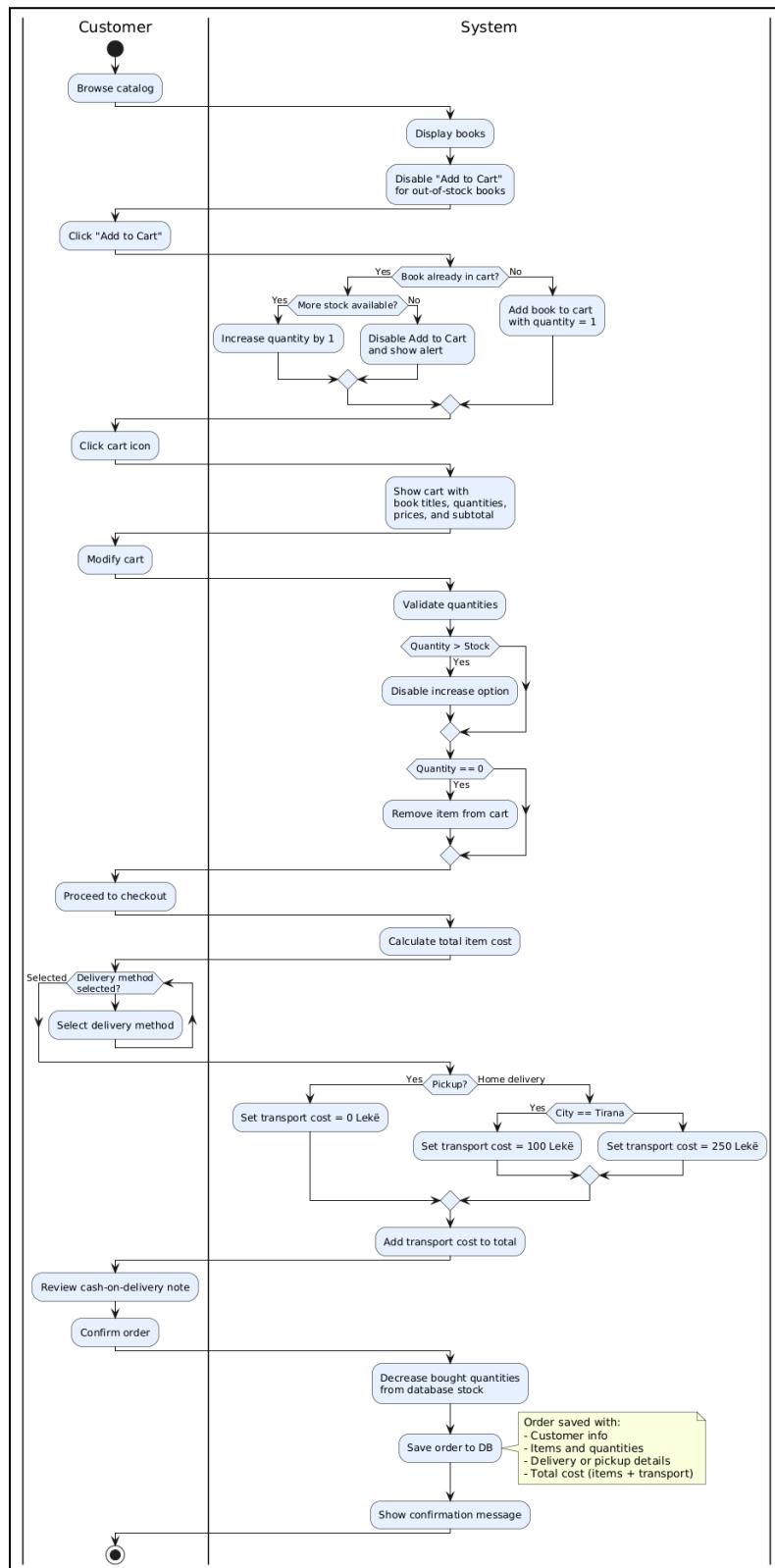
Bookstore Management System Requirements Specification

FR-22: Confirms and lists second-hand books



Bookstore Management System Requirements Specification

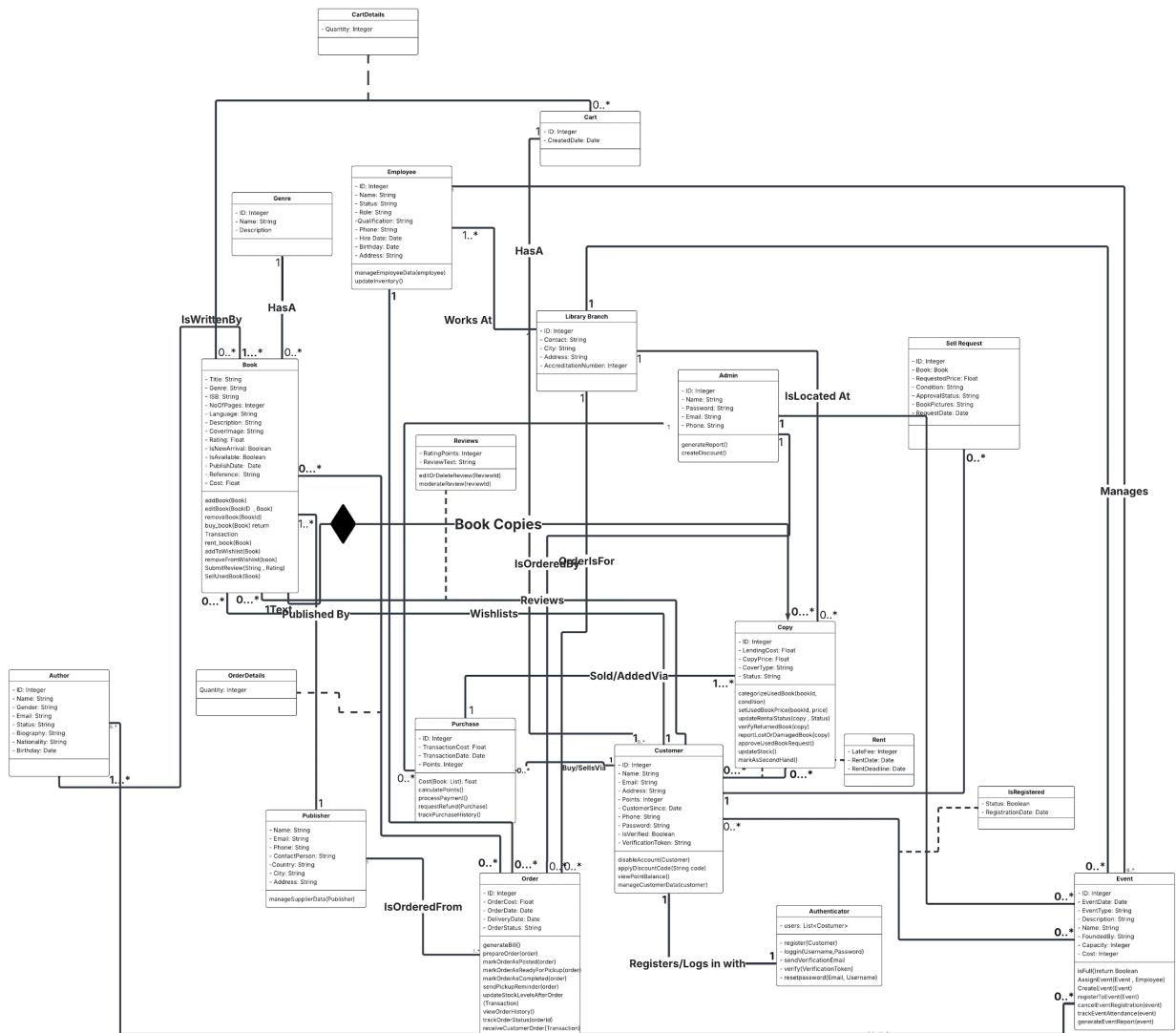
UC_UFR4-20-Customer manages cart and places order



Bookstore Management System Requirements Specification

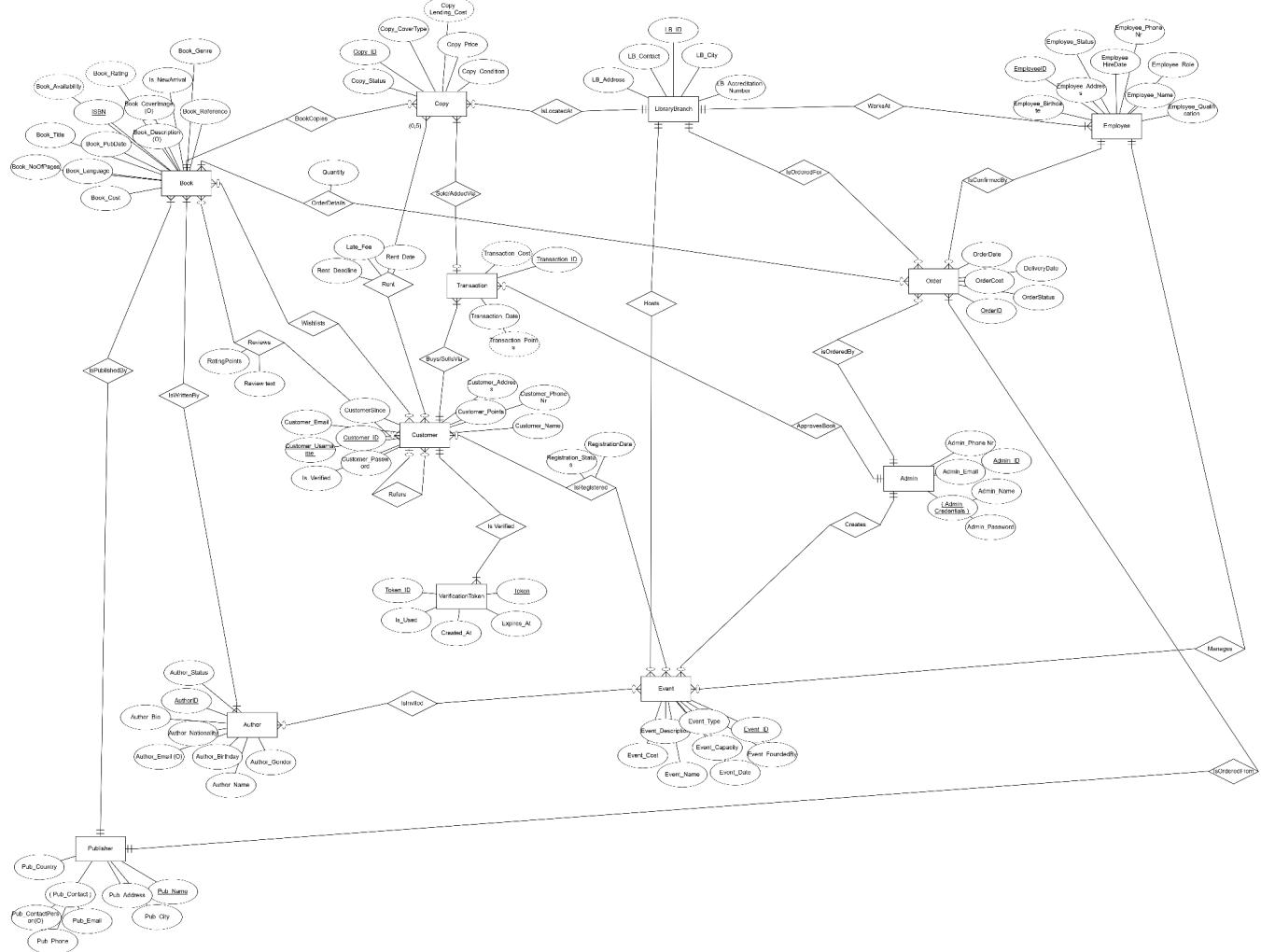
Bookstore Management System Requirements Specification

6. Class Diagram



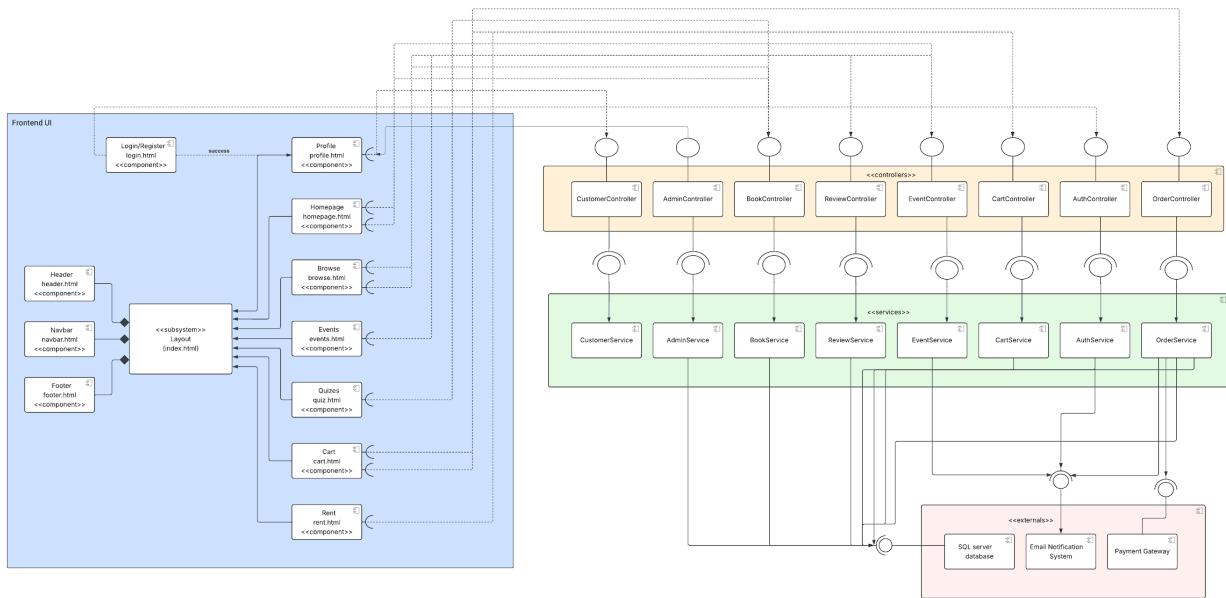
Bookstore Management System Requirements Specification

7. ERD



Bookstore Management System Requirements Specification

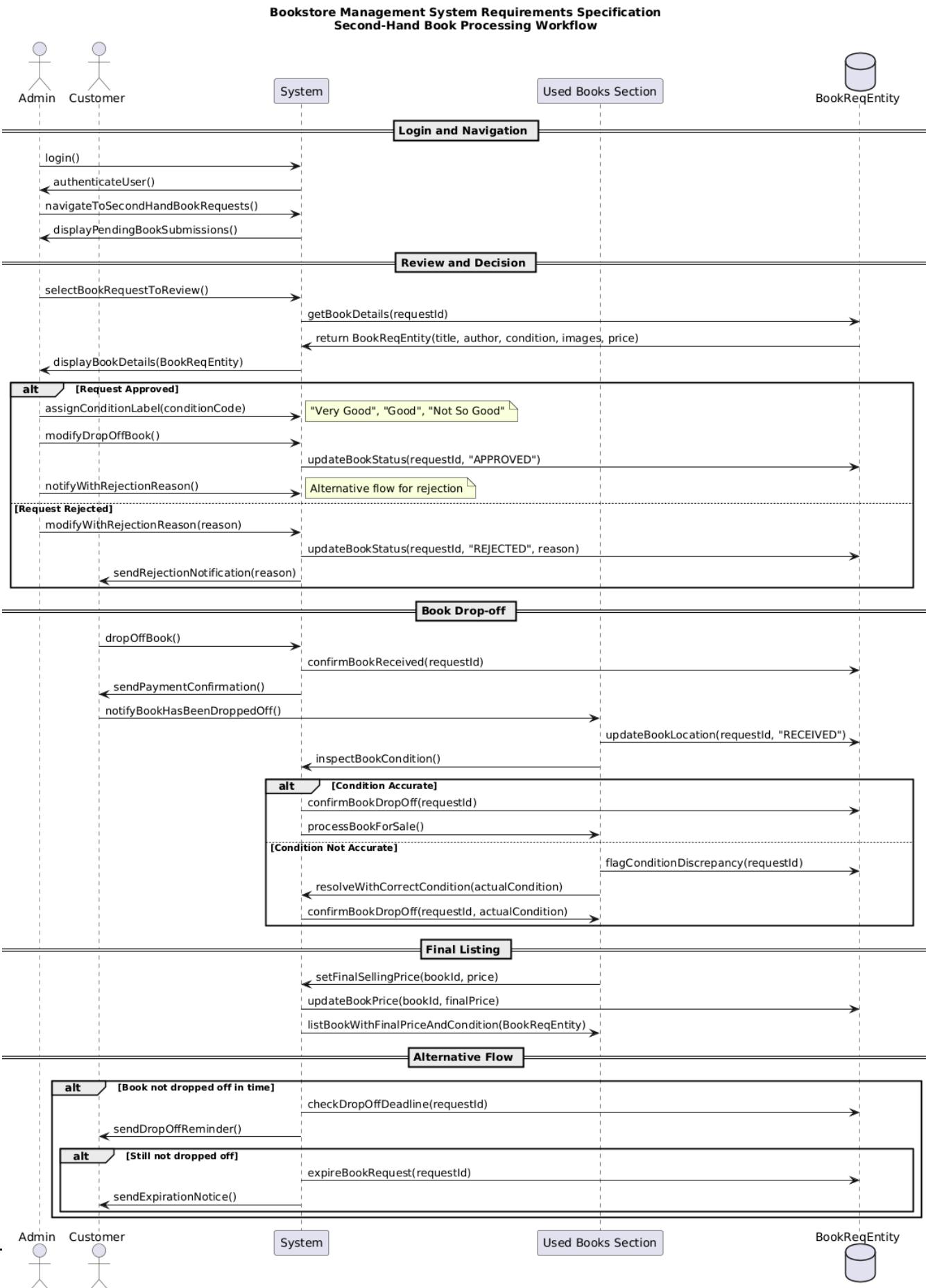
8. Component diagram



Bookstore Management System Requirements Specification

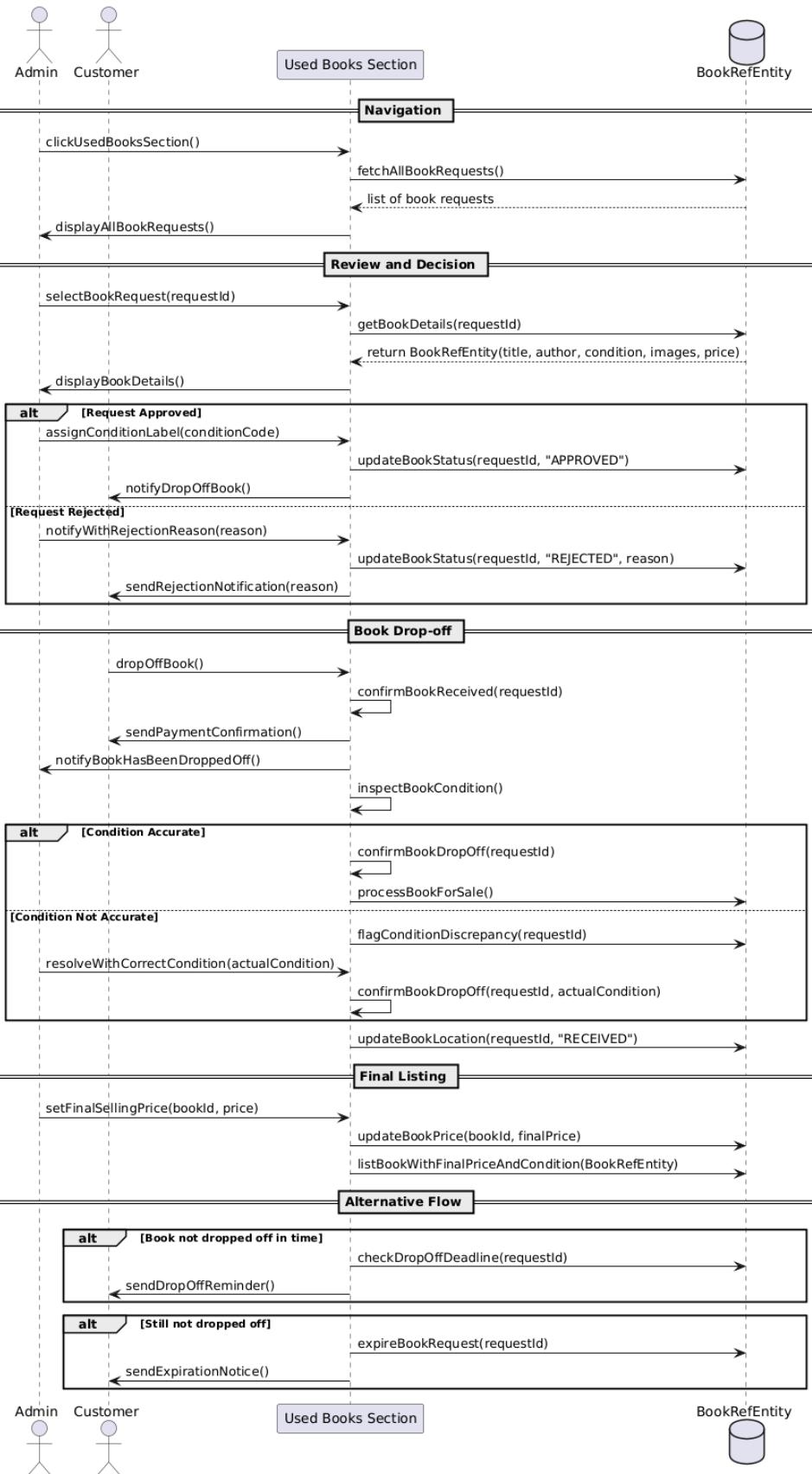
9. Sequence diagrams

Bookstore Management System Requirements Specification

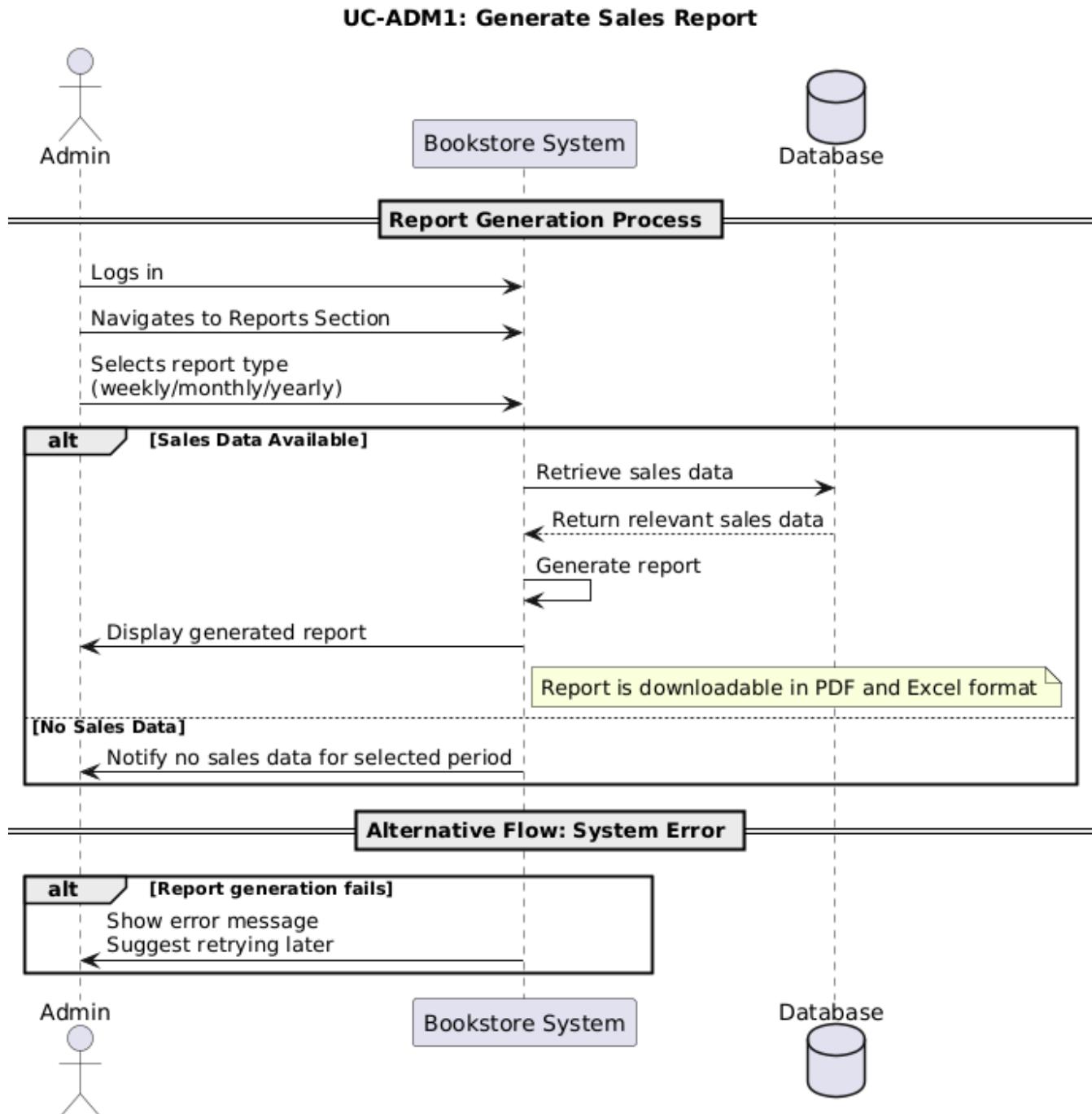


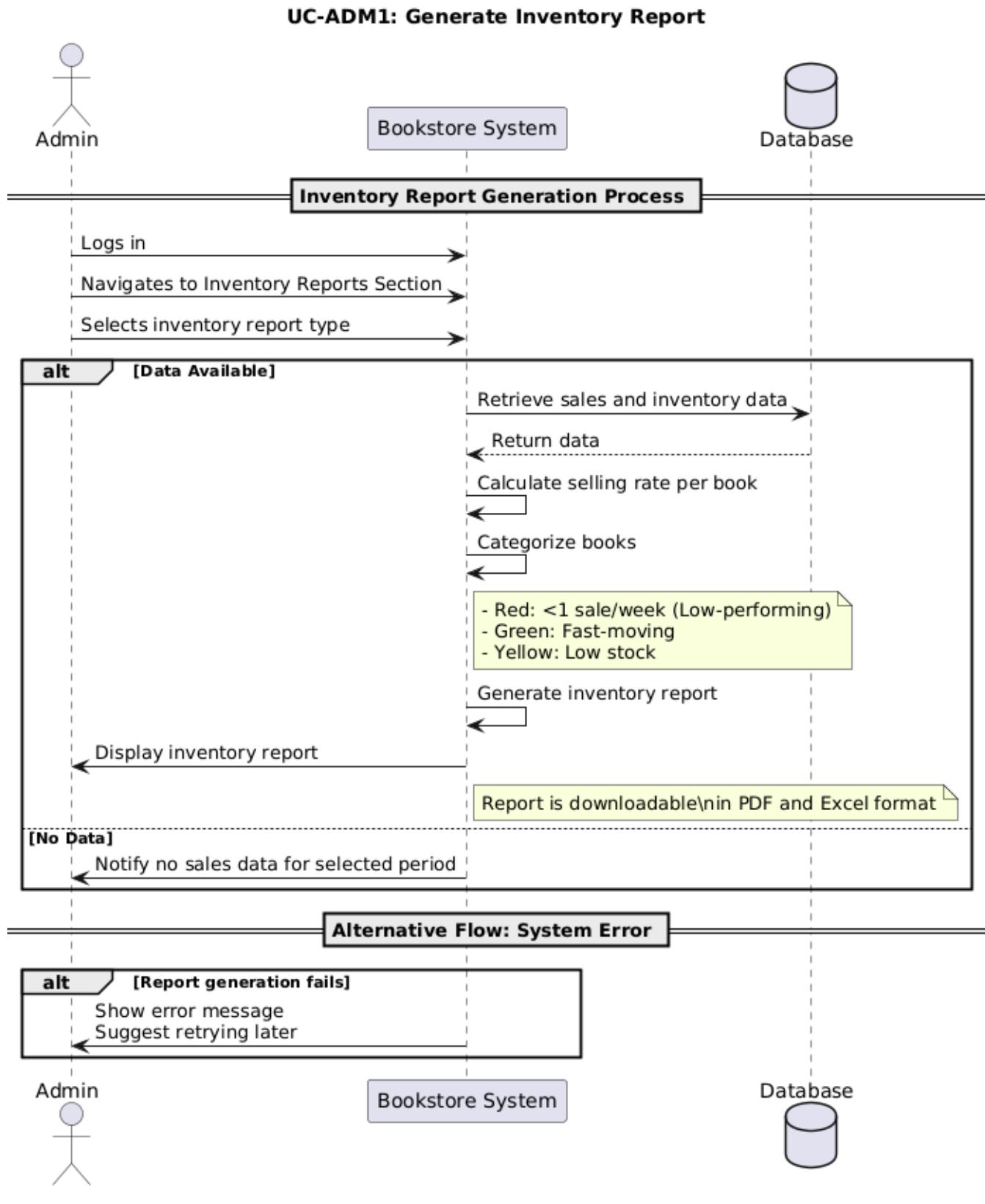
Bookstore Management System Requirements Specification

FR-22: Confirms and lists second hand books



Bookstore Management System Requirements Specification

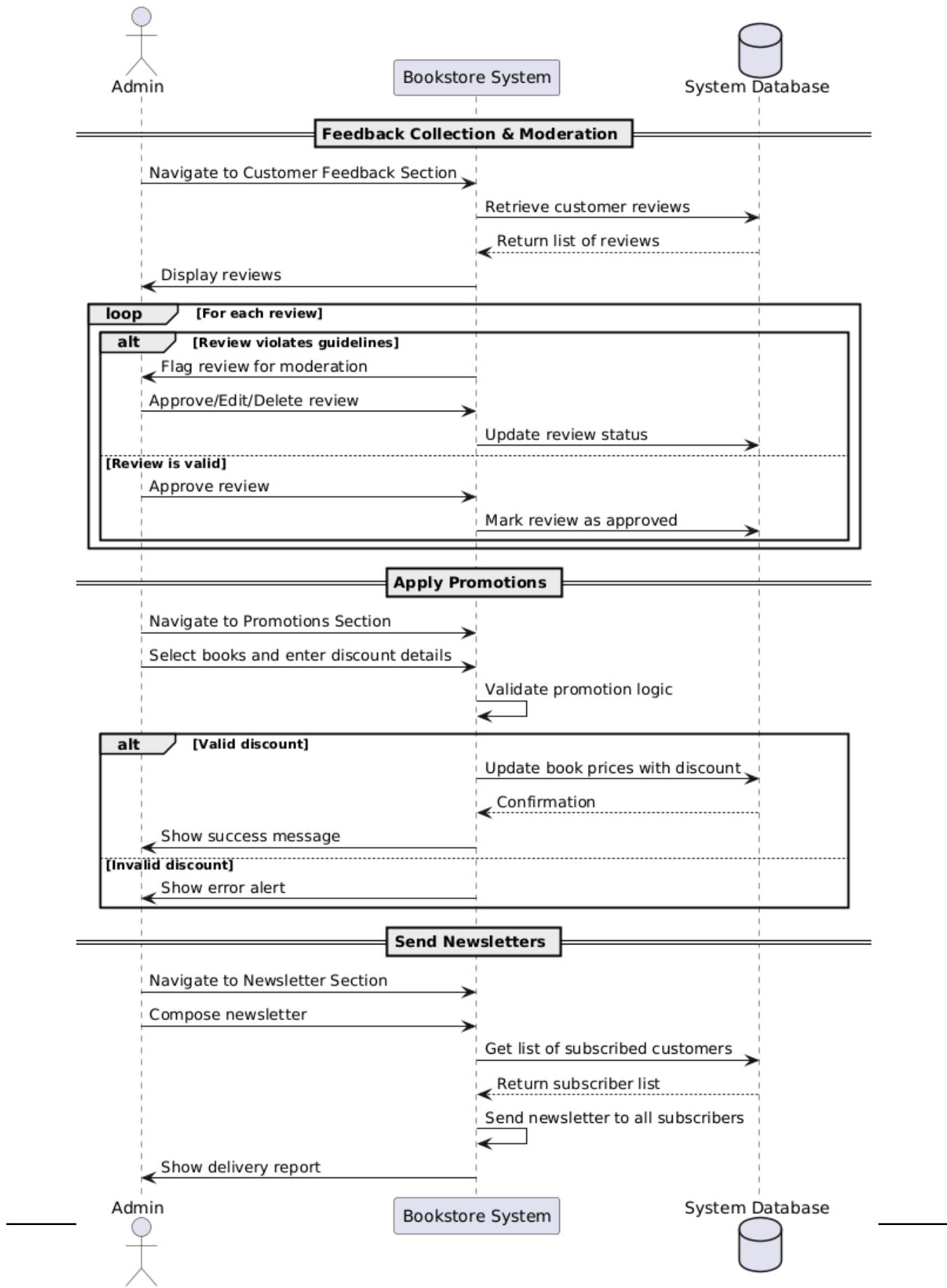




Bookstore Management System Requirements Specification

Bookstore Management System Requirements Specification

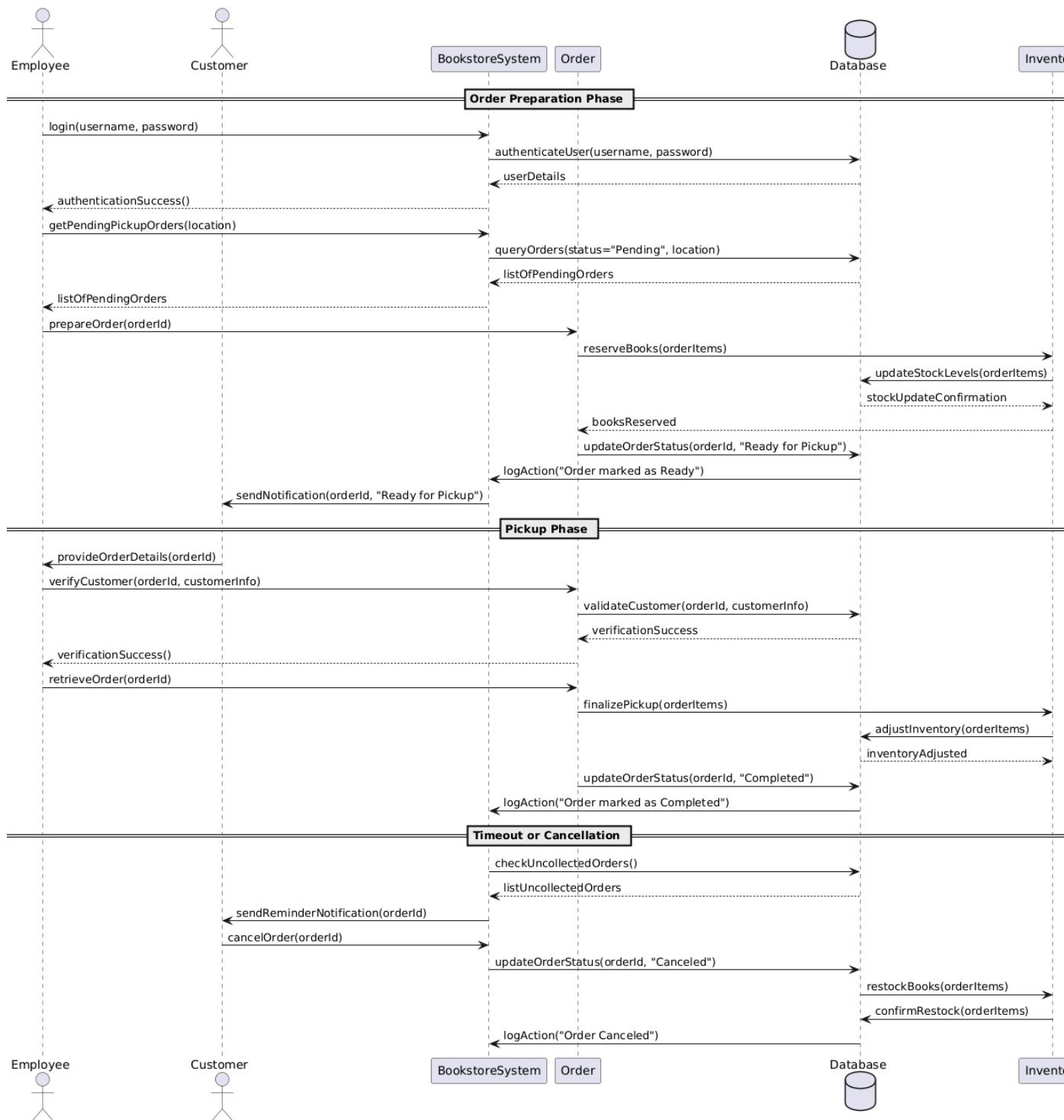
UC-ADM2: Customer Engagement and Promotions



Bookstore Management System Requirements Specification

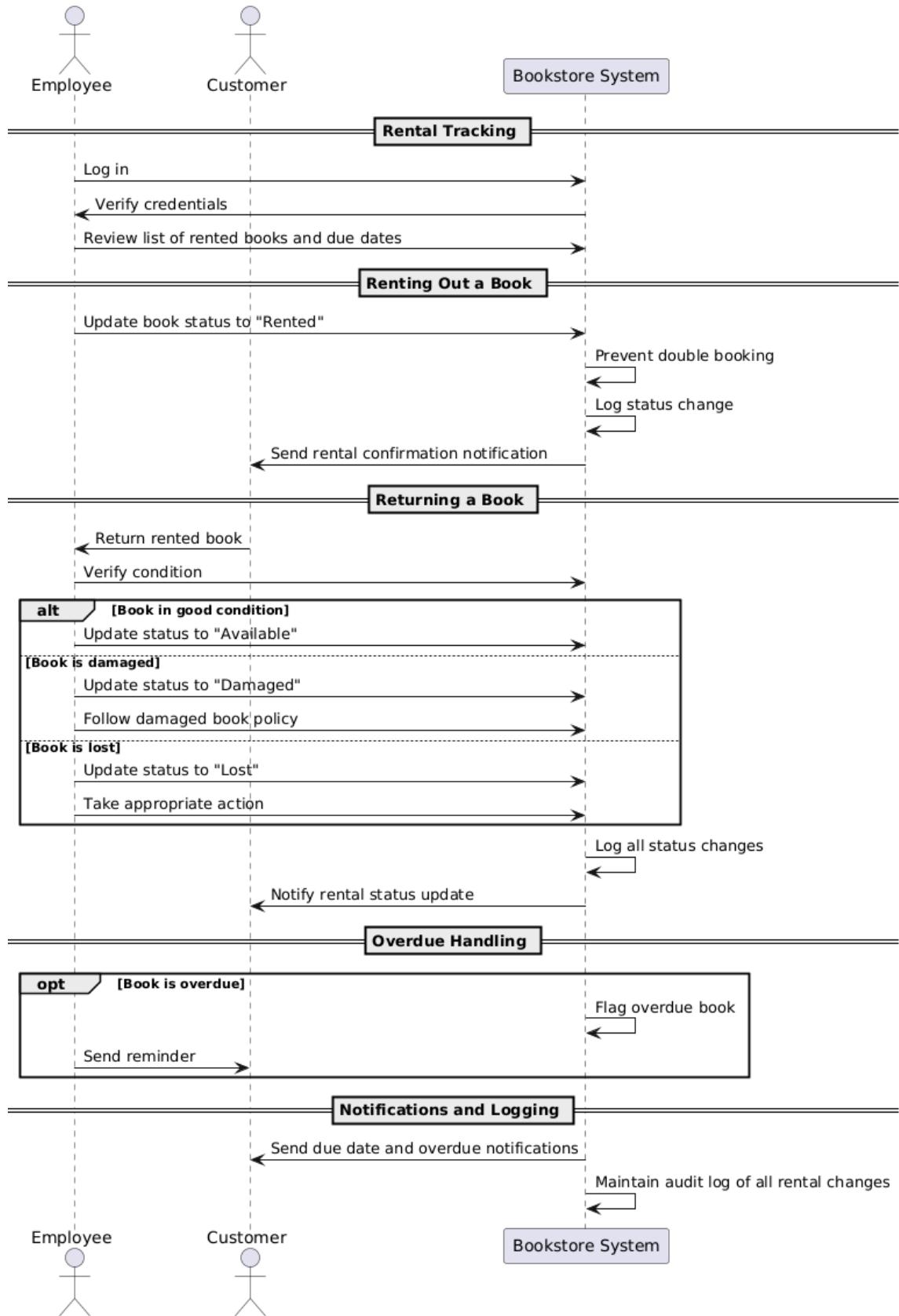
Employee UC Sequence Diagrams

UC-ER Employee Process InStore pickup Orders



Bookstore Management System Requirements Specification

UC-ER Handle Rented Books



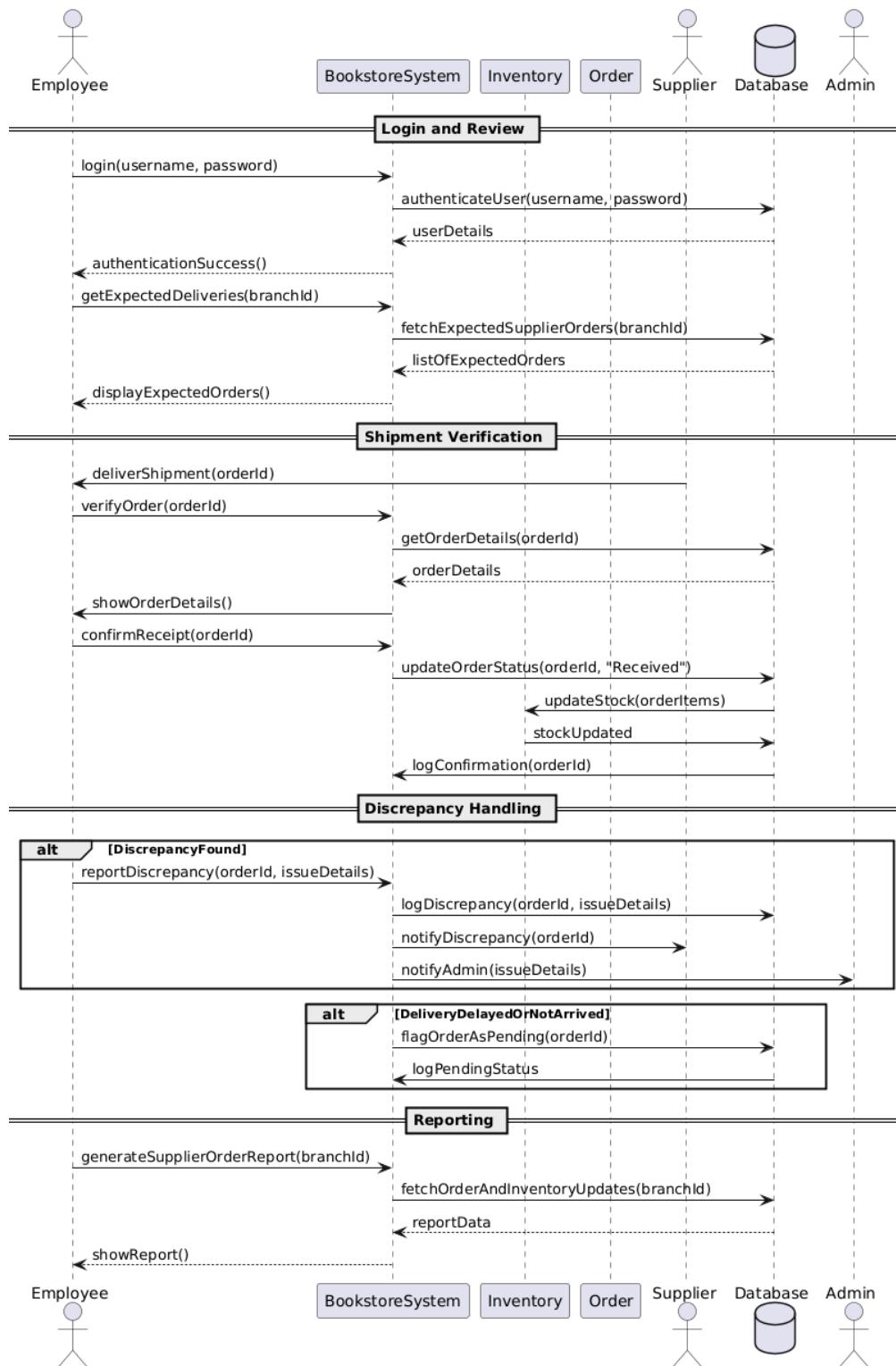
Bookstore Management System Requirements Specification

UC-ER Employee Manages Events



Bookstore Management System Requirements Specification

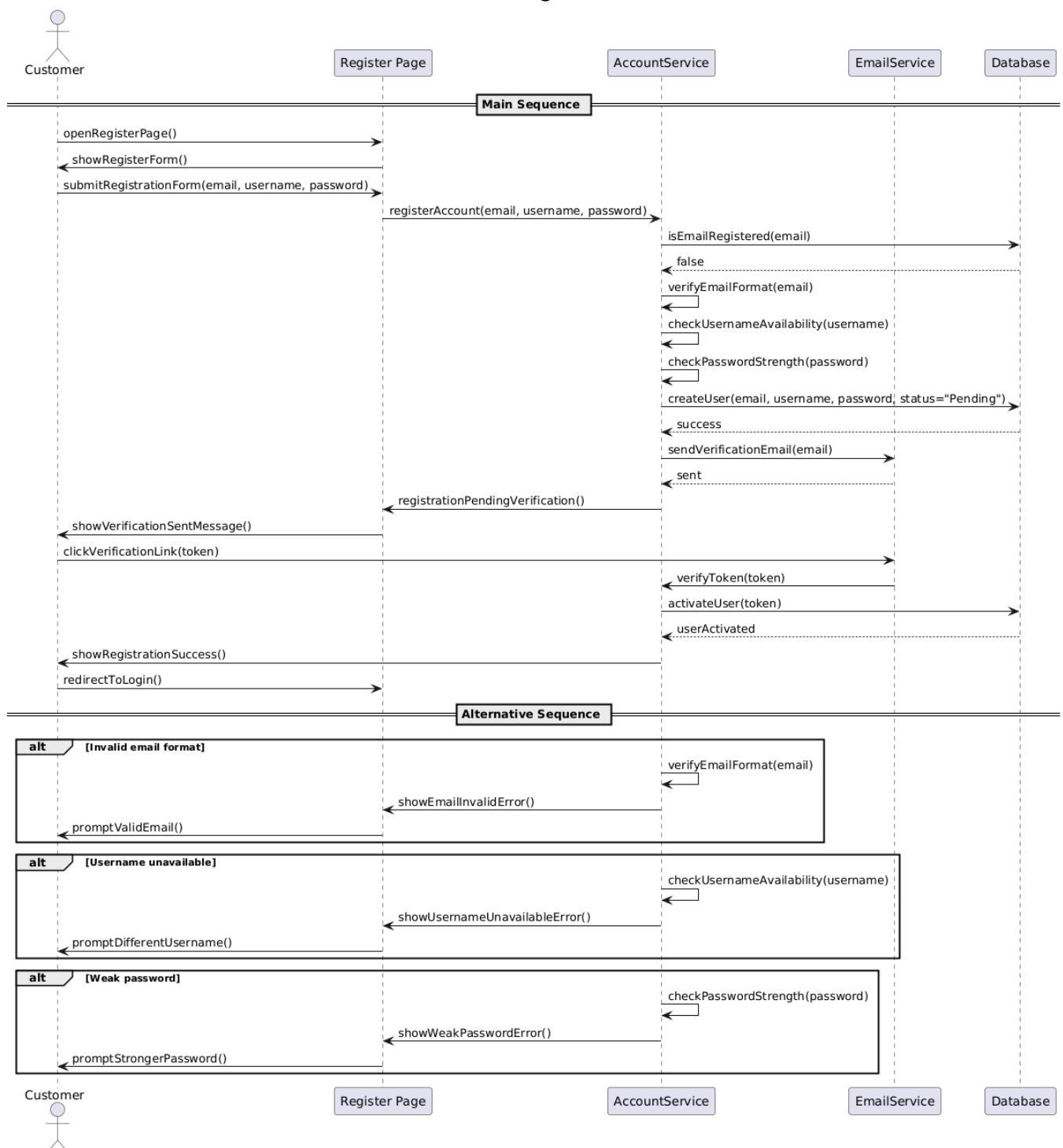
UC-ER Employee Handles Supply Orders



Bookstore Management System Requirements Specification

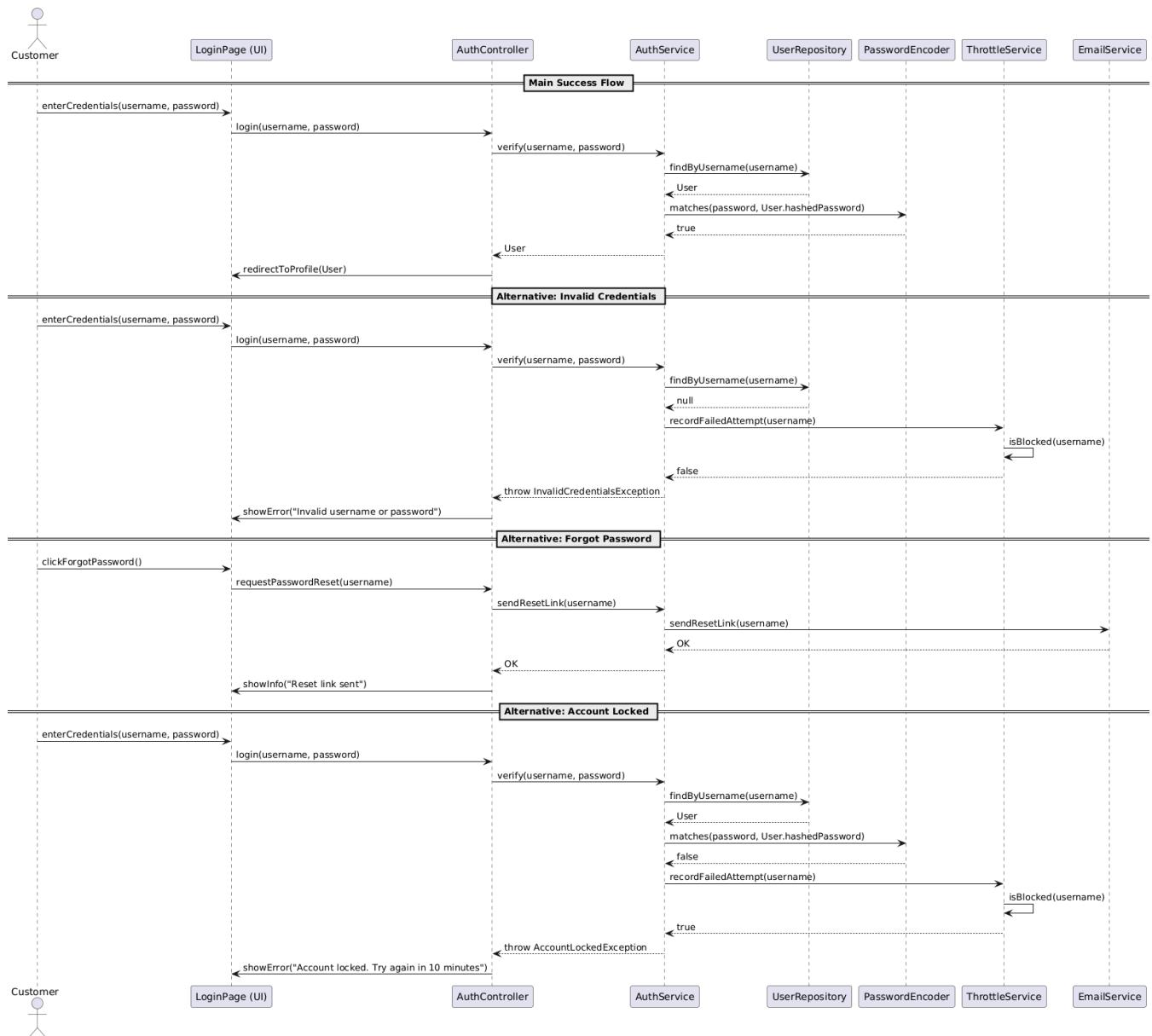
Customer UC Sequence Diagrams

UC_UFR1-Customer registers account



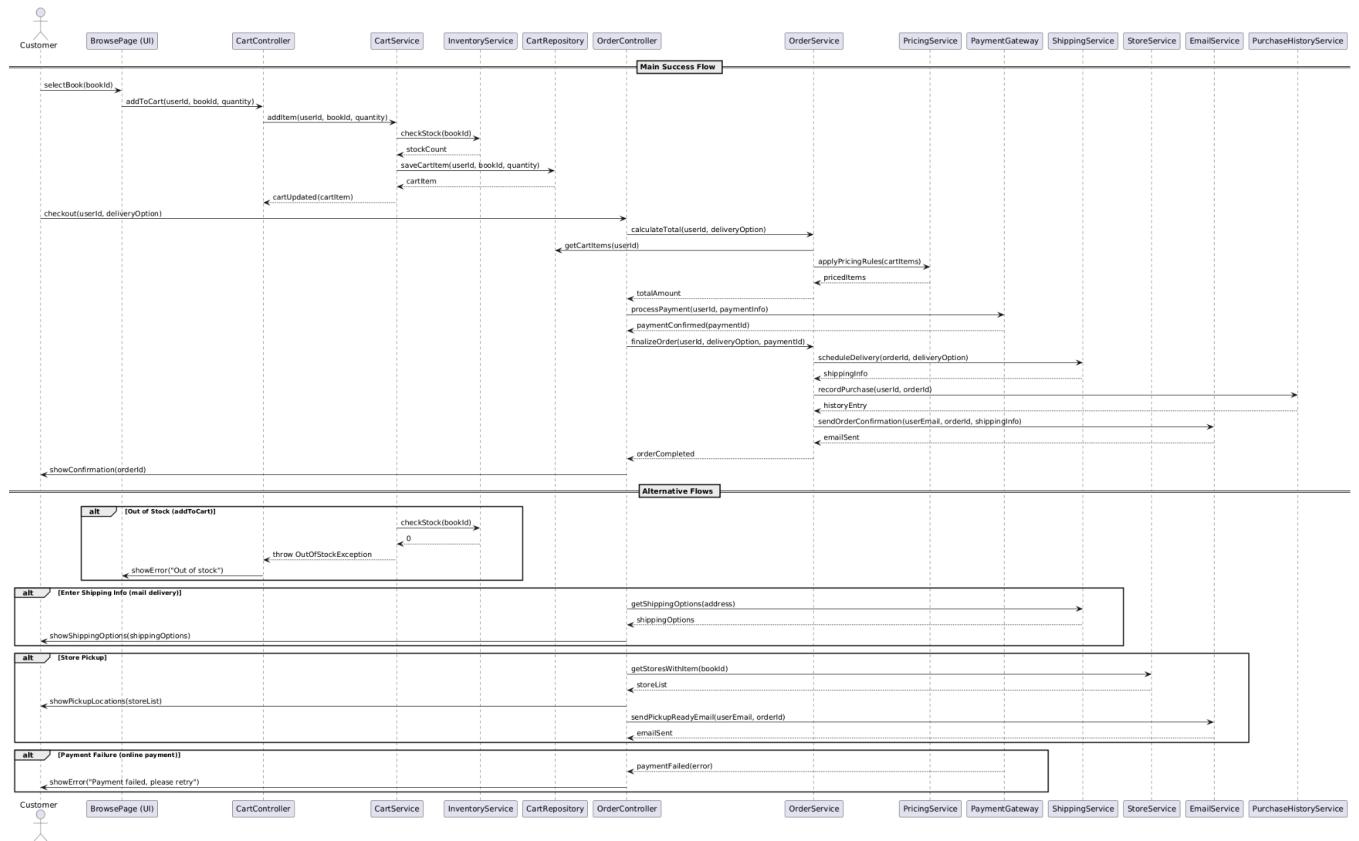
Bookstore Management System Requirements Specification

UC_UFR2-Customer logs in



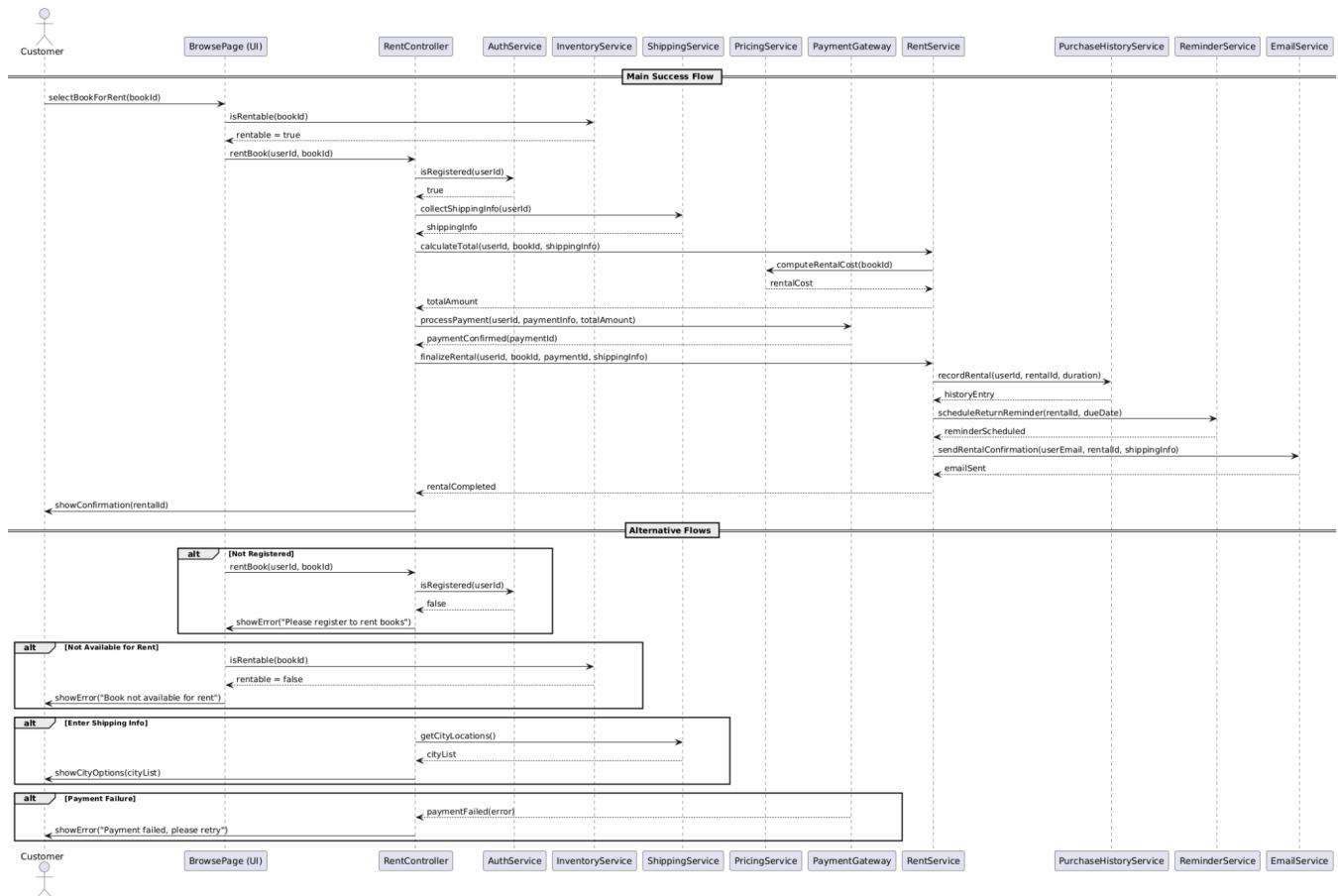
UC_UF3-UF7-Buy Books

Bookstore Management System Requirements Specification

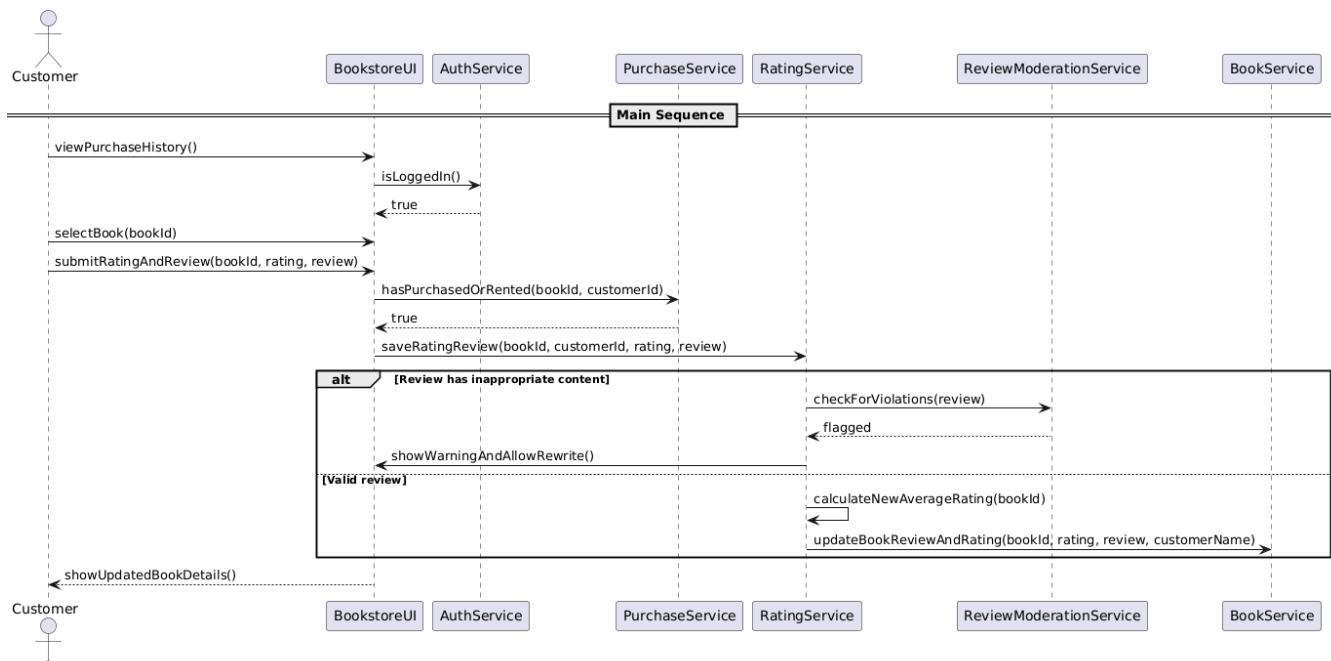


Bookstore Management System Requirements Specification

UC_UF30-Rent Books

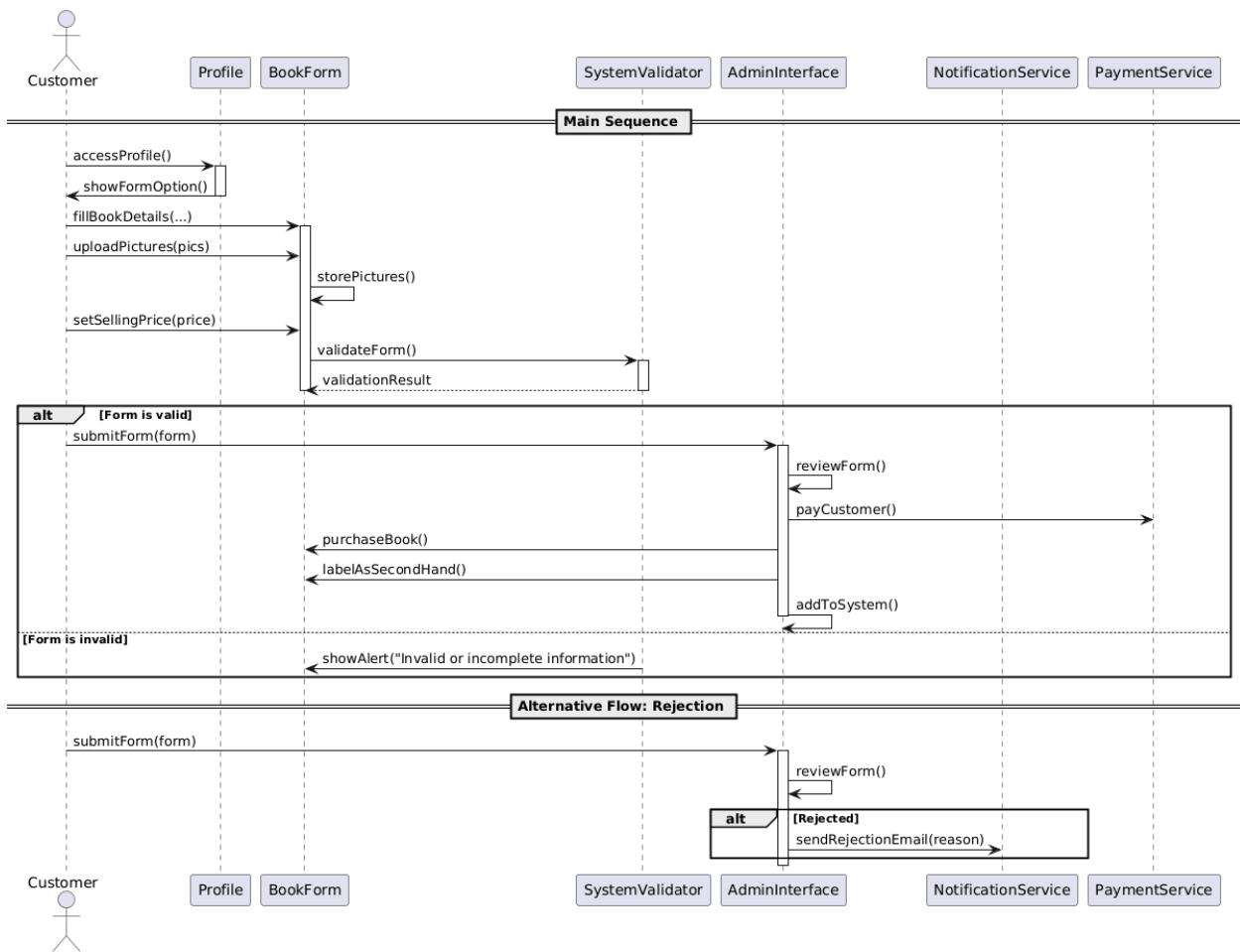


UC_UFR9-UFR10-Rate Books



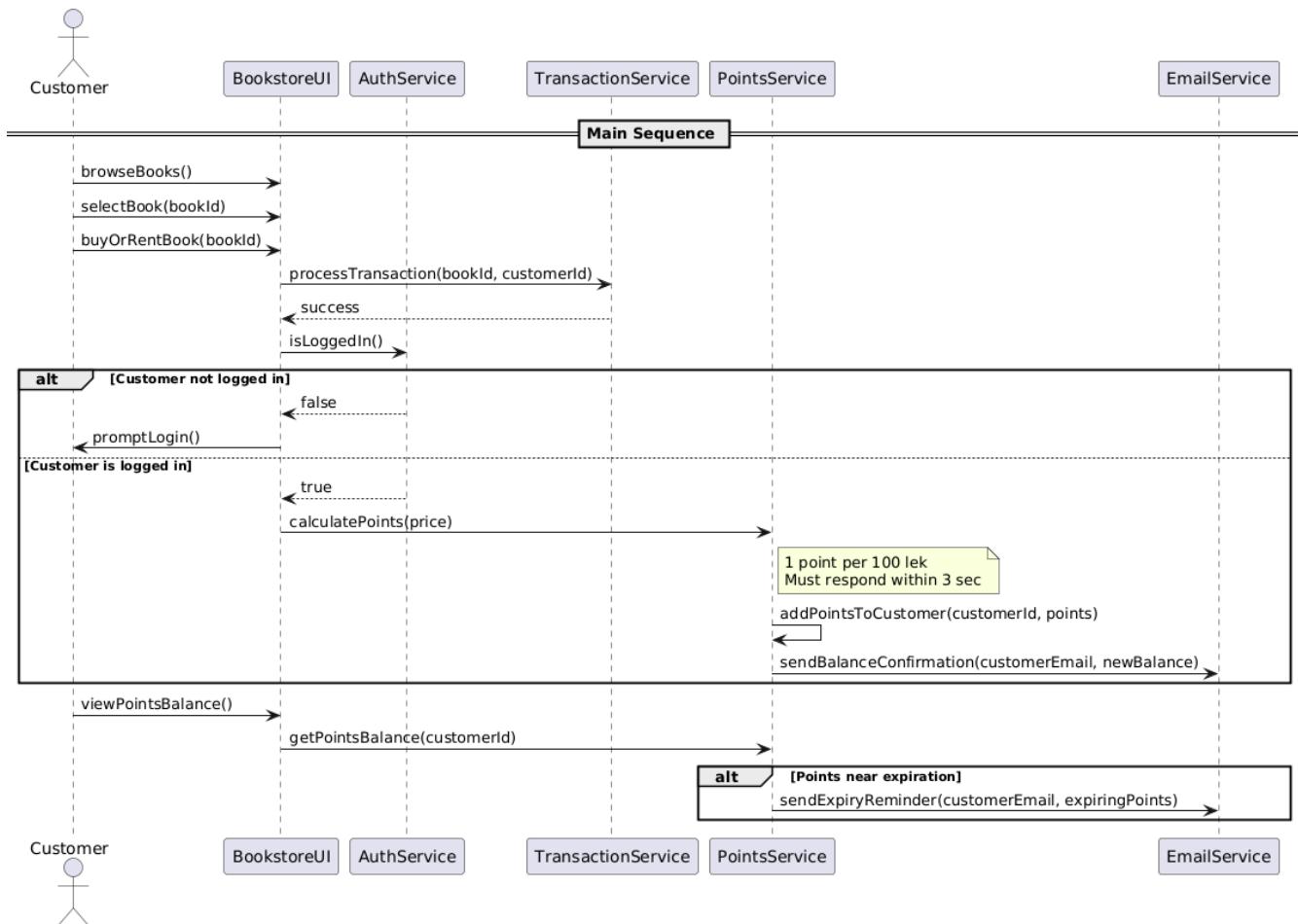
Bookstore Management System Requirements Specification

UC_UFR18-Sell Used Books



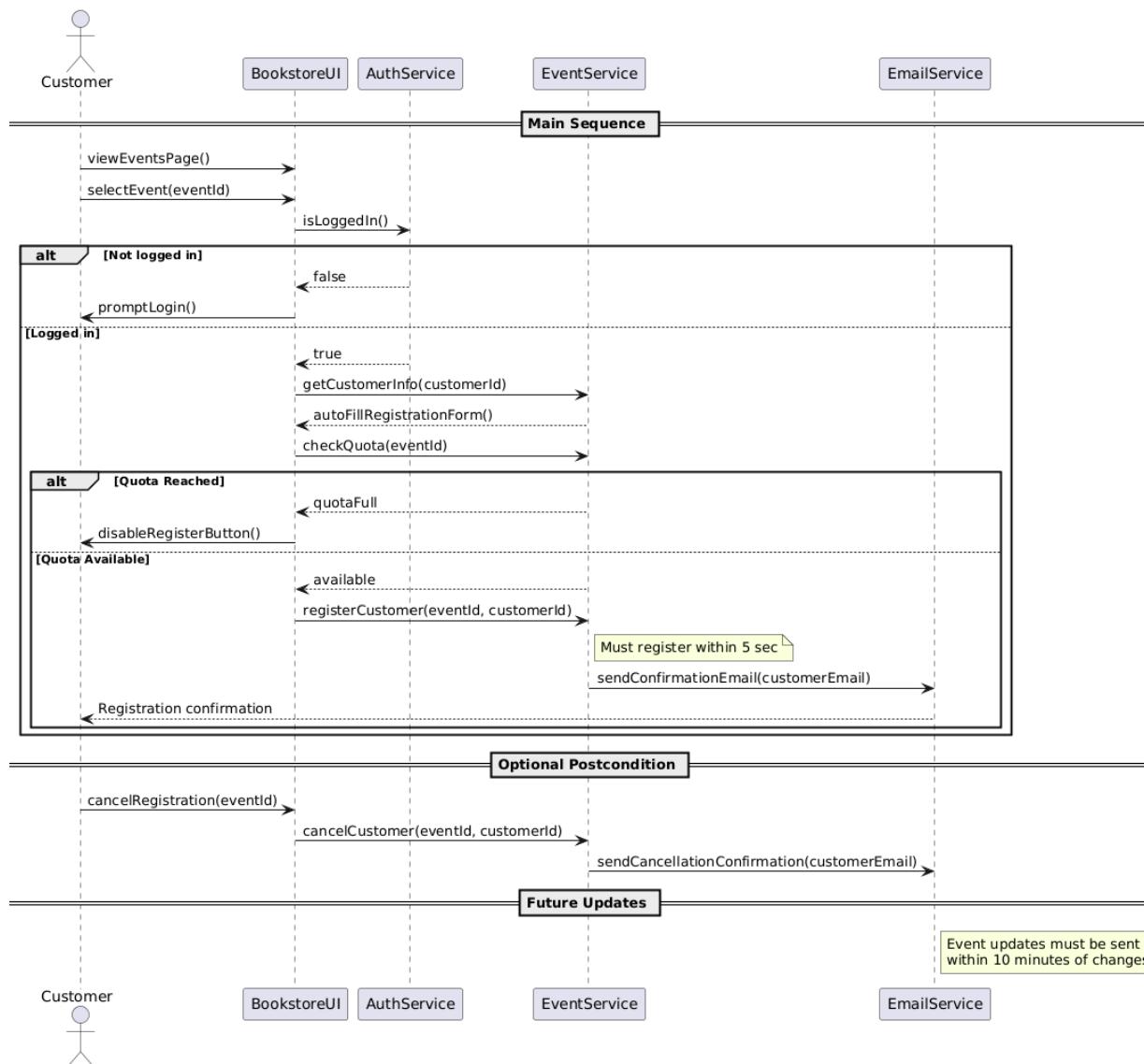
Bookstore Management System Requirements Specification

UC_UFR22-Earns Points



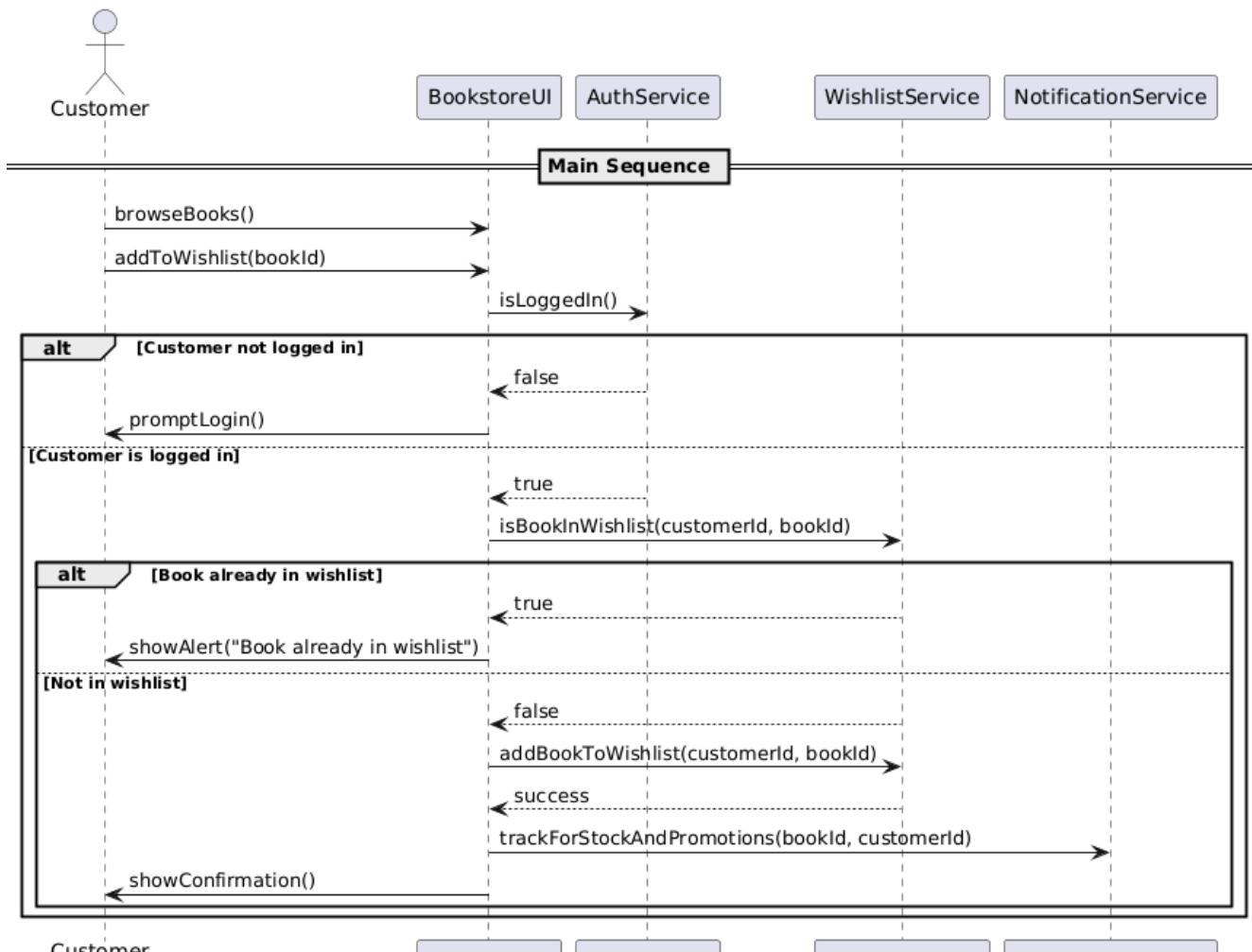
Bookstore Management System Requirements Specification

UC_UFR17-Register for Events



Bookstore Management System Requirements Specification

UC_UFR16-Add to Wishlist



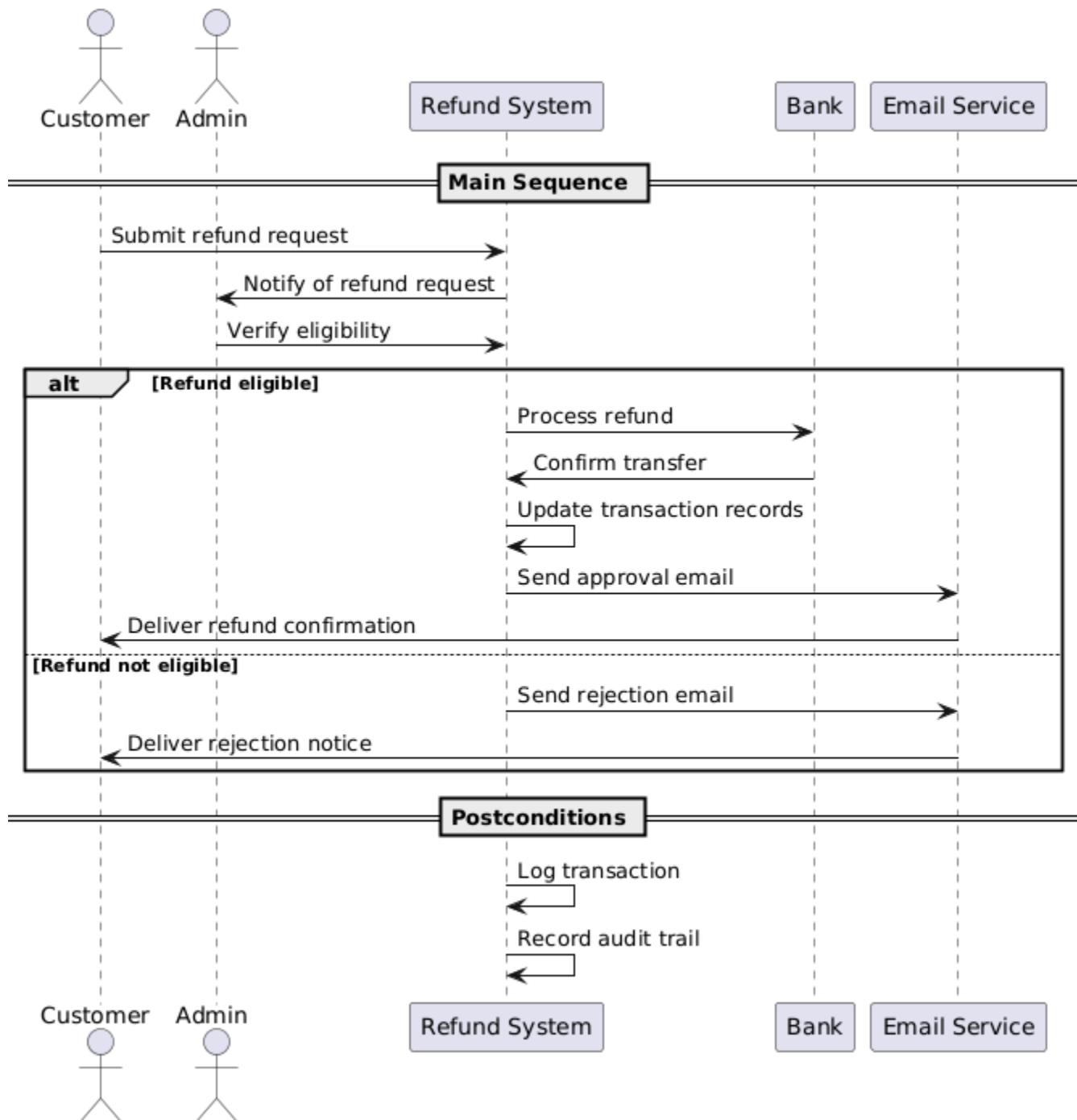
Customer

BookstoreUI AuthService WishlistService NotificationService

Bookstore Management System Requirements Specification

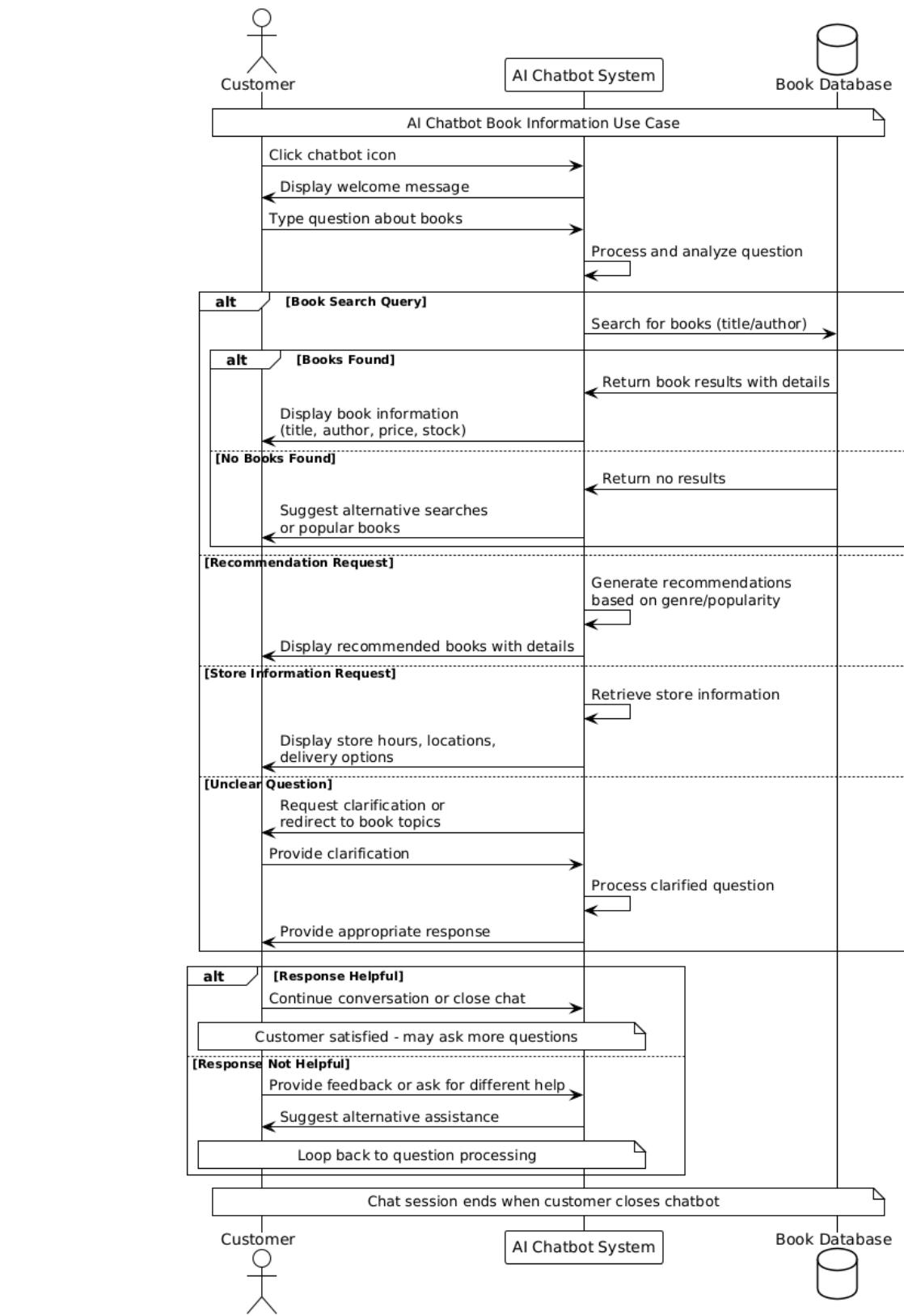
Admin UC Sequence Diagrams

UC_UFR30-AI Chatbot

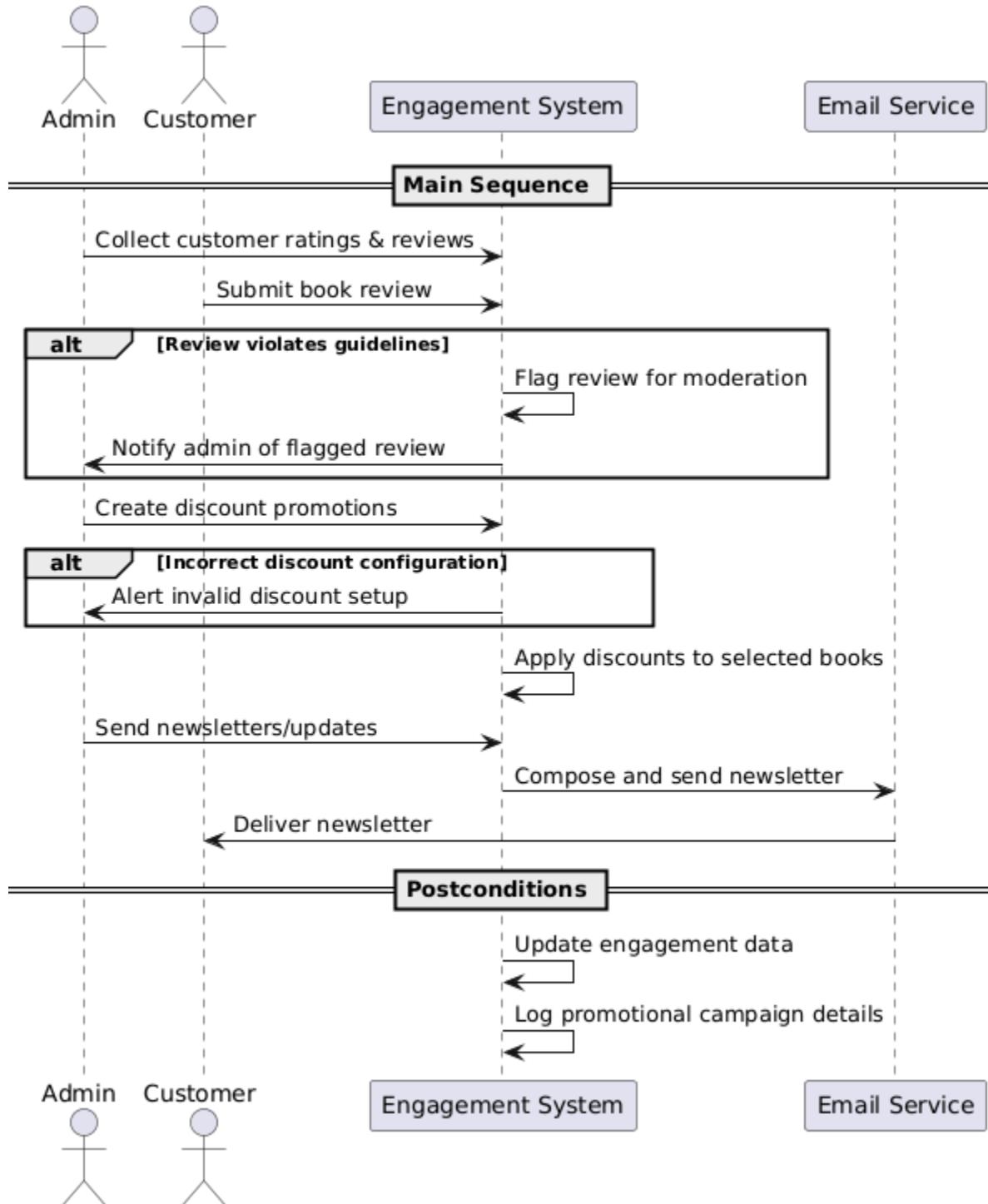


Bookstore Management System Requirements Specification

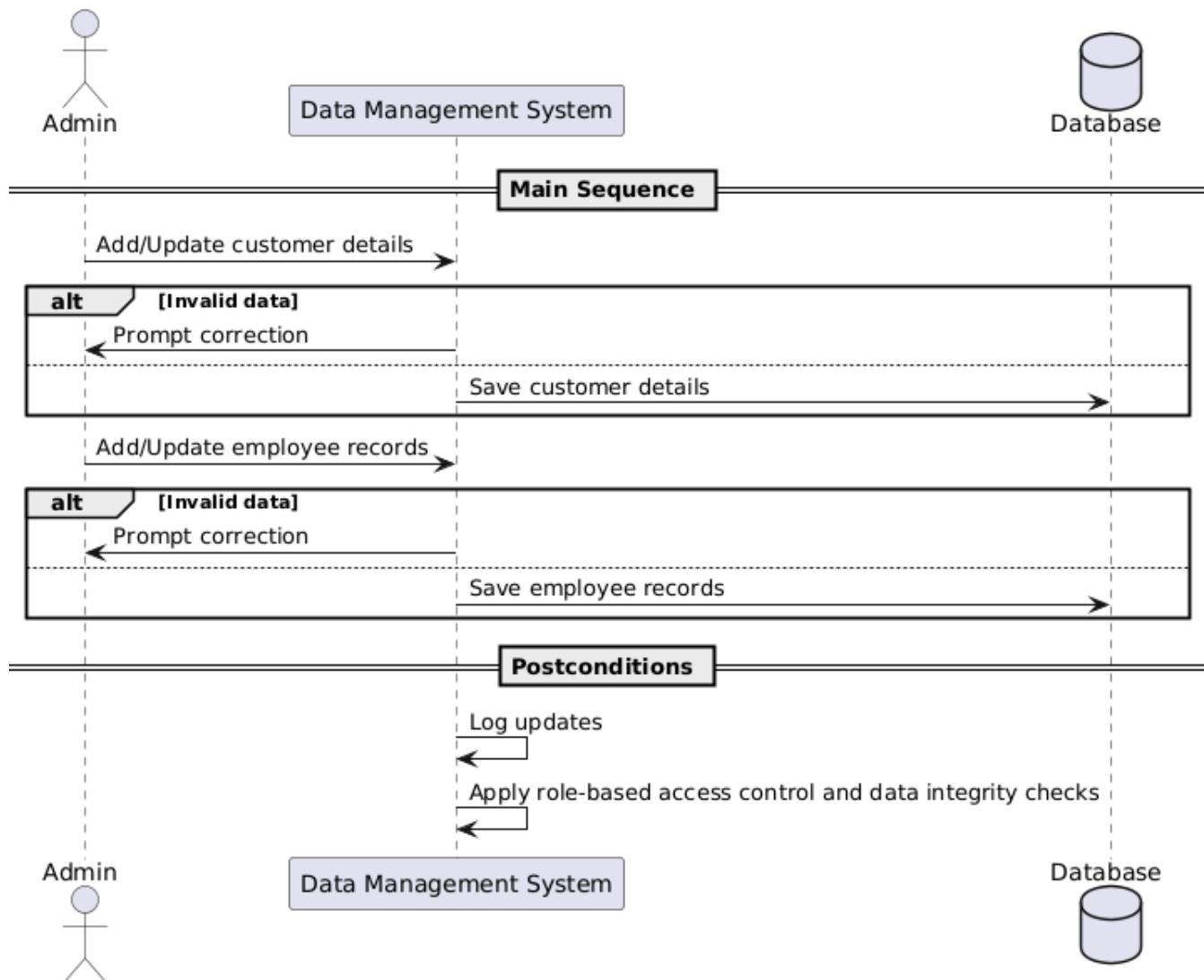
Admin UC Sequence Diagrams UC_FR14-15 - Online Refunds



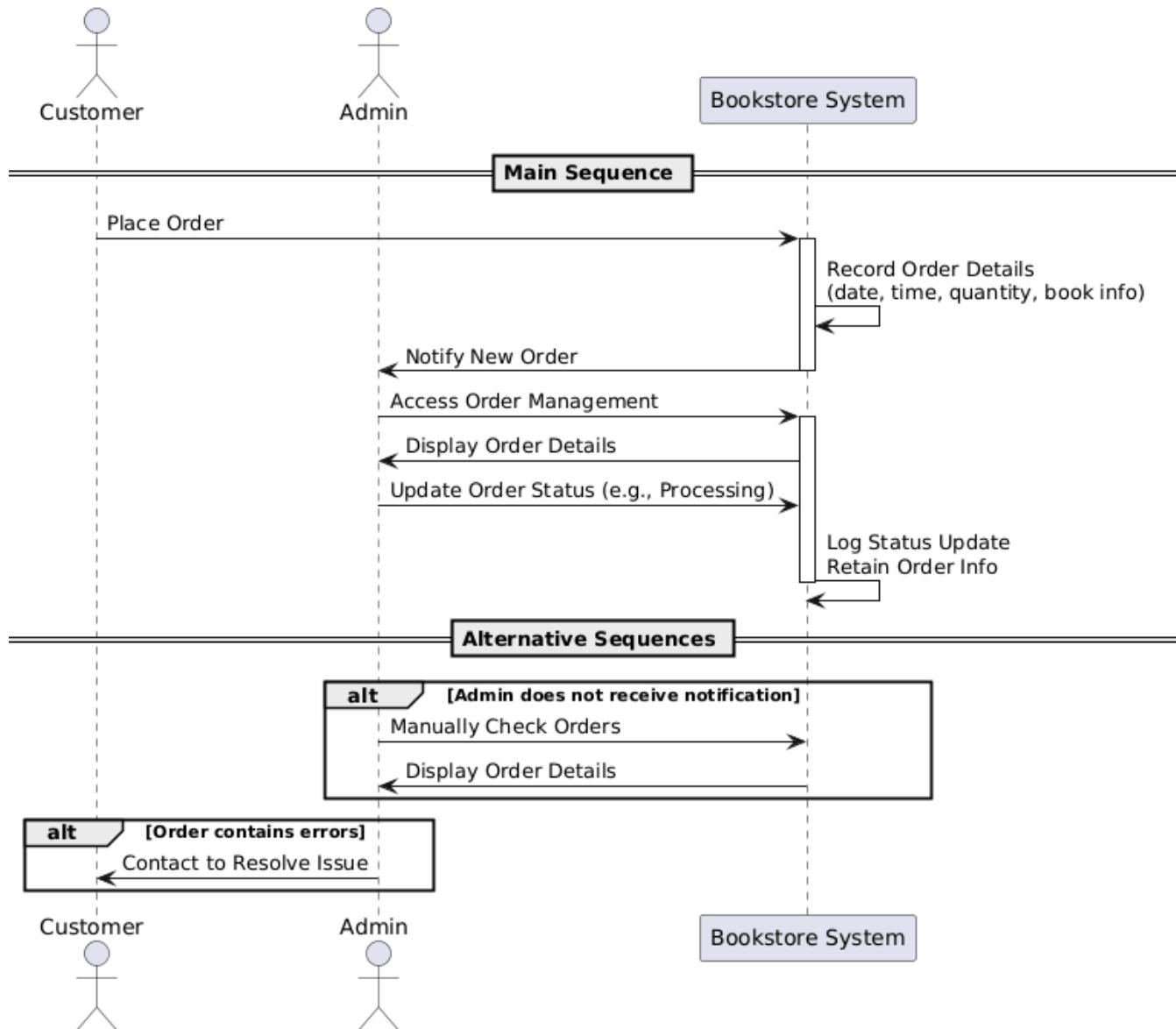
UC_FR18-19-20 - Customer Engagement and Promotions



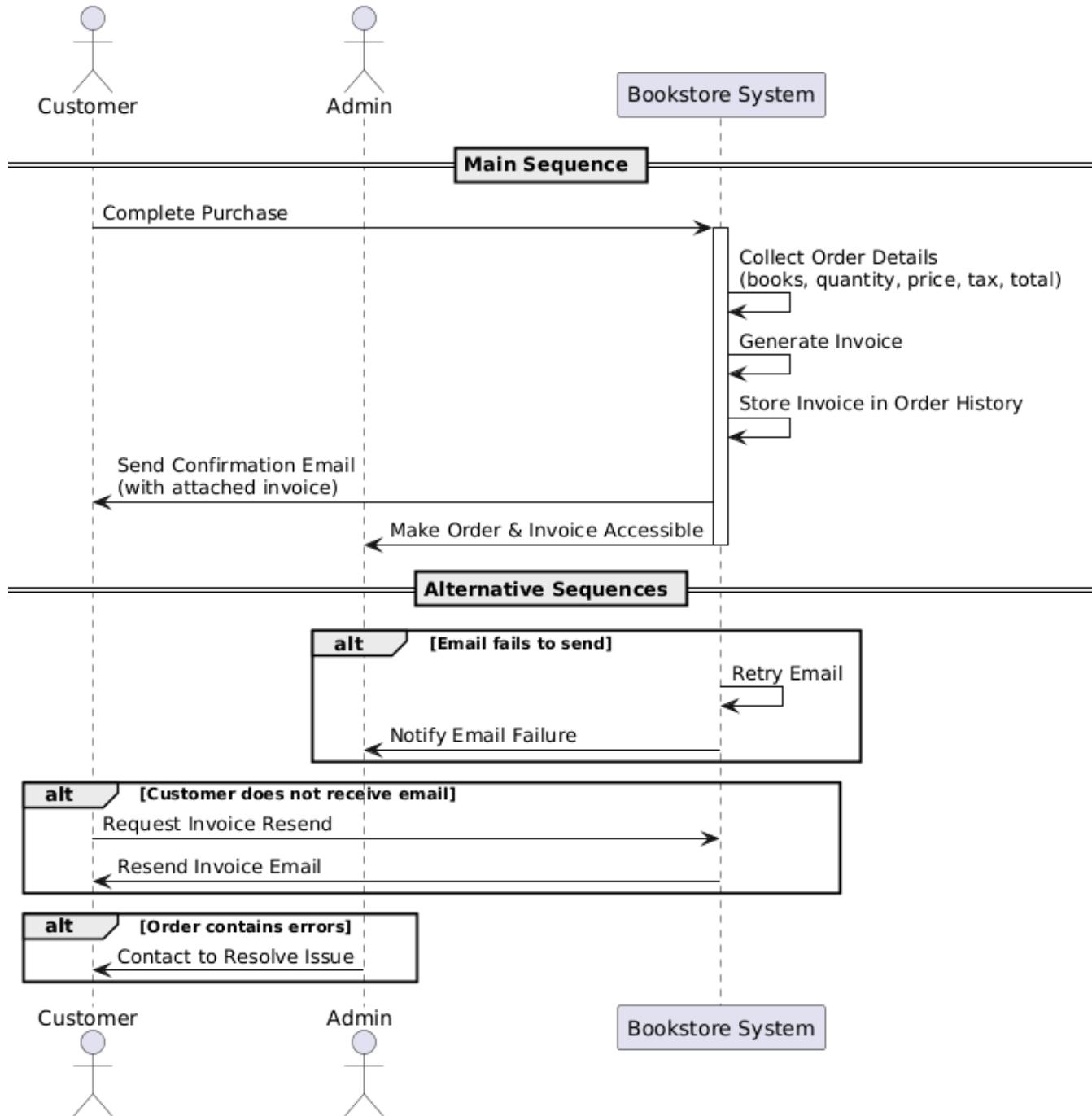
UC_FR11-12-25 - Customer and Employee Data Management



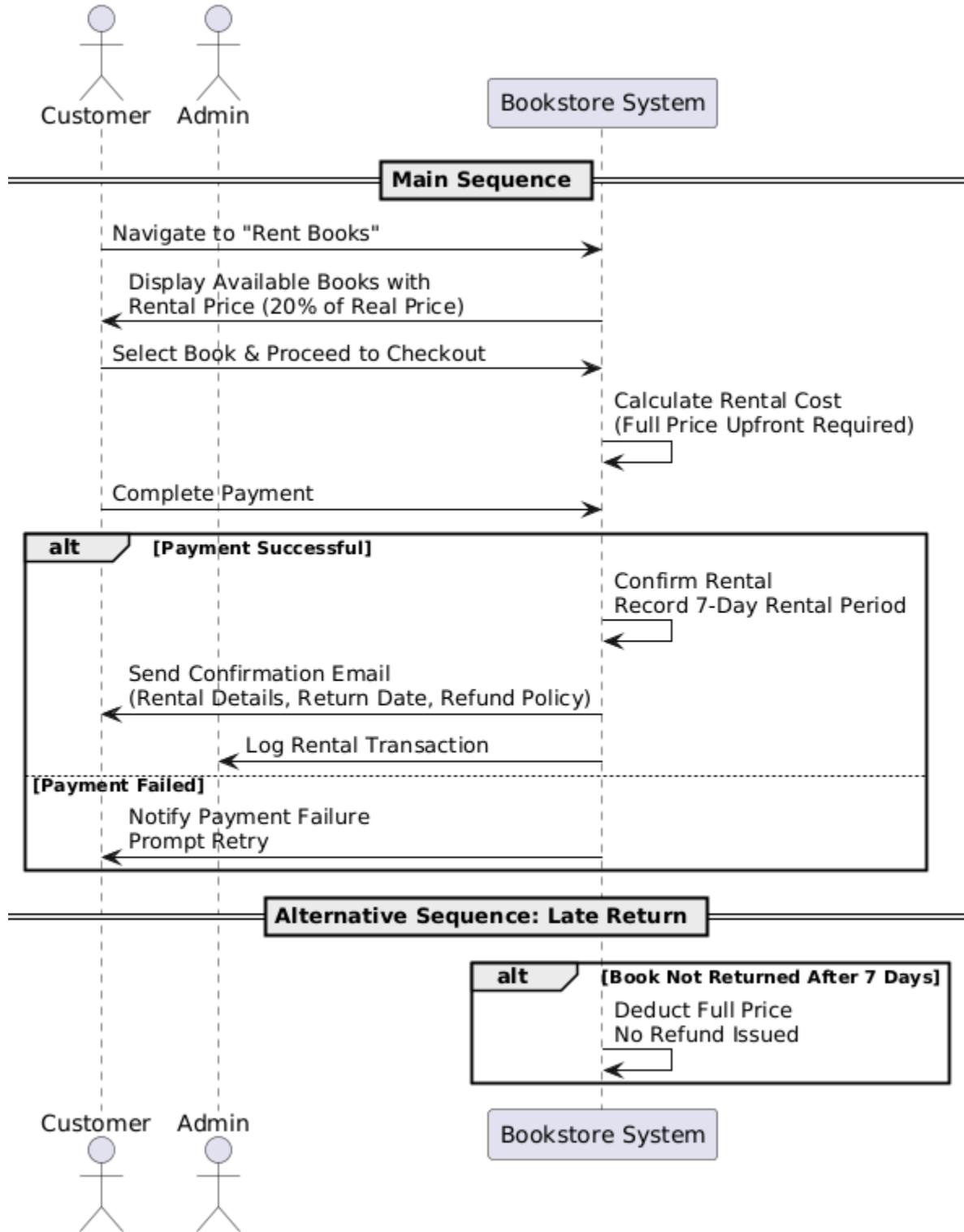
UC10-Receive Customer Orders



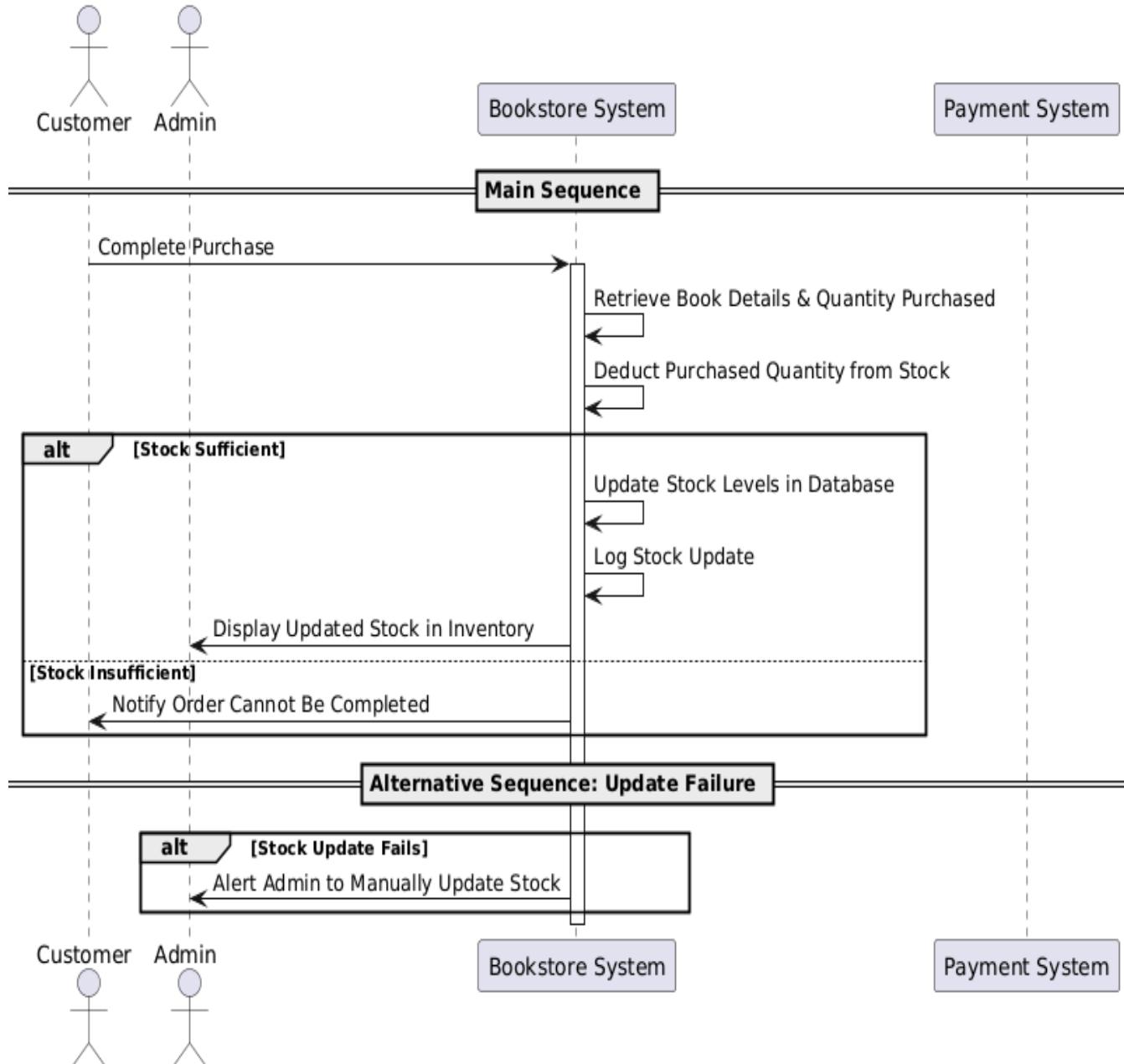
UC11-Generate Bill and Send Confirmation Email



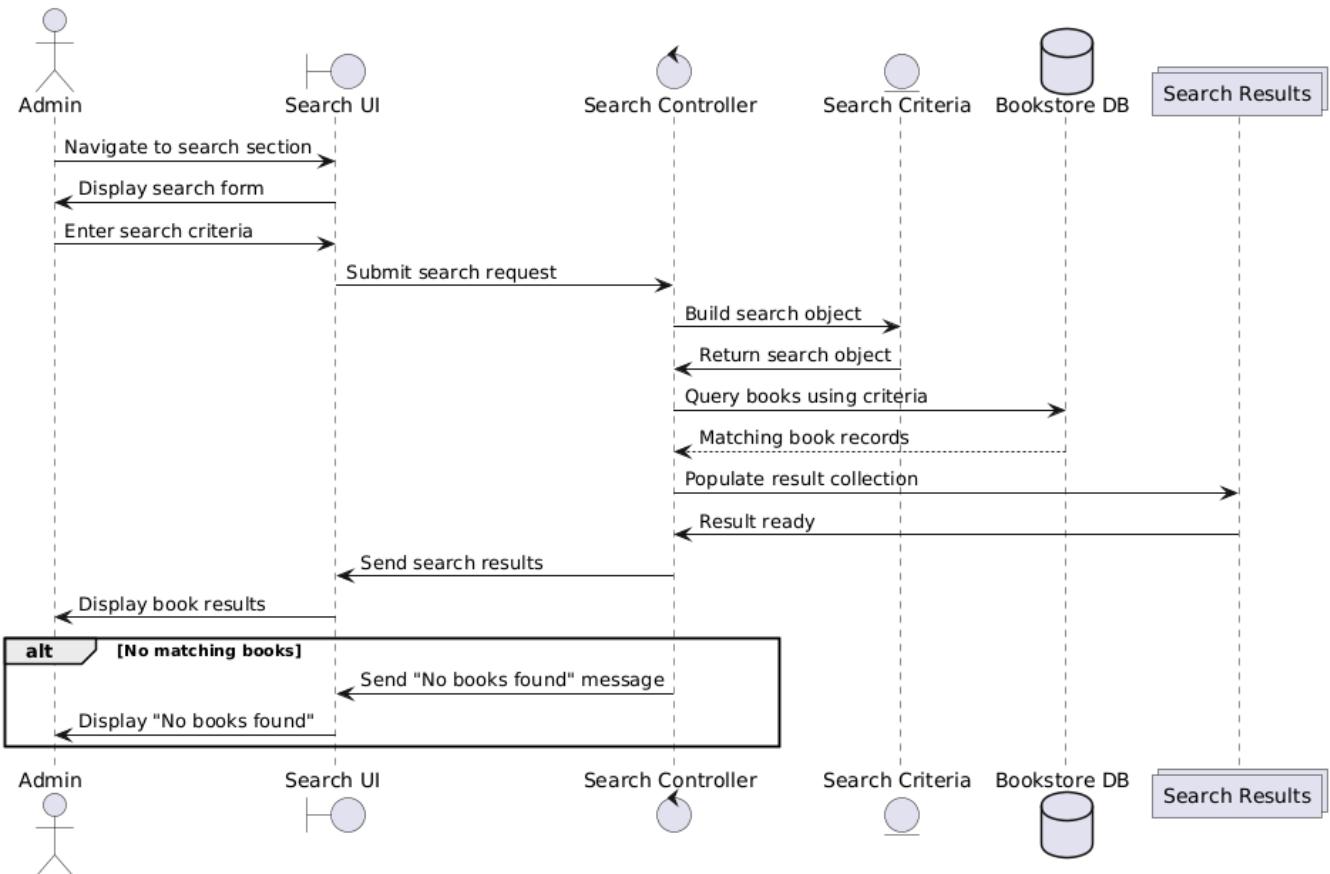
UC11-Price Of Rented Books



UC11-Update Stock Levels After Orders

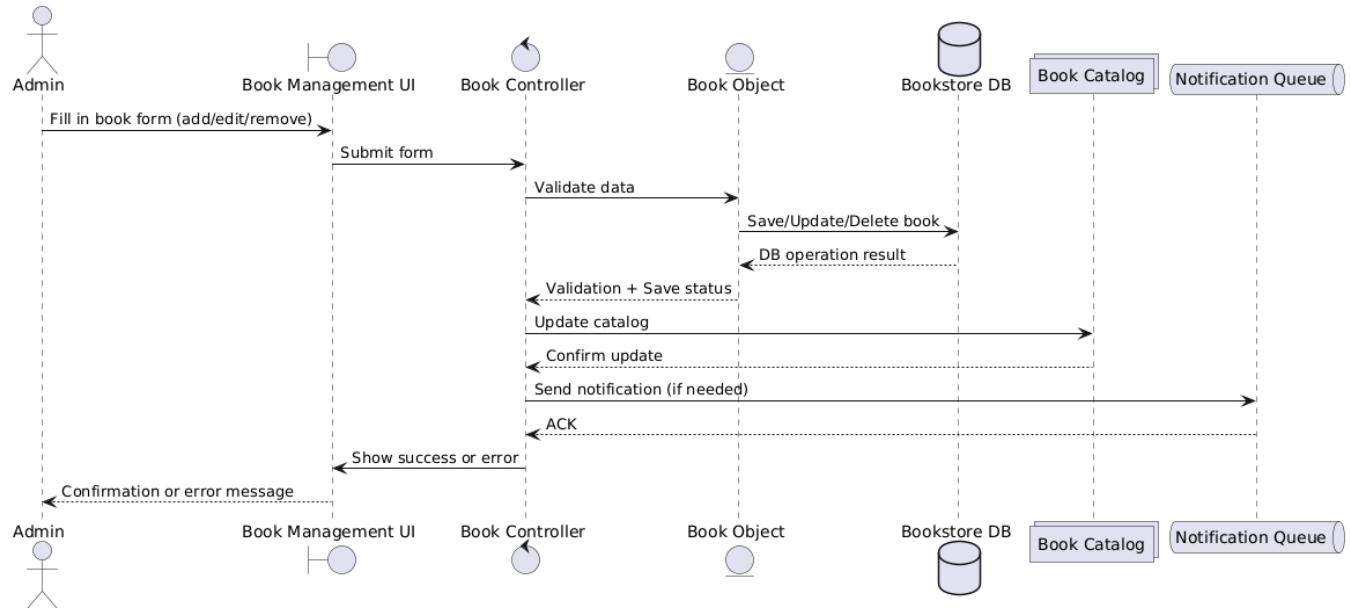


UC09 – Search Books

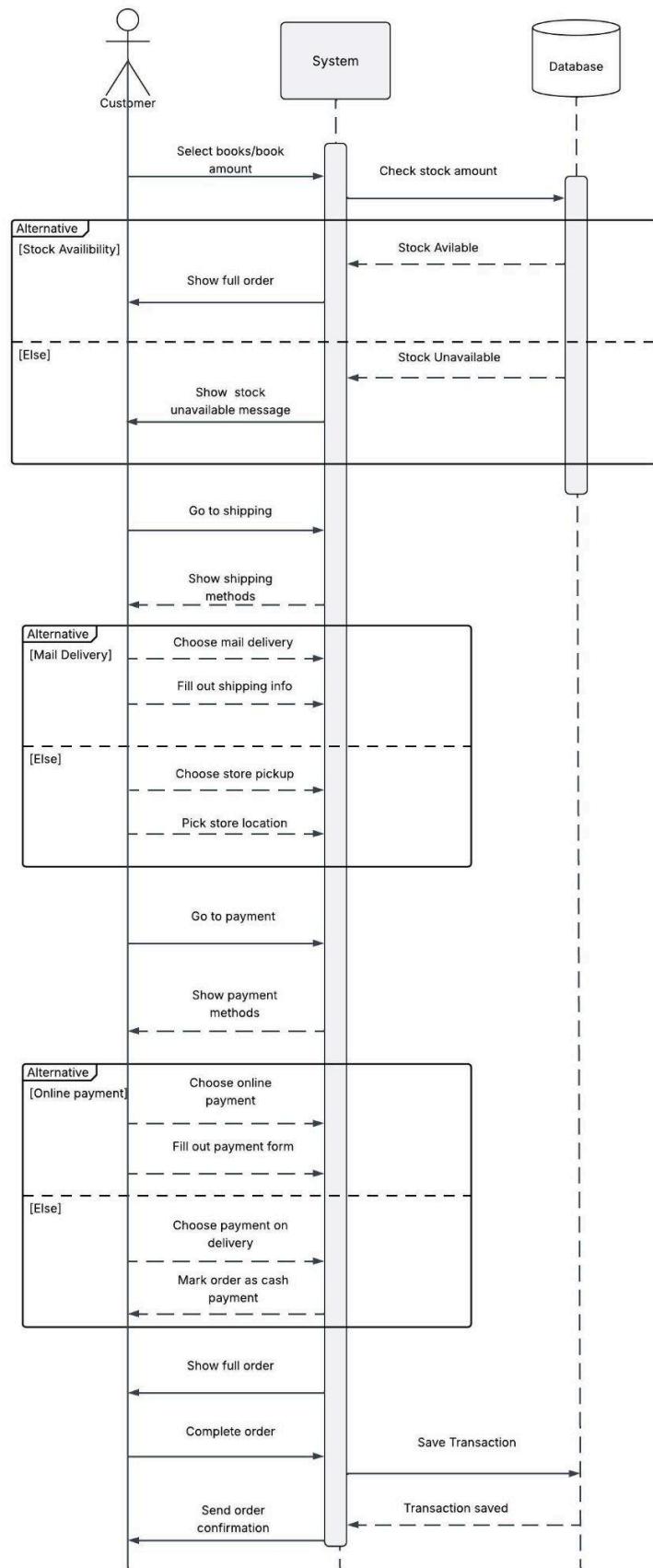


Bookstore Management System Requirements Specification

UC08 - Add, Edit And Remove New Book

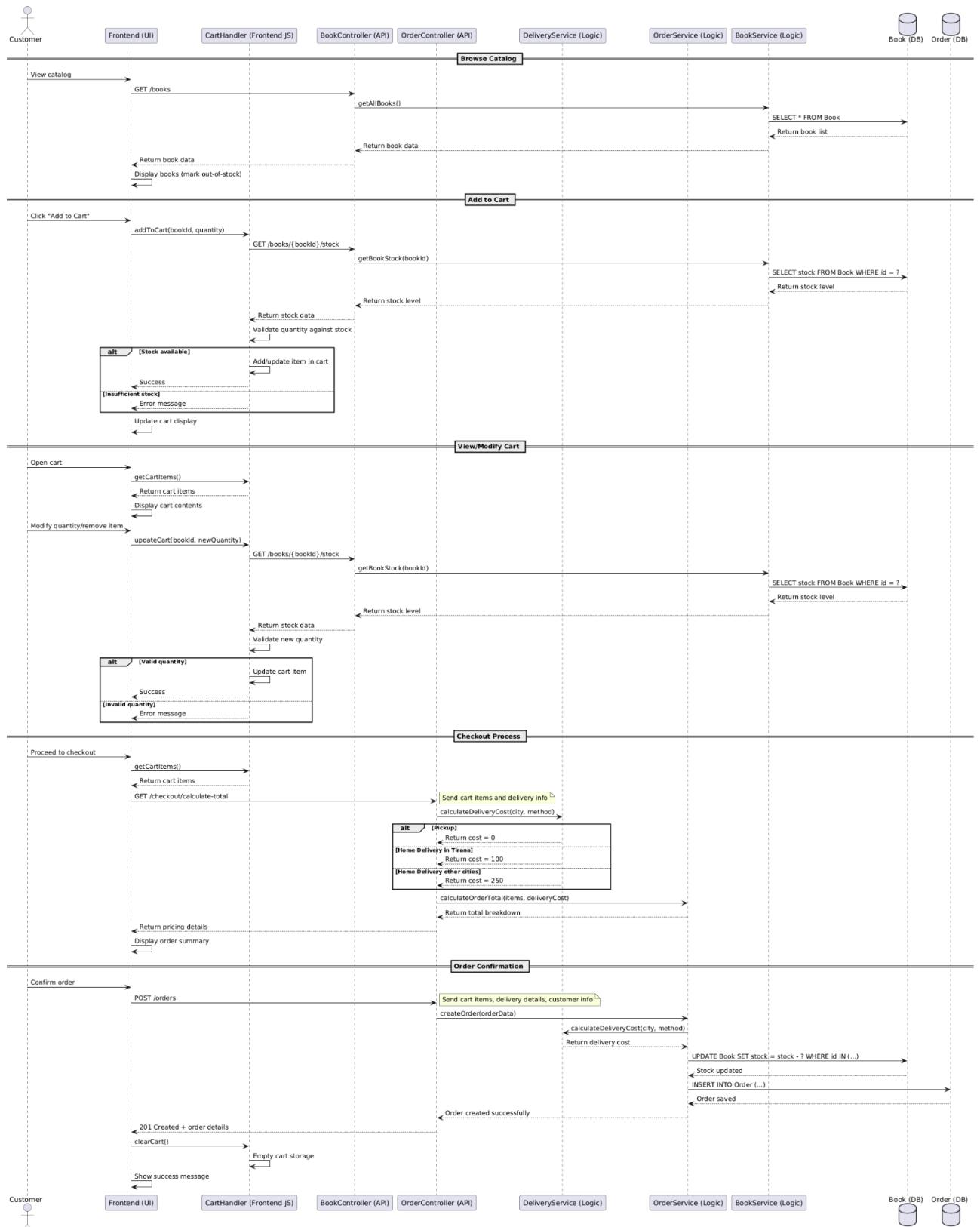


Bookstore Management System Requirements Specification

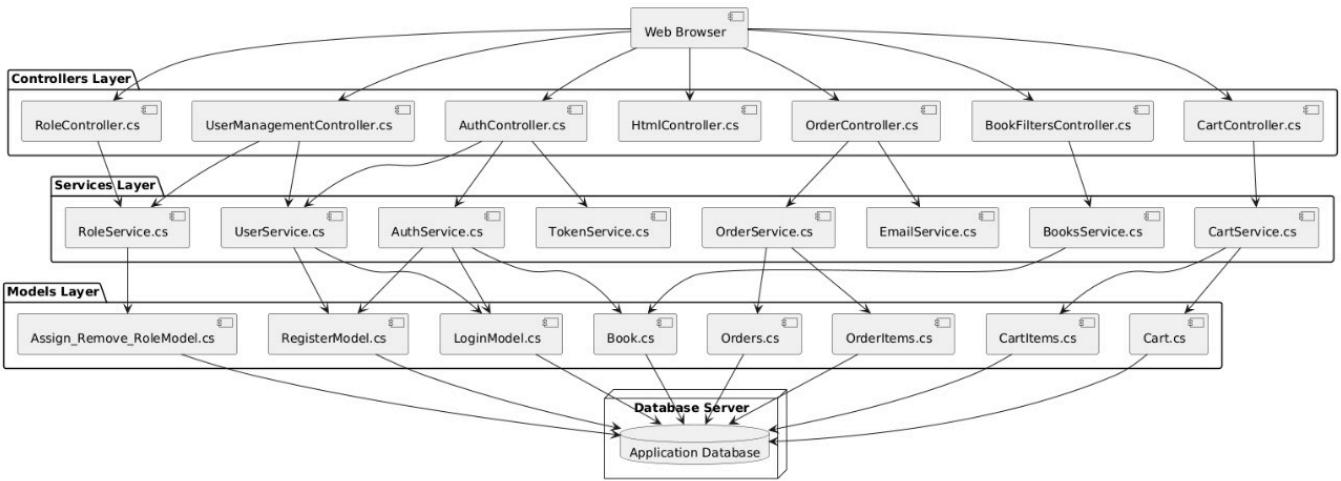


Bookstore Management System Requirements Specification

UC_UFR4-20-Customer manages cart and places order



10. Deployment diagram



11. Implementation Technology

Technology Stack Overview

The Bookstore Management System is built using Microsoft's .NET ecosystem, providing a comprehensive and integrated development experience suitable for educational purposes. The stack leverages modern .NET technologies while maintaining simplicity appropriate for a student project.

Backend Technologies

Web API Framework:

Framework: ASP.NET Core 9 Web API

IDE: Visual Studio 2022 Community Edition

Language: C# 12 with .NET 9 runtime

Architecture: RESTful API following MVC pattern

Project Structure: Clean architecture with separate layers for controllers, services, and data access

Database and Data Access:

Database: Microsoft SQL Server (LocalDB for development)

ORM: Entity Framework Core 9 with Code-First approach

Database Tools: SQL Server Management Studio (SSMS) for database management

Migrations: EF Core migrations for database schema management

Connection: SQL Server connection strings for local development

Authentication and Security:

Authentication: JWT (JSON Web Tokens) for stateless authentication

Identity Management: ASP.NET Core Identity with IdentityUser

Authorization: Role-based authorization using ASP.NET Core policies

Password Security: ASP.NET Core Identity default password hashing

Token Management: JWT token generation and validation middleware

Frontend Technologies

Web Application:

IDE: Visual Studio Code

Languages: HTML5, CSS3, JavaScript (ES6+)

Styling Framework: Bootstrap 5 for responsive design and UI components

HTTP Client: Fetch API for consuming ASP.NET Core Web API endpoints

UI Components: Vanilla JavaScript with DOM manipulation

Responsive Design: Mobile-first approach using Bootstrap grid system

Development Environment

Microsoft Development Stack:

Backend IDE: Visual Studio 2022 Community (free for students)

Frontend IDE: Visual Studio Code with extensions (Live Server, C# support)

Bookstore Management System Requirements Specification

Database: SQL Server LocalDB (included with Visual Studio)

Version Control: Git integration within Visual Studio and VS Code

Package Management: NuGet for .NET packages, npm for frontend dependencies

Project Configuration:

Development Environment: Local development only (no deployment)

Configuration: appsettings.json for application configuration

CORS: Configured for local frontend-backend communication

API Documentation: Swagger/OpenAPI integration for endpoint testing

Security Implementation

ASP.NET Core Security Features:

Authentication: JWT tokens with configurable expiration

Identity Framework: ASP.NET Core Identity for user management

Password Policy: Configurable password requirements through Identity options

Input Validation: Data annotations and model validation

HTTPS: Local development with HTTPS support

CORS Policy: Restricted cross-origin requests for security

Development Workflow

Team Development Process:

Version Control: Git repositories for both frontend and backend projects

Code Organization: Separate repositories or solution structure for API and frontend

Database Management: EF Core migrations shared through version control

Testing: Manual testing using Swagger UI and browser developer tools

Documentation: XML documentation comments for API endpoints

Local Development Setup:

Backend: ASP.NET Core API running on https://localhost:7xxx

Frontend: Live Server extension serving static files on http://localhost:5500

Database: SQL Server LocalDB with connection string in appsettings.json

Authentication Flow: Login generates JWT token for subsequent API calls

12. Project Planning

Real start and end days: 02.03.2025 – 09.06.2025

Estimated start and end days: 02.03.2025 – 05.07.2025

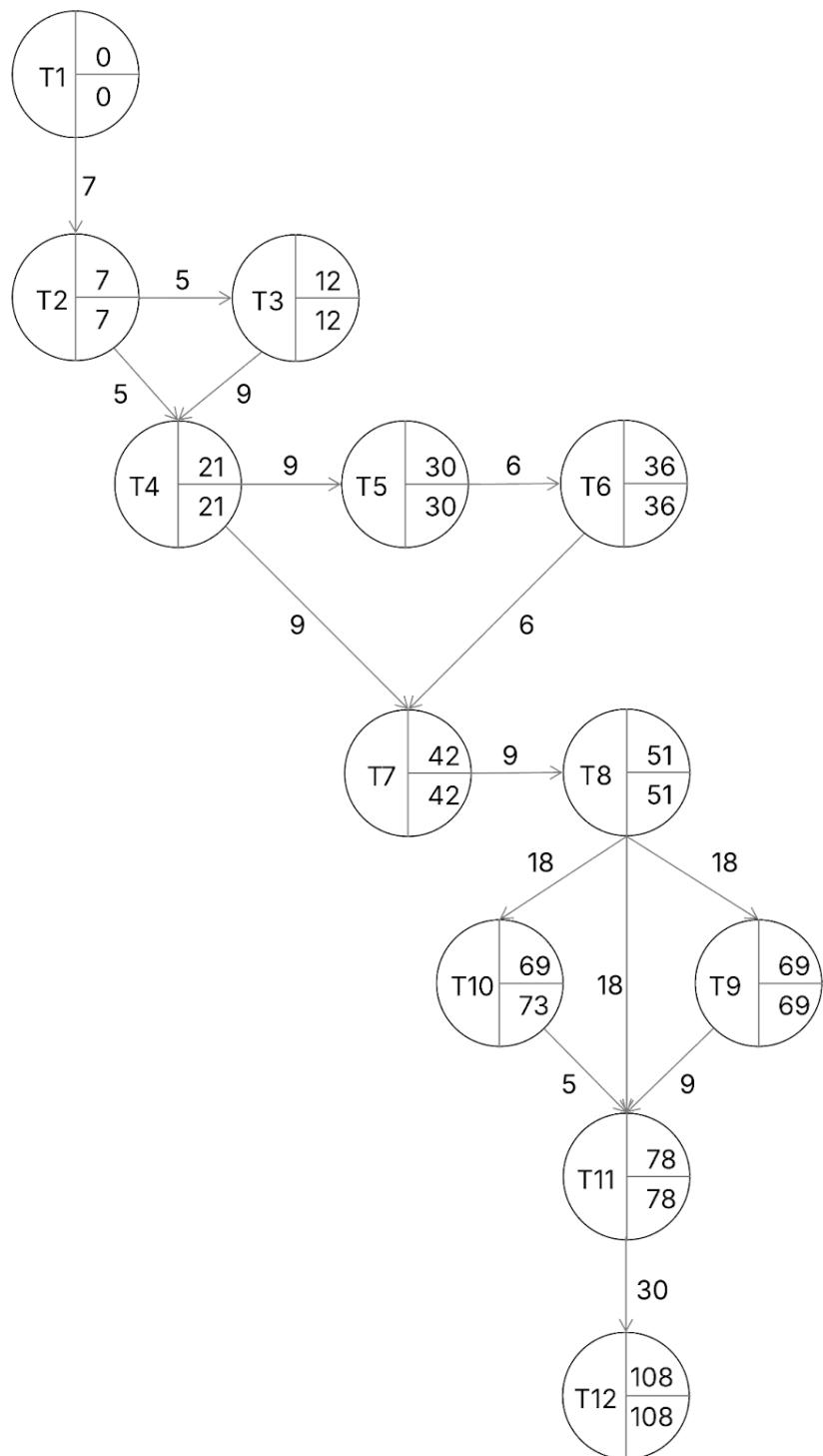
Real total days: 93 days

Estimated total days: 118 days

Network Analysis:

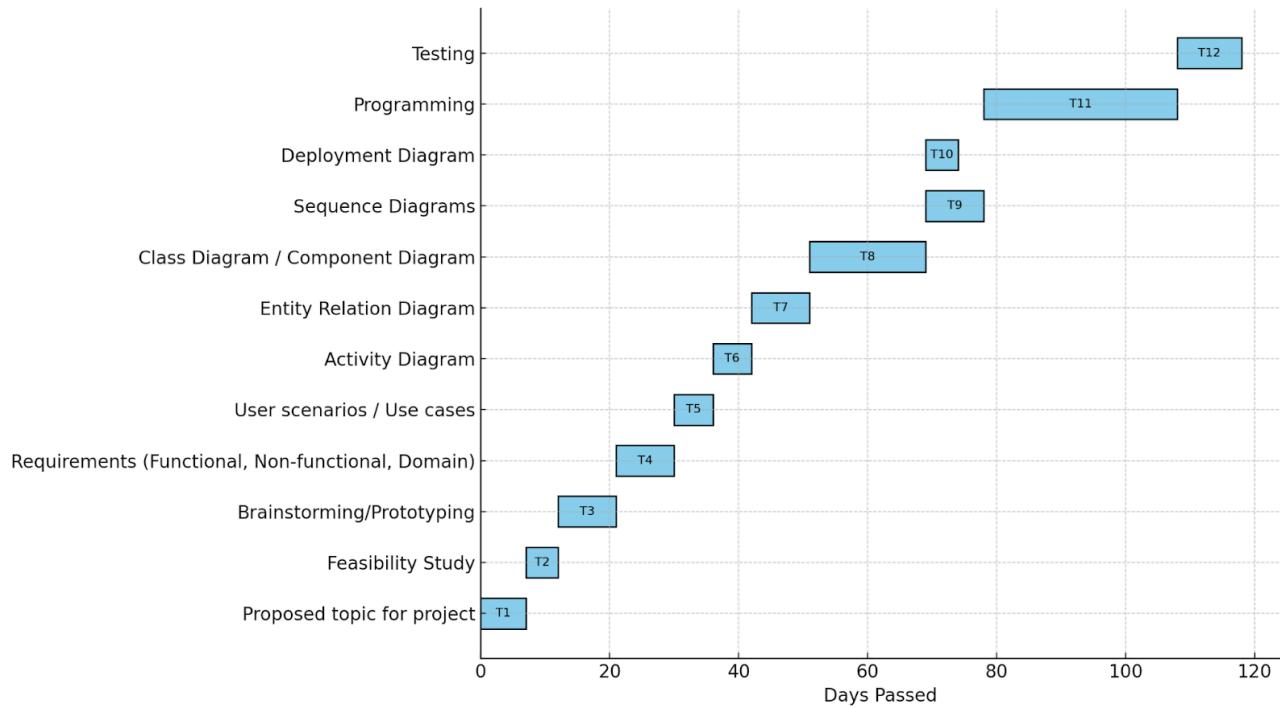
Task ID	Task Name	Duration	Depends On
T1	Proposed topic for project	7 days	-
T2	Feasibility Study	5 days	T1
T3	Brainstorming/Prototyping	9 days	T2
T4	Requirements (Functional, Non-functional, Domain)	9 days	T2, T3
T5	User scenarios Use cases	6 days	T4
T6	Activity Diagram	6 days	T5
T7	Entity Relation Diagram	9 days	T4, T6
T8	Class Diagram Component Diagram	18 days	T7
T9	Sequence Diagrams	9 days	T8
T10	Deployment Diagram	5 days	T8
T11	Programming	30 days	T8, T9, T10
T12	Testing	10 days	T12

Networks:



Bookstore Management System Requirements Specification

Stage Plan (Gantt Charts):



13. Implementation Technology

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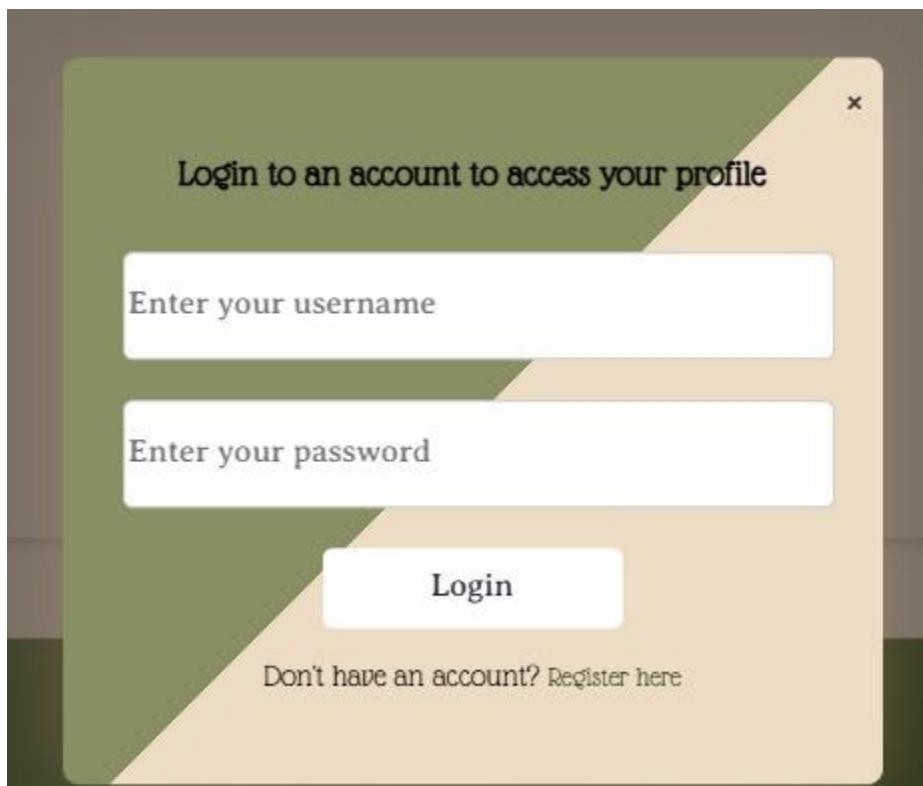
Frontend: Live Server extension serving static files on http://localhost:5500

Database: SQL Server LocalDB with connection string in appsettings.json

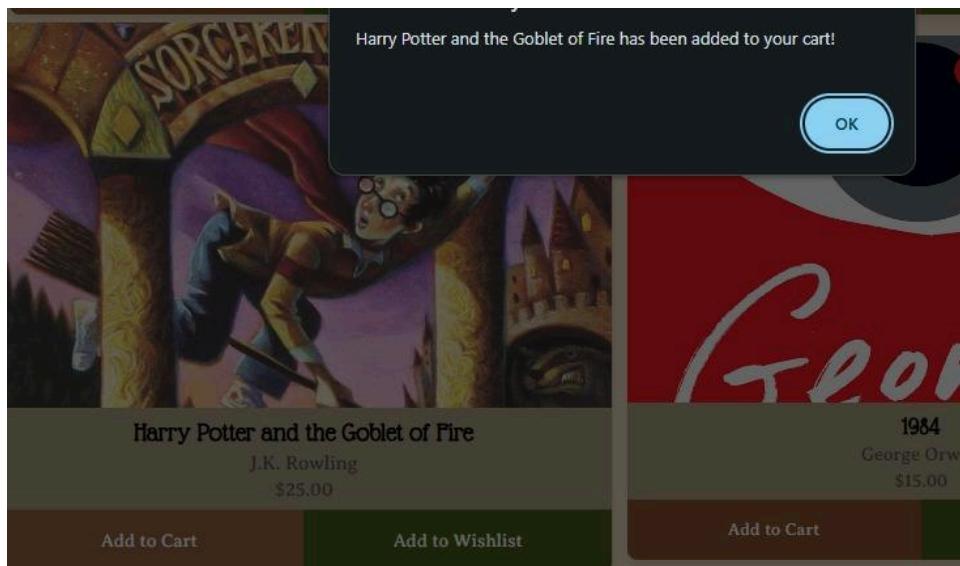
Authentication Flow: Login generates JWT token for subsequent API calls

APPENDIX A: Screenshots of the implementation

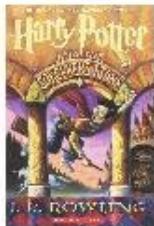
Login



Cart



Your Cart

	Harry Potter and the Goblet of Fire	25 L
J.K. Rowling		
-	1	+
		x
Subtotal 25 USD		
Transport cost 2 USD		
Total 27 USD		

FINISH YOUR ORDER

Search

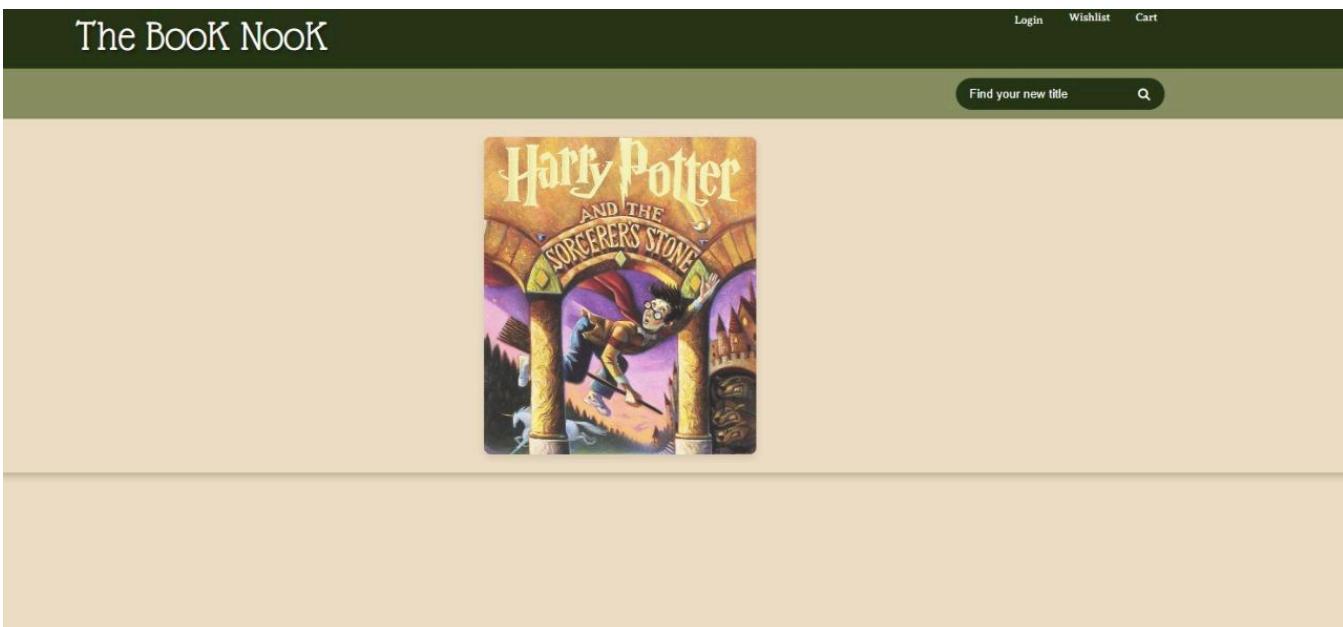
harry

q

harry

harry potter

Bookstore Management System Requirements Specification



A screenshot of the "Bookshop AI Assistant" interface. It features a green header with the text "Bookshop AI Assistant" and a "New Chat" button. Below the header is the book cover for "Harry Potter and the Sorcerer's Stone". A message box below the book cover contains the text: "If you have any questions about these books or need further recommendations, feel free to ask!". At the bottom of the interface is a text input field with the placeholder "Ask me anything" and a send button. Below the input field is the text "Powered by WebAgent". A green circular close button with a white "X" is located in the bottom right corner of the interface.