

# **Term Project**

## **OneStop retail application requirements and diagrams**

CS521 – Object Oriented Analysis and Design

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## **1. Project Overview**

### OneStop Online App

The project aims to develop an app for OneStop , an online retailer that sells products in different categories and departments. The app will provide a user-friendly interface for the customers to browse, search, order, track, and review products and some specialist services. The app will also provide a dashboard for the different departments of OneStop to manage their operations, such as inventory, sales, delivery, customer feedback, etc. The app will use a real-time stream processing and microservices platform to perform various data analytics tasks related to the business process and workflows of OneStop, such as product recommendations, fraud detection, etc. The app will also create contingency plans for coping with adverse weather conditions or other emergencies that might impact the daily operations for the warehouses, and order deliveries. The project will follow an agile methodology and deliver the app in incremental releases.

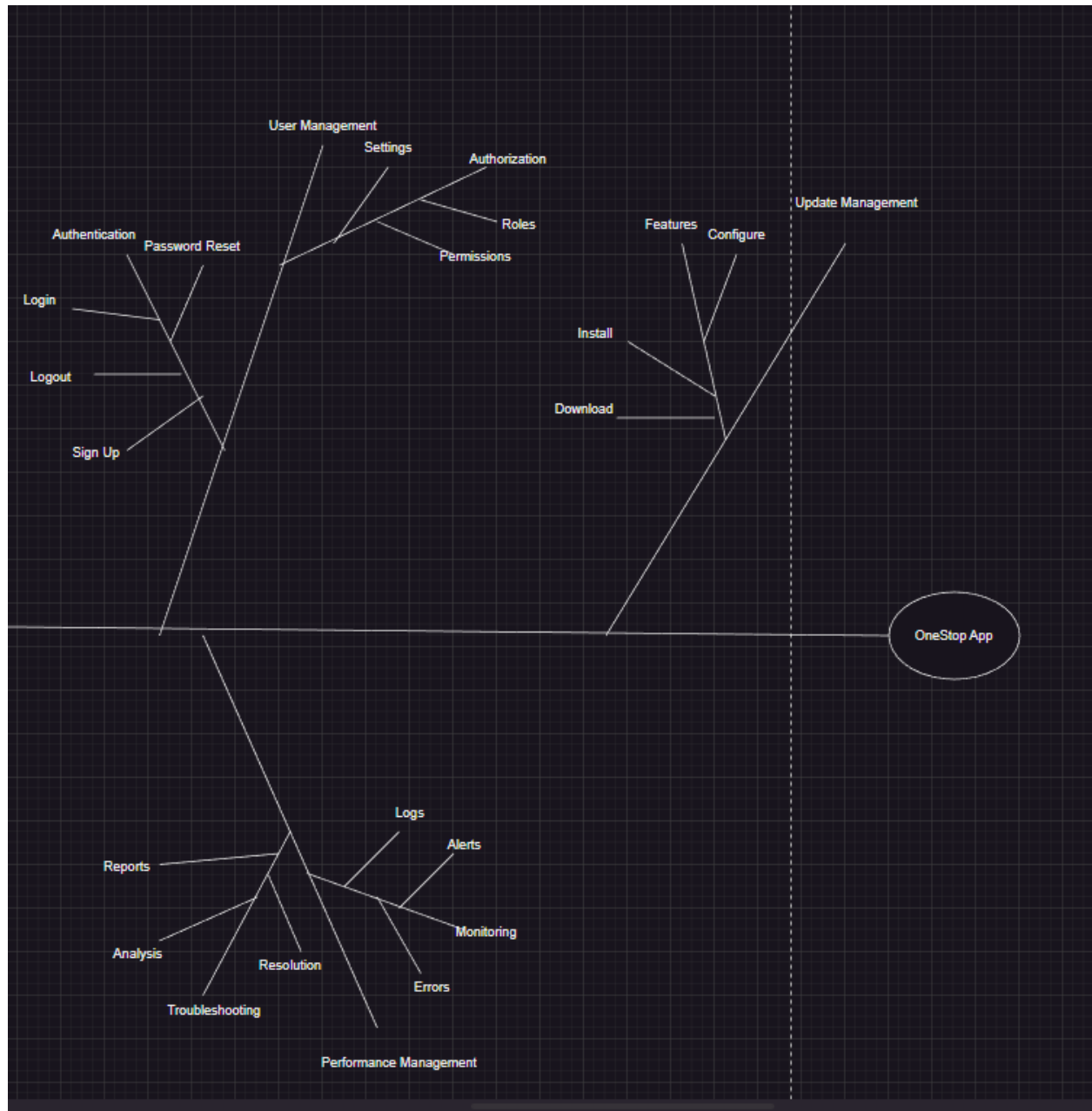
# OneStop

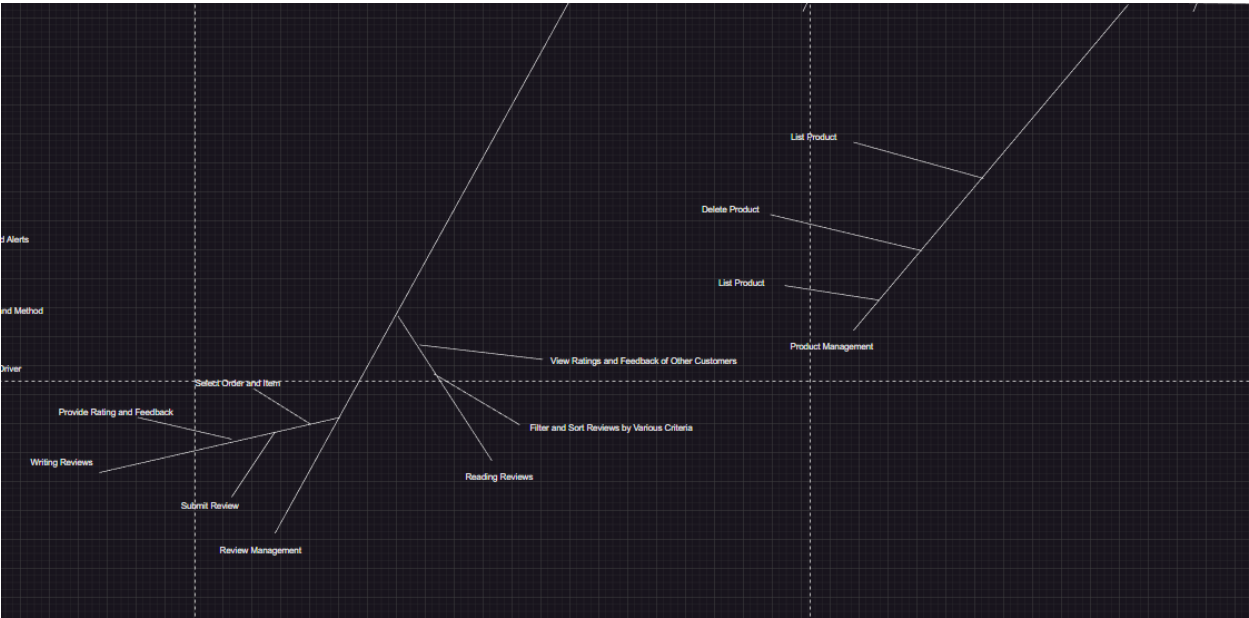
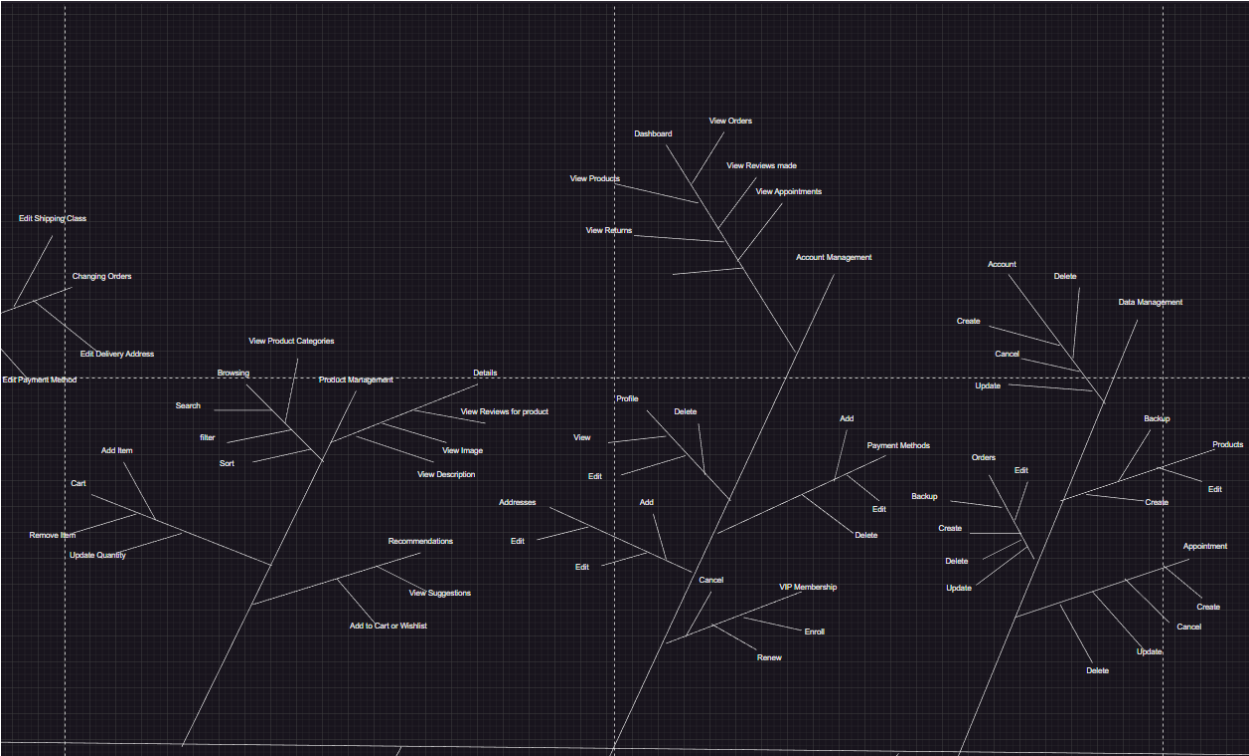
## 2. Requirements / Feature List

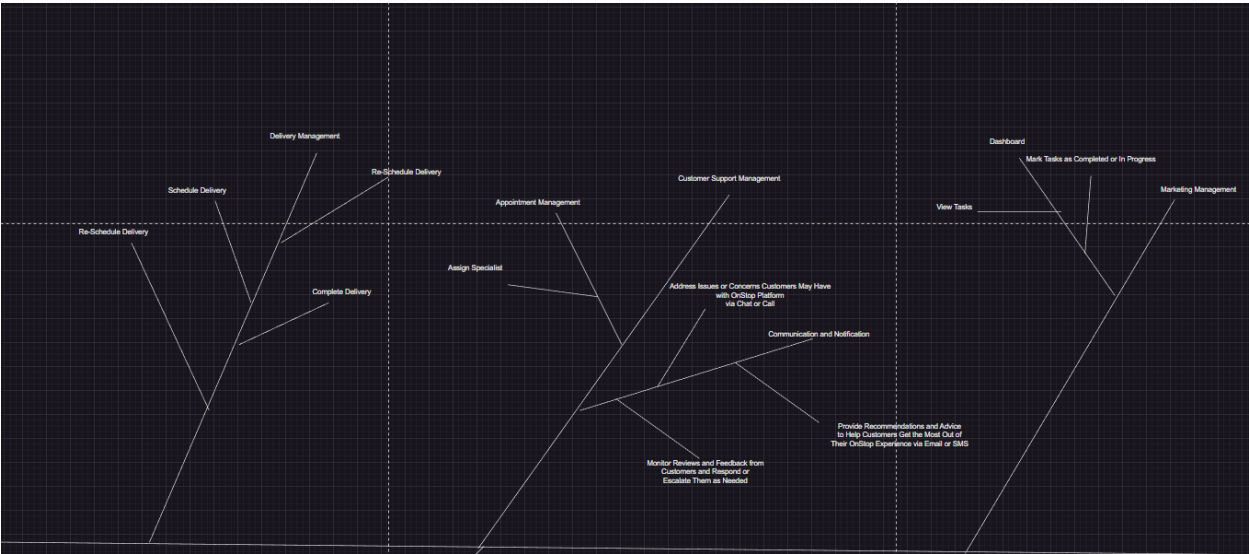
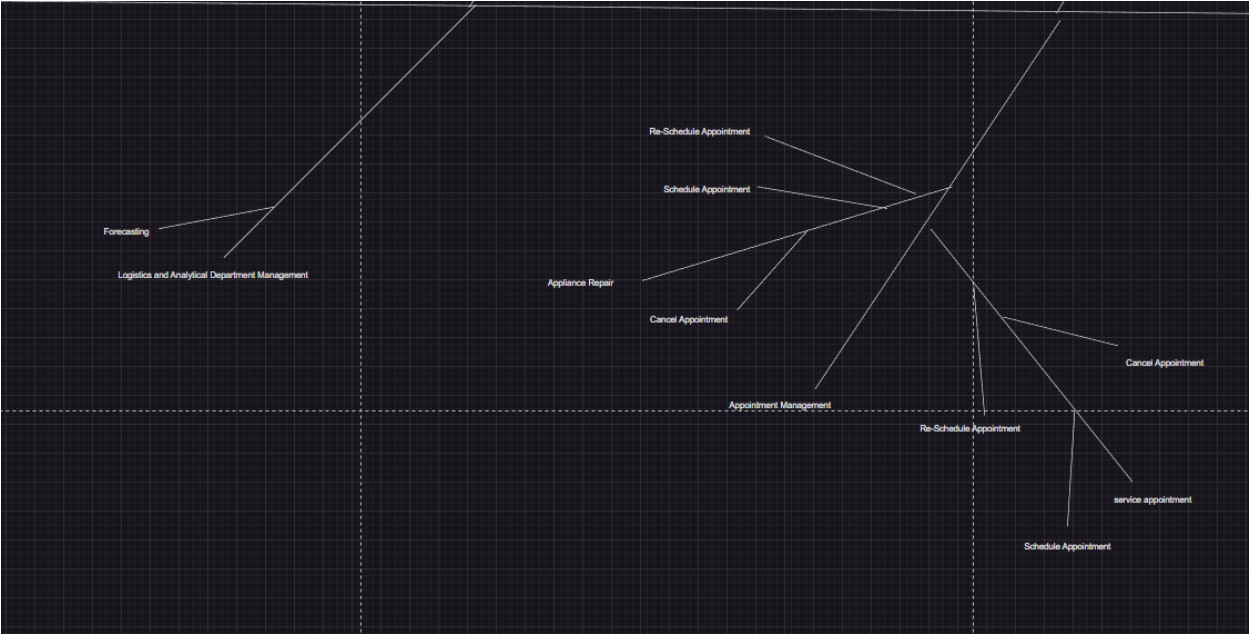
- **Product Search:** OneStop requires that the application allow browsing, searching, and ordering of products within a cart system for the end-user.
- **Customization:** OneStop wants the Customer to have full ability to customize their profile, allowing updates to happen both on their end and on the administration side
- **Review:** OneStop needs to have a reviewing system for the products that were sold
- **Product For You:** OneStop wants the customer to have a better experience based on their last purchase. Showing products from that specific department to the user after finishing payment
- **Fraud detection:** The application must have a fraud detection, since the increase of frauds were raised by 30% according to the **Federal Trade Comission**
- **Tax Pay:** The application must add the tax amount to the product. This information will be stored in a database for further use.
- **Multiple Products:** OneStop will work with multiple departments within a single store, and online retailing will work the same way, allowing user to search by department.
- **Administrative Rights:** OneStop wants ease of use and implements a way of the administrator to generate inventory along with purchase this inventory.

- **Order in your own:** OneStop will allow user to order a product in case the inventory does not have it, searching through an API the fastest way possible for that user to have the product.
- **Redundancy:** Weather must not stop the OneStop, the application must provide a logic to search and find stores nearby when a climate event happens
- **Support:** Have a problem with your product? No worries, we can help with our technical support. OneStop will allow user to call someone with expertise in regards of their product
- Application must be installed on Linux Servers and run on both mobile and computer.
- Application should be highly responsive to help people with disabilities.
- Application should be reliable, allowing data to be backed up on secure servers in case something happens.
- Application will use external API's, such as Credit Card APIs and Tax paying API's.
- Provide analysis from the gathering of the product reviews.
- Application must be redundant in regards of data saving, allowing data to be saved after machine comes back online.

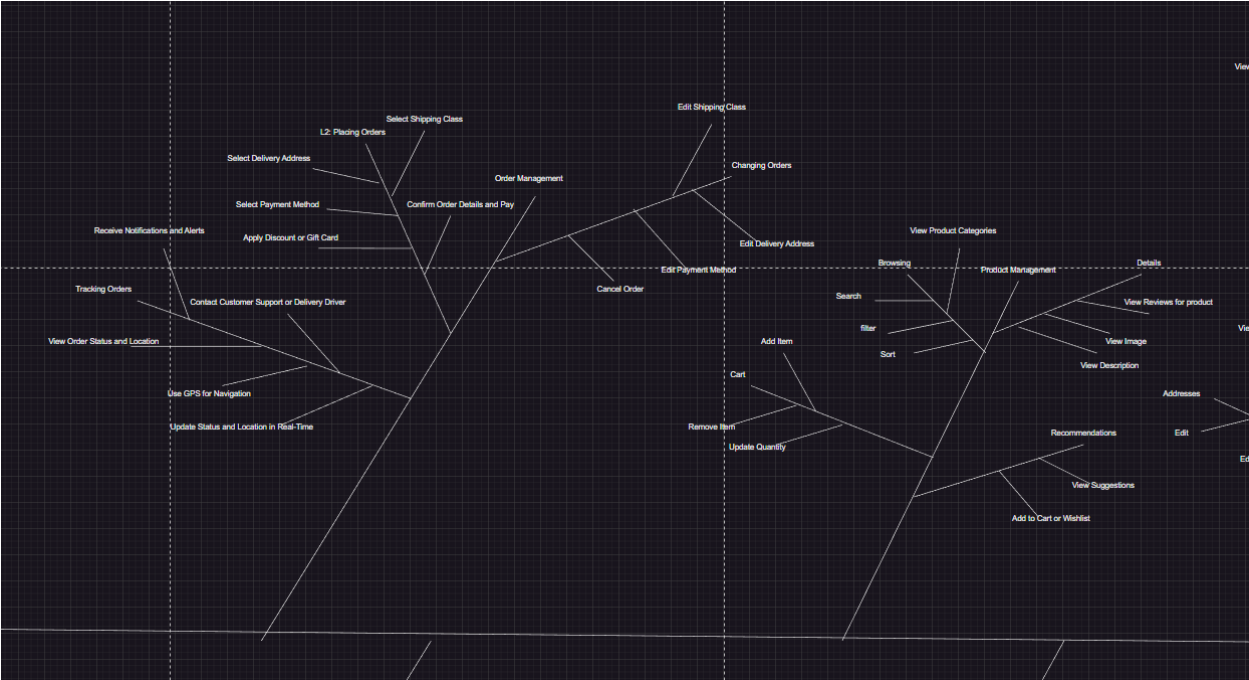
### 3. Feature Tree Diagram













## 4. Actors

### Administrators:

- The app shall allow the administrators to log in with their credentials and access their dashboard.
- The app shall display the list of users, roles, permissions, and settings on the dashboard and allow the administrators to create, edit, delete, or assign them as needed.
- The app shall allow the administrators to manage the app's data and resources, such as products, orders, appointments, inventory, etc. by displaying them on the dashboard and allowing them to create, edit, delete, or backup them as needed.
- The app shall allow the administrators to monitor and troubleshoot the app's performance, security, and reliability by displaying them on the dashboard and allowing them to view logs, alerts, errors, or reports as needed.
- The app shall allow the administrators to update or upgrade the app's features, functions, or platforms by displaying them on the dashboard and allowing them to download, install, or configure them as needed.

### Customer (Existing)

- Allow customers to sign up for a new account or log in to an existing account.
- The app shall allow the general managers to log in with their credentials and access their dashboard.
- Enable customers to browse products, view details and add items to their cart products across departments.
- Enable customers to View product details like descriptions, images, and reviews.
- Provide customers with recommendations for products they may be interested in based on their browsing and purchase history.
- Allow customers to place, change, or cancel orders through the app.
- Enable customers to pay for orders using payment methods like credit cards, debit cards, gift cards, etc. that are saved to their account.
- Enable customers to provide home address, delivery address, and shipping class when placing an order.
- App should provide unique order number for every order placed.
- Enable customers to pay for orders using payment methods like credit cards, debit cards, gift cards, etc. that are saved to their account.
- Allow VIP members to receive their discount on all purchases made through the app and faster delivery time.
- Integrate with services like Apple Pay, Google Pay, etc. for a seamless checkout experience.

- Enable customer to Return purchased items.
- Enable customers to review and rate purchased products.
- Share product descriptions of purchases with friends in the social network
- Provide customers with notifications for order updates, shipping alerts, promotions, new product releases, etc. through the app.
- Allow customers to update account information like credit card details, personal info, etc.
- Allow customers to schedule, reschedule, track status of specialist help.
- Pay monthly subscriptions bills.
- Enroll in or cancel VIP membership to receive 5% discount on all purchases for \$100 annual fee.
- Provide feedback on the OneStop platform to improve the customer experience.
- Enable customer to subscribe or unsubscribe to receive email notifications for:
  - Holidays, seasonal events, and discounts
  - New product releases

#### **General Managers:**

- The app shall allow the general managers to log in with their credentials and access their dashboard.
- The app shall display the list of accounts, orders, and appointments on the dashboard and allow the general managers to create, cancel, update, and delete them as needed.
- The app shall allow the general managers to oversee the account specialists/customer support, technicians and other departments employees' and ensure high quality service for customers by displaying their performance and feedback on the dashboard and allowing them to assign tasks, provide guidance, or escalate issues as needed.
- The app shall allow the general managers to monitor metrics related to customer satisfaction, retention, orders, etc. to identify areas for improvement by displaying them in charts and reports on the dashboard and allowing them to export them as PDF or CSV files.
- Manage the returns process for purchased items.

#### **Delivery Drivers:**

- The app shall allow the delivery driver to log in with their credentials and access their schedule.

- The app shall allow the delivery driver to schedule a delivery by selecting an order from their list and confirming the details.
- The app shall allow the delivery driver to re-schedule a delivery by selecting an order from their list and choosing a new date and time slot, subject to availability and approval from the distribution center manager.
- The app shall allow the delivery driver to cancel a delivery by selecting an order from their list and providing a reason, subject to approval from the distribution center manager.
- Complete delivery of orders from customers based on the delivery details and schedule provided.
- Update the status of deliveries to keep customers informed of their order status.
- Report any issues encountered during the delivery process to the relevant teams.
- The app shall notify the delivery driver and the customer of any changes in the delivery schedule via email or SMS.
- The app shall allow the delivery driver to cancel a delivery by selecting an order from their list and providing a reason, subject to approval from the distribution center manager.
- The app shall allow the delivery driver to cancel a delivery by selecting an order from their list and providing a reason, subject to approval from the distribution center manager.

#### **VIP Member:**

- The app shall allow the VIP user to activate notification.
- The app shall allow the VIP to select the option of faster delivery.

#### **Customer Support:**

- The app will allow the customer support to generate a support ticket.
- Will allow the user to generate a recommendation.
- Will allow this user to generate some advice.
- Will allow this user to assign a specialist to the customer in regards of product

#### **Security Bot fraud tractions and reviews**

- The app shall implement a review bot detection module that analyzes the reviews and ratings of the products on OneStop and flags any suspicious or fake ones based on the guidelines provided by OneStop.

- The app shall implement a credit card fraud detection module that uses a decision tree classifier to predict whether a transaction is fraudulent or not based on the features and rules provided by OneStop.
- The app shall store the transactions log dataset in a secure database and update it regularly with new transactions and their labels (fraudulent or not).
- The app shall send alerts to the fraud detection department and the credit card holder whenever a fraudulent transaction is detected by the classifier.
- The app shall allow the fraud detection department to review the flagged transactions and confirm or reject the classifier's prediction.
- The app shall allow the credit card holder to report any unauthorized transactions or disputes through a user-friendly interface.
- The app shall implement a contingency plan in case of system failure, data breach, or other emergencies that may compromise the security and integrity of the transactions and the customer data.

## Department products

OneStop has several departments that are selling products in different categories. The following is a sample of these departments and the different product categories they sell:

Department	Product Categories
Appliances	Refrigerators, Dishwashers, Microwaves, Washers, Dryers
Electronics	Computers, TV, Phones, and Sound System
Clothing	Shoes, Socks, Dresses, Jackets, Shorts and Shirts
Office Supplies	Desk Supplies, Filing Supplies, Paper & Pads, Binding Supplies, and Stationery/mailing supplies
Grocery	Dairy, Beans, Pasta, Paper products, and cleaning supplies
Furniture	Bookcases, Chairs, and Tables

## 5. Domain dictionary

Name	Type	Description
Administrator	Role	<p>A user who has the highest level of access and control over the app and its data.</p> <ul style="list-style-type: none"><li>• administrators can create, edit, delete, or assign users, roles, permissions, and settings</li><li>• Administrator can manage the app's data and resources, such as products, orders, appointments, inventory, etc. by displaying them on the dashboard and allowing them to create, edit, delete, or backup them as needed.</li><li>• administrators to monitor and troubleshoot the app's performance, security, and reliability by displaying them on the dashboard and allowing them to view logs, alerts, errors, or reports as needed</li><li>• Administrators can update or upgrade the app's features, functions, or platforms by displaying them on the dashboard and allowing them to download, install, or configure them as needed.</li></ul>
Credentials	Identifier	<p>The unique username and password user users to login to app .</p>

Dashboard	Object	A graphical user interface that displays the list of users, roles, permissions, settings, data, resources, performance, security, reliability, features, functions, and platforms on the app
User	Role	A person who uses the app for various purposes, such as browsing, ordering, reviewing, etc.
Permission	Object	A right or privilege granted to a user to perform certain actions or access certain data or resources on the app
Log	Object	A record of events or activities that occur on the app
Alert	Object	A notification or message that informs the administrator of an important or urgent situation on the app
Report	Object	A document that summarizes or analyzes the data or information collected by the app
Create users/ roles, permissions, and settings	Process	Process of where the administrator creates roles, users permission and setting for the app
edit users/ roles, permissions, and settings	Process	Process of where the administrator edits roles, users permission and setting for the app
Delete users/ roles, permissions, and settings	Process	Process of where the administrator deletes roles, users permission and setting for the app
Assign users/ roles, permissions	Process	Process of where the administrator assigns roles, users permission to the app
Manage app's data	Process	Process of where the administrator manages app data such as products, orders, appointments, inventory, etc. by displaying them on the dashboard
Create products, orders, appointments, inventory	Process	Process of where the administrator manages the app data so that data



		generated from products, orders, appointments, inventory and created
edit products, orders, appointments, inventory	Process	Process of where the administrator manages the app data so that data generated from products, orders, appointments, inventory and edited
Delete products, orders, appointments, inventory	Process	Process of where the administrator manages the app data so that data generated from products, orders, appointments, inventory and delete
monitor and troubleshoot	Process	Process where administrators can monitor and troubleshoot the app's performance, security, and reliability by displaying them on the dashboard and allowing them to view logs, alerts, errors, or reports as needed.
update or upgrade the app's features	Process	Process of where the administrators can update or upgrade the app's features, functions, or platforms by displaying them on the dashboard and allowing them to download, install, or configure them as needed
User ID	Identifier	Unique identifier for each user
Role ID	Identifier	Unique identifier for each role
App data	Object	Information or facts stored or processed by the app, such as products, orders, appointments, inventory, etc.
Existing Customer	Role	<ul style="list-style-type: none"> <li>Existing Customer can login in app credentials and access their dashboard using.</li> <li>A user who purchases products or services from the app</li> <li>customers to browse products, view details and add items to their cart products across</li> </ul>

		<p>departments.</p> <ul style="list-style-type: none"> <li>• customers can View product details like descriptions, images, and reviews</li> <li>• customers can place, change or cancel orders through the app</li> <li>• customers can pay for orders using payment methods like credit cards, debit cards, gift cards, etc. that are saved to their account</li> <li>• customer can provide home address, delivery address, and shipping class when placing an order</li> <li>• customers to pay for orders using payment methods like credit cards, debit cards, gift cards, etc. that are saved to their account</li> <li>• customer can to Return purchased items</li> <li>• customers can review and rate purchased products</li> <li>• Share product descriptions of purchases with friends in the social network</li> <li>• customers can schedule, reschedule or cancel repair service appointments for home appliances.</li> <li>• customers to update account information like credit card details, personal info, etc.</li> <li>• customers to schedule, reschedule, track status of home delivery for online</li> </ul>
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		<p>purchases</p> <ul style="list-style-type: none"> <li>• Pay monthly subscriptions bills</li> <li>• Enroll in or cancel VIP membership to receive 5% discount on all purchases for \$100 annual fee</li> <li>• customer subscribe or unsubscribe to receive email notifications for: <ol style="list-style-type: none"> <li>1. Holidays, seasonal events and discounts</li> <li>2. New product releases</li> </ol> </li> <li>• Provide feedback on the OneStop platform to improve the customer experience</li> </ul>
New customer	Role	New user does not have account with One Stop
Customer ID	Identifier	Unique identifier for each exiting customer
VIP members	Role	Customer as has additional benefits of to receive their discount on all purchases made through the app
Product/item	Object	Represents an item available for purchase, with details like description, images, and reviews.
Sign up for new account	Process	Process of where new customers create a new account.
Sign in	Process	Process of where existing customers to log in to their existing account.
Browse Products	Process	Process of where existing customers to browse products across departments.
view details products		Process of existing customers descriptions, images, and reviews details of products on OneStop across departments
Update Cart	Process	Process of where existing customers to add, delete, or

		update items in their cart.
Cart	Object	Represents a customer's shopping cart, containing products and their quantities.
Order	Object	Represents a customer's order, including products, payment, and shipping details.
Place Order	Process	Allows customers to place an order for the items in their cart.
Update Order	Process	Process of where existing customers to update or cancel an existing order.
Process Payment	Process	Processes customer's payment using their saved payment methods.
Manage Addresses	Process	Process of where existing to add, update, or delete their home and delivery addresses.
Add Addresses	Process	Allows customers to add, home and delivery addresses.
Update Addresses	Process	Allows customers to update, home and delivery addresses.
Delete Addresses	Process	Allows customers to delete, home and delivery addresses.
Shipping address	Object	A location where a customer lives or wants to receive their order
Shipping Class	Object	A category that determines the cost and speed of delivery for an order
Order Number	Identifier	A unique code assigned to each order for identification and tracking purposes
Apply VIP Discount	Process	Applies a VIP discount to eligible purchases made by VIP members.
update order		Process of where existing customer update order placed
Cancel order		Process where customer cancel order placed
Payment Methods	Object	Various ways customers can pay for their purchases (credit/debit cards, gift cards,

		etc.)
Pay with credit card		Process of where existing customer pay for order by credit card
Pay with debit card.		Process of where existing customer pay for order by credit card
Pay gift card		Process of where existing customer pay for order by credit card
Select address		Process of where existing selects the preferred shipping address when placing order.
Checkout	Process	Process of where existing customer goes through to place order. Existing customer view the items would like to purchase and add payment if necessary and shipping address. Once on the last step customer will place to order
Checkout	Object	Represents last step where customer reviews order and places the order.
Review Product	Process	Process of where existing customers review and rate purchased products.
VIP members notifications	Process	Process of where existing receive discount on all purchases made through the app.
VIP Member	Role	A existing customer who pays an annual fee to receive a discount on all purchases made through the app
Review	Object	A feedback or opinion given by a existing customer about a product they purchased from the app
Rating	Object	A numerical score given by a customer to indicate their level of satisfaction with a product they purchased from the app
Notification	Object	A message or alert that informs the existing customer of something important or relevant to their account, order, product, or service

Share Product	Process	Process of where existing customers can share product descriptions with friends on social networks.
Manage Notifications	Process	Process of where existing customer can subscribe or unsubscribe from various types of notifications.
Subscribe Notifications	Process	Process of where existing customer can subscribe from various types of notifications.
unsubscribe Notifications	Process	Process of where existing customer can unsubscribe from various types of notifications.
Schedule Repair appliance Appointment	Process	Process of where existing customer can schedule, repair appliance appointments.
Reschedule Repair appliance Appointment	Process	Process of where existing customer can re schedule, repair appliance appointments.
Cancel Repair appliance Appointment	Process	Process of where existing customer can cancel, repair appliance appointments.
Schedule service Appointment	Process	Process of where existing customer can schedule, service appointments.
Reschedule service Appointment	Process	Process of where existing customer can re schedule, service appointments.
Cancel service Appointment	Process	Process of where existing customer can cancel , service appointments.
Update Account Info	Process	Process of where existing customer can update their account information.
Manage Delivery	Process	Process of where existing customer can manage reschedule track the status of home deliveries.
Track Delivery	Process	Process of where existing customer can track the status of home deliveries.
Reschedule Delivery	Process	Process of where existing customer can reschedule, home deliveries
Schedule Delivery	Process	Process of where existing customer can schedule,,

		home deliveries
Pay Subscription	Process	Allows customers to pay their monthly subscription bills.
ManageVIPMembership	Process	Process of where existing customer can enroll in or cancel their VIP membership.
Enroll VIP Membership	Function	Process of where existing customer can enroll in their VIP membership.
Cancel VIPMembership	Function	Process of where existing customer can cancel their VIP membership.
provide Feedback	Function	Process of where existing customer can provide feedback on the OneStop platform.
Discount Rule	Business Rule	A rule that applies a 5% discount to all purchases made by VIP members.
Return purchased Items	Process	Allows customers to return purchased items.
Customer Account	Object	Represents a customer's account with login credentials and personal information.
Payment Method	Object	Represents a customer's saved payment method, such as credit card, debit card, or gift card.
VIP Membership	Object	Represents a customer's VIP membership status, with associated benefits and fees.
Notification	Object	Represents alerts sent to customers for various events and updates.
Appointment	Object	Represents a scheduled service appointment for home appliance repair or service.
Subscription	Object	Represents a customer's monthly subscription for a service or product.
<b>General Manager</b>	Role	<ul style="list-style-type: none"> <li>The role responsible for overseeing the app's functions and managing employees.</li> <li>general managers can to create, cancel, update, and delete them as needed, general managers can oversee the</li> </ul>

		<p>account specialists/customer support, technicians and other departments employees' and</p> <ul style="list-style-type: none"> <li>• ensure high quality service for customers by displaying their performance and feedback on the dashboard and allowing them to assign tasks, provide guidance, or escalate issues as needed.</li> <li>• general managers can monitor metrics related to customer satisfaction, retention, orders, etc. to identify areas for improvement by displaying them in charts and reports on the dashboard and allowing them to export them as PDF or CSV files.</li> </ul> <p>General manager can manage the return process for purchased items</p>
Account Management	Function	Allows general managers to create, cancel, update, and delete accounts.
Create employee account	Process	Process where general managers can create employee account accounts.
Cancel employee account	Process	Process where general managers can cancel employee account.
Update employee account	Process	Process where general managers can update employee account.
Delete employee account	Process	Process where general managers can delete employee account.
Order Management	Function	Allows general managers to cancel, update, and delete orders.



Cancel order	Process	Process where general managers can cancel orders.
Update order	Process	Process where general managers can update orders.
Delete order	Process	Process where general managers can delete orders.
Appointment Management	Function	Allows general managers to create, cancel, update, and delete Repair appliance and service appointments.
Appointment ID	Identifier	Unique identifier for each appointment
create Repair appliance Appointment	Process	Process where general managers can schedule, repair appliance appointments.
Cancel Repair appliance Appointment	Process	Process where general managers can cancel , repair appliance appointments.
update Repair appliance Appointment	Process	Process where general managers can update, repair appliance appointments.
delete Repair appliance Appointment	Process	Process where general managers can delete , repair appliance appointments.
Create service Appointment	Process	Process where general managers can create , service appointments.
Update service Appointment	Process	Process where general managers can update , service appointments.
Cancel service Appointment	Process	Process where general managers can cancel , service appointments.
Delete service Appointment	Process	Process where general managers can re delete , service appointments.
Employee Oversight	Process	Process where general managers can oversee employees and their performance.
Performance Metrics	Object	Represents various metrics related to customer satisfaction, retention, orders, etc.
Task Assignment	Process	Process where general managers can assign tasks to employees.
Guidance Provision	Function	Process where general managers can provide

		guidance to employees.
Issue Escalation	Process	Process where general managers can escalate issues as needed.
Metrics Monitoring	Process	Process where general managers can monitor performance metrics for improvement.
Chart	Object	Represents a visual representation of performance metrics.
Report	Object	Represents a detailed report of performance metrics.
Export Metrics	Function	Allows general managers to export metrics as PDF or CSV files.
PDF	Identifier	A file format used to export data from the dashboard.
CSV	Identifier	A file format used to export data from the dashboard.
Returns Process Management	Function	Allows general managers to manage the returns process for purchased items.
Return Management Rule	Business Rule	General managers are allowed to manage the return of purchased items
Customer Satisfaction Metric	Identifier	A metric that measures the level of customer satisfaction.
Customer Retention Metric	Identifier	A metric that measures the rate of customer retention.
<b>Customer Support</b>	Role	The user responsible for assisting customers and managing their accounts, orders, and appointments.
Customer Account	Object	A record containing customer information such as name, email, phone number, address, and payment method.
Search, filter, sort	Function	The process where customer support can find specific customer accounts, orders, or appointments based on criteria.
Search customer accounts	Process	The process where customer support can search specific customer accounts, based on criteria.

Filter customer accounts	Process	The process where customer support can filter specific customer accounts, based on criteria.
Sort customer accounts	Process	The process where customer support can sort specific customer accounts, based on criteria.
Search orders	Process	The process where customer support can search specific customer orders , based on criteria.
Filter orders	Process	The process where customer support can filter specific customer orders , based on criteria.
Sort orders	Process	The process where customer support can sort specific customer orders , based on criteria.
Search appointments	Process	The process where customer support can search specific appointments, based on criteria.
Filter appointments	Process	The process where customer support can filter specific appointments, based on criteria.
Sort appointments	Process	The process where customer support can sort specific appointments, based on criteria.
Create Customer Account	Process	The process where customer support can create new customer accounts with required information provided from the new customer
Update Customer Account	Process	The process where customer support can modify existing customer account information.
Create specialist appointment	Process	The process where customer support can create specialist Appointment for customers
Reschedule or Cancel Appointment	Function	The process where customer support can help customers modify or cancel appointment
Reschedule specialist appointment	Process	The process where customer support can help customers Reschedule

Customer Assistance	Function	Act of customer support to address customer issues or concerns with the OnStop platform.
Recommendations and Advice	Process	Act of customer support to provide personalized suggestions and guidance to customers.
Monitor Reviews and Feedback	Process	Allows customer support to track customer reviews and feedback for improvement opportunities
<b>Specialist</b>	Role	The individual responsible for performing a help to the customer
Appliance	Object	The specific device that requires repair or service during the appointment.
<b>Delivery Driver</b>	Role	The individual responsible for delivering orders to customers based on the provided schedule and delivery details.
Schedule	Object	A calendar displaying the delivery driver's assigned deliveries, including date, time, and order details.
Schedule delivery by delivery driver	Process	Process where delivery driver can sets the date and time of an new delivery, subject to availability and approval from the distribution center manager. Performed by delivery driver
Reschedule delivery by driver delivery	Process	Process where delivery driver can change the date and time of an existing delivery, subject to availability and approval from the distribution center manager. Performed by delivery driver
Cancel delivery by delivery driver	Process	Process where delivery driver can cancel an existing delivery from the delivery driver schedule, subject to approval from the distribution center manager.
Complete delivery by delivery driver	Process	Process where delivery driver can finalize a delivery by updating the order status and

		informing the customer. Performed by delivery driver
Delivery Status	Object	The current status of a delivery, such as "in transit," "delivered," or "canceled."
Issue Reporting	Process	Process where delivery driver can provide relevant teams about any problems encountered during the delivery process.
Notification	Function	The system used to inform the delivery driver and customer of changes in the delivery schedule via email or SMS.
Reason	Identifier	The explanation provided by the delivery driver for canceling a delivery, subject to approval from the distribution center manager.
Pending Orders	Object	A list of customer orders that are waiting to be processed and delivered.
Delivery Trucks	Object	The available vehicles used for delivering orders to customers.
Delivery Notification	Function	The system used to inform the delivery driver and customer of changes in the delivery schedule via email or SMS.
Reports and Analytics	Object	Data and insights generated by the app to evaluate the performance and efficiency of the distribution center operations.
Inventory Management	Process	The process where Distribution Center Manager can perform monitoring and replenishing stock levels in the distribution center.
List product	Process	Process where vendors list their products across different departments and categories for customers to purchase
process returns of purchased items	Process	Process where vendors approve, reject, or refund the return purchased items from customers

Approved return purchased items	Process	Process where vendors approving returned purchased item by customer
Reject return purchased items	Process	Process where vendors reject returned purchased item by customer
Refund return purchased items	Process	Process where vendors refunding a returned purchased item to customer
Refund	Object	Refers the amount of money customer receives when return purchase item
Generate order number	Process	Process where vendors generates order number for order made by customer
Monitor reviews and ratings	Process	Process where vendors monitor the review and rating their product displayed on OneStop
Manage return order	Process	Process where vendors manages returned purchased item by tracking the status using GPS and barcode scanning
Barcode Scanning	Function	A method used to track and manage returns by scanning unique barcodes on the items.
PDF/CSV Export	Process	Process where vendors export to download and save charts and reports in PDF or CSV file formats.
Customer Profile	Object	A summary of the customer's personal information, preferences, purchase history, and browsing behavior on the platform.
Perform cross-promotion	Process	Process of where marketing team members find products from different departments for cross-promotion campaigns based on the preferences of these well-connected customers using a recommendation system.
Recommendation System	Function	A system that suggests products for cross-promotion campaigns based on the preferences of well-connected customers.

Cross-Promotion Campaign	Process	Process of where marketing team uses marketing strategy that involves promoting products from different departments to well-connected customers through personalized messages or offers.
Email	Identifier	A method of communication used to contact influential reviewers and well-connected customers.
SMS	Identifier	A method of communication used to contact influential reviewers and well-connected customers.
<b>Logistics Department</b>	Role	The team responsible for managing logistics operations in the app
Forecasts	Object	Predicted values for returned orders, delayed deliveries, and order volumes
Generate forecasts	Process	Process of where logistics department to generate forecasts for the number of returned orders, delayed deliveries, and order volumes for every warehouse, distribution center, and zip code using Neo4j GDS library
Display Forecasts	Function	Displays forecasts in charts and tables on the dashboard
Forecast ID	Identifier	Unique identifier for each generated forecast
Export Forecasts	Process	The process of where logistics department can export to download and save charts and reports in PDF or CSV file formats.
PDF and CSV Files	Object	Represents the File formats for exporting data
Weather agency	Role	Organization that helps and provides weather information.
Gathering weather information	Process	Process where the weather agency provides the logistics team with weather updates
Weather condition	Identifier	A description of the atmospheric state at a given time and place, such as temperature, precipitation,

		wind, humidity, etc.
Contingency Planning Rule	Business Rule	Contingency plans should be created for adverse weather conditions
Delayed Delivery	Object	Represents a situation in which an order is not delivered within the expected time frame.
Delayed delivery	Business rule	A policy that compensates customers for orders that are not delivered within the expected time frame.
Zip code	Identifier	A postal code that identifies a geographic area within the United States.
<b>Fraud Detection Department</b>	Role	The team responsible for managing and reviewing fraudulent transactions
Credit Card Holder	Role	The individual whose credit card was used for the transaction
Review Bot Detection Module	Function	A component of the app that flags suspicious or fake reviews
Credit Card Fraud Detection Module	Function	A component of the app that predicts fraudulent transaction
Transactions Log Dataset	Object	A secure database where all transaction records and their labels are stored
Alerts	Object	Notifications sent to the fraud detection department and the credit card holder
Database	Role	A protected storage system for storing transactions log dataset, that stores, organizes, and manages data in a structured way.
Fraudulent Transaction	Object	A transaction flagged as suspicious by the classifier
Fraud Detection Rule	Business Rule	Fraudulent transactions are predicted using a decision tree classifier
Classifier Prediction	Business Rule	The outcome of the decision tree classifier's analysis, indicating whether a transaction is likely to be fraudulent or not.



Classifier	Object	A machine learning model that assigns a label (fraudulent or not) to a transaction based on its features and rules.
Analyze Reviews	Process	The process of reviewing and rating products for suspicious or fake reviews
Review Analysis Rule	Business Rule	Reviews are analyzed based on the guidelines provided by OneStop
Predict Fraudulent Transactions	Process	Process of where that uses the decision tree classifier to identify potential fraudulent transactions
Store Transactions Log	Process	The process of regularly updates the transaction log dataset with new transactions and their labels
Transaction Storage Rule	Business Rule	Transactions log data is regularly updated and securely stored
Alert Sending Rule	Business Rule	Alerts are sent whenever a fraudulent transaction is detected
Review Flagged Transactions	Process	Process that allows the fraud detection department to confirm or reject the classifier's prediction
Report Unauthorized Transactions	Function	Allows the credit card holder to report unauthorized transactions or disputes
Transaction ID	Identifier	Unique identifier for each transaction
Credit Card ID	Identifier	Unique identifier for each credit card
Department ID	Identifier	Unique identifier for each department
Product Category ID	Identifier	Unique identifier for each product category
Product Identifier	Identifier	A unique code or number assigned to each product for tracking and identification purposes.
Product Category Rule	Business Rule	Different departments sell different categories of products
Product category	Identifier	A classification of products based on their characteristics, features, or

		functions, such as appliances, electronics, or clothing.
Department	Role	A group of users who are responsible for selling products in a specific category or performing a specific function for OneStop
Shipping Policy	Business Rule	The guidelines for packaging, shipping, and delivering products to customers.
Membership Benefits	Business Rule	The guidelines for determining the benefits and perks offered to OneStop members.

## 6. Actor Dictionary

Actor	Description	Abstract	Use Case (s)
User	Generalizes: Administrator ,General Manager Existing customer Customer support Specialist	✓	Login
Existing customer	<ul style="list-style-type: none"> <li>Existing Customer can login in app credentials and access their dashboard using.</li> <li>A user who purchases products or services from the app</li> <li>customers to browse products, view details and add items to their cart products across departments.</li> <li>customers can View product details like descriptions, images, and reviews</li> <li>customers can place, change or cancel orders through the app</li> <li>customers can pay for orders using payment methods like credit cards, debit cards, gift cards, etc.</li> </ul>	✓	Browse Products, view details products, Update Cart, Place Order, Manage Addresses, Manage order, Update Cart, Place Order, Review Product, Pay Subscription, Share Product, Manage Notifications, Manage appointments by customer, Update Account Info, Manage Delivery, Provide Feedback, ManageVIPMembership, Return purchased Items

	<p>that are saved to their account</p> <ul style="list-style-type: none"> <li>customer can provide home address, delivery address, and shipping class when placing an order</li> <li>customers to pay for orders using payment methods like credit cards, debit cards, gift cards, etc. that are saved to their account</li> <li>customer can to Return purchased items</li> <li>customers can review, and rate purchased products</li> <li>customers can schedule, reschedule or cancel appointments with specialists</li> <li>customers to update account information like credit card details, personal info, etc.</li> <li>Pay monthly subscriptions bills</li> <li>Enroll in or cancel VIP membership to receive 5% discount on all purchases for \$100 annual fee</li> <li>customer subscribe or unsubscribe to receive email notifications for: <ol style="list-style-type: none"> <li>Holidays, seasonal events and discounts</li> <li>New product releases</li> </ol> </li> <li>Provide feedback on the OneStop platform to improve the customer experience</li> </ul>		
VIP Member customer	<p>Can receive VIP members notifications</p> <p>Can select faster delivery</p>	✖	VIP members notifications

	options		
New customer	Provides personal information the customer support	x	Provide personal Info
Administrator	<p>A user who has the highest level of access and control over the app and its data.</p> <ul style="list-style-type: none"> <li>administrators can create, edit, delete, or assign users, roles, permissions, and settings</li> <li>Administrator can manage the app's data and resources, such as products, orders, appointments, inventory, etc. by displaying them on the dashboard and allowing them to create, edit, delete, or backup them as needed.</li> <li>administrators to monitor and troubleshoot the app's performance, security, and reliability by displaying them on the dashboard and allowing them to view logs, alerts, errors, or reports as needed</li> </ul> <p>Administrators can update or upgrade the app's features, functions, or platforms by displaying them on the dashboard and allowing them to download, install, or configure them as needed.</p>	x	<p>Manage roles, manage users, Manage setting, Manage permissions.</p> <p>Manage app's data, Manage inventory, Manage Products, Manage orders, monitor and troubleshoot, update or upgrade the app's features</p>

Bank	Verify Card funds	x	Verify Card funds
Tax Agency	collect tax	x	collect tax
General Manager	<p>responsible for overseeing the app's functions</p> <ul style="list-style-type: none"> <li>• general managers can to create, cancel, update, and delete them as needed, general managers can oversee the account specialists/customer support, specialists and other departments employees' and</li> <li>• general managers can monitor metrics related to customer satisfaction, retention, orders, etc. to identify areas for improvement by displaying them in charts and reports on the dashboard and allowing them to export them as PDF or CSV files.</li> <li>• General manager can manage the return process for purchased items</li> </ul>	x	<p>Account Management, Order Management, Appointment Management by general manager, Employee Oversight, Task Assignment, Guidance Provision, Issue Escalation, Metrics Monitoring, Returns Process Management, Export Metrics</p>
Customer support	<ul style="list-style-type: none"> <li>• customer support to search, filter, and sort customer accounts, orders, and appointments them by various criteria.</li> <li>• customer support can create new customer accounts by entering the customer's name, email, phone number, address, and payment method and a</li> <li>• customer support can update existing customer accounts by</li> </ul>	x	<p>Search, filter, sort management, Create Customer Account, Update Customer Account by customer support, Appointment Management by customer support, assist customers order management, Recommendations and Advice</p>

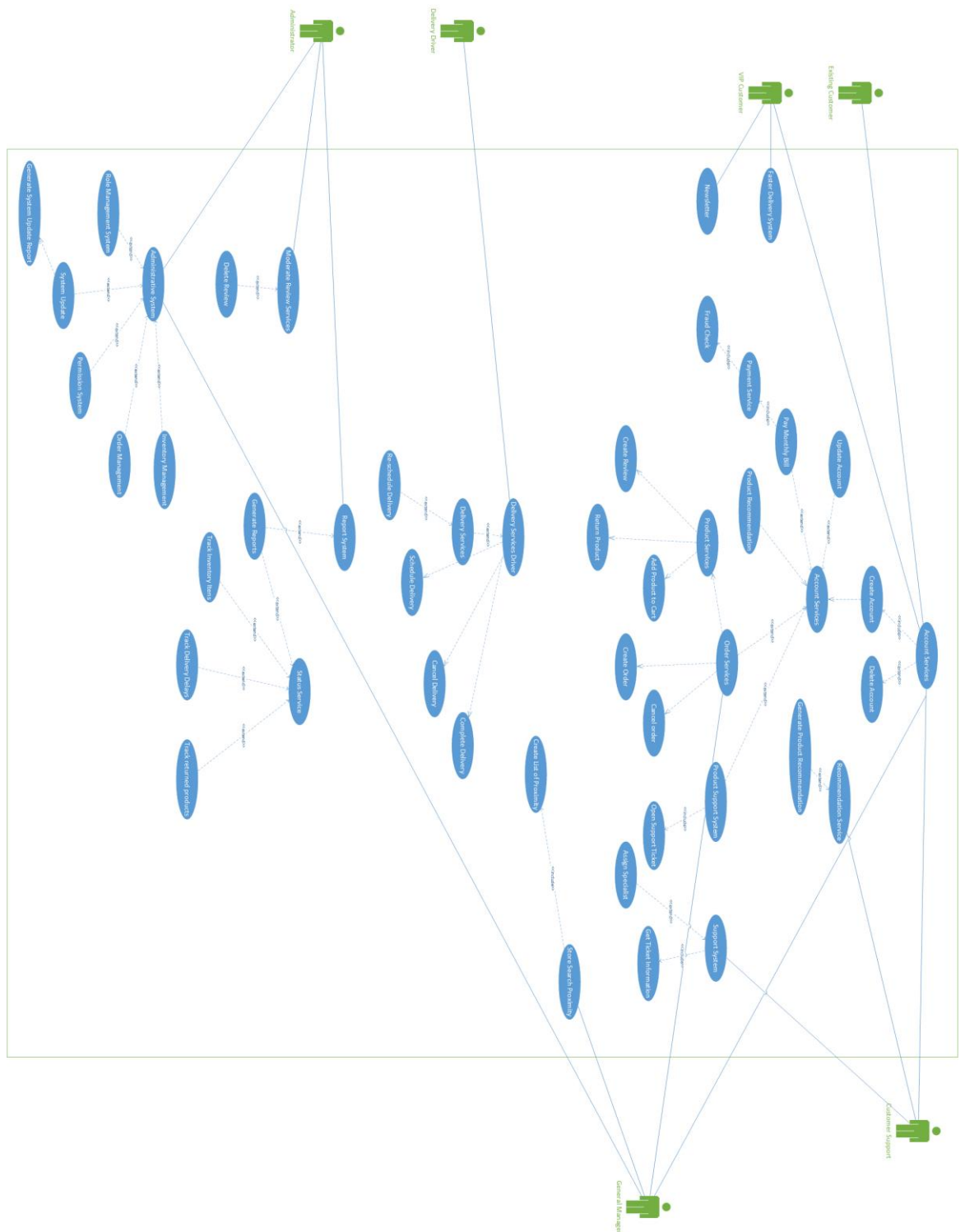
	<p>editing the customer's name, email, phone number, address, and payment method.</p> <ul style="list-style-type: none"><li>• customer support to create appliance repair and service appointments for customers by selecting an available date and time slot and entering the customer's name, address, phone number, and appliance details and assigns to technician</li><li>• customer support can assist customers with placing, changing or canceling orders by selecting an order from the list and performing the desired action.</li><li>• customer support can help customers re-schedule or cancel appliance repair and service appointments by selecting an appointment from the list and choosing a new date and time slot or providing a reason for cancellation.</li><li>• customer support can address any issues or concerns customers may</li></ul>		
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	<p>have with the OnStop platform by selecting a customer from the list and initiating a chat or call with them.</p> <ul style="list-style-type: none"> <li>customer support can provide recommendations and advice to help customers get the most out of their OnStop experience by selecting a customer from the list and sending them personalized messages or offers based on their preferences, purchase history, and browsing behavior.</li> <li>customer support can monitor reviews and feedback from customers to identify opportunities for improvement by displaying them on the dashboard and allowing them to respond or escalate them as needed.</li> </ul>		
Delivery Driver	Can deliver orders to customers based on the provided schedule and delivery details. Can Schedule delivery, reschedule delivery, Cancel delivery, Complete delivery and Issue Reporting	x	Delivery Management by delivery driver, Issue Reporting
Weather agency	Agency can provide weather information	x	Gathering weather information

Fraud Detection Department	The team can manage and review fraudulent transactions and reviews	✖	Predict Fraudulent Transactions, Predict fake reviews
Database	Storage can store transactions log dataset, organizes, and manages data in a structured way.	✖	Store Transactions Log
Employees	Generalizes employees that work at various departments of the store.	✓	N/A

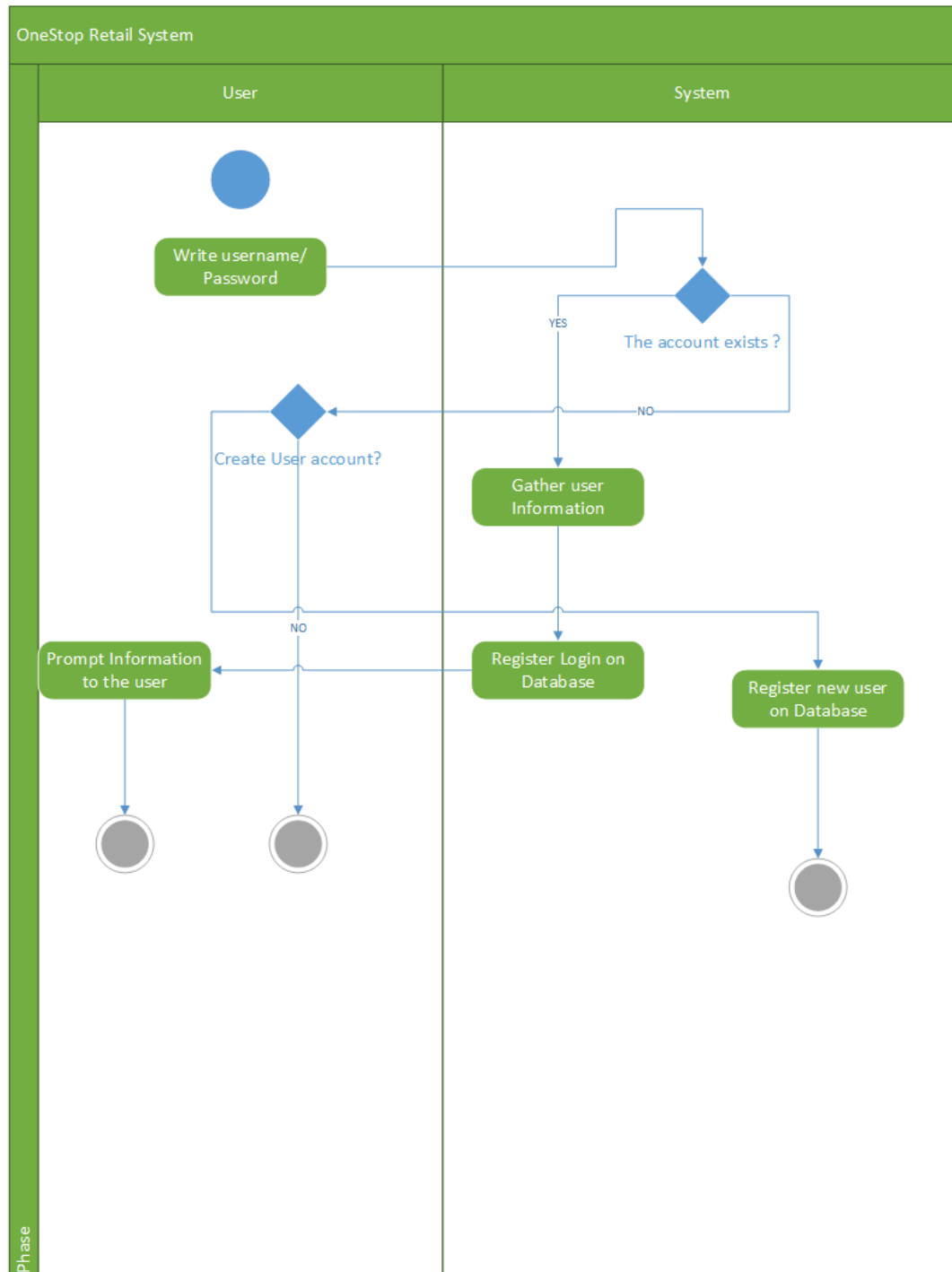


## 7. Use Case Diagram

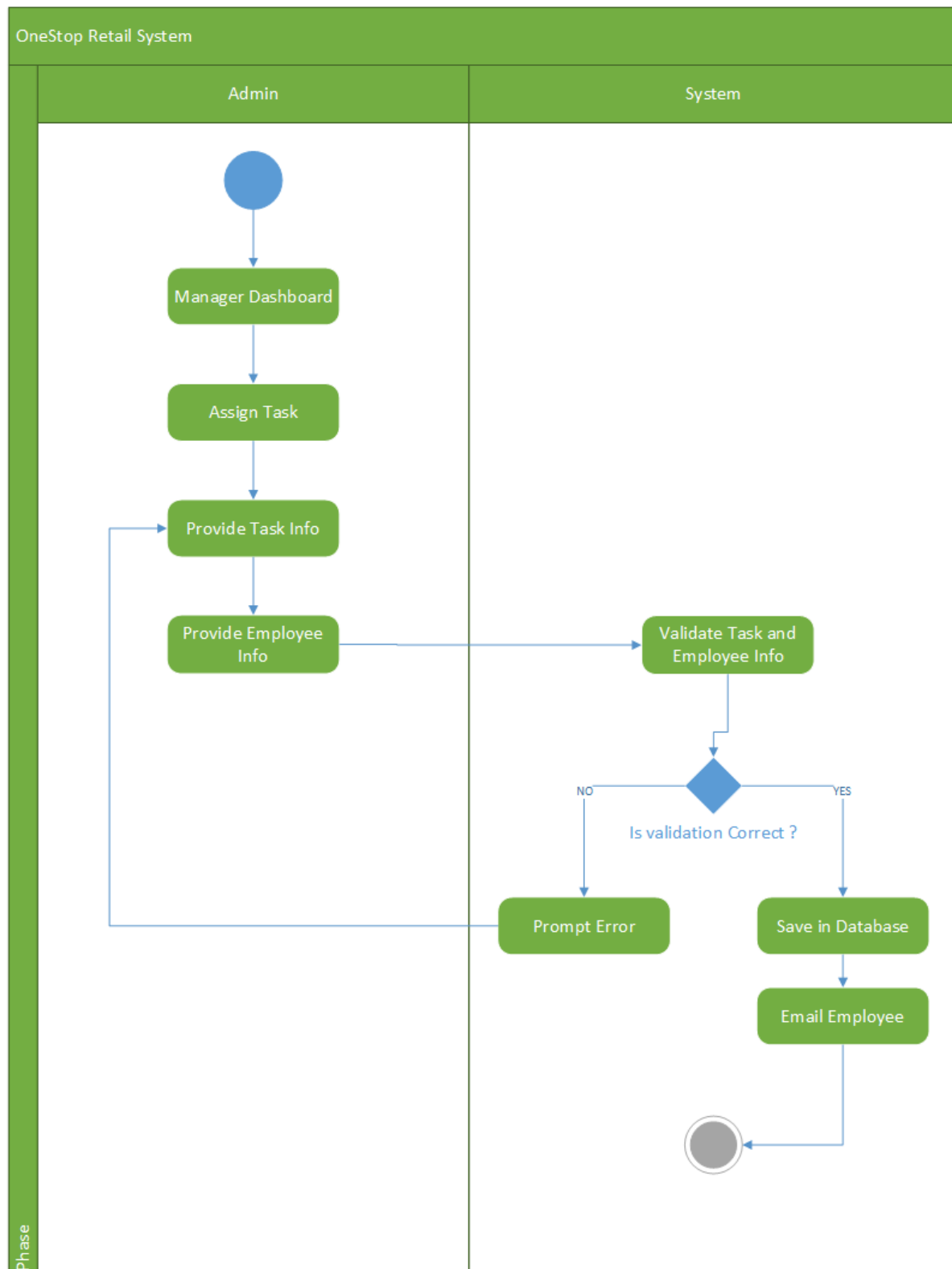


## 8. Activity Diagrams

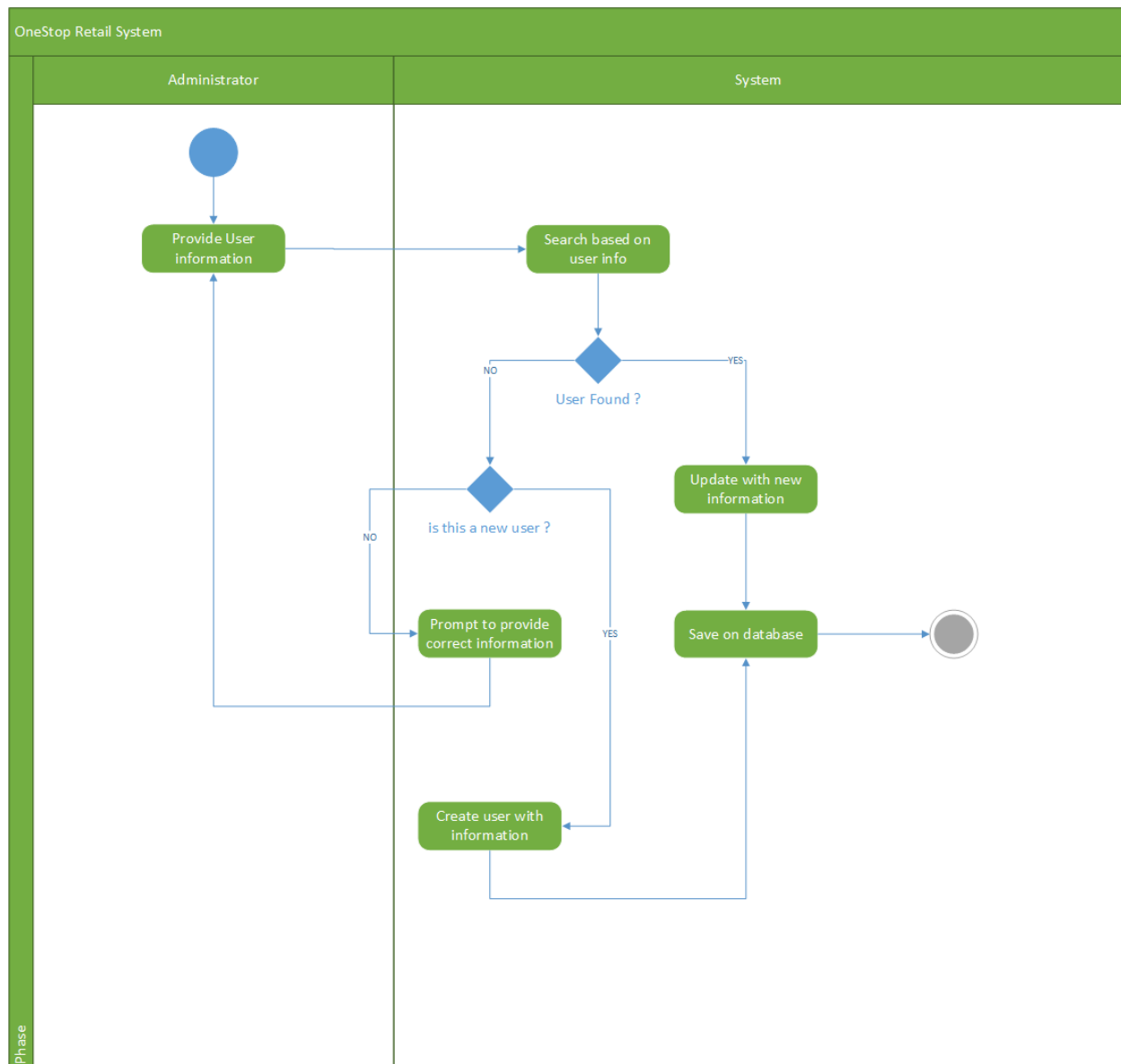
### User Login



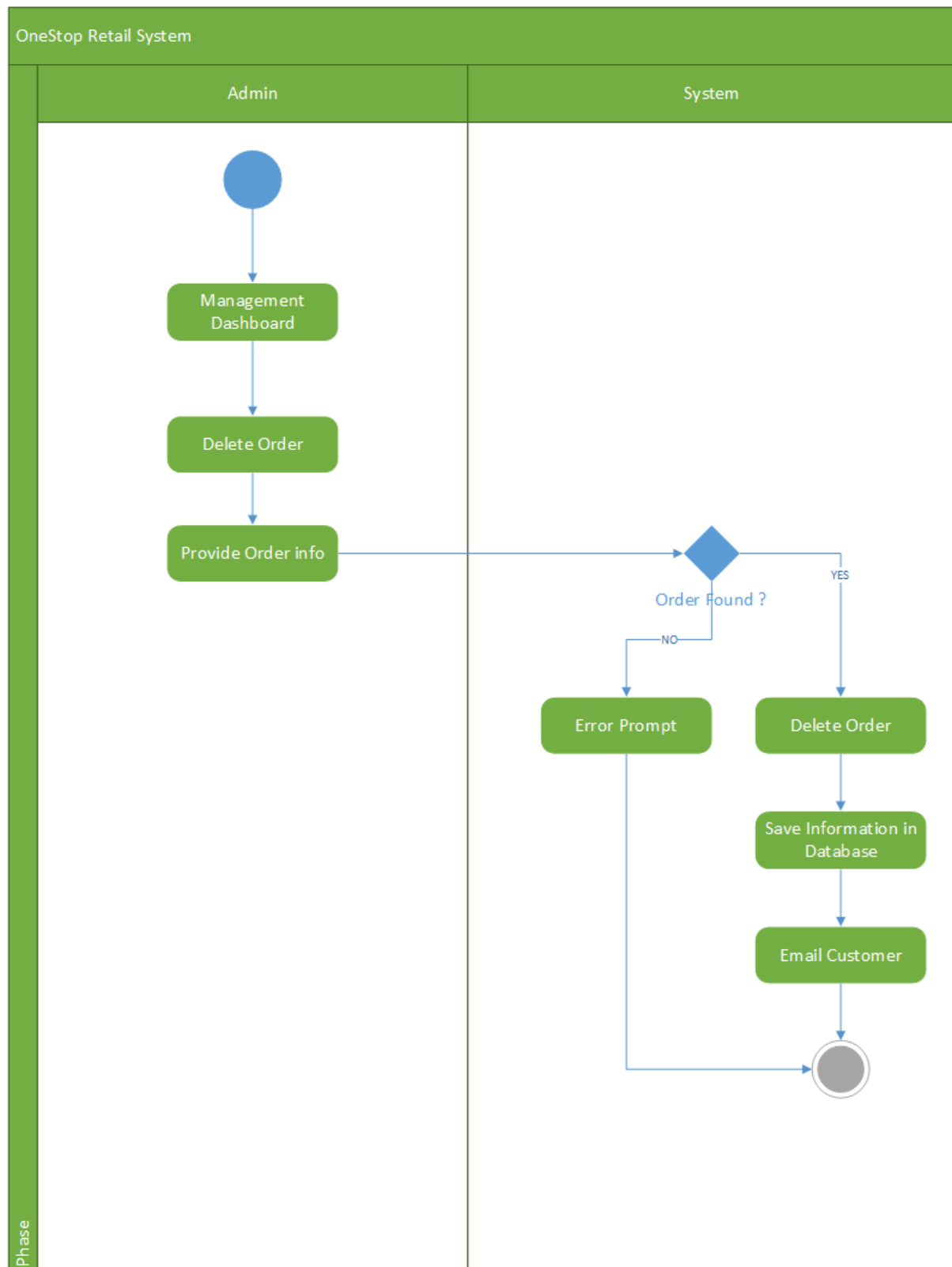
## Assign Task



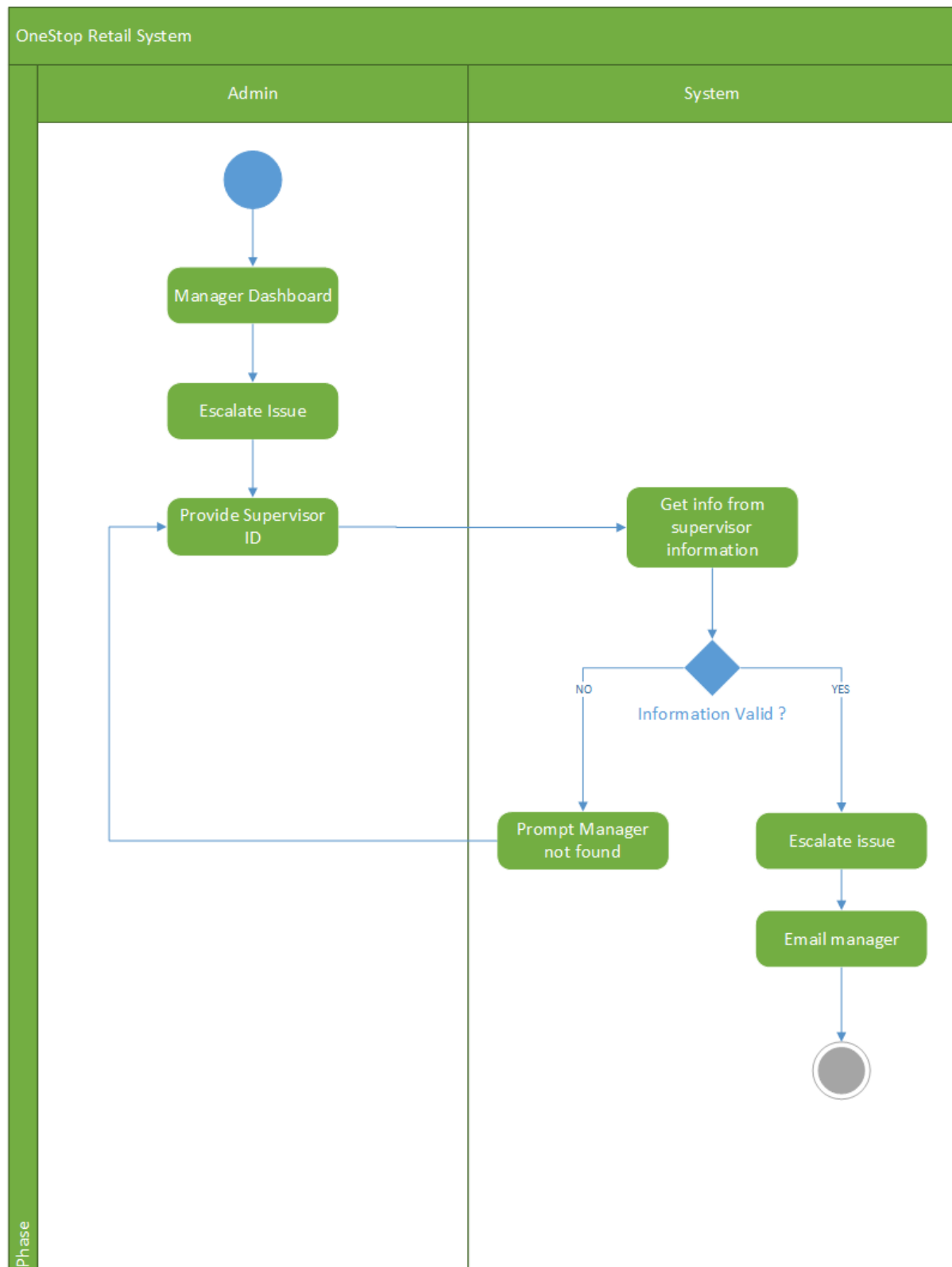
## Create/Update User



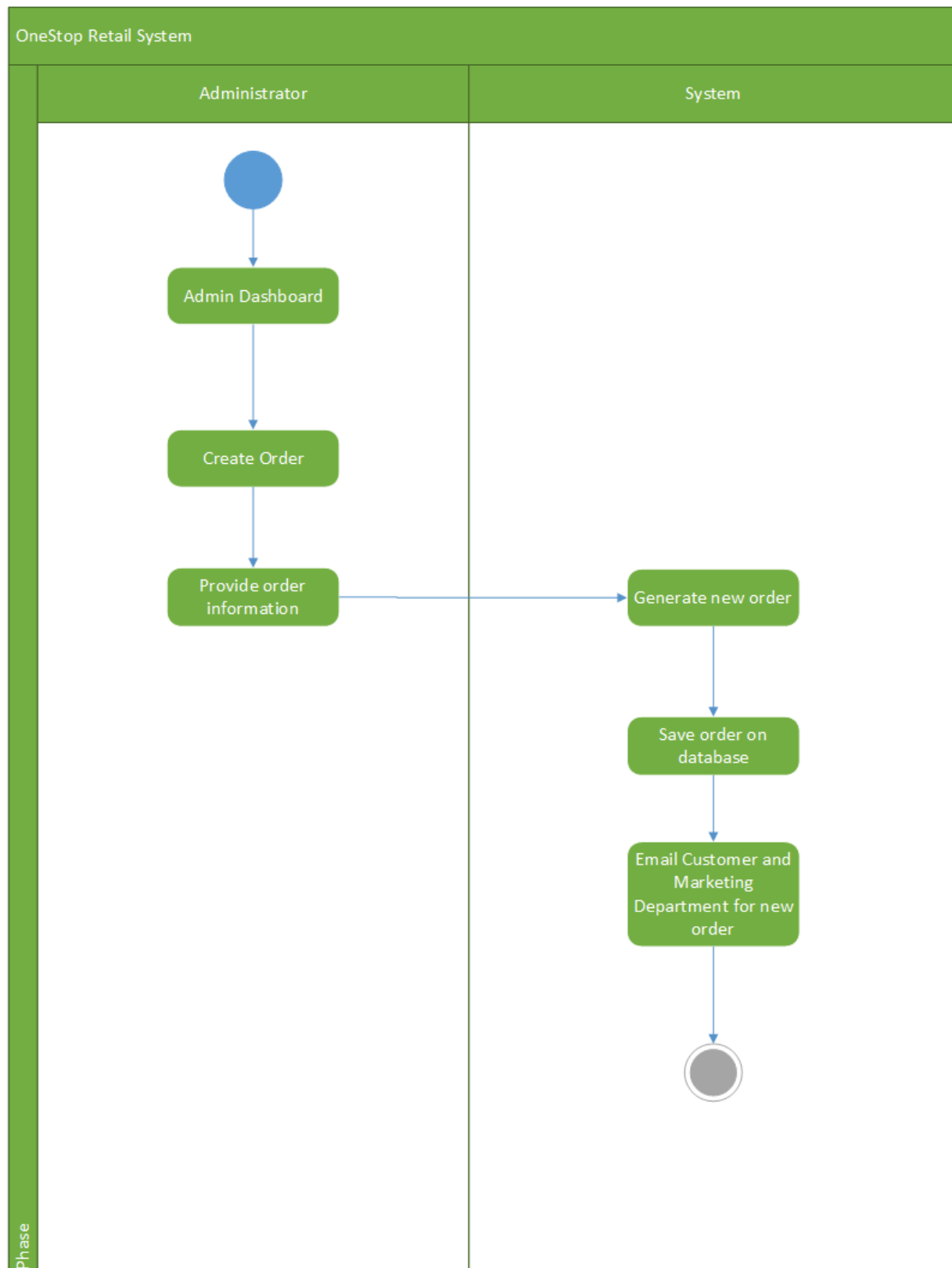
## Delete Order



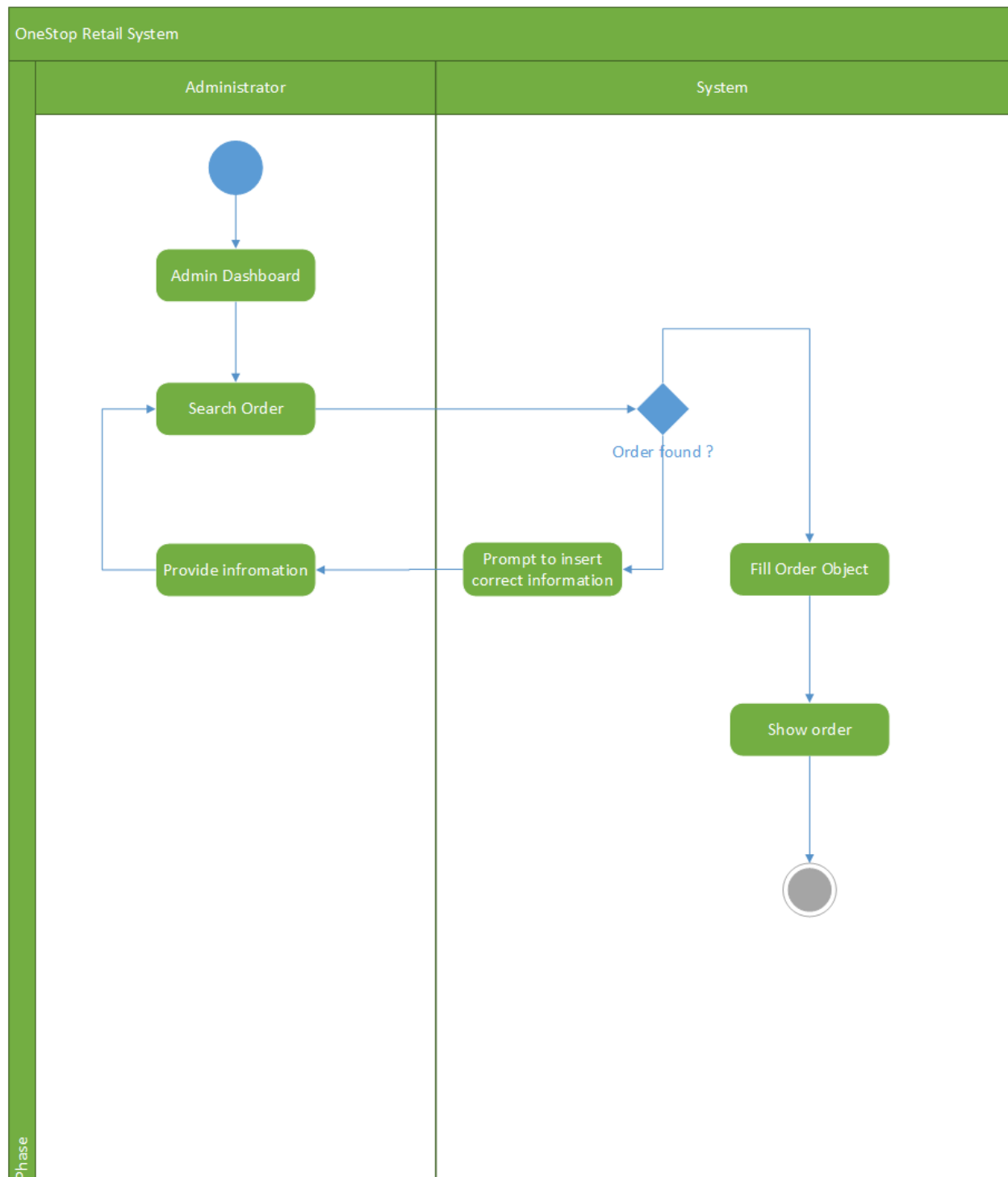
## Escalate Ticket



## Generate Order

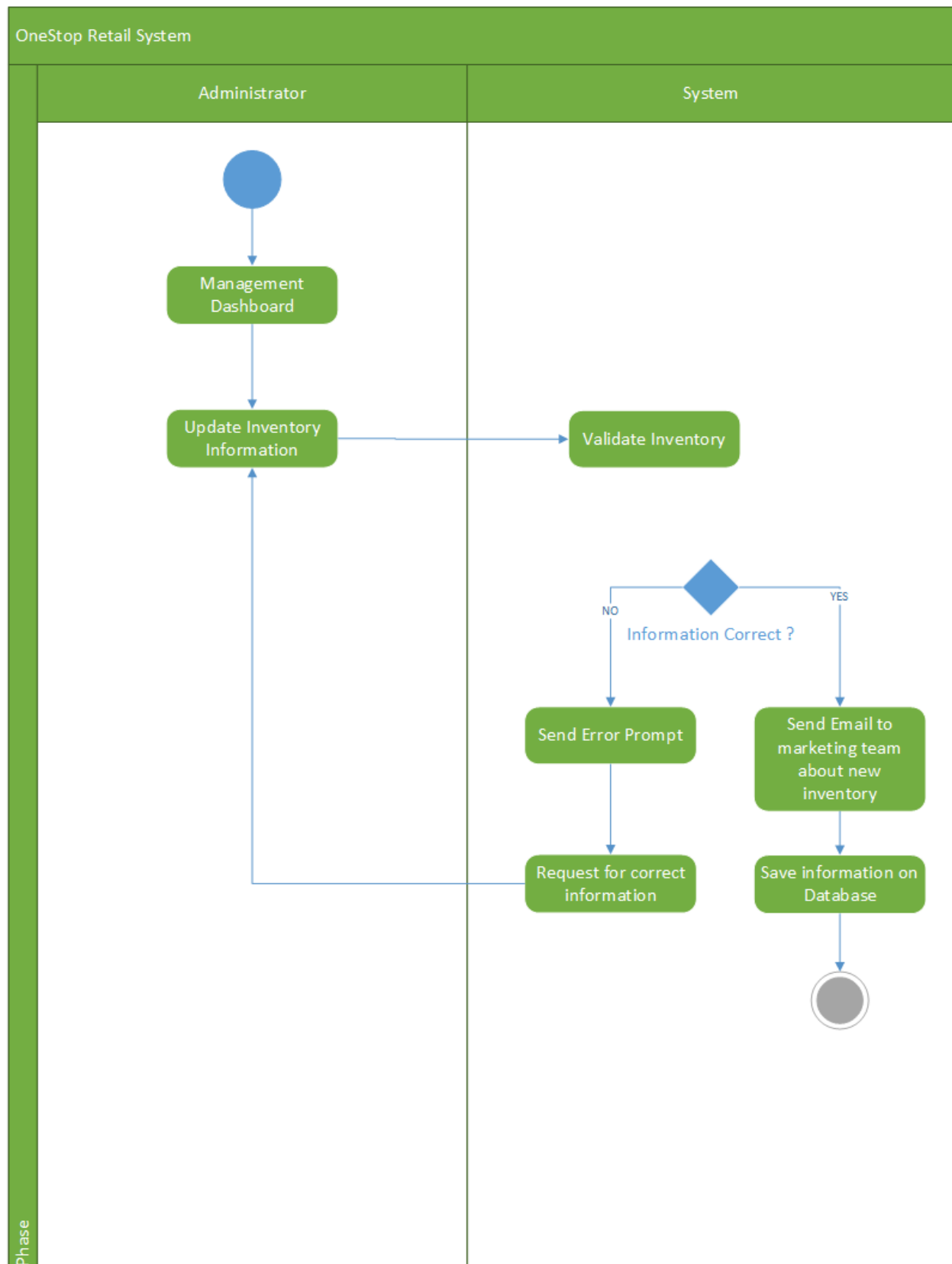


## Search Order

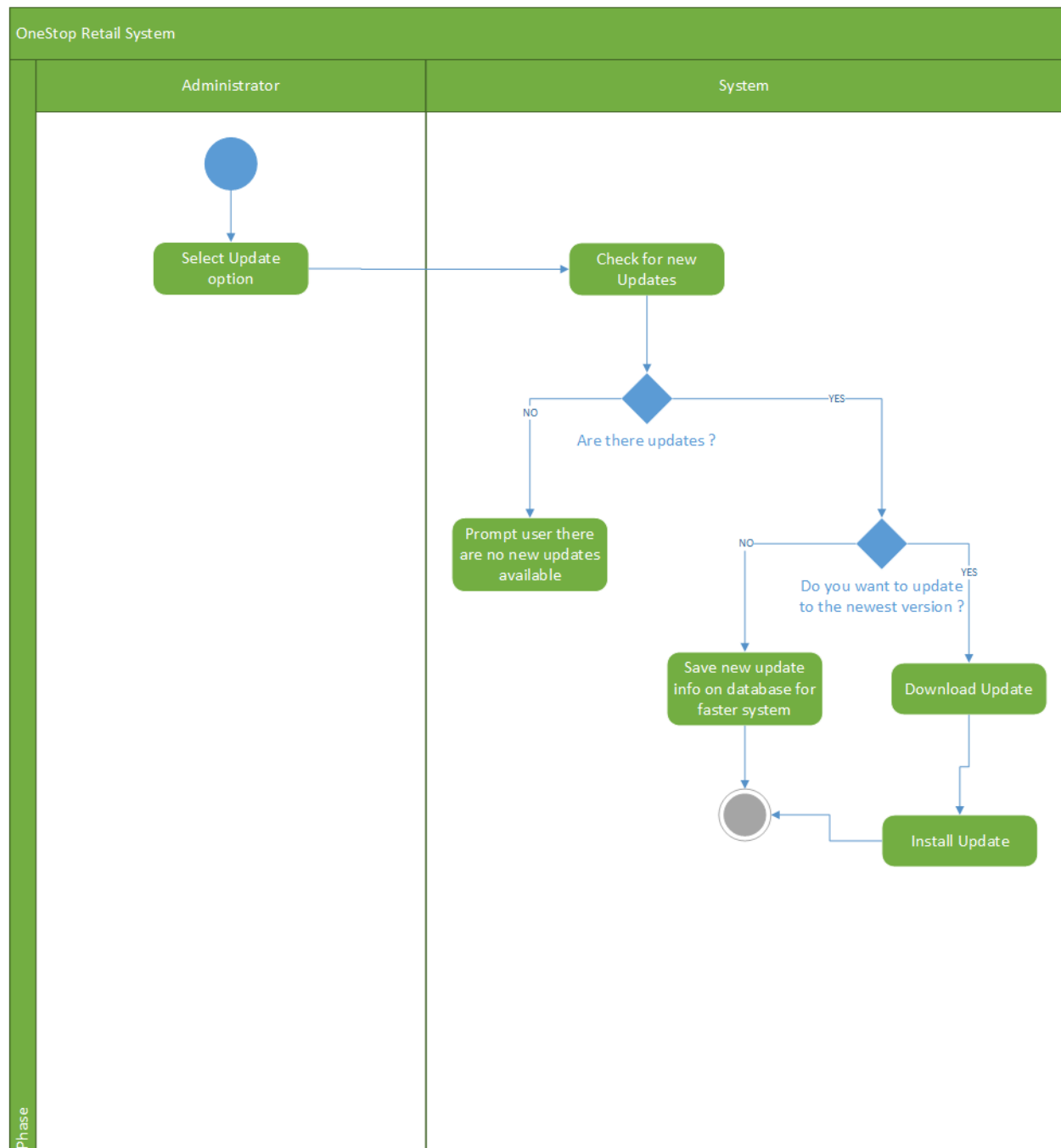




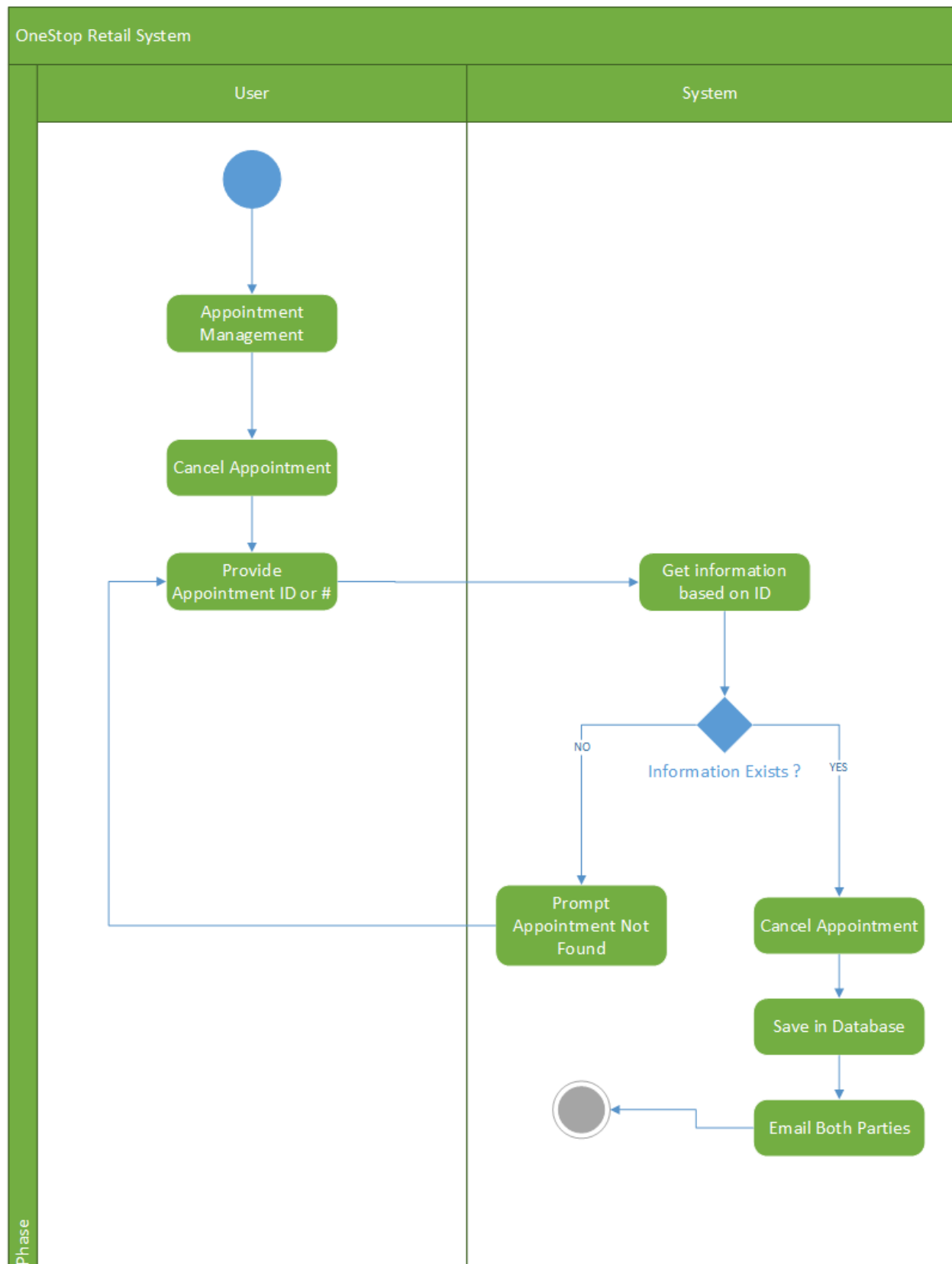
## Update Inventory



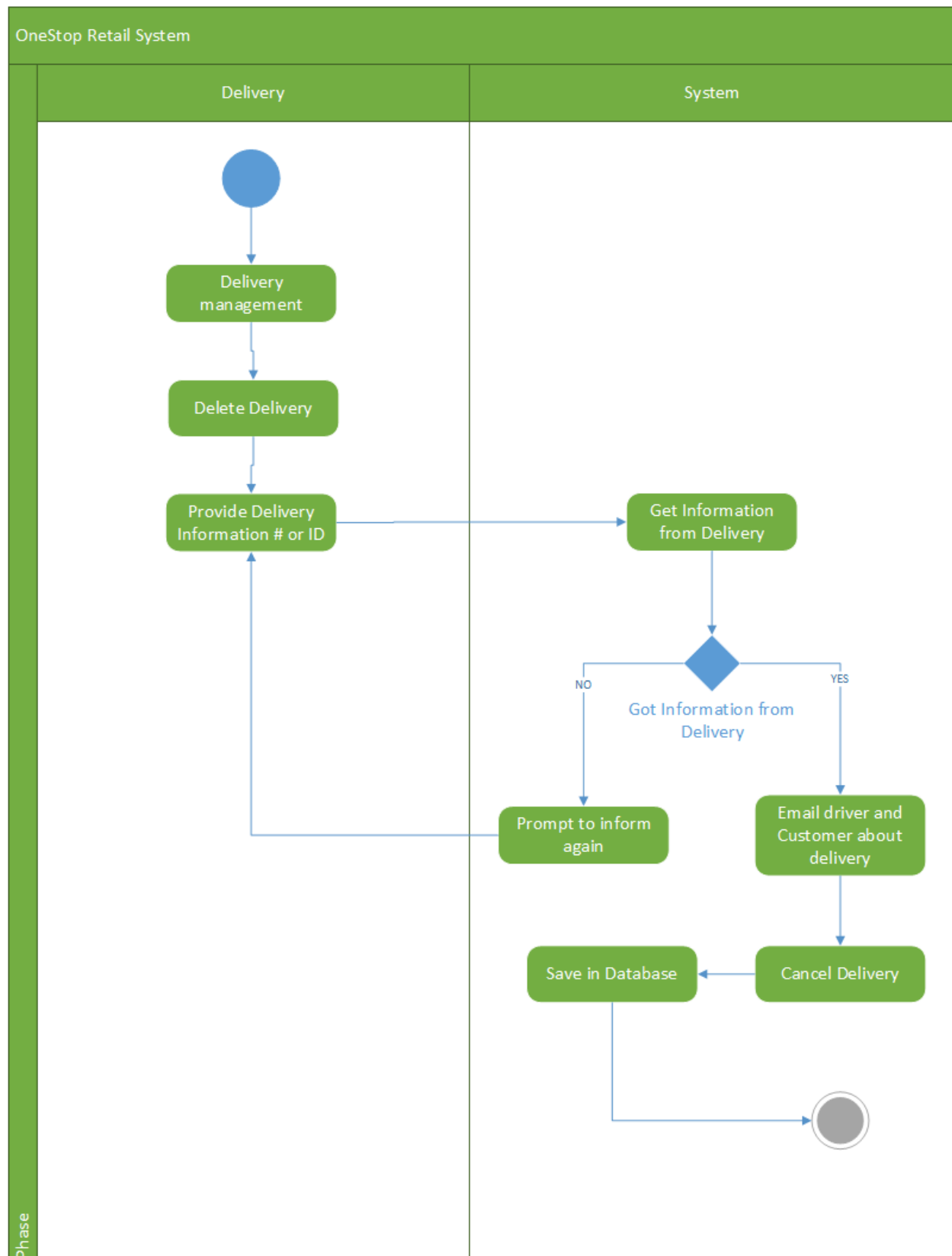
# Update System



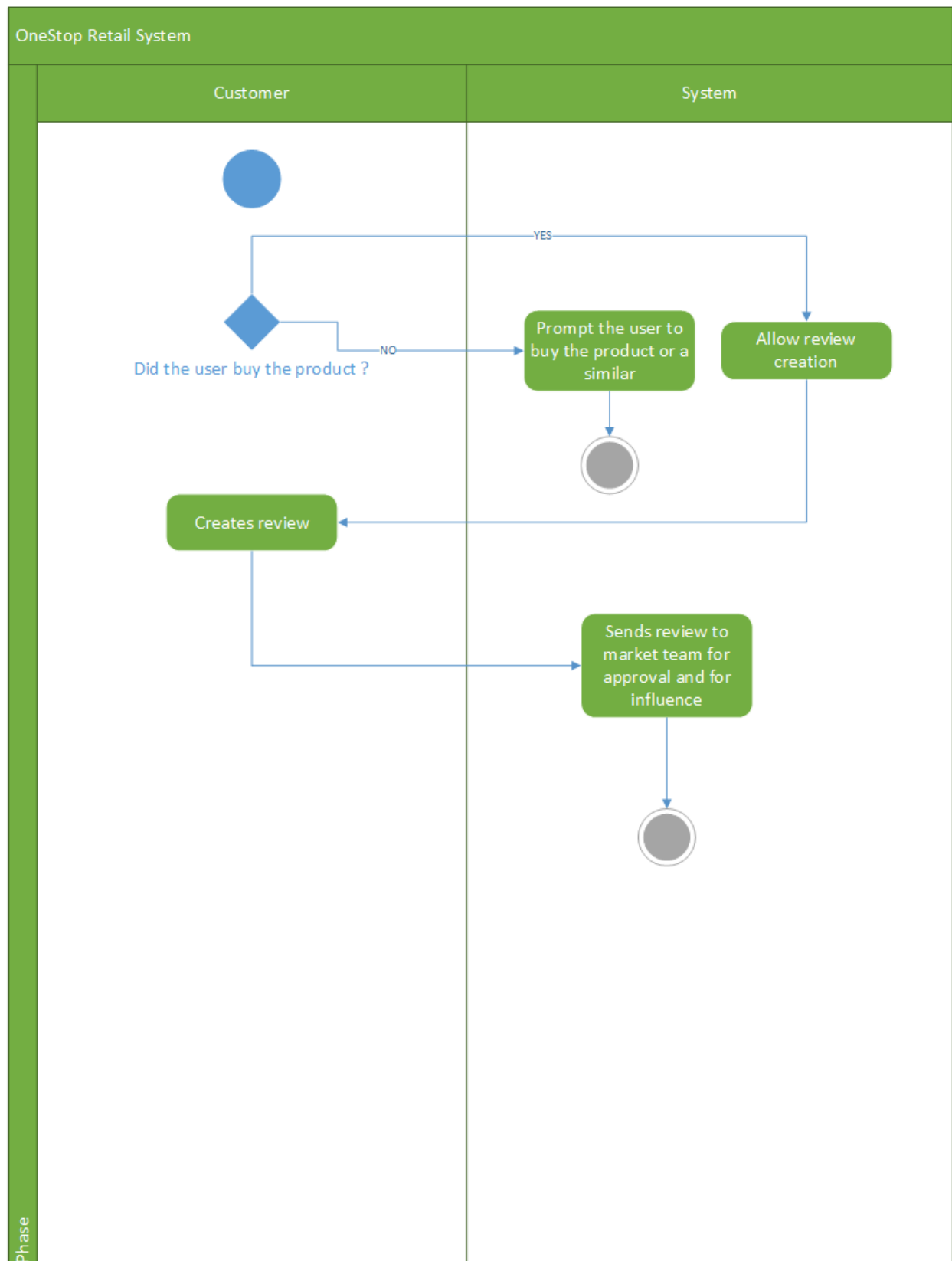
## Cancel Appointment



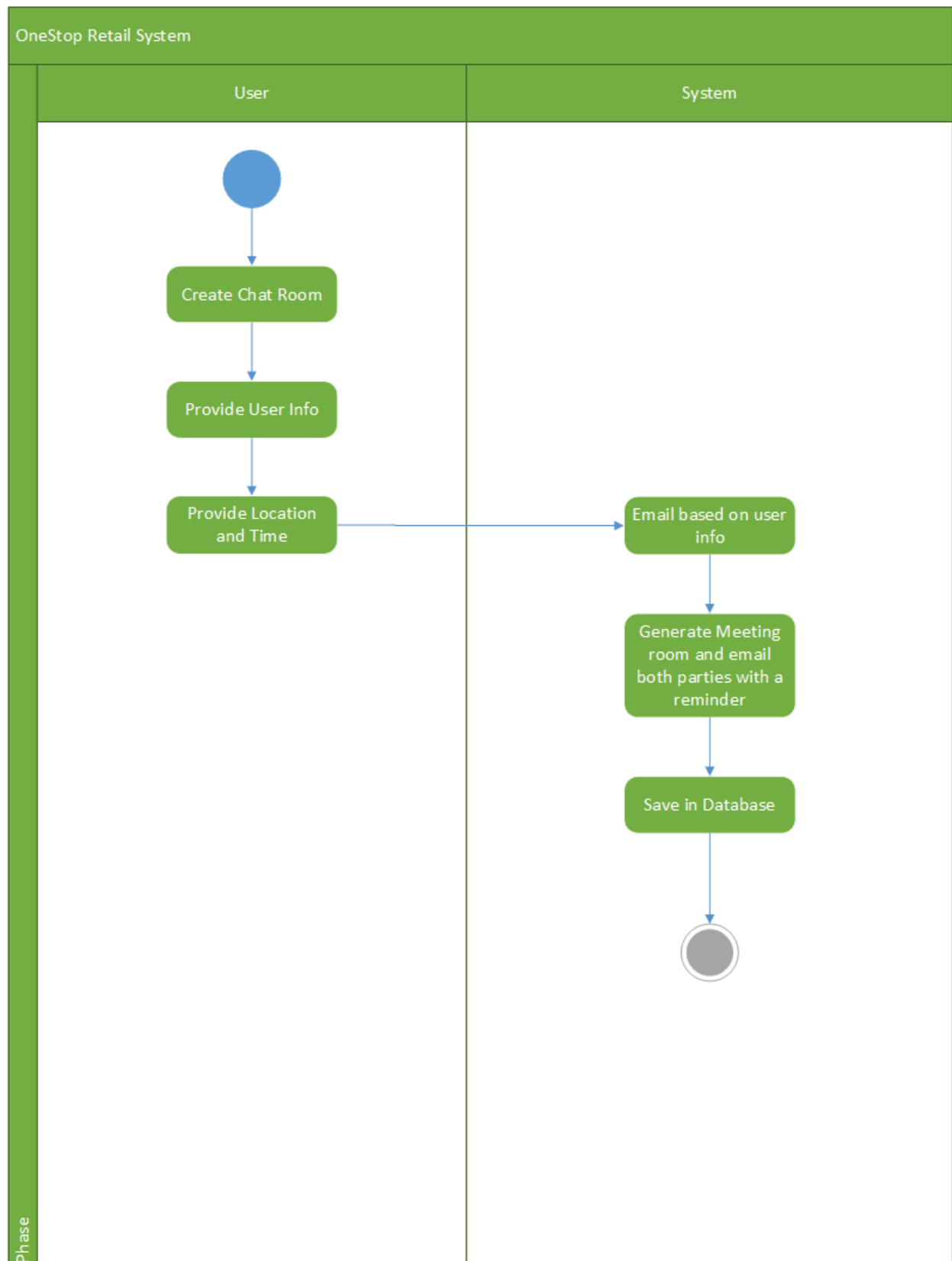
## Cancel Delivery



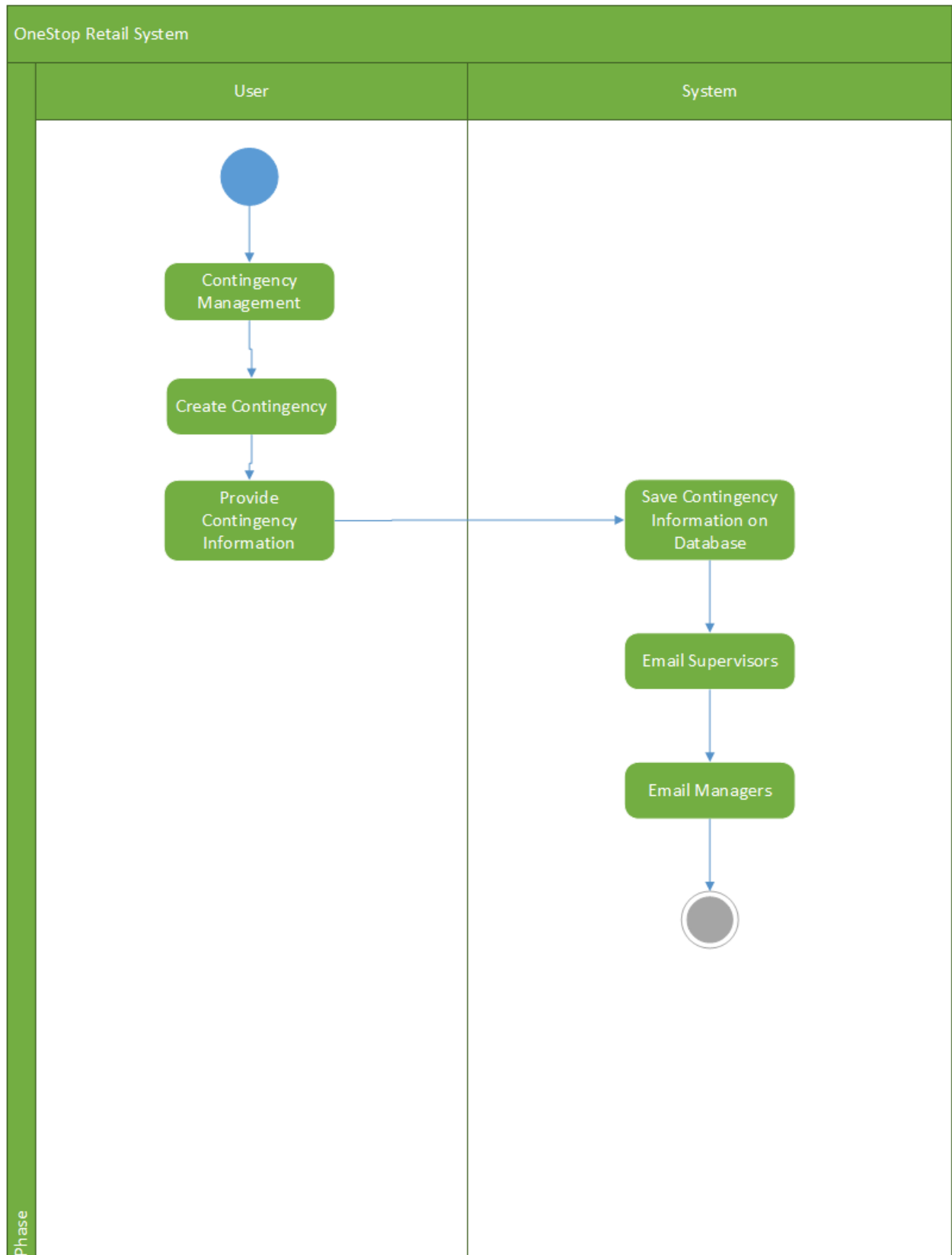
## Create Review



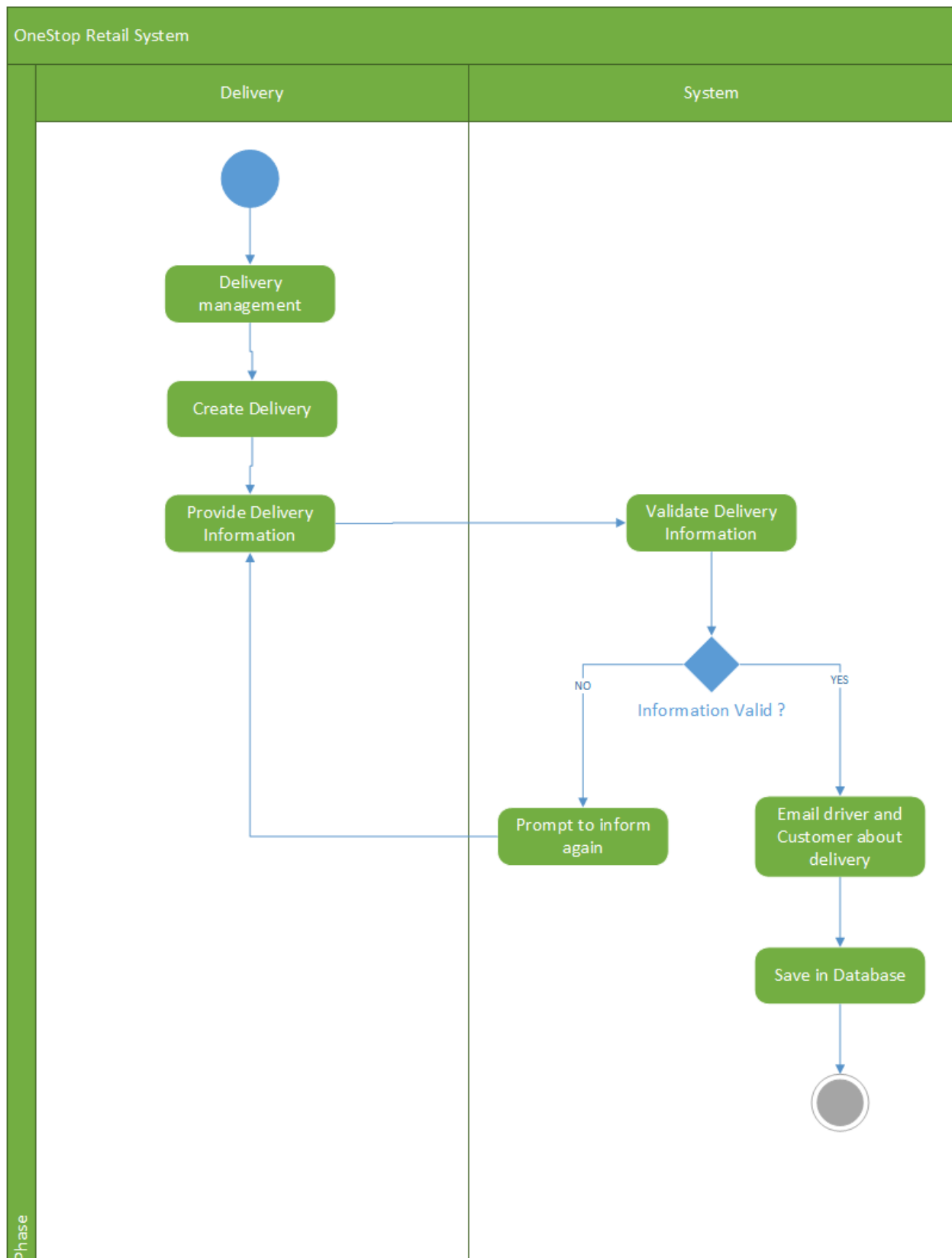
## Create Chat Room



## Create Contingency

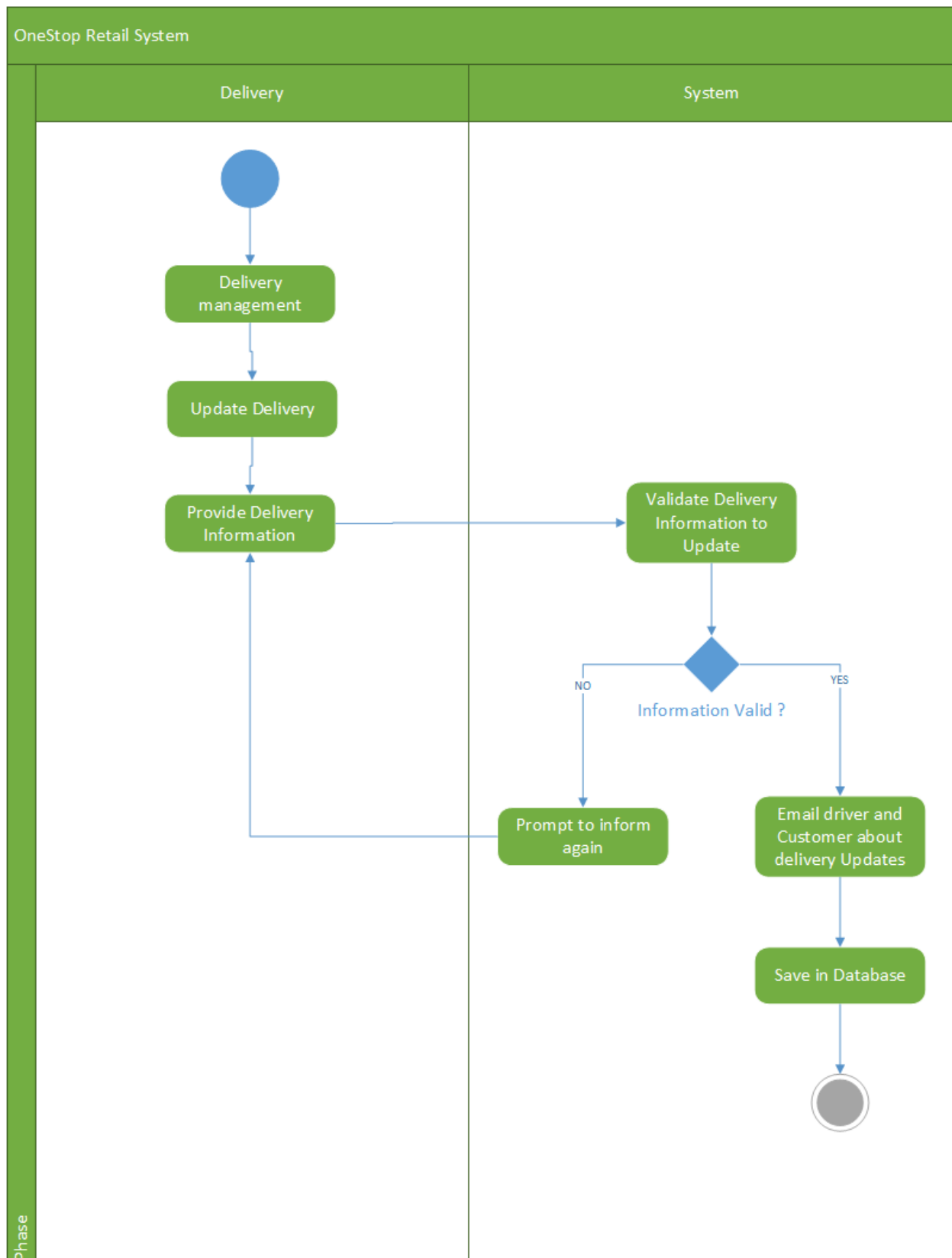


## Create Delivery

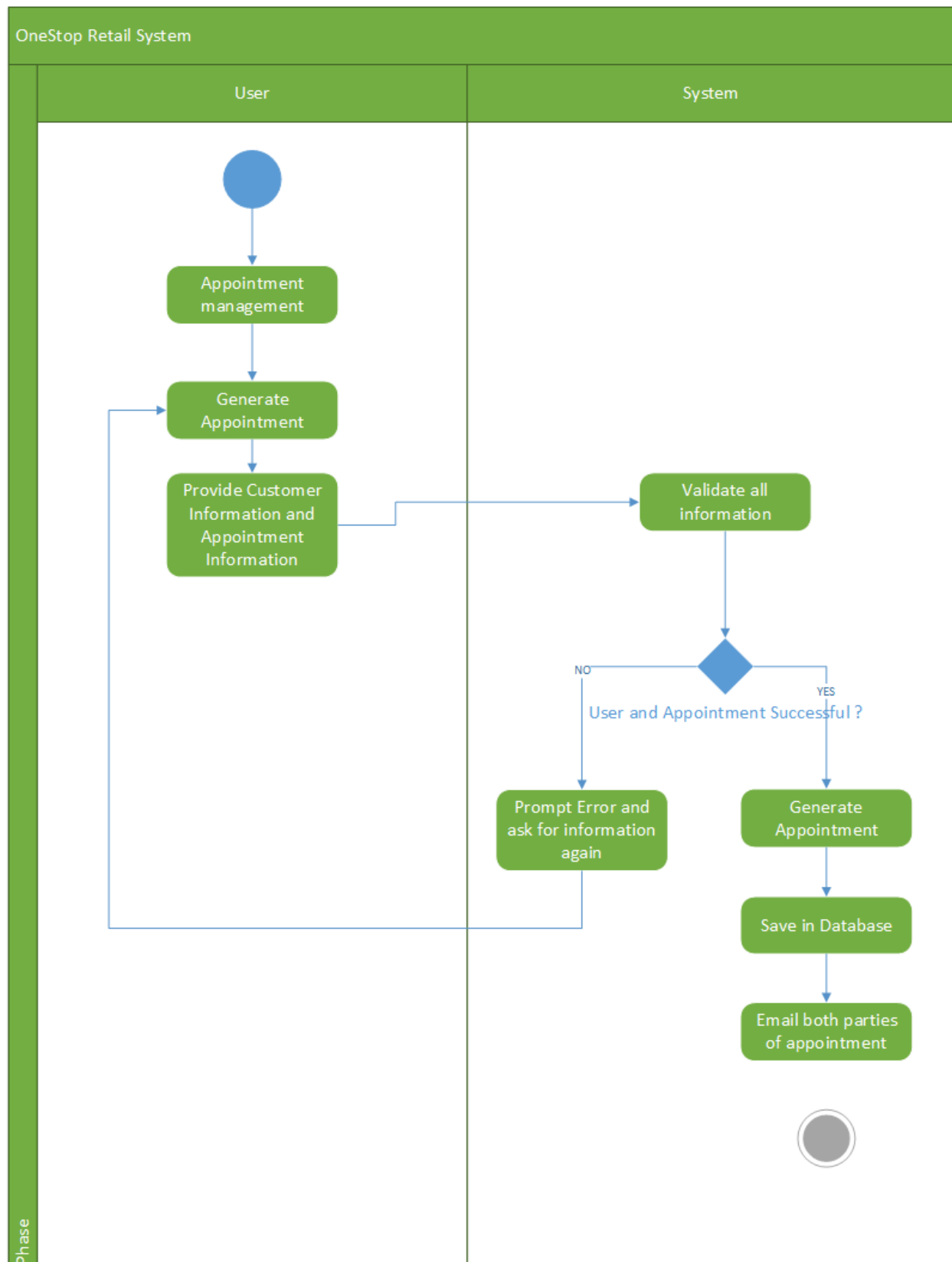




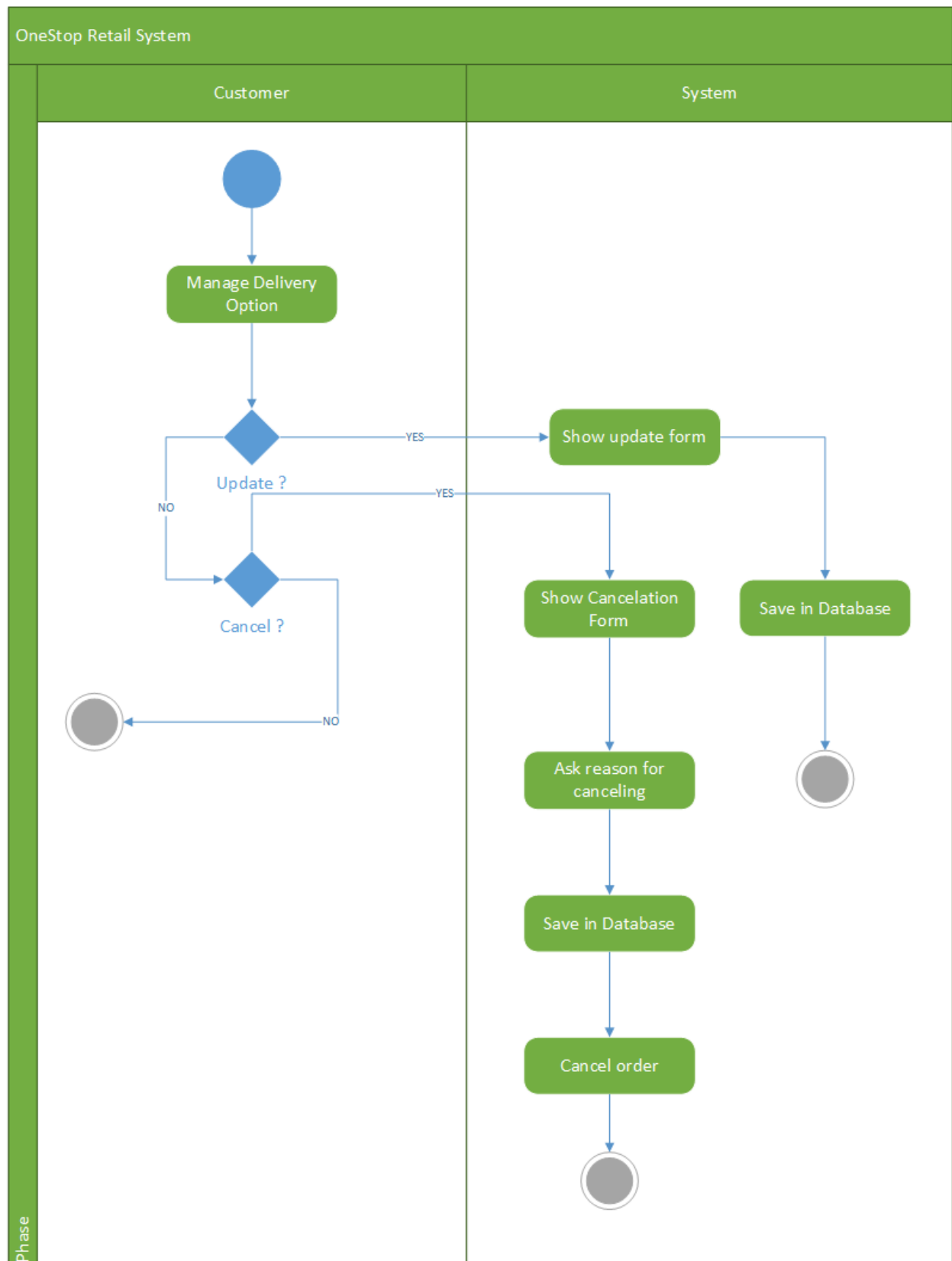
## Update Delivery



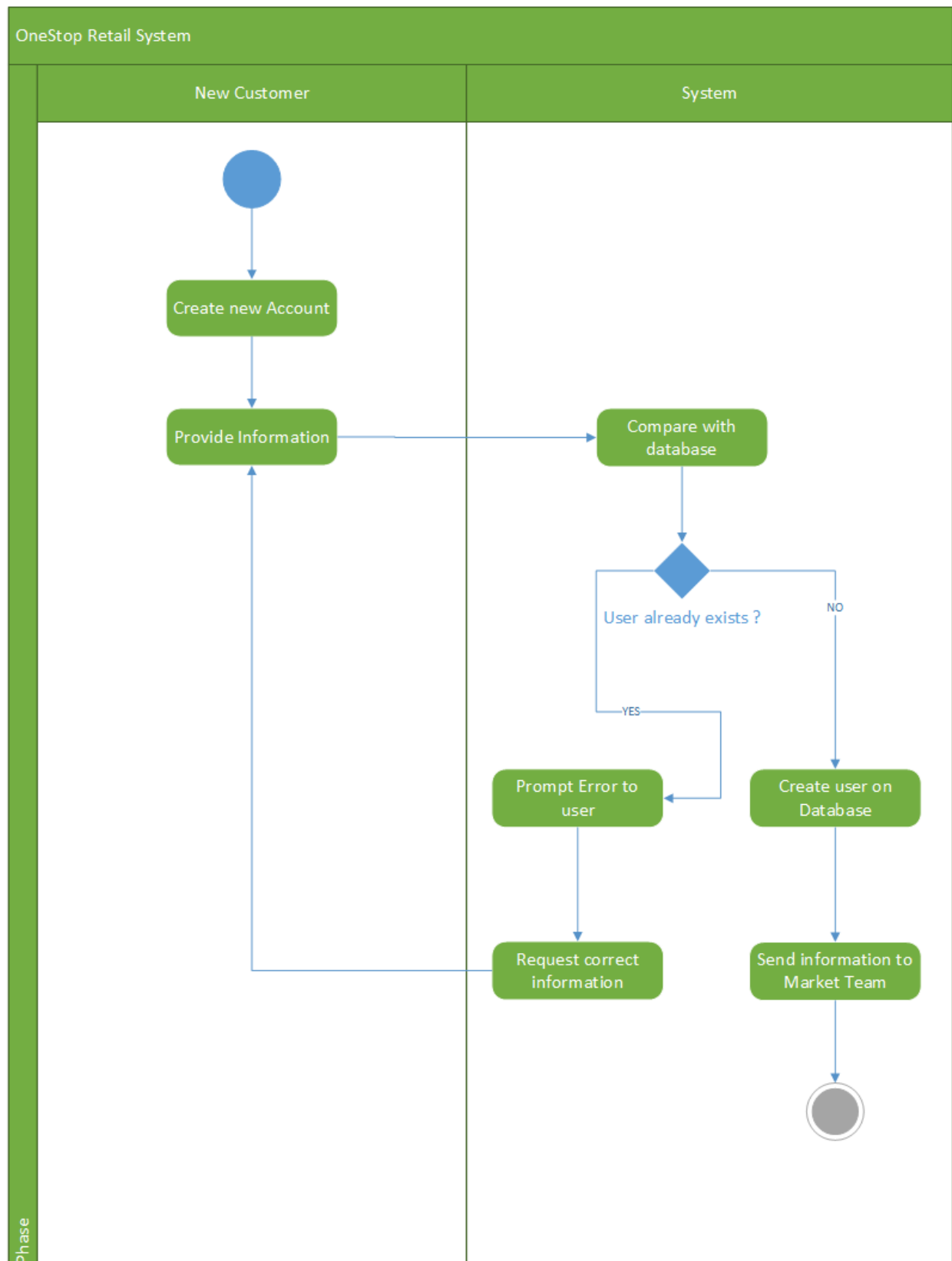
## Generate Appointment



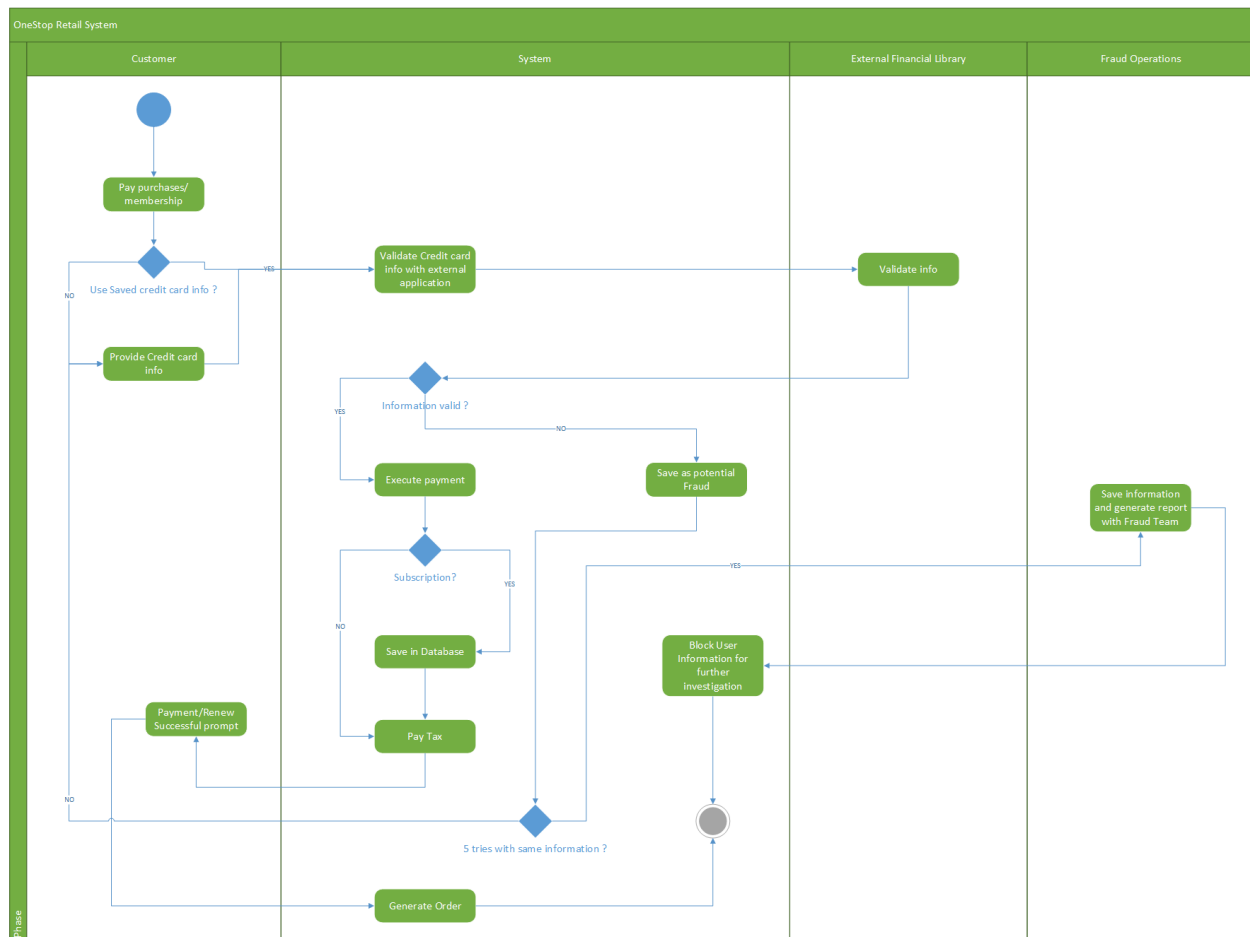
## Cancel Delivery



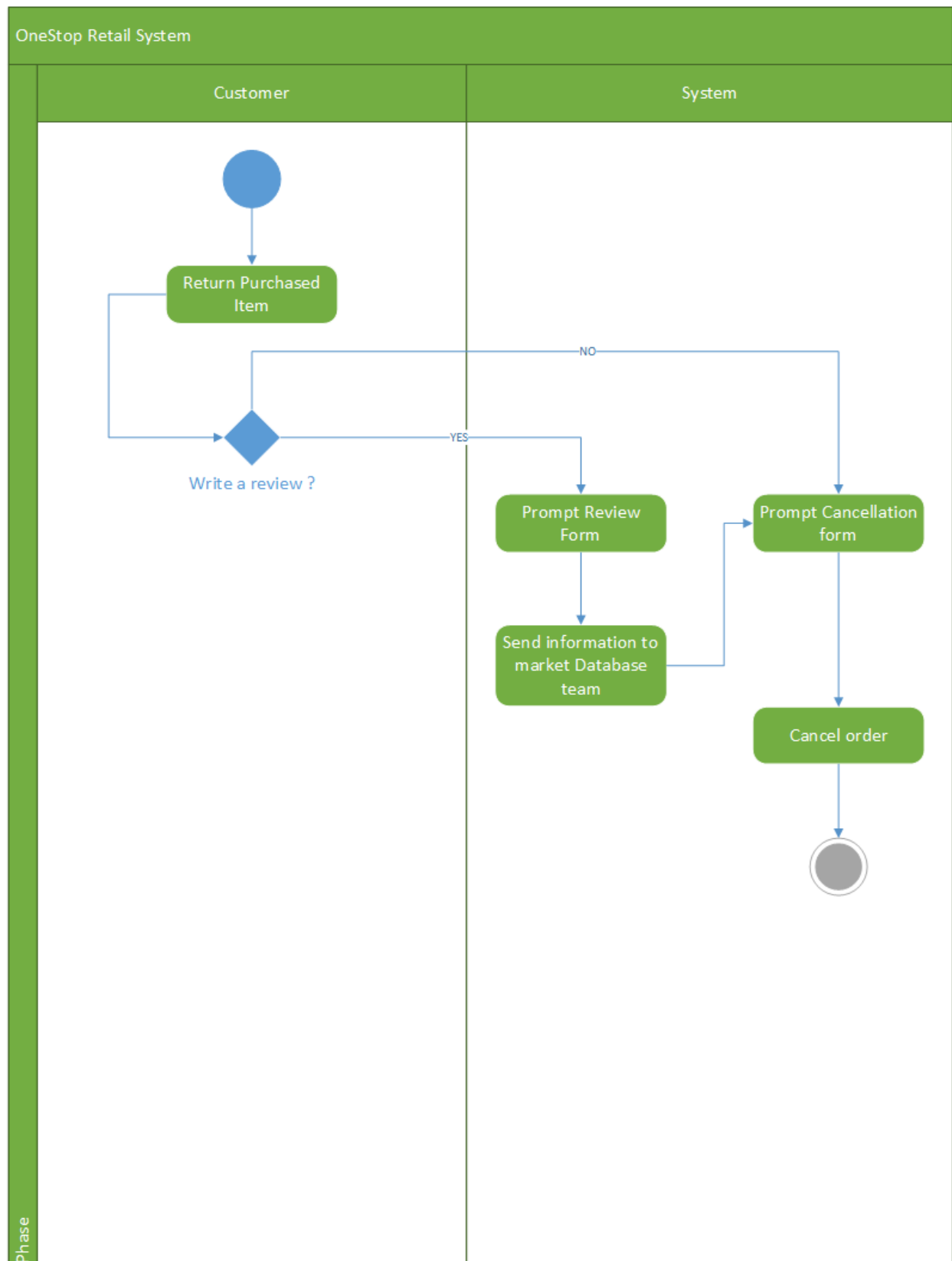
## New User account



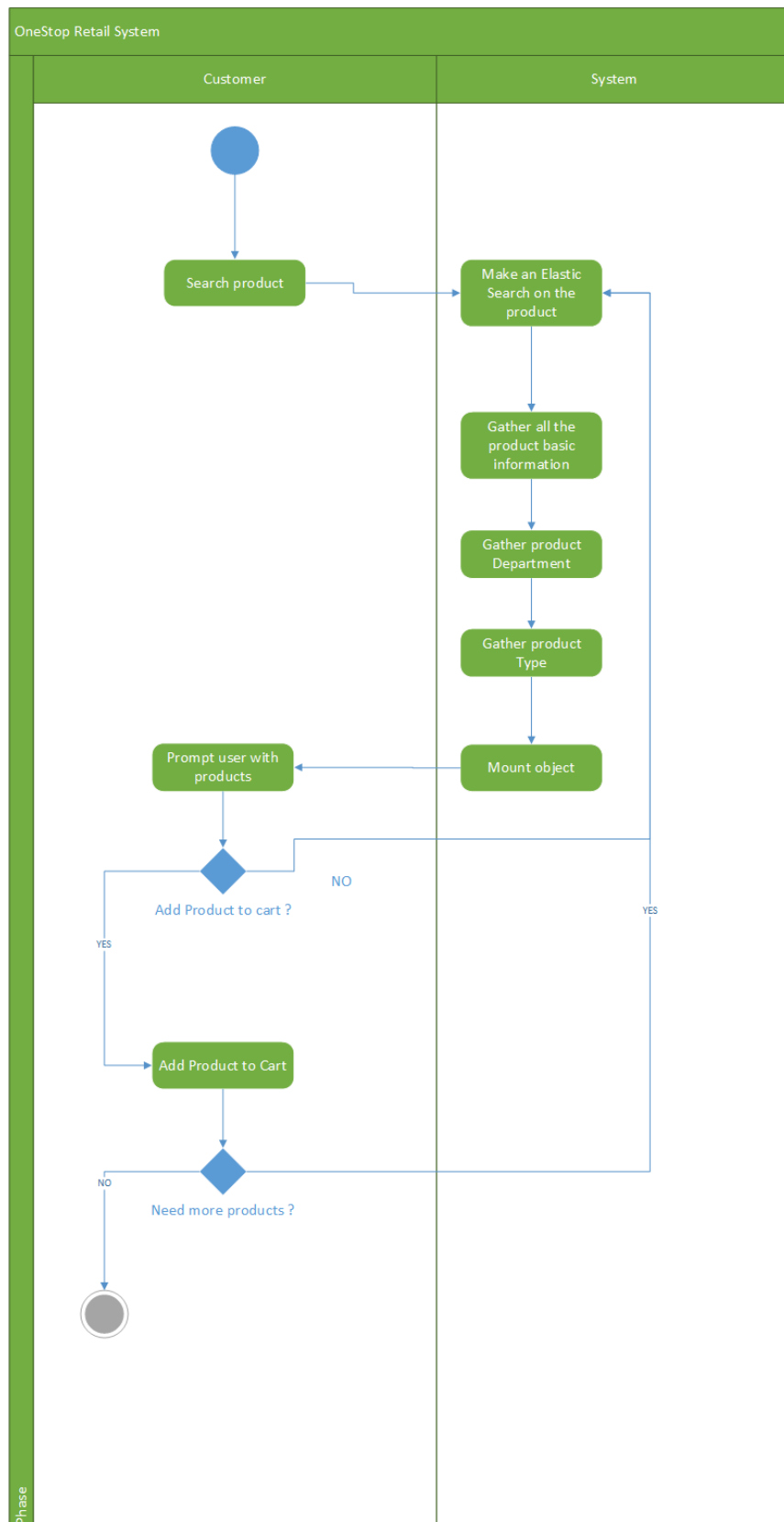
## Pay/Renew Subscription



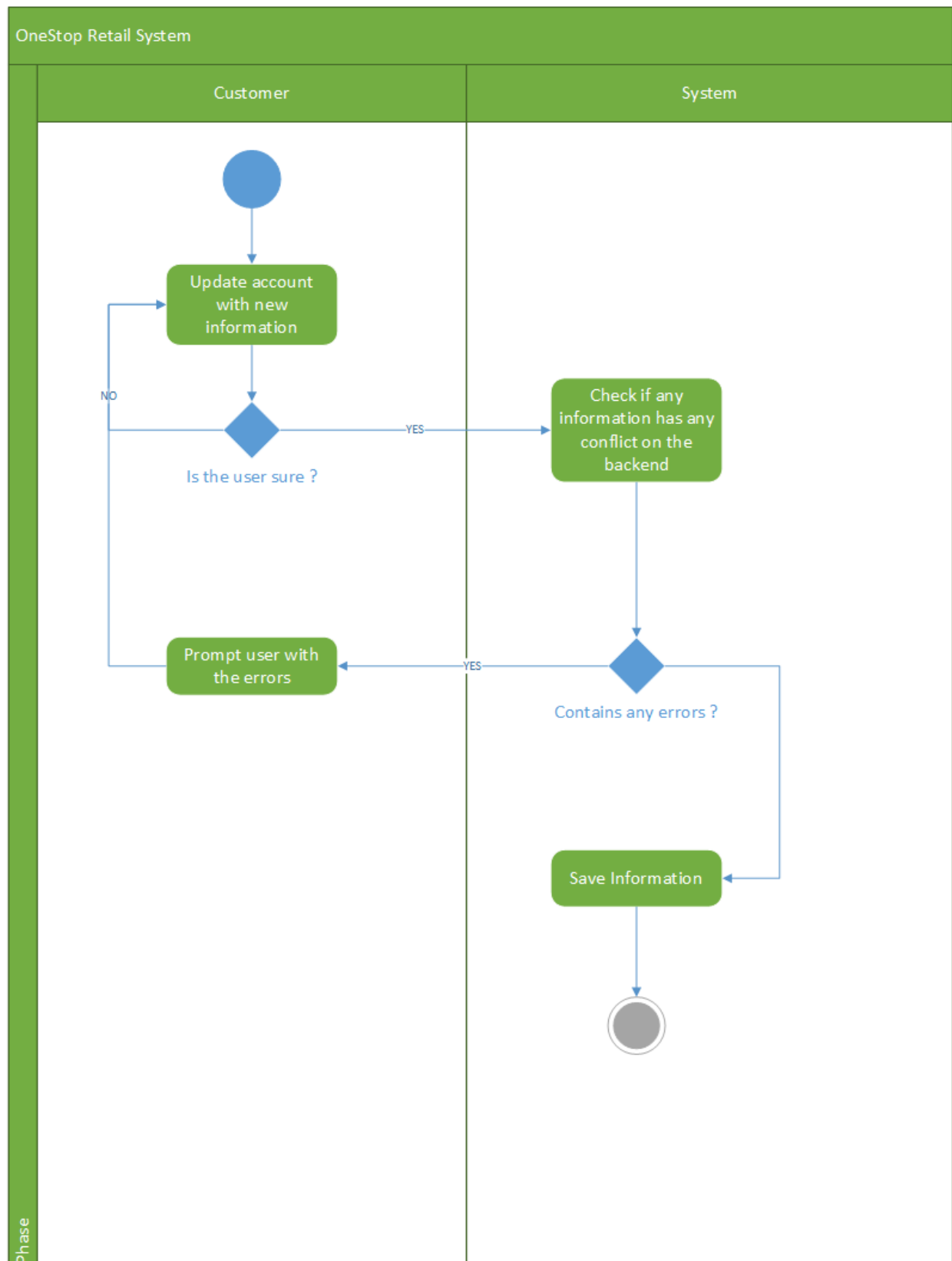
## Return Product



## Search Product

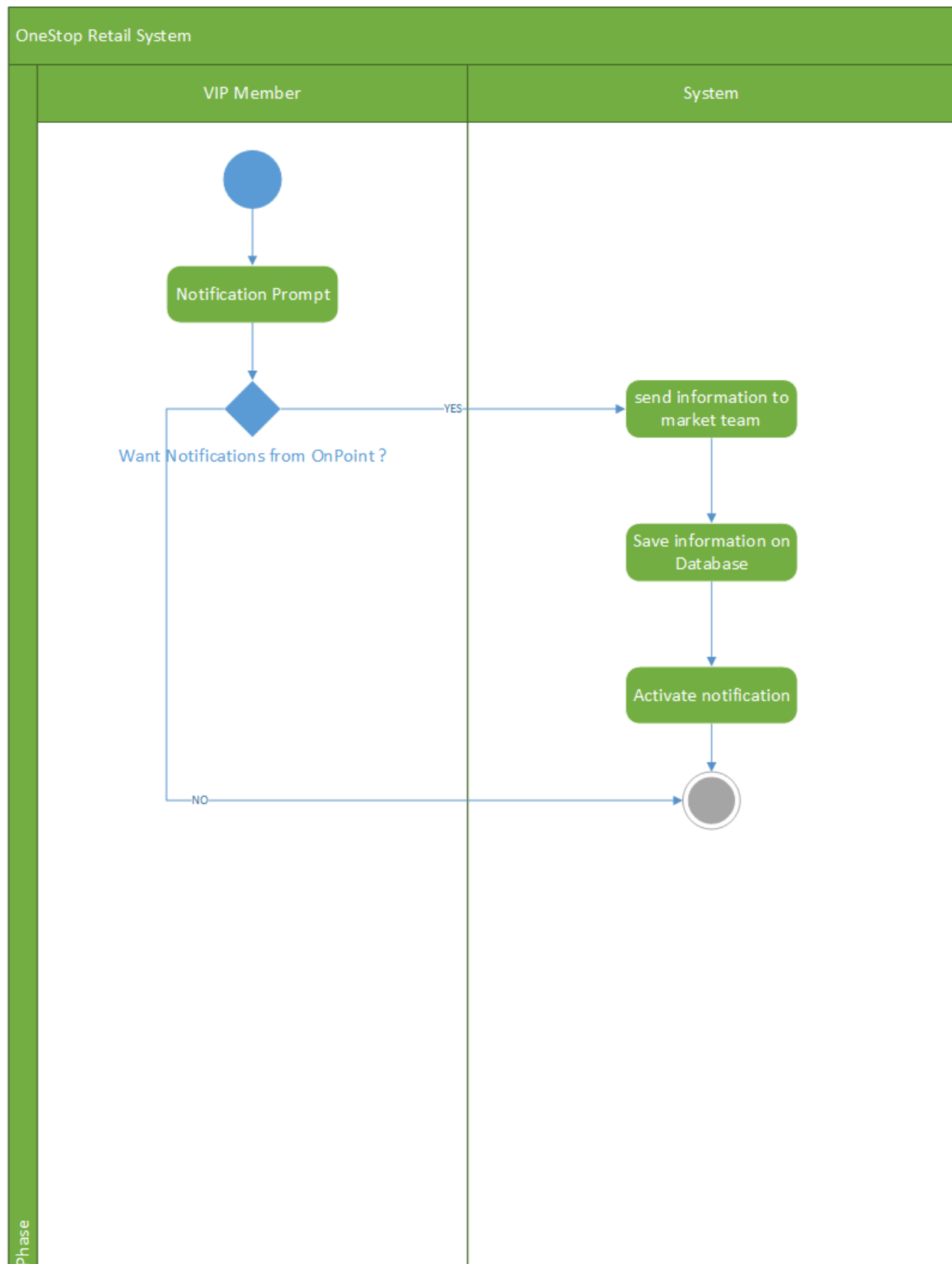


## Update Information



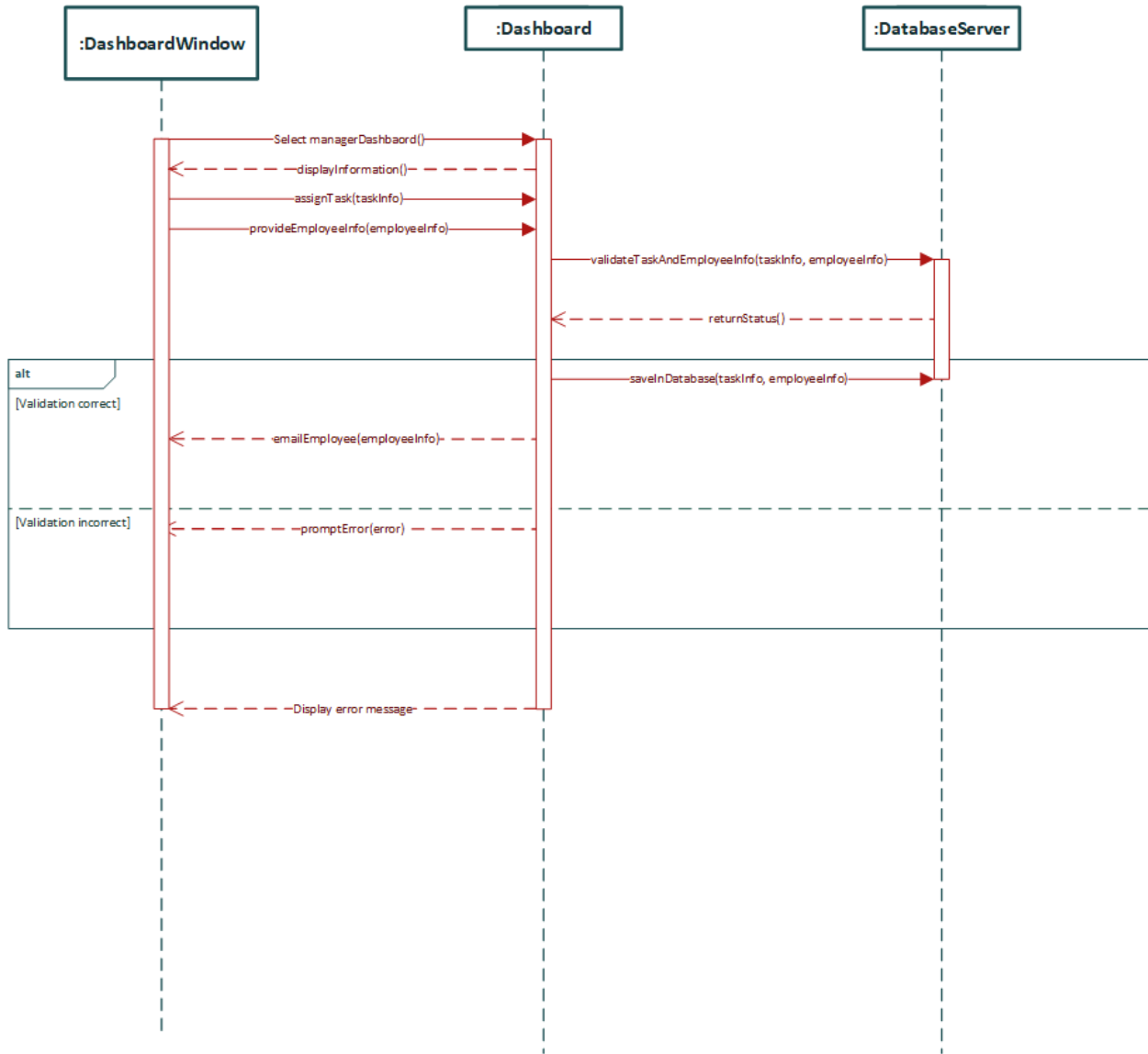


## VIP Notification

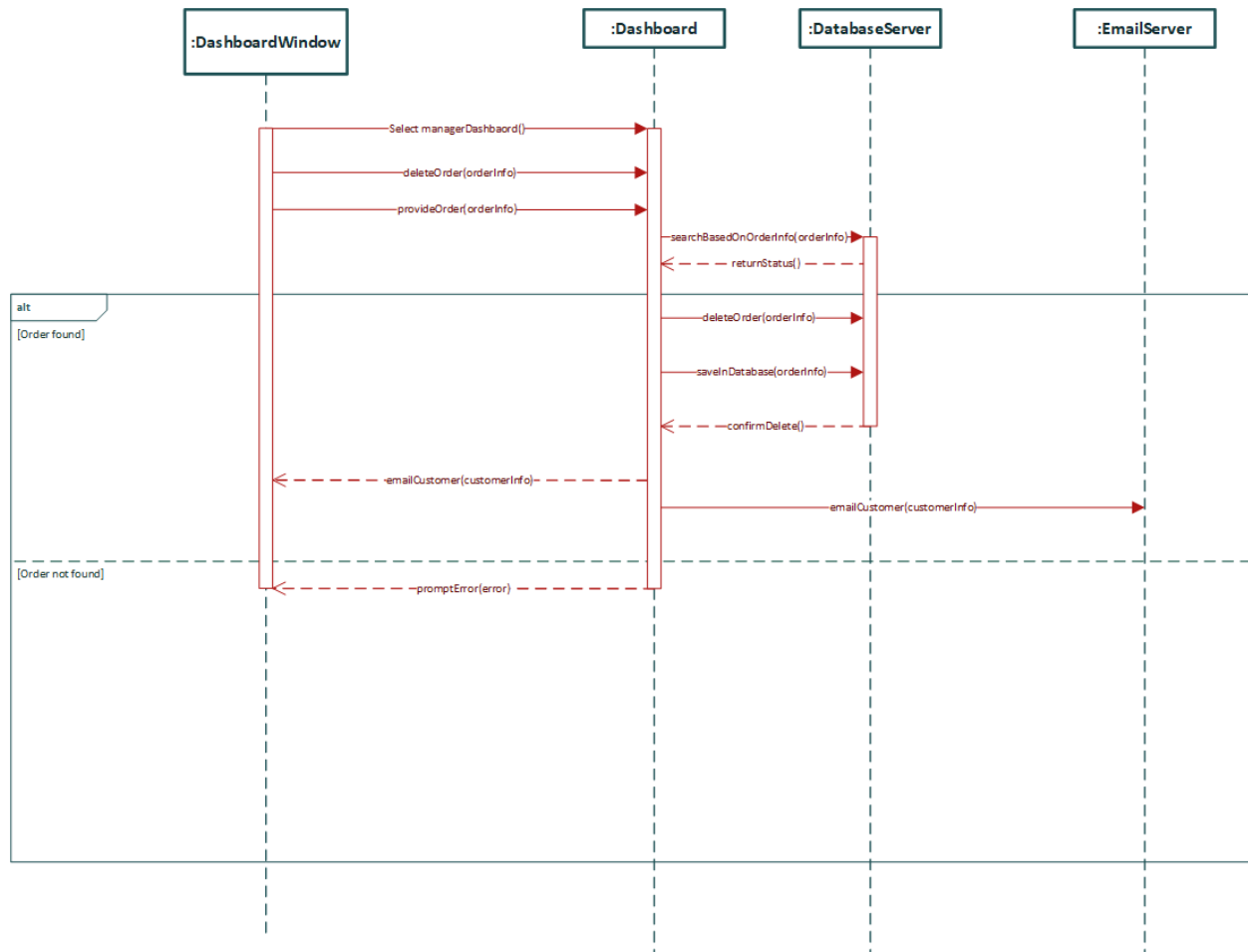


## 9. Interaction Sequence Diagrams

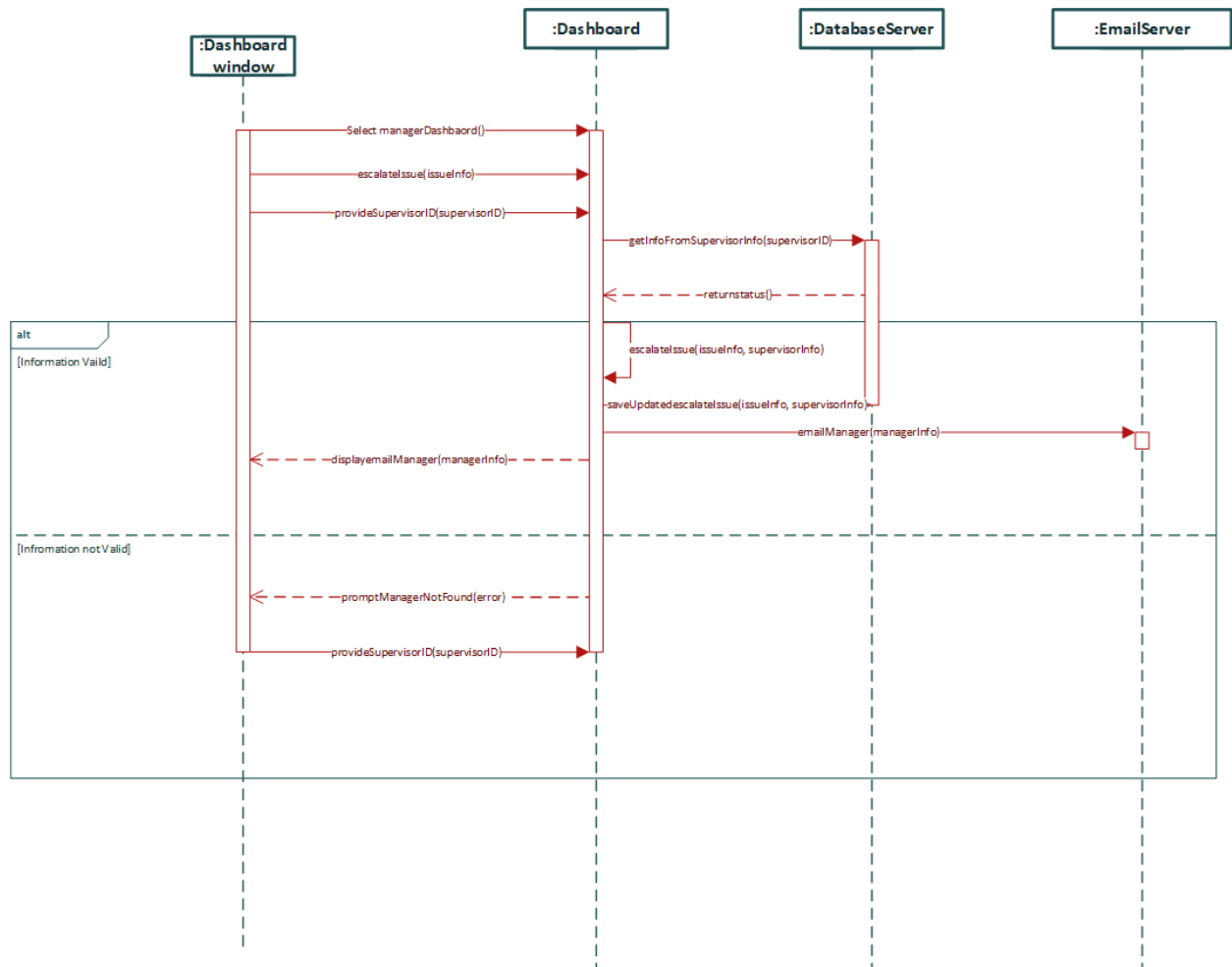
### Admin Assign Task



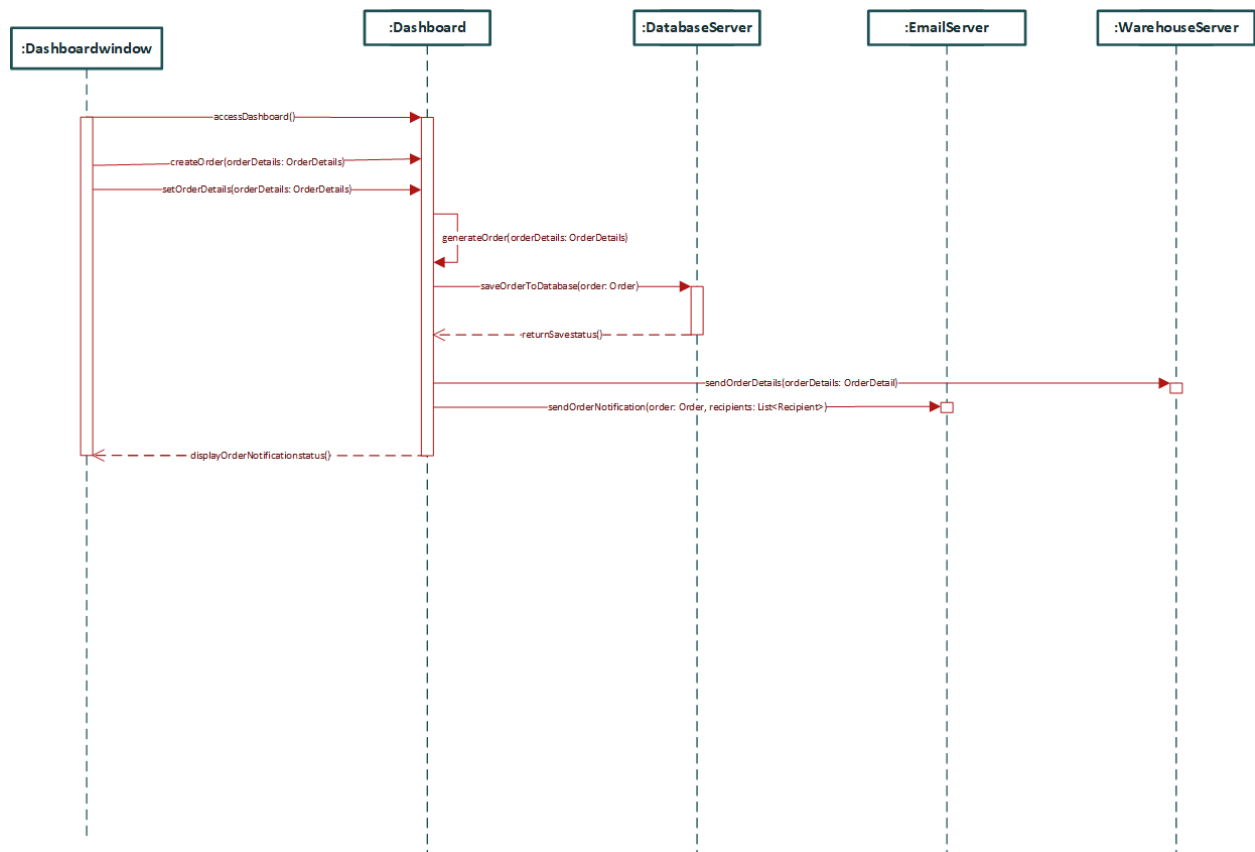
## Admin Delete Order



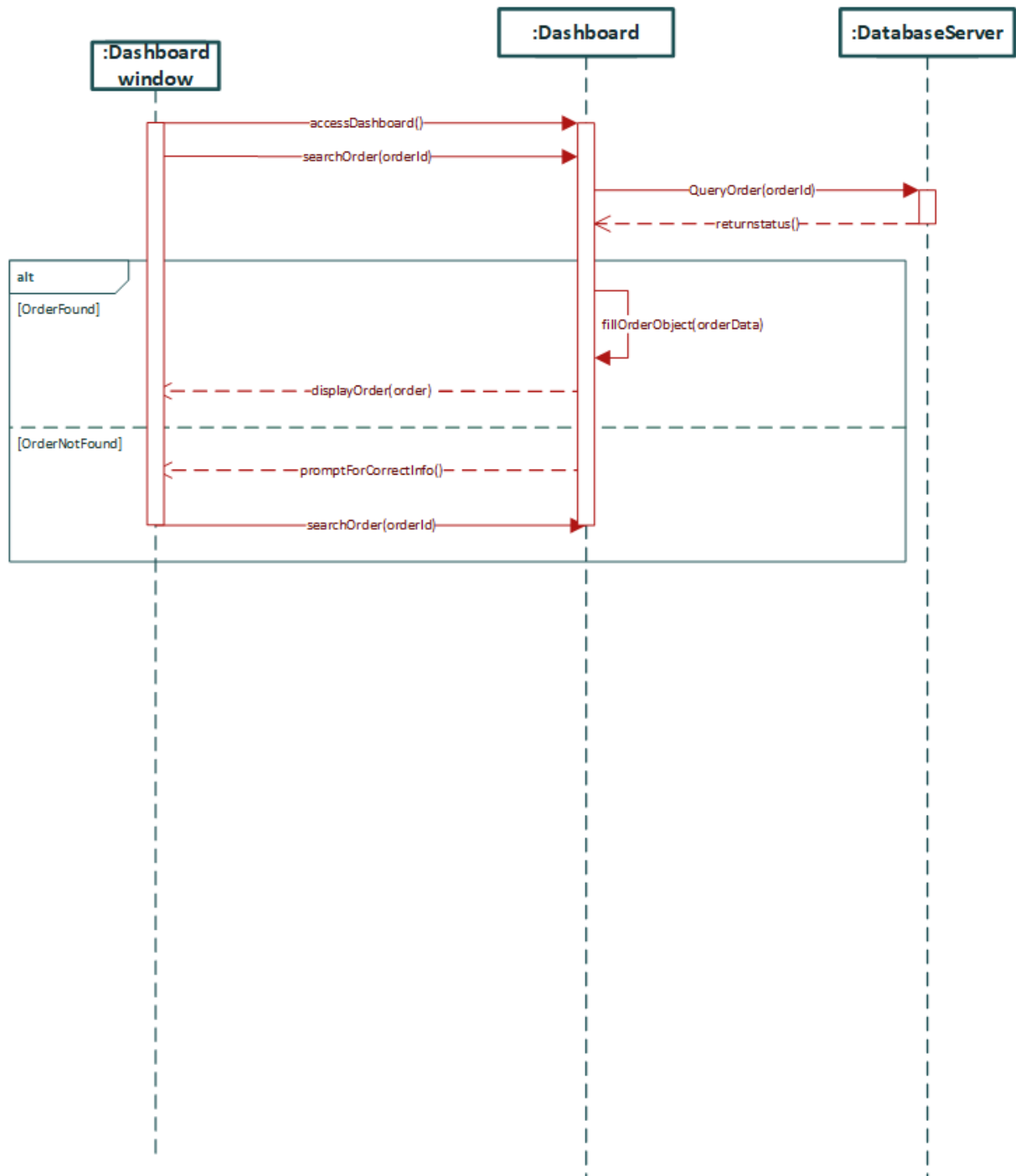
## Escalate Ticket



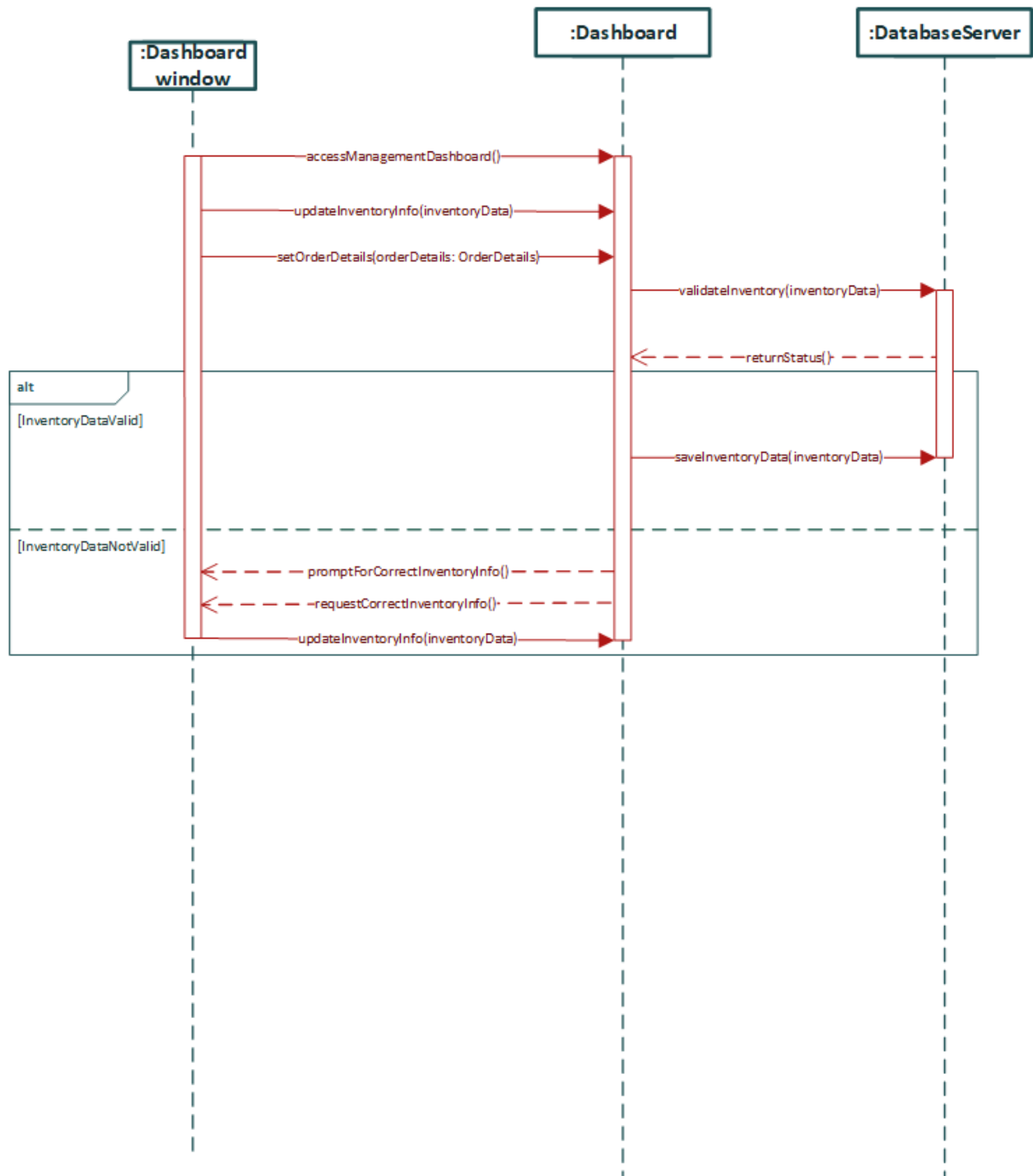
## Generate Order



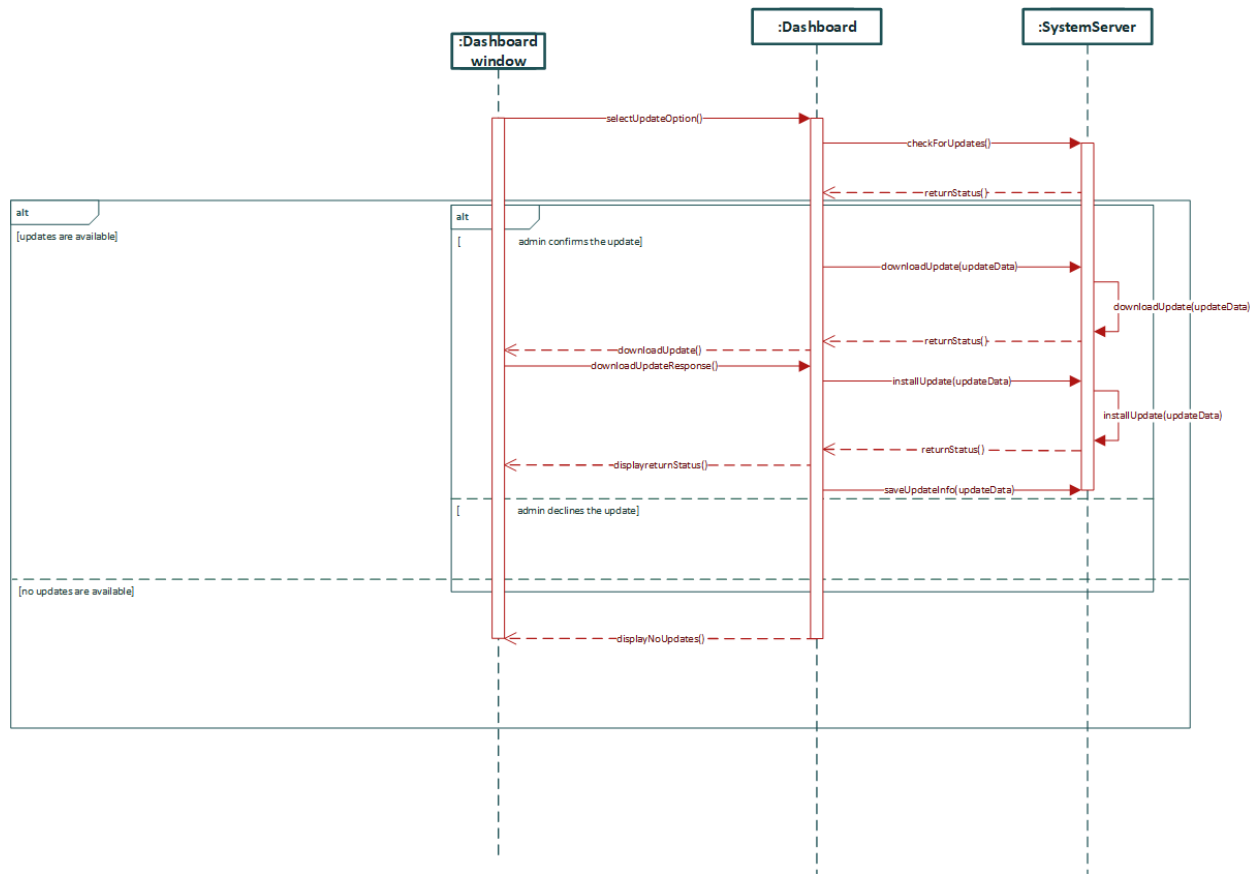
## Search order



## Update Inventory

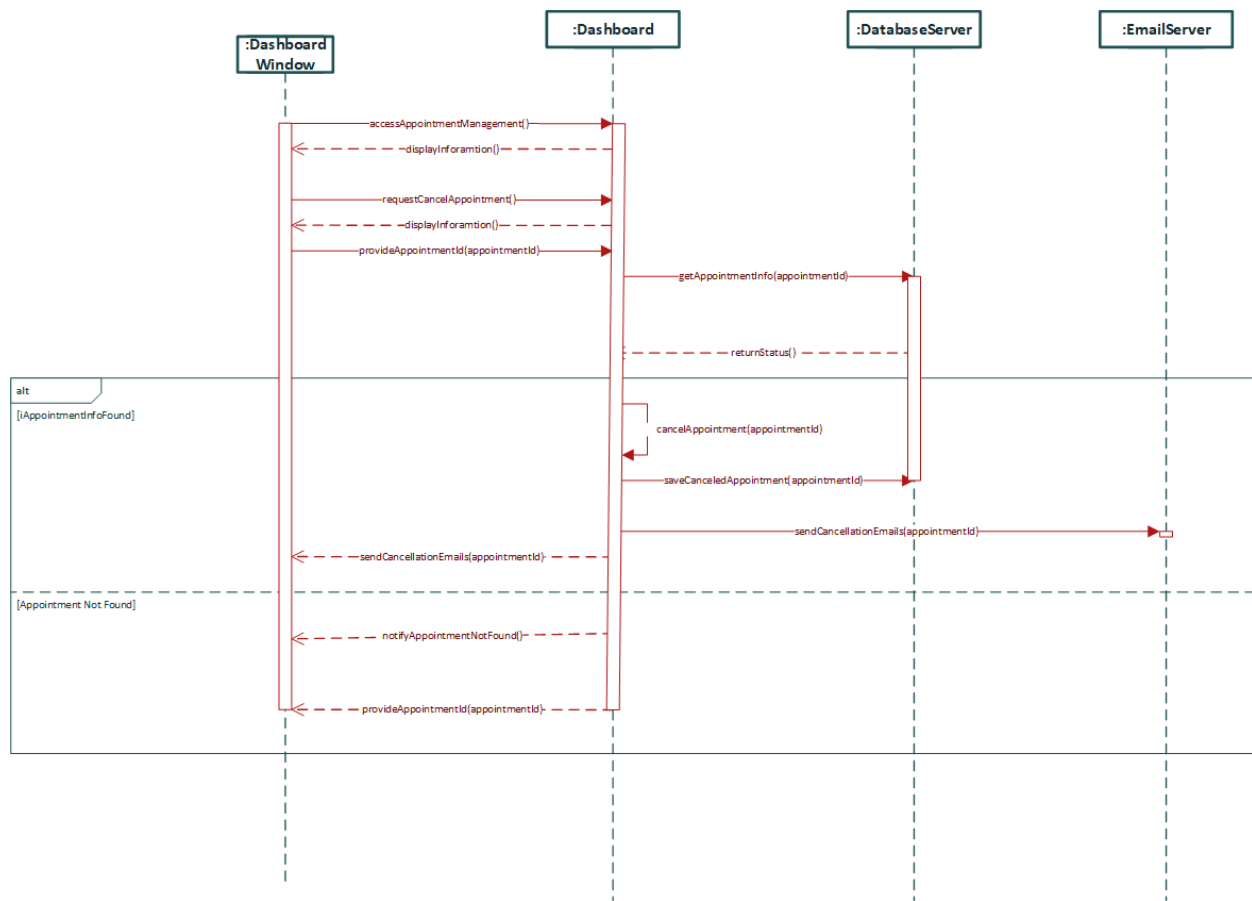


## System Update

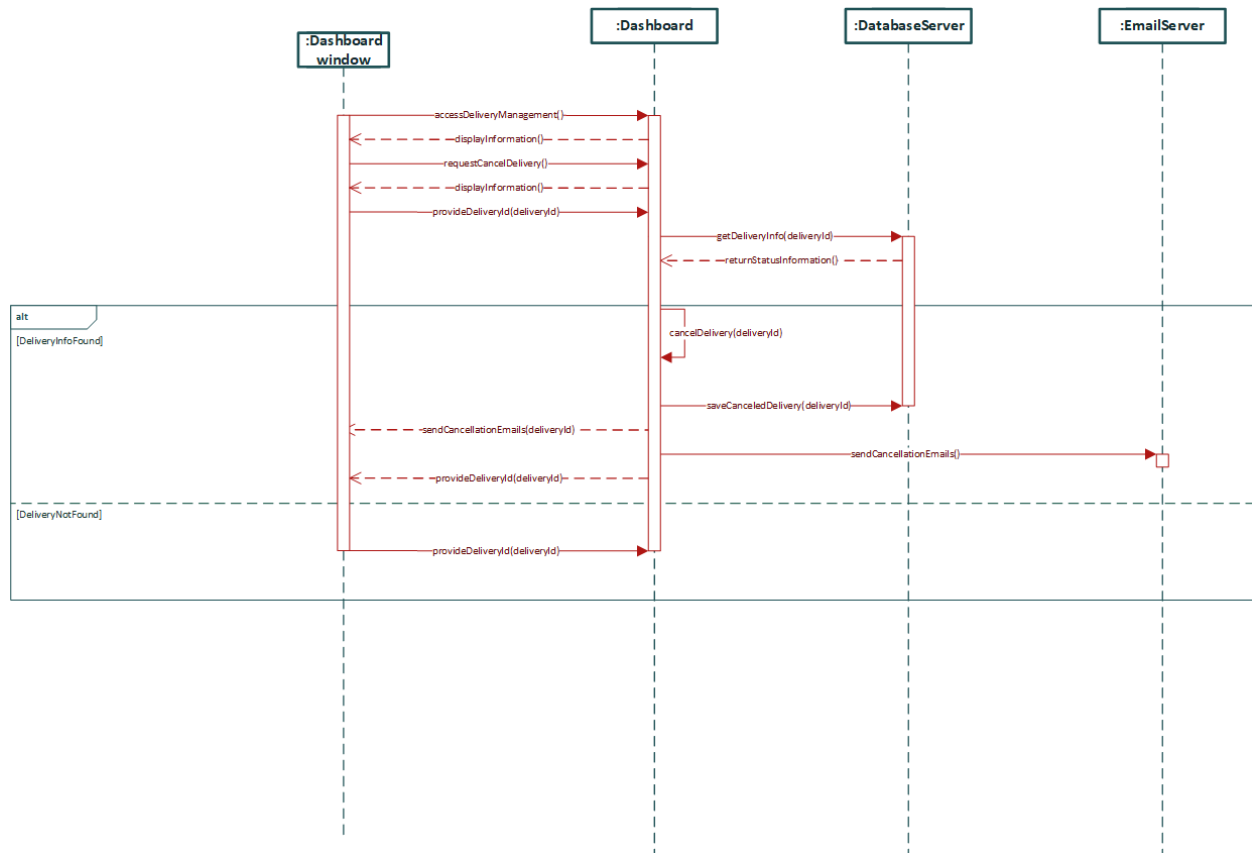




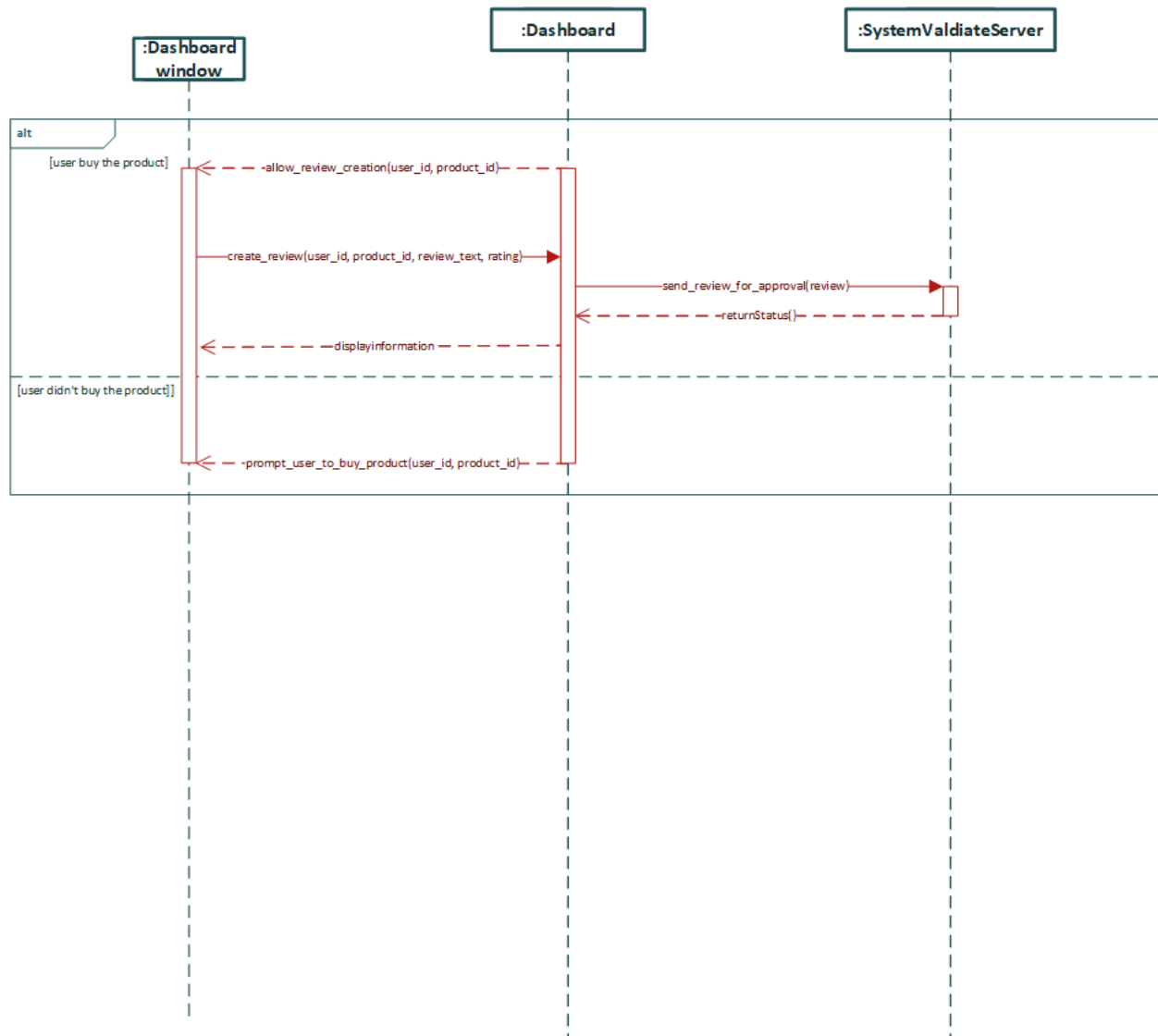
## Cancel appointment



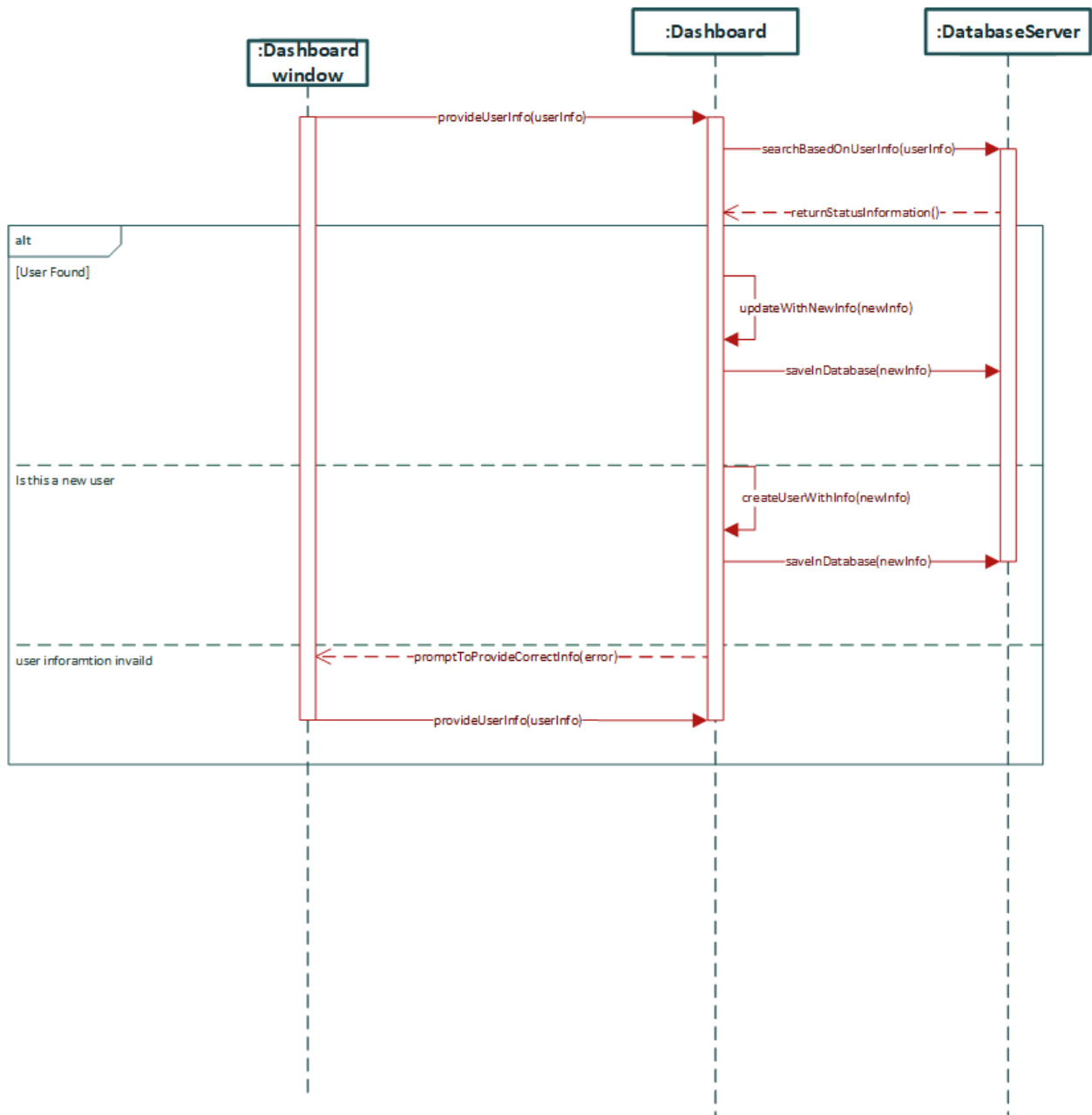
## Cancel Delivery



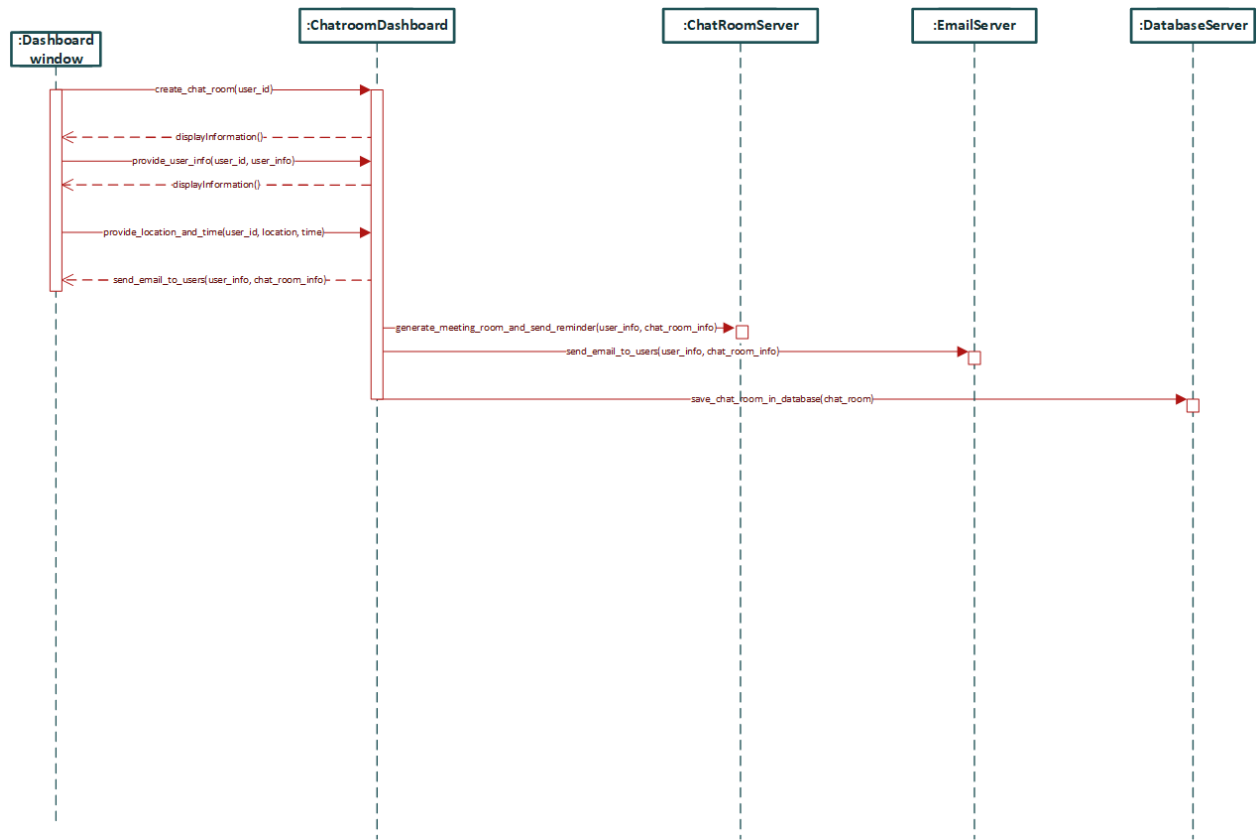
## Create Review



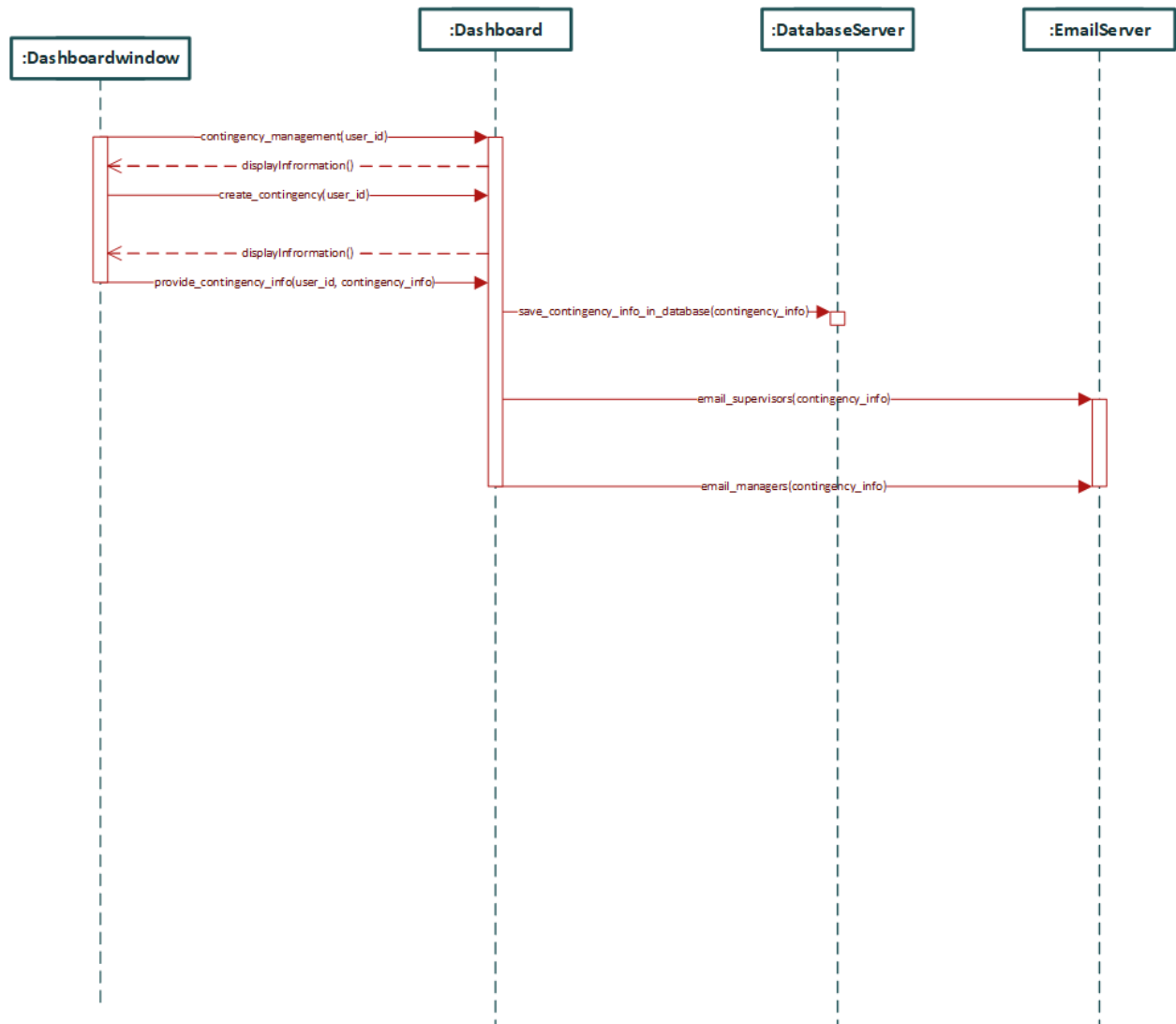
## Update User



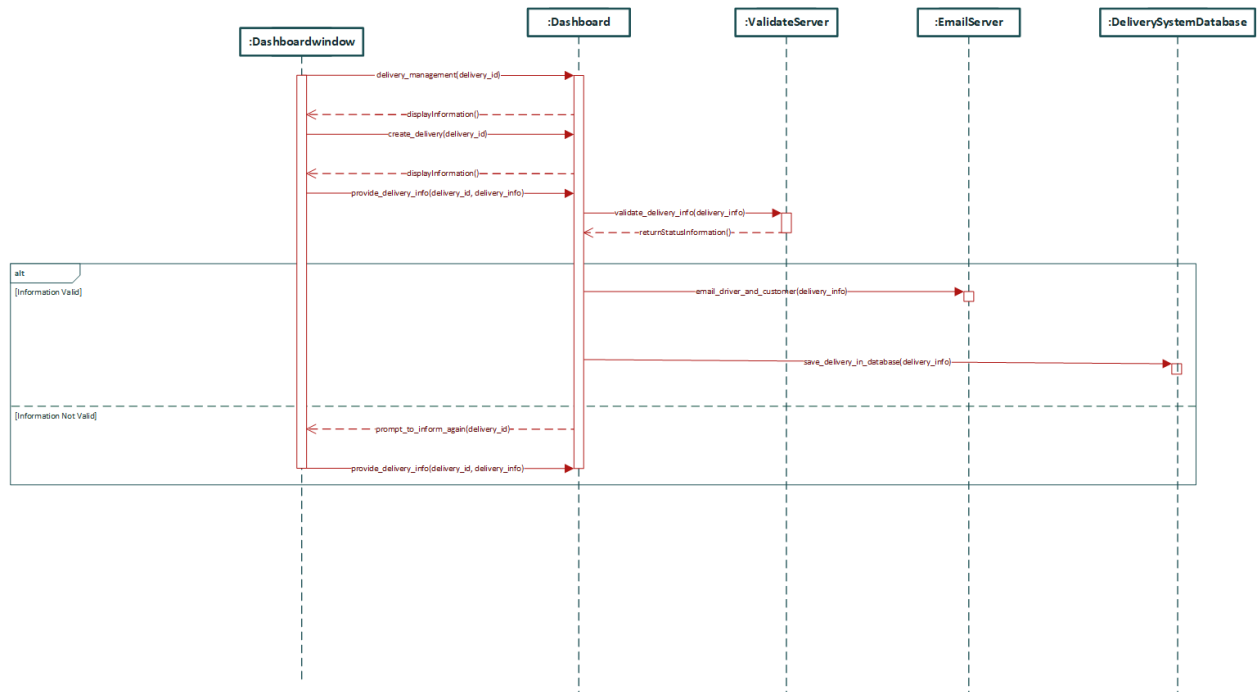
## Create Chat Room



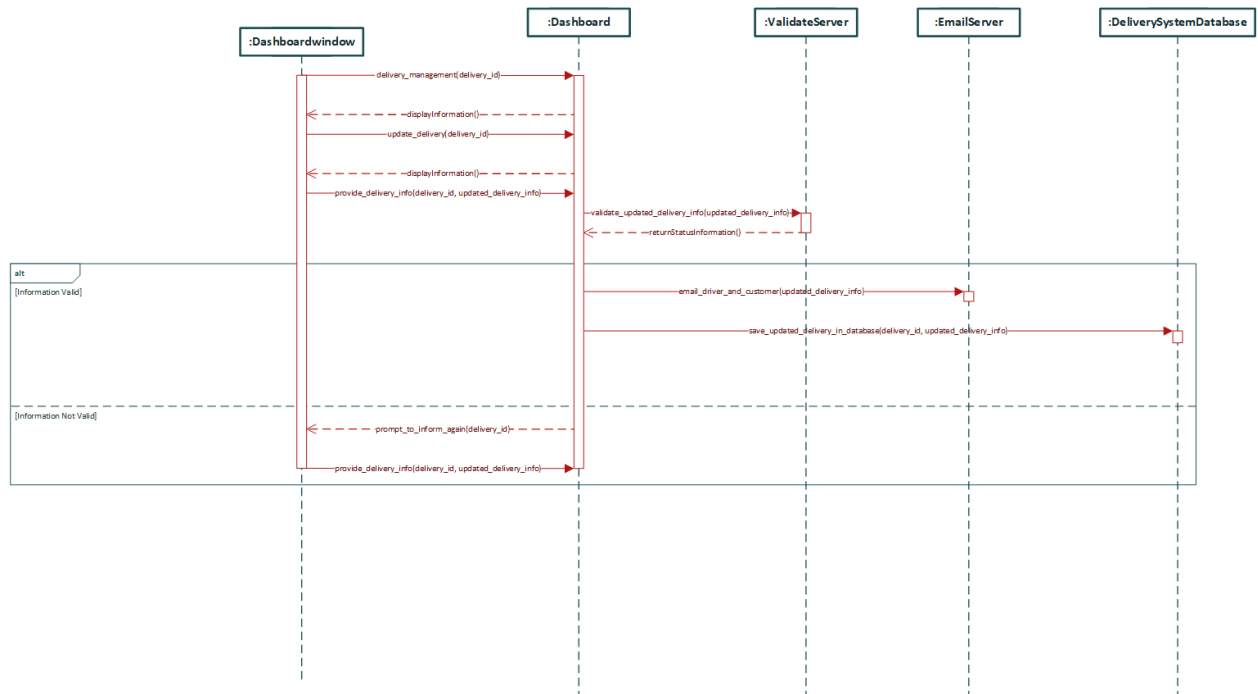
## Create Contingency



## Create Delivery

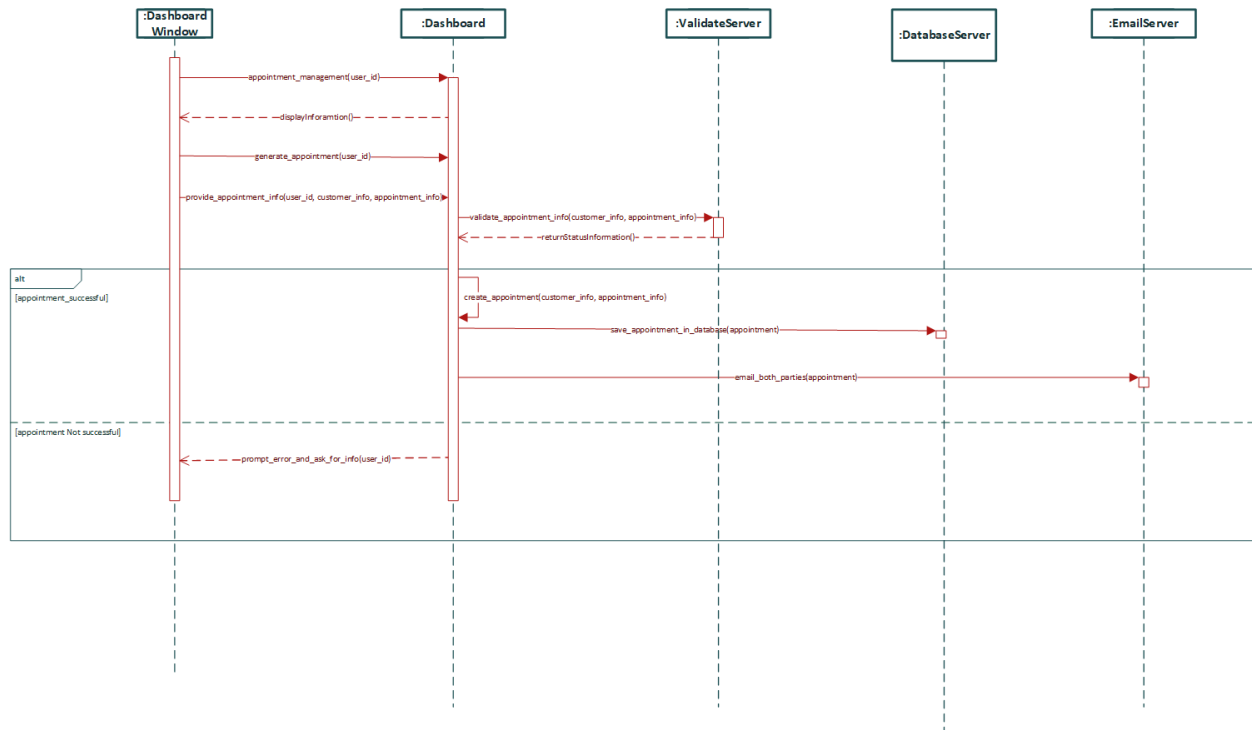


## Delivery Update

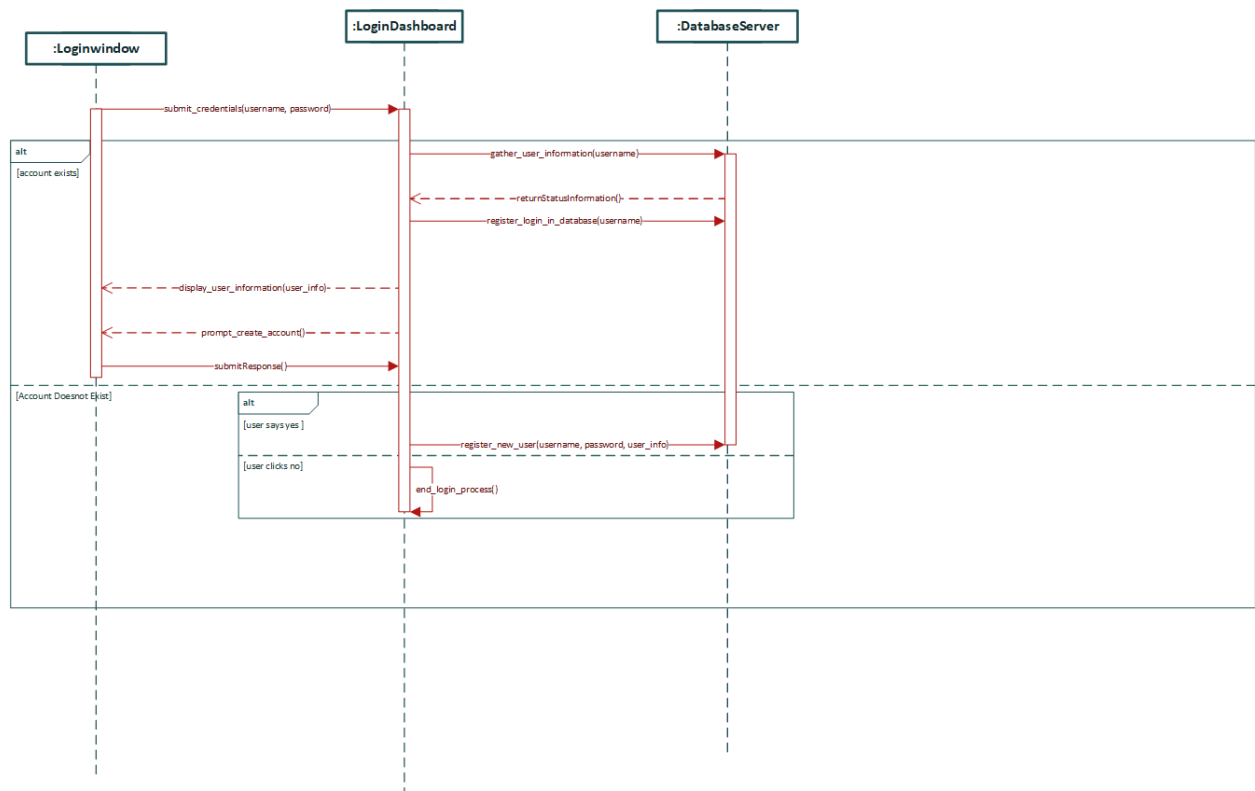




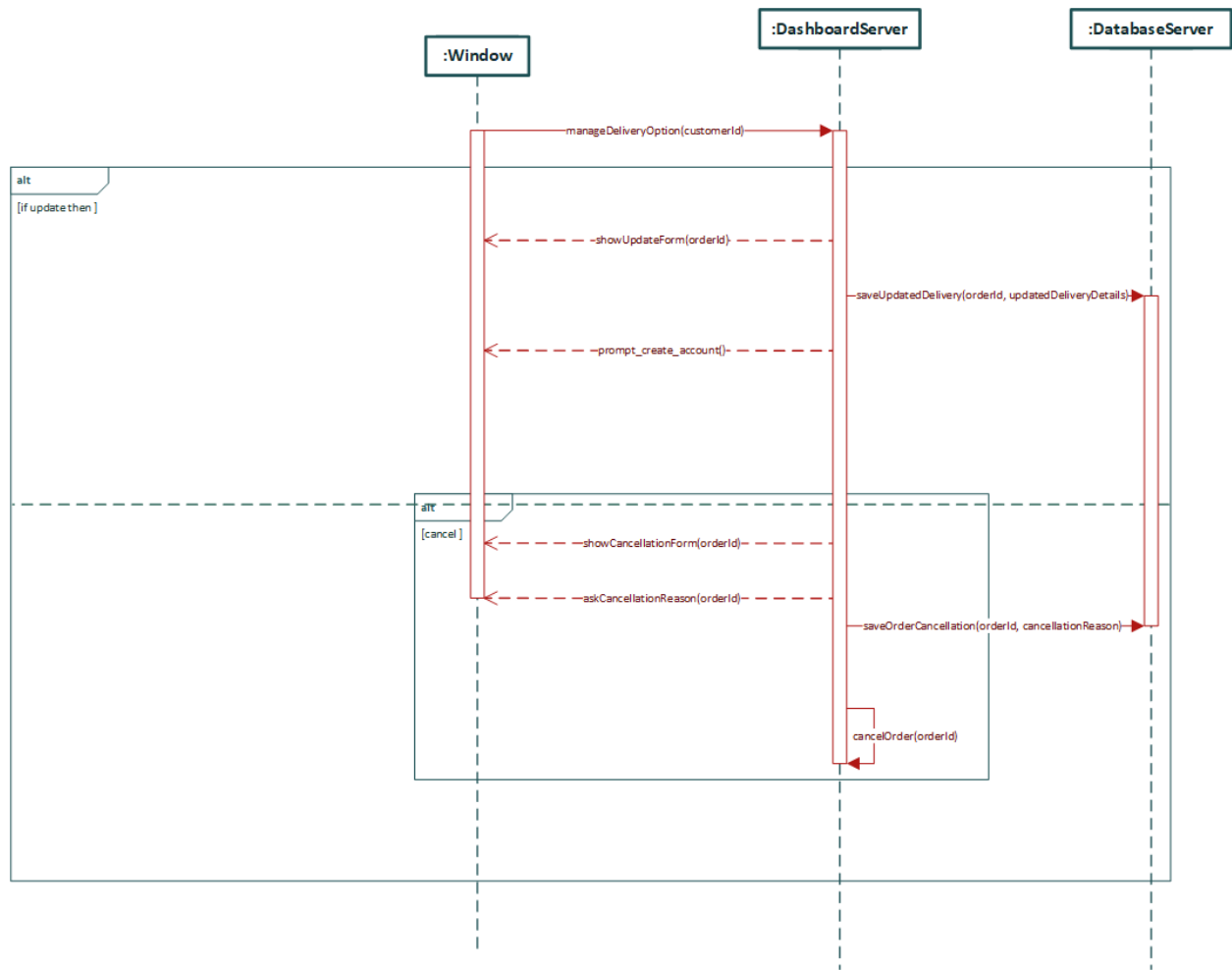
## Generate Appointment



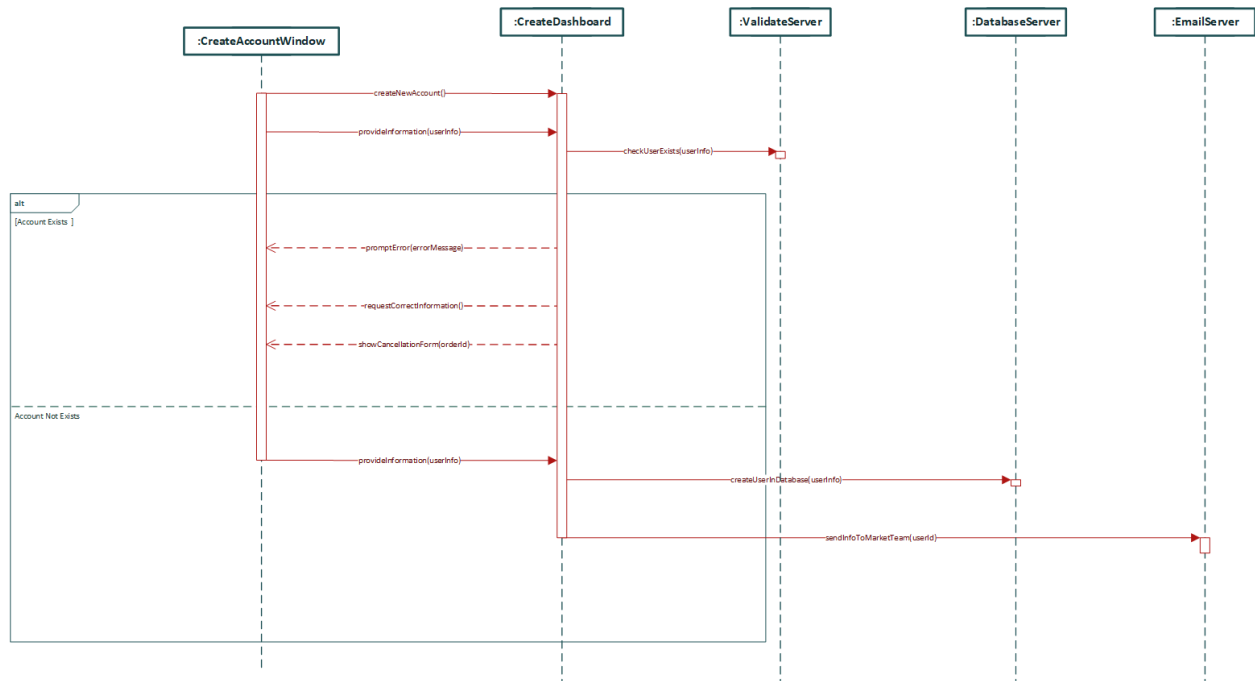
# Login



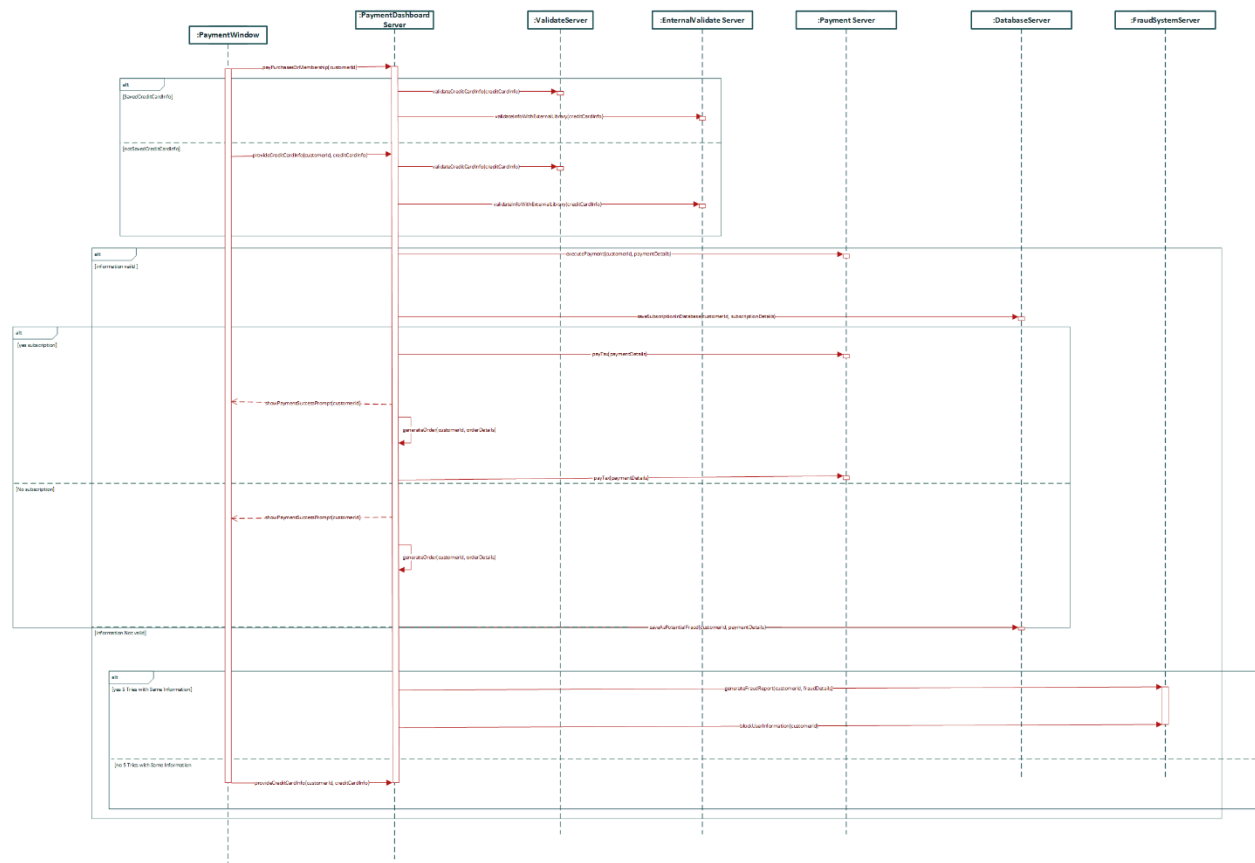
## Manage Delivery



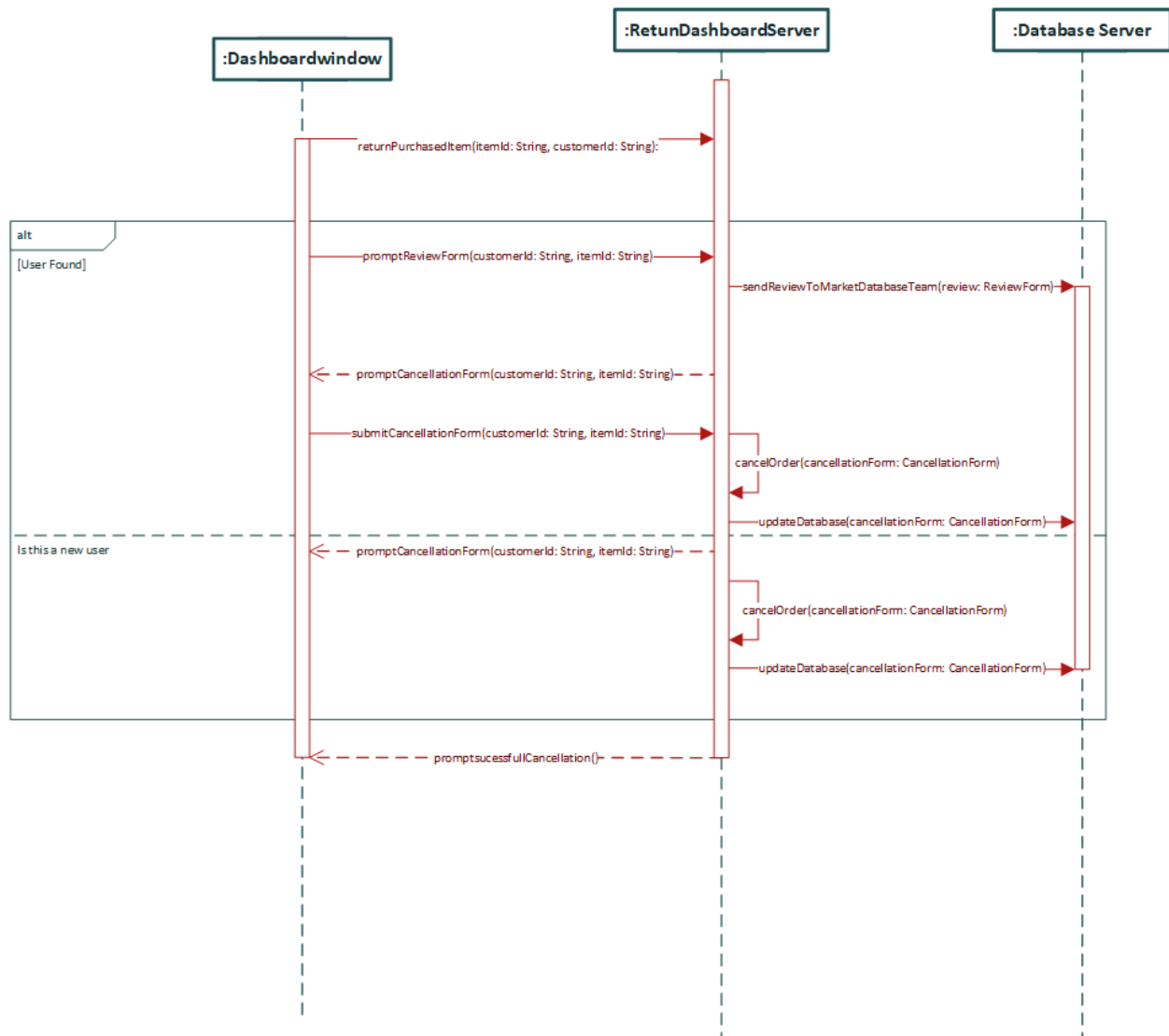
## New User



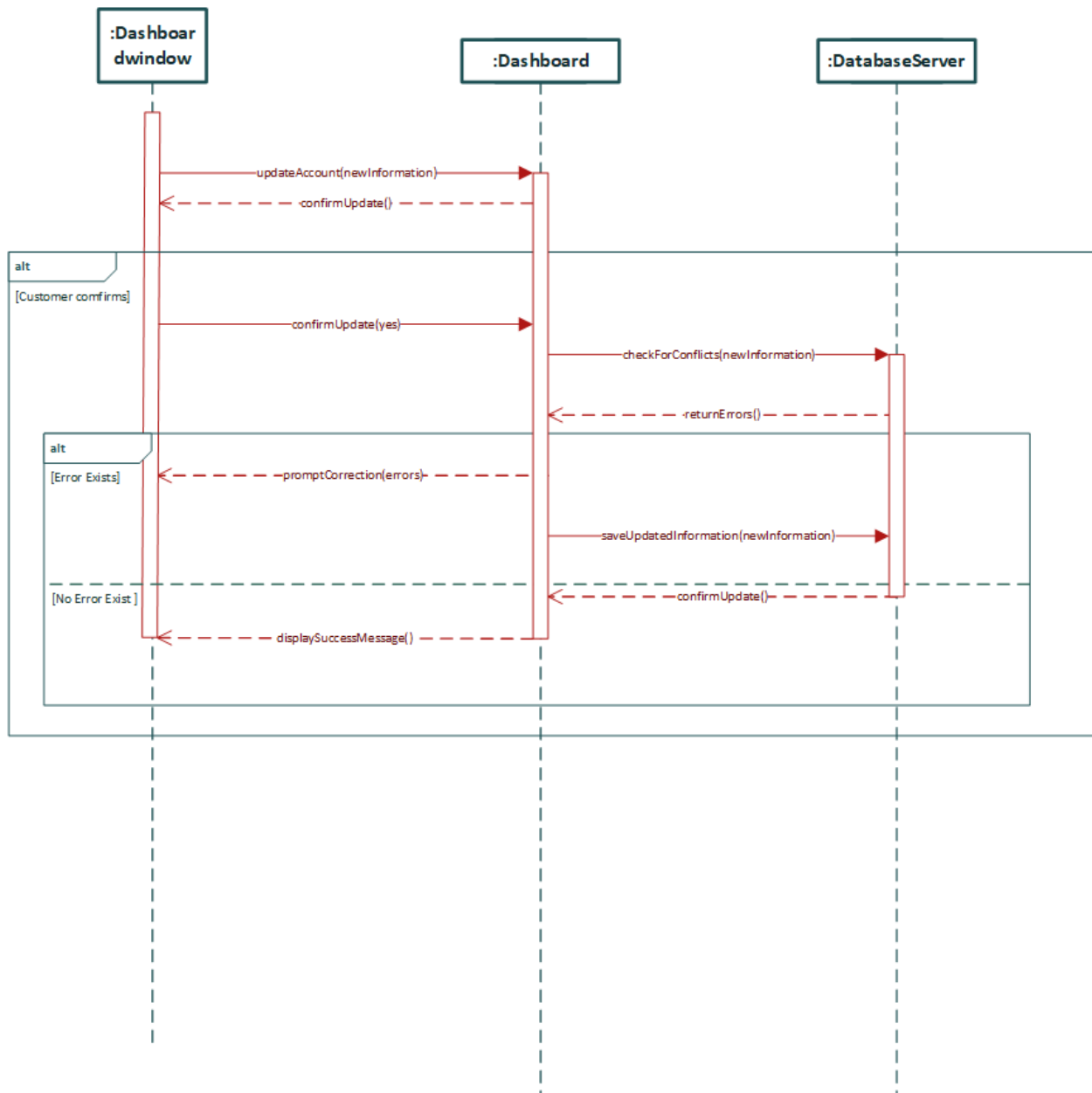
## Renew Subscription



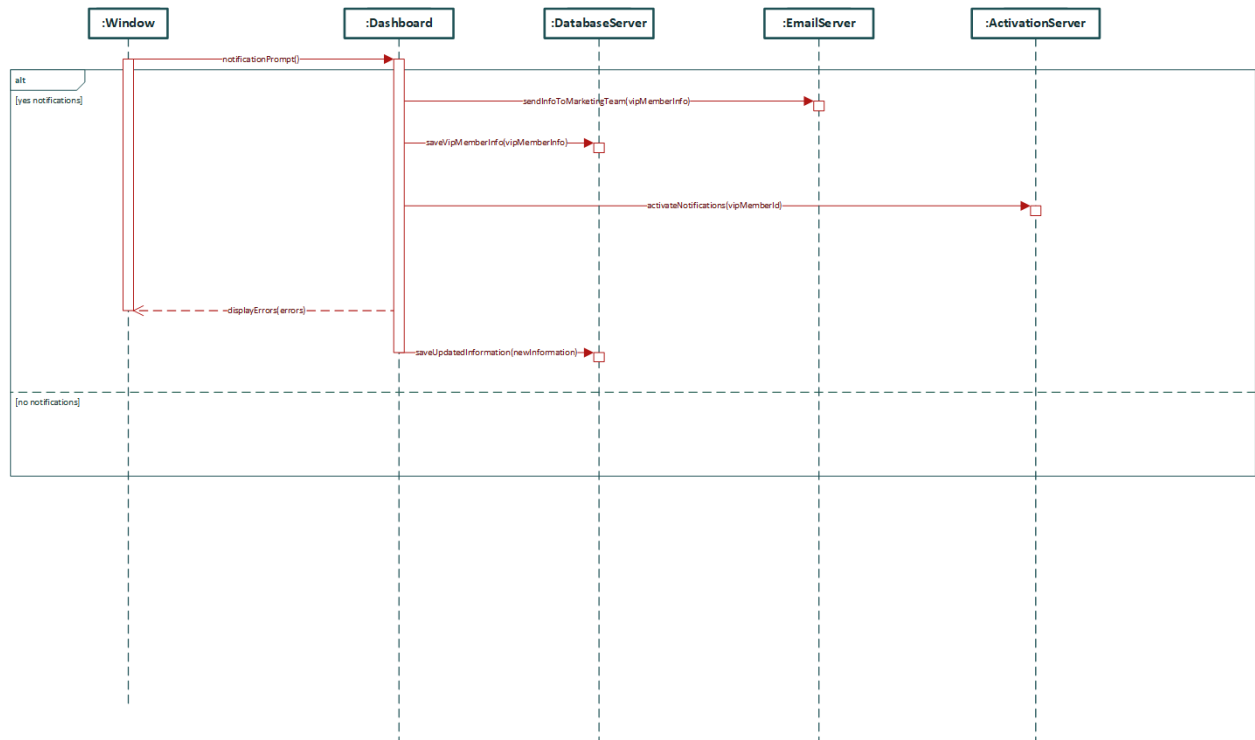
## Product Return



## Update Information

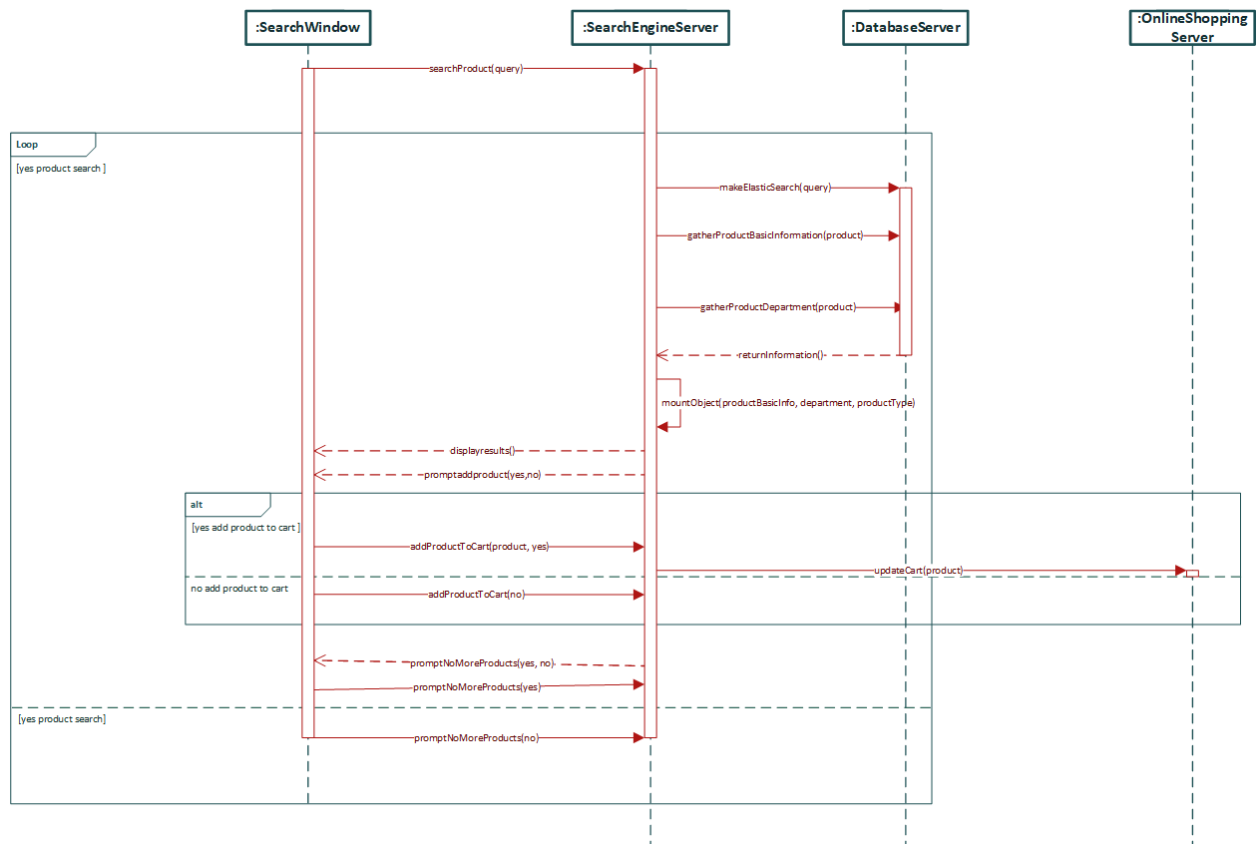


## VIP Notification



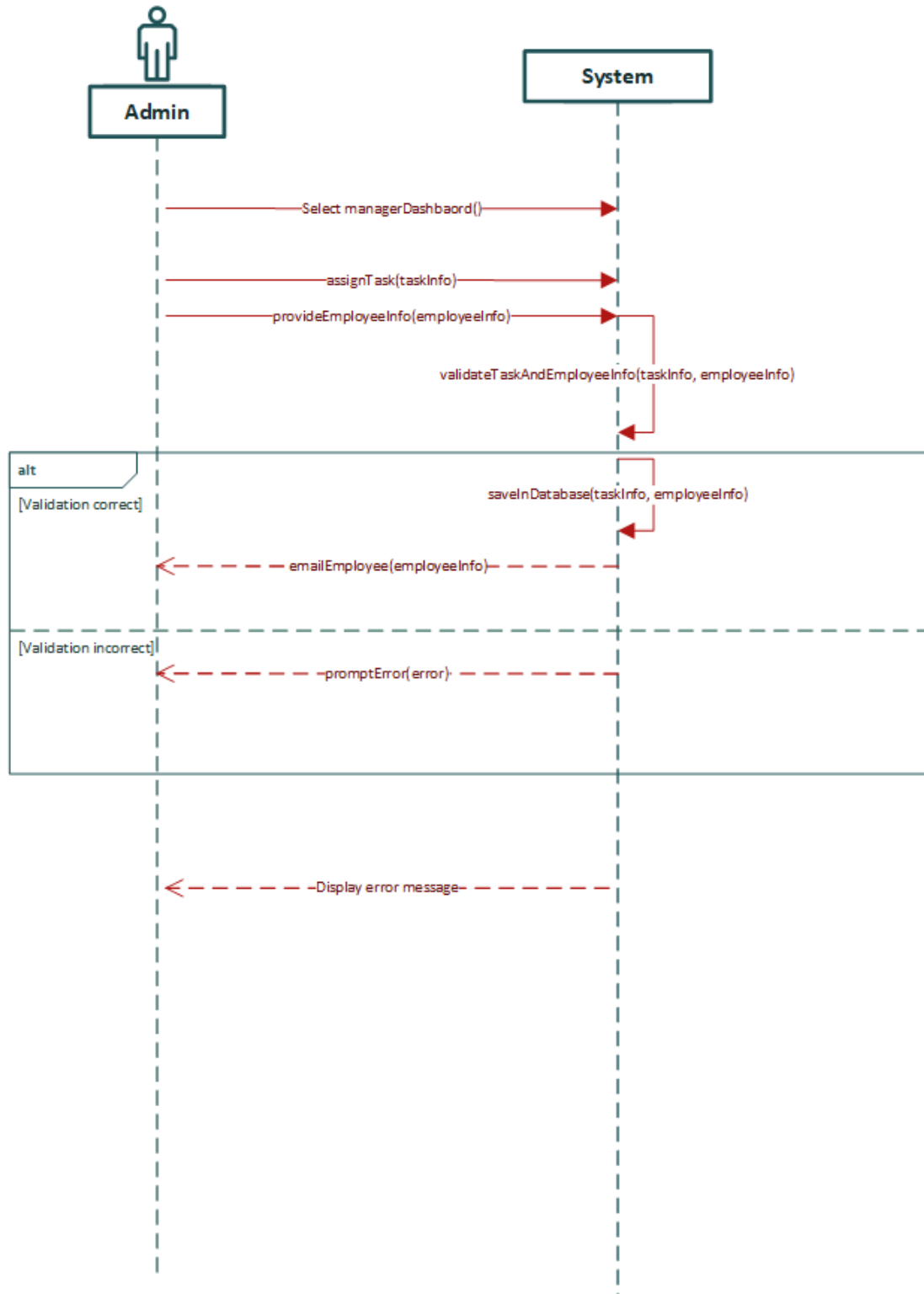


## Product Search

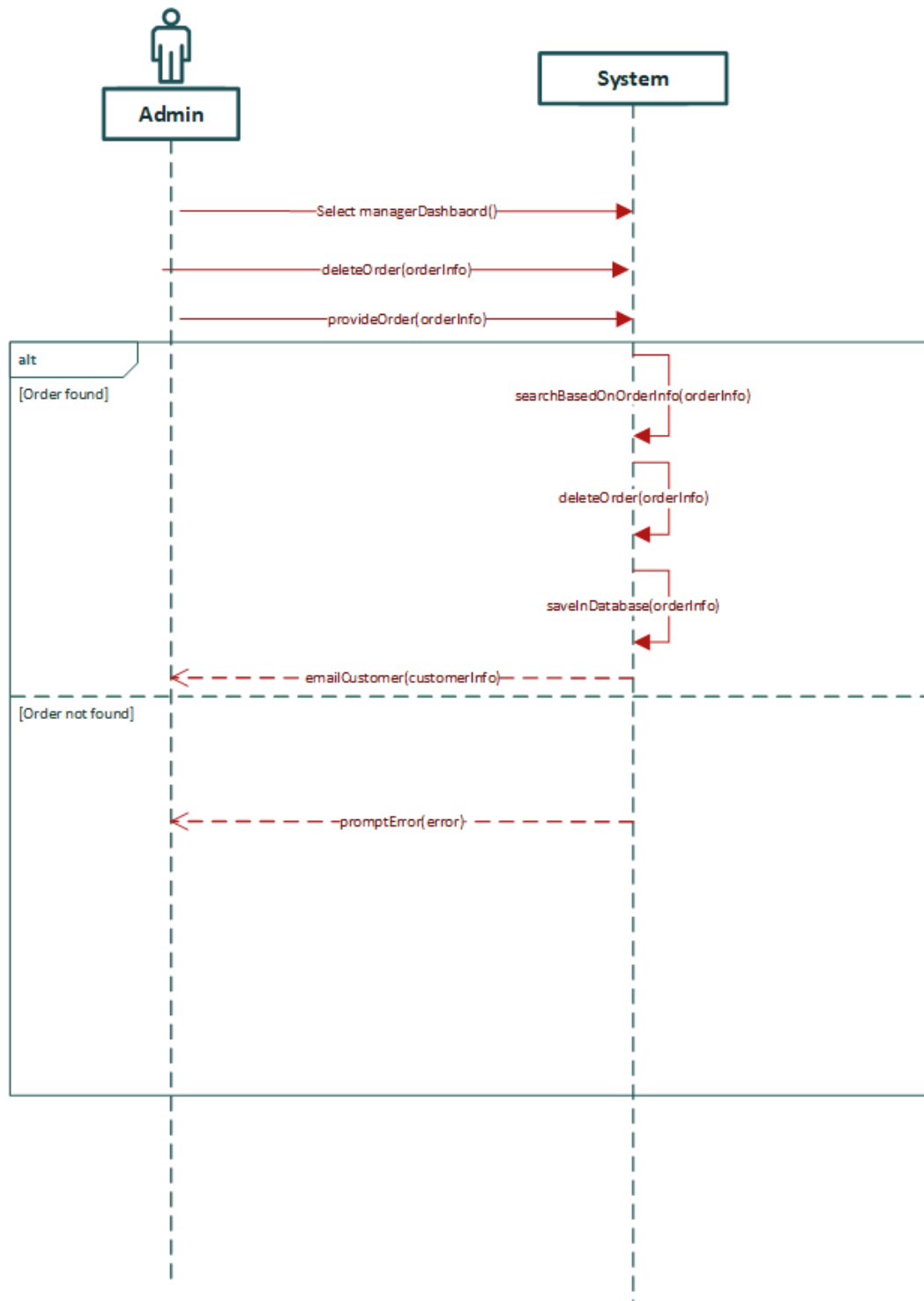


## 10. System Sequence Diagrams

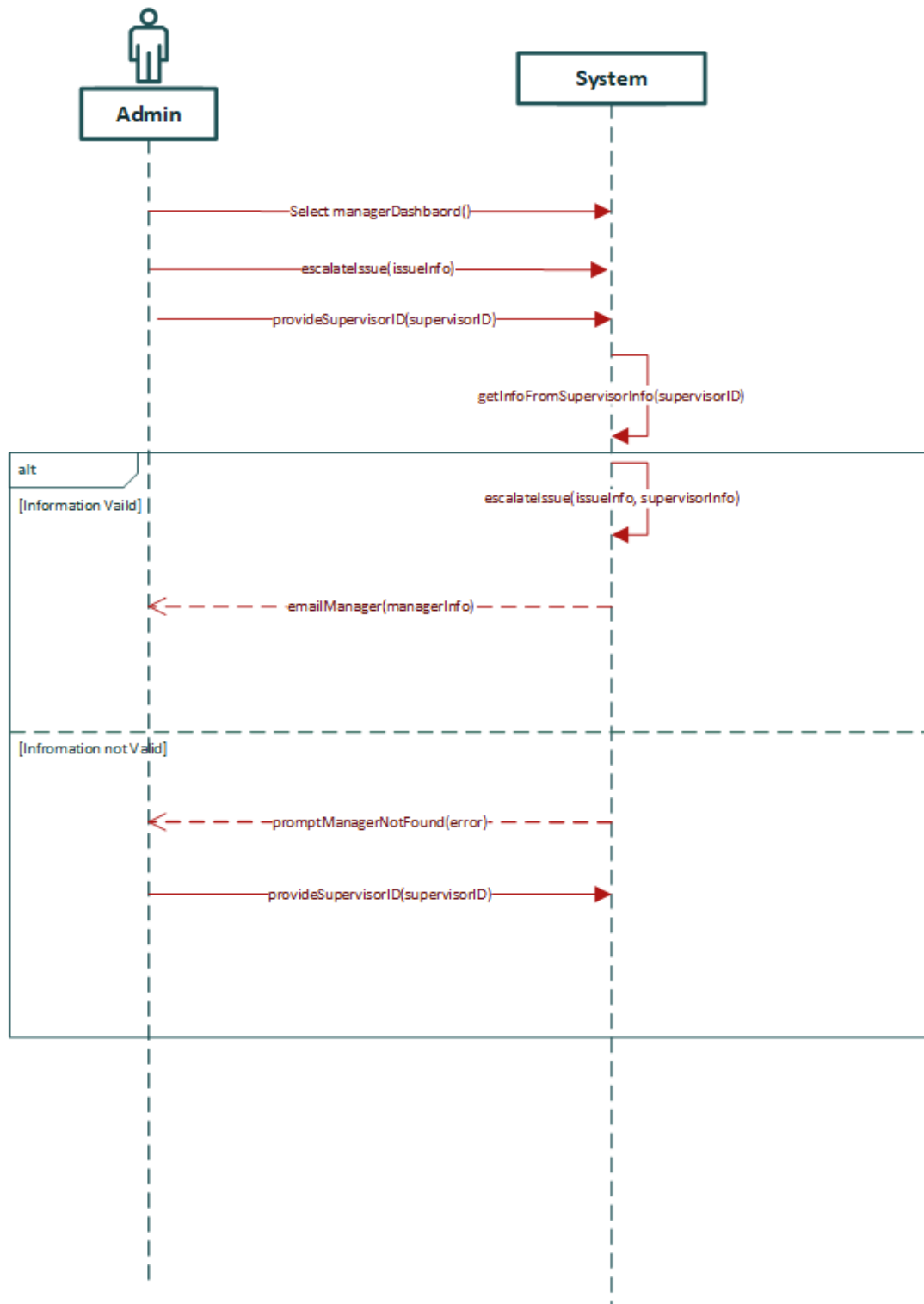
### Admin Assign Task



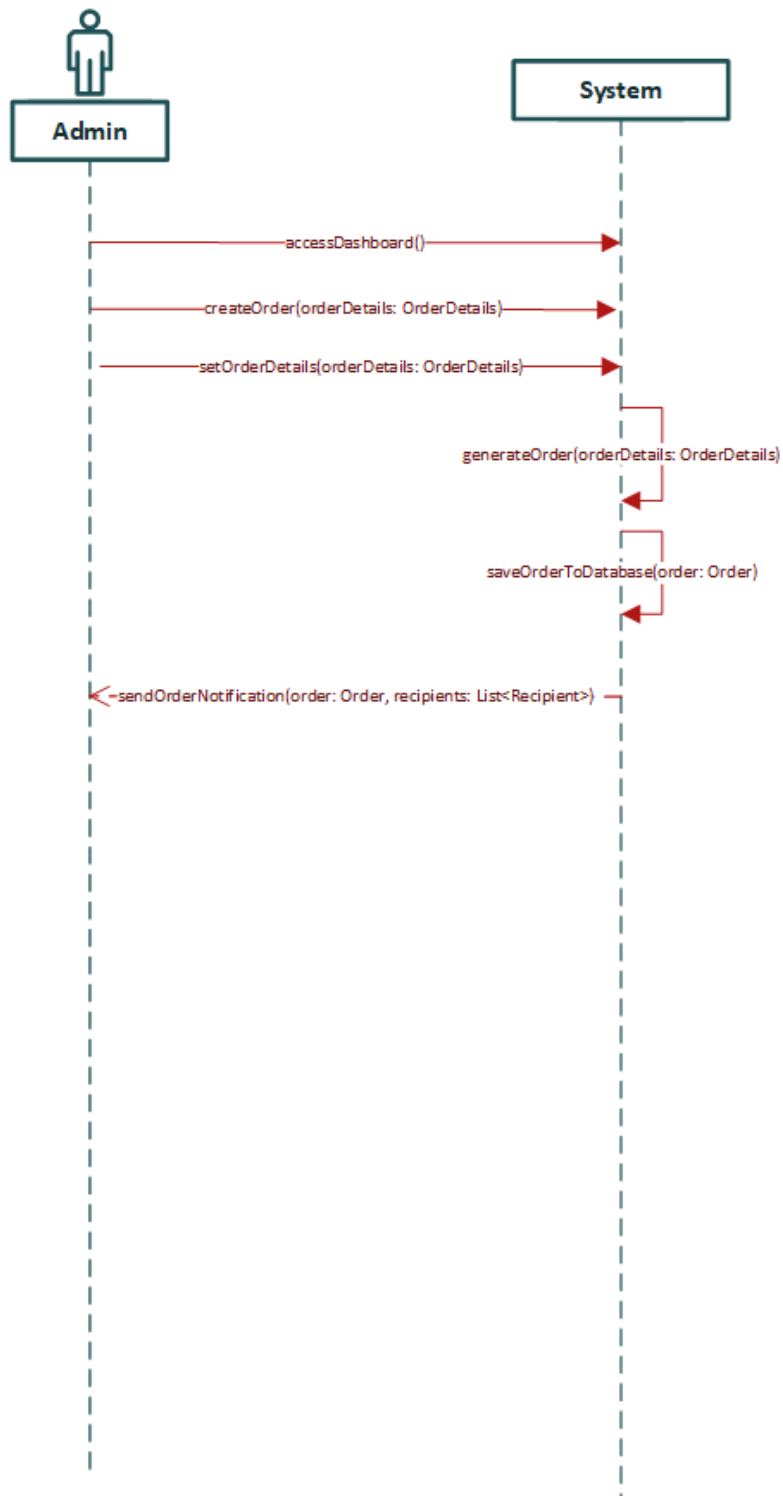
## Admin Delete Order



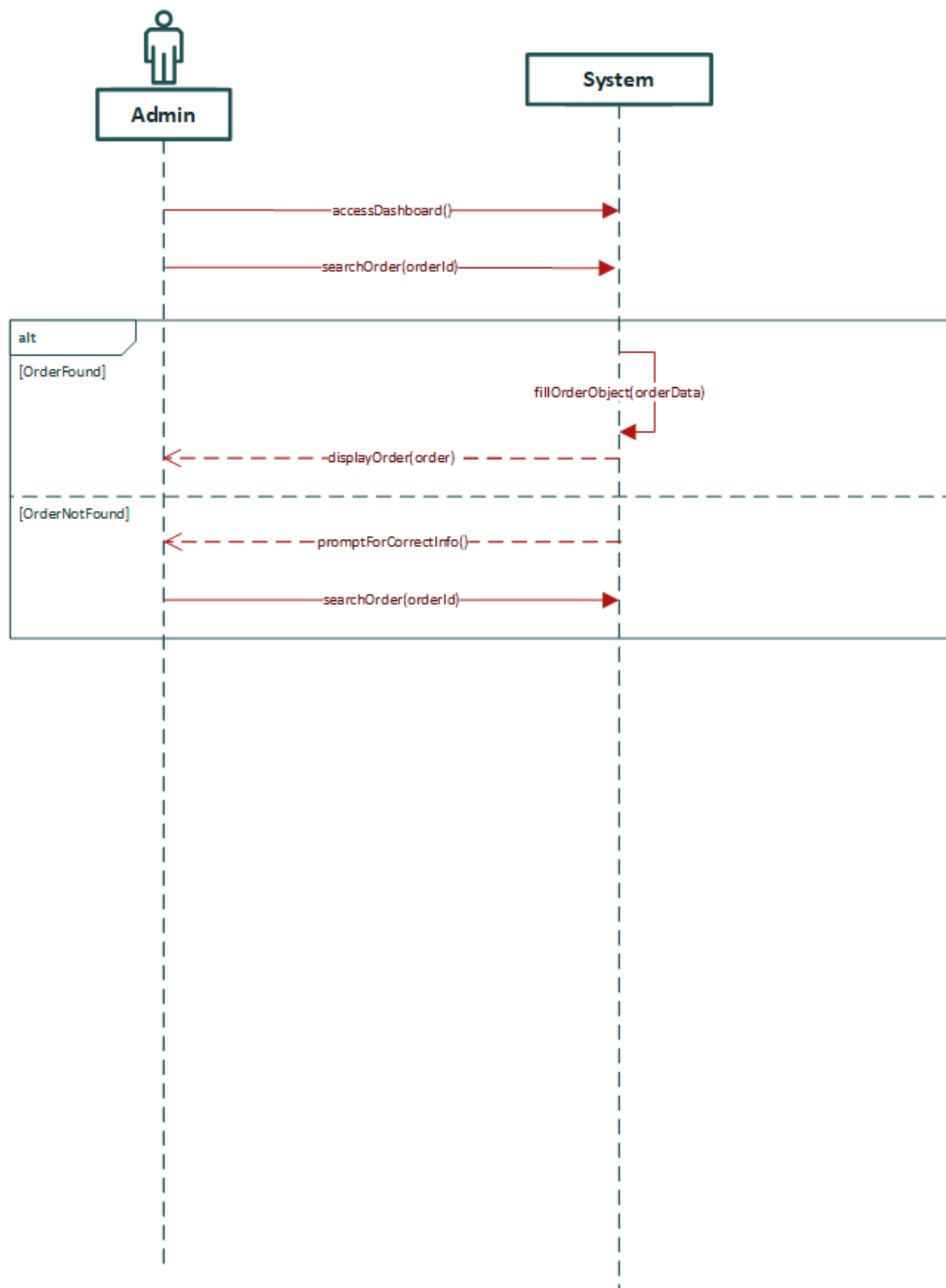
## Admin Escalating



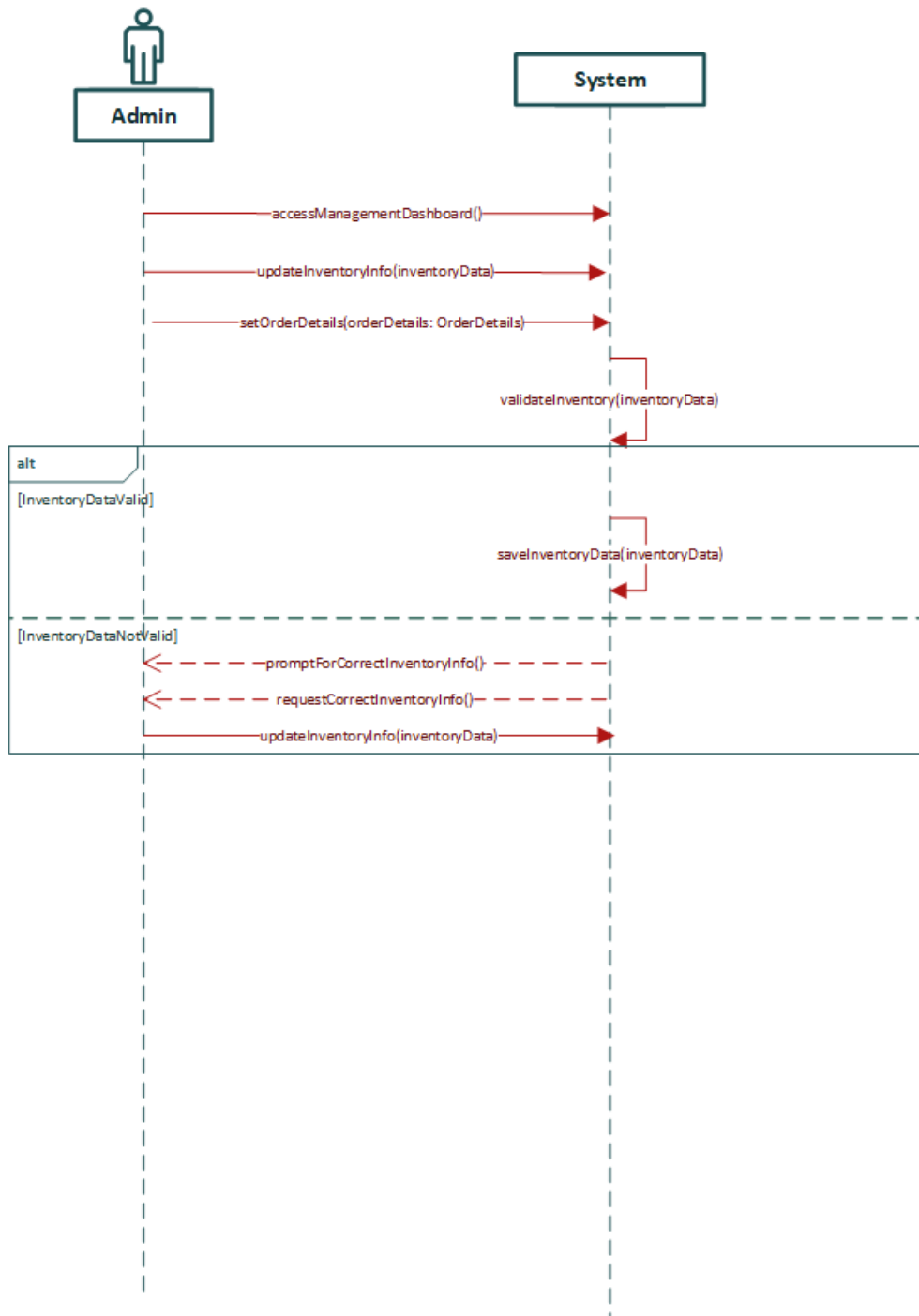
## Generate order



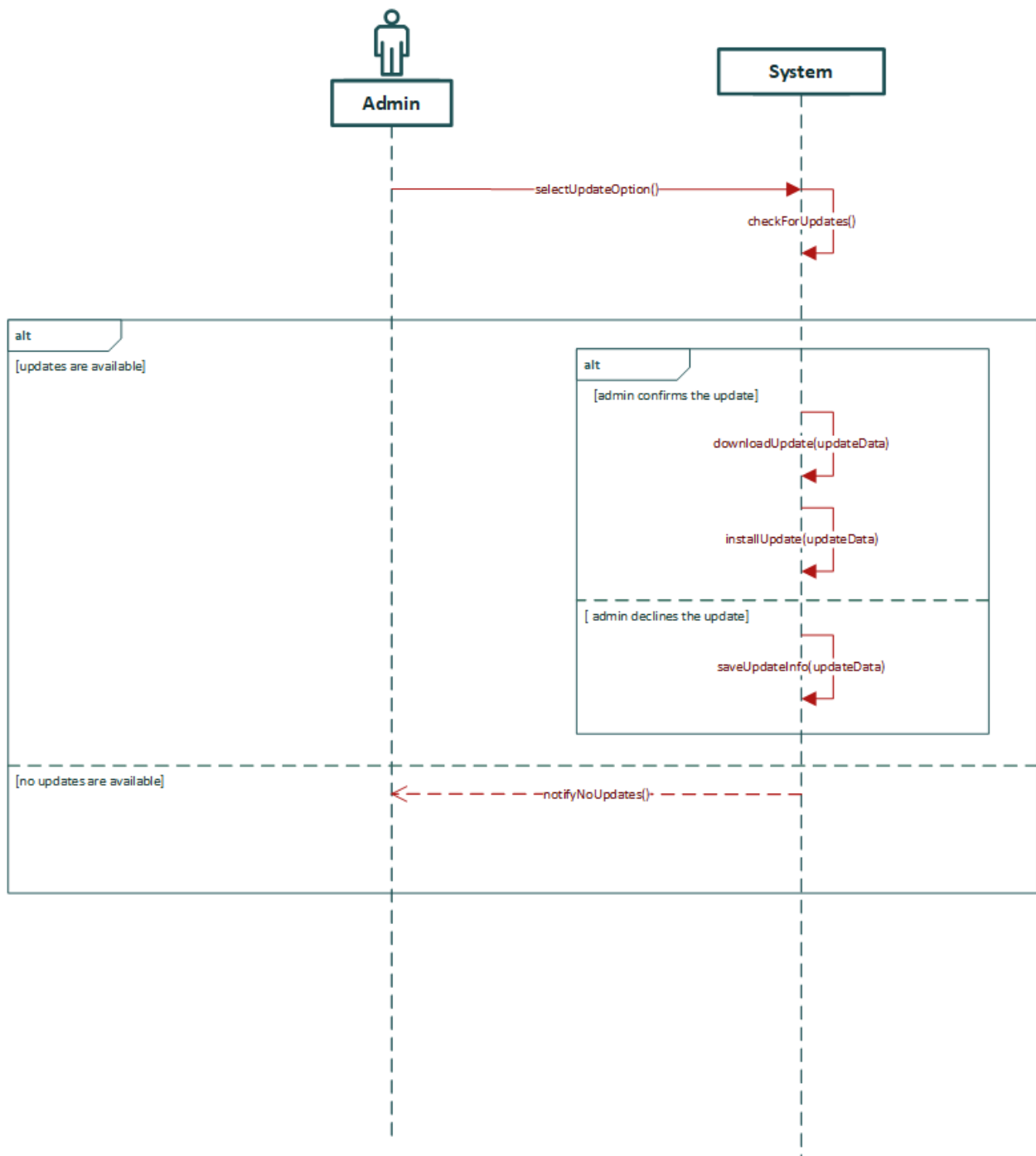
## Search order



## Update Inventory

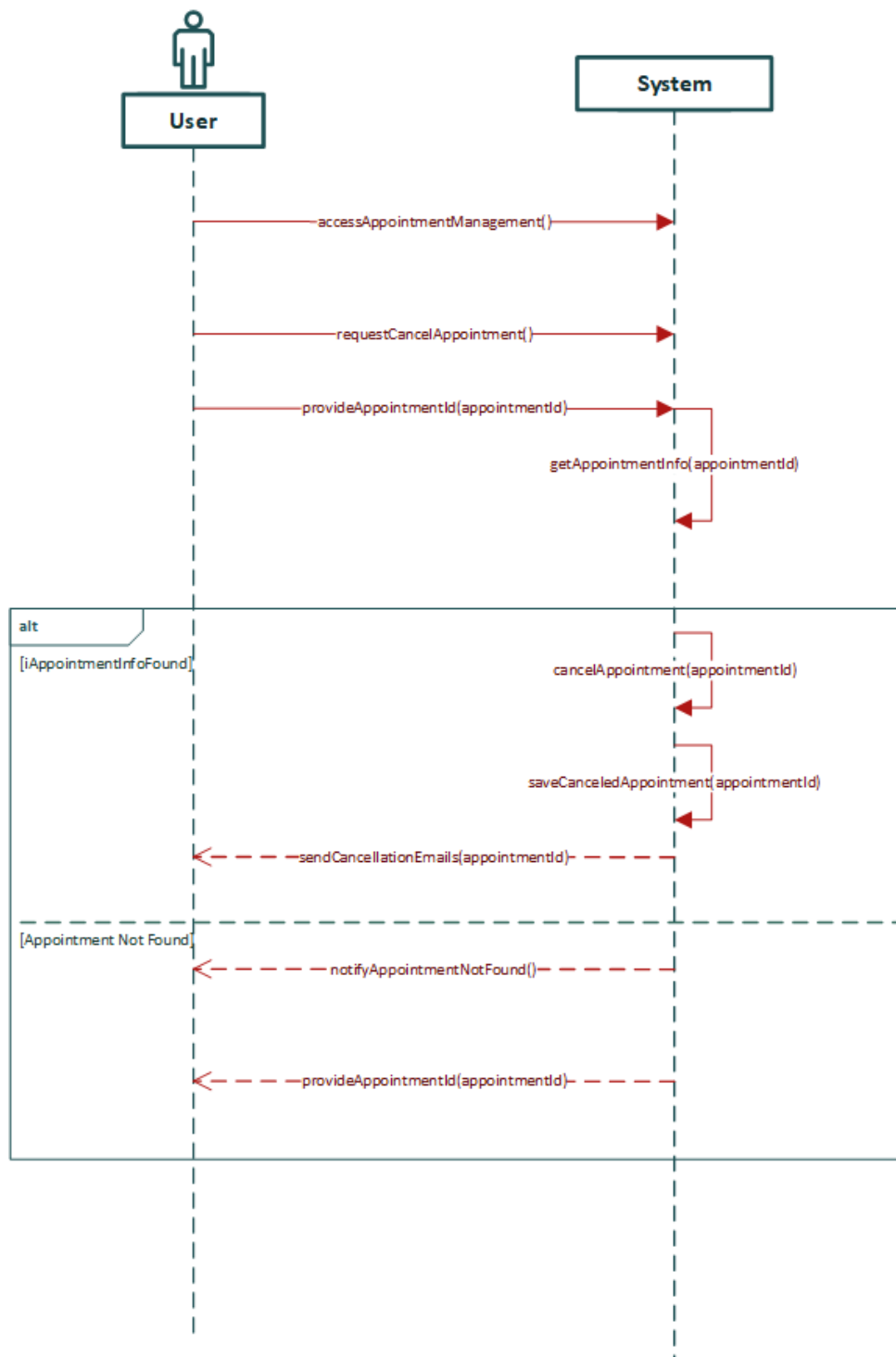


## Update System

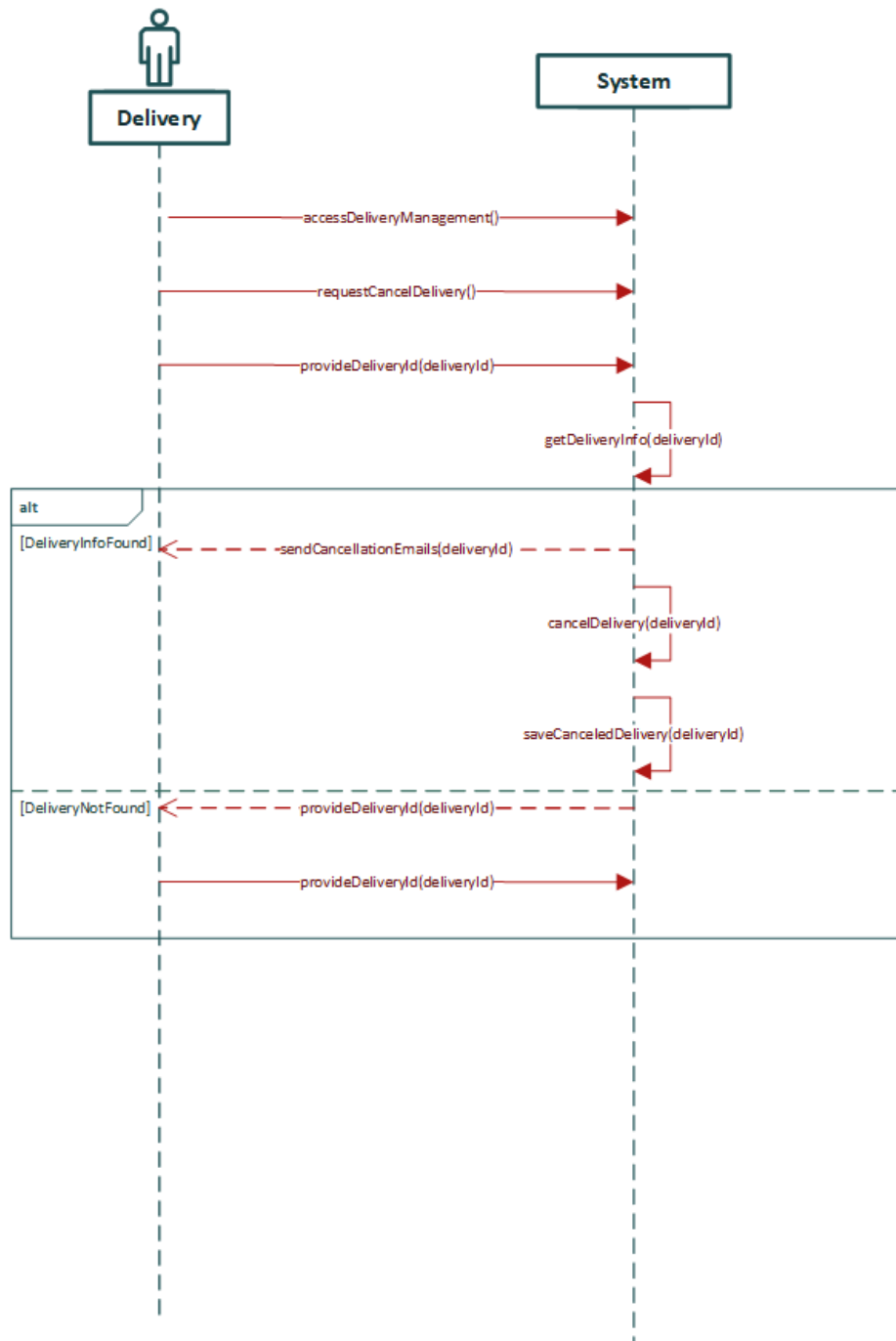




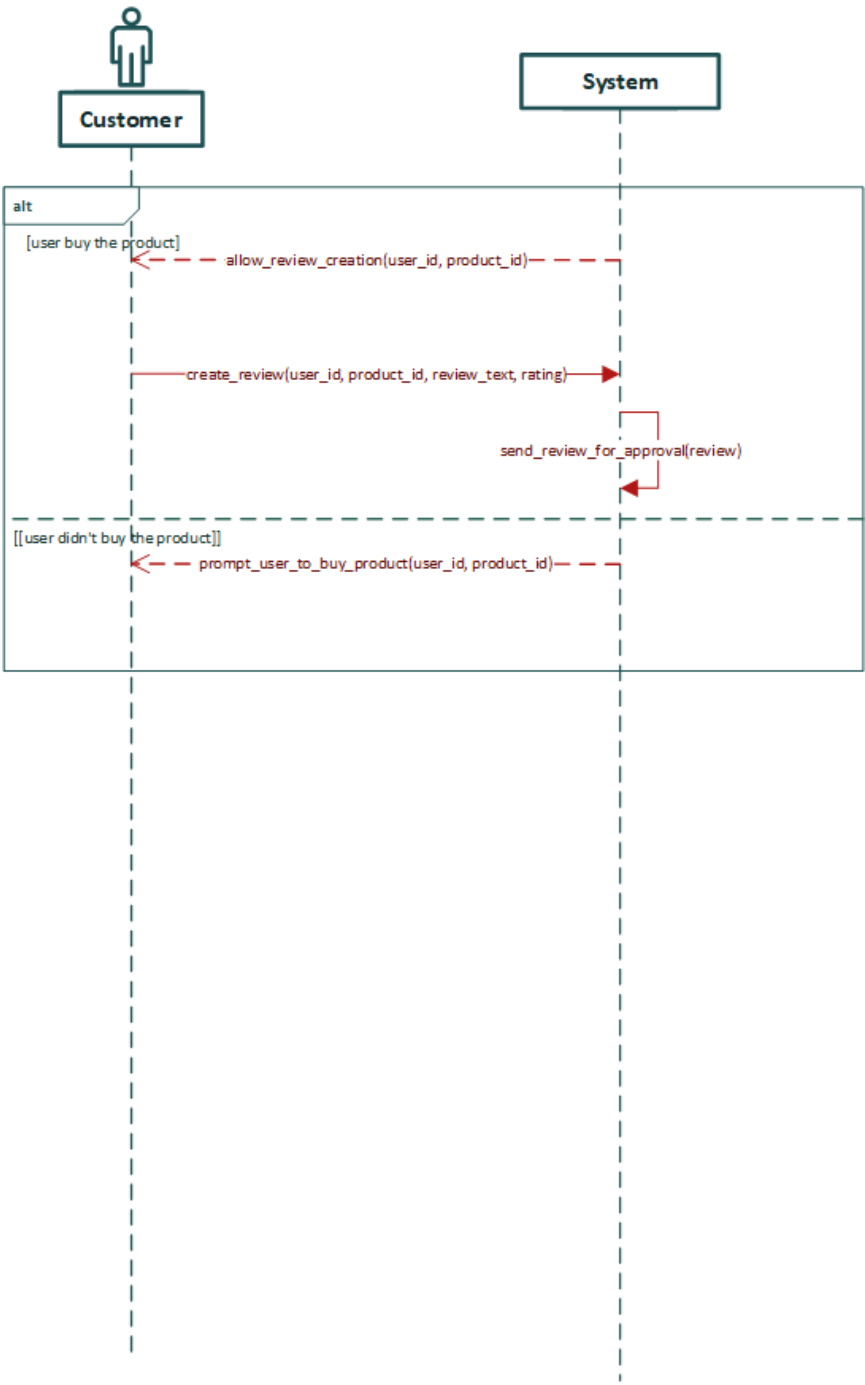
## Cancel Specialist Appointment



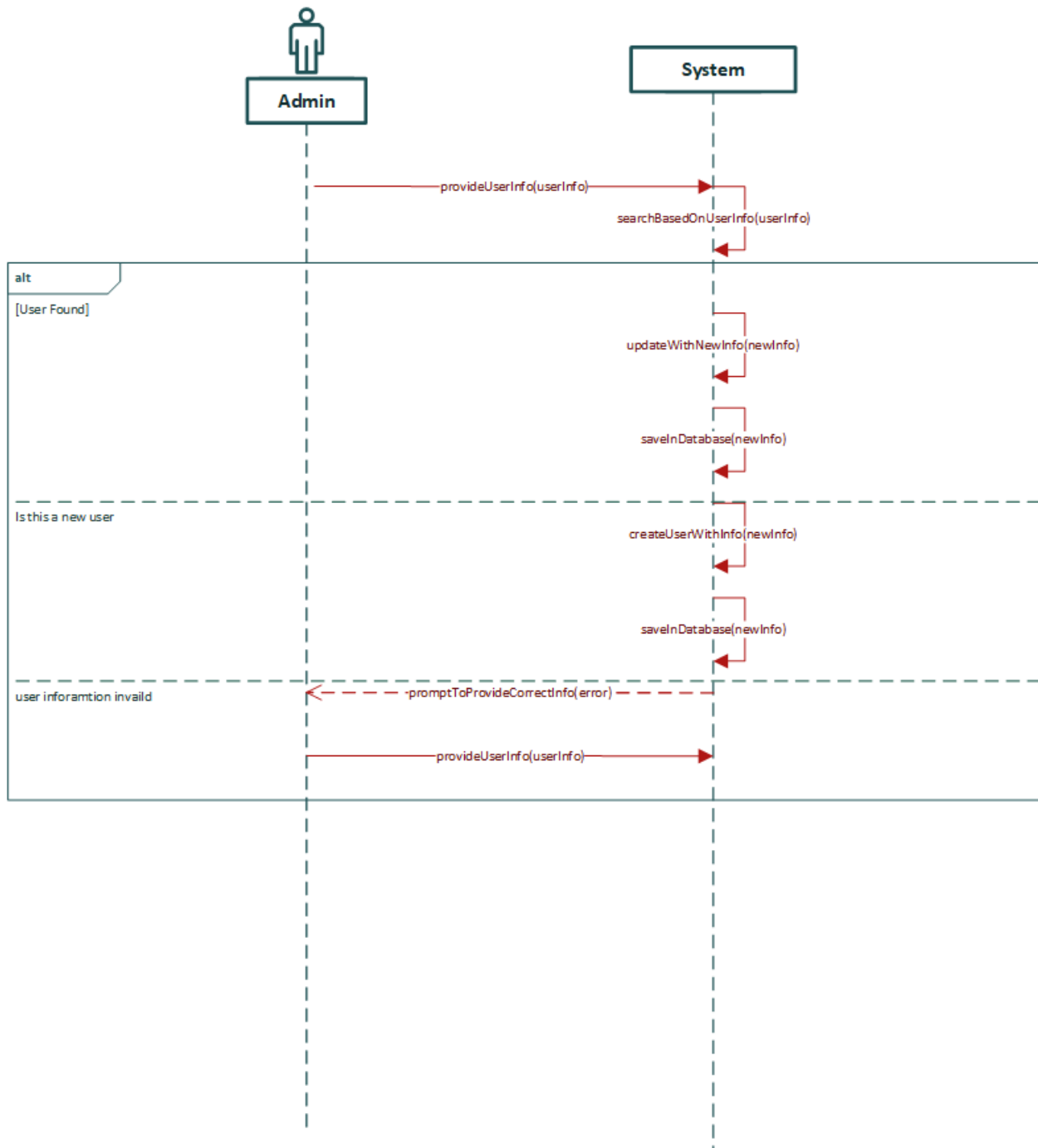
## Cancel Delivery



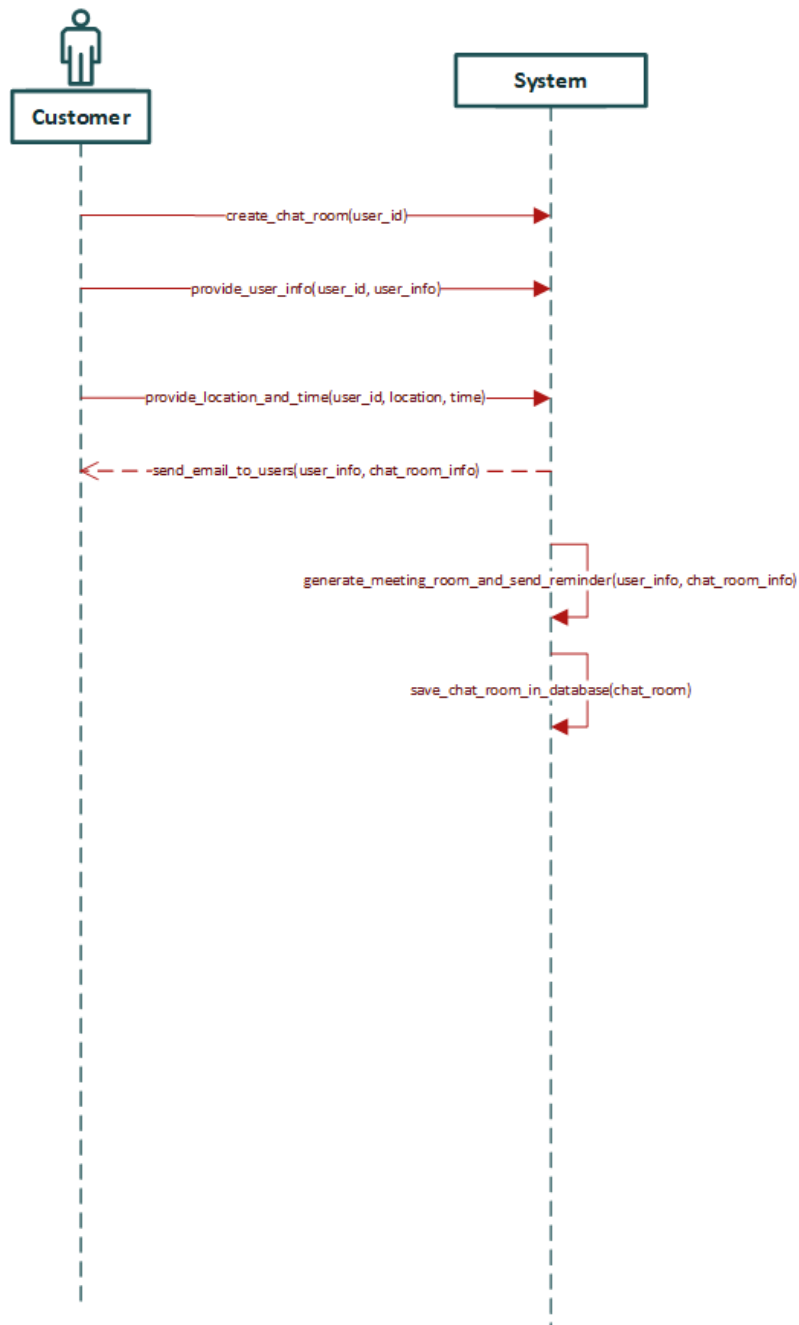
Create Review



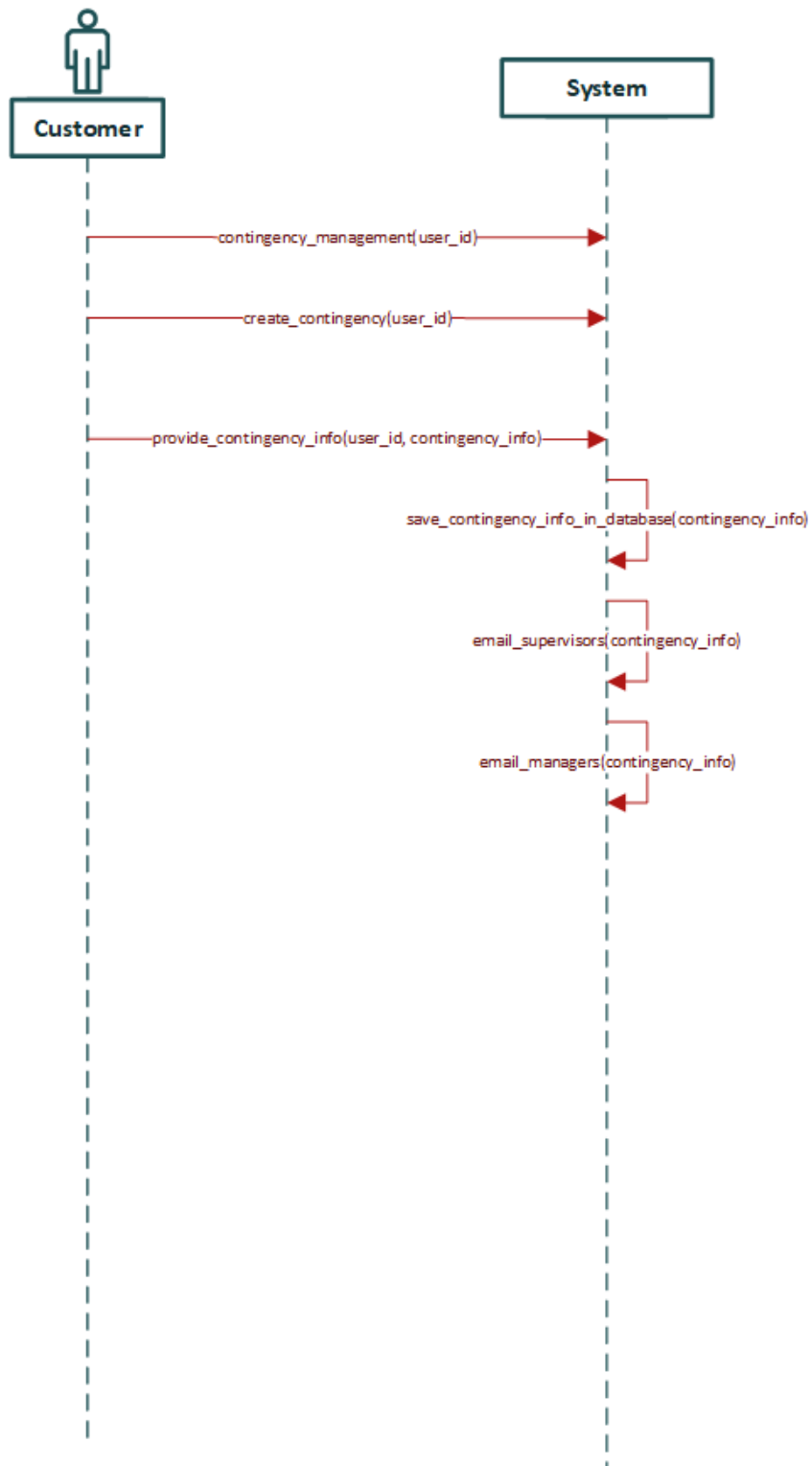
## Create/Update User



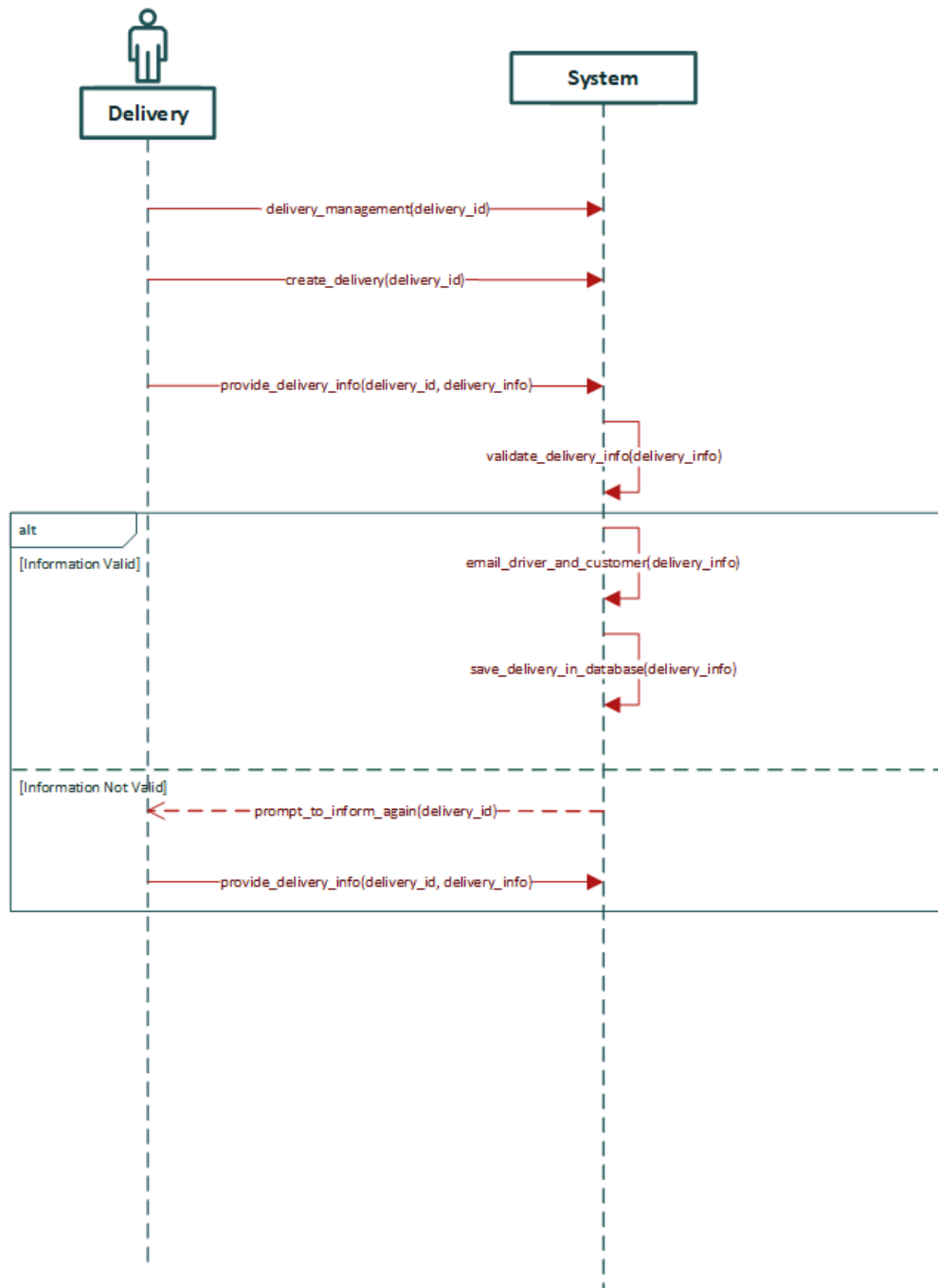
## Create Chat room with Specialist



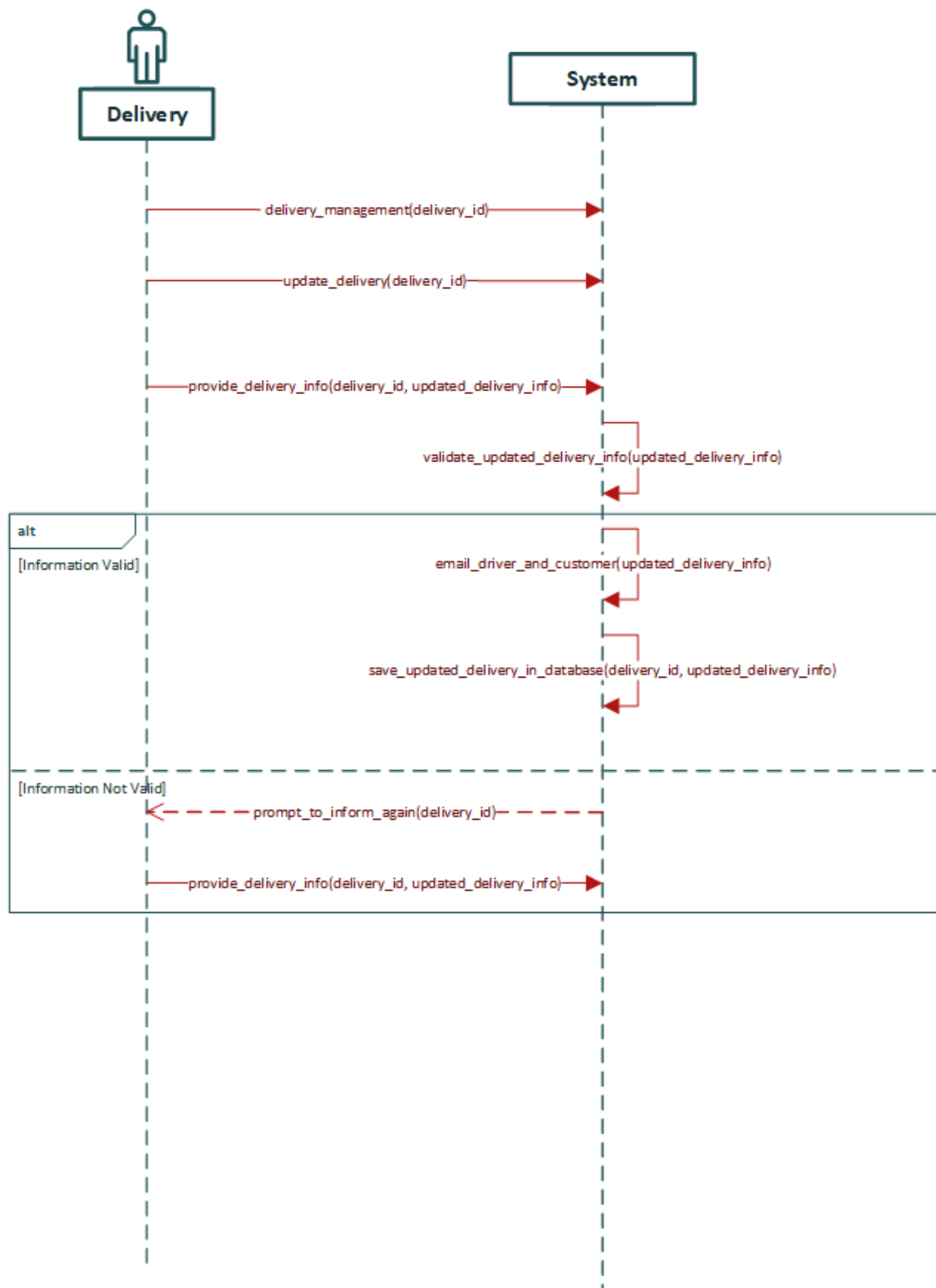
## Create Contingency



## Create Delivery

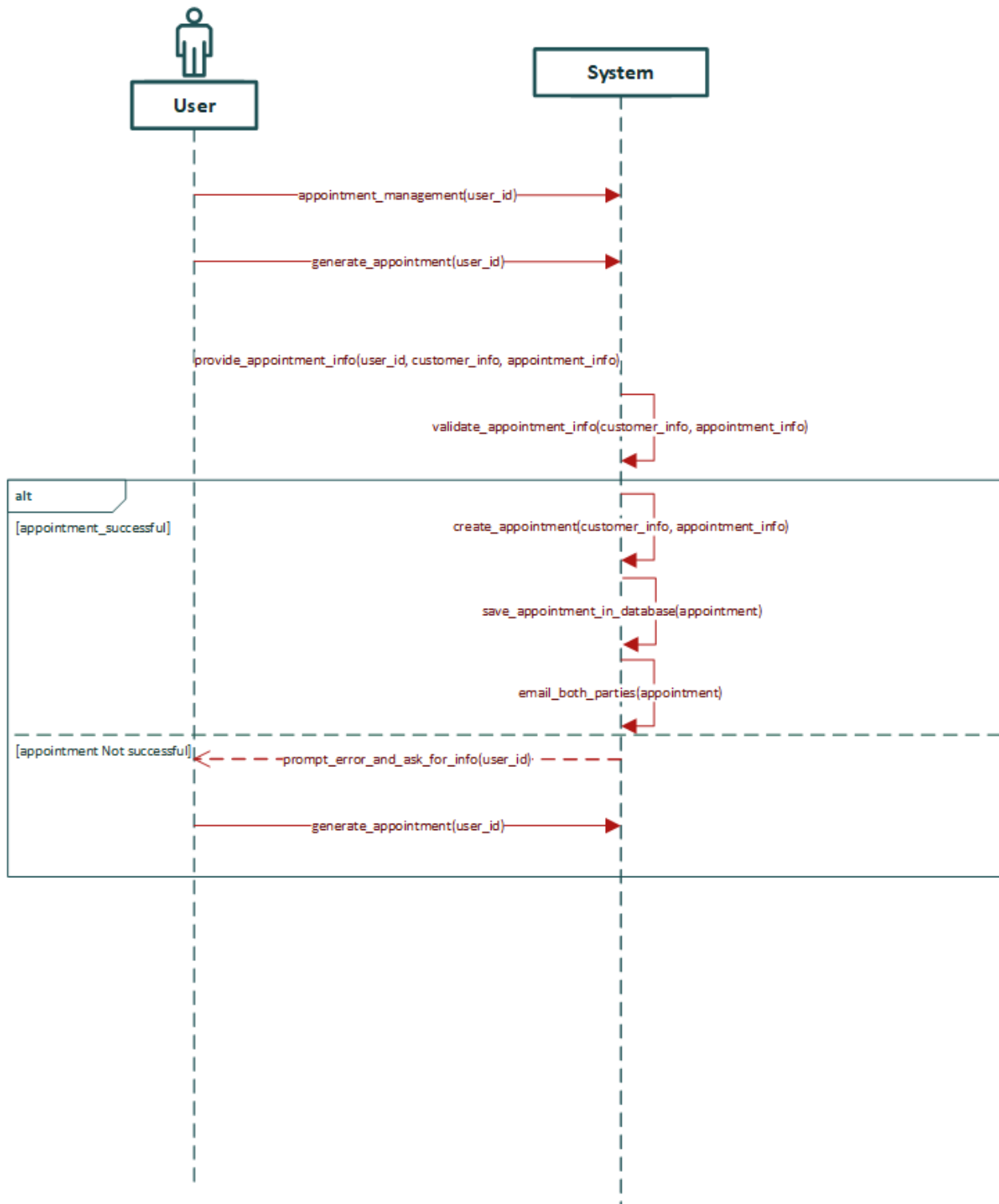


## Delivery Update

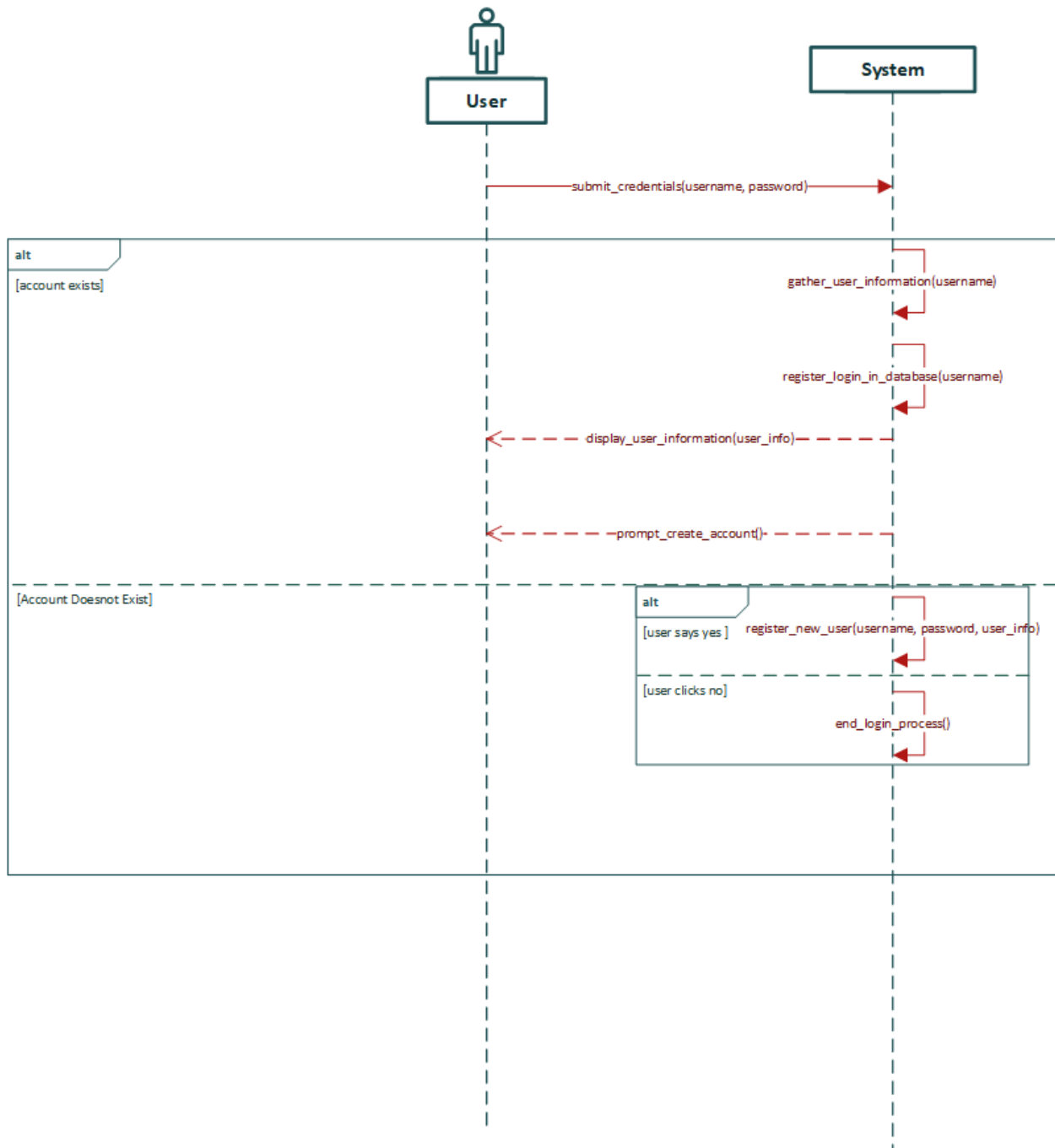




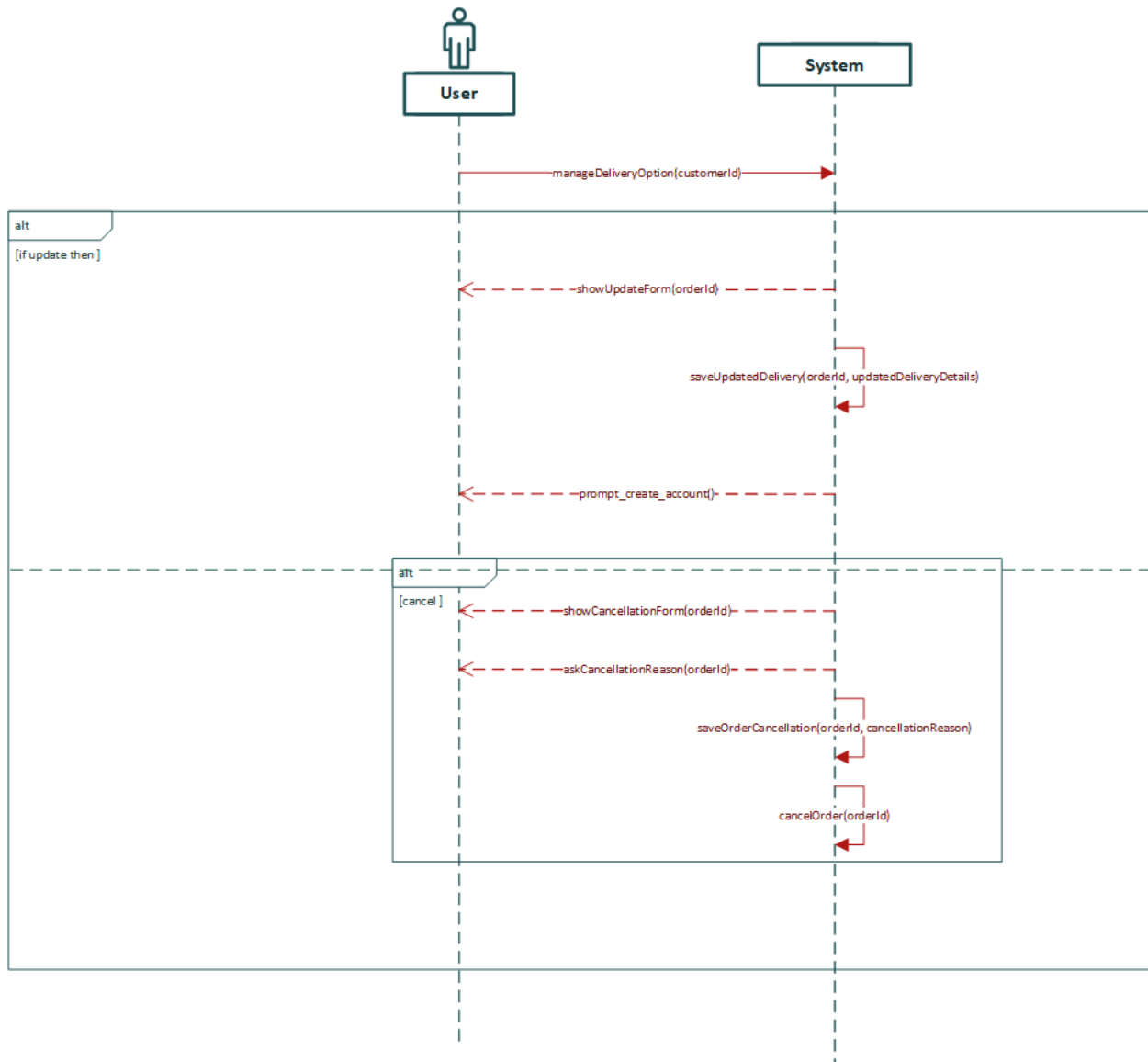
## Generate Specialist Appointment



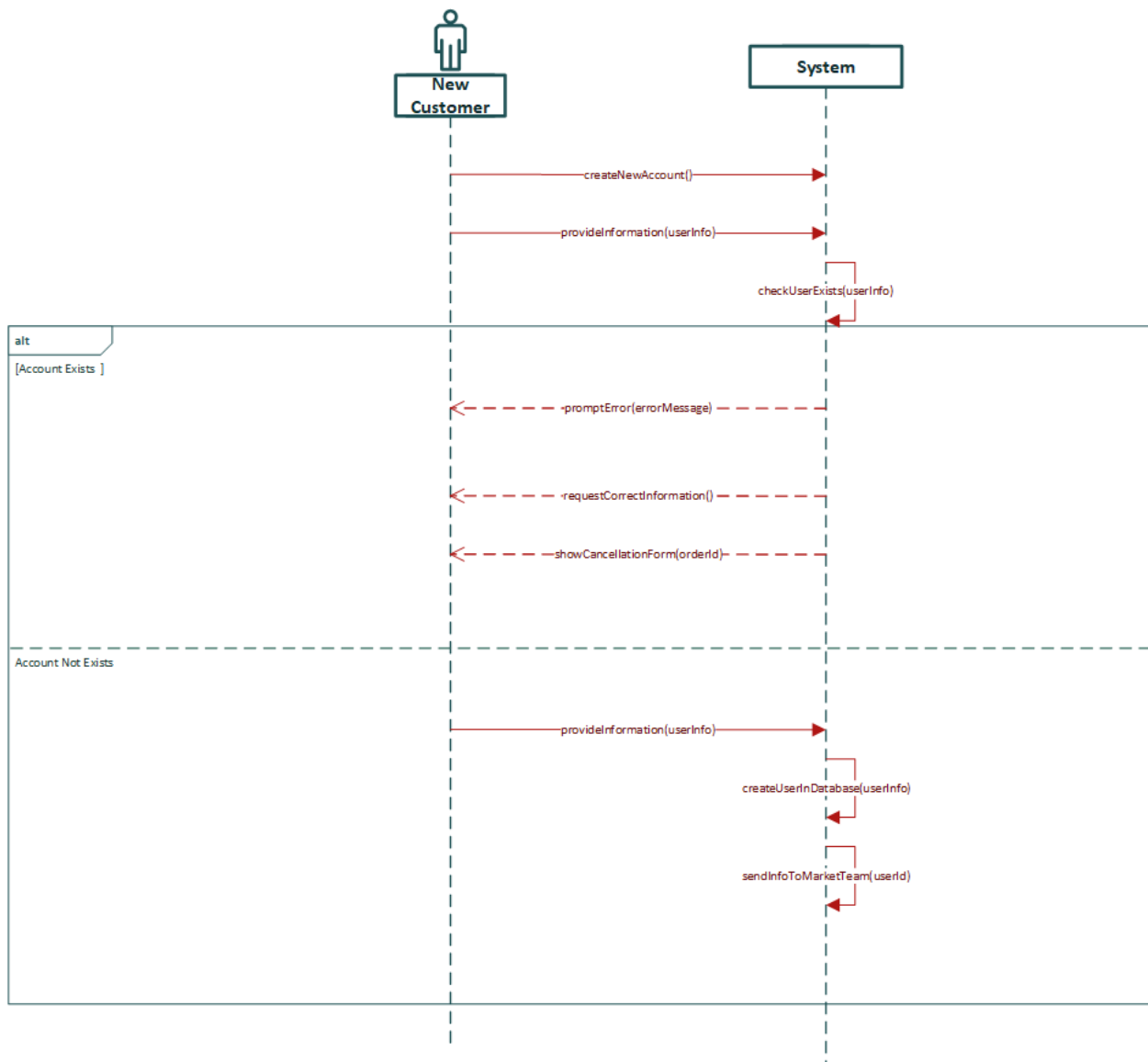
## Login



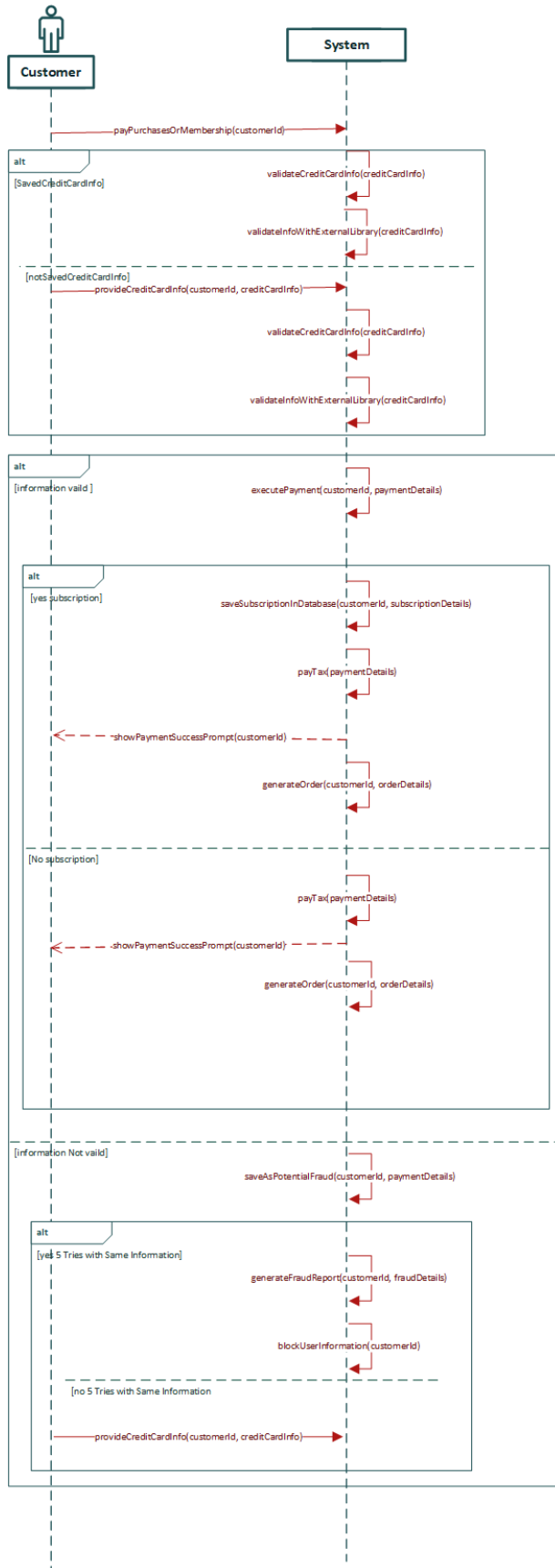
## Cancel Delivery



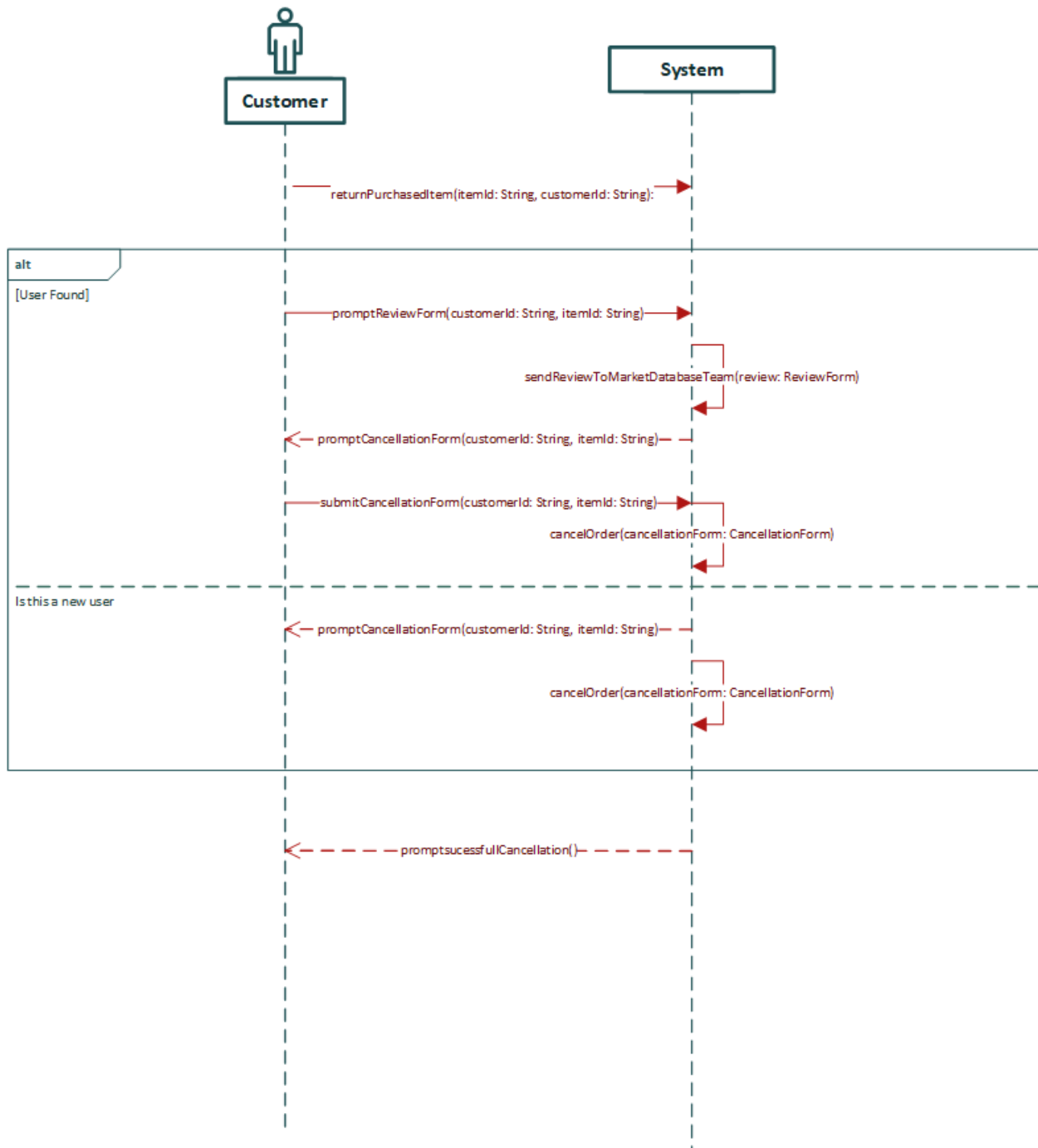
## Create Account



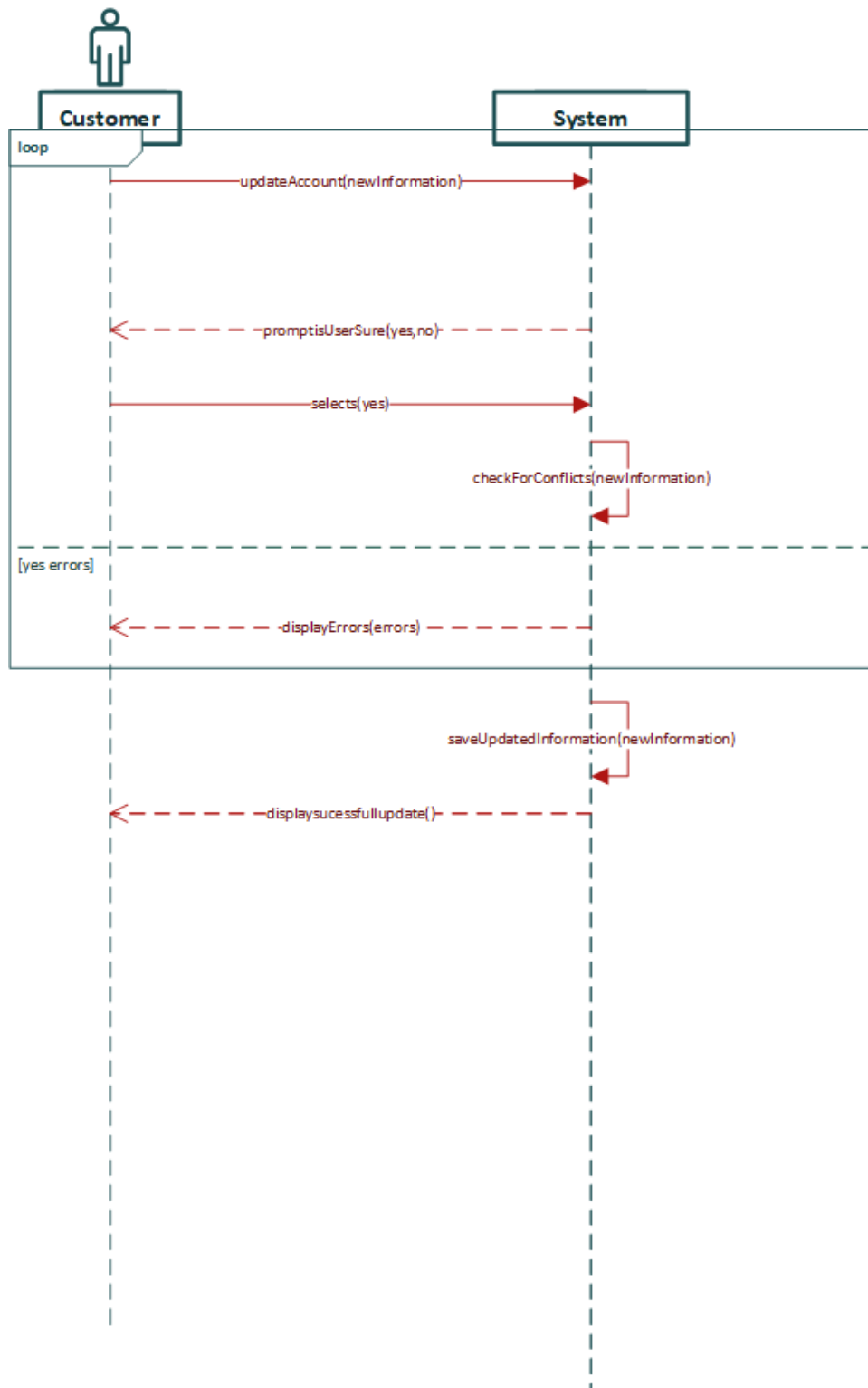
Pay/Renew Subscription



## Return Product

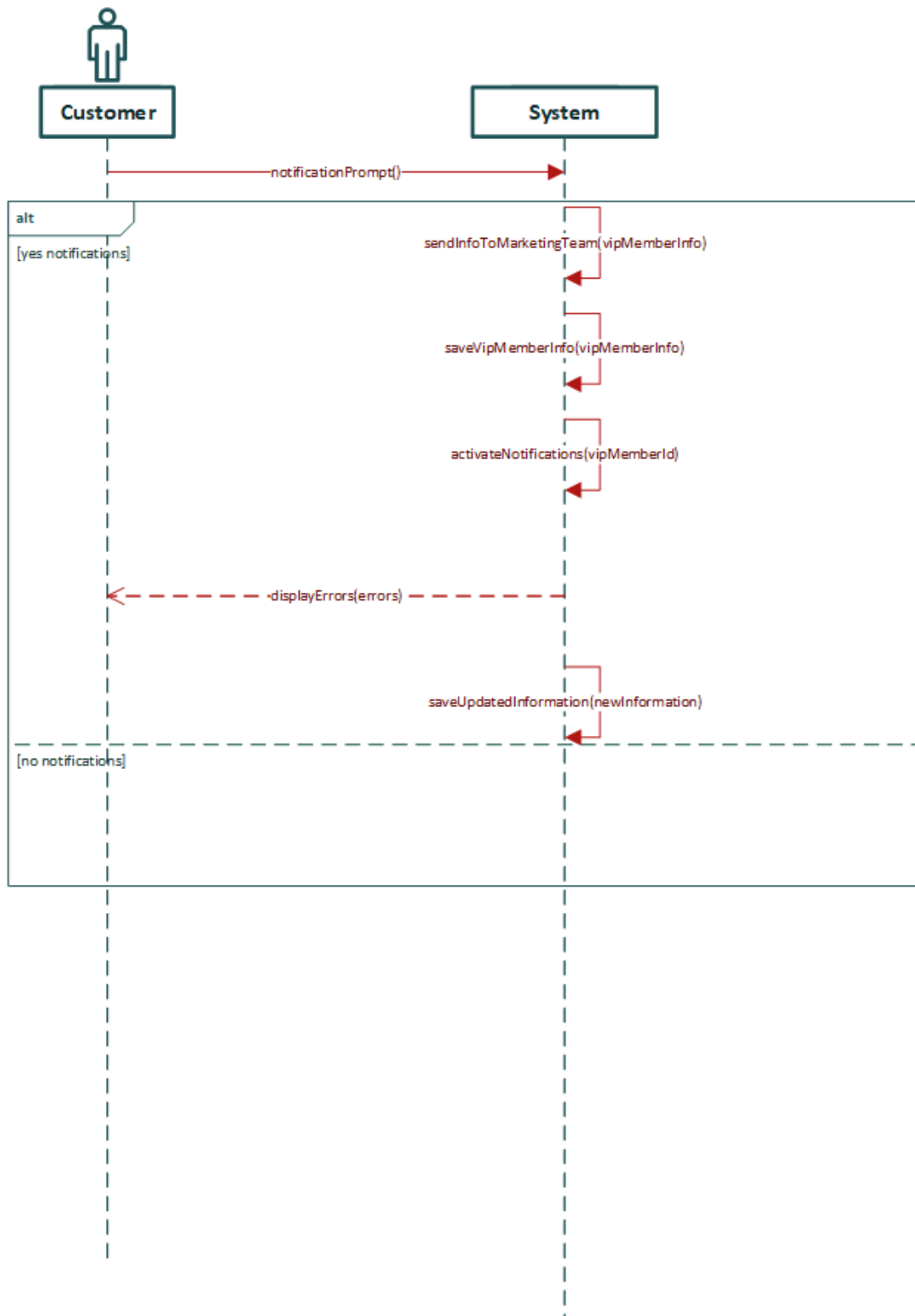


## Update Account

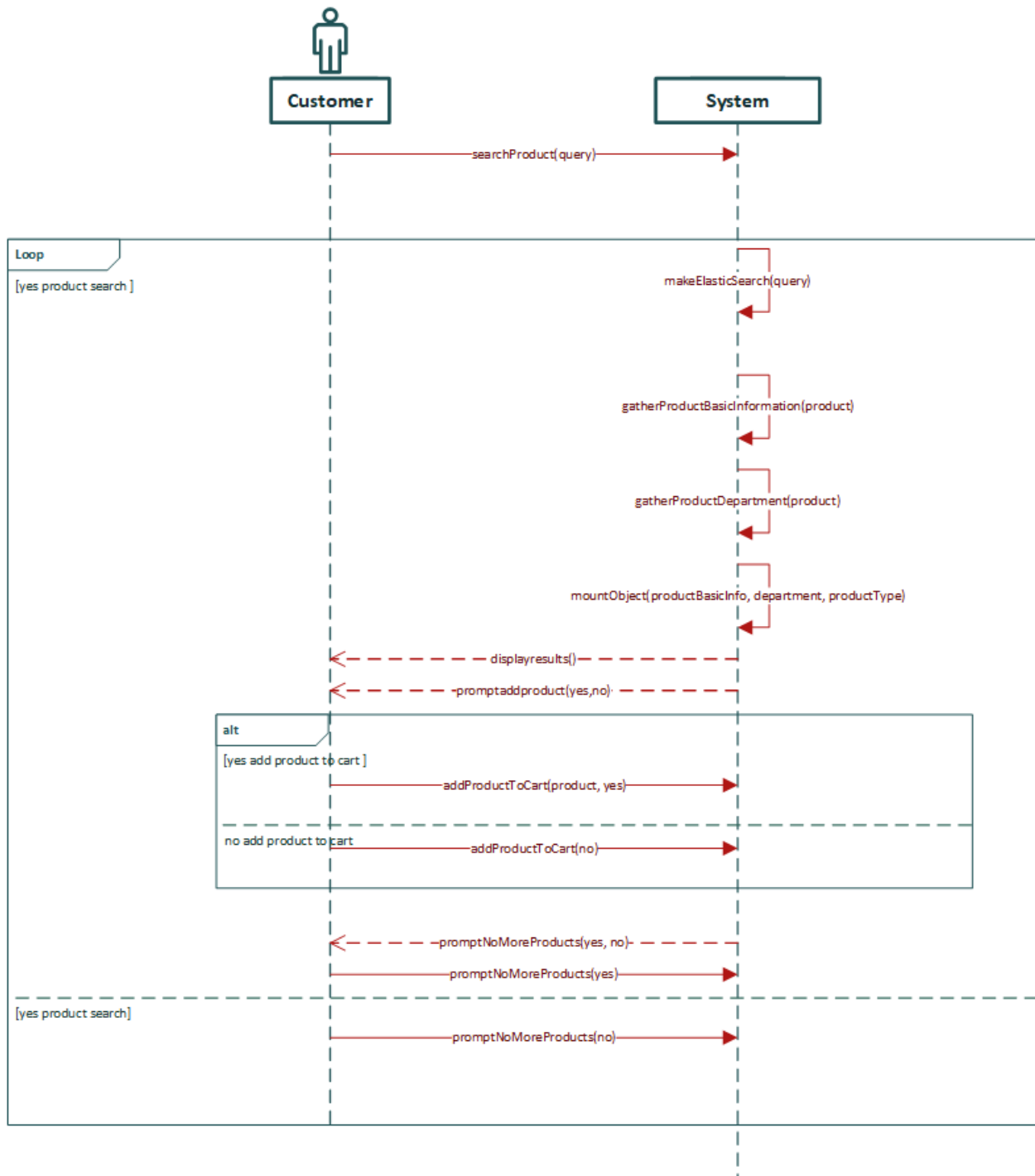




## VIP Notification



## Product Search



# 11. Object-Relational Model



## 12. Class Diagram With Design pattern

