
Software Requirements and Design Document

for

Paper trails- Bookstore Management System

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24th November 2024

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1. Introduction

1.1 Purpose

The purpose of this paper is to give an informative overview to the Bookstore Management System (BMS), a complex software program designed especially for bookshop owners and employees. The BMS is designed to enhance customer satisfaction, streamline bookshop operations, and enhance inventory management. This article aims to provide an overview of the BMS's main objectives, features, and stakeholders.

1.2 Product Scope

The goal of the Bookstore Management System is to simplify the administration of bookstore resources by providing a comprehensive platform. Essential operations like staff scheduling, inventory control, online order processing, book promotions, and supplier information management are given top priority. The BMS ensures that tasks are carried out in the bookstore environment in a secure and efficient manner, meeting the needs of both management and staff.

1.3 Title

Paper Trails – Bookstore Management System.

1.4 Objectives

The major aims and goals to be achieved through the implementation of the Bookstore Management System are as follows:

1. Efficient Inventory Management:

- Develop a centralized platform to track and manage inventory levels in real-time, allowing for accurate forecasting and replenishment of stock.
- Reduce instances of overstock and stockouts by implementing automated alerts for low inventory levels and trends in sales patterns.

2. Streamlined Employee Scheduling:

- Create an intuitive scheduling tool that allows managers to easily assign shifts, track employee availability, and accommodate employee requests, thereby optimizing workforce management.
- Enhance the ability to balance staff workloads based on peak hours and operational demands, thus improving customer service.

3. Enhanced Reporting and Insights:

- Incorporate analytical tools that provide data-driven insights into sales trends, customer preferences, and inventory turnover, enabling informed decision-making.
- Generate comprehensive reports that assist in strategic planning and marketing initiatives by identifying high-performing products and seasonal trends.

4. Improved Customer Experience:

- Facilitate better service delivery through effective staff management and reduced wait times during peak periods, ultimately enhancing customer satisfaction.
- Enable personalized marketing strategies by using sales data to tailor promotions and recommendations to customer buying habits.

5. Cost Reduction:

- Decrease operational costs associated with manual processes and errors in inventory management and scheduling, leading to a more efficient allocation of resources.
- Optimize labor costs by ensuring appropriate staffing levels are maintained without overstaffing or understaffing.

6. Scalability and Flexibility:

- Build a system that can easily adapt to the changing needs of the bookstore as it grows, including the addition of new inventory types or store locations.
- Ensure the system is scalable to accommodate increased data and user load without compromising performance.

1.5 Problem Statement

The management of bookstore operations presents a significant challenge, primarily characterized by handling a diverse inventory and coordinating employee schedules. Bookstores often struggle with inefficiencies that lead to potential errors in inventory management, such as overstocking or understocking items, which can result in lost sales or wasted resources. Additionally, coordinating staff schedules can be cumbersome, often leading to overstaffing or understaffing during critical hours, thereby compromising customer service and affecting the store's overall productivity. Without effective tools in place, these operational hurdles can hinder a bookstore's ability to thrive in a competitive market.

To address these issues, a Bookstore Management System is proposed as a comprehensive solution. This system aims to provide a user-friendly interface for efficient inventory management that minimizes errors and enhances accuracy. By streamlining processes related to employee scheduling, the system will help ensure that the right number of staff is available at optimal times, improving customer service. Furthermore, it will offer strategic planning insights that enable bookstore owners to make informed decisions based on data trends and sales patterns. Overall, implementing this system will not only mitigate the problems faced in bookstore operations but also enhance operational efficiency, leading to better service delivery and increased profitability. The feasibility of such a project is high, as existing technologies can be leveraged to create an effective management system tailored to the specific needs of bookstores.

2. Overall Description

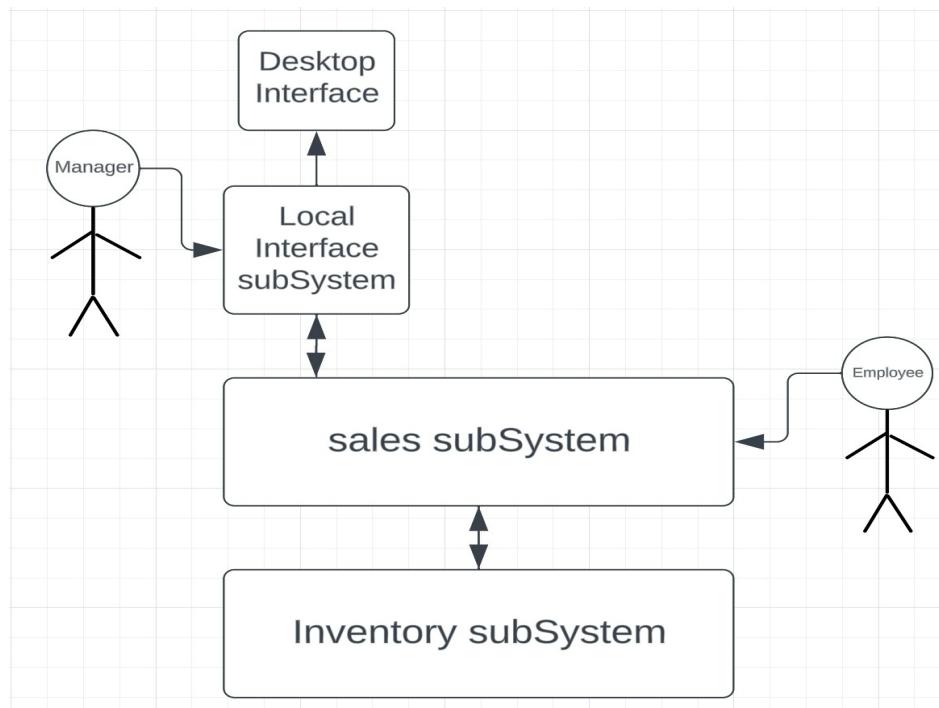
2.1 Product Perspective

The Bookstore Management System (BMS) is a new, self-contained product designed to address the operational challenges faced by bookstores in managing their inventory and employee scheduling efficiently. This system emerges in response to the increasing complexity of bookstore operations, driven by the need for improved efficiency, accuracy, and strategic insight. Bookstores, particularly independent and small chains, often rely on manual processes or disparate software solutions that do not seamlessly integrate. These existing methods are prone to errors, lead to inefficiencies, and hinder the potential for data-driven decision-making.

The BMS represents an evolution in bookstore operations, combining functionalities that are often segregated across multiple platforms into a unified system. By focusing on the core operational needs—inventory management, employee scheduling, and data analytics—this system aims to fill the gaps left by previous solutions and provide a more streamlined and effective approach.

While the Bookstore Management System is a standalone product, it incorporates elements that may interface with broader retail management ecosystems. For instance, the system can potentially integrate with existing point-of-sale (POS) systems to enhance customer transaction processing and provide real-time inventory updates as sales occur. Additionally, it may interface with external e-commerce platforms for online sales, ensuring that inventory levels are synchronized across physical and digital sales channels.

The following diagram outlines the major components of the overall system, showing the interconnections between the BMS and other related systems:



2.2 Product Functions

The Bookstore Management System (BMS) is designed to facilitate a variety of essential functions that streamline bookstore operations. Below is a high-level summary of the major functions the system must perform or allow users to perform, organized for clarity:

1. Inventory Management

- **Inventory Tracking:** Monitor stock levels across multiple categories.
- **Automated Reordering:** Automatically generate reorder alerts for low stock items.
- **Inventory Audits:** Conduct physical counts and reconcile discrepancies.
- **Product Catalog Management:** Manage product details, categories, and pricing.

2. Employee Management

- **Scheduling:** Create, modify, and manage employee schedules.
- **Time and Attendance Tracking:** Record and track employee hours worked.
- **Role and Permission Management:** Assign roles to employees and manage access to various functions of the system.

3. Sales Management

- **Sales Transactions Processing:** Record and process sales transactions in real time.
- **Sales Reporting:** Generate reports on sales performance, trends, and forecasts.
- **Customer Purchase History Tracking:** Maintain records of customer purchases for better service and marketing.

4. Customer Management

- **Customer Profile Management:** Create and edit customer profiles with purchase history and preferences.
- **Loyalty and Rewards Programs:** Implement and manage loyalty programs for regular customers.
- **Targeted Marketing Campaigns:** Engage customers with targeted promotions based on purchase history.

5. Analytics and Reporting

- **Performance Analysis:** Provide insights into sales trends, inventory performance, and employee productivity.
- **Custom Reporting Tools:** Enable users to build custom reports to suit their specific needs.

6. Integration

- **POS System Integration:** Interface with existing point-of-sale systems for seamless operation.
- **E-commerce Platform Integration:** Synchronize inventory and sales data across online and physical store channels.

Bookstore Management System

Inventory Management

- Track Inventory
- Automated Reordering
- Inventory Audits
- Product Catalog

Employee Management

- Scheduling
- Attendance
- Role Management

Customer Management

- Profile Management
- Loyalty Programs
- Marketing Campaigns

Analytics & Reporting

- Performance
- Custom Reports

Integration

- POS System
- E-commerce

2.3 List of Use Cases

USECASE_ID_01: Process Book Purchase
USECASE_ID_02: Manage Employee Information
USECASE_ID_03: Process Online Order
USECASE_ID_04: Manage Inventory
USECASE_ID_05: Place Order to Supplier
USECASE_ID_06: Manage Supplier Information
USECASE_ID_07: Manage Online Orders
USECASE_ID_08: Manage Employee Schedules
USECASE_ID_09: Assign Employee Schedules and Roles
USECASE_ID_10: Manage Coupons
USECASE_ID_11: Handle Returns
USECASE_ID_12: Make Payment to Supplier
USECASE_ID_13: Manage Employee Roles
USECASE_ID_14: Cancel Supplier Order
USECASE_ID_15: Manage Discounts

2.4 Extended Use Cases

USECASE_ID_01: Process Book Purchase

Use Case Section	Comment
Use Case Name	Process Book Purchase
Scope	Paper Trails Bookstore Management System
Level	User Goal
Primary Actor	Cashier
Stakeholders and Interests	<ul style="list-style-type: none"> • Customer: Wants to easily find and purchase desired books, receive accurate billing, and obtain a proof of purchase for potential returns. • Cashier: Aids in the purchase process, ensuring a smooth transaction. • Manager: May need to provide overrides or handle exceptional cases. • Inventory System: Needs accurate updates based on sales.

Preconditions	Cashier is identified and authenticated.	
Postconditions	<ul style="list-style-type: none"> • Sale is saved. • Tax is correctly calculated. • Accounting and Inventory are updated. • Commissions recorded. • Receipt is generated. • Payment authorization approvals are recorded. • Purchase details are recorded. 	
Main Success Scenario	<p>Actor Action</p> <ol style="list-style-type: none"> 1. Customer selects books to purchase and brings them to the cashier. 2. The cashier starts a new sale transaction. 3. Cashier starts a new sale: Initiates a new transaction in the system. 4. Cashier scans or manually enters book details: For each selected book, the cashier scans its barcode or manually enters the book's details into the system. 6. Cashier repeats steps 4-5, for each book until the customer indicates they are done. 8. Customer pays with cash 12. Customer receives a receipt and 	<p>System Responsibility</p> <ol style="list-style-type: none"> 5. System records sale line item: The system records the book details, presenting the item description, price, and running total to the cashier. 7. System presents total: Calculates the total amount 9. System updates the sale information. 10. System updates Inventory: Decreases the book quantity in the inventory.

	purchased books: Leaves the store with the receipt and purchased books.	11. System generates a receipt: Prints a receipt that includes book details, total amount, and transaction timestamp.
Extensions	<ol style="list-style-type: none"> 1. Item not found in the system: <ol style="list-style-type: none"> a. Cashier manually enters the book details. b. System displays the description and price. 2. The customer decides to remove a book from the purchase: <ol style="list-style-type: none"> a. The cashier removes the item, and the system updates the total. 3. Customer requests a gift receipt: <ol style="list-style-type: none"> a. Cashier generates a gift receipt without displaying prices. b. System includes the gift receipt with the purchase. 4. Payment failure: <ol style="list-style-type: none"> a. If the payment fails, the cashier assists the customer with an alternative payment method. 5. System fails: <ol style="list-style-type: none"> a. Cashier restarts the system, logs in, and requests recovery of the prior state. 6. Printer out of paper: <ol style="list-style-type: none"> a. Cashier replaces the paper, and a new receipt is printed. 	
Special Requirements	<ul style="list-style-type: none"> • Touchscreen interface for easy interaction. • Quick response from the system during credit authorization. • Robust recovery mechanisms for handling failures in remote services. • Language internationalization for displayed text. • Support for pluggable business rules at specific steps. 	
Technology and Data Variations List	<ul style="list-style-type: none"> • Book identification through barcode scanning or manual entry. • Various payment methods including cash, credit, etc. 	
Frequency of Occurrence	Continuous during store operating hours.	
Open Issues	<ul style="list-style-type: none"> • What are the tax law variations? • Explore the remote service recovery issue. • What customization is needed for different businesses? • Must a cashier take their cash drawer when they log out? • Can the customer directly use the card reader, or does the cashier have to do it? 	

USECASE_ID_02: Manage Employee Information

Use Case Section	Comment	
Use Case Name	Manage Employee Information	
Scope	Paper Trails Bookstore Management System	
Level	User Goal	
Primary Actor	Manager	
Stakeholders and Interests	<ul style="list-style-type: none"> Manager: Wants secure and efficient user authentication and profile management. Employee: Expects a user-friendly login/signup process and the ability to have an updated profile. 	
Preconditions	Manager is identified and authenticated	
Postconditions	User profiles are created, modified, or deleted as needed.	
Main Success Scenario	<p>Actor Action</p> <p>1. Manager accesses the User Authentication and Profiles module.</p> <p>3. Manager provides valid credentials and initiates the login process.</p> <p>Profiles module.</p> <p>1. <i>Create New Employee Profile:</i></p> <p>a. If Manager selects to create a new employee profile:</p> <p>b.</p> <p>i. Manager enters necessary details such as employee name, username, password, contact information, and role.</p>	<p>System Responsibility</p> <p>2. System prompts Manager to enter login credentials.</p> <p>4. System authenticates Manager's identity and grants access to the User</p> <p>ii. System validates entered</p>

	<p>2. <i>Modify Employee Profile:</i></p> <p>a. If Manager selects to modify an existing employee profile:</p> <p>i. Manager chooses the employee profile to be modified from the list.</p> <p>iii. Manager edits the necessary information.</p> <p>v. Manager confirms and submits the changes.</p> <p>3. <i>Delete Employee Profile:</i></p> <p>a. If Manager selects to delete an employee profile:</p> <p>. Manager chooses the employee profile to be deleted from the list.</p>	<p>ii. information. Manager confirms and submits the new employee profile.</p> <p>ii. System creates the employee profile and updates the list.</p> <p>ii. System displays the current details of the selected profile.</p> <p>iv. System validates the modified information.</p> <p>vi. System updates the employee profile with the modified information.</p>
Extensions	<p>1. Invalid login credentials:</p> <p>a. System signals an authentication error to Manager.</p> <p>b. Manager re-enters valid login credentials.</p> <p>2. Manager cancels the employee profile creation, modification, or deletion:</p> <p>a. System cancels the operation and returns to the employee management menu.</p>	
Special Requirements	<ul style="list-style-type: none"> Validation checks for entered employee profile details. Access control measures to ensure only managers can perform profile management. 	
Technology and Data Variations List	<ul style="list-style-type: none"> Encrypted storage of employee profile data. 	
Frequency of Occurrence	Occasional	
Open Issues	<ul style="list-style-type: none"> What measures are in place to ensure password security and compliance with data protection regulations? How will the system handle forgotten passwords and password recovery procedures? 	

	<ul style="list-style-type: none">• Are there any limitations on the types of characters or length allowed for passwords?• How will the system handle concurrent profile modifications by multiple managers?• What protocols are in place for user profile backup and recovery in case of system failure?• How will the system handle requests for profile deletion, and what data retention policies are in place?
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USECASE_ID_03: Process Online Order

Use Case Section	Comment	
Use Case Name	Process Online Order	
Scope	Paper Trails Bookstore Management System	
Level	User-Goal	
Primary Actor	Sales Manager	
Stakeholders and Interests	<ul style="list-style-type: none"> Sales Manager: Aims to efficiently manage online orders received through the website, ensuring accurate processing and timely fulfillment. Customer: Expects seamless order processing and timely delivery of purchased items. Inventory System: Requires real-time updates to manage stock availability and allocate items for online orders. Accounting System: Needs accurate recording of online sales for financial tracking. 	
Preconditions	Online orders are received through the website, and the system is operational. The sales manager is successfully logged in the system.	
Postconditions	Online orders are processed, inventory is updated, and the customer receives confirmation of their order.	
Main Success Scenario	<p>Actor Action</p> <ol style="list-style-type: none"> Sales Manager logs into the system and navigates to the online orders section. Sales Manager selects an order to process. Sales Manager verifies the order details for accuracy. 	<p>System Responsibility</p> <ol style="list-style-type: none"> System displays a list of pending online orders received from the website. System presents order details including customer information, ordered items, and shipping address. System reserves the items in the

	<p>8. Sales Manager prepares the order and updates the status of the order.</p> <p>9. Sales Manager ships the order and updates the status of the shipment.</p>	<p>inventory for the selected order</p> <p>7. System generates an invoice of the order.</p>
Extensions	<p>1. <i>Items not available in inventory:</i></p> <ul style="list-style-type: none"> a. Sales Manager informs the customer of the unavailability. b. System updates the order status to 'Out of Stock'. c. Customer is given options for a refund or to wait for restocking. <p>2. <i>Payment authorization fails:</i></p> <ul style="list-style-type: none"> a. System notifies Sales Manager of the payment failure. b. Sales Manager contacts the customer to resolve payment issues. c. If payment cannot be resolved, System cancels the order and updates the status accordingly. 	
Special Requirements	<ul style="list-style-type: none"> • Secure integration between the website and the management system to protect customer data. • Real-time inventory updates to prevent overselling and ensure order fulfillment. • Seamless communication with the Payment Gateway for secure online transactions. 	
Technology and Data Variations List	<ul style="list-style-type: none"> • Online orders received through the website. • Payment processing via secure Payment Gateway. 	
Frequency of Occurrence	Frequent	
Open Issues	<ul style="list-style-type: none"> • How will the taxes be implemented and updated? 	

USECASE_ID_04: Manage Inventory

Use Case Section	Comment	
Use Case Name	Manage Inventory	
Scope	Paper Trails Bookstore Management System	
Level	User Goal	
Primary Actor	Inventory Manager	
Stakeholders and Interests	<ul style="list-style-type: none"> • Inventory Manager: Wants an efficient system to manage book inventory, update stock levels, and track book information. • Salesperson: Relies on accurate inventory data to assist customers and prevent over-selling. • Customer: Expects the availability of books as displayed in the inventory. • Bookstore Manager: Needs real-time updates on inventory for strategic decision-making. • System Administrator: Ensures the security and integrity of inventory data. 	
Preconditions	Inventory Manager is identified and authenticated	
Postconditions	<ul style="list-style-type: none"> • Inventory is accurately managed • Stock levels are updated based on operations. • Criteria levels for low inventory notifications are successfully modified. 	
Main Success Scenario	Actor Action	System Responsibility
	1. Inventory Manager accesses the Manage Inventory module. 3. Inventory Manager provides valid credentials and initiates the login process. <i>View Inventory:</i> 5. Inventory Manager selects the option to view the current inventory.	2. System prompts the Inventory Manager to enter login credentials. 4. System authenticates the Inventory Manager's identity and grants access to the Manage Inventory module. 6. System displays a list of all books in

		the inventory, including details such as book title, author, quantity on hand, and pricing information.
	<p><i>Add New Book to Inventory:</i></p> <p>7. If Inventory Manager chooses to add a new book to the inventory:</p> <p>8. Inventory Manager enters book details such as title, author, quantity, pricing, and other relevant information.</p> <p>10. Inventory Manager confirms and submits the new book details.</p>	<p>9. System validates the entered information.</p> <p>11. System adds the new book to the inventory and updates the list.</p>
	<p><i>Remove Book from Inventory:</i></p> <p>12. If Inventory Manager selects to remove a book from the inventory:</p> <p>13. Inventory Manager chooses the book to be removed from the list.</p> <p>15. Inventory Manager confirms the removal.</p>	<p>14. System displays a confirmation prompt</p> <p>16. System removes the selected book from the inventory and updates the list.</p>
	<p><i>Modify Criteria Levels for Low Inventory Notifications:</i></p> <p>17. Inventory Manager selects the option to modify the criteria levels.</p> <p>19. Inventory Manager enters new value for the parameter</p>	<p>18. System displays the existing criteria levels, including parameters such as minimum stock quantity and threshold values.</p> <p>20. System validates the entered information and ensures that the new criteria levels are within acceptable ranges.</p> <p>22. System displays the updated criteria levels for confirmation.</p>

	21. Inventory Manager confirms and submits the updated criteria levels.	
Extensions	<p><i>Invalid login credentials:</i></p> <ol style="list-style-type: none"> 1. System signals an authentication error to the Inventory Manager. 2. Inventory Manager re-enters valid login credentials. <p><i>Inventory Manager cancels stock update, new book addition, or book removal:</i></p> <ol style="list-style-type: none"> 3. System cancels the operation and returns to the inventory management menu. 	
Special Requirements:	<ul style="list-style-type: none"> • Secure authentication mechanism for the Inventory Manager. • Validation checks for entered book details during new additions or updates. • Real-time synchronization with the sales module to ensure accurate stock levels. 	
Technology and Data Variations List:	Encrypted storage of inventory data.	
Frequency of Occurrence	Regularly	
Open Issues	<ul style="list-style-type: none"> • Are there any limitations on the number of books that can be added to the inventory at once? • How will the system handle inventory updates in real-time to reflect changes accurately? • What protocols are in place for inventory data synchronization? • Are there any restrictions on the types of books that can be added to the inventory? 	

USECASE_ID_05: Place Order to Supplier

Use Case Section	Comment	
Use Case Name	Place Order to Supplier	
Scope	Paper Trails Bookstore Management System	
Level	User Goal	
Primary Actor	Inventory Manager	
Stakeholders and Interests	<ul style="list-style-type: none"> Inventory Manager: Aims to efficiently order new books from suppliers, ensuring optimal stock levels. Bookstore Manager: Requires a streamlined process for maintaining a well-stocked inventory. Supplier: Expects accurate and timely order requests to fulfill the book orders. System Administrator: Ensures the security and reliability of the order placement functionality. 	
Preconditions	Manager is identified and authenticated	
Postconditions	Order details are successfully recorded and sent to the supplier for fulfillment.	
Main Success Scenario	<p>Actor Action</p> <ol style="list-style-type: none"> 1. Inventory Manager accesses the Place Order module. 3. Inventory Manager provides valid credentials and initiates the login process. 5. Inventory Manager selects the supplier from a list of approved suppliers. 6. Inventory Manager adds books to the order by selecting them from the catalog. b. Inventory Manager enters the 	<p>System Responsibility</p> <ol style="list-style-type: none"> 2. System prompts the Inventory Manager to enter login credentials. 4. System authenticates the Inventory Manager's identity and grants access to the Place Order module. a. System displays the catalog of available books from the chosen supplier a. System prompts the Inventory Manager to specify the quantity

	<p>desired quantities for each book.</p> <p>7. Inventory Manager reviews and completed the order, ensuring the correct supplier, books, and quantities are selected.</p> <ul style="list-style-type: none"> a. If necessary, the Inventory Manager can modify the order details. b. Inventory Manager confirms the order. <p>8. System records the order details and generates a confirmation for the Inventory Manager.</p> <ul style="list-style-type: none"> b. Inventory Manager receives a confirmation message indicating that the order was successfully submitted. 	<p>for each selected book.</p> <p>c. System validates the entered information and adds the selected books to the order.</p> <p>a. System sends the order information to the selected supplier for fulfillment.</p>
Extensions	<p><i>Invalid login credentials:</i></p> <ol style="list-style-type: none"> 1. System signals an authentication error to the Inventory Manager. 2. Inventory Manager re-enters valid login credentials. <p><i>Inventory Manager cancels the order:</i></p> <ol style="list-style-type: none"> 1. System cancels the operation and returns to the order placement menu. <p><i>Special Requirements:</i></p> <ol style="list-style-type: none"> 1. Secure authentication mechanism for the Inventory Manager. 2. Real-time synchronization with the supplier's system for accurate catalog information. 3. Validation checks for entered quantities and order details to prevent errors. <p><i>Incomplete order details:</i></p> <ol style="list-style-type: none"> 1. If the Inventory Manager submits the order with missing or incomplete information: <ol style="list-style-type: none"> a. System signals an error and highlights the missing details. b. Inventory Manager corrects the incomplete information and resubmits the order. <p><i>Insufficient inventory funds:</i></p> <ol style="list-style-type: none"> 1. If the Inventory Manager attempts to place an order exceeding the allocated budget: <ol style="list-style-type: none"> a. System signals an error indicating insufficient funds for the order. b. Inventory Manager revises the order to meet the budget constraints. <p><i>Supplier catalog unavailability:</i></p> <ol style="list-style-type: none"> 2. If the system cannot retrieve the supplier's catalog due to technical issues: <ol style="list-style-type: none"> a. System signals a catalog retrieval error. b. Inventory Manager is prompted to retry or choose an alternative supplier. 	

	<p>c. c. If the issue persists, Inventory Manager contacts system support for assistance.</p> <p><i>Order confirmation delay:</i></p> <ol style="list-style-type: none"> 1. If the system encounters delays in confirming the order with the supplier: <ol style="list-style-type: none"> a. System notifies the Inventory Manager about the delay. b. Inventory Manager can choose to wait for confirmation or cancel the order.
Special Requirements:	<ul style="list-style-type: none"> • Secure authentication mechanism for the Inventory Manager. • Real-time synchronization with the supplier's system for accurate catalog information. • Validation checks for entered quantities and order details to prevent errors. • Integration with the budget management module to check and enforce budget constraints. • Robust error handling and user-friendly prompts to guide the Inventory Manager in case of issues.
Technology and Data Variations List:	<ul style="list-style-type: none"> • Encrypted transmission of order details to the supplier. • Real-time inventory synchronization with the supplier: • Integration with notification system:
Frequency of Occurrence	Occasional, as orders are placed based on inventory needs and stock availability.
Open Issues	<ul style="list-style-type: none"> • Are there any limitations on the number of books that can be ordered from a single supplier at once? • How will the system handle discrepancies between ordered quantities and received quantities? • What protocols are in place for verifying the authenticity and reliability of supplier information? • How will the system handle supplier disputes or issues with order fulfillment? • Are there any regulations or compliance standards that the system must adhere to regarding order placement?

USECASE_ID_06: Manage Supplier Information

Use Case Section	Comment	
Use Case Name	Manage Supplier Information	
Scope	Paper Trails Bookstore Management System	
Level	User Goal	
Primary Actor	Inventory Manager	
Stakeholders and Interests	<ul style="list-style-type: none"> Inventory Manager: Wants to efficiently manage supplier information, add new suppliers, delete existing suppliers, and view detailed information for informed decision-making. System Administrator: Wants a secure and user-friendly system for managing supplier data. Company Management: Wants accurate supplier records for strategic planning, negotiation, and relationship management. Auditors: Want to ensure compliance with data protection regulations and accuracy of supplier information. 	
Preconditions	Inventory Manager is identified and authenticated	
Postconditions	Supplier information is accurately updated. Changes are reflected in the system. System maintains data integrity	
Main Success Scenario	Actor Action 1. Inventory Manager logs into the system. 2. Inventory Manager navigates to the Supplier Management section. <i>Inventory Manager selects the desired action:</i> 3. Add a new supplier. 4. Delete an existing supplier. 5. View detailed information about a supplier. <i>If adding a new supplier:</i> 6. Inventory Manager enters the necessary supplier details, including name, contact information, and any relevant notes.	System Responsibility

	<p>8. Inventory Manager receives a confirmation message.</p> <p><i>If deleting an existing supplier:</i></p> <p>9. Inventory Manager selects the supplier to be deleted.</p> <p>11. Inventory Manager confirms the deletion.</p> <p>13. Inventory Manager receives a confirmation message.</p> <p><i>If viewing supplier information:</i></p> <p>14. Inventory Manager selects the supplier to view.</p> <p>16. Inventory Manager can review the information for decision-making.</p> <p>17. Inventory Manager completes the action and logs out.</p> <p><i>View Suppliers List:</i></p> <p>18. Inventory Manager navigates to the Supplier Management section.</p> <p>19. Inventory Manager selects the option to view all supplier details</p>	<p>7. System validates the entered information and adds the new supplier to the database.</p> <p>10. System prompts for confirmation.</p> <p>12. System removes the supplier from the database.</p> <p>15. System displays detailed information, including contact details, order history, and any special agreements.</p> <p>20. The system displays a comprehensive list of suppliers, including all their details</p>
Extensions	<p><i>Invalid login credentials:</i></p> <ol style="list-style-type: none"> 1. If the Inventory Manager enters incorrect login credentials: <ol style="list-style-type: none"> a. System signals an authentication error. b. Inventory Manager re-enters valid login credentials. c. Supplier addition error: 2. If there are validation errors during the addition of a new supplier: <ol style="list-style-type: none"> a. System signals an error and highlights the specific fields with issues. 	

	<p>b. Inventory Manager corrects the information and resubmits.</p> <p>c. Supplier deletion confirmation:</p> <ol style="list-style-type: none"> 3. If the Inventory Manager hesitates or selects the wrong supplier for deletion: <ol style="list-style-type: none"> a. System prompts for confirmation again. b. Inventory Manager either confirms or cancels the deletion. c. Supplier not found during deletion or viewing. <p><i>If the selected supplier is not found in the database:</i></p> <ol style="list-style-type: none"> 1. System signals an error. 2. Inventory Manager verifies the supplier selection and re-enters if necessary.
Special Requirements:	<ul style="list-style-type: none"> • Secure authentication mechanism for the Inventory Manager. • Access controls to ensure only authorized personnel can manage supplier information. • System maintains an audit trail of supplier management actions for accountability. • Integration with external databases or services for verifying supplier details. • User-friendly interface for efficient supplier data management.
Technology and Data Variations List:	Data Encryption for Supplier Information
Frequency of Occurrence	Ongoing.
Open Issues	<ul style="list-style-type: none"> • How will the system handle supplier information updates and ensure data accuracy? • Are there any restrictions on the types of information that can be included in supplier profiles? • How will the system handle conflicts or discrepancies in supplier data across different databases or sources? • Are there any regulations or compliance standards that the system must adhere to regarding supplier management?

USECASE_ID_07: Manage Online Orders

Use Case Section	Comment	
Use Case Name	Manage Online Orders	
Scope	Paper Trails Bookstore Management System	
Level	User Goal	
Primary Actor	Sales Manager	
Stakeholders and Interests	<ul style="list-style-type: none"> Sales Manager: Aims to efficiently manage online orders, including viewing, updating, and deleting orders as needed. Customer: Expects timely and accurate processing of online orders. Inventory System: Requires real-time updates based on changes made to online orders. 	
Preconditions	Sales Manager is identified and authenticated	
Postconditions	Online orders are managed effectively, and the inventory system is updated accordingly.	
Main Success Scenario	<p>Actor Action</p> <ol style="list-style-type: none"> Sales Manager logs into the system and navigates to the online orders management section. Sales Manager selects an order from the list to view or update. Sales Manager reviews the order details and current status. Sales Manager updates the 	<p>System Responsibility</p> <ol style="list-style-type: none"> System displays a list of all types of online orders, including pending, shipped, delivered, cancelled, etc., along with their respective order details. System presents the order details for the selected order, including customer information, ordered items, and current order status.

	order status as needed, selecting from options such as pending, shipped, delivered, cancelled, etc.	7. System saves the changes made to the order status and updates the order details accordingly. 8. System generates notifications to inform customers of any changes to their order status.
Extensions	<p>1. <i>Order details are incorrect or incomplete:</i></p> <ul style="list-style-type: none"> a. Sales Manager contacts the customer to clarify or obtain missing information. b. Sales Manager updates the order details based on the information provided by the customer. c. System saves the updated order details and notifies the customer of any changes. <p>2. <i>Order deletion confirmation is canceled:</i></p> <ul style="list-style-type: none"> a. Sales Manager chooses not to delete the order. b. System returns to the previous state without deleting the order. 	
Special Requirements:	<ul style="list-style-type: none"> • Secure access control to prevent unauthorized access to online order management functionalities. • Real-time synchronization between the online order management system and the inventory system. 	
Technology and Data Variations List:	Online orders retrieved from the website. Updates made to orders reflected in the inventory system.	
Frequency of Occurrence	Regular	
Open Issues	<ul style="list-style-type: none"> • How will the system handle cancellation of deleted orders? 	

USECASE_ID_08: Manage Employee Schedules

Use Case Section	Comment	
Use Case Name	Manage Employee Schedules	
Scope	Paper Trails Bookstore Management System	
Level	User Goal	
Primary Actor	Store Manager	
Stakeholders and Interests	<ul style="list-style-type: none"> • Store Manager: Aims to efficiently manage employee schedules, and ensure proper staffing. • Employees: Expect clear schedules for effective work planning. • Company: Seeks to optimize employee scheduling to enhance operational efficiency. 	
Preconditions	The Store Manager is identified and authenticated. Employee schedules and role definitions are available in the system.	
Postconditions	Employee schedules are successfully assigned, roles are defined, and the system updates the schedule database.	
Main Success Scenario	<p>Actor Action</p> <ol style="list-style-type: none"> 1. Store Manager logs into the system using secure credentials. 3. The Store Manager selects "Manage Employee Schedules and Roles" from the menu. 5. The Store Manager views a calendar view of the current week's schedule. 6. The Store Manager selects a specific day on the calendar to view and manage schedules. 	<p>System Responsibility</p> <ol style="list-style-type: none"> 2. The system presents the main dashboard with options, including "Manage Employee Schedules and Roles." 4. The system displays the current employee schedules, and working hours. 7. The system displays the available time slots for the selected day and

	<p>8. The Store Manager changes existing time slot by providing new start and end times</p> <p>9. The Store Manager updates employees to other time slots, defining their schedules for the selected day.</p> <p>11. The Store Manager can add a new time slot by selecting day and defining start and end time</p> <p>12. The Store Manager can delete a specific time slot in the schedule due to any reasons.</p>	any existing role assignments. 10. The system updates the schedule database and working hours. 13. The system deletes the schedule from the database.
Extensions	<p><i>Unavailable employees:</i></p> <ol style="list-style-type: none"> If an employee is unavailable for a specific day, the system alerts the Store Manager during the scheduling process. The store Manager can adjust the schedule or assign another available employee. 	
Special Requirements:	<ul style="list-style-type: none"> Secure authentication mechanism for Store Manager login. Intuitive calendar view for easy navigation of employee schedules and role assignments. Real-time synchronization with employee information and role definitions. Notification system for employees to receive updates on their assigned schedules and roles. 	
Technology and Data Variations List:	<p><i>Integration with Employee Database:</i></p> <ol style="list-style-type: none"> The system integrates with the employee database for real-time access to employee information. <p><i>Role Definition Database:</i></p> <ol style="list-style-type: none"> Maintain a database of predefined roles with descriptions for easy reference during scheduling. <p><i>Calendar Integration:</i></p> <ol style="list-style-type: none"> Implement a calendar integration for easy visualization of schedules and role assignments. 	
Frequency of Occurrence	Regular, as Store Managers need to create and manage employee schedules on an ongoing basis.	

Open Issues	<ul style="list-style-type: none">• How will the system handle employee scheduling conflicts or overlapping shifts?• What measures are in place to ensure fair and equitable distribution of shifts among employees?• Are there any limitations on the number of employees that can be assigned to a single shift?• How will the system handle requests for time off or schedule changes from employees?• Are there any regulations or compliance standards that the system must adhere to regarding employee scheduling?• How will the system handle requests for shift swaps or replacements among employees?• What procedures are in place for employee performance evaluations and feedback related to scheduling?
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USECASE_ID_09: Assign Employee Schedules and Roles

Use Case Section	Comment	
Use Case Name	Assigning Employee Schedules and Roles	
Scope	Paper Trails Bookstore Management System	
Level	User Goal	
Primary Actor	Store Manager	
Stakeholders and Interests	<ul style="list-style-type: none"> • Store Manager: Aims to efficiently manage employee schedules, assign roles, and ensure proper staffing. • Employees: Expect clear schedules and defined roles for effective work planning. • Company: Seeks to optimize employee scheduling and role assignments to enhance operational efficiency. • Human Resources: Requires accurate recording of employee schedules for payroll and compliance purposes. • Customers: Benefit from well-staffed shifts that provide quality service. 	
Preconditions	The Store Manager is identified and authenticated and has access to the schedule assigning dashboard.	
Postconditions	All the employees have been successfully assigned roles with their respective times and dates	
Main Success Scenario	<p>Actor Action</p> <ol style="list-style-type: none"> 1. Store Manager logs into the system and navigates to the schedule management section. 3. Store Manager adds time slots for the upcoming week 4. Store Manager assigns employees to roles and time slots based on their availability, skills, and shift preferences. 5. Store Manager resolves conflicts by adjusting employee assignments or 	<p>System Responsibility</p> <ol style="list-style-type: none"> 2. System displays the schedule template for the upcoming week, divided into days and shifts.

	<p>shift timings as needed.</p> <p>6. Store Manager finalizes the schedule for the upcoming week.</p> <p>9. Store Manager communicates any changes or updates to the schedule to the affected employees.</p>	<p>7. System saves the assigned employee schedules and updates the schedule database.</p>
Extensions	<p>1. <i>Conflicts detected in the assigned schedule:</i></p> <ol style="list-style-type: none"> System alerts the Store Manager about the conflicting shifts. Store Manager reviews the conflicting shifts and identifies the cause of the conflict. Store Manager resolves the conflict by adjusting employee assignments or shift timings. System updates the schedule accordingly and confirms the resolution of conflicts 	
Special Requirements:	<ul style="list-style-type: none"> User-friendly interface for easy navigation and assignment of employee schedules. Automated conflict detection to minimize errors and ensure smooth scheduling. Ability to accommodate employee preferences and availability while assigning shifts. 	
Technology and Data Variations List:	<ul style="list-style-type: none"> Employee availability and preferences retrieved from the employee database. Updates made to the schedule reflected in the schedule database. 	
Frequency of Occurrence	Weekly	
Open Issues	How does the system manage urgent changes?	

USECASE_ID_10: Manage Coupons

Use Case Section	Comment	
Use Case Name	Manage Coupons	
Scope	Paper Trails Bookstore Management System	
Level	User Goal	
Primary Actor	Sales Manager	
Stakeholders and Interests	<ul style="list-style-type: none"> • Sales Manager: Aims to generate, manage, and verify coupons to provide discounts to customers and boost sales. • Cashier: Responsible for verifying and applying discounts using coupons during the checkout process. • Customers: Anticipate receiving discounts through coupons for their purchases. • Company: Aims to increase sales and customer satisfaction through strategically planned coupon promotions. • System Administrator: Ensures the security and integrity of coupon data and settings 	
Preconditions	Sales Manager is identified and authenticated.	
Postconditions	Coupons are successfully generated, managed, and verified, providing discounts to customers.	
Main Success Scenario	Actor Action	System Responsibility
	1. Sales Manager accesses the Manage Coupons module. 3. Sales Manager provides valid credentials and initiates the login process. 5. Sales Manager selects the desired action: - Add new coupons. - View existing coupons. - Delete coupons.	2. System prompts the Sales Manager to enter login credentials. 4. System authenticates the Sales Manager's identity and grants access to the Manage Coupons module.
<i>Add New Coupons:</i>		

	<p>6. Sales Manager chooses to create new coupons.</p> <p>8. Sales Manager enters the required information.</p> <p><i>View Existing Coupons:</i></p> <p>11. Sales Manager selects the option to view existing coupons.</p> <p>13. The Sales Manager reviews the list of coupons.</p> <p><i>Delete Coupons:</i></p> <p>14. Sales Manager selects the option to delete coupons.</p> <p>16. Sales Manager chooses one or more coupons to delete.</p>	<p>7. System prompts the Sales Manager to specify the discount percentage for the coupon.</p> <p>9. System validates the entered information and generates the coupon with unique codes and associated discounts.</p> <p>10. System stores the generated coupon in the database.</p> <p>12. System displays a list of all coupons, including details such as coupon code, discount percentage</p> <p>15. System displays a list of active coupons.</p> <p>17. System confirms the deletion and removes the selected coupons from the database.</p>
Extensions	<p><i>Invalid login credentials:</i></p> <ol style="list-style-type: none"> 1. System signals an authentication error to the Sales Manager. 2. Sales Manager re-enters valid login credentials. <p><i>Invalid coupon code during verification:</i></p> <ol style="list-style-type: none"> 3. System notifies the cashier that the entered coupon code is invalid. 4. Cashier informs the customer accordingly. 	
Special Requirements:	<ul style="list-style-type: none"> • Secure authentication mechanism for Sales Manager login. • Real-time validation checks for coupon codes during verification. • Integration with the checkout process for seamless coupon application. • Notification system to inform customers about active promotions 	

	and discounts.
Technology and Data Variations List:	<ul style="list-style-type: none">• Encrypted storage of coupon data to ensure security.• Integration with the sales module to track the usage and effectiveness of coupons.
Frequency of Occurrence	Occasional
Open Issues	<ul style="list-style-type: none">• Can AI- driven coupon generation work?

USECASE_ID_11: Handle Returns

Use Case Section	Comment	
Use Case Name	Handle Returns	
Scope	Paper Trails Bookstore Management System	
Level	User Goal	
Primary Actor	Cashier	
Stakeholders and Interests	<ul style="list-style-type: none"> • Cashier: Aims to efficiently handle returns and refunds to ensure customer satisfaction. • Customers: Expect a straightforward and fair return/refund process in case of product dissatisfaction. • Company: Aims to maintain positive customer relationships and uphold the reputation of the bookstore. • Inventory Manager: Needs accurate updates on returned items for inventory management. 	
Preconditions	Cashier is identified and authenticated. A return request is initiated by the customer.	
Postconditions	Return and refund process is successfully completed, the inventory is updated, and the customer is satisfied.	
Main Success Scenario	Actor Action	System Responsibility
	1. Customer comes to store to initiate a return or refund. 2. Customer provides order details, item information, and reason for return/refund. 4. The system presents the "Process Return" option. 5. Representative selects the option and enters the customer's order details. 6. Cashier inspects the returned item to ensure it meets the return policy criteria (e.g., unused,	3. Cashier logs into the system using secure credentials.

	<p>undamaged).</p> <p>7. If the item meets the return policy, the cashier will enter the order details in the return.</p> <p>10. Cashier thanks the customer for their business and ensures they are satisfied with the return process.</p>	<p>8. System calculates the refund amount based on the original payment method and the item's condition.</p> <p>9. The system prints an automated recipient to the customer, including details of the refunded amount and transaction.</p>
Extensions	<p><i>Invalid login credentials:</i></p> <ol style="list-style-type: none"> 1. System signals an authentication error to the Cashier. 2. Representative re-enters valid login credentials. <p><i>Item fails inspection:</i></p> <ol style="list-style-type: none"> 1. If the returned item does not meet the return policy criteria, the system generates a report. 2. The Cashier contacts the customer, explaining the reasons for non-acceptance and potential resolutions. <p><i>Customer cancels return:</i></p> <ol style="list-style-type: none"> 1. If the customer decides to cancel the return before shipping the item, the system cancels the return process. 2. Cashier notifies the customer about the cancellation. <p><i>Delay in refund processing:</i></p> <ol style="list-style-type: none"> 1. If there is a delay in processing the refund, the system generates an alert. 2. Cashier contacts the customer, apologizes for the delay, and provides an estimated timeframe. 	
Special Requirements:	<ul style="list-style-type: none"> • Secure authentication mechanism for Cashier login. • Automated communication system for notifying customers at each step of the return and refund process. • Integration with the payment gateway for seamless refund transactions. 	
Technology and Data Variations List:	<p><i>Integration with Payment Gateways:</i></p> <ol style="list-style-type: none"> 1. Explore and integrate with various payment gateways to ensure smooth refund transactions. 2. Implement secure API calls for real-time refund processing. <p><i>Automated Refund Calculation:</i></p> <ol style="list-style-type: none"> 1. Investigate the use of algorithms to automate refund calculations based on predefined criteria. 2. Implement a transparent and accurate refund calculation mechanism. 	

Frequency of Occurrence	Occasional, depending on customer requests and satisfaction levels.
Open Issues	<ul style="list-style-type: none">• How will the system handle disputes or discrepancies between customers and the bookstore regarding return eligibility or refund amounts?• What procedures are in place for tracking returned items during transit to ensure they reach the designated return address?• What measures are implemented to prevent fraudulent returns or attempts to abuse the return policy?

USECASE_ID_12: Make Payment to Supplier

Use Case Section	Comment	
Use Case Name	Make Payment to Supplier	
Scope	Paper Trails Bookstore Management System	
Level	User Goal	
Primary Actor	Inventory Manager	
Stakeholders and Interests	<ul style="list-style-type: none"> • Inventory Manager: Aims to complete orders by making secure and convenient payments to suppliers. • Supplier: Expects timely and error-free payment transactions for fulfilled orders. • Accounting Department: Relies on accurate payment records for financial management and reconciliation. • Payment Gateway: Provides secure processing of payment transactions and receives payment authorizations. 	
Preconditions	Inventory Manager has initiated an order with selected items from the supplier.	
Postconditions	Payment is successfully processed, and the order status is updated. The supplier receives a payment confirmation.	
Main Success Scenario	<p>Actor Action</p> <ol style="list-style-type: none"> 1. Order details: <ol style="list-style-type: none"> a. Inventory Manager proceeds to the payment stage after confirming the order with the supplier. b. The system presents the order details, including the total amount to be paid to the supplier. 2. Payment Selection: <ol style="list-style-type: none"> a. Inventory Manager chooses a preferred payment method from available options (e.g., bank transfer, credit card). 3. Entering Payment Details: <ol style="list-style-type: none"> a. Based on the selected payment method, the system prompts the Inventory Manager to enter relevant payment details. b. Inventory Manager enters accurate payment information, such as bank account details or payment 	System Responsibilty

	<p>reference numbers.</p> <p>4. Payment Authorization:</p> <ol style="list-style-type: none"> The system securely transmits payment details to the Payment Gateway or the supplier's payment system. Payment Gateway or supplier's system verifies the information and requests authorization from the financial institution or accounting department. <p>5. Payment Receipt:</p> <ol style="list-style-type: none"> The system provides a digital receipt to the Inventory Manager, detailing the payment amount, items ordered, and transaction ID.
Extensions	<ol style="list-style-type: none"> <i>Invalid Payment Details:</i> <ol style="list-style-type: none"> If the Inventory Manager enters incorrect payment details, the system prompts for corrections. Inventory Manager corrects the information and proceeds with the payment. <i>Payment Declined:</i> <ol style="list-style-type: none"> If the financial institution or accounting department declines the payment, the system notifies the Inventory Manager. Inventory Manager may choose an alternate payment method or contact the financial institution or accounting department for assistance. <i>Cancelling Payment:</i> <ol style="list-style-type: none"> If the Inventory Manager decides to cancel the payment, the system returns to the payment method selection. Inventory Manager chooses a different payment method or cancels the entire transaction.
Special Requirements:	<ul style="list-style-type: none"> Secure encryption of payment data during transmission. Integration with a reliable Payment Gateway for secure payment processing. Compliance with Payment Card Industry Data Security Standard (PCI DSS) for handling cardholder information.
Technology and Data Variations List:	<p><i>Encryption of Payment Data:</i></p> <ol style="list-style-type: none"> Implement secure encryption protocols (e.g., SSL/TLS) for safeguarding payment data during transmission.
Frequency of Occurrence	Common, as customers frequently make payments during the checkout process.
Open Issues	<ul style="list-style-type: none"> Are there any regulations or compliance standards that the system must adhere to regarding payment?

USECASE_ID_13: Manage Employee Roles

Use Case Section	Comment	
Use Case Name	Manage Employee Roles	
Scope	Paper Trails Bookstore Management System	
Level	User Goal	
Primary Actor	Store Manager	
Stakeholders and Interests	<ul style="list-style-type: none"> • Store Manager: Aims to efficiently manage employee roles, including viewing, adding, removing, and updating roles as needed. • Employees: Expect clear and accurate assignment of roles that align with their responsibilities and skills. • Human Resources: Requires accurate recording of employee roles for organizational structure and compliance purposes. 	
Preconditions	Store Manager is authenticated and has access to the employee management section in the system.	
Postconditions	Employee roles are managed effectively, and the employee database is updated accordingly.	
Main Success Scenario	<p>Actor Action</p> <ol style="list-style-type: none"> 1. Store Manager logs into the system and navigates to the employee management section. 3. Store Manager selects an employee from the list to view or manage roles. 6. Store Manager chooses to add a new role to the employee. 8. Store Manager selects the 	<p>System Responsibility</p> <ol style="list-style-type: none"> 2. System displays a list of employees along with their current roles. 5. System presents the employee's current roles and options to add, remove, or update roles. 7. System provides a list of available roles to choose from.

	<p>desired role to add to the employee.</p> <p>10. Store Manager chooses to remove an existing role from the employee.</p> <p>12. Store Manager selects the role to be removed from the employee.</p> <p>14. Store Manager chooses to update an existing role for the employee.</p> <p>16. Store Manager selects the role to be updated from the employee's roles.</p> <p>18. Store Manager makes the necessary updates to the role.</p>	<p>9. System updates the employee's roles and confirms the addition of the new role.</p> <p>11. System displays the employee's current roles and options to remove roles.</p> <p>13. System confirms the removal of the selected role from the employee.</p> <p>15. System displays the employee's current roles and options to update roles.</p> <p>17. System provides options to modify the selected role, such as changing responsibilities or permissions.</p> <p>19. System confirms the updates to the selected role for the employee.</p>
Extensions	<p><i>Employee roles are not available or cannot be modified:</i></p> <p>a. <i>System notifies the Store Manager that the employee's roles cannot be modified.</i></p> <p>b. <i>Store Manager may contact Human Resources or an administrator for further assistance.</i></p>	
Special Requirements:	<ul style="list-style-type: none"> • Clear and intuitive user interface for easy navigation and management of employee roles. • Role-based access control to restrict unauthorized changes to employee roles. • Audit trail functionality to track changes made to employee roles for accountability and compliance. 	
Technology and Data Variations List:	<ol style="list-style-type: none"> 1. Employee roles retrieved from the employee database. 2. Updates made to employee roles reflected in the employee database. 	

Frequency of Occurrence	Occasional
Open Issues	<ul style="list-style-type: none">• Who handles the overlapping of roles?

USECASE_ID_14: Cancel Supplier Order

Use Case Section	Comment	
Use Case Name	Cancel Supplier Order	
Scope	Paper Trails Bookstore Management System	
Level	User Goal	
Primary Actor	Inventory Manager	
Stakeholders and Interests	<ul style="list-style-type: none"> Inventory Manager: Aims to cancel an order efficiently when necessary, ensuring accurate stock management. Bookstore Manager: Requires a streamlined process for maintaining a well-managed inventory. Supplier: Expects timely and transparent communication regarding order cancellations. System Administrator: Ensures the security and reliability of the order cancellation functionality. 	
Preconditions	Inventory Manager is identified and authenticated. An existing order is available for cancellation.	
Postconditions	Order is successfully canceled, and relevant systems are updated accordingly.	
Main Success Scenario	Actor Action <i>Access Order Cancellation Module:</i> 1. Inventory Manager accesses the Order Cancellation module within the system.	System Responsibility <i>Login Authentication:</i> 2. The system prompts the Inventory Manager to enter login credentials. 3. Inventory Manager provides valid credentials, initiating the login process. 4. The system authenticates the Inventory Manager's identity and grants access to the Order Cancellation module.
	<i>Select Order to Cancel:</i> 5. Inventory Manager views a	

	<p>list of existing orders available for cancellation.</p> <p>6. Inventory Manager selects the specific order intended for cancellation.</p> <p>8. Inventory Manager reviews the order details to ensure it is the correct order for cancellation.</p> <p><i>Confirm Order Cancellation:</i> 9. Inventory Manager confirms the cancellation of the selected order.</p>	<p><i>Review Order Details:</i> 7. The system displays detailed information about the selected order, including supplier, books, and quantities.</p> <p>10. The system records the cancellation details and updates order status accordingly</p>
Extensions	<p><i>Invalid Login Credentials:</i></p> <ol style="list-style-type: none"> If the Inventory Manager enters incorrect login credentials, the system signals an authentication error. Inventory Manager corrects the information and re-enters valid credentials. <p><i>Cancellation Rejection:</i></p> <ol style="list-style-type: none"> If the system encounters issues preventing the cancellation (e.g., order already shipped), it notifies the Inventory Manager. Inventory Manager is informed of the reason for rejection and may need to contact support or explore alternatives. 	
Special Requirements:	<ul style="list-style-type: none"> Secure authentication mechanism for the Inventory Manager. Real-time synchronization with the supplier's system for accurate order status. Confirmation of cancellation reflected in real-time on relevant reports and records. 	
Technology and Data Variations List:	<p><i>Encrypted Cancellation Communication:</i></p> <ol style="list-style-type: none"> Ensure secure and encrypted transmission of cancellation details to the supplier. 	
Frequency of Occurrence	Occasional, as cancellations are performed based on specific circumstances or inventory adjustments.	
Open Issues	<ul style="list-style-type: none"> How will the system handle order cancellations for items that have already been shipped or are in transit? Are there any penalties or fees associated with order 	

	<p>cancellations, and how will the system calculate and communicate these to the inventory manager?</p> <ul style="list-style-type: none">• How will the system handle cancellations for partial orders, where only certain items within an order need to be canceled?• What measures are implemented to prevent accidental or unauthorized order cancellations by the inventory manager?
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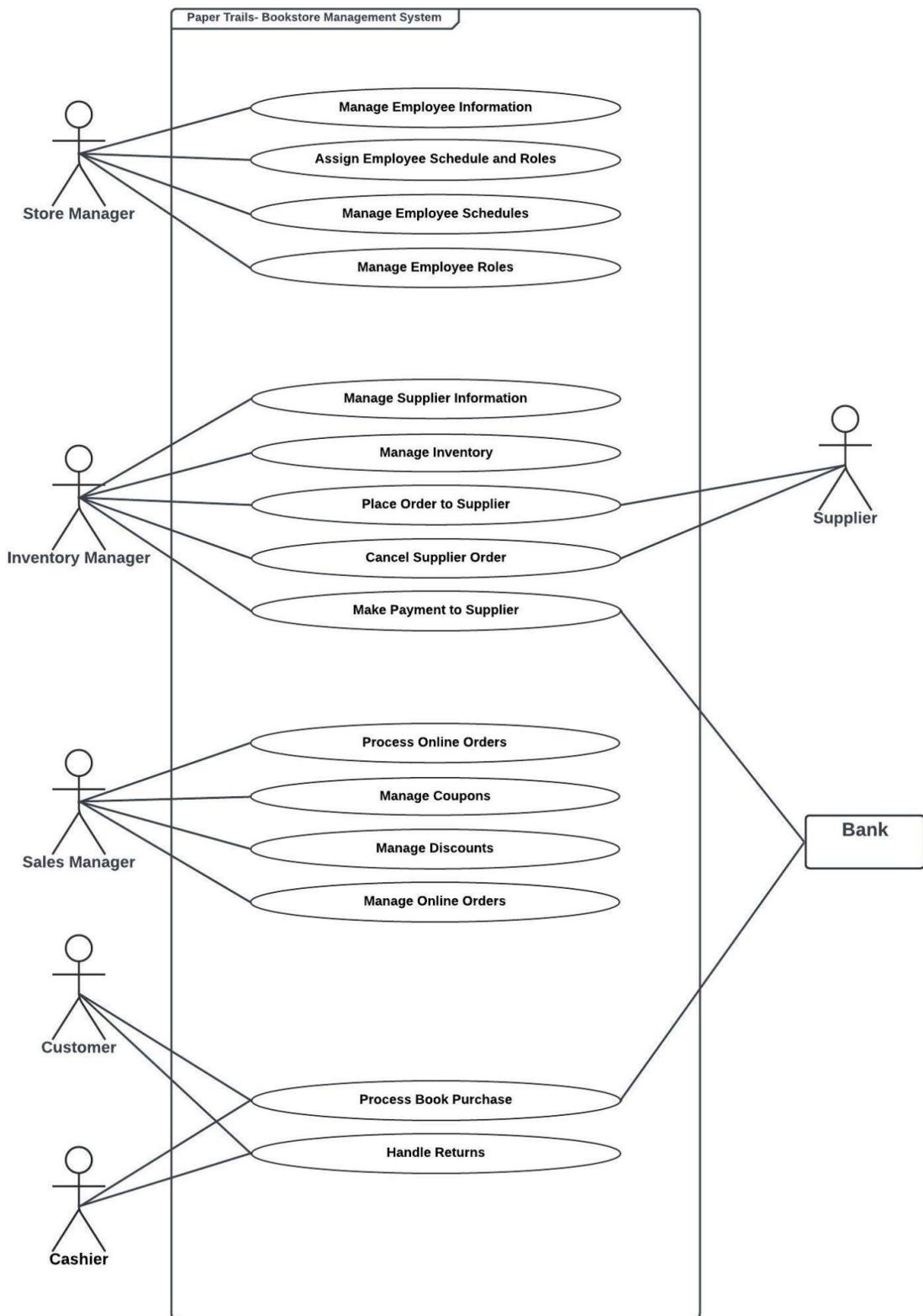
USECASE_ID_15: Manage Discounts

Use Case Section	Comment	
Use Case Name	Manage Discounts	
Scope	Paper Trails Bookstore Management System	
Level	User Goal	
Primary Actor	Sales Manager	
Stakeholders and Interests	<ul style="list-style-type: none"> Sales Manager: Aims to efficiently manage discounts to attract customers, boost sales, and implement promotional strategies. Bookstore Manager: Requires a flexible and controlled discount system to align with business goals. Customer: Expects fair and transparent discount policies to make informed purchasing decisions. System Administrator: Ensures the security and reliability of the discount management functionality. 	
Preconditions	Sales Manager is identified and authenticated. The system is accessible and operational.	
Postconditions	Discounts are successfully applied, updated, or removed based on the Sales Manager's actions.	
Main Success Scenario	Actor Action <i>Access Discount Management Module:</i> 1. Sales Manager accesses the Discount Management module within the system. 3. Sales Manager provides valid credentials, initiating the login process.	System Responsibility <i>Login Authentication:</i> 2. The system prompts the Sales Manager to enter login credentials. 4. The system authenticates the Sales Manager's identity and grants access to the Discount Management module.
	<i>View Existing Discounts:</i> 5. Sales Manager views a list of	6. The system displays relevant

	<p>existing discounts available in the system.</p> <p><i>Add New Discount:</i> 7. Sales Manager initiates the process of adding a new discount.</p> <p>9. Sales Manager selects specific products or categories to which the discount applies.</p> <p><i>Review and Confirm:</i> 11. Sales Manager reviews the configured discount details for accuracy. 12. Sales Manager confirms the addition of the new discount.</p> <p><i>Update Existing Discounts:</i> 13. Sales Managers may choose to modify existing discounts. 14. The system allows Sales Managers to adjust discount parameters, products.,</p> <p><i>Remove Existing Discount:</i> 15. Sales Managers may opt to remove a discount that is no longer relevant or applicable.</p> <p><i>Confirmation Message:</i> 17. Sales Manager receives a confirmation message for successful addition, modification, or removal of discounts.</p>	<p>information, such as discount type, and percentages</p> <p>8. The system prompts Sales Manager to specify the discount details, including type, percentage or fixed amount, book to apply to.</p> <p>10. The system validates the selected products and associates the discount accordingly.</p> <p>16. The system prompts the Sales Manager to confirm the removal.</p>
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Extensions	<p><i>Invalid Login Credentials:</i></p> <ol style="list-style-type: none"> 1. If the Sales Manager enters incorrect login credentials, the system signals an authentication error. 2. Sales Manager corrects the information and re-enters valid credentials. <p><i>Duplicate Discount Name:</i></p> <ol style="list-style-type: none"> 1. If the Sales Manager attempts to add a discount with a name already in use, the system signals an error. 2. Sales Manager adjusts the discount name to ensure uniqueness.
Special Requirements:	<ul style="list-style-type: none"> • Secure authentication mechanism for the Sales Manager. • Real-time synchronization with the pricing and inventory systems to ensure accurate discount application. • User-friendly interface for easy configuration and management of discounts.
Technology and Data Variations List:	<p><i>Integration with Pricing System:</i></p> <ol style="list-style-type: none"> 1. Ensure seamless integration with the pricing system to reflect discount changes in real-time.
Frequency of Occurrence	Regular
Open Issues	<ul style="list-style-type: none"> • How will the system handle conflicts or inconsistencies between different discount rules or promotions applied to the same products? • Are there any limitations on the types of products or categories that can be discounted, and how will the system enforce these restrictions? • What measures are implemented to prevent errors or glitches in discount applications that could lead to over-discounting or loss of revenue? • How will the system handle discounts for bulk purchases or wholesale orders, if applicable?

2.5 Use Case Diagram



3. Other Nonfunctional Requirements

3.1 Performance Requirements

The performance requirements for the Bookstore Management System (BMS) are crucial to ensure that the system operates efficiently and provides a seamless user experience. Below are the specific performance requirements categorized by functional areas, along with their rationale.

1. Inventory Management

Real-Time Inventory Updates:

- **Requirement:** Inventory levels must be updated in real time with a maximum delay of 2 seconds after a sale or restock event.
- **Rationale:** This ensures that employees have accurate stock information at all times, reducing the risk of overselling and improving customer satisfaction.

Batch Processing:

- **Requirement:** The system should support batch processing of inventory updates (e.g., bulk imports) with a maximum processing time of 5 minutes for up to 1,000 items.
- **Rationale:** This allows for efficient management of large inventory changes, such as seasonal updates or restocking, without significantly impacting system performance.

2. Employee Management

Employee Scheduling Response Time:

- **Requirement:** Scheduling changes must be processed and reflected in the system within 3 seconds.
- **Rationale:** Quick updates are essential for real-time staff management, especially during busy periods when immediate adjustments may be necessary.

3. Sales Management

Transaction Processing Speed:

- **Requirement:** Each sales transaction must be processed and confirmed within 1 second under normal operating conditions.
- **Rationale:** Fast transaction processing is critical during peak hours to minimize customer wait times and enhance the overall shopping experience.

Concurrent Transactions:

- **Requirement:** The system must support at least 50 concurrent transactions without degradation in performance.
- **Rationale:** This ensures that the system can handle busy periods, such as holiday sales, without impacting service quality.

4. Customer Management

Profile Retrieval Time:

- **Requirement:** Customer profiles must be retrieved within 2 seconds, even under high load conditions.
- **Rationale:** Quick access to customer data allows staff to provide personalized service efficiently, improving customer satisfaction and retention.

5. Analytics and Reporting

Report Generation Time:

- **Requirement:** Standard reports (e.g., sales reports, inventory reports) should be generated within 10 seconds for datasets up to 10,000 records.
- **Rationale:** Timely access to analytics is crucial for informed decision-making, enabling managers to respond quickly to trends.

Real-Time Analytics:

- **Requirement:** The system should provide real-time analytics updates with a maximum latency of 5 seconds.
- **Rationale:** Real-time insights allow for immediate adjustments in strategy, inventory, and marketing efforts.

6. Integration Performance

POS System Integration Latency:

- **Requirement:** The integration with the POS system must not exceed 2 seconds for data synchronization.
- **Rationale:** This ensures that inventory and sales data remain consistent across platforms, preventing discrepancies that could affect operations.

E-commerce Integration Updates:

- **Requirement:** Changes to inventory levels on the e-commerce platform must reflect in the BMS within 5 seconds.
- **Rationale:** Timely updates are essential to ensure that online customers have accurate information about product availability.

3.2 Safety Requirements

The safety and security of the Bookstore Management System (BMS) are critical to prevent potential loss, damage, or harm that could arise from its use. The following outlines the specific safety considerations, safeguards, required actions, and compliance with relevant policies and regulations.

1. Data Protection and Security

Requirement: The system must implement robust data encryption (AES-256) for all sensitive customer and financial information, both in transit and at rest.

- **Rationale:** To prevent unauthorized access and data breaches that could lead to identity theft or financial loss.

Requirement: User authentication must include two-factor authentication (2FA) for all employee access to the system.

- **Rationale:** This extra layer of security helps prevent unauthorized access from compromised accounts.

Requirement: The system should maintain an activity log that records user actions, administrative changes, and system access.

- **Rationale:** This log helps trace unauthorized activities and supports accountability.

2. Compliance with Regulations

Requirement: The BMS must comply with the General Data Protection Regulation (GDPR) for handling personal data of customers in the EU.

- **Rationale:** Compliance with GDPR ensures that personal data is processed lawfully and with respect to the individual's rights, preventing legal penalties and reputational damage.

Requirement: Compliance with the Payment Card Industry Data Security Standard (PCI DSS) for processing card transactions.

- **Rationale:** Ensuring that customer payment information is secure protects against fraud and builds trust with customers.

3. System Reliability and Disaster Recovery

Requirement: The system must have a reliable backup solution that performs daily backups of all data, with backups stored off-site.

- **Rationale:** This protection against data loss due to hardware failure, cyberattacks, or natural disasters ensures business continuity and data integrity.

Requirement: Implement a disaster recovery plan that allows for restoration of system functionality within 4 hours of a critical failure.

- **Rationale:** Quick recovery from system failures mitigates potential downtime and loss of revenue, ensuring operational resilience.

4. User Training and Safety Practices

Requirement: Mandatory training for all employees on data security practices and emergency procedures.

- **Rationale:** Educating employees helps prevent accidental data loss or breaches and prepares them to respond appropriately to security incidents.

Requirement: An incident response plan must be developed to address security breaches and data loss, outlining steps for containment, investigation, and notification to affected parties.

- **Rationale:** Having a documented response plan reduces reaction time and potential damage in the event of a security incident.

5. Actions to Prevent

Requirement: The system must prevent multiple concurrent logins for the same user account to mitigate risks of credential sharing and unauthorized access.

- **Rationale:** This helps maintain accountability and security integrity for user activity.

Requirement: Automatic session timeouts must be implemented after 15 minutes of inactivity for all user accounts.

- **Rationale:** Prevents unauthorized access in cases where an employee forgets to log out of a shared or public device.

6. Safety Certifications

Requirement: The BMS software must undergo security testing and certification according to recognized standards, such as ISO/IEC 27001 for information security management.

- **Rationale:** To ensure that the system meets international best practices for security and risk management.

Requirement: Obtain third-party audits and certifications for compliance with relevant safety standards involving customer data protection and transaction security.

- **Rationale:** Independent verification ensures accountability and demonstrates commitment to safety and security.

3.3 Security Requirements

The following outlines the specific security and privacy requirements applicable to the Bookstore Management System (BMS). These requirements address the protection of data, user identity authentication, compliance with external regulations, and necessary certifications to ensure security and privacy are prioritized.

1. Data Protection and Privacy

Requirement: All personal data collected from customers, including names, addresses, payment information, and purchase history, must be stored securely using encryption (e.g., AES-256) at rest and during transmission.

- **Rationale:** This prevents unauthorized access to sensitive information, safeguarding customer privacy and complying with data protection regulations.

Requirement: The system must implement data anonymization techniques for any data used for analytics or reporting that does not require identifiable information.

- **Rationale:** This reduces the risk of exposing personal data in non-critical applications while still allowing for effective analysis.

Requirement: User consent must be obtained before collecting and processing personal data, with clear options for opting in or out of data collection practices.

- **Rationale:** Compliance with data protection regulations like GDPR, which requires informed consent for data processing.

2. User Identity Authentication

Requirement: All users must be authenticated using a multi-factor authentication (MFA) process, which may involve a combination of passwords, security questions, and verification codes sent via SMS or email.

- **Rationale:** Multi-factor authentication significantly enhances security and reduces the risk of unauthorized access to user accounts.

Requirement: Password policies must require a minimum length of 12 characters, including upper and lower case letters, numbers, and special characters, with mandatory password changes every 90 days.

- **Rationale:** Strong password policies prevent common security threats, such as brute force attacks.

Requirement: The system should support single sign-on (SSO) capabilities to allow users to access multiple related system functions with one set of credentials.

- **Rationale:** This enhances user convenience while maintaining security across applications.

3. Compliance with External Regulations

Requirement: The BMS must comply with the General Data Protection Regulation (GDPR) for handling personal data of individuals within the European Union.

- **Rationale:** GDPR mandates strict guidelines regarding the collection, processing, and storage of personal data, ensuring individuals' rights are protected.

Requirement: Compliance with the Payment Card Industry Data Security Standard (PCI DSS) is mandatory for the secure handling of credit card information during transactions.

- **Rationale:** PCI DSS standards help protect against credit card fraud and are necessary for any business that processes card transactions.

Requirement: Adhere to the California Consumer Privacy Act (CCPA) for California-based customers, providing options for customers to opt-out of data selling practices and request deletion of their data.

- **Rationale:** Ensuring compliance with CCPA demonstrates a commitment to consumer privacy rights in line with regional laws.

4. Security and Privacy Certifications

Requirement: The BMS software must achieve ISO/IEC 27001 certification for information security management.

- **Rationale:** This certification demonstrates a systematic approach to managing sensitive company information, ensuring data security, and providing assurance to customers and partners.

Requirement: The system must undergo regular third-party security audits and penetration testing to identify and mitigate vulnerabilities.

- **Rationale:** Regular assessments help ensure continued compliance with security standards and can identify areas needing improvement.

Requirement: Secure code review should be performed for all software releases to identify security vulnerabilities before deployment.

- **Rationale:** Validating code security is essential in preventing vulnerabilities that could be exploited by malicious actors.

3.4 Software Quality Attributes

In addition to the performance, security, and privacy requirements previously outlined, several quality characteristics are critical to the successful operation and acceptance of the Bookstore Management System (BMS). The characteristics below have been defined to be specific, quantitative, and verifiable, focusing on what is most important to both customers and developers.

1. Usability

Requirement: The system should achieve a usability score of at least 85/100 on the System Usability Scale (SUS) after user testing.

- **Rationale:** High usability scores indicate that the system is user-friendly and meets the needs of the bookstore staff and customers.

Requirement: Users should be able to complete key tasks (e.g., searching for books, processing transactions) within an average time of 30 seconds.

- **Rationale:** This ensures that users can efficiently accomplish necessary functions without excessive delays.

2. Adaptability

Requirement: The system must support at least three types of payment options (credit cards, PayPal, and gift cards) and be adaptable to integrate new payment methods as they become available.

- **Rationale:** This flexibility ensures the system can evolve with changing market demands and customer preferences.

3. Reliability

Requirement: The system must demonstrate 99.9% uptime over a 12-month period, with no more than 4.38 minutes of downtime per month.

- **Rationale:** High availability is critical for maintaining operational continuity and preventing loss of sales.

Requirement: In the event of failure, the system should have a recovery time objective (RTO) of no more than 1 hour to restore service with minimal data loss.

- **Rationale:** Quick recovery minimizes disruption to operations and maintains customer service standards.

4. Maintainability

Requirement: The system codebase should maintain a cyclomatic complexity score of less than 10 to facilitate easier maintenance and updates.

- **Rationale:** Lower complexity reduces the likelihood of bugs and improves the speed at which developers can implement changes.

Requirement: Any system updates or bug fixes should be deployable within 30 minutes, with no more than one planned downtime per month.

- **Rationale:** High maintainability ensures that the system can adapt to new requirements or fix issues without significant service interruption.

5. Interoperability

Requirement: The BMS must be able to integrate with at least three third-party systems (e.g., accounting software, email marketing tools, and inventory management systems) using industry-standard APIs.

- **Rationale:** Interoperability with other systems enhances functionality and provides a seamless experience for users.

6. Testability

Requirement: The system must include automated tests covering at least 80% of the codebase, with successful execution of these tests required before deployment.

- **Rationale:** High test coverage ensures that the system is reliable and reduces the likelihood of introducing defects during updates.

7. Robustness

Requirement: The BMS should handle incorrect user input gracefully, maintaining functionality and not crashing, with user-friendly error messages provided.

- **Rationale:** Robustness improves the overall user experience and prevents frustration due to input errors.

8. Flexibility

Requirement: The software architecture must support modular design, allowing additional features (e.g., loyalty programs, promotional discounts) to be integrated within 2 weeks of development.

- **Rationale:** Flexibility to add new functionalities without extensive rewrites is key to adapting to future business needs.

3.5 Business Rules

The following operating principles outline the roles and responsibilities associated with the Bookstore Management System (BMS) and specify which individuals or roles can perform specific

functions under defined circumstances. These principles will serve as a guiding framework to ensure proper access control, accountability, and operational efficiency.

1. User Roles and Permissions

Administrator Role:

- **Responsibilities:** Manage user accounts, configure system settings, oversee inventory, and generate reports.
- **Scope:** The administrator can add, modify, or delete user accounts, assign roles, and access all system functionalities.
- **Circumstances:** Only individuals with a designated administrator account can perform these functions.

Cashier Role:

- **Responsibilities:** Process transactions, handle returns, and manage customer inquiries at the point of sale.
- **Scope:** A cashier can access the sales interface, process payments, and view certain product information but cannot modify inventory records or access administrative functions.
- **Circumstances:** A cashier must be logged into the system with a valid account and should be located within the retail environment.

Inventory Manager Role:

- **Responsibilities:** Oversee inventory levels, reorder products, and manage stock discrepancies.
- **Scope:** The inventory manager can add new products, modify existing product details, and view inventory reports.
- **Circumstances:** This role can only perform these functions during store hours and must authenticate using secure credentials.

Customer Service Representative Role:

- **Responsibilities:** Assist customers with inquiries, manage returns, and handle customer feedback.
- **Scope:** The representative can access customer records associated with purchases but cannot modify sensitive data such as payment information.
- **Circumstances:** They must approach these functions with proper validation, and access to customer details is logged for auditing purposes.

2. Access Control

Role-Based Access Control (RBAC):

- Access to system features is governed by defined roles, ensuring that individuals can only perform functions aligned with their role.
- Role changes must be requested through a supervisor and approved by an administrator to maintain security.

Time-Based Access Restrictions:

- Certain functions may be restricted based on time. For example, inventory adjustments can only be performed during non-business hours.
- Cashiers can only process returns if the original purchase occurred within the previous 30 days.

3. Data Handling Guidelines

Sensitive Customer Data:

- Only administrators and inventory managers have the authority to access and analyze sensitive customer and transaction data.

- Customer service representatives can view purchase histories only relevant to ongoing customer engagements.

Transaction Integrity:

- Only authorized cashiers can complete transactions. Any discrepancies in transactions (e.g., refunds, voids) must be approved by a supervisor.

4. Reporting and Auditing

Report Generation:

- Only administrators can generate comprehensive financial reports, while inventory managers may generate stock-level reports.
- All actions taken on the reporting feature will be logged, including the user, date, and type of report generated, to maintain accountability.

Audit Trails:

- The system must keep detailed logs of all actions performed by users, particularly those with administrative privileges, ensuring traceability and accountability for all major modifications to data.

5. Exception Handling

Access Request Protocol:

- If a user encounters a situation requiring elevated privileges (e.g., accessing restricted areas of the system), they must submit a formal access request to a supervisor for temporary authorization.

Emergency Protocols:

- In case of a system outage or malfunction, designated administrators must follow a defined escalation process to restore service within predefined SLAs (Service Level Agreements).

3.6 Operating Environment

The successful deployment and operation of the Bookstore Management System (BMS) will require a specific environment, including hardware, operating systems, and other software components. Below is a detailed description of each aspect of the operating environment.

1. Hardware Platform

Server Specifications:

- **Type:** Dedicated server or cloud-based virtual server (e.g., AWS, Azure).
- **Processor:** Minimum dual-core processor, preferably quad-core or higher, with a clock speed of at least 2.5 GHz.
- **Memory:** At least 8 GB of RAM (16 GB recommended for larger inventory systems).
- **Storage:** SSD (Solid State Drive) with a minimum capacity of 256 GB, providing faster data access and better performance for database operations.
- **Network:** Gigabit Ethernet for reliable and fast connectivity.

Client Device Specifications:

- **Type:** Desktop computers or laptops for administrative staff; tablets or POS terminals for cashiers.
- **Processor:** Minimum dual-core processor with a clock speed of at least 2.0 GHz.
- **Memory:** At least 4 GB of RAM.

- **Display:** Minimum resolution of 1280x800 pixels for optimal viewing of the application interface.

2. Operating System

Server Operating System:

- **Type:** Linux (Ubuntu Server 20.04 LTS or later) or Windows Server 2019.
- **Requirements:** The server should be kept up to date with the latest security patches and updates.

Client Operating System:

- **Type:** Windows 10 (or later), macOS (Mojave or later), or Linux (Ubuntu Desktop 20.04 LTS or later).
- **Browser Compatibility:** Latest versions of Google Chrome, Firefox, or Microsoft Edge should be supported for web-based interfaces.

3. Software Components

Database Management System (DBMS):

- **Type:** MySQL version 8.0 or later, PostgreSQL version 13 or later (depending on specific needs).
- **Configuration:** The database must be properly secured and regularly backed up to prevent data loss.

Web Server:

- **Type:** Apache HTTP Server version 2.4 or Nginx version 1.18 or later.
- **Functionality:** The web server will host the BMS's web interface and serve client requests.

Middleware:

- **Type:** Node.js or Python Flask/Django for back-end development, depending on the architecture chosen for the BMS.
- **Requirements:** Ensure middleware components are compatible with the chosen DBMS and framework.

4. Integration and Coexistence

Third-Party Applications:

- **Payment Processing:** The system must integrate seamlessly with payment gateways such as Stripe, PayPal, and Square.
- **Inventory Management:** Must peacefully coexist with external inventory management solutions (if applicable), ensuring data synchronization.
- **Accounting Software:** Integration with popular accounting software (e.g., QuickBooks Online or Xero) to streamline financial data management.

Network Infrastructure:

- **Type:** The internal network should consist of secure Wi-Fi for mobile clients and CAT6 Ethernet for wired connections to reduce latency.
- **Firewall and Security:** Implement firewall rules and VPN access for remote management to ensure secure connections to the server environment.

5. Security Considerations

Antivirus and Malware Protection: All client devices should have up-to-date antivirus software to prevent security breaches.

Data Encryption: All sensitive data in transit and at rest should be encrypted using industry-standard protocols (e.g., TLS for data in transit and AES-256 for data at rest).

3.7 User Interfaces

The user interfaces (UIs) of the Bookstore Management System (BMS) are vitally important for ensuring usability and productivity for various user roles. Below, we describe the logical characteristics of each interface, including standards, screen layouts, common functions, and software components requiring a user interface.

1. User Interface Components

Login Interface:

- **Purpose:** Authenticates users before granting access to the system.
- **Elements:** Username and Password fields, Login button, "Forgot Password?" link.
- **Features:** Two-factor authentication (optional).

Dashboard Interface:

- **Purpose:** Provides an overview of critical metrics (sales, inventory status).
- **Elements:** Quick links to major functions (e.g., Sales, Inventory, Reports), graphical indicators (charts/graphs).
- **Layout Constraints:** Grid layout for easy scanning; responsive design for different screen sizes.

Inventory Management Interface:

- **Purpose:** Manage inventory records, add or modify products.
- **Elements:** Product listing, search bar, filters, Add Product button, Edit/Delete options.
- **Features:** Bulk upload option through CSV file import.

Sales Transaction Interface (POS):

- **Purpose:** Process customer sales.
- **Elements:** Item search field, shopping cart display, Discount and Tax options, Finalize Sale button.
- **Standard Buttons:** 'Complete Sale', 'Void Transaction', 'Apply Discount'.
- **Keyboard Shortcuts:**
 - F1: Help
 - F2: Add new product
 - Ctrl + S: Save transaction

Reporting Interface:

- **Purpose:** Generate and view reports.
- **Elements:** Date range selectors, report types (Sales, Inventory), Generate Report button.
- **Features:** Export report options (PDF, Excel).

User Management Interface:

- **Purpose:** Manage user accounts and permissions.
- **Elements:** User list, Add User button, Edit/Delete buttons, Role assignments.

2. Common User Interface Standards

Visual Design Principles:

- **Color Scheme:** Use a cohesive color palette aligned with the bookstore's branding.
- **Typography:** Consistent fonts (e.g., Arial, 12pt) for readability; headings should be larger and bolded.

Layout Guidelines:

- **Consistency:** All interfaces should follow a standard layout pattern (top navigation bar, side menus where applicable).
- **Margins and Padding:** Maintain uniform margins of at least 10px between elements to ensure a clean layout.

Common Buttons and Functions:

- Standard buttons should include:
 - **Save:** For saving changes.
 - **Cancel:** To abort actions.
 - **Help:** Redirects users to the help section.
 - **Search:** Present throughout the application to assist users in quickly finding records.

3. Error Message Display Standards

Format: Error messages should appear in a prominent red box at the top of the affected section.

Content: Clearly state the issue (e.g., "Invalid Username or Password") and provide instructions on how to resolve it (e.g., "Please try again" or "Reset your password").

Severity Levels:

- **Informational:** General information about actions taken (non-intrusive).
- **Warning:** Important reminders for pending actions that need attention.
- **Error:** Critical issues that prevent the completion of tasks.

4. User Feedback Mechanisms

Loading Indicator: A spinner or progress bar will inform users that a background process is happening during data retrieval or transactions.

User Notifications: Toast notifications should confirm actions (e.g., "Product added successfully") that disappear automatically after a few seconds.

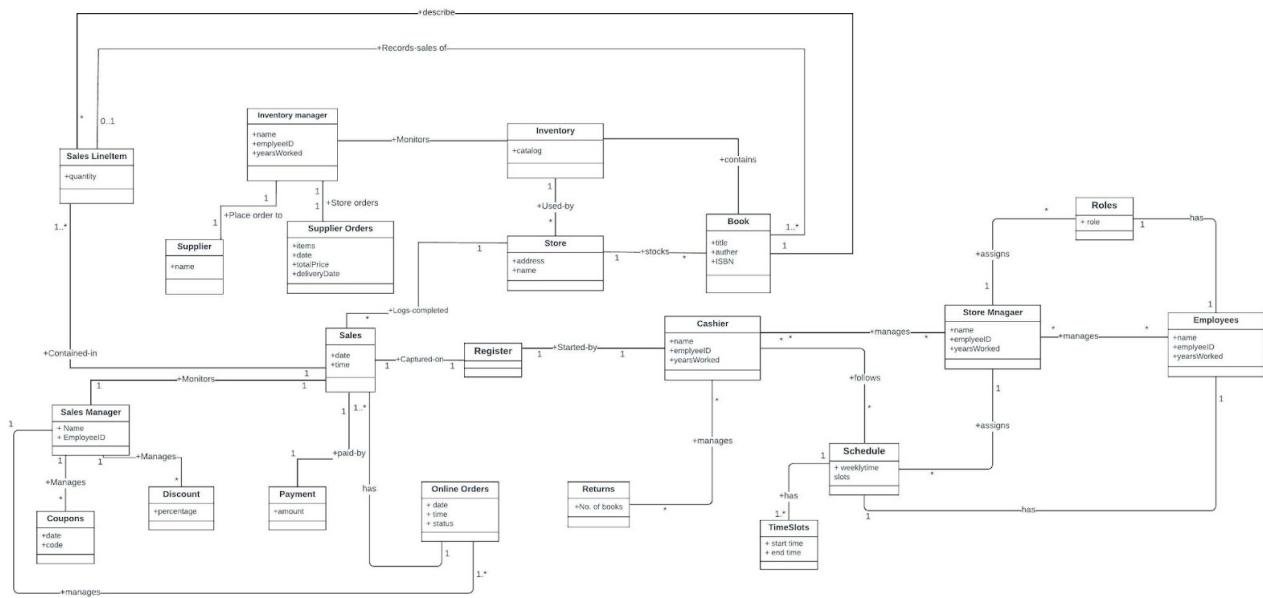
5. Accessibility Considerations

Keyboard Navigation: All functionalities should be accessible via keyboard.

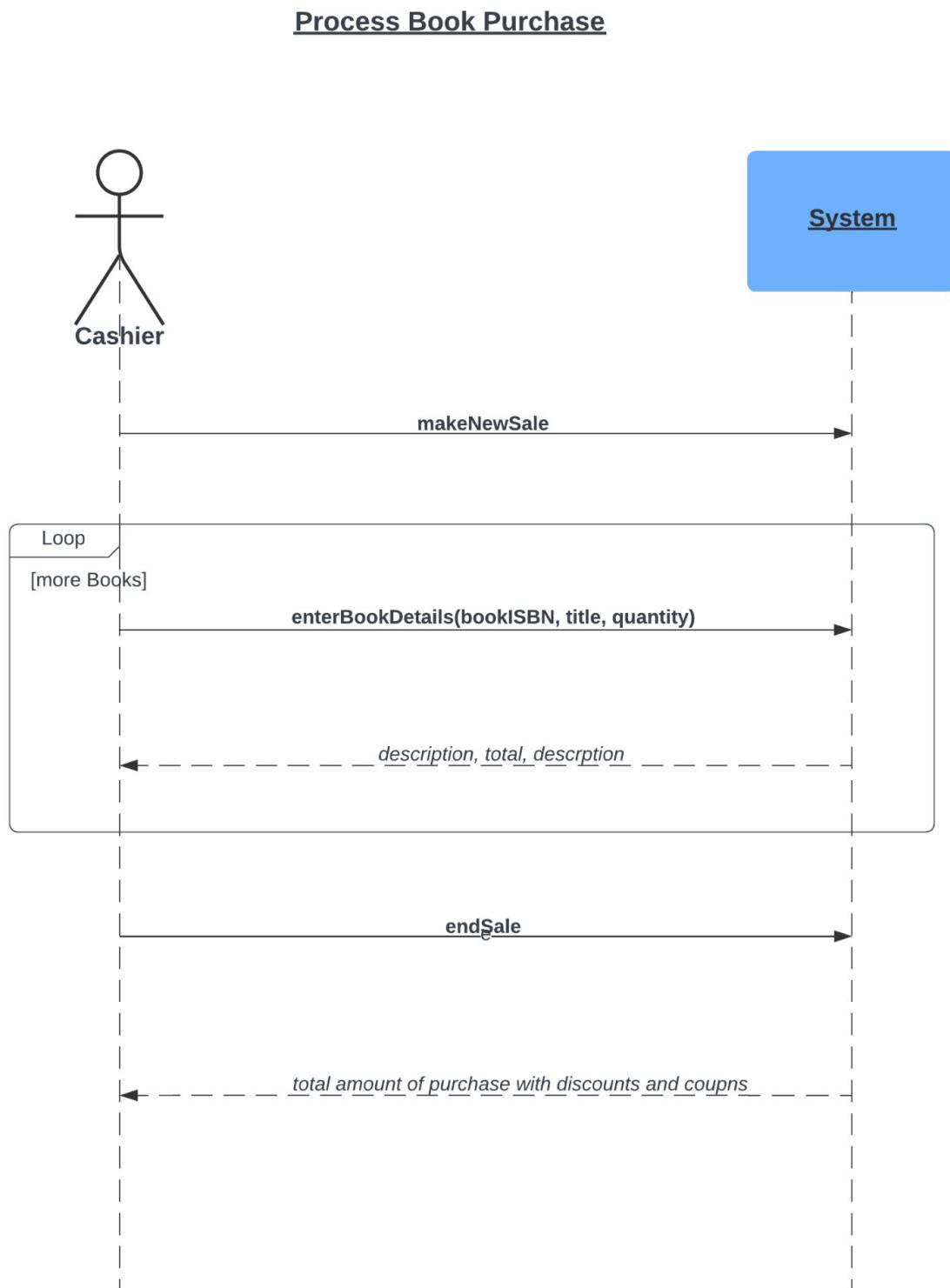
Screen Reader Support: All text elements should have appropriate descriptions for screen readers.

Contrast Ratios: Color schemes should meet accessibility standards (WCAG) for contrast to support visually impaired users.

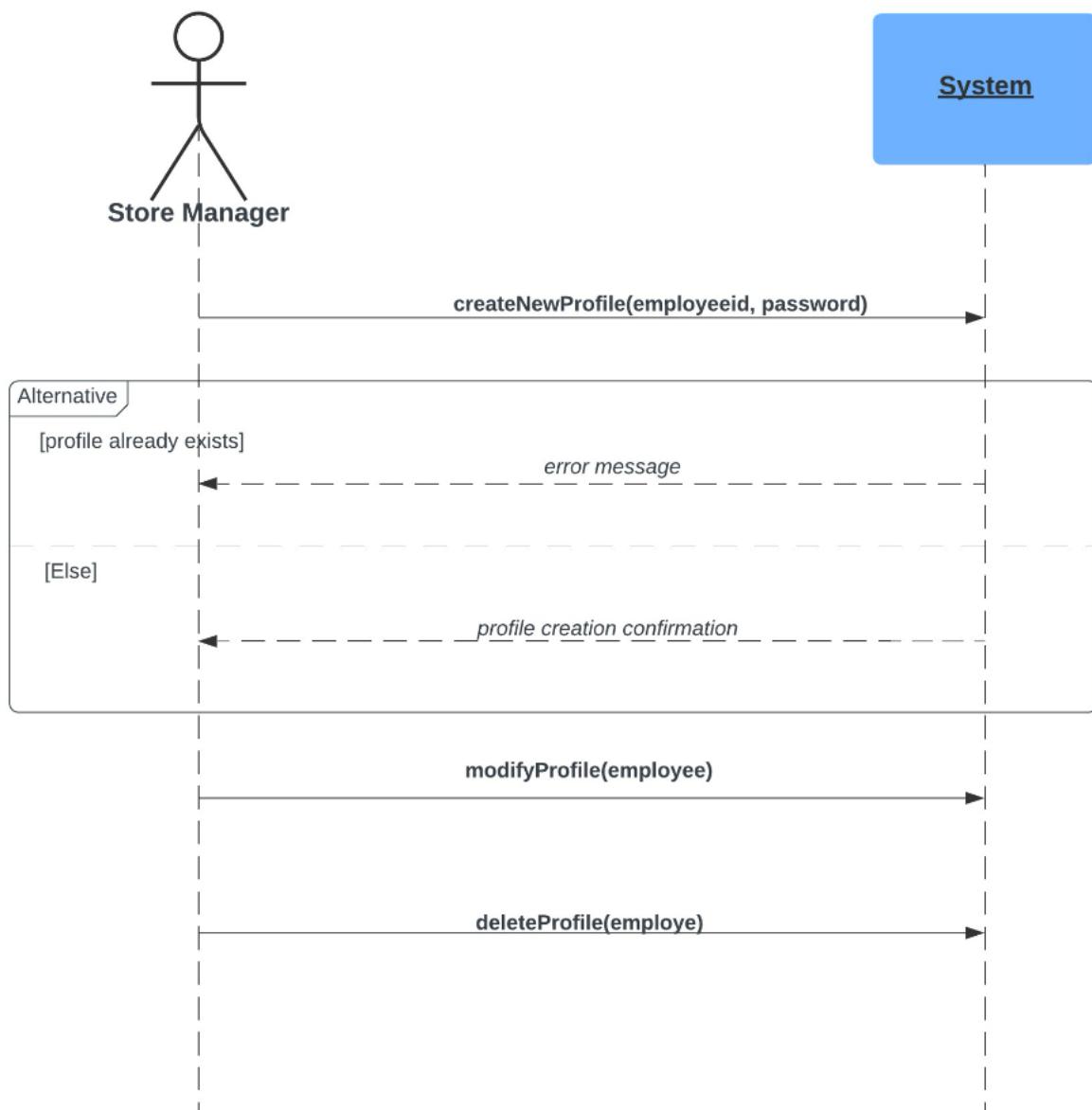
4. Domain Model



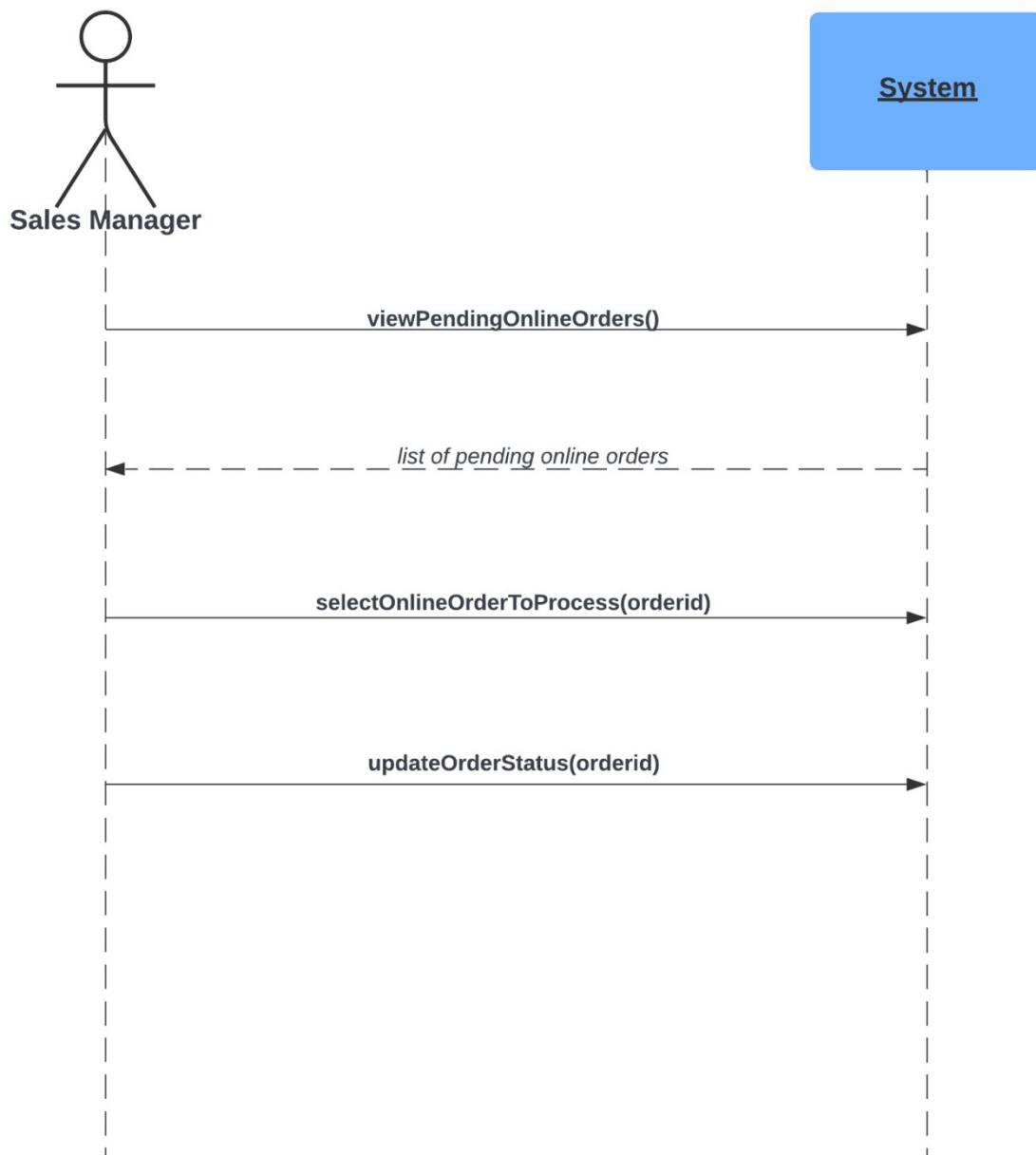
5. System Sequence Diagram

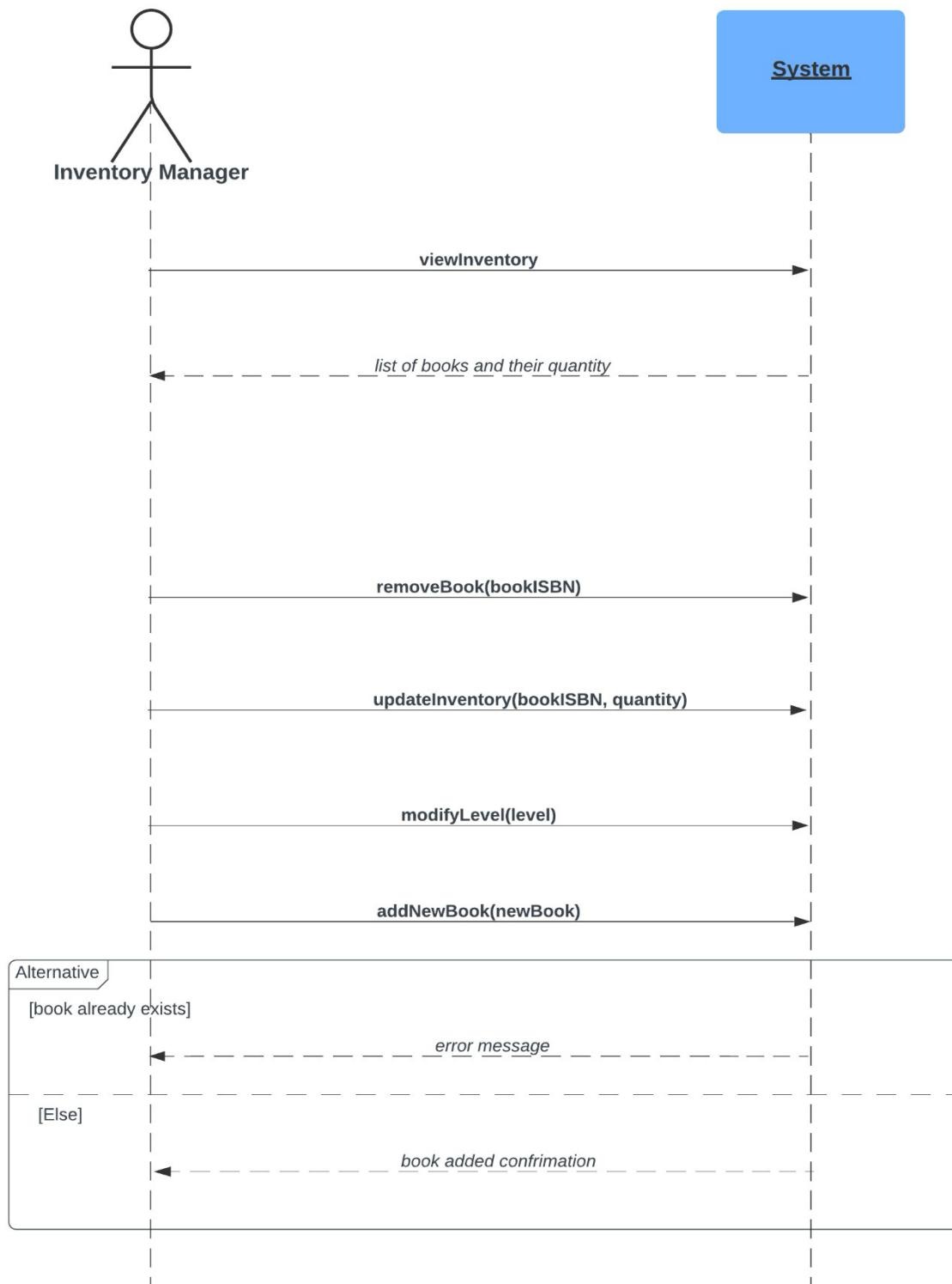


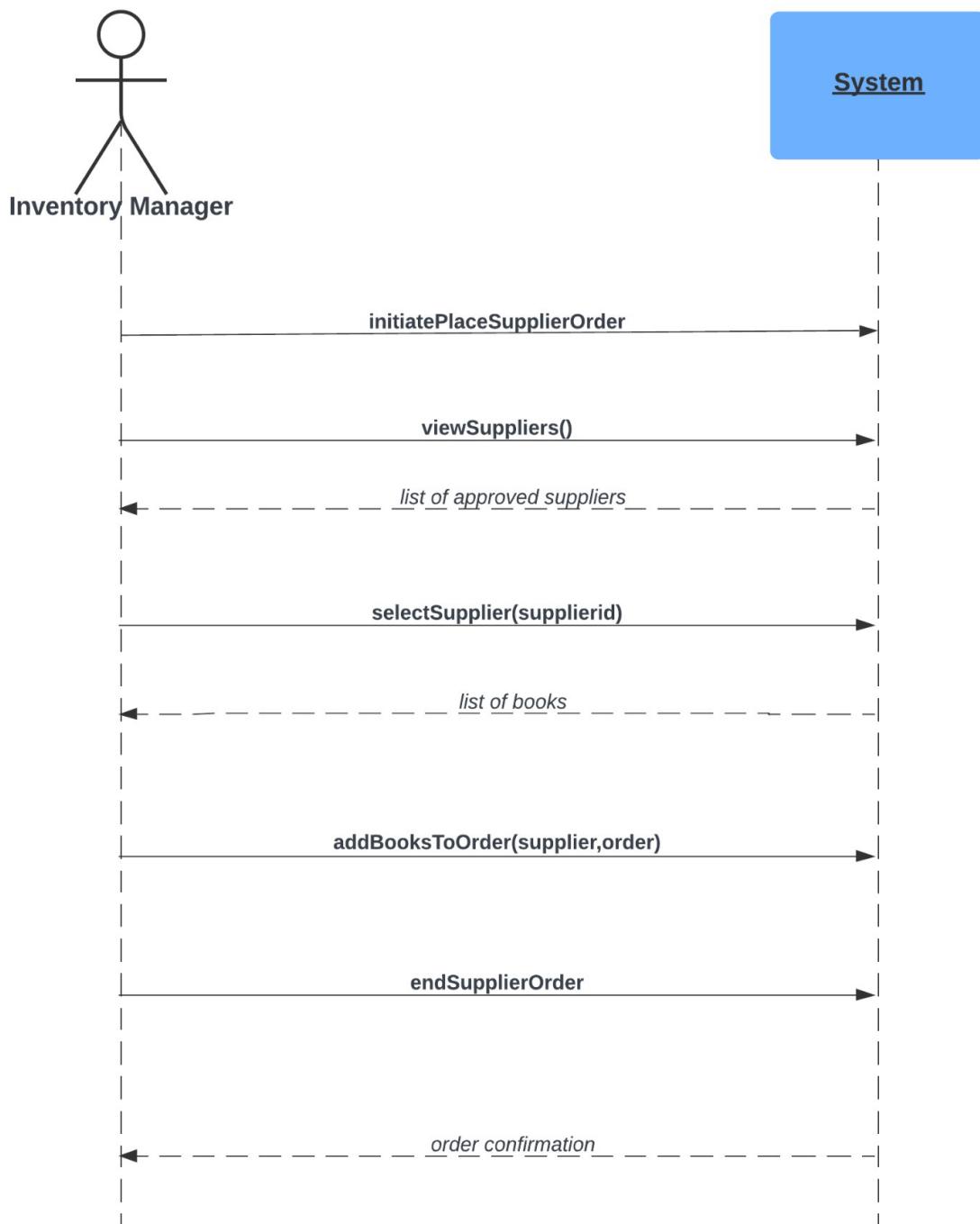
Manage Employee Information



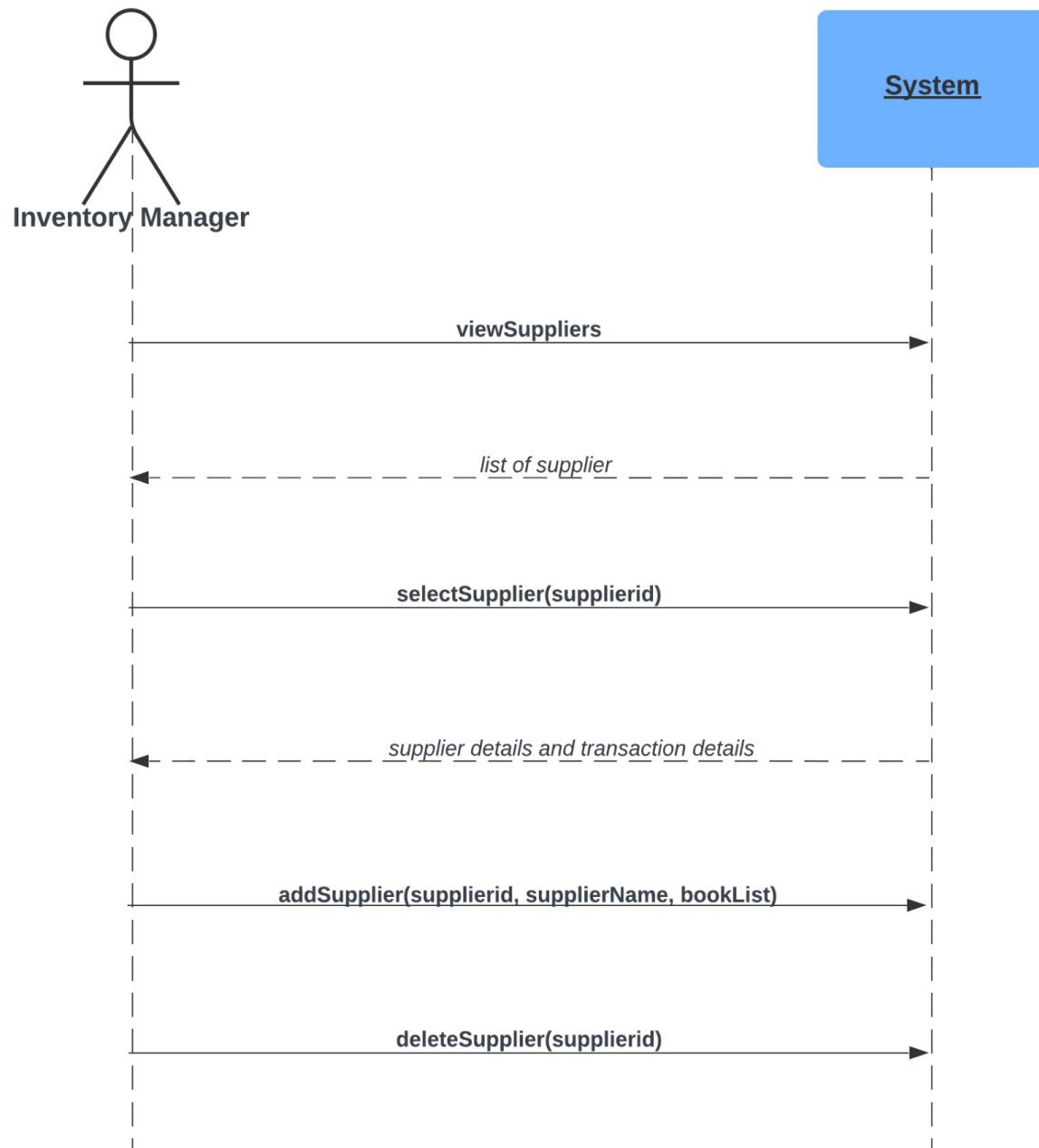
Process Online Orders



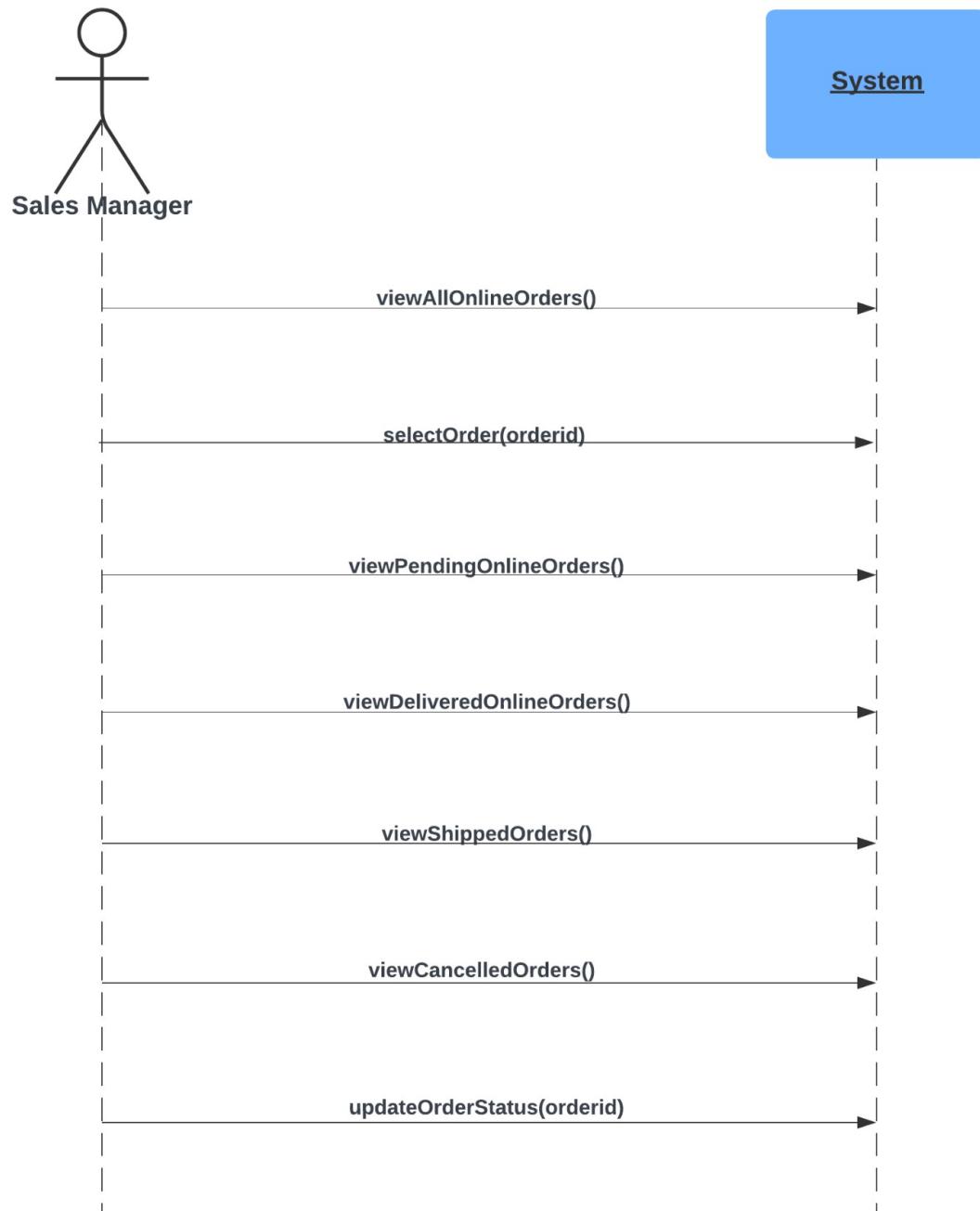
Manage Inventory

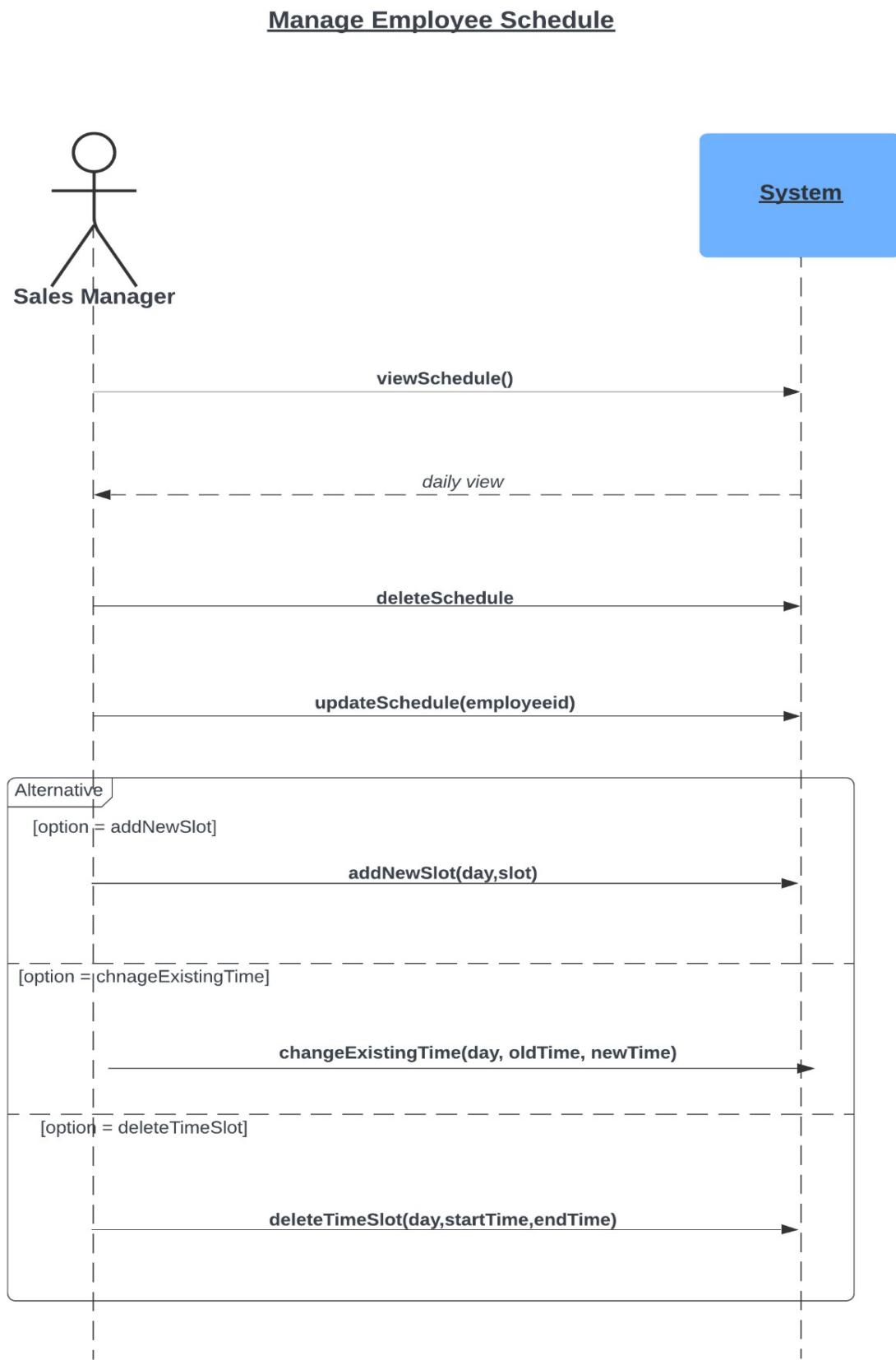
Place Order to Supplier

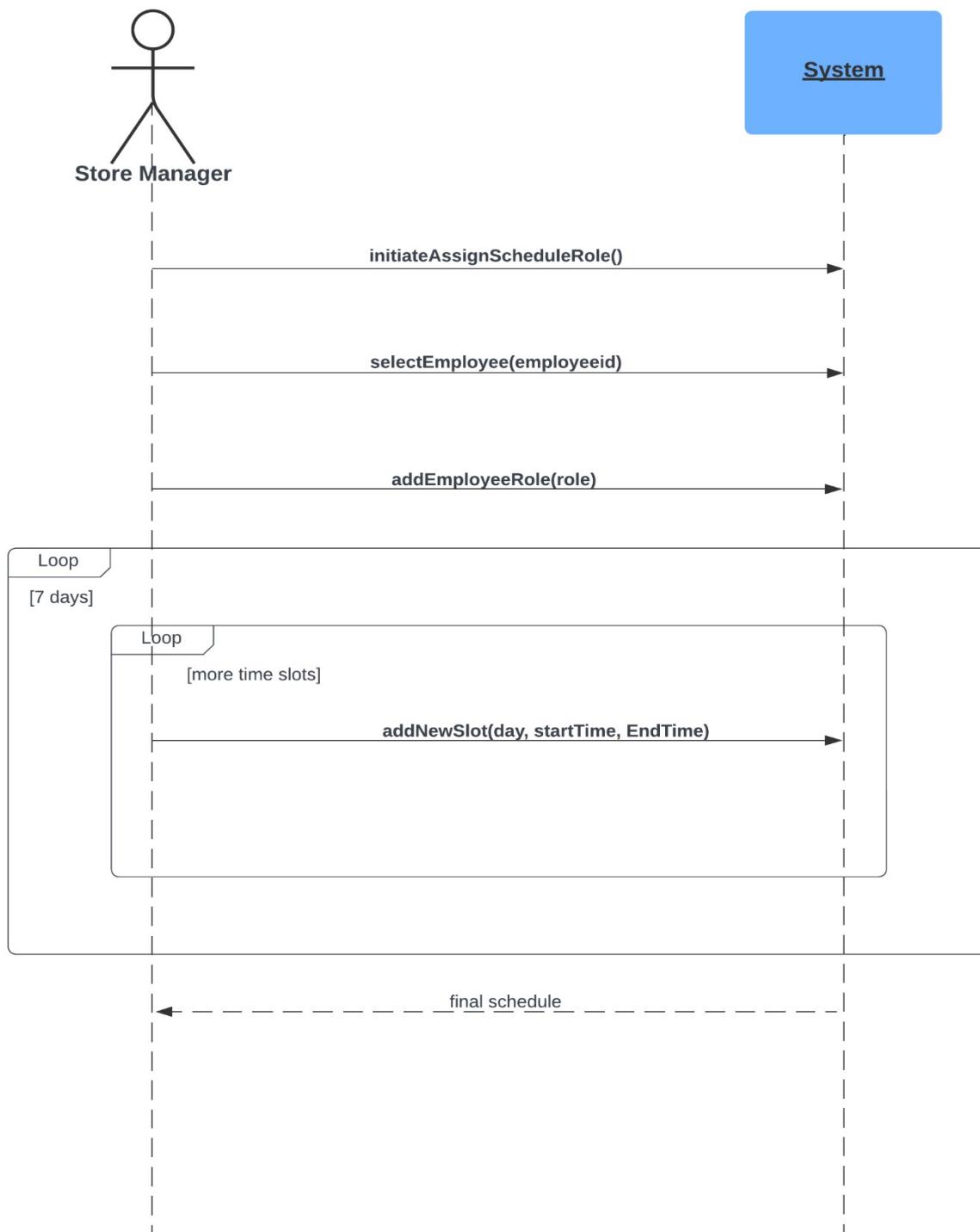
Manage Supplier Information



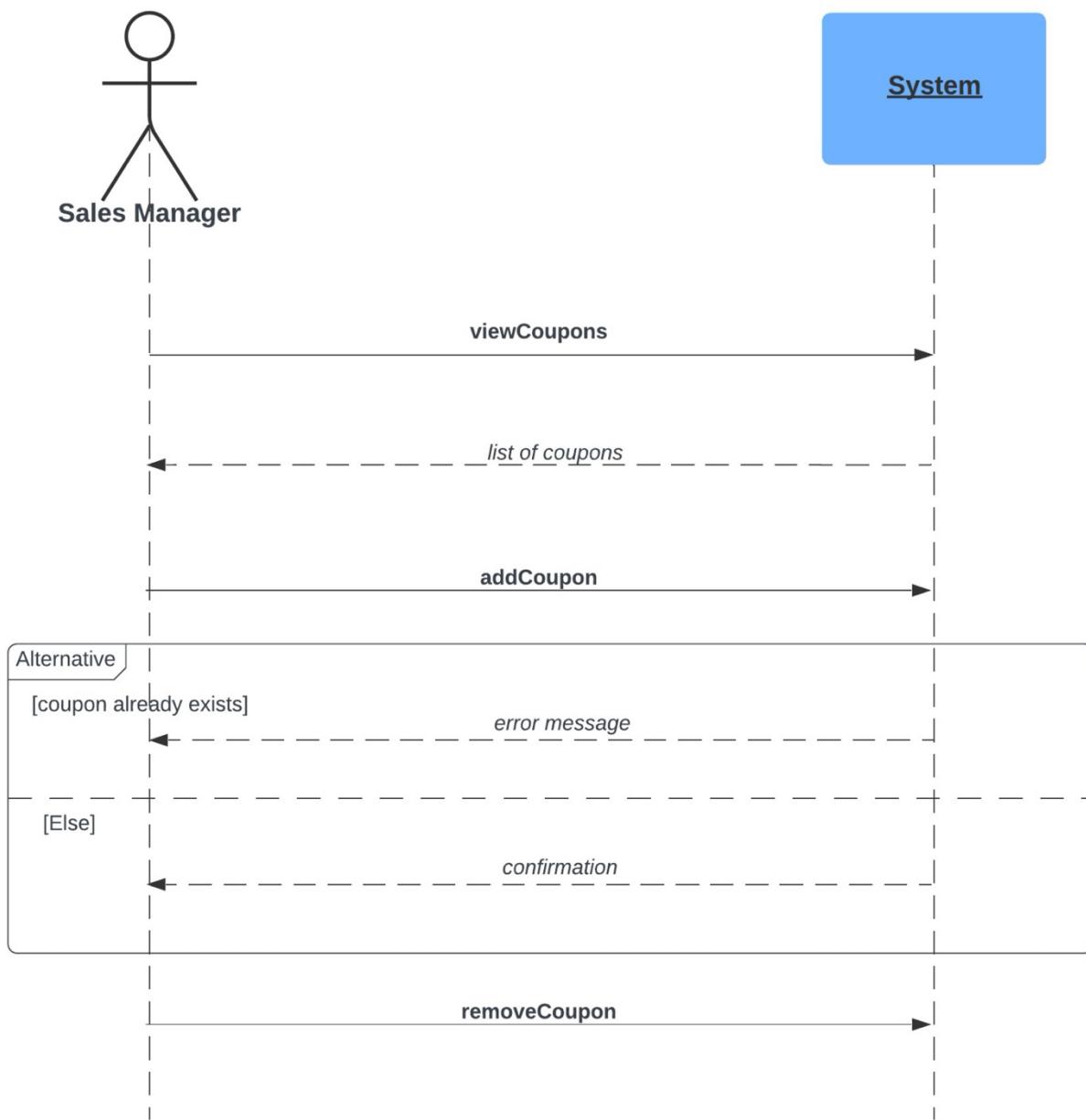
Manage Online Orders



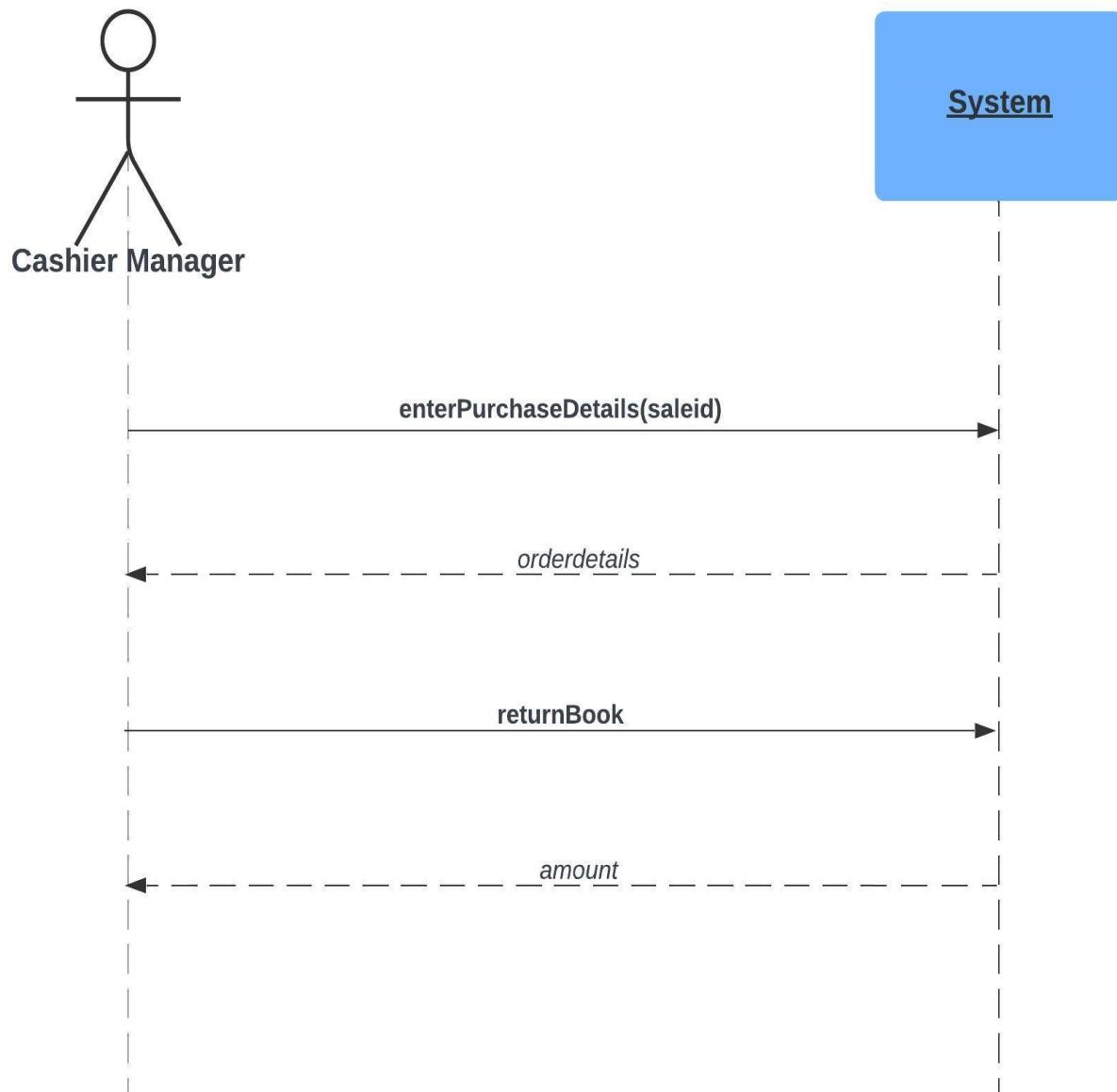


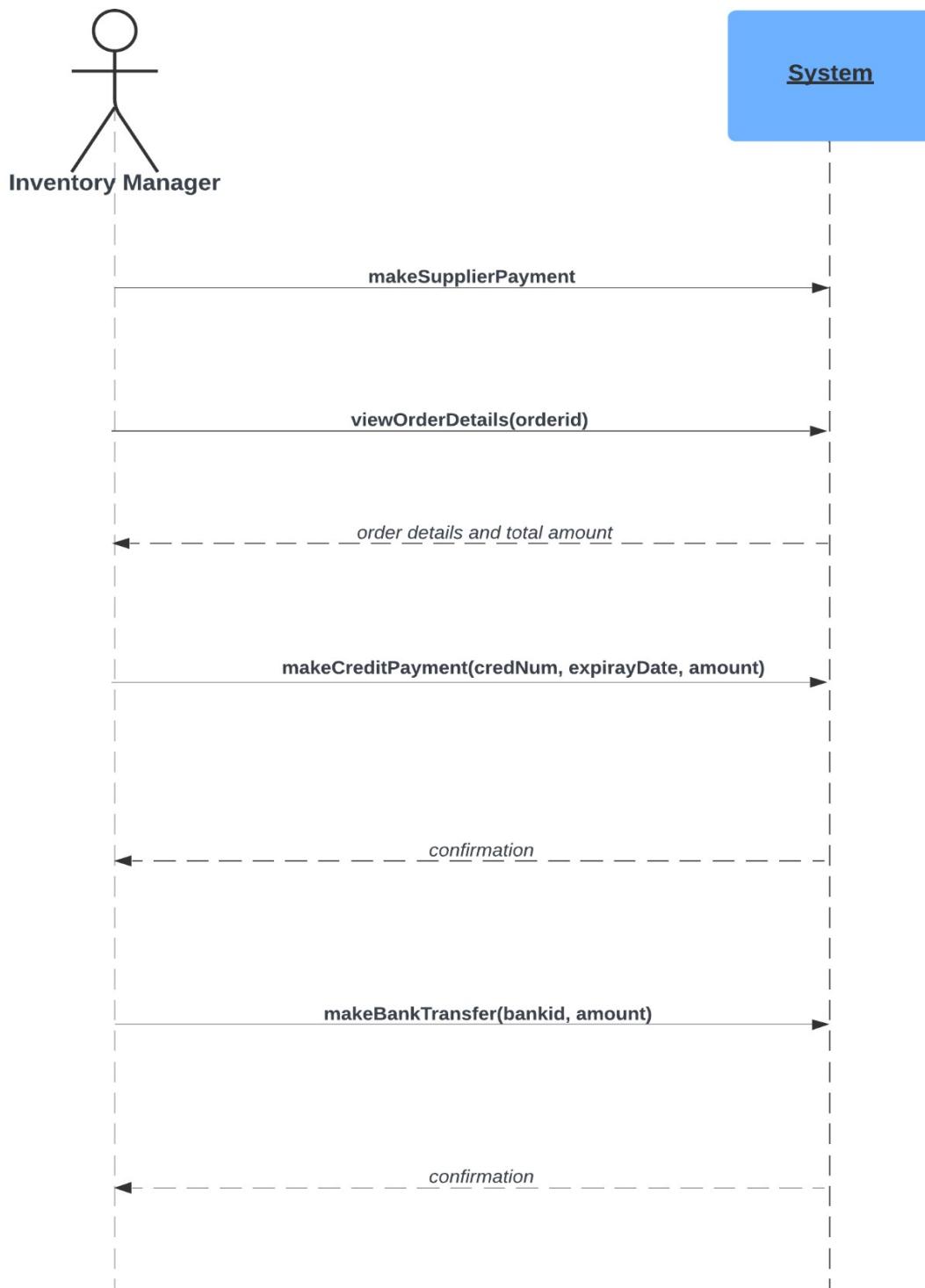
Assign Employee Schedule and Role

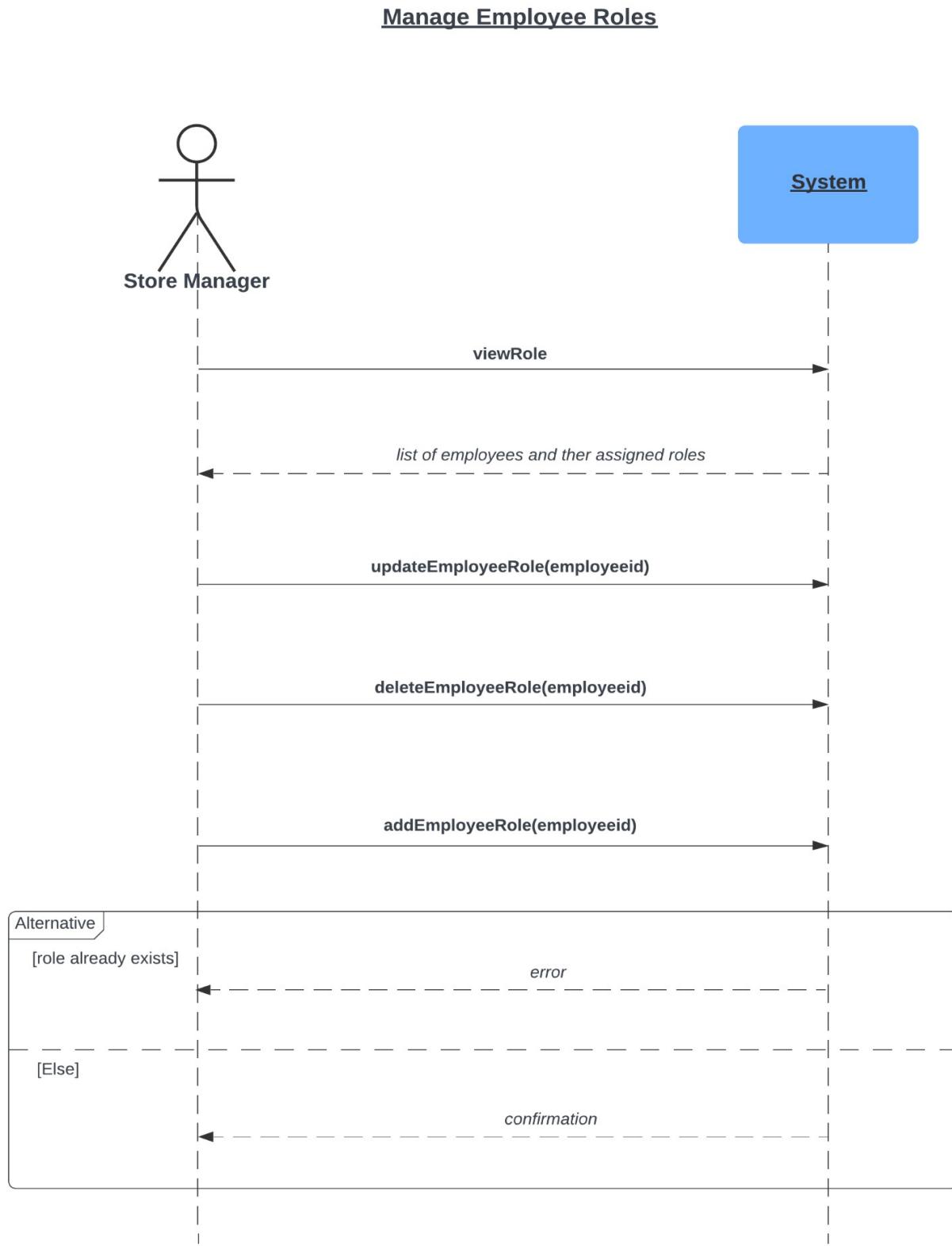
Manage Coupons



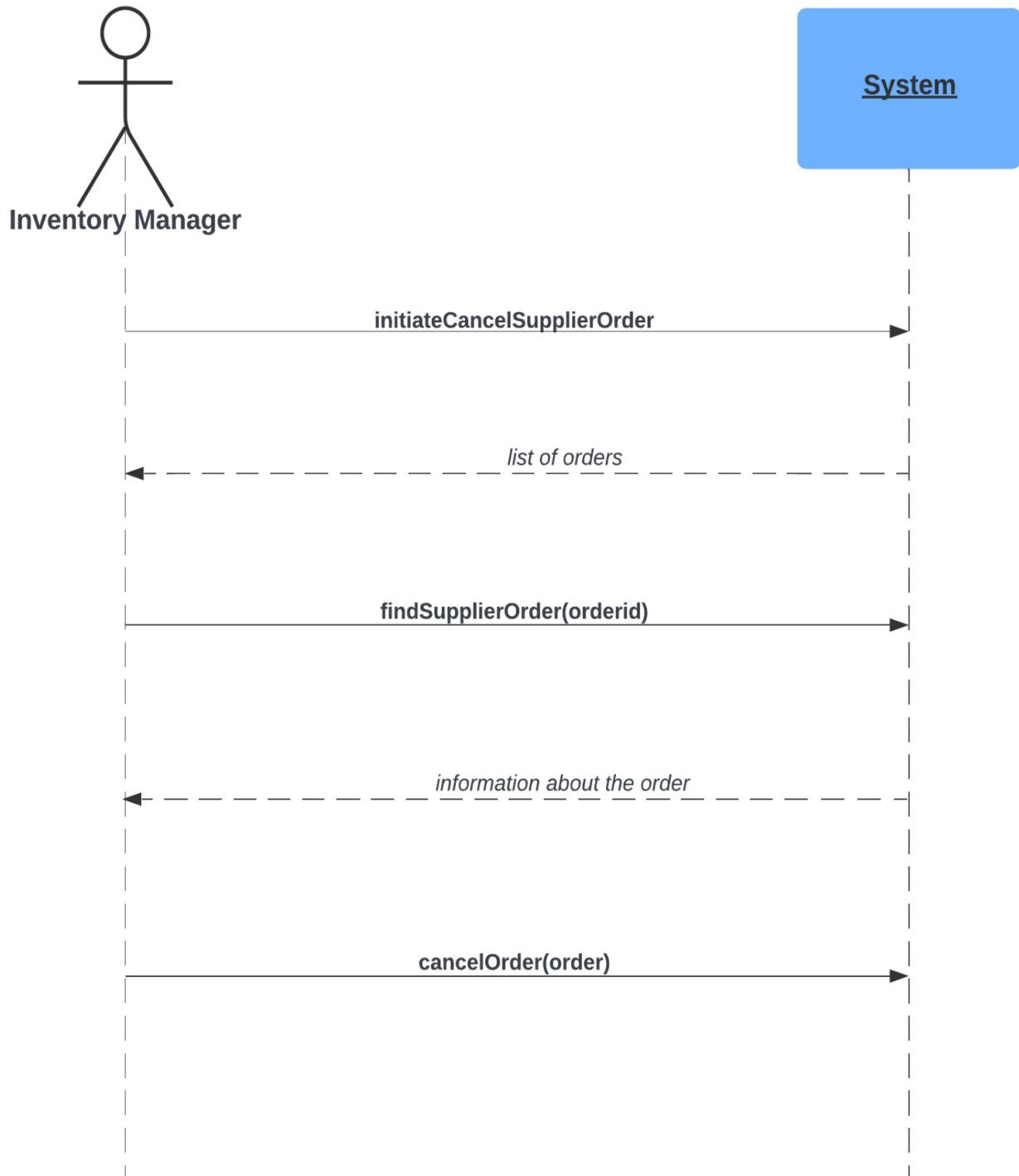
Handle Returns



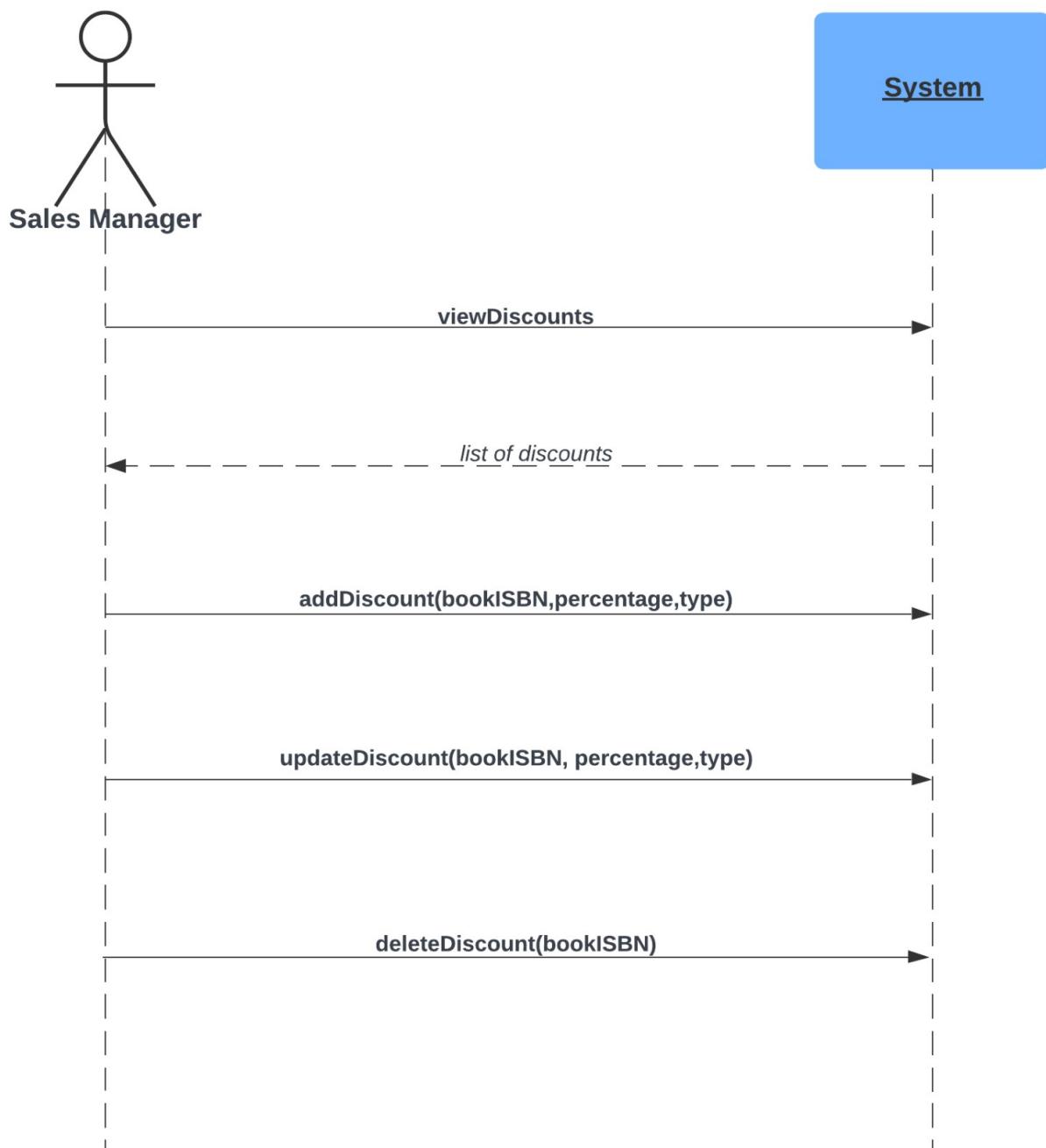
Make Payment to Supplier



Cancel Supplier Order



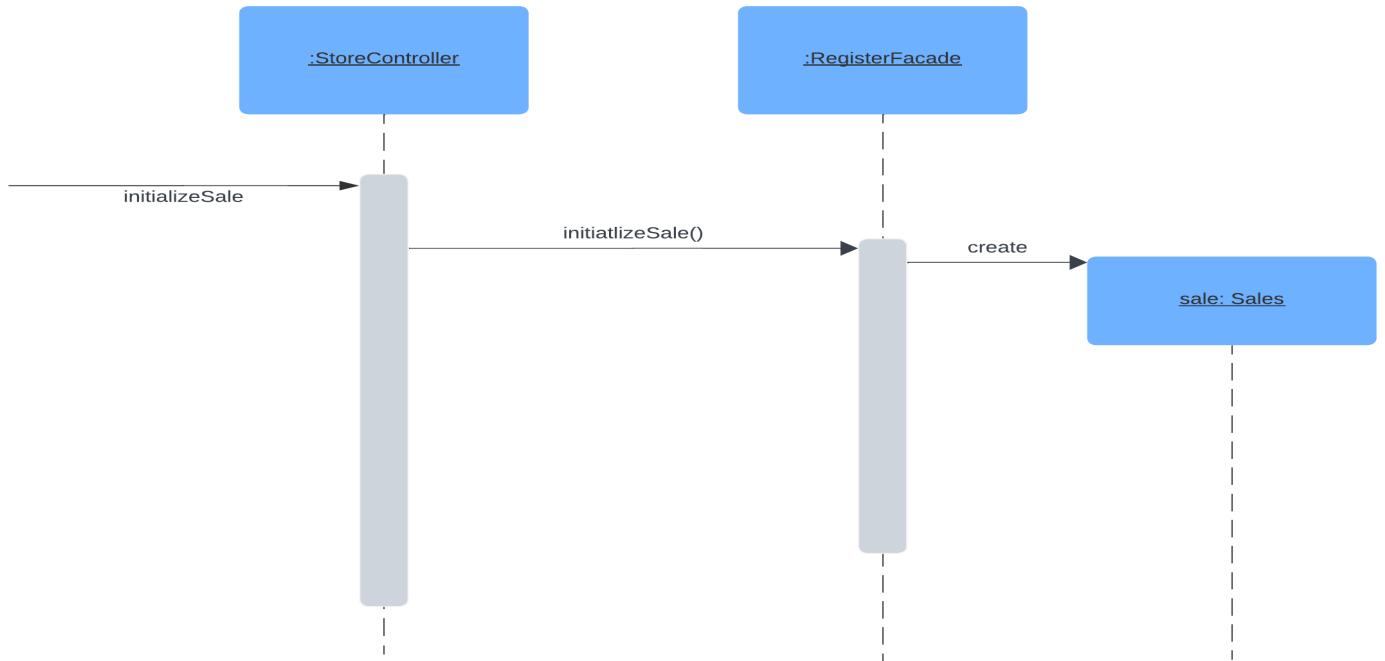
Manage Discounts



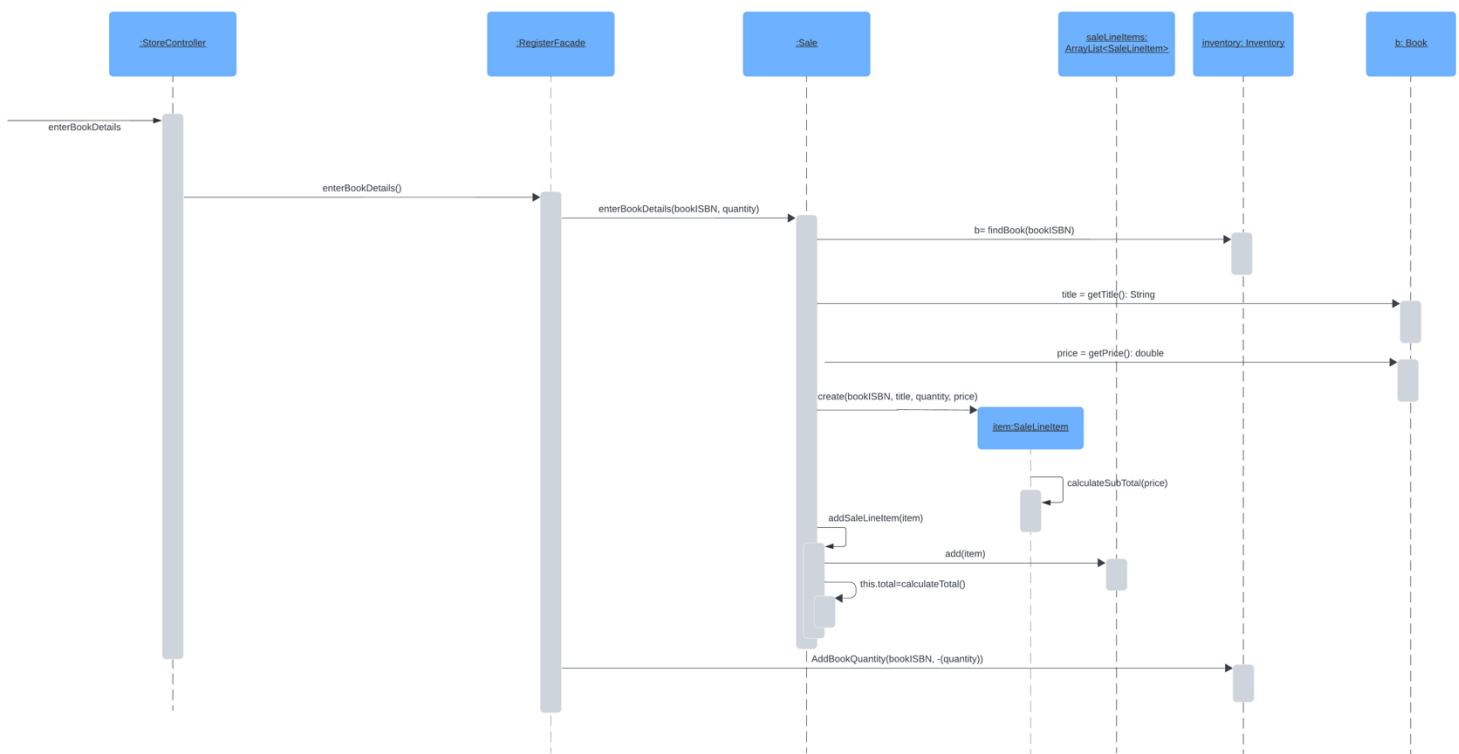
6. Sequence Diagram

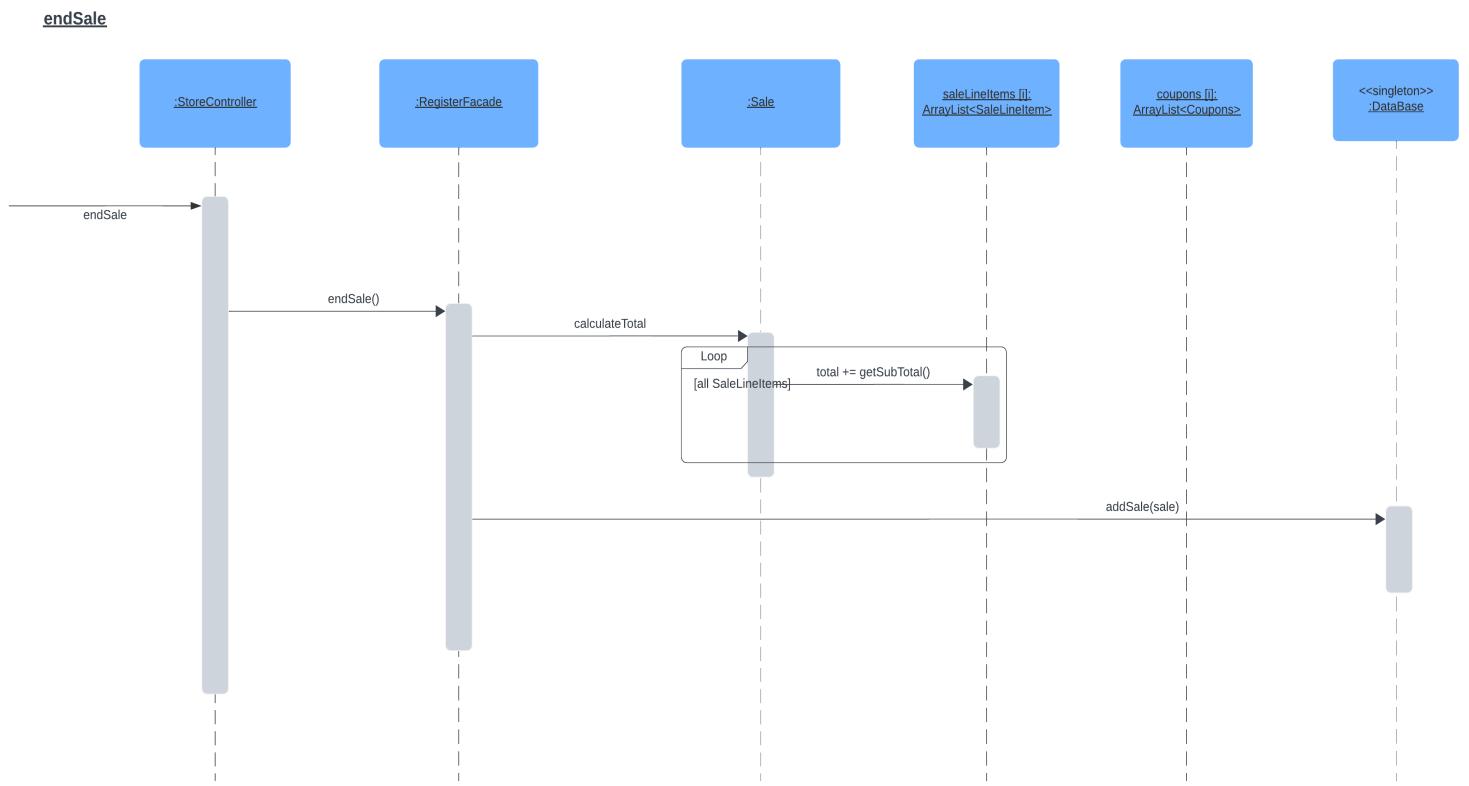
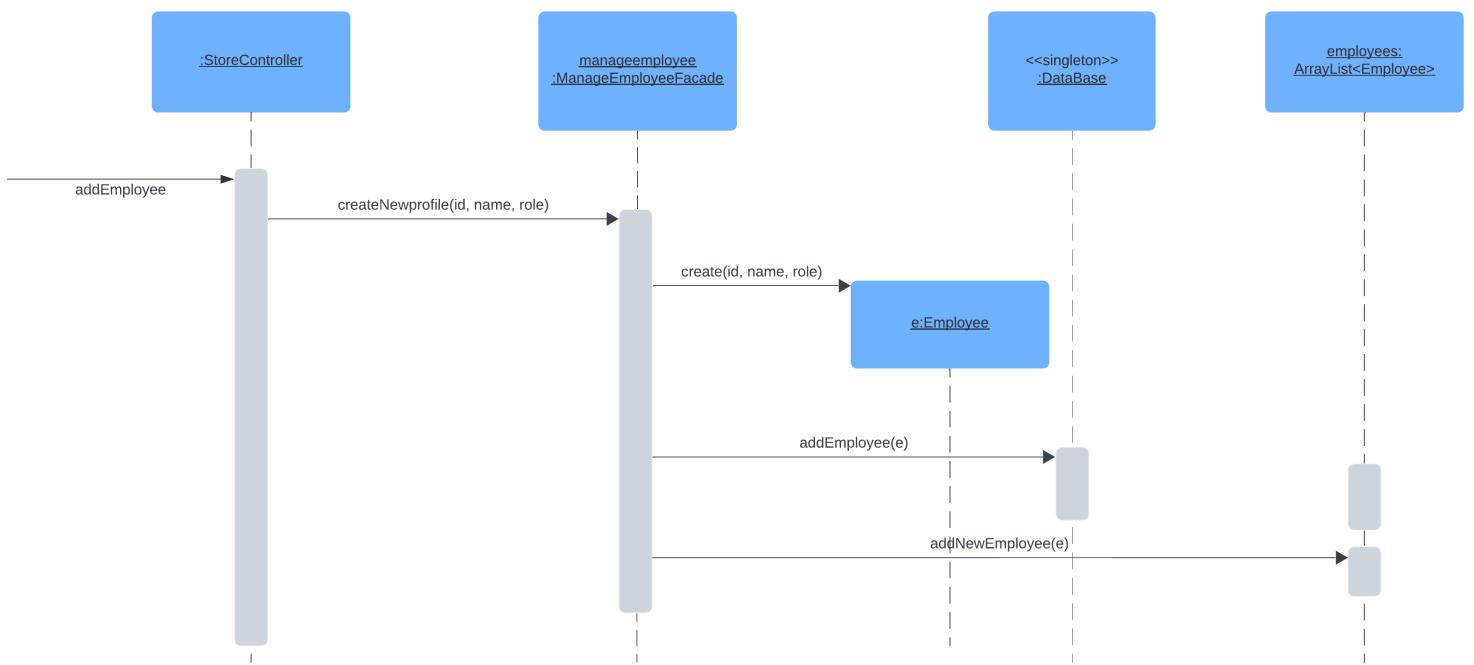
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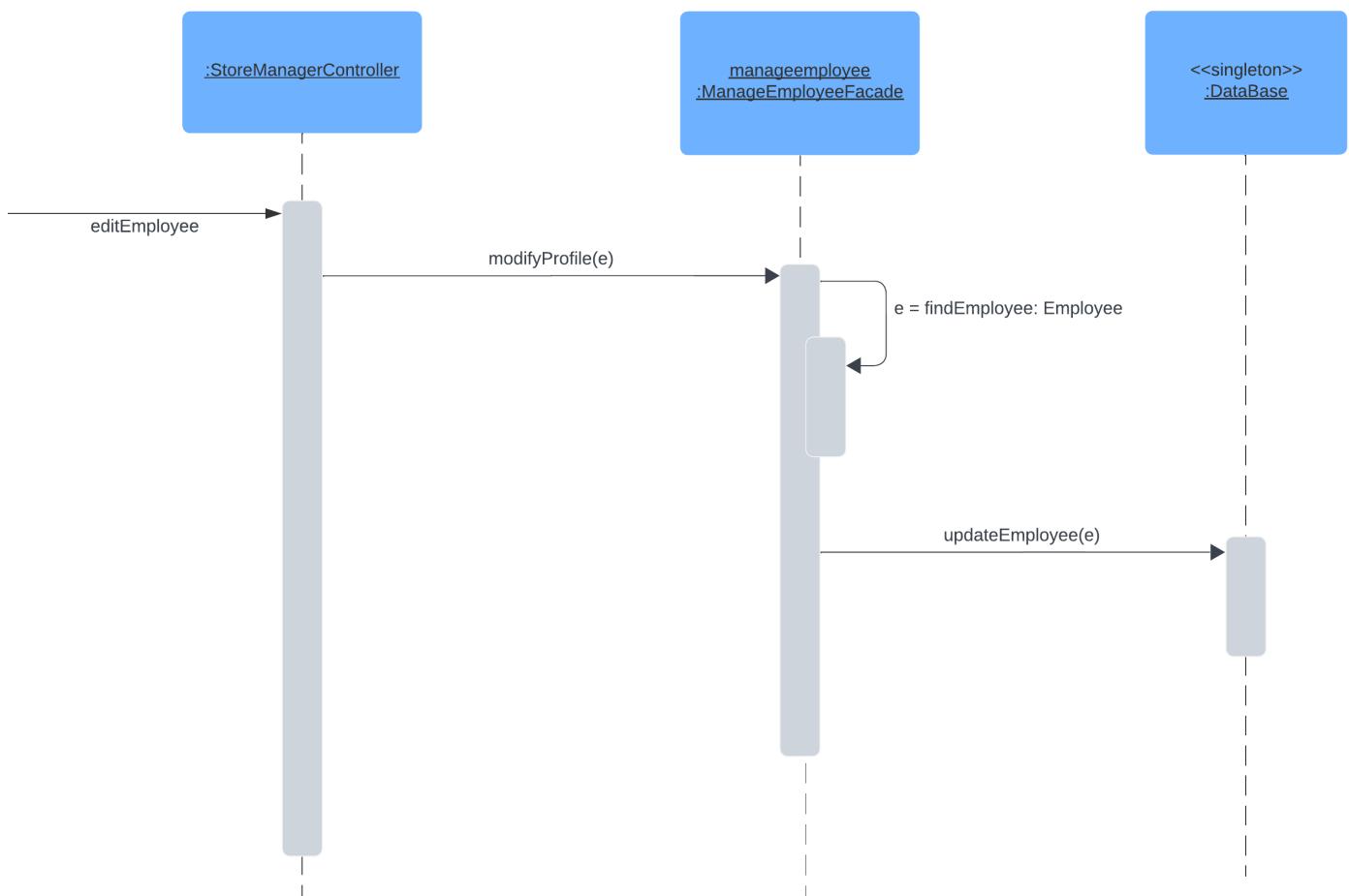
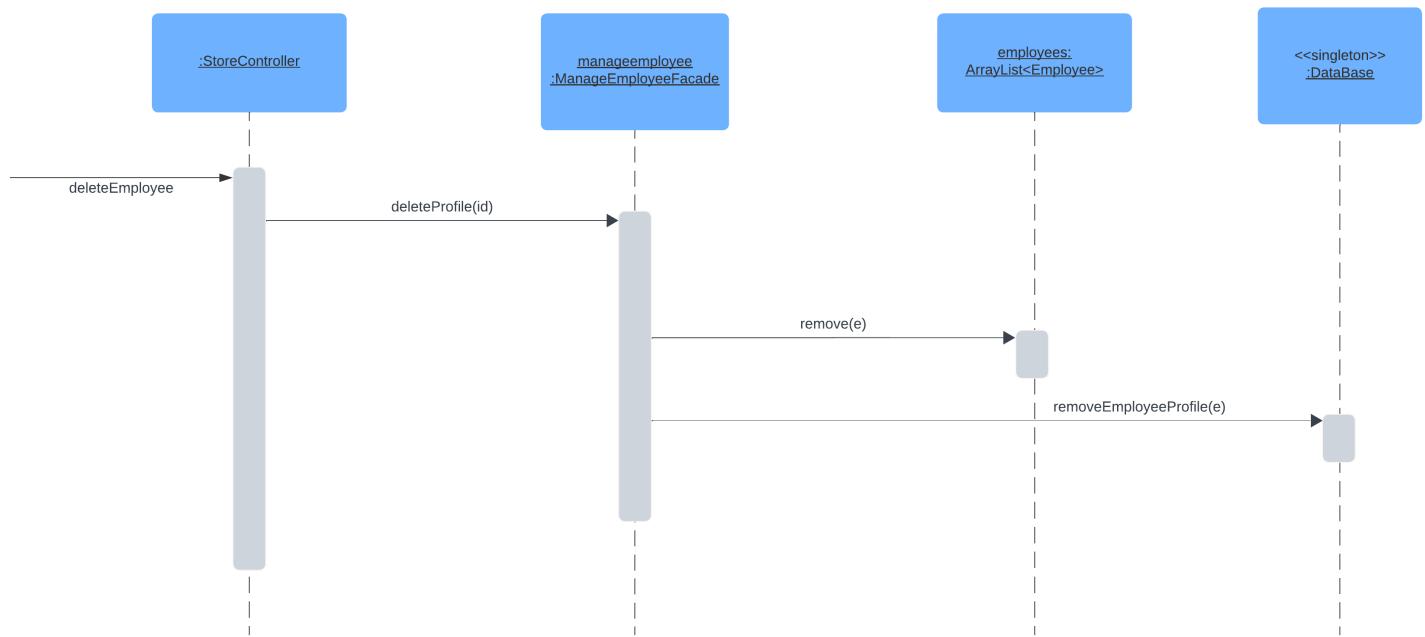
makeNewSale

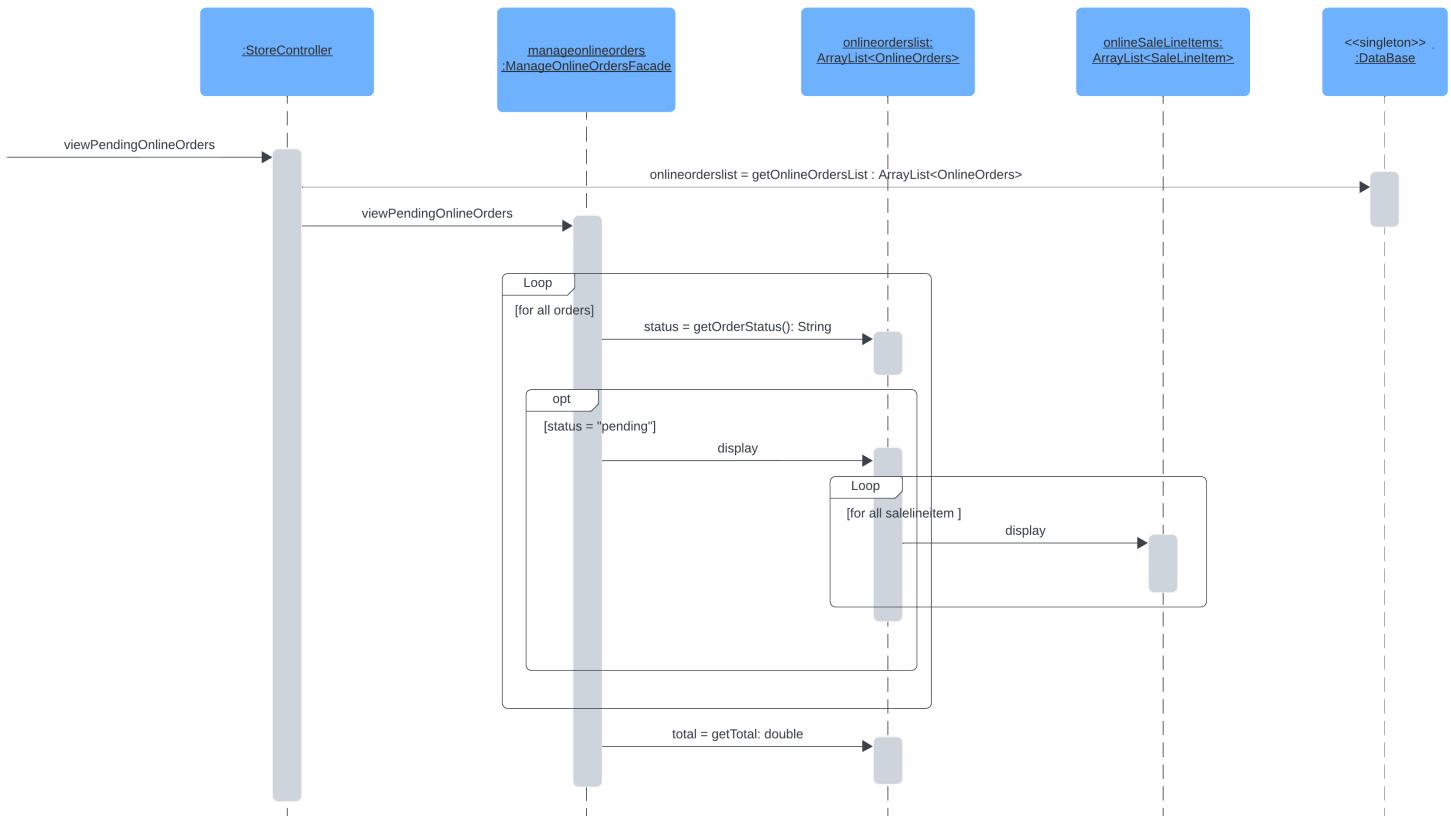
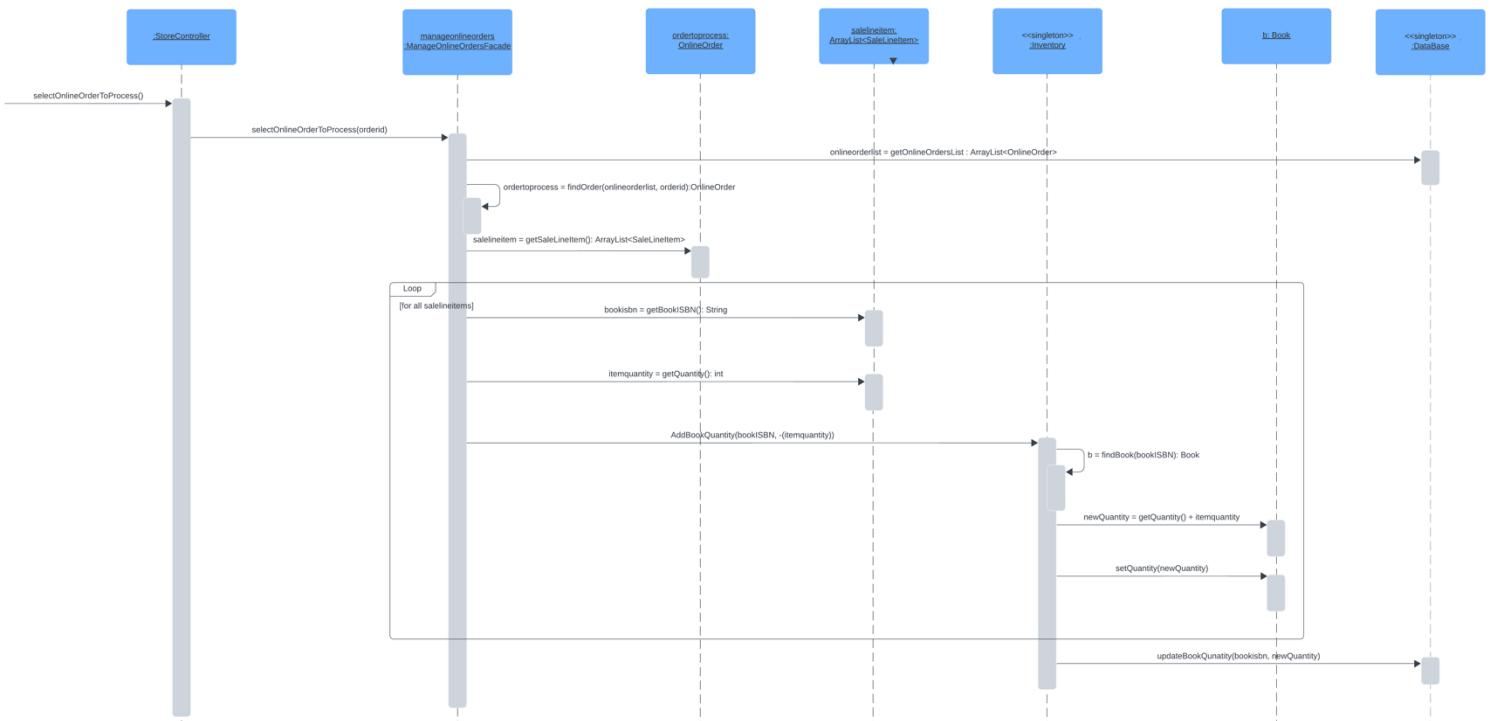


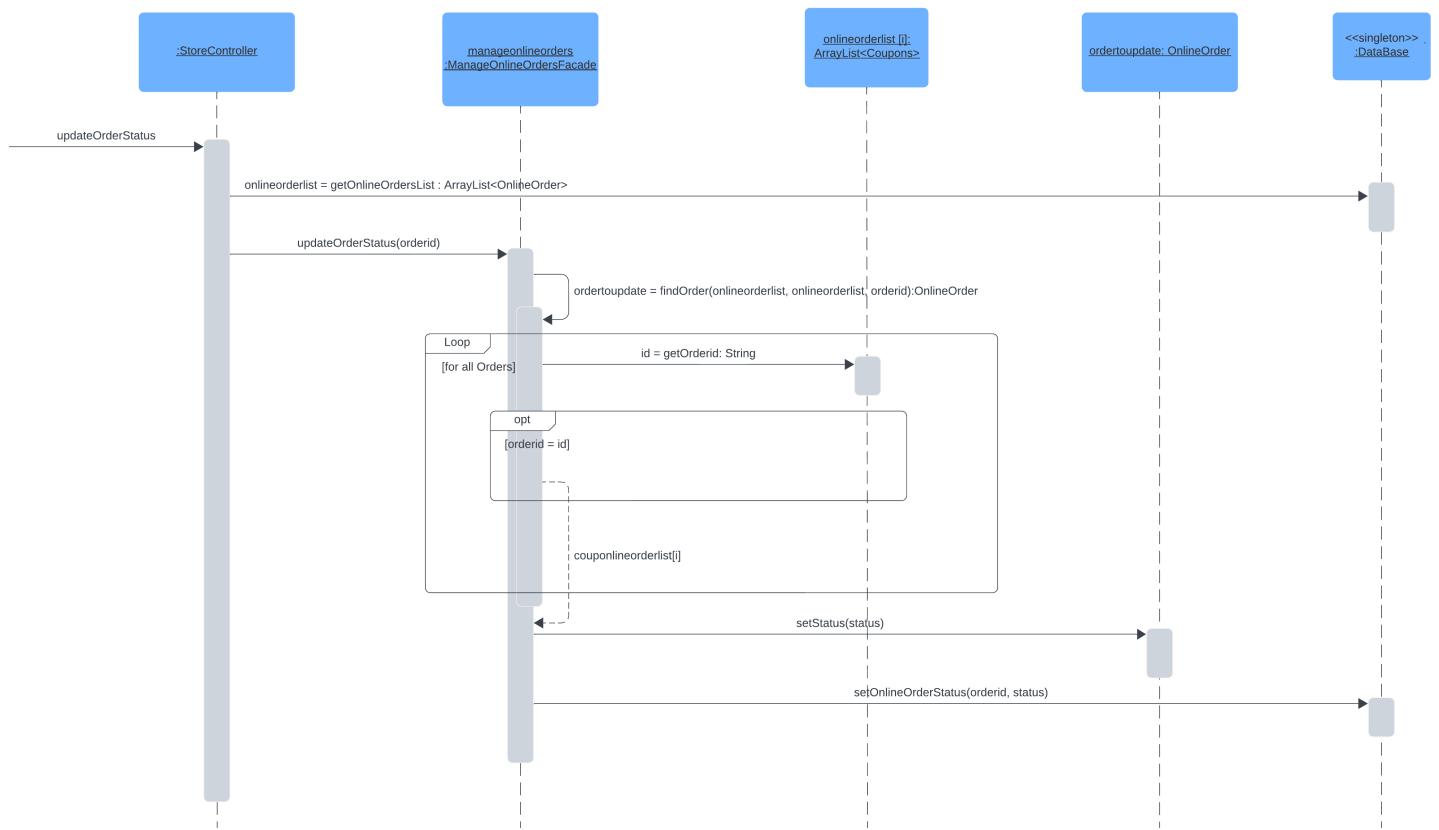
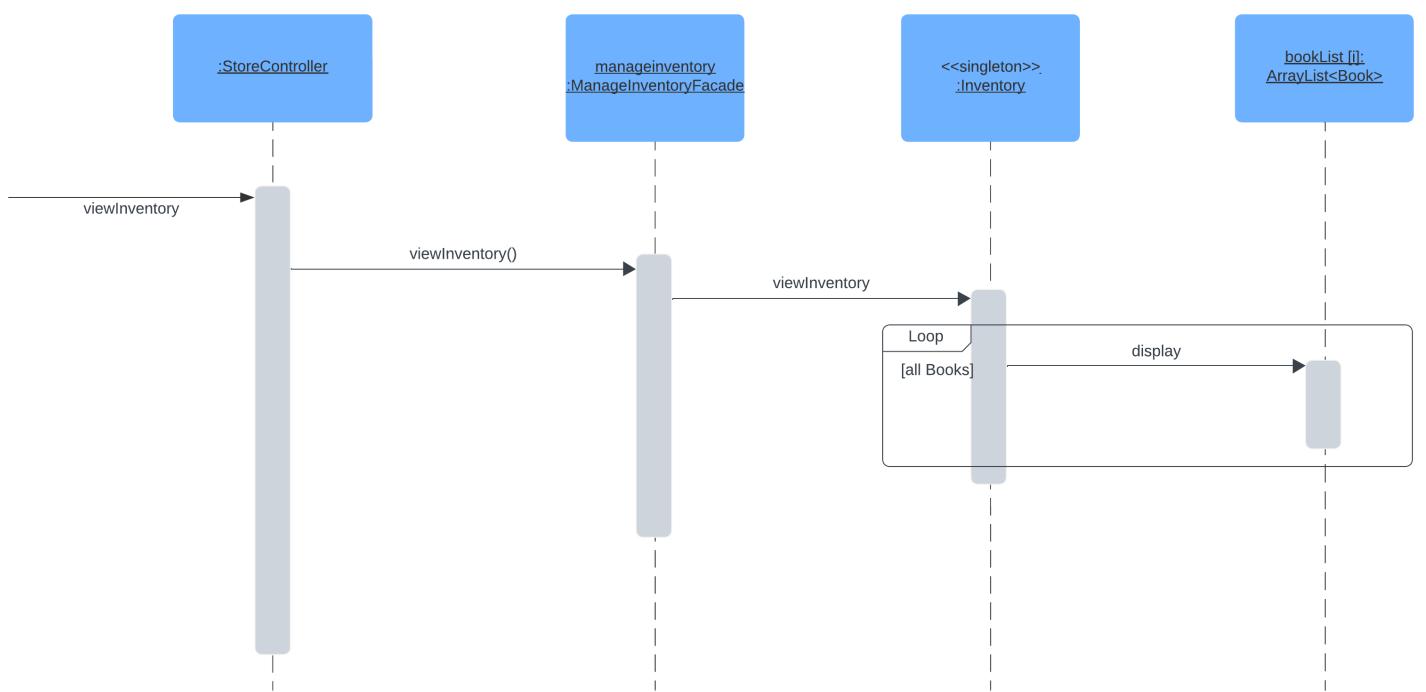
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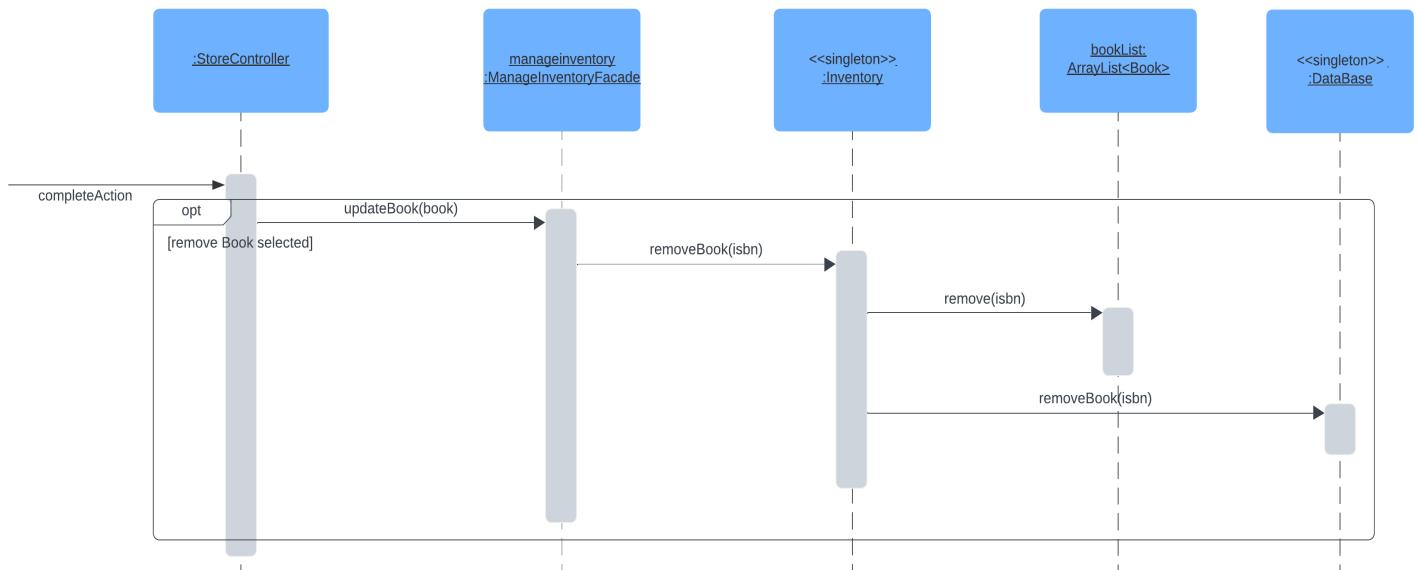


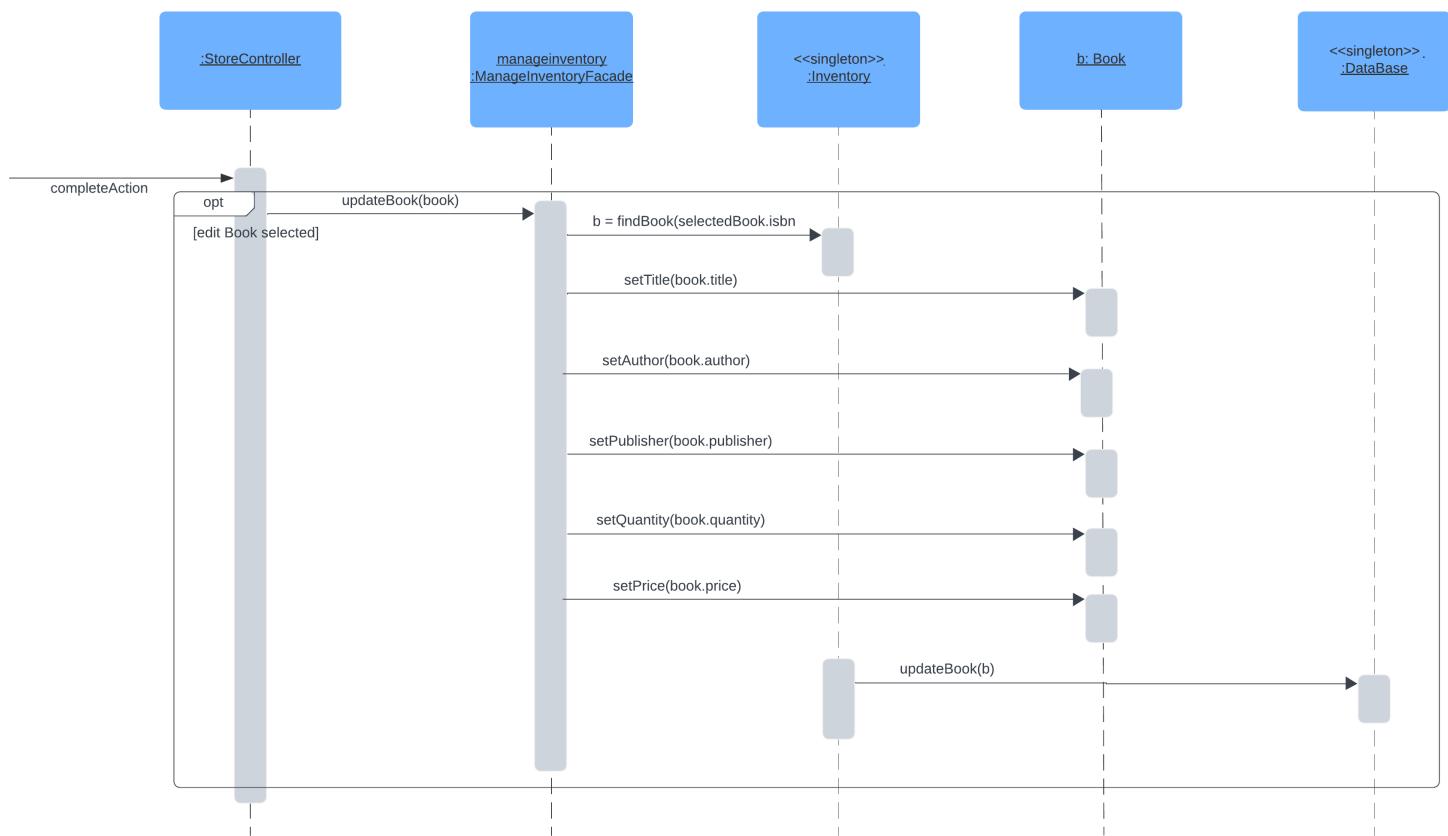
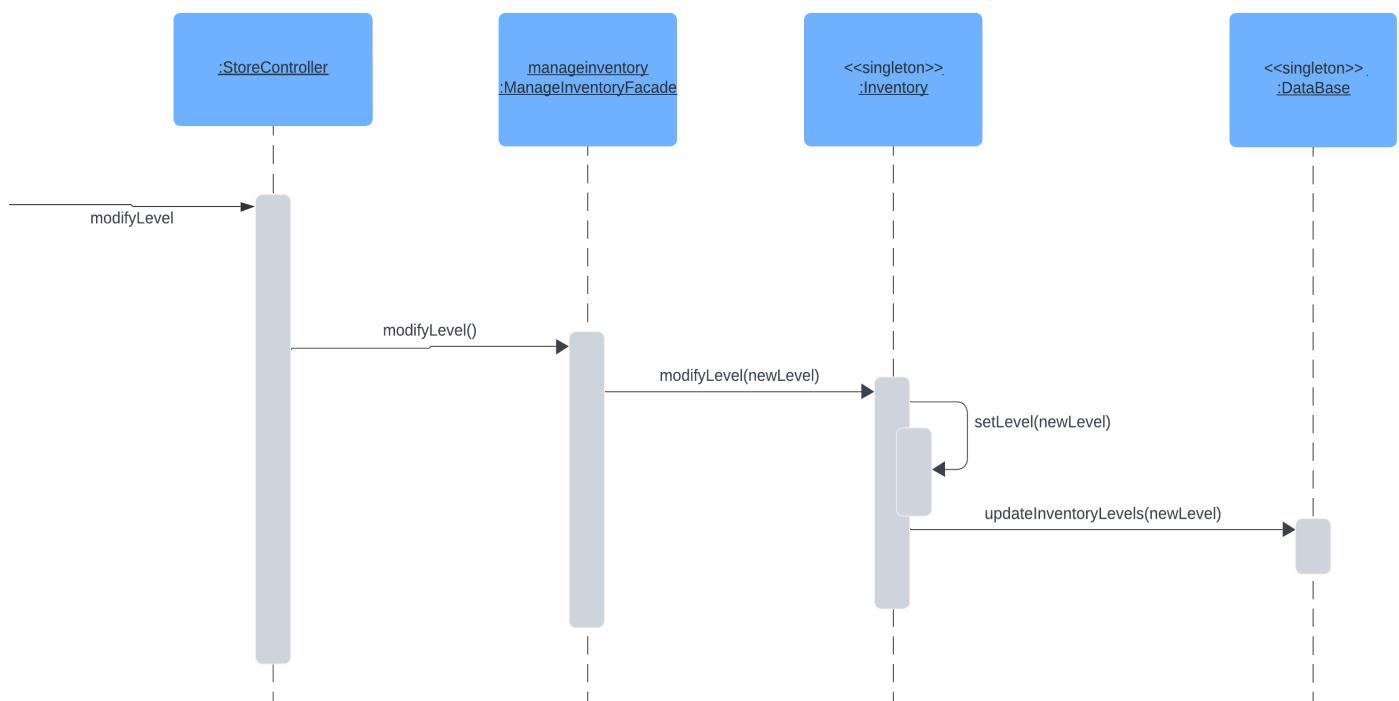
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editEmployeedeleteProfile

USECASE ID 03:**viewPendingOnlineOrders****selectOnlineOrderToProcess**

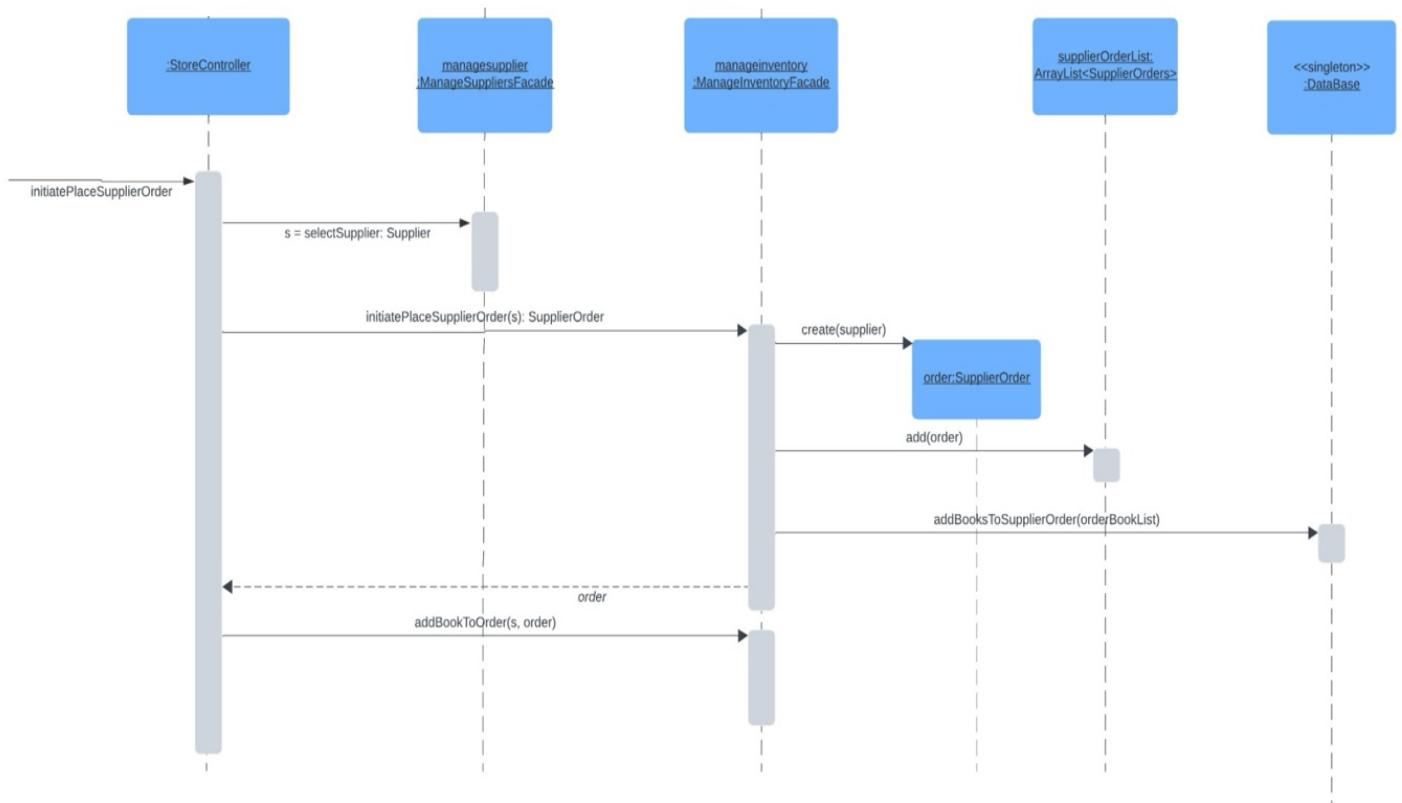
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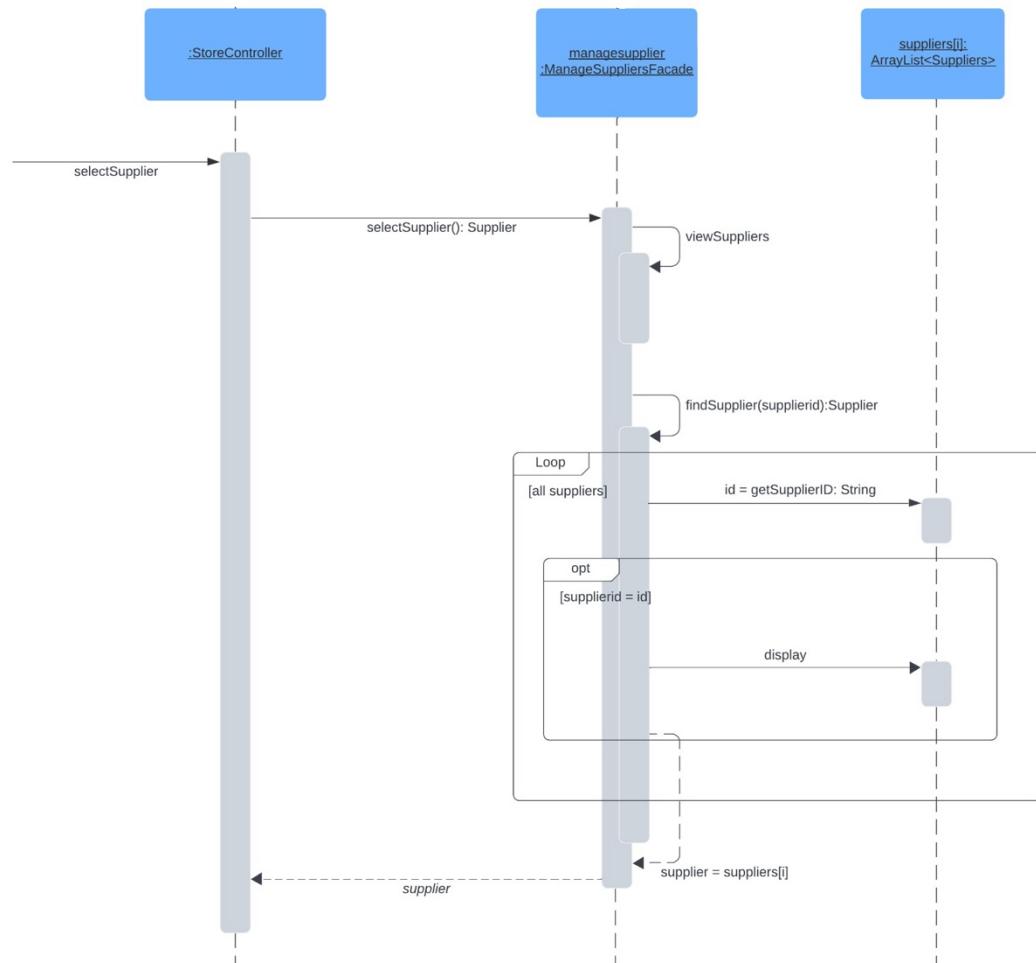
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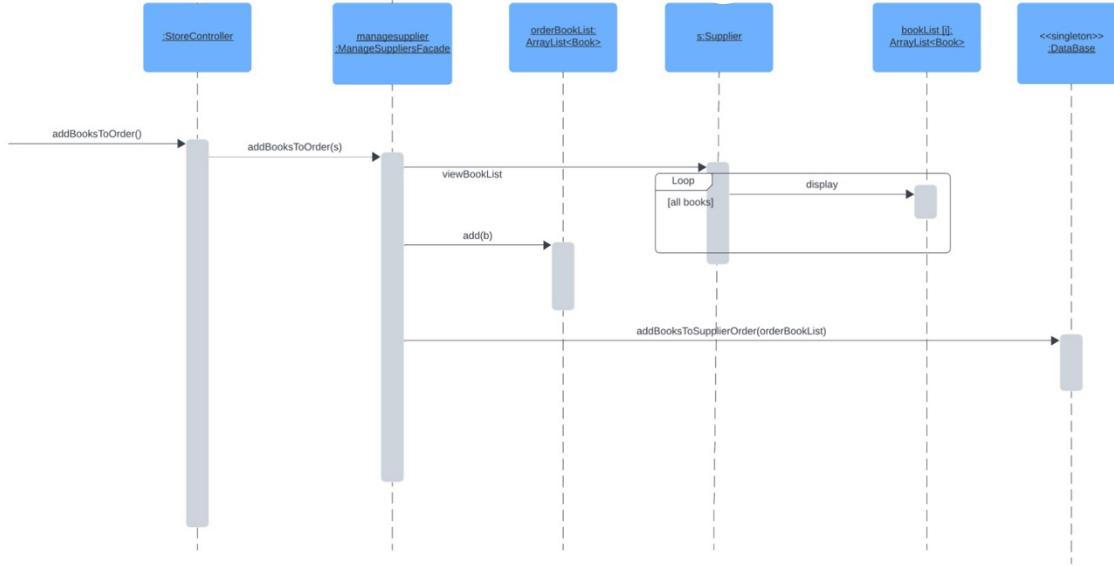
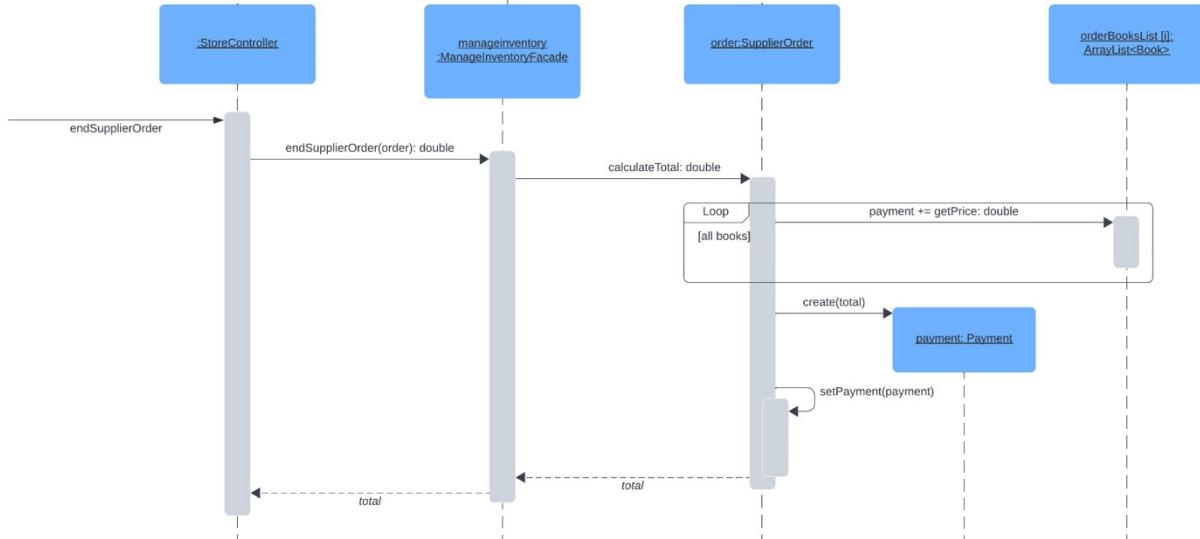
updateInventorymodifyLevels

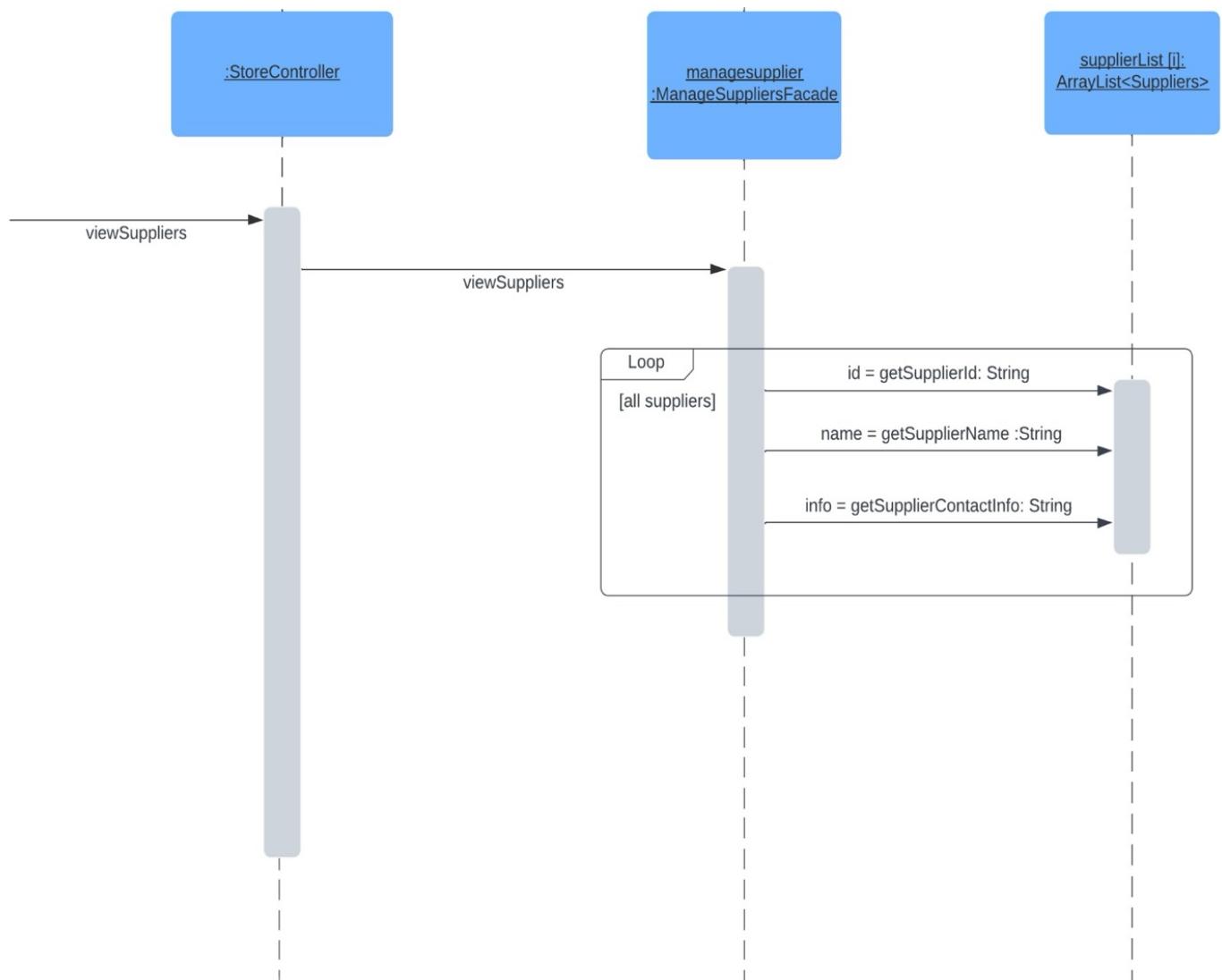
USECASE ID 05:

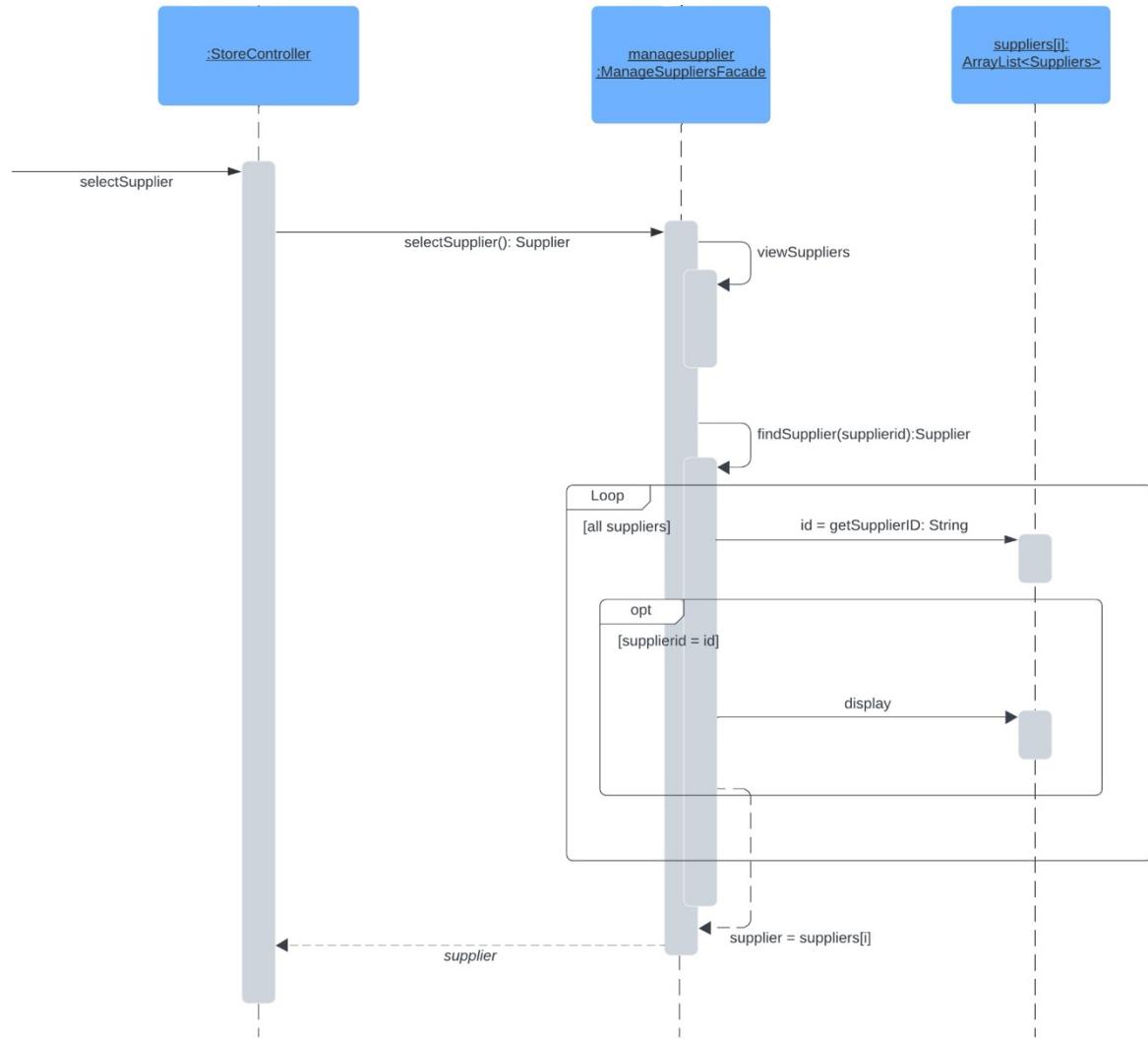
initiatePlaceSupplierOrder

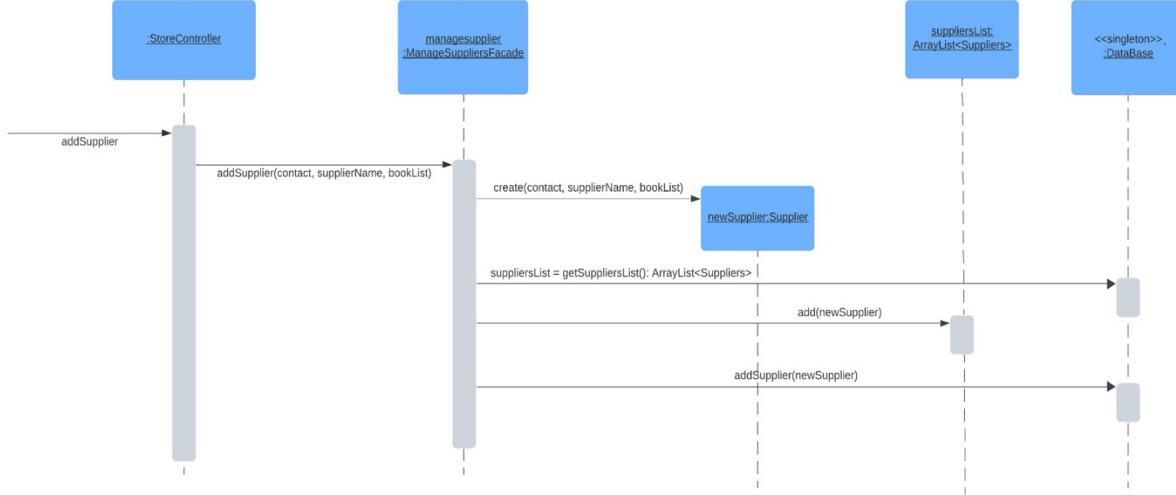
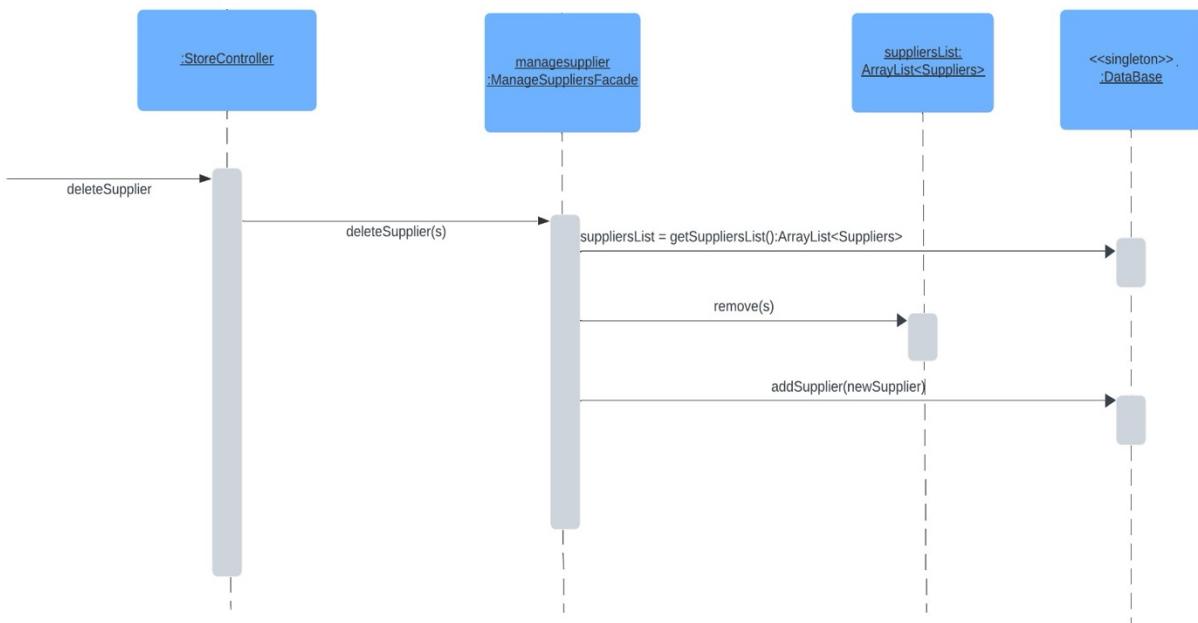


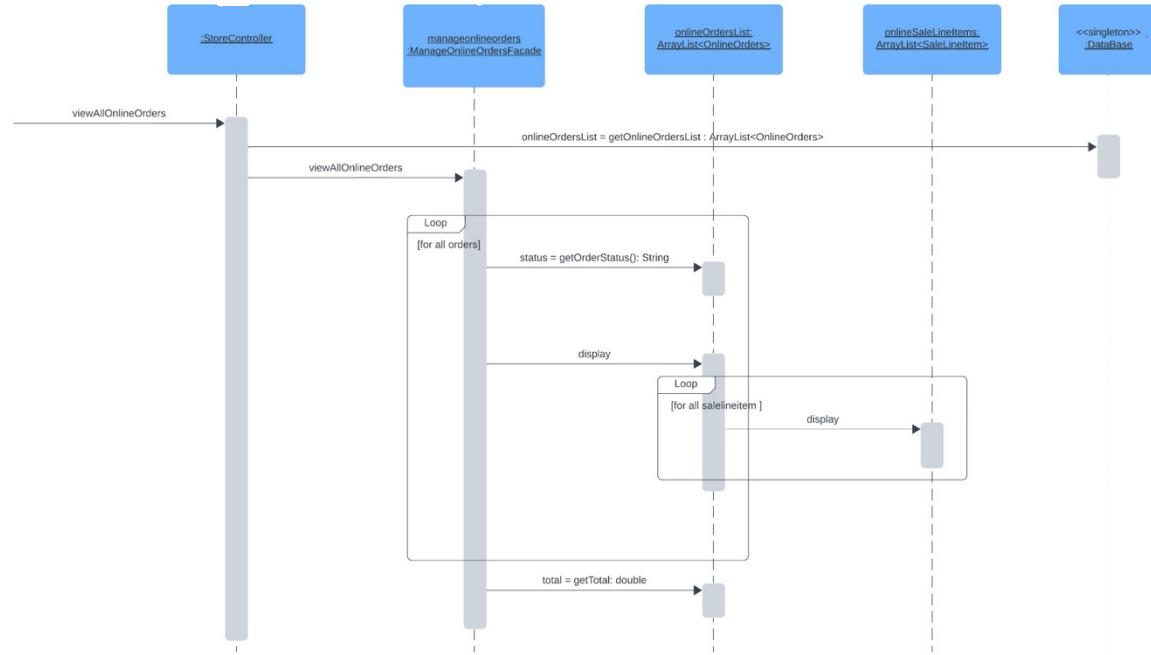
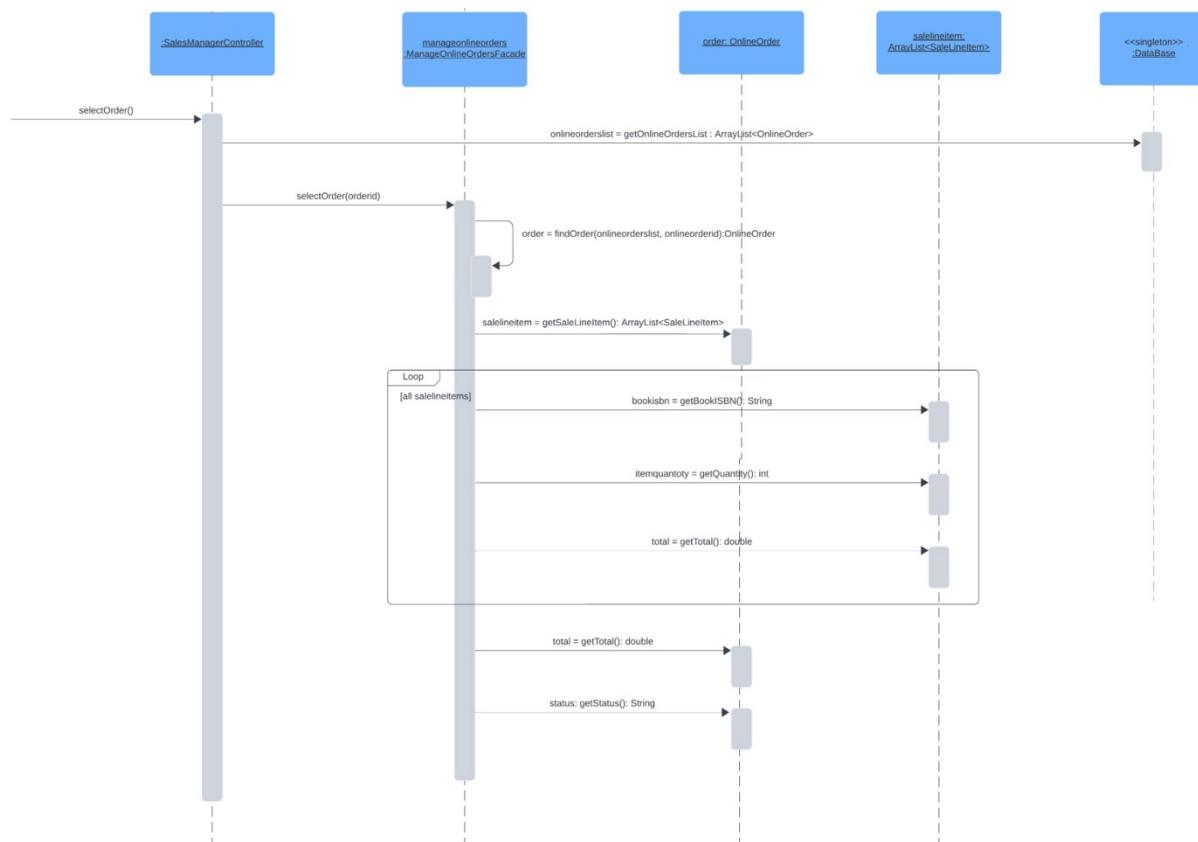
selectSupplier

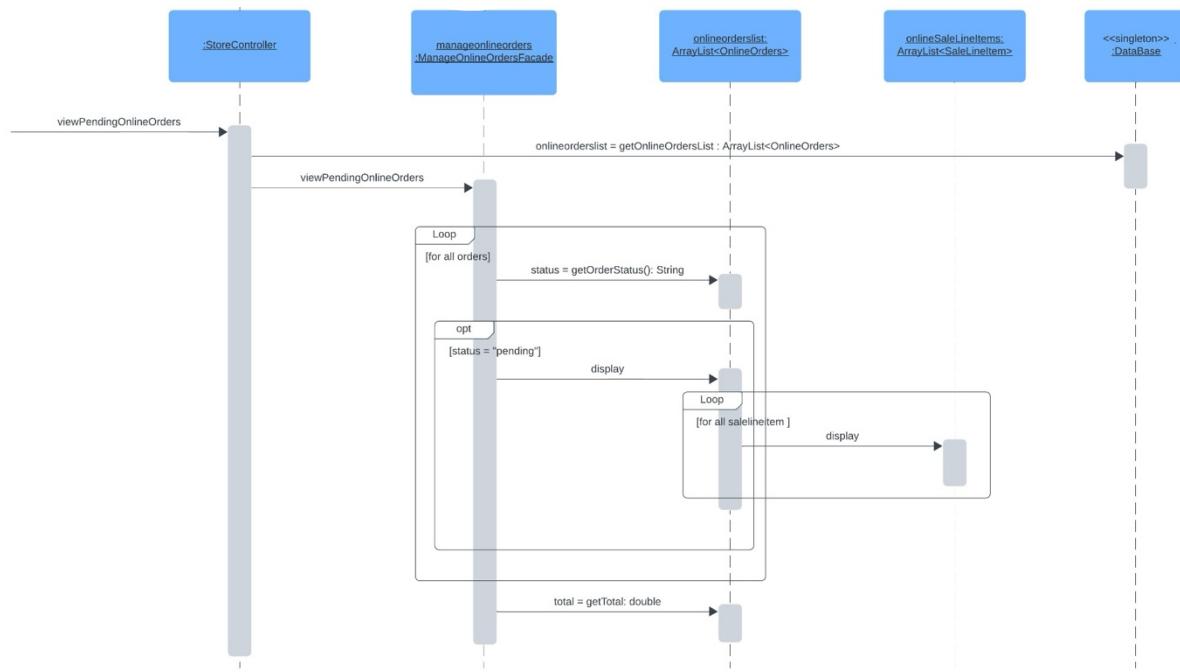
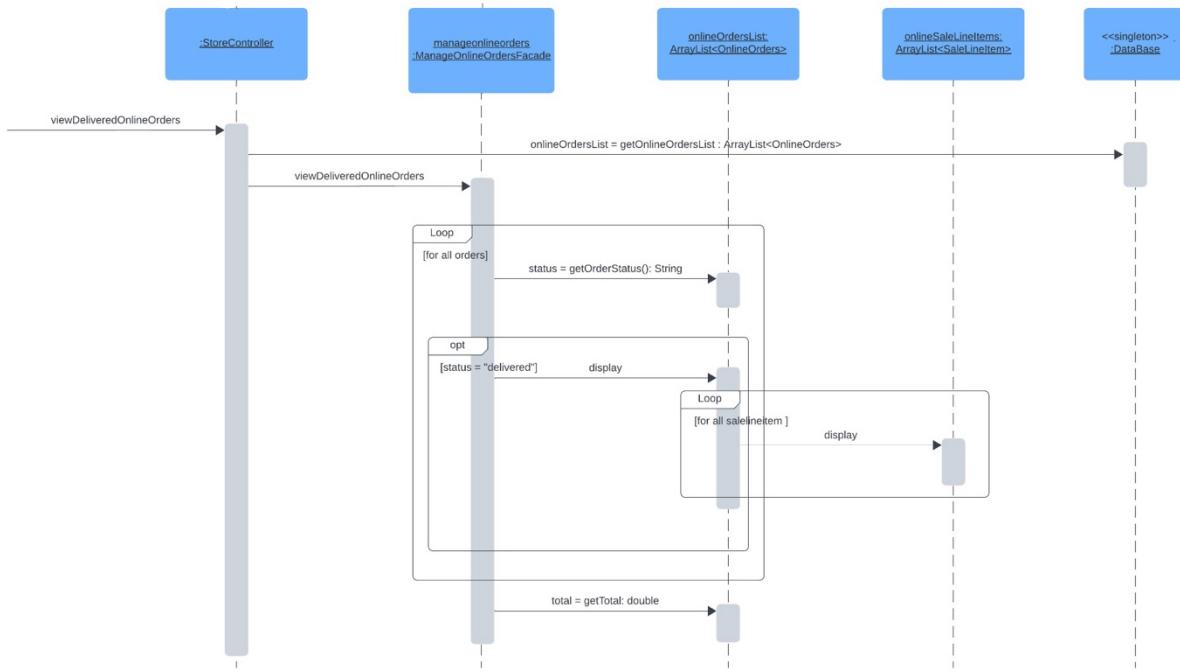
addBooksToOrderendSupplierOrder

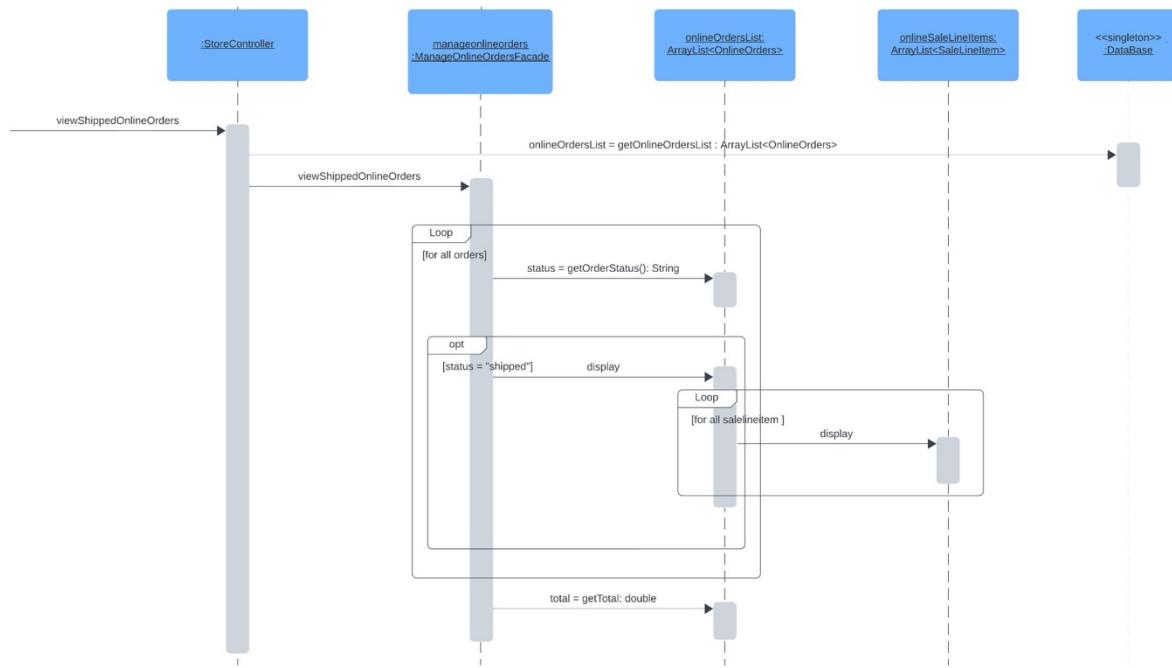
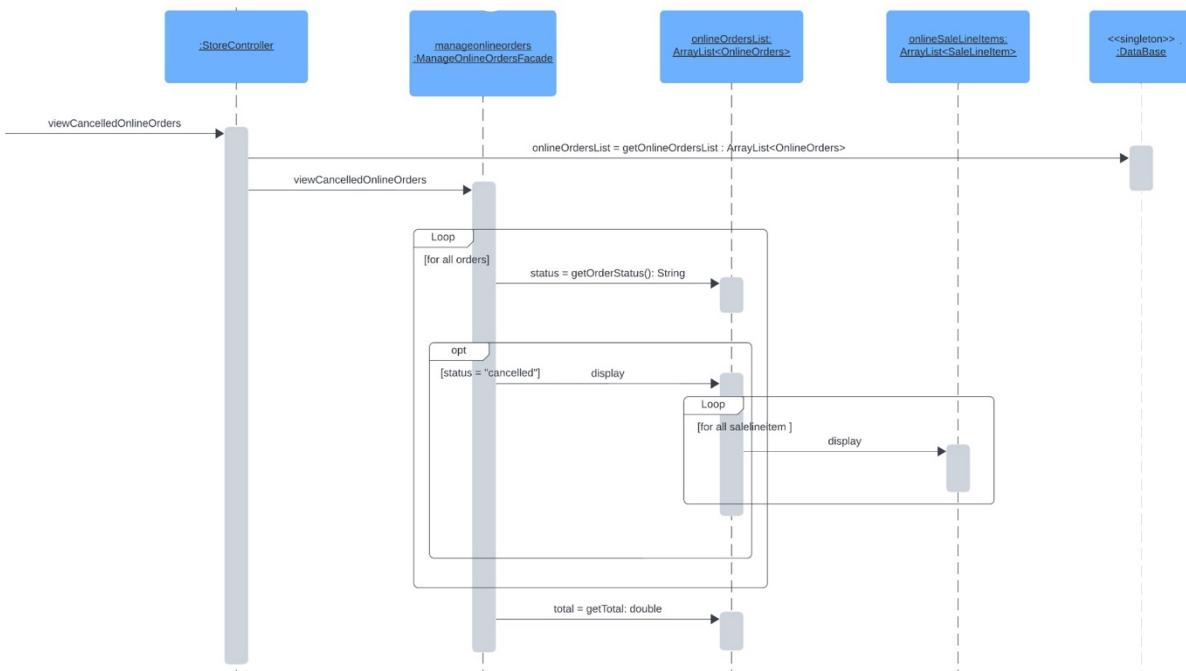
USECASE ID: 06:**viewSuppliers**

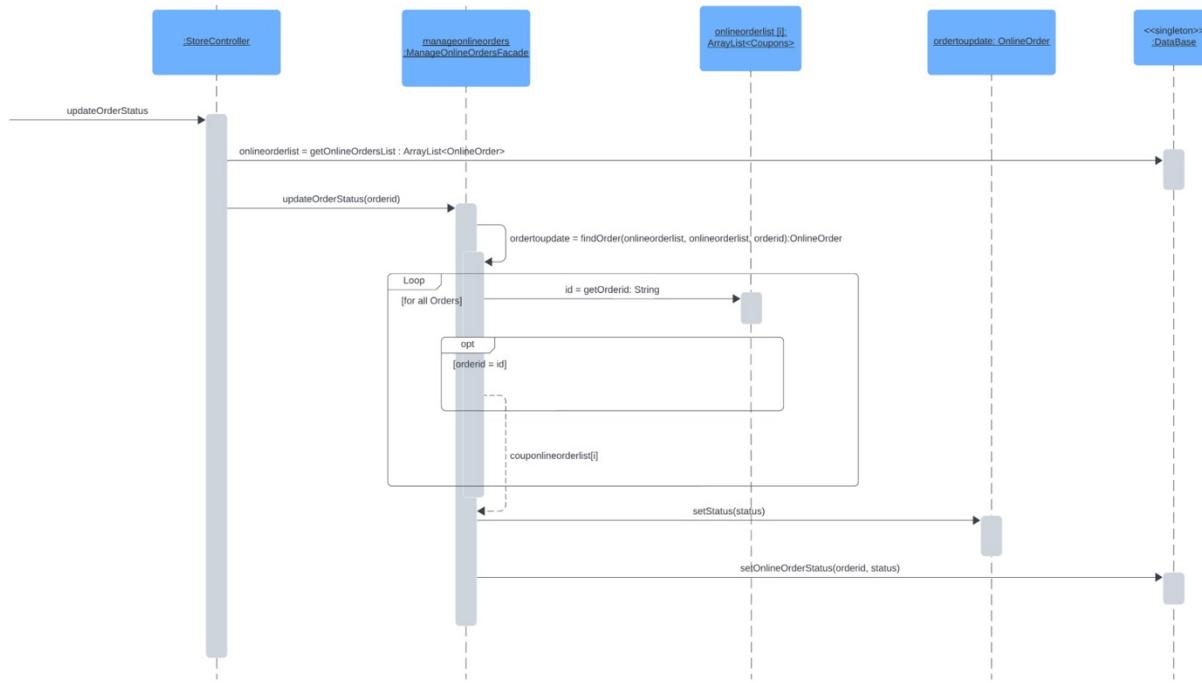
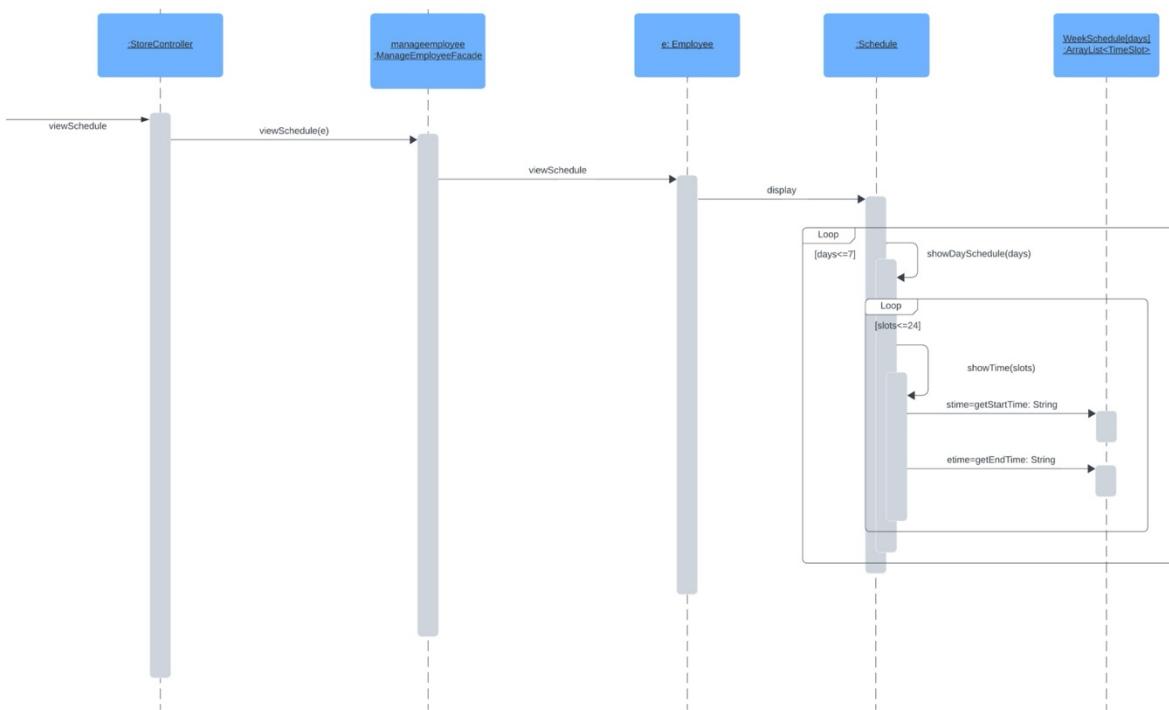
selectSupplier

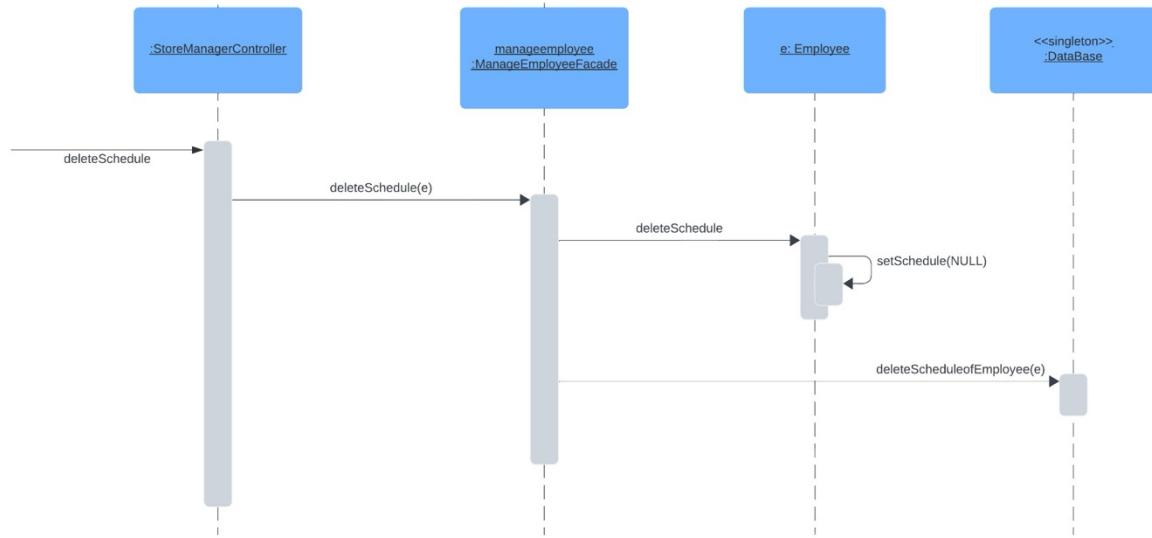
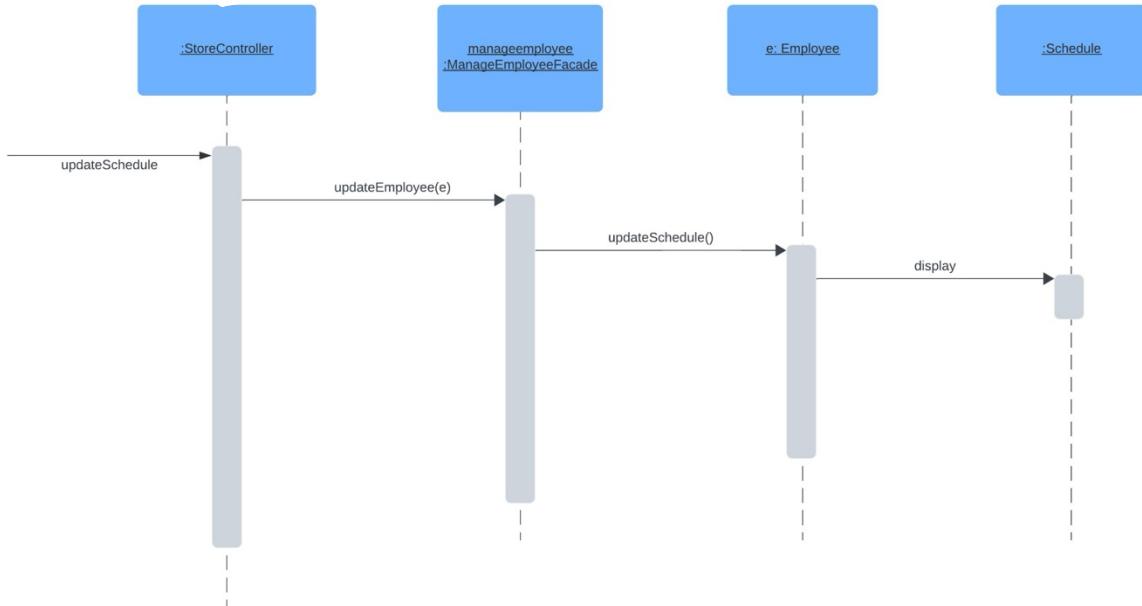
[addSupplier](#)[deleteSupplier](#)

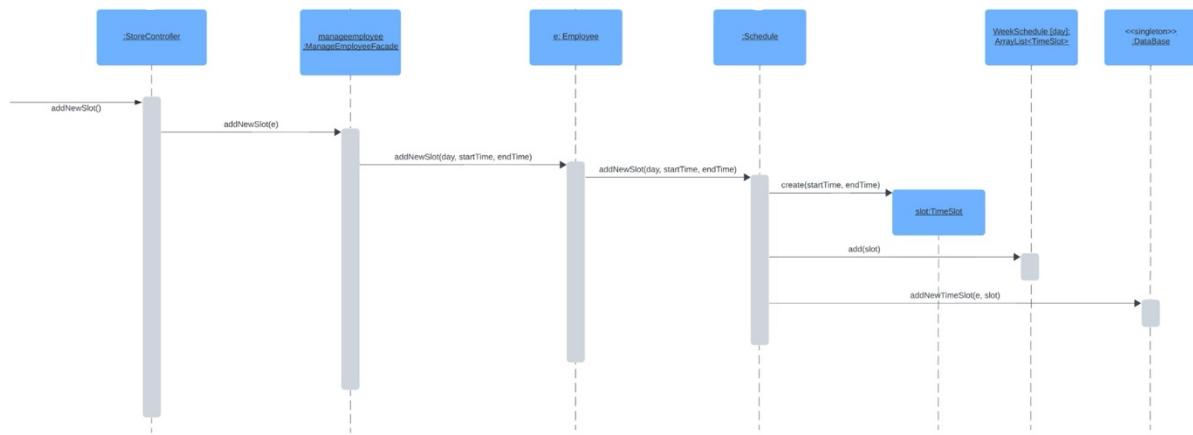
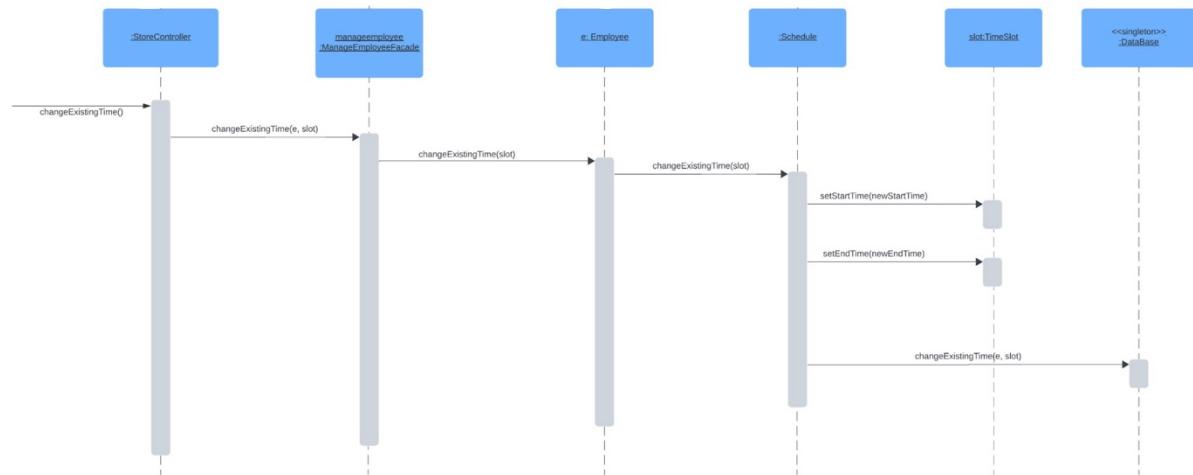
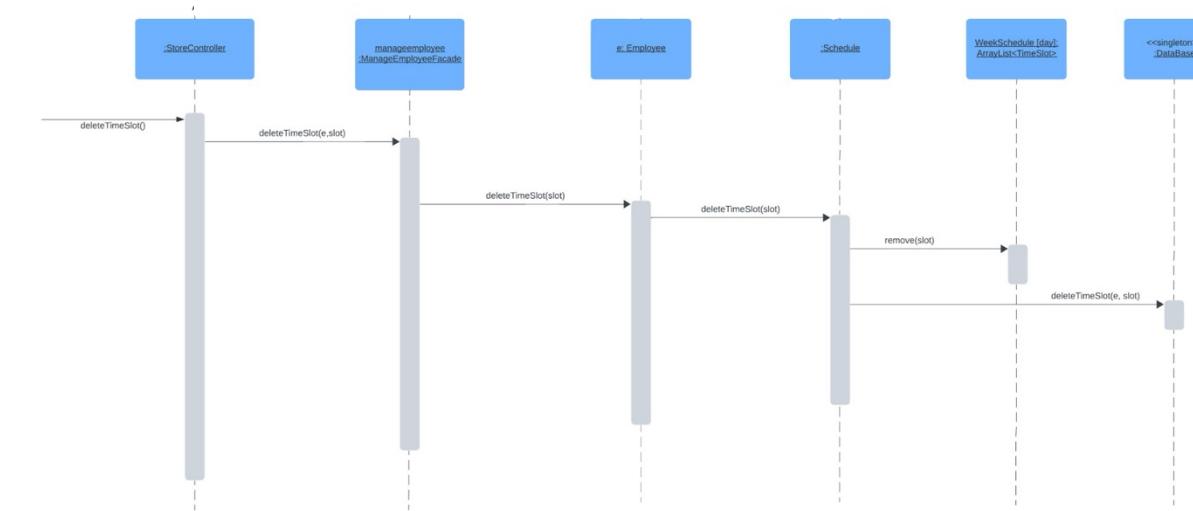
USECASE ID 07:viewAllOnlineOrdersselectOrder

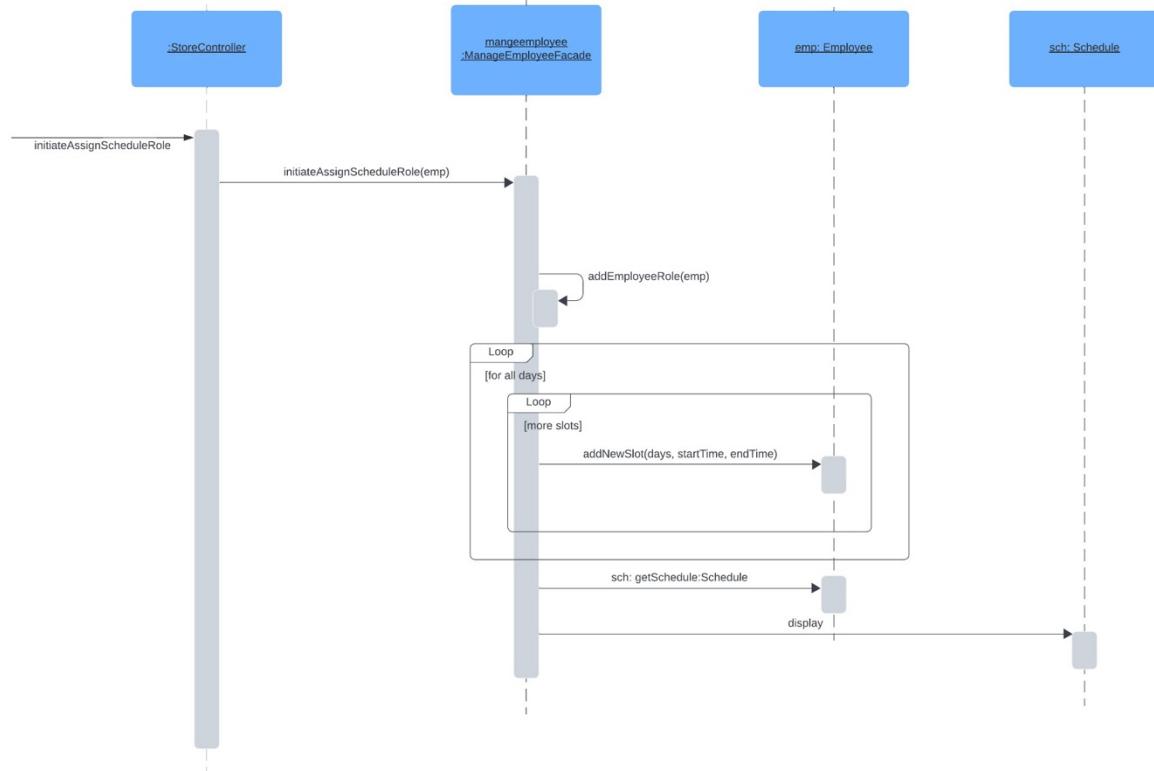
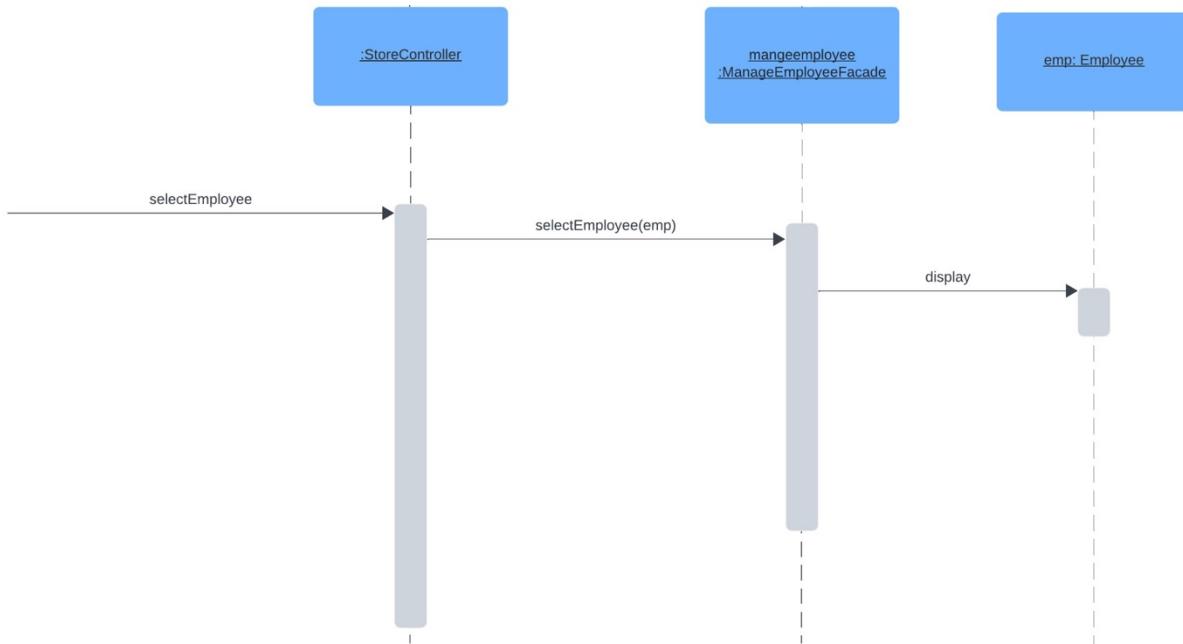
[viewPendingOnlineOrders](#)[viewDeliveredOnlineOrders](#)

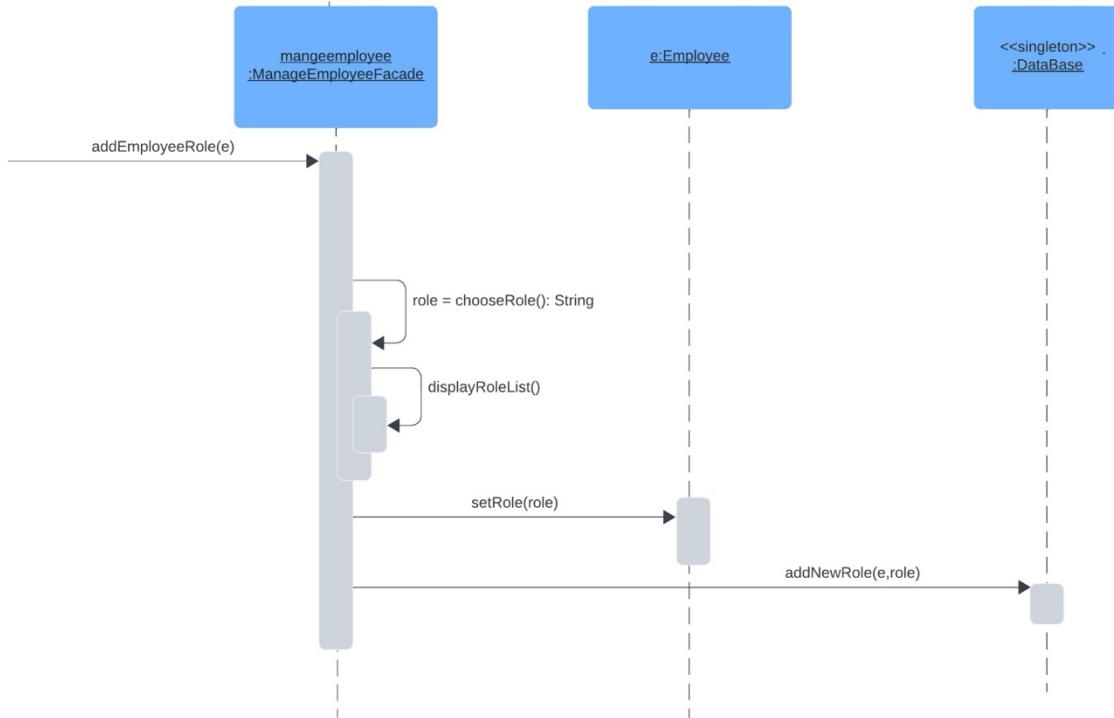
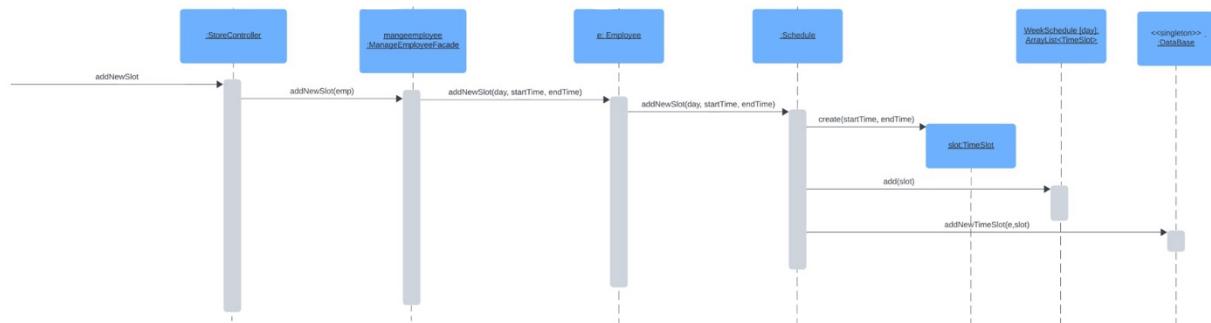
viewShippedOnlineOrdersviewCancelledOnlineOrders

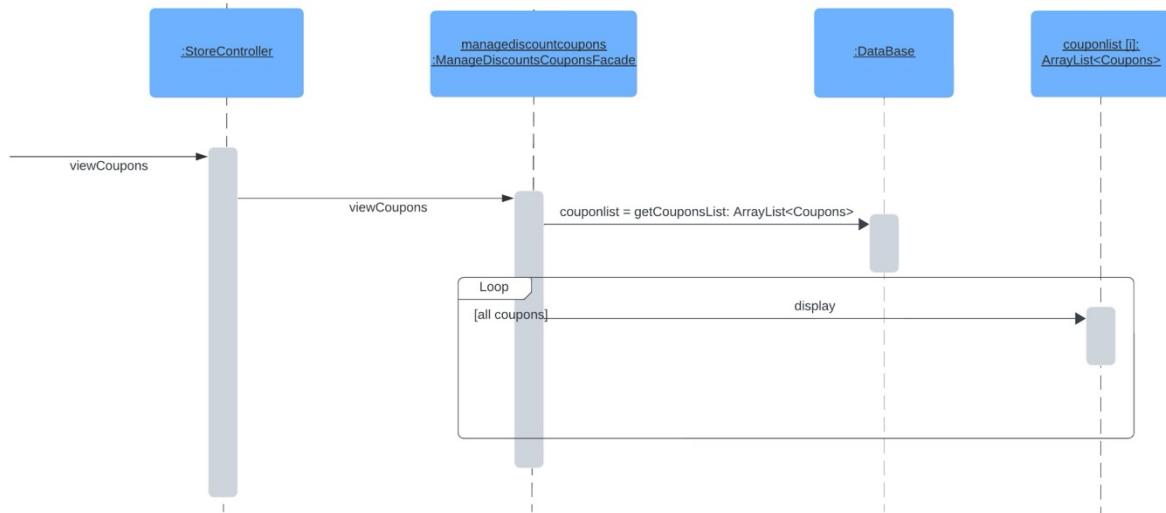
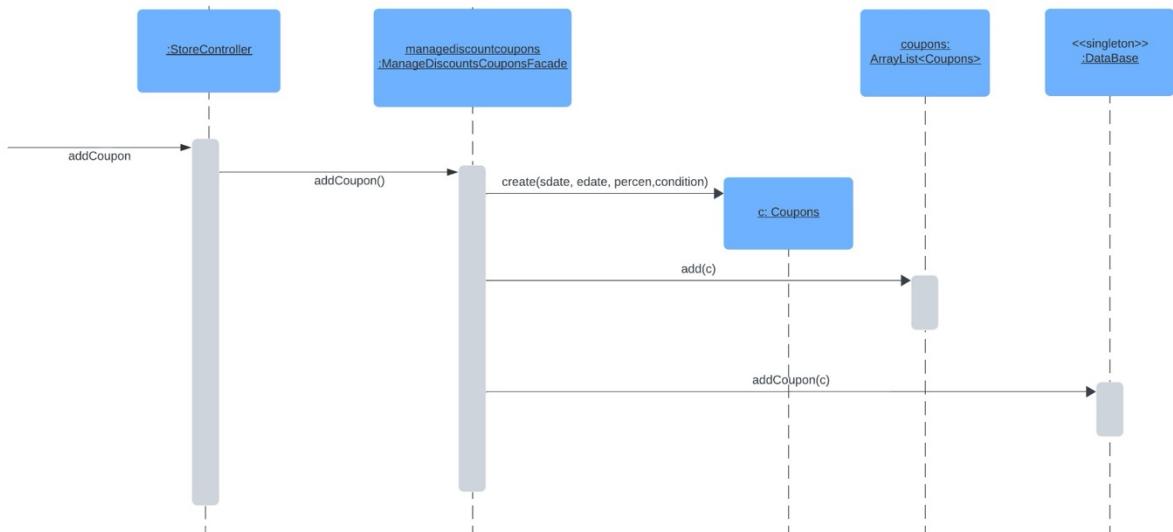
updateOrderStatus**USECASE ID 08:**viewSchedule

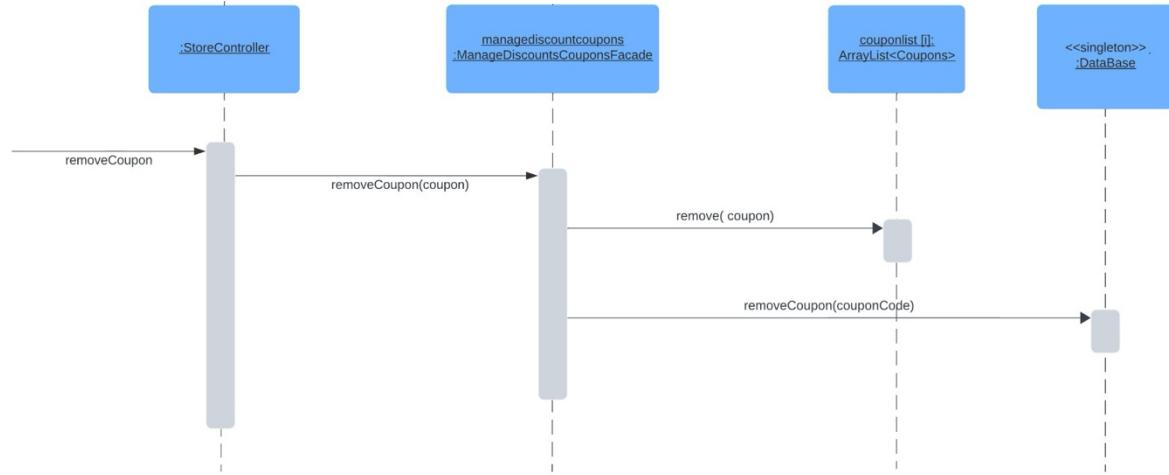
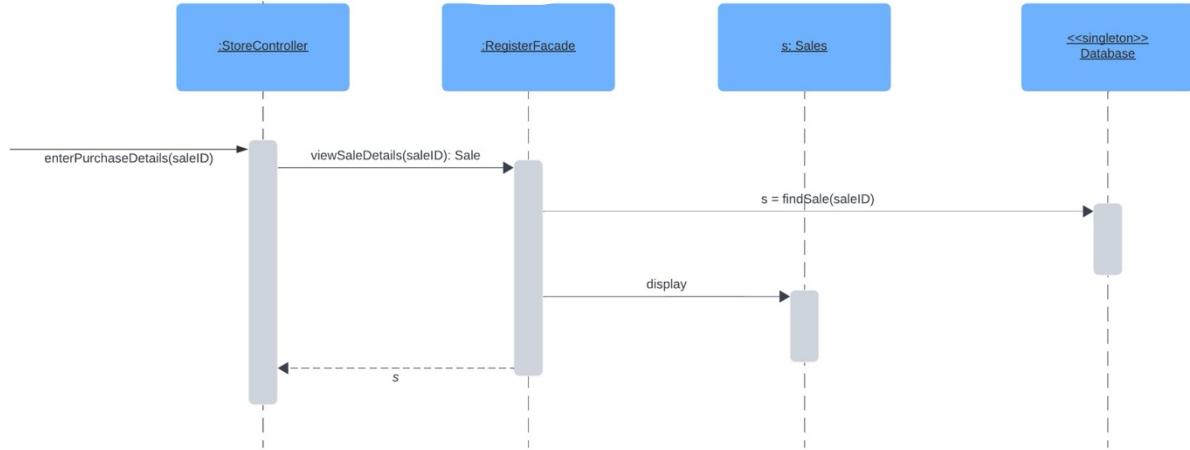
deleteScheduleupdateSchedule

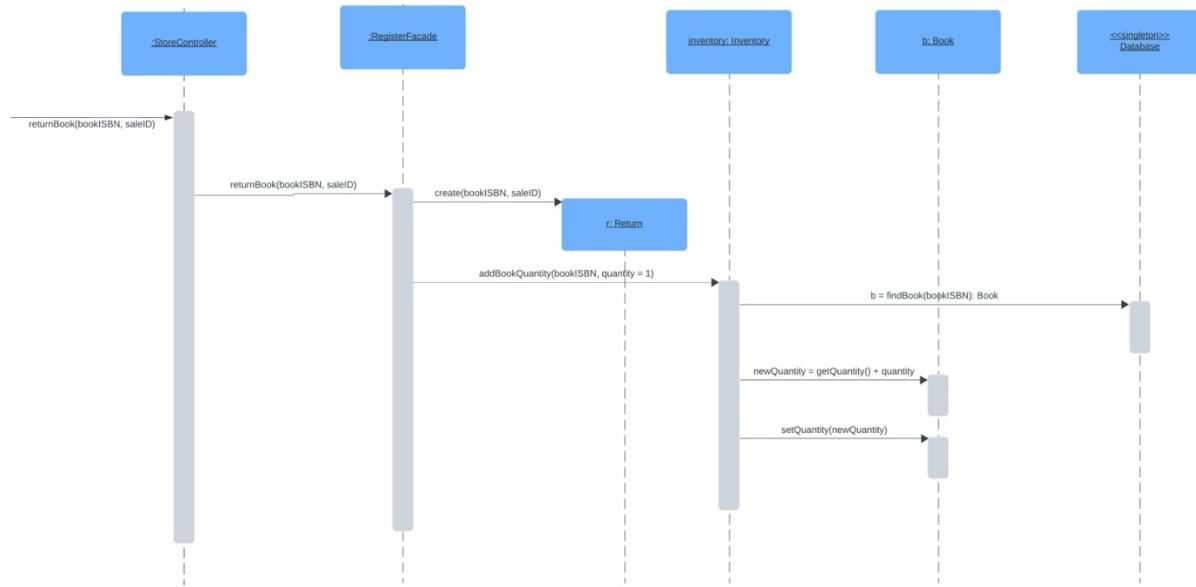
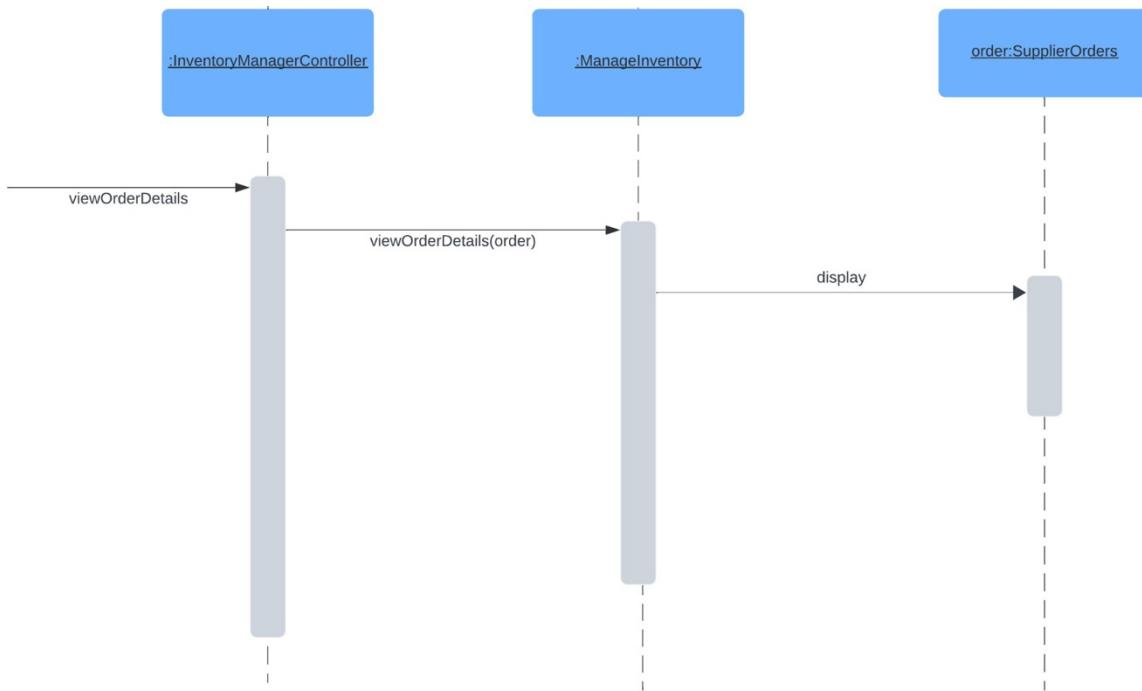
[addNewSlot](#)[changeExistingTime](#)[deleteTimeSlot](#)

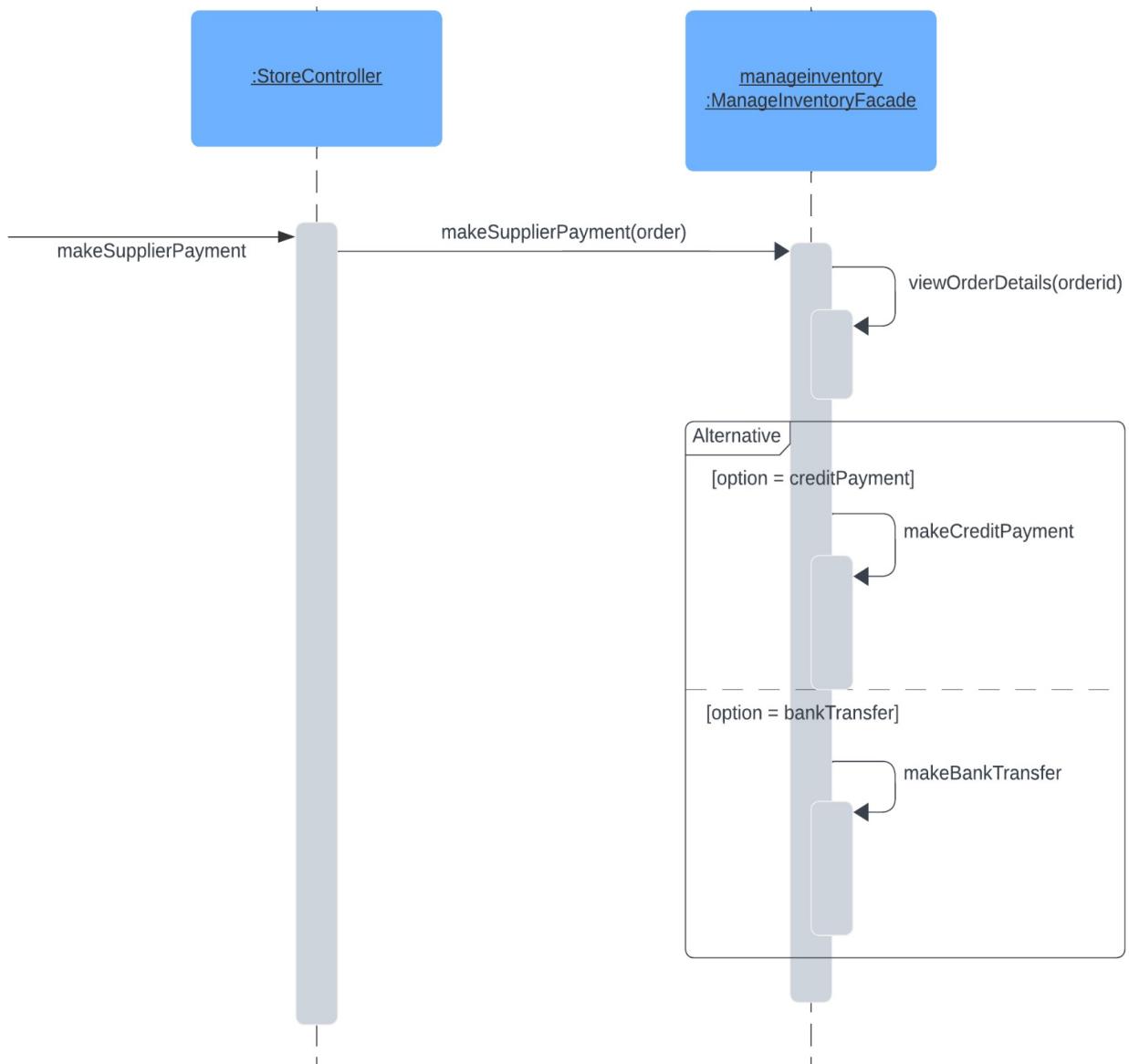
USECASE ID 09:initiateAssignScheduleRoleselectEmployee

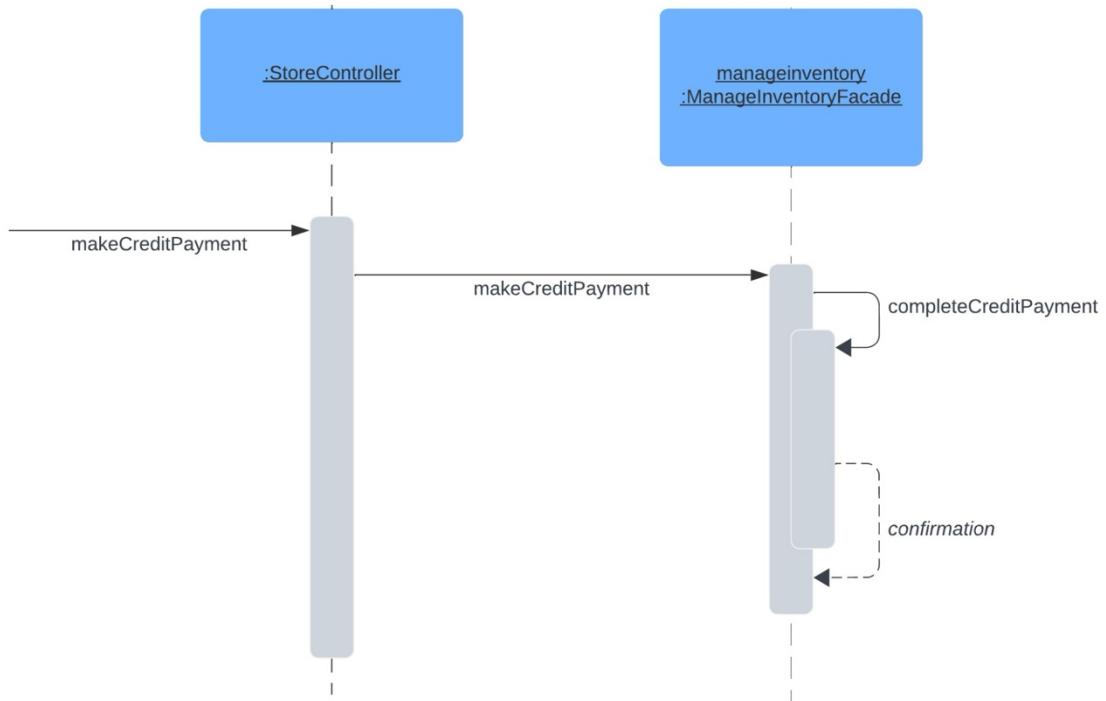
addEmployeeRole**addNewSlot**

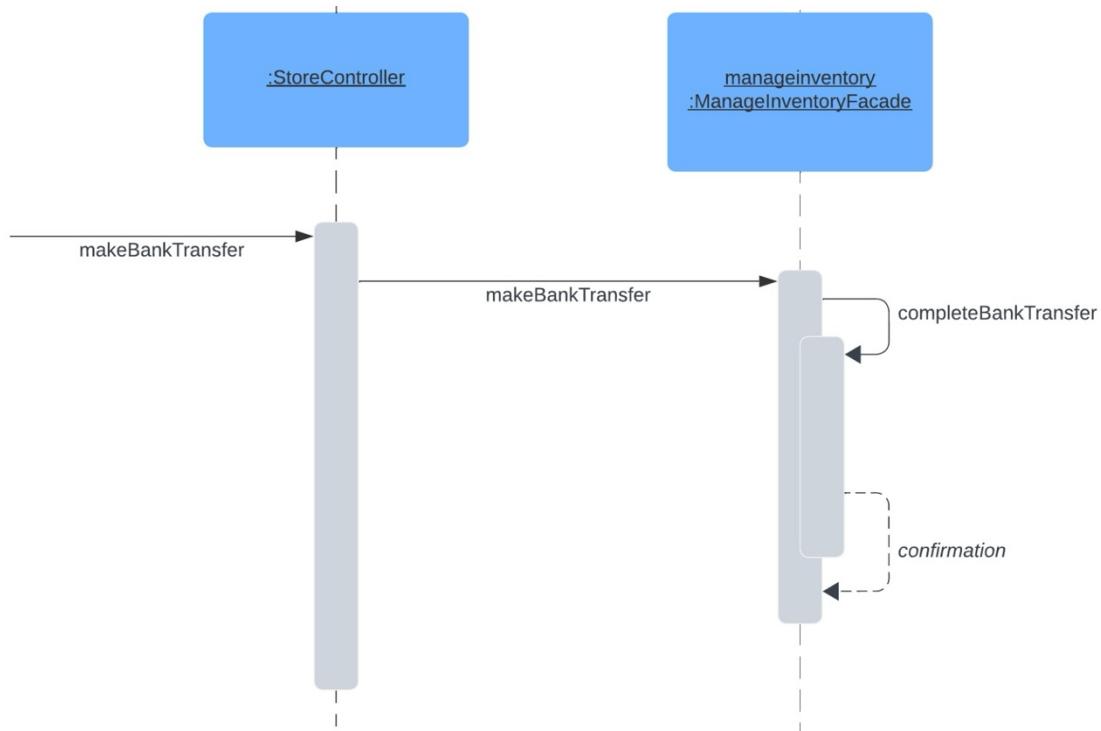
USECASE ID 10:viewCouponsaddCoupon

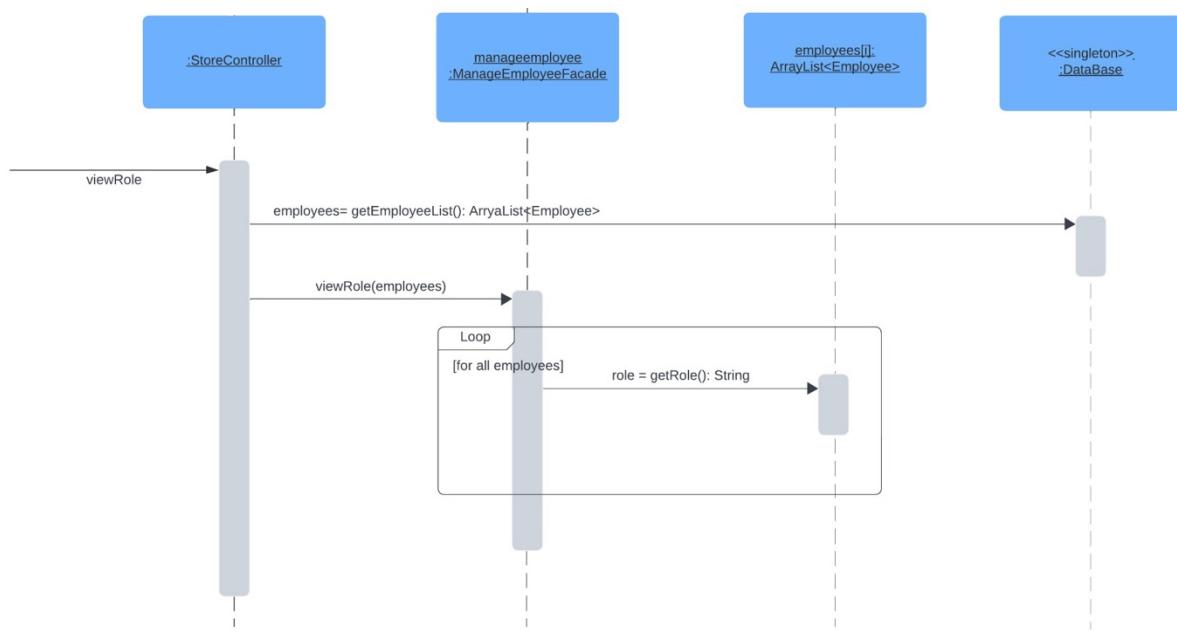
removeCouponUSECASE ID 11:enterPurchaseDetails

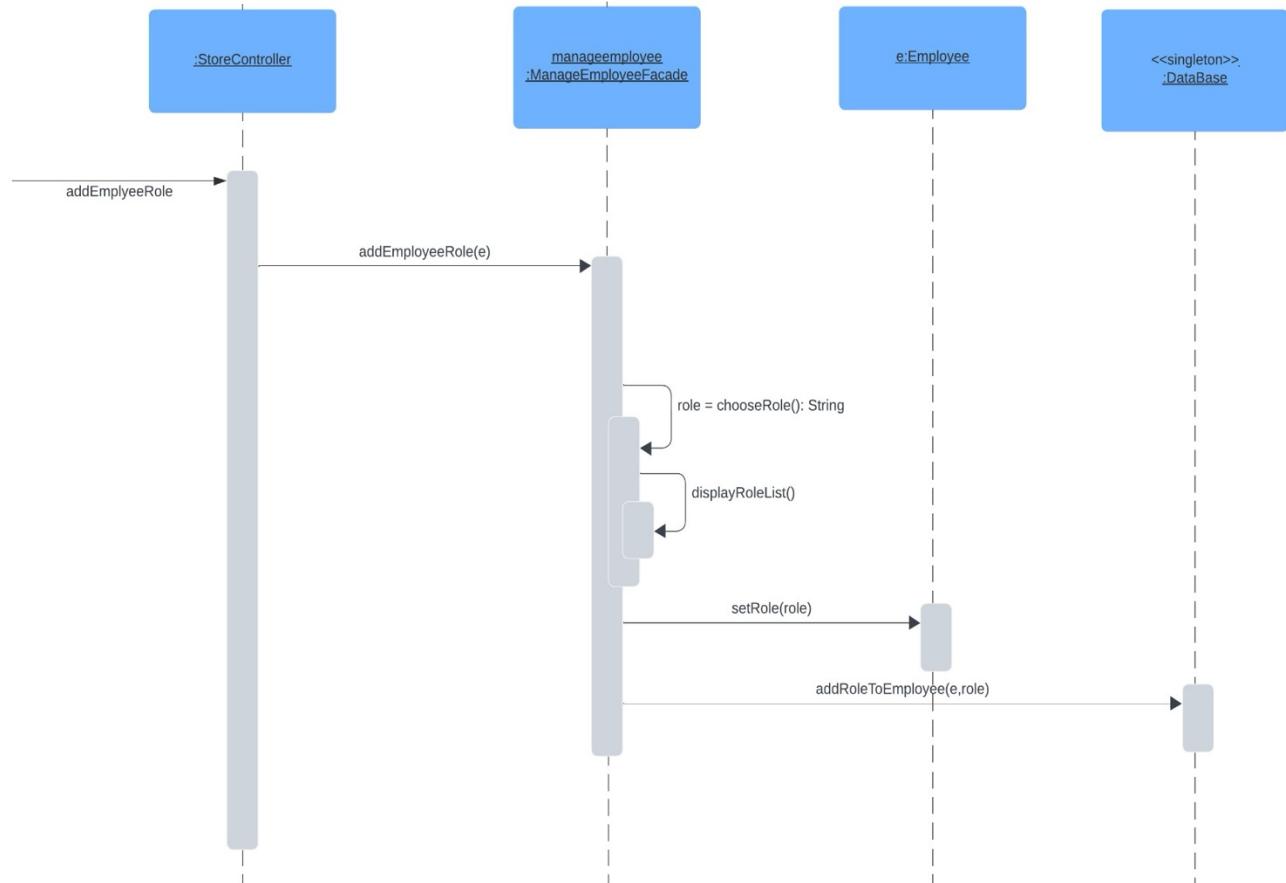
returnBook**USECASE ID 12:**viewOrderDetails

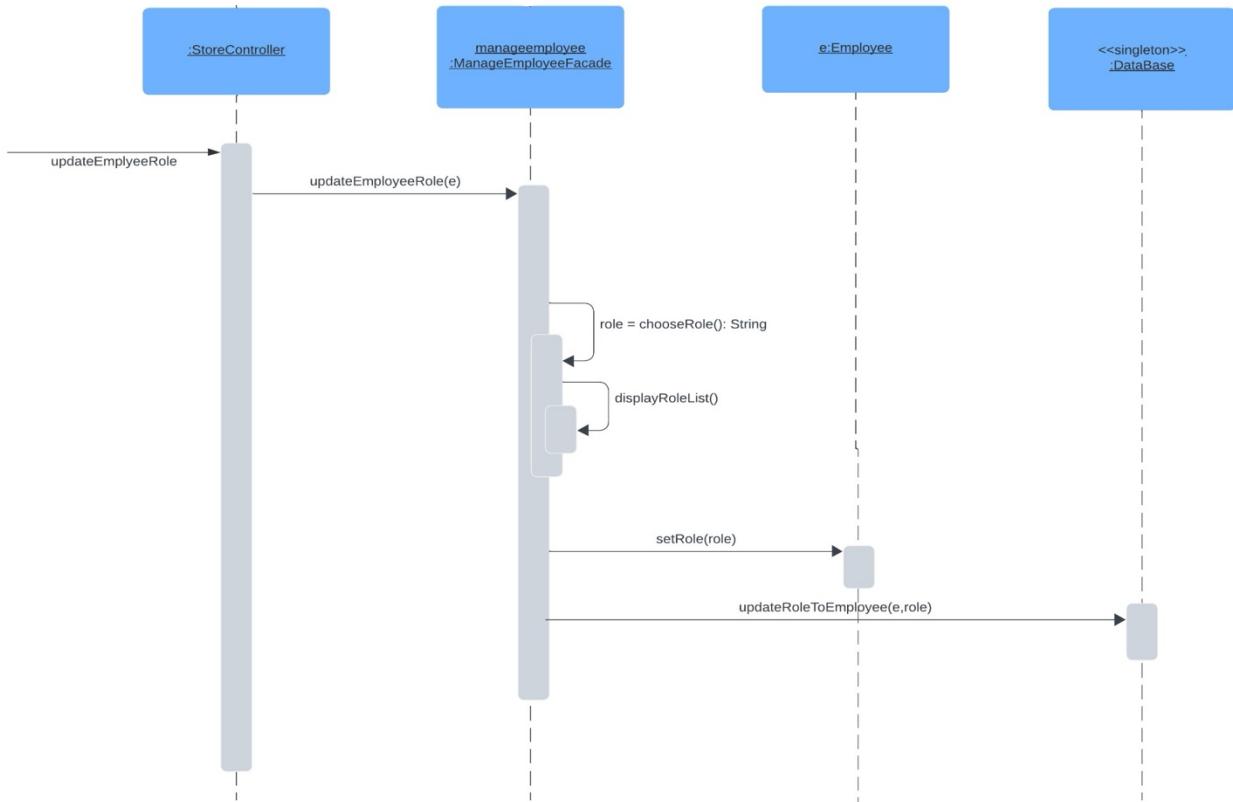
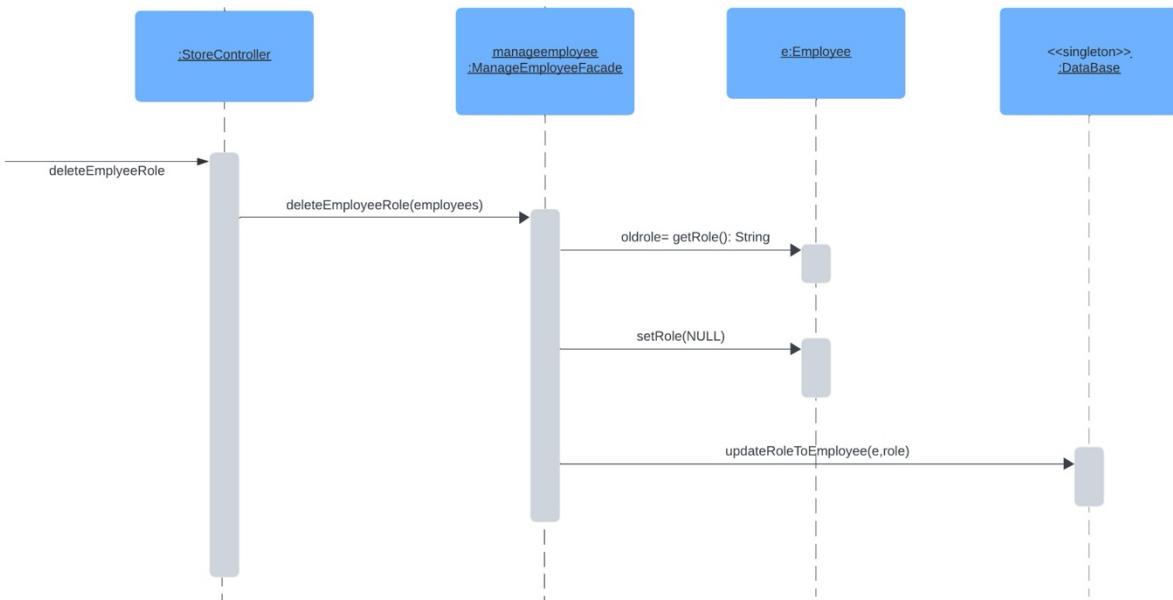
makeSupplierPayment

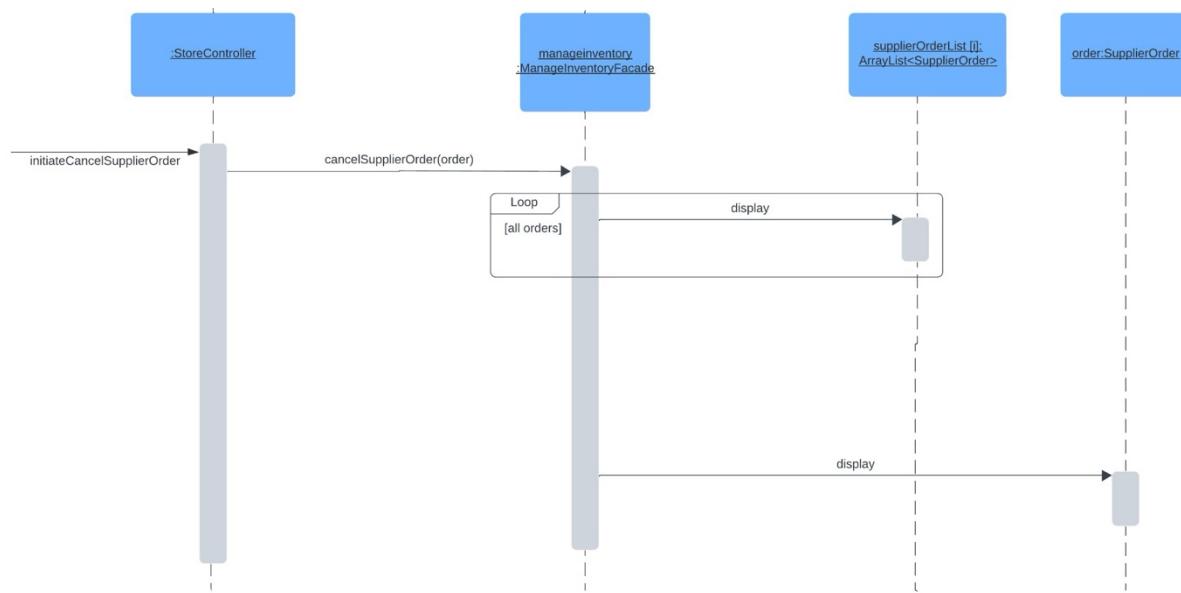
makeCreditPayment

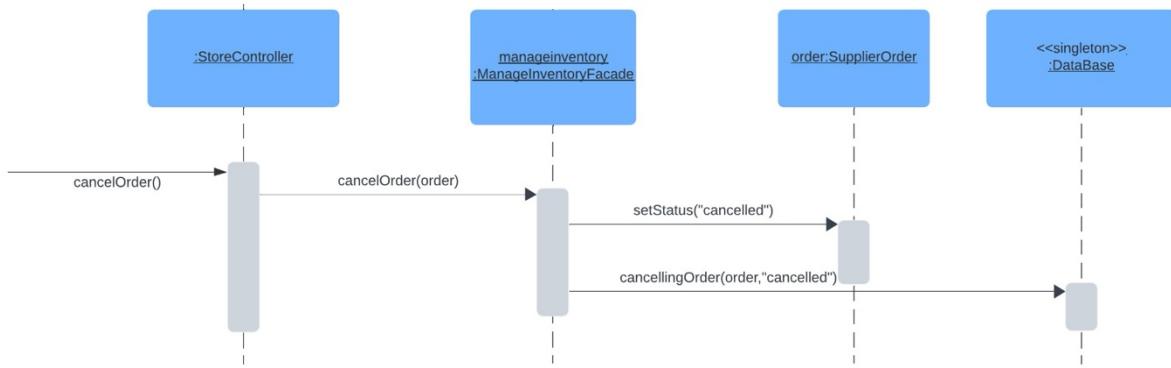
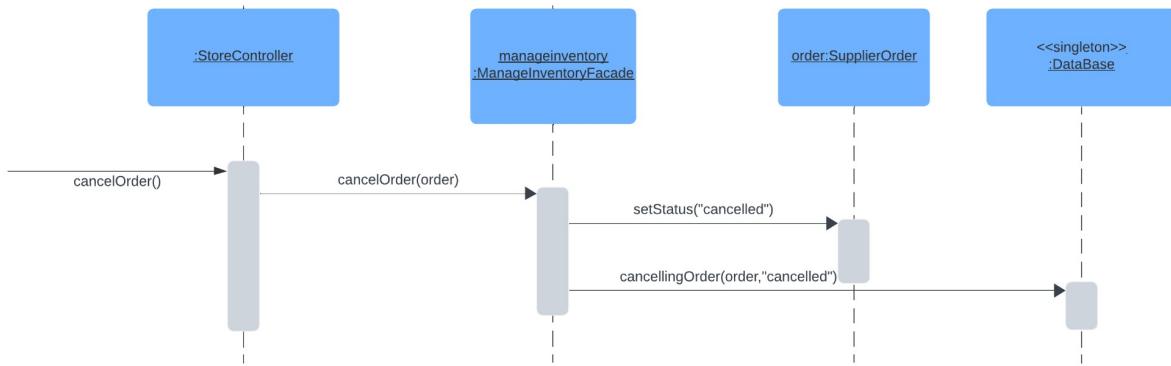
makeBankTransfer

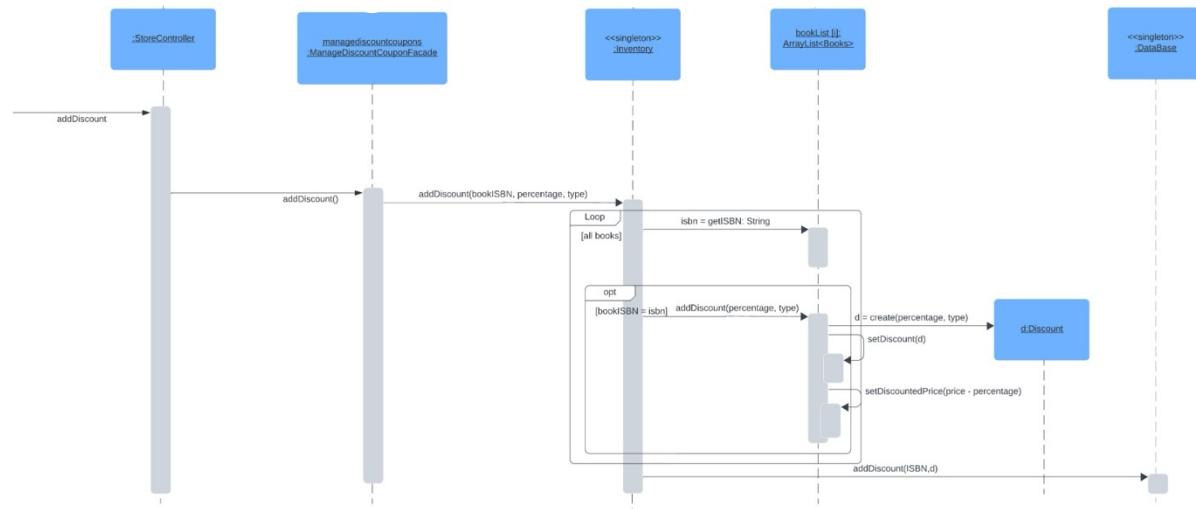
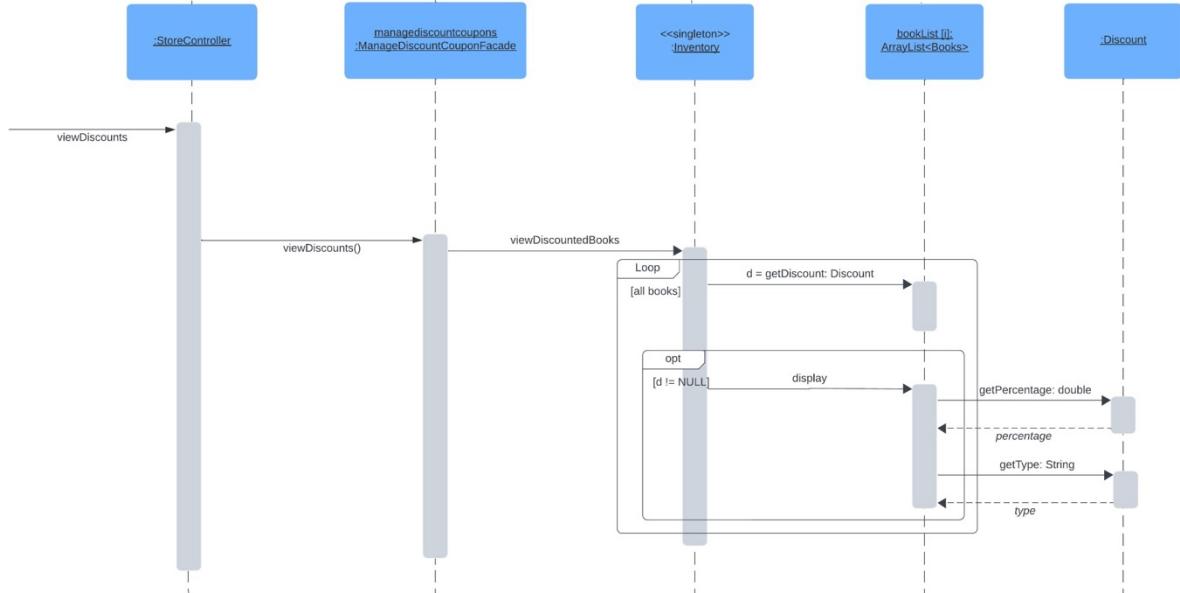
USECASE ID 13:viewRole

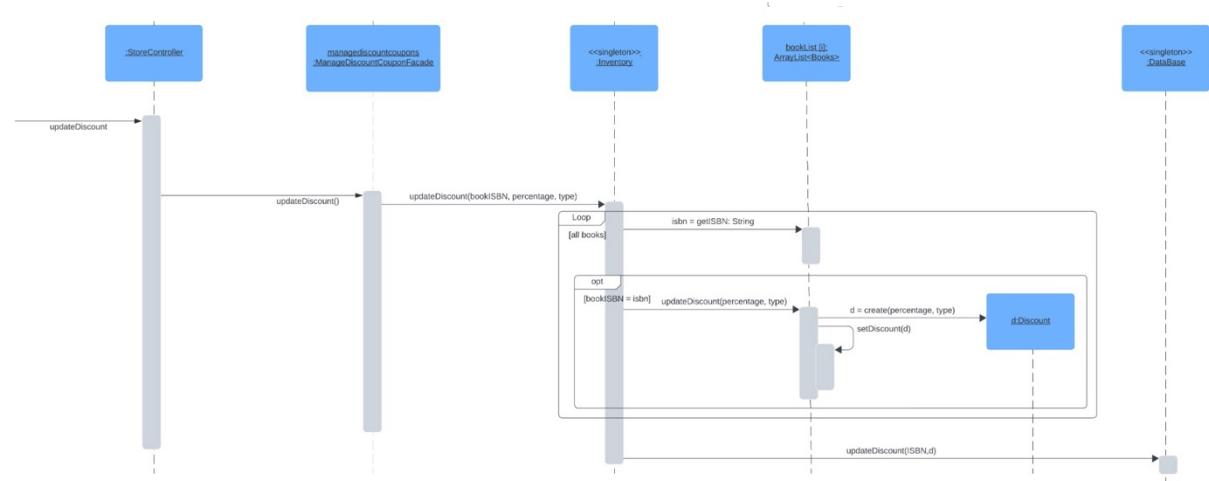
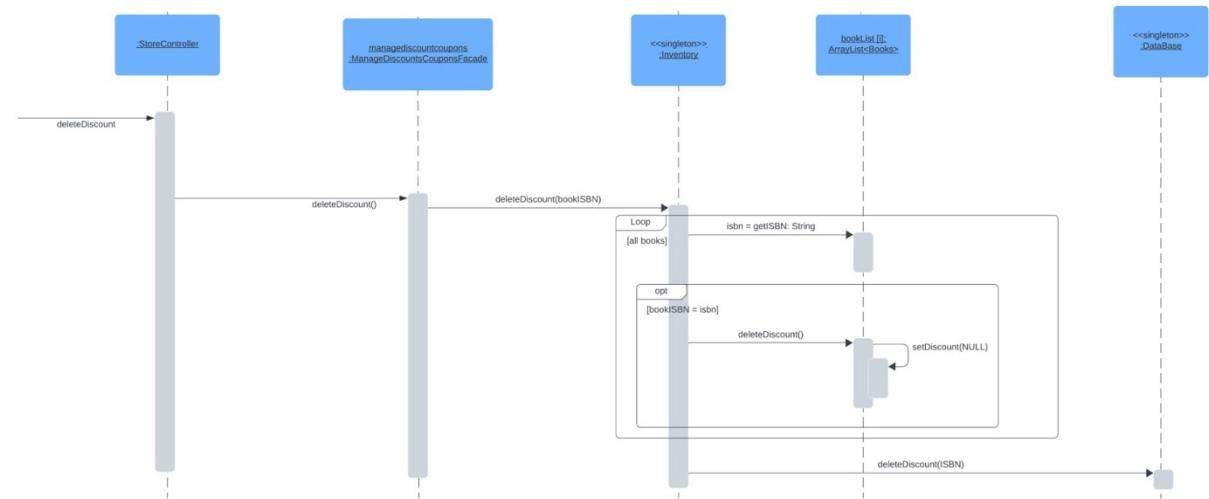
addEmployeeRole

updateEmployeeRoledeleteEmployeeRole

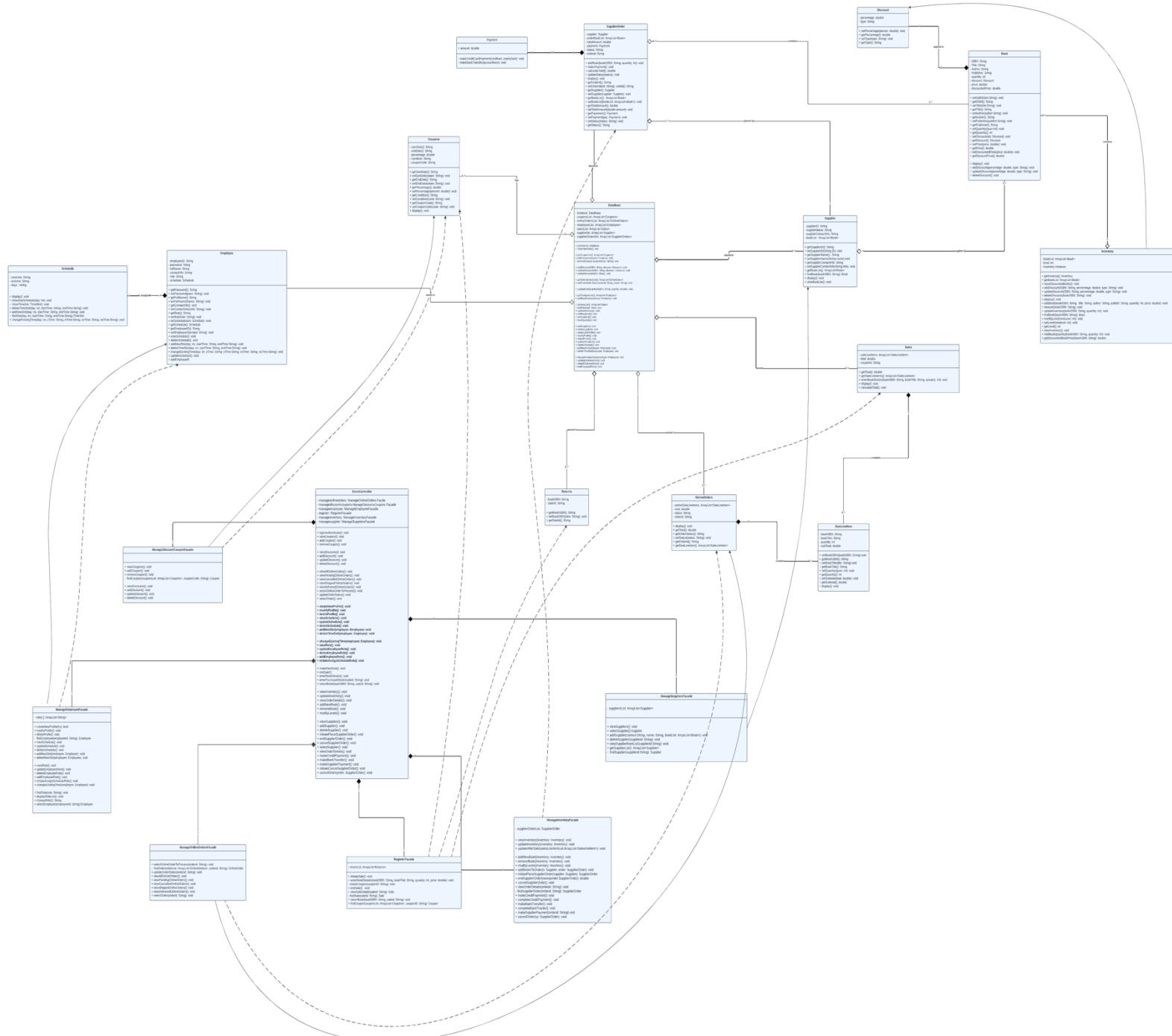
USECASE ID 14:initiateCancelSupplierOrder

cancelOrdercancelOrder

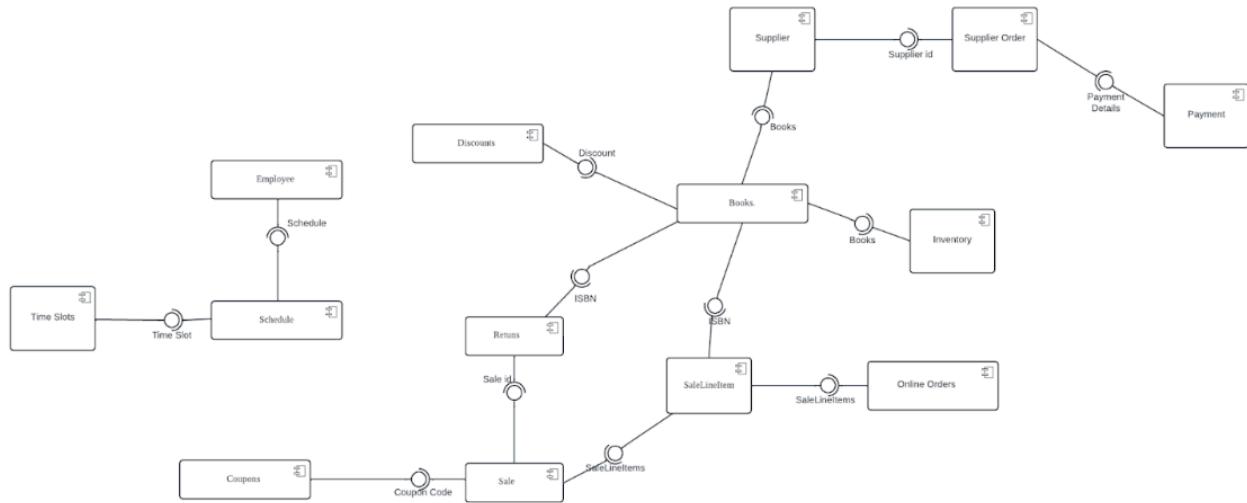
USECASE ID 15addDiscountviewDiscounts

updateDiscountdeleteDiscount

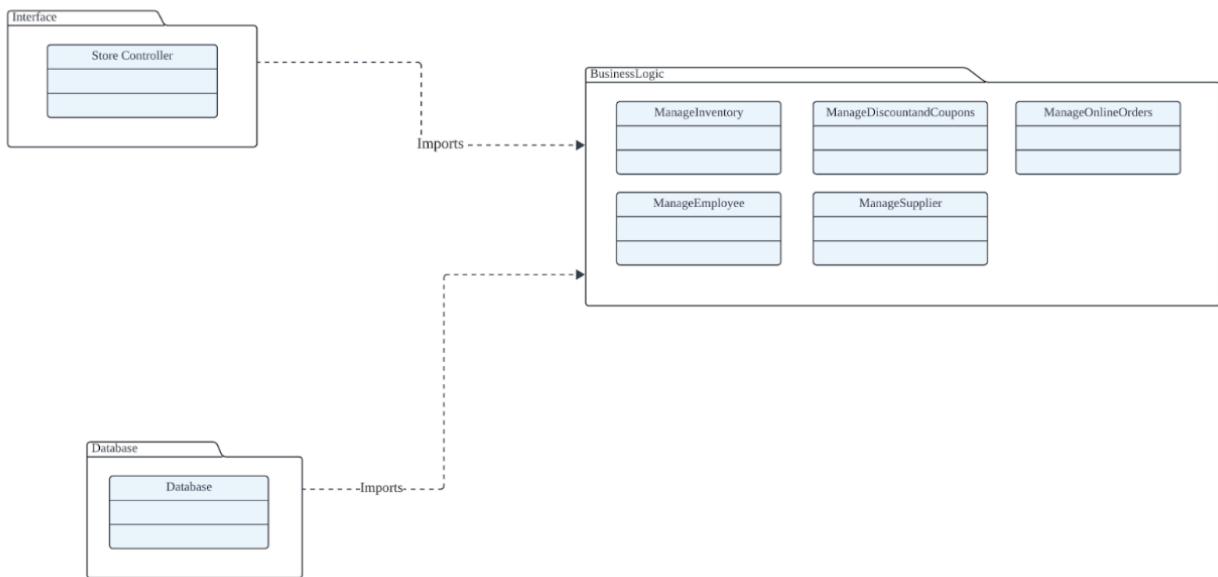
7. Class Diagram



8. Component Diagram



9. Package Diagram



10. Deployment Diagram

