

Mobile Car Wash Booking & Management System

Group: CS-01

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1. System Features

1.1 Use Case Diagram URL (for quality image): <https://ibb.co/tZg4mwW>

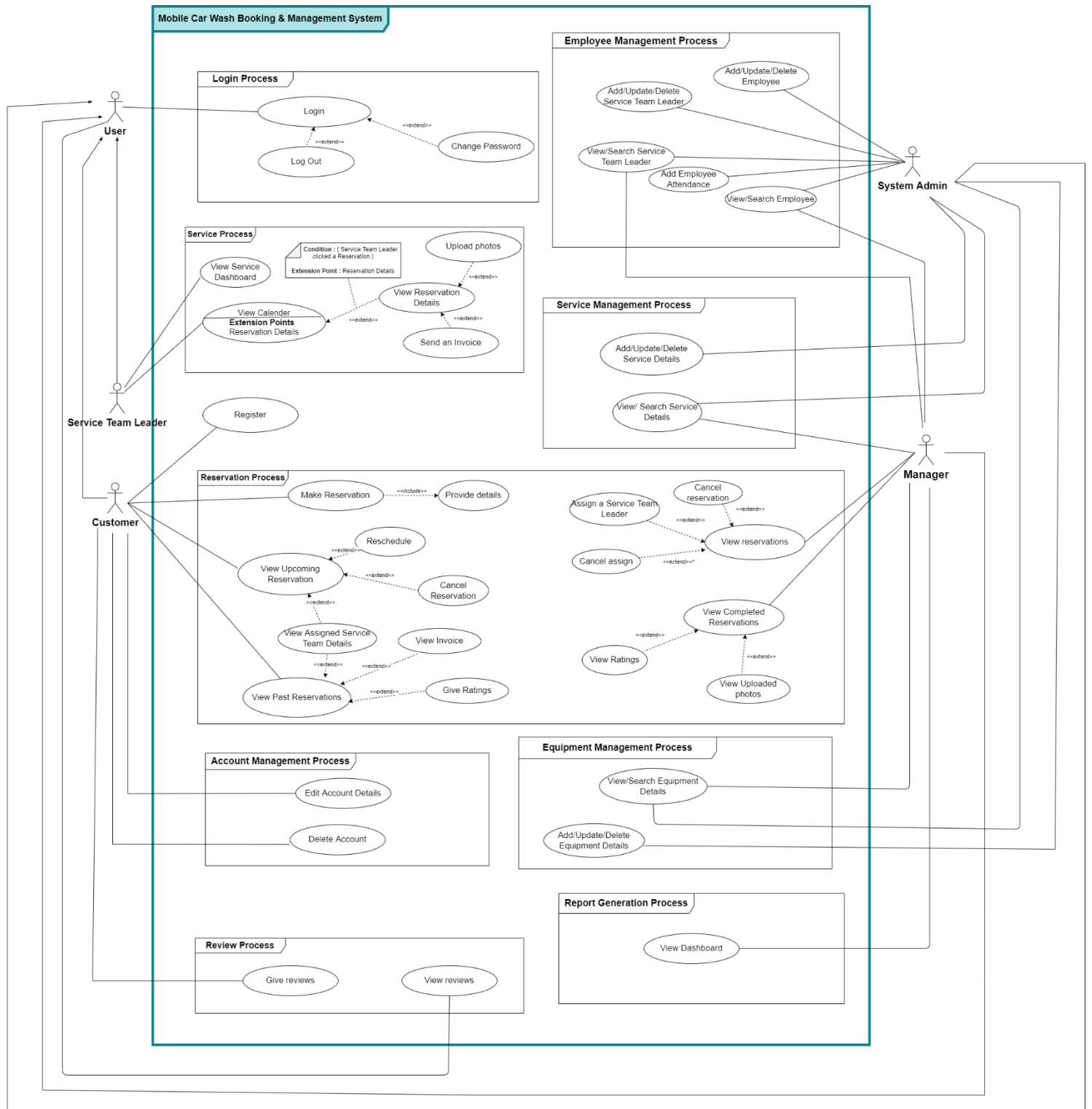


Figure 1: Use Case Diagram

1.2 Use Case Narratives

Author(s): Aluthwaththa A.G.N.P.

Date: 2021/06/10 Version: 01

Use Case Name:	Login	Use Case Type System Requirements:
Use Case Id:	001	
Priority:	High	
Source:	Requirements - R1	
Primary Business Actor:	User	
Other Participating Actors:	None	
Other Interested Stakeholders:	None	
Description:	This use case describes the event of a user logging into the system. The user accesses the system and provides the username and password. Once the details are accepted, the user is directed to the relevant homepage.	
Precondition:	None	
Trigger:	This use case is initiated when a user initiates the user login process.	
Typical course of events:	Actor Action	System Response
	Step 1: The user clicks 'login'. Step 2: The user provides the username and the password.	Step 3: The system verifies that the details provided by the user are valid. Step 4: If the user is a customer, the system directs the user to the customers' homepage. If the user is the manager, the system directs the user to the manager's homepage. If the user is the system admin, the system directs the user to the system admin's homepage. If the user is a service team leader, the system directs the user to the service team leaders' homepage.

Alternate Courses:	<p>Alt-Step 2: The user requests to change the password. The system sends an email to reset the password. Once the user sets a new password using the email, the system updates the database and redirects the user to the homepage.</p> <p>Alt-Step 3: Details provided by the user are not valid. The user is notified the information provided is invalid.</p>
Conclusion:	This use case concludes when the user is successfully redirected to a homepage or in the case of an unregistered user when the user is redirected to the registration page or when an email is sent to change the password.
Postcondition:	None
Assumptions:	<p>All the users of the system must be registered within the system.</p> <p>Reviews can be viewed by all users before logging in to the system.</p> <p>Reservation/rating services are available to users only after they log into the system.</p>

Author(s): Abdulla M.N.

Date: 2021/06/10 Version: 01

Use Case Name:	View Reviews	Use Case Type Business Requirements:
Use Case Id:	002	
Priority:	Low	
Source:	Requirement – R1	
Primary Business Actor:	User	
Other Participating Actors:	None	
Other Interested Stakeholders:	None	
Description:	This use case describes the event of a user viewing the customers’ reviews.	
Precondition:	-	
Trigger:	This use case is initiated when the user chooses ‘View Reviews’.	
Typical course of events:	Actor Action	System Response
	Step 1: The user chooses ‘View Reviews’.	Step 2: The system displays an interface that shows the customer reviews.
Alternate Courses:	None	
Conclusion:	This use case concludes when the system displays the reviews of the customers.	

Post condition:	None
Assumptions:	None

Author(s): Aluthwaththa A.G.N.P.

Date: 2021/06/10 Version: 01

Use Case Name:	Register	Use Case Type System Requirements:
Use Case Id:	003	
Priority:	High	
Source:	Requirements - R1	
Primary Business Actor:	Customer	
Other Participating Actors:	None	
Other Interested Stakeholders:	None	
Description:	This use case describes the event of a customer registering into the system. The customer accesses the system and provides the details, username and a password. Once the details are accepted, an email is sent for verification.	
Precondition:	None	
Trigger:	This use case is initiated when a customer initiates the user registration process.	
Typical course of events:	Actor Action	System Response
	Step 1: The customer clicks "Register". Step 3: The customer provides details, a username and a password. Step 7: The customer verifies the email..	Step 2: The system redirects the customer to the registration page. Step 4: The system checks the validity and uniqueness of the details provided. Step 5: The system updates the database with the user details. Step 6: The system sends an email to the customer for verification. Step 8: The system updates the database.
Alternate Courses:	Alt-Step 5: The details provided by the customer are invalid or not unique. The system informs this to the customer.	
Conclusion:	This use case concludes when the customer is successfully registered and when an error message is displayed to the customer.	
Postcondition:	None	
Assumptions:	None.	

Use Case Name:	Make Reservation	Use Case Type Business Requirements:
Use Case Id:	004	
Priority:	High	
Source:	Requirement – R1	
Primary Business Actor:	Customer	
Other Participating Actors:	None	
Other Interested Stakeholders:	None	
Description:	This use case describes the event of a Customer reserving an available and convenient date and time slot by selecting his/her vehicle category, wash package with prices and giving the location.	
Precondition:	The user must be registered within the system. The user must be logged in.	
Trigger:	This use case is initiated when the ‘Make a Reservation’ button is clicked.	
Typical course of events:	Actor Action	System Response
	Step 1: The customer clicks the ‘Make a Reservation’. Step 4: The customer provides the details. Step 6: The customer confirms the reservation.	Step 2: The system validates the user. Step 3: The system displays an interface with a smart calendar to select available and convenient date and time and to select vehicle types, wash packages with prices and to get the customer location. Step 5: The system accepts the details and displays the reservation details with the price. Step 7: The system updates the database.
Alternate Courses:	Alt-Step 5: User has not provided necessary and accurate information to make a reservation. User is notified that the reservation is unavailable due to insufficient or incorrect information. Alt-Step 6: If the reservation is not confirmed by the customer, the system will redirect the customer back to the Home page.	
Conclusion:	This use case concludes when the system notifies the user of the successful/unsuccessful reservation.	
Post condition:	None	
Assumptions:	None	

Use Case Name:	View Upcoming Reservation	Use Case Type Business Requirements:
Use Case Id:	005	
Priority:	High	
Source:	Requirement – R1	
Primary Business Actor:	Customer	
Other Participating Actors:	None	
Other Interested Stakeholders:	None	
Description:	This use case describes the event of a customer viewing his/her upcoming reservations.. The customer can choose to see the details of each reservation such as assigned service team leaders and also choose to cancel/reschedule them.	
Precondition:	The user must be registered within the system. The user must be logged in.	
Trigger:	This use case is initiated when the ‘View Upcoming Reservations’ button is clicked.	
Typical course of events:	Actor Action	System Response
	Step 1: The user clicks the ‘View upcoming Reservations’ button.	Step 2: The system displays the user’s upcoming reservations with details.
Alternate Courses:	Alt-Step 3: The customer clicks the reschedule button and chooses a relevant date and time. The system removes the reservation from the current time slot and assigns it to the new time slot. Alt-Step 4: Customer clicks the cancel button of the relevant reservation and confirms it. The current reservation is cancelled by the system. Alt-Step 5: Customer clicks ‘View Service Team Details’ of relevant reservations. The system shows the details of the service team assigned to the reservation.	
Conclusion:	This use case concludes when the system displays the reservations or the service team details or when the system updates the database after the user reschedules/cancels the reservation.	
Post condition:	None	
Assumptions:	Customers can only reschedule/cancel the reservation within the time up to 24 hours before the reserved service time.	

Author(s): Abdulla M.N.

Date: 2021/06/10

Version: 01

Use Case Name:	View Past Reservations	Use Case Type Business Requirements:
Use Case Id:	005	
Priority:	Medium	
Source:	Requirement – R1	
Primary Business Actor:	Customer	
Other Participating Actors:	None	
Other Interested Stakeholders:	None	
Description:	This use case describes the event of a customer viewing his/her past reservations. The customer can choose to see the details of each past reservation such as invoice / assigned service team details and give ratings on the service.	
Precondition:	The user must be registered within the system. The user must be logged in.	
Trigger:	This use case is initiated when the ‘View Past Reservations’ button is clicked.	
Typical course of events:	Actor Action	System Response
	Step 1: The user clicks the ‘View Past Reservations’ button.	Step 2: The system displays the user’s past reservations with details.
Alternate Courses:	.Alt-Step 3: Customer clicks ‘View Service Team Details’ of relevant reservations. The system shows the details of the service team assigned to the reservation. Alt-Step 4: Customer clicks ‘View Invoice’ of relevant reservation. The system shows the invoice of the reservation. Alt-Step 5: Customer clicks give ratings of relevant reservations and gives the rating. The system updates the database.	
Conclusion:	This use case concludes when the system displays the reservations or the invoice or the service team details or when the system updates the database after the user gives the ratings.	
Post condition:	None	
Assumptions:	None	

Author(s): Abdulla M.N.

Date: 2021/06/10

Version: 01

Use Case Name:	Give Reviews	Use Case Type Business Requirements:
Use Case Id:	006	
Priority:	Low	

Source:	Requirement – R1	
Primary Business Actor:	Customer	
Other Participating Actors:	None	
Other Interested Stakeholders:	None	
Description:	This use case describes the event of a Customer giving reviews about the service.	
Precondition:	The user must be registered within the system. The user must be logged in.	
Trigger:	This use case is initiated when the 'Provide a Review' button is clicked.	
Typical course of events:	Actor Action	System Response
	Step 1: The user clicks the 'Provide a Review' button. Step 3: The user types the review and submits.	Step 2: The system displays an interface to type the review. Step 4: The system stores the review and displays a 'thank you' message.
Alternate Courses:	None	
Conclusion:	This use case concludes when the system displays the 'thank you' message.	
Post condition:	None	
Assumptions:	Customer provides reviews only after a service is provided to him/her.	

Author(s): Abdulla M.N.

Date: 2021/06/10

Version: 01

Author(s): Asadul Karim		Date: 2024/05/15	Version: 01
Use Case Name:	Edit Account Details	Use Case Type Business Requirements:	
Use Case Id:	007		
Priority:	Medium		
Source:	Requirement – R1		
Primary Business Actor:	Customer		
Other Participating Actors:	None		
Other Interested Stakeholders:	None		
Description:	This use case describes the event of a customer editing account details.		

Precondition:	The user must be registered within the system. The user must be logged in.	
Trigger:	This use case is initiated when 'My Account' is clicked.	
Typical course of events:	Actor Action	System Response
	Step 1: The user clicks 'My Account'. Step 3: Customer clicks the edit button and replaces the details with new details.	Step 2: The system displays his/her account details. Step 4: The system validates the user. Step 5: The system updates the database with the new details.
Alternate Courses:	None	
Conclusion:	This use case concludes when the system displays the account details or system updates the database after the user edits his/her account details.	
Post condition:	None	
Assumptions:	None	

Author(s): Abdulla M.N.

Date: 2021/06/10

Version: 01

Version: 01		
Use Case Name:	Delete Account	Use Case Type Business Requirements:
Use Case Id:	008	
Priority:	Medium	
Source:	Requirement – R1	
Primary Business Actor:	Customer	
Other Participating Actors:	None	
Other Interested Stakeholders:	None	
Description:	This use case describes the event of a customer deleting the account.	
Precondition:	The user must be registered within the system. The user must be logged in.	
Trigger:	This use case is initiated when ‘My Account’ is clicked.	

Typical course of events:	Actor Action	System Response
	Step 1: The user clicks 'My Account'. Step 3: Customer clicks the delete button.	Step 2: The system displays his/her account details. Step 4: The system validates the user. Step 5: The system updates the database.
Alternate Courses:	None	
Conclusion:	This use case concludes when the system updates the database after the user deletes his/her account.	
Post condition:	None	
Assumptions:	None	

Author(s): Abdulla M.N.

Date: 2021/06/10

Version: 01

Use Case Name:	View Reservations	Use Case Type Business Requirements:
Use Case Id:	009	
Priority:	High	
Source:	Requirement – R1	
Primary Business Actor:	Manager	
Other Participating Actors:	None	
Other Interested Stakeholders:	None	
Description:	This use case describes the event of the manager viewing the upcoming reservations. The Manager can choose to assign a service team leader to any reservations of a particular day or cancel the assignment or cancel a reservation.	
Precondition:	The user must be registered within the system. The user must be logged in.	
Trigger:	This use case is initiated when the manager clicks ‘View Reservations’.	
Typical course of	Actor Action	System Response

events:	Step 1: The manager clicks the 'View Reservations' button. Step 4: The manager chooses a particular reservation.	Step 2: The system validates the user. Step 3: The system displays an interface that shows the customer reservations with details. Step 5: The system displays the details of the current reservation.
Alternate Courses:	Alt-Step 6: The manager assigns a service team leader to the relevant reservation. The system updates the calendar and the database Alt-Step 7: The manager cancels an assignment of a service team leader to the relevant reservation. The system updates the calendar and the database. Alt-Step 8: The manager cancels a reservation. The system updates the calendar and the database.	
Conclusion:	This use case concludes when the system displays the reservation details or a service team leader is assigned or cancelled from an assignment to a reservation or when a reservation is cancelled..	
Post condition:	None	
Assumptions:	The manager assigns a service team leader to all the customer reservations.	

Author(s): Ilma B.F.

Date: 2021/06/10

Version: 01

Name: (s) / Title: (s)		Date: 2024/03/15	Version: 01
Use Case Name:	View Completed Reservations	Use Case Type Business Requirements:	
Use Case Id:	010		
Priority:	Medium		
Source:	Requirement – R1		
Primary Business Actor:	Manager		
Other Participating Actors:	None		
Other Interested Stakeholders:	None		
Description:	This use case describes the event of the manager viewing the completed reservations. The Manager can view ratings of the relevant reservation or view uploaded photos by the service team leader.		
Precondition:	The user must be registered within the system.		

	The user must be logged in.	
Trigger:	This use case is initiated when the manager clicks 'View Completed Reservations'.	
Typical course of events:	Actor Action	System Response
	Step 1: The manager clicks the 'View Completed Reservations' button.	Step 2: The system validates the user. Step 3: The system displays an interface that shows the past reservations.
Alternate Courses:	Alt-Step 4: The manager chooses a particular reservation. The system displays the details of the current reservation. Alt-Step 5: The manager clicks 'view ratings'. The system displays the ratings of the particular reservation. Alt-Step 6: The manager clicks 'view photos'. The system displays the photos of the particular reservation.	
Conclusion:	This use case concludes when the system displays the reservation details or the details of a particular reservation or the photos of a reservation.	
Post condition:	None	
Assumptions:	None	

Author(s): Abdulla M.N.

Date: 2021/06/10

Version: 01

Use Case Name:	View Dashboard	Use Case Type Business Requirements:
Use Case Id:	011	
Priority:	Medium	
Source:	Requirement – R1	
Primary Business Actor:	Manager	
Other Participating Actors:	None	
Other Interested Stakeholders:	None	
Description:	This use case describes the event of the manager viewing the monthly revenue and number of bookings as charts and graphs.	
Precondition:	The user must be registered within the system. The user must be logged in.	
Trigger:	This use case is initiated when the manager chooses ‘View Dashboard’.	

Typical course of events:	Actor Action	System Response
	Step 1: The Manager chooses the 'View Dashboard'.	Step 2: The system validates the user. Step 3: The system displays the Dashboard.
Alternate Courses:	None.	
Conclusion:	This use case concludes when the system displays the Dashboard to the manager.	
Post condition:	None	
Assumptions:	None	

Author(s): Ilma B.F.

Date: 2021/06/10

Version: 01

Version: 01		
Use Case Name:	Add/ Update/ Delete Employee	Use Case Type Business Requirements:
Use Case Id:	012	
Priority:	Medium	
Source:	Requirements - R1	
Primary Business Actor:	System Admin	
Other Participating Actors:	None	
Other Interested Stakeholders:	None	
Description:	This use case describes the event of the system admin managing employee details within the system. The system admin can choose to add/update/delete employee details within the system. Once the change has been made, relevant changes are updated within the database.	
Precondition:	The user must be registered within the system. The user must be logged in.	
Trigger:	This use case is initiated when the system admin clicks 'Manage Employee Details'.	
Typical course of events:	Actor Action	System Response
	Step 1: The system admin chooses 'Manage Employee Details'. Step 3: The system admin chooses either to add/update/delete Employee details	Step 2: The system validates the user. .Step 4 : System update the database.
Alternate	None	

Courses:	
Conclusion:	This use case concludes when the system admin has successfully added / updated/ deleted relevant employee records.
Post condition:	None
Assumptions:	The system admin makes changes that do not violate the domain constraints.

Author(s): Ilma B.F.

Date: 2021/06/10

Version: 01

Use Case Name:	Add/ Update/ Delete Service Team Leader	Use Case Type Business Requirements:
Use Case Id:	013	
Priority:	Medium	
Source:	Requirements - R1	
Primary Business Actor:	System Admin	
Other Participating Actors:	None	
Other Interested Stakeholders:	None	
Description:	This use case describes the event of the system admin managing service team leaders' details within the system. The system admin can choose to add/update/delete service team leaders details within the system. Once the change has been made, relevant changes are updated within the database.	
Precondition:	The user must be logged in.	
Trigger:	This use case is initiated when the system admin clicks 'Manage Service Team Leaders Details'.	
Typical course of events:	Actor Action	System Response
	Step 1: The system admin chooses 'Manage Service Team Leaders Details'. Step 3: The system admin chooses either to add/update/delete Service Team Leader details.	Step 2: The system validates the user. Step 4: The System updates the Database.
Alternate Courses:	None.	
Conclusion:	This use case concludes when the system admin has successfully added/updated/deleted relevant service team leaders' records.	

Post condition:	None
Assumptions:	The system admin makes changes that do not violate the domain constraints.

Author(s): Ilma B.F.

Date: 2021/06/10

Version: 01

Use Case Name:	View / Search Employee	Use Case Type Business Requirements:
Use Case Id:	014	
Priority:	Medium	
Source:	Requirements - R1	
Primary Business Actor:	System Admin/ Manager	
Other Participating Actors:	None	
Other Interested Stakeholders:	None	
Description:	This use case describes the event of the system admin or manager viewing/searching employee details within the system.	
Precondition:	The user must be logged in.	
Trigger:	This use case is initiated when the system admin/manager clicks 'View Employee Details'.	
Typical course of events:	Actor Action	System Response
	Step 1: The system admin/manager chooses 'View Employee Details'.	Step 2: The system validates the user. Step 3: The system displays details with options to search and filter.
Alternate Courses:	None	
Conclusion:	This use case concludes when the system displays the employee details.	
Post condition:	None	
Assumptions:	None	

Author(s): Ilma B.F.

Date: 2021/06/10

Version: 01

Use Case Name:	View / Search Service Team Leader	Use Case Type
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Use Case Id:	015	Business Requirements:
Priority:	Medium	
Source:	Requirements - R1	
Primary Business Actor:	System Admin / Manager	
Other Participating Actors:	None	
Other Interested Stakeholders:	None	
Description:	This use case describes the event of the system admin/manager viewing/searching service team leader details within the system.	
Precondition:	The user must be logged in.	
Trigger:	This use case is initiated when the system admin/manager clicks 'View Service Team Leader Details'.	
Typical course of events:	Actor Action	System Response
	Step 1: The system admin/manager chooses 'View Service Team Leader Details'.	Step 2: The system validates the user. Step 3: The system displays details with options to search and filter.
Alternate Courses:	None	
Conclusion:	This use case concludes when the system displays the service team leader details.	
Post condition:	None	
Assumptions:	None	

Author(s): Ilma B.F.

Date: 2021/06/10

Version: 01

Use Case Name:	Add/ Update/ Delete Service Details	Use Case Type Business Requirements:
Use Case Id:	016	
Priority:	Medium	
Source:	Requirements - R1	
Primary Business Actor:	System Admin	
Other Participating Actors:	None	

Other Interested Stakeholders:	None	
Description:	This use case describes the event of the system admin managing service details within the system. The system admin can choose to add/update/delete service details within the system. Once the change has been made, relevant changes are updated within the database.	
Precondition:	The user must be logged in.	
Trigger:	This use case is initiated when the system admin clicks 'Manage Service Details'.	
Typical course of events:	Actor Action	System Response
	Step 1: The system admin chooses 'Manage Service Details'. Step 3: The system admin chooses to add/update/delete Service details.	Step 2: The system validates the user. Step 4: The System updates the Database.
Alternate Courses:	None.	
Conclusion:	This use case concludes when the system admin has successfully added/updated/deleted relevant service records.	
Post condition:	None	
Assumptions:	The system admin makes changes that do not violate the domain constraints.	

Author(s): Ilma B.F.

Date: 2021/06/10

Version: 01

Name: [Name]		Date: 2021/03/10	Version: 01
Use Case Name:	View / Search Service Details.	Use Case Type Business Requirements:	
Use Case Id:	017		
Priority:	Medium		
Source:	Requirements - R1		
Primary Business Actor:	System Admin / Manager		
Other Participating Actors:	None		
Other Interested Stakeholders:	None		
Description:	This use case describes the event of the system admin/manager viewing/searching service details within the system.		
Precondition:	The user must be logged in.		

Trigger:	This use case is initiated when the system admin/manager clicks 'View Service Details'.	
Typical course of events:	Actor Action	System Response
	Step 1: The system admin/manager chooses 'View Service Details'.	Step 2: The system validates the user. Step 3: The system displays details with options to search and filter.
Alternate Courses:	None	
Conclusion:	This use case concludes when the system displays the service details.	
Post condition:	None	
Assumptions:	None	

Author(s): Ilma B.F.

Date: 2021/06/10

Version: 01

Name(s): Anna Durr		Date: 2021/03/19	Version: 01
Use Case Name:	Add/ Update/ Delete Equipment Details	Use Case Type Business Requirements:	
Use Case Id:	018		
Priority:	Medium		
Source:	Requirements - R1		
Primary Business Actor:	System Admin		
Other Participating Actors:	None		
Other Interested Stakeholders:	None		
Description:	This use case describes the event of the system admin managing equipment details within the system. The system admin can choose to add/update/delete equipment details within the system. Once the changes are made, they are updated within the database.		
Precondition:	The user must be logged in.		
Trigger:	This use case is initiated when the system admin clicks 'Manage Equipment Details'.		
Typical course of events:	Actor Action	System Response	
	Step 1: The system admin chooses 'Manage Equipment Details'. Step 3: The system admin chooses either to add/update/delete equipment details.	Step 2: The system validates the user. Step 4: The System updates the Database.	

Alternate Courses:	None.
Conclusion:	This use case concludes when the system admin has successfully added/updated/deleted relevant equipment records.
Post condition:	None
Assumptions:	The system admin makes changes that do not violate the domain constraints.

Author(s): Abdulla M.N.

Date: 2021/06/10

Version: 01

Use Case Name:	View / Search Equipment Details.	Use Case Type Business Requirements:
Use Case Id:	019	
Priority:	Medium	
Source:	Requirements - R1	
Primary Business Actor:	System Admin/ Manager	
Other Participating Actors:	None	
Other Interested Stakeholders:	None	
Description:	This use case describes the event of the system admin/ manager viewing/searching equipment details within the system.	
Precondition:	The user must be logged in.	
Trigger:	This use case is initiated when the system admin/manager clicks View Equipment Details’.	
Typical course of events:	Actor Action	System Response
	Step 1: The system admin/manager chooses ‘View Equipments Details’.	Step 2: The system validates the user. Step 3: The system displays details with options to search and filter.
Alternate Courses:	None	
Conclusion:	This use case concludes when the system displays the equipment details.	
Post condition:	None	
Assumptions:	None	

Use Case Name:	View Service Dashboard	Use Case Type Business Requirements:
Use Case Id:	020	
Priority:	Medium	
Source:	Requirement – R1	
Primary Business Actor:	Service Team Leader	
Other Participating Actors:	None	
Other Interested Stakeholders:	None	
Description:	This use case describes the event of a service team leader viewing the details of services completed by his/her team from a chart/graph.	
Precondition:	The user must be registered within the system. The user must be logged in.	
Trigger:	This use case is initiated when the service team leader chooses ‘View Service Dashboard’.	
Typical course of events:	Actor Action	System Response
	Step 1: The Service Team Leader chooses the ‘View Service Dashboard’.	Step 2: The system validates the user. Step 3: The system displays the Service Dashboard.
Alternate Courses:	None.	
Conclusion:	This use case concludes when the system displays the Dashboard to the service team leader.	
Post condition:	None	
Assumptions:	None	

Use Case Name:	View Calendar	Use Case Type Business Requirements:
Use Case Id:	021	
Priority:	High	
Source:	Requirement – R1	
Primary Business Actor:	Service Team Leader	
Other Participating Actors:	None	
Other Interested Stakeholders:	None	
Description:	This use case describes the event of a service team leader viewing the customer reservations for the particular day. The service team leader can choose a certain reservation he/she has within the day and see the details of the reservations, upload photos and send an invoice to the customer.	
Precondition:	The user must be registered within the system. The user must be logged in.	
Trigger:	This use case is initiated when a service team leader clicks ‘View Calendar’.	
Typical course of events:	Actor Action	System Response
	Step 1:The service team leader chooses the ‘View Calendar’ option.	Step 2: The system validates the user. Step 3: The system displays an interface that shows the customer reservations of the particular day.
Alternate Courses:	Alt-Step 4: The service team leader clicks ‘View Reservation Details’. He/she is shown the details of each reservation. Alt-Step 5: The service team leader clicks ‘Send Invoice’. An invoice is sent to the relevant customer through the system. Alt-Step 6: The service team leader clicks ‘Upload picture’ and uploads -before and after- service pictures. The system updates the database.	
Conclusion:	This use case concludes when the system displays the calendar or displays each reservation details or sends an invoice to the customer or stores the uploaded photos of the reservation.	
Post condition:	None	
Assumptions:	Service Team Leader sends an invoice to the customer only after the service has been provided.	

Use Case Name:	Add Employee Attendance	Use Case Type Business Requirements:
Use Case Id:	022	
Priority:	Medium	
Source:	Requirement – R1	
Primary Business Actor:	System Admin	
Other Participating Actors:	None	
Other Interested Stakeholders:	None	
Description:	This use case describes the event of the system admin inserting the employee attendance for the particular day. The system admin can then form teams based on the attendance. The employees and the teams who are on work on the particular day can then be displayed to the manager.	
Precondition:	The user must be registered within the system. The user must be logged in.	
Trigger:	This use case is initiated when the system admin clicks ‘Employee Attendance’.	
Typical course of events:	Actor Action	System Response
	Step 1: The system admin chooses the ‘Employee Attendance’ option.	Step 2: The system validates the user. Step 3: The system displays an interface that shows the employee attendance for the particular day.
Alternate Courses:	Alt-Step 4: The system admin clicks edit. The system then displays the interface where he can insert the attendance. Alt-Step 5: The system admin inserts details of who are on work that day and the teams to which they belong. The details are updated to the database.	
Conclusion:	This use case concludes when the system admin clicks submit and the system updates the attendance and team details for the particular day.	
Post condition:	None	
Assumptions:	The system admin inserts attendance details each morning.	

2. System Architecture

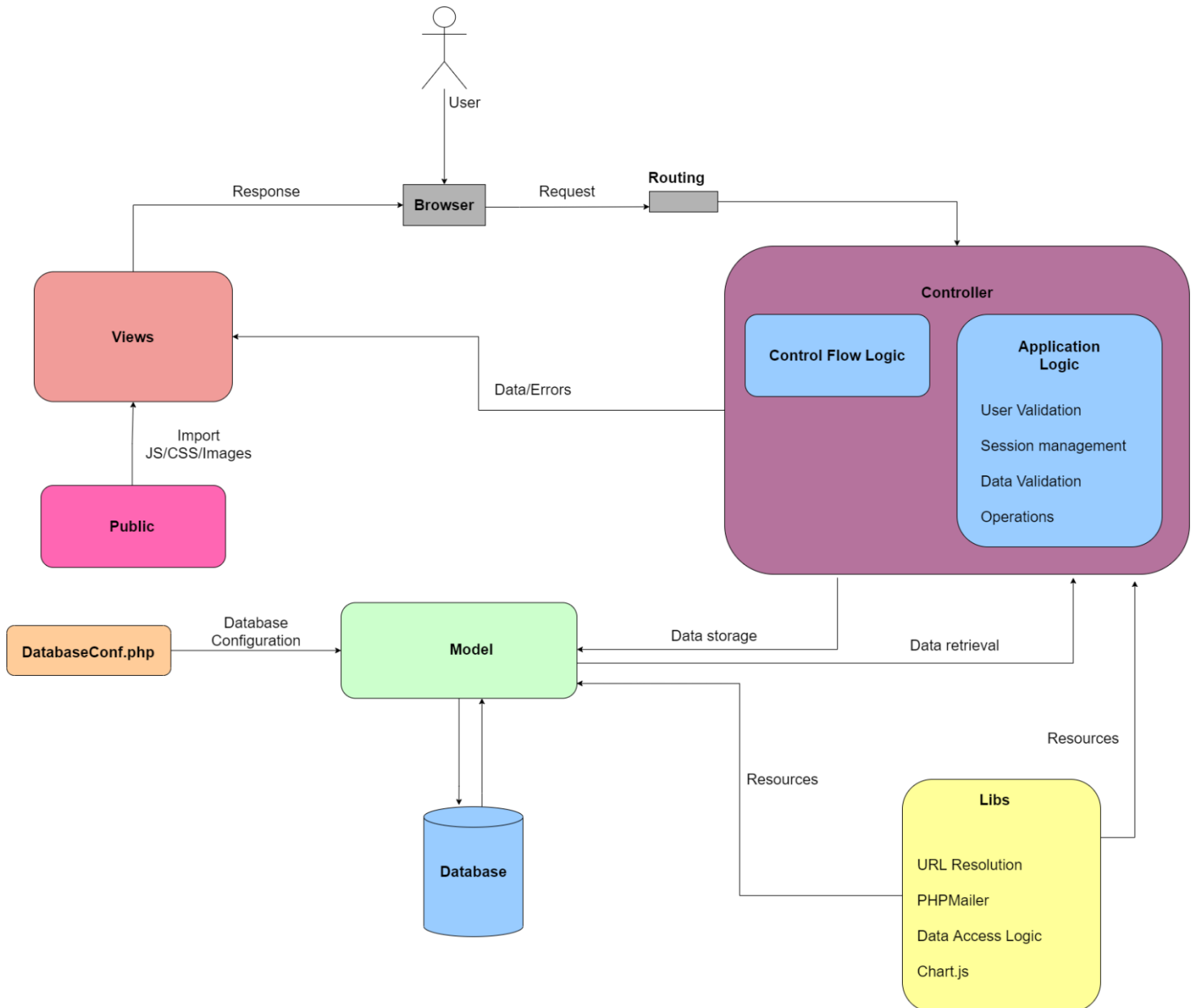


Figure 2: System Architecture

2.1 Derived Component Diagram

URL (for quality image): <https://files.fm/f/bey9a3r2x>

The derived component diagram [3] below shows the architecture of the system.

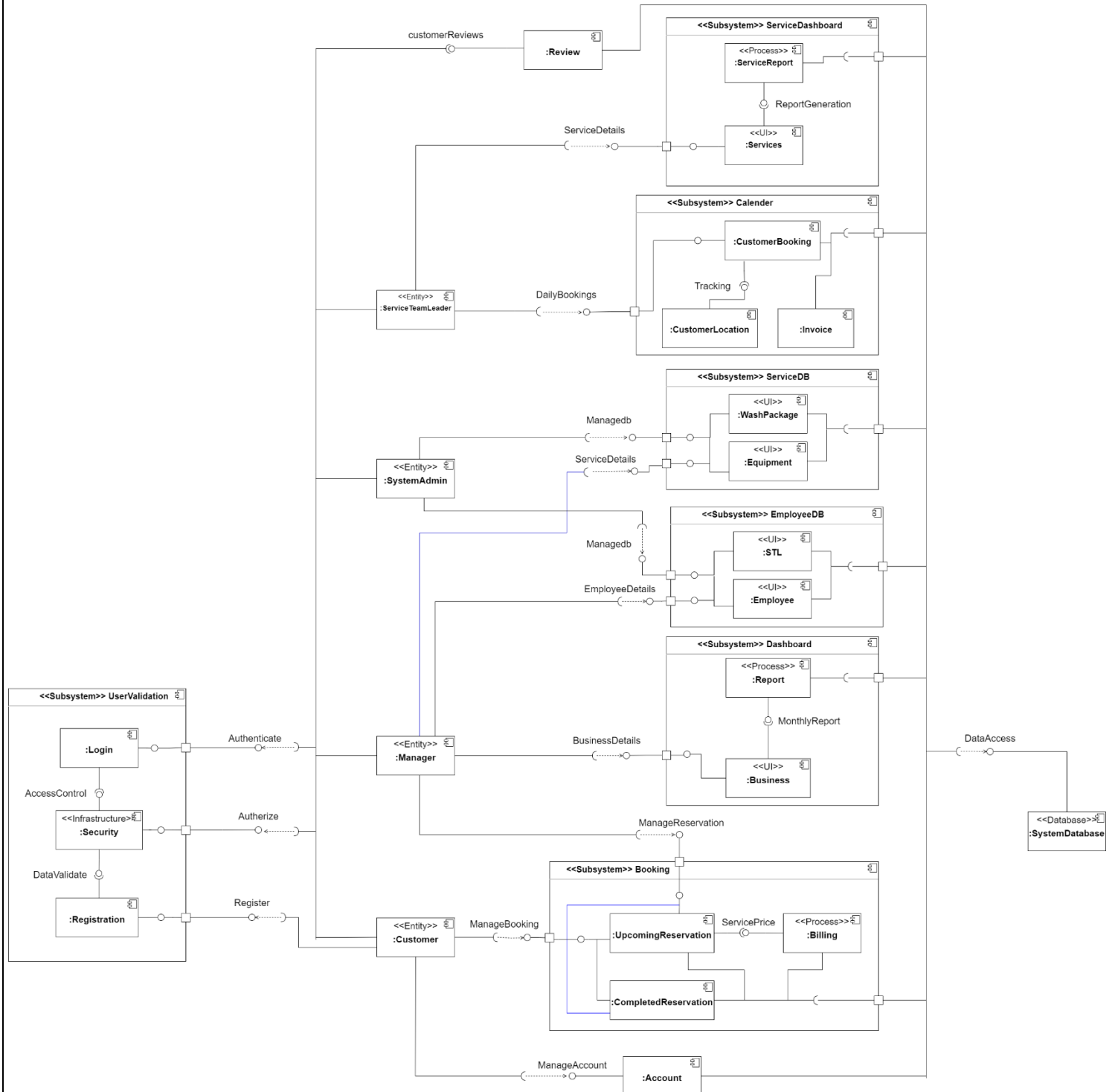










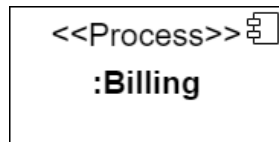


Figure 3: System Architecture - Derived Component Diagram

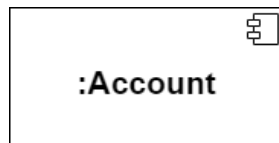
2.2 Components and their responsibilities

 :Login	Has the functionalities needed for user login
<<Infrastructure>>  :Security	Provides security functionalities such as user validation, email verification, user authorization etc.
 :Registration	Has the functionalities needed for customer registration
<<Entity>>  :ServiceTeamLeader	Entity component which provides the functionalities of a service team leader
<<Entity>>  :SystemAdmin	Entity component which provides the functionalities of the system admin
<<Entity>>  :Manager	Entity component which provides the functionalities of the manager
<<Entity>>  :Customer	Entity component which provides the functionalities of a customer
 :Review	Provides storing and retrieving customer reviews functionalities
<<Process>>  :ServiceReport	Analyzes past reservations of a service team leader and generates reports
<<UI>>  :Services	UI component which presents the service reports of a service team leader graphically

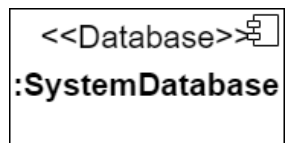
:CustomerBooking	Provides assigned reservation details of the current day for a service team leader
:CustomerLocation	Tracks customer location with the use of Google maps API
:Invoice	Generates and sends an invoice to the customer for a particular service
<<UI>> :WashPackage	UI component to manage wash package details in the system
<<UI>> :Equipment	UI component to manage details of servicing equipment and cleaning consumables
<<UI>> :STL	UI component to manage service team leader details in the system
<<UI>> :Employee	UI component to manage employee details in the system
<<Process>> :Report	Analyzes revenue of the reservations within the past month and generates business reports
<<UI>> :Business	UI component which presents the business reports graphically
:UpcomingReservation	Contains functionalities for the customer and manager to manage the upcoming reservations such as rescheduling, cancelling, assigning service team leaders etc.
:CompletedReservation	Contains functionalities for the customer and manager to view details of past reservations



Calculates the service price of a reservation



Provides functionalities for a customer to manage their account



Transfers data to and from the database for the relevant queries

3.2 EER Diagram

URL (for quality image): <https://ibb.co/64gh4HT>

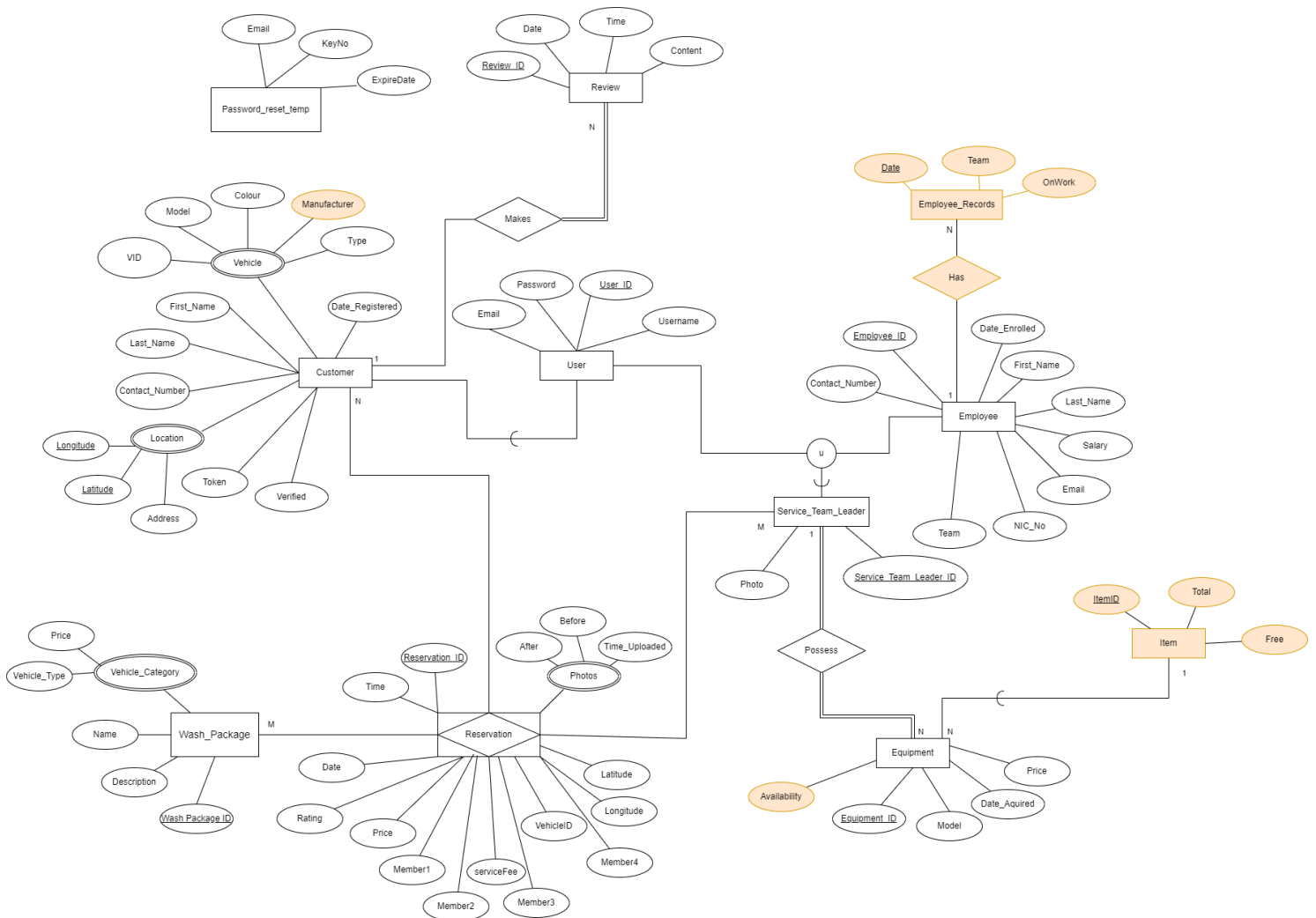
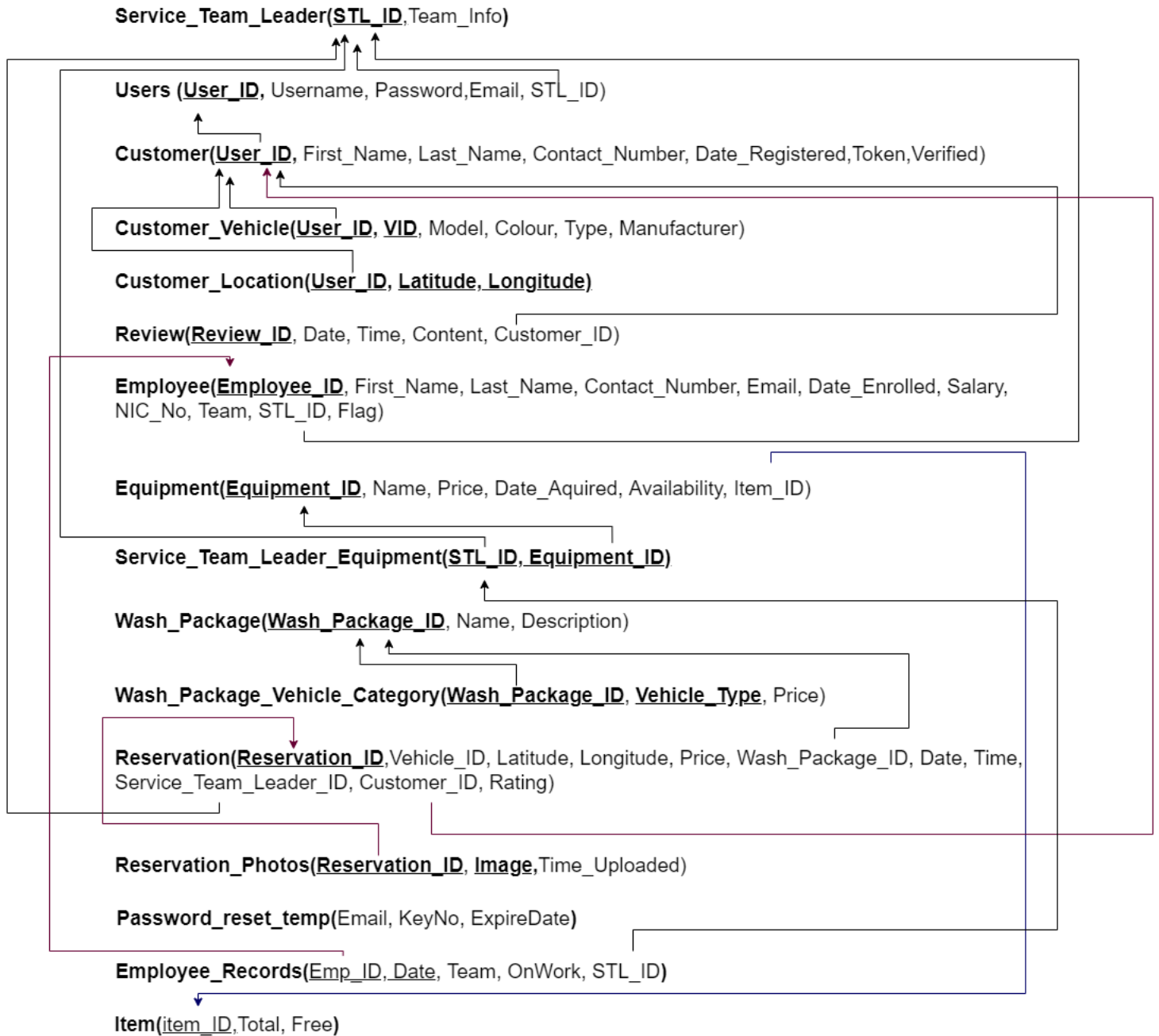


Figure 5: EER Diagram

-Changes from the initial diagram are highlighted.

3.3 EER Mapping



Primary keys are indicated by underlining.

Foreign keys are indicated using arrows.

3.4 Sequence Diagrams

The following sequence diagrams are drawn to show the interactions between classes and objects and their sequences for the use cases.

Login

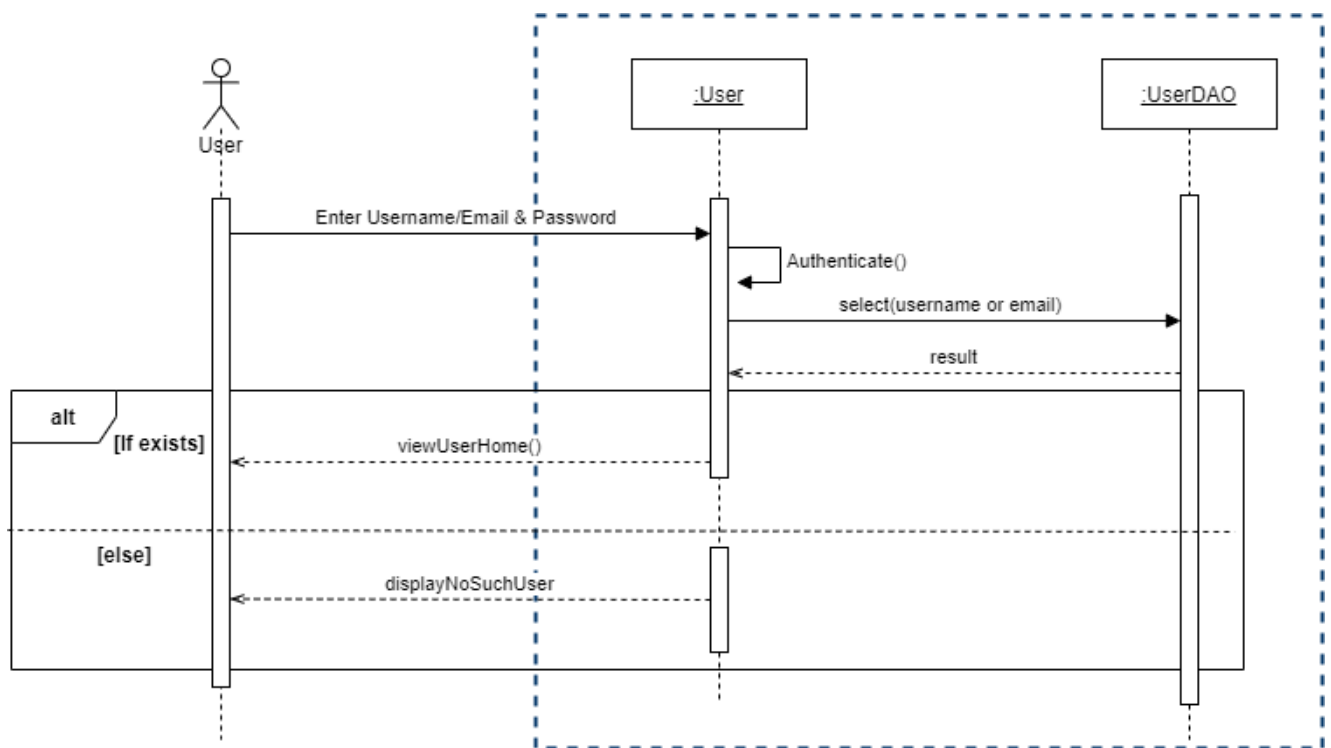


Figure 6: Sequence Diagram - Login

Password Reset

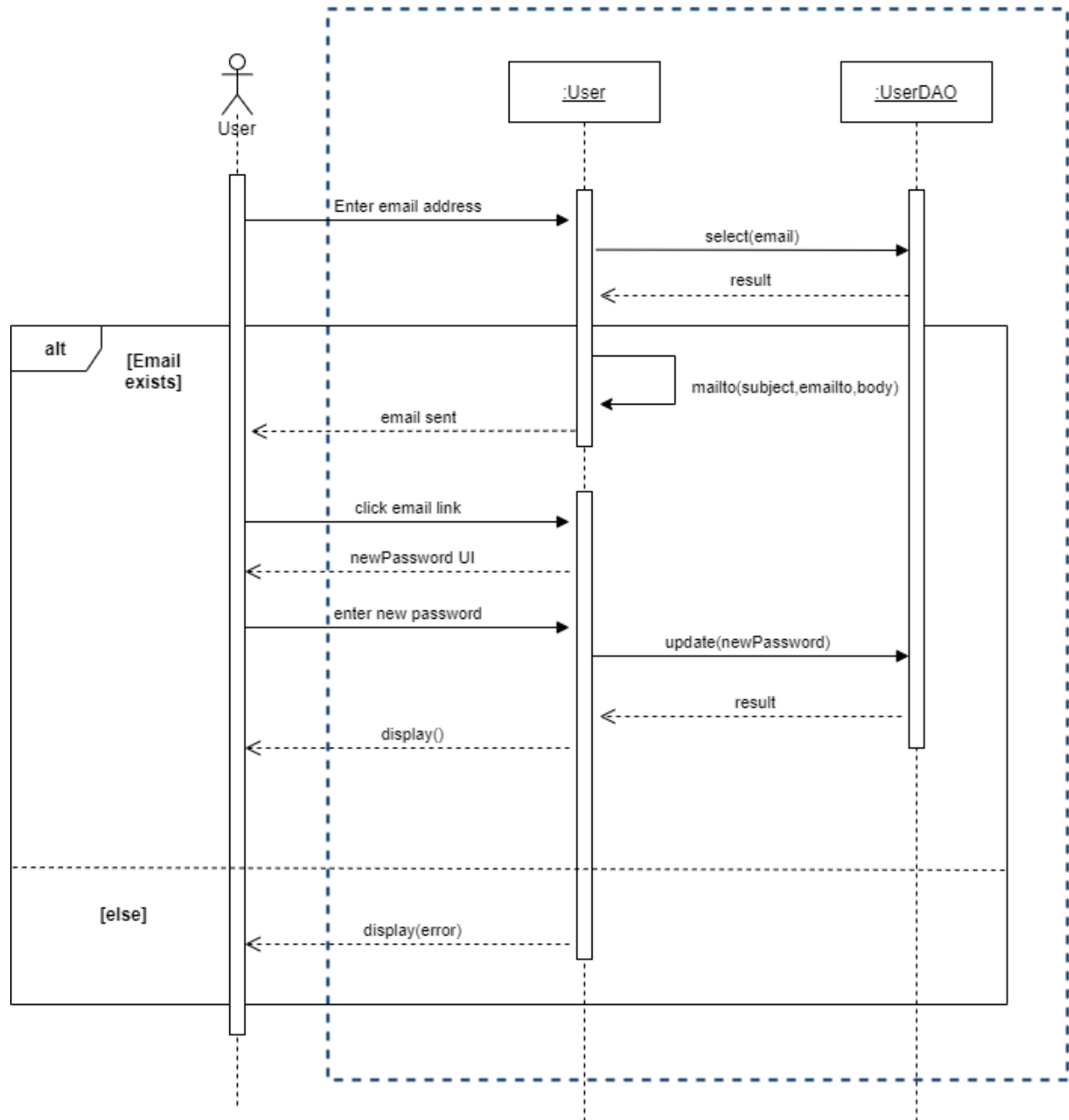


Figure 7: Sequence Diagram - Password Reset

View Reviews

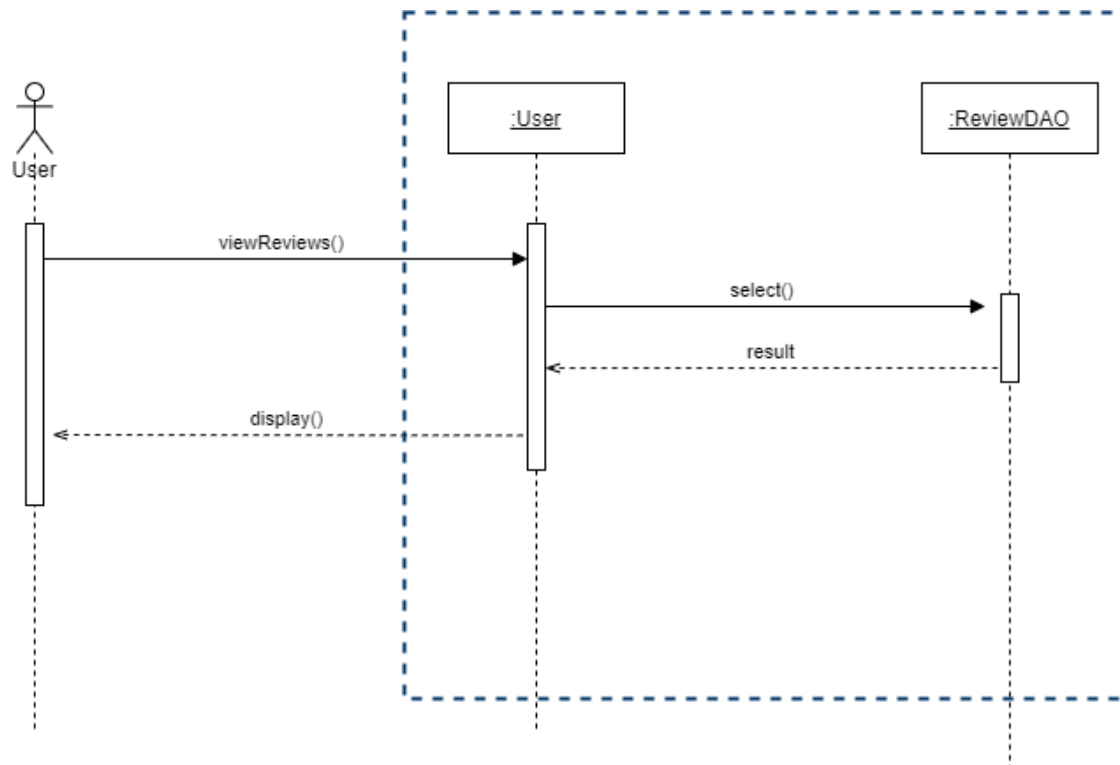


Figure 8: Sequence Diagram - View Reviews

Registration

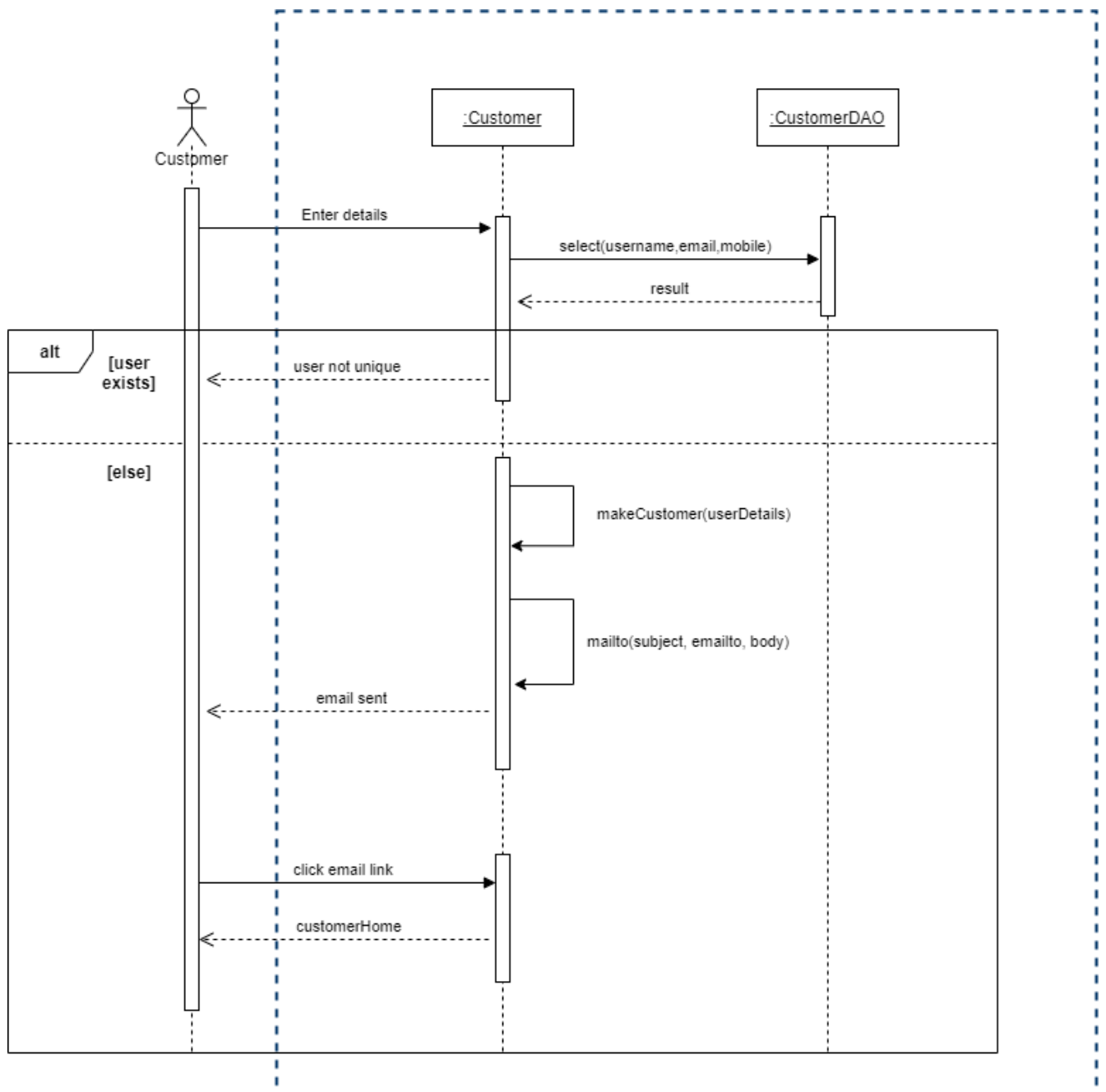


Figure 9: Sequence Diagram - Registration

Make Reservation

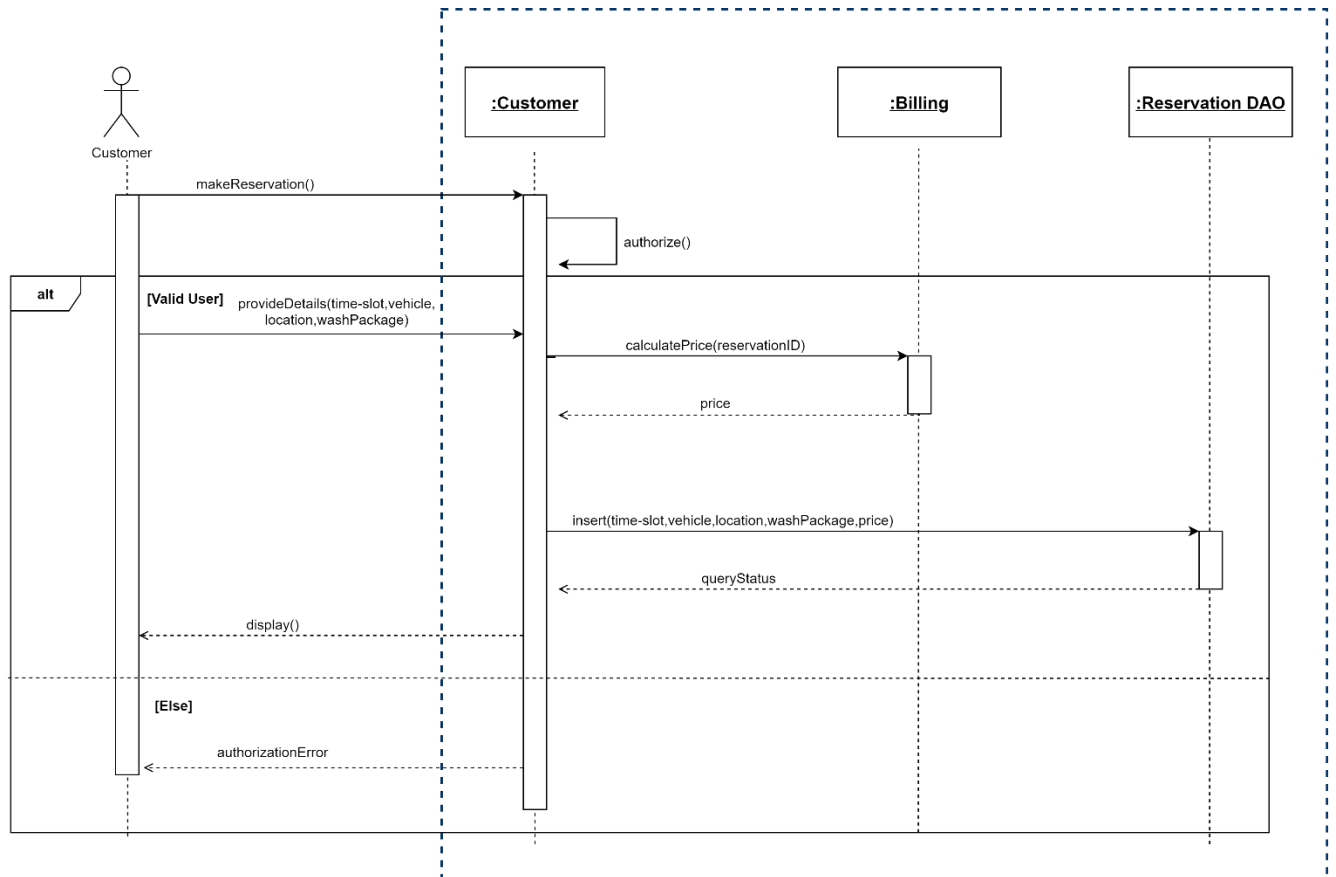


Figure 10: Sequence Diagram - Make Reservation

View and Modify Upcoming Reservations

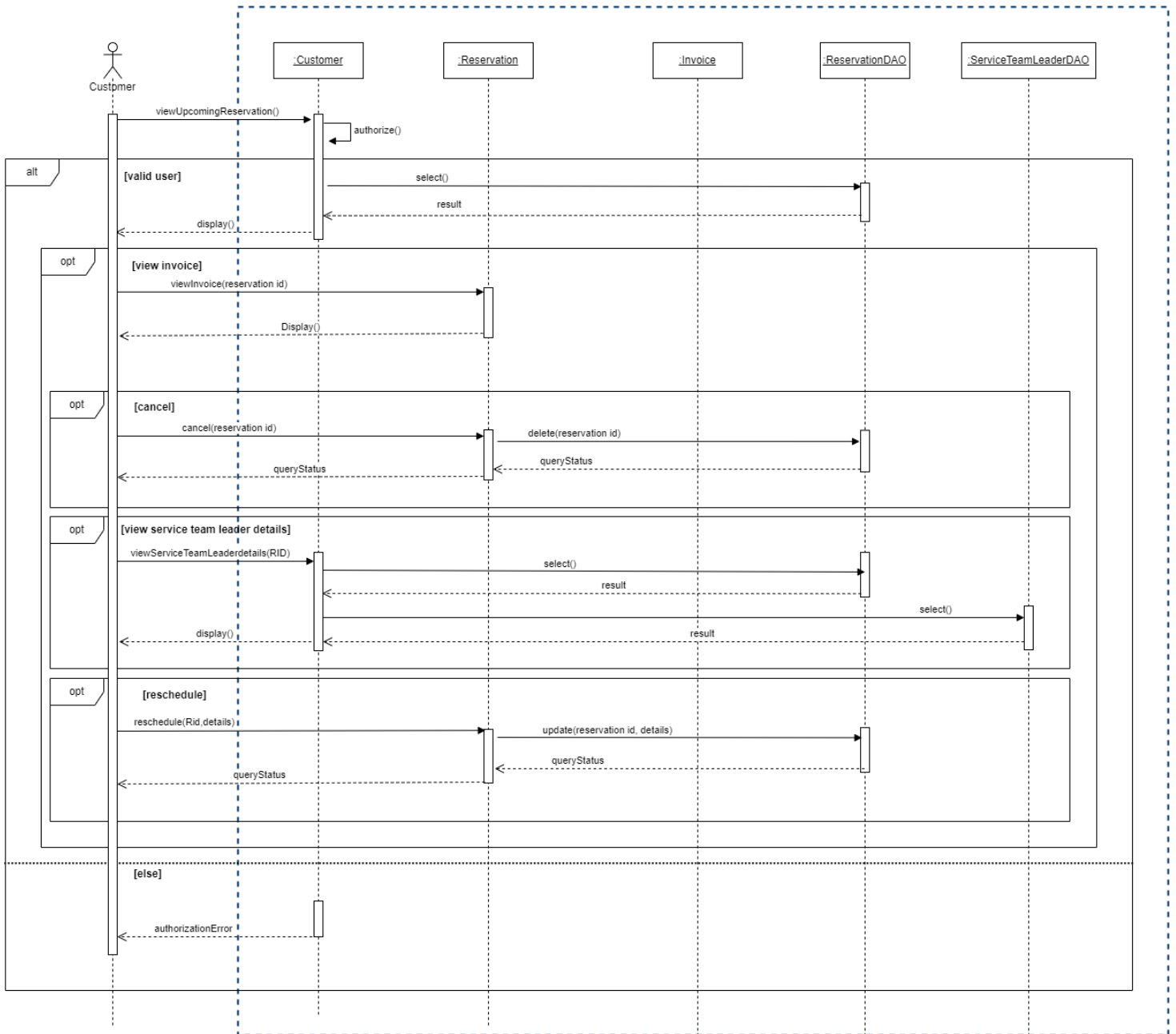


Figure 11: Sequence Diagram - View and Modify Upcoming Reservations

View and Rate Past Reservations

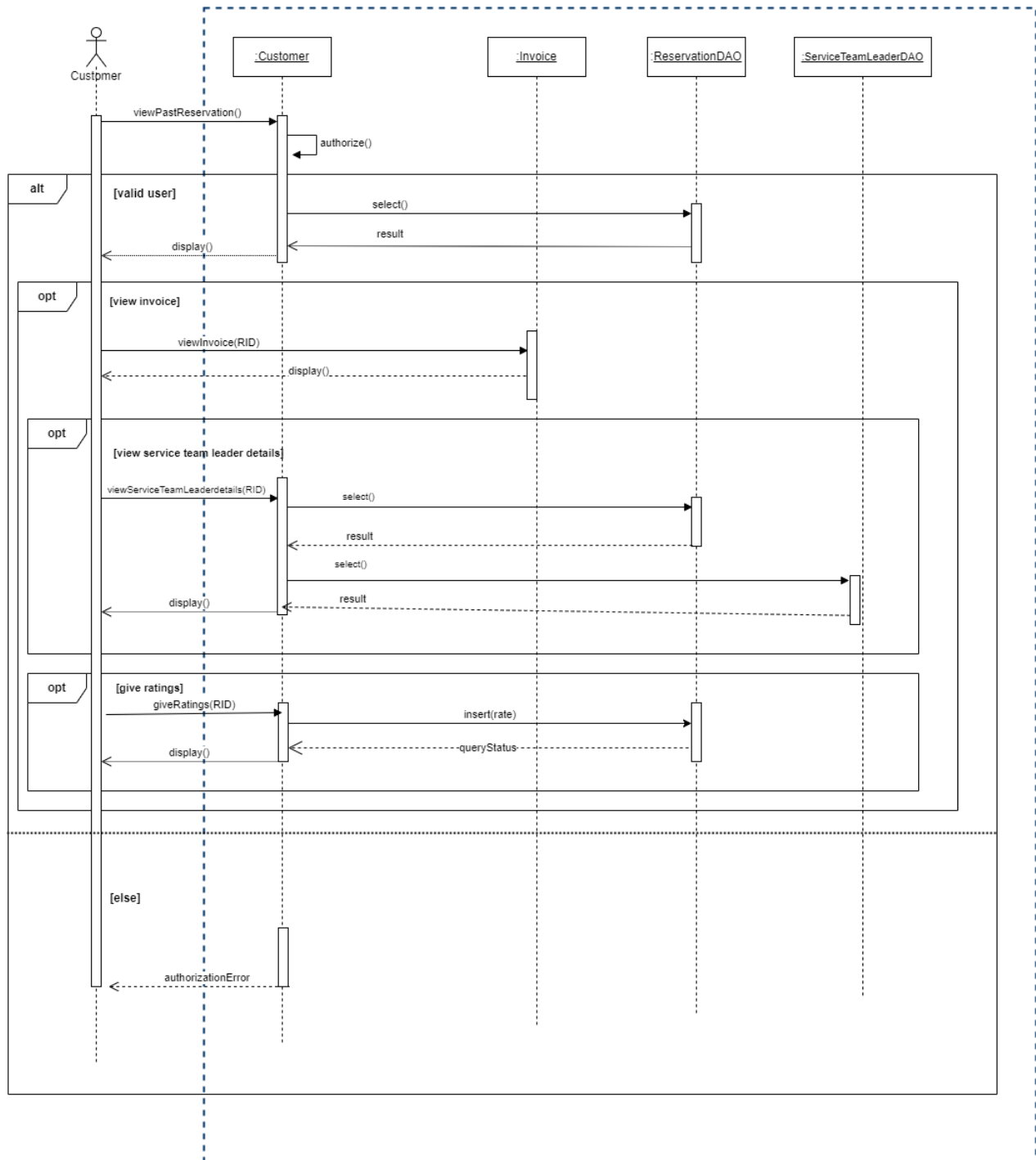


Figure 12: Sequence Diagram - View and Rate Past Reservations

Give Reviews

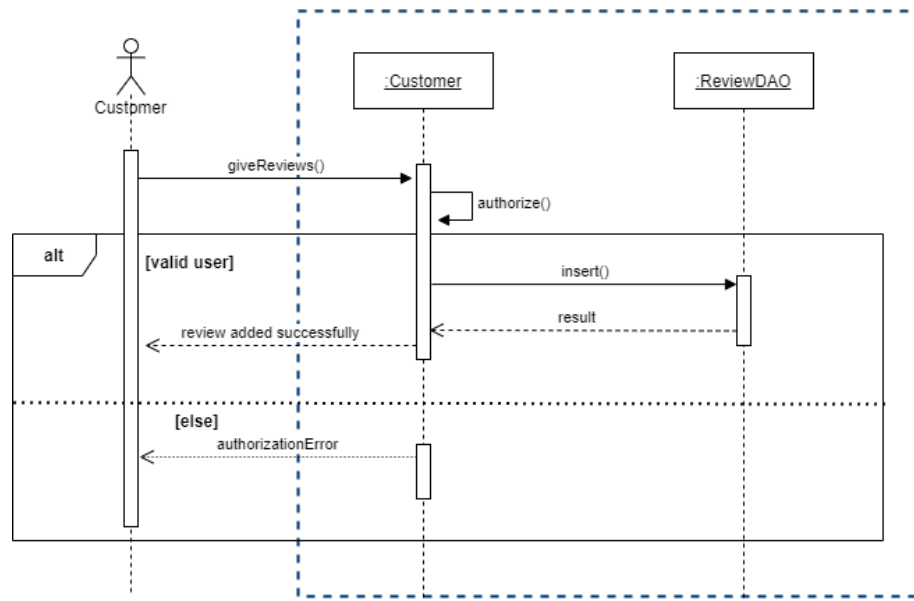


Figure 13: Sequence Diagram - Give Reviews

Edit Account Details

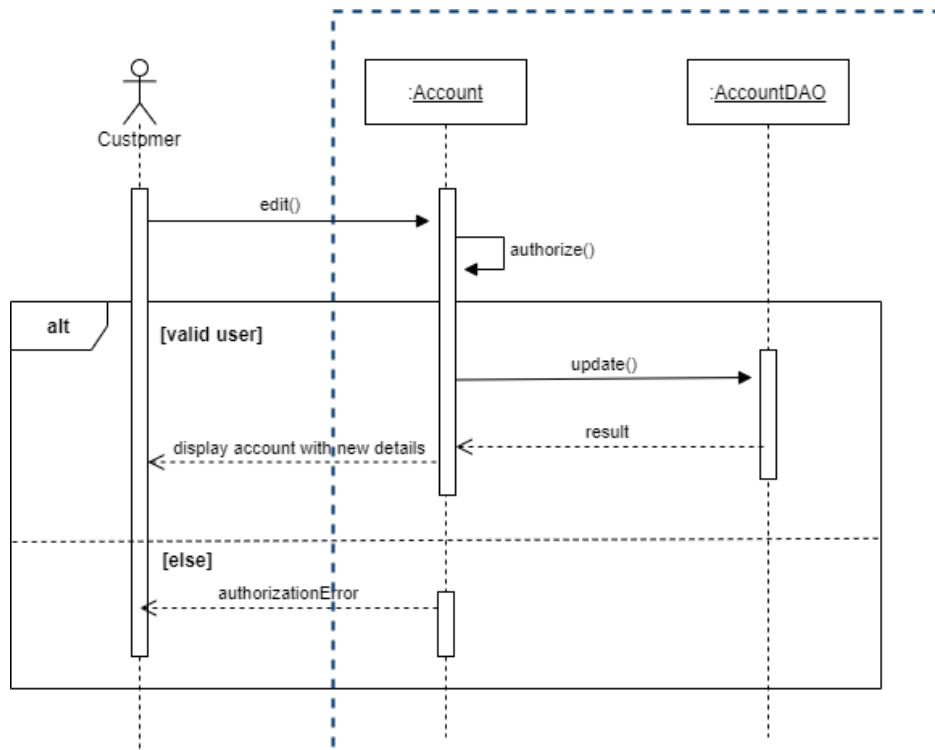


Figure 14: Sequence Diagram - Edit Account Details

Delete Account

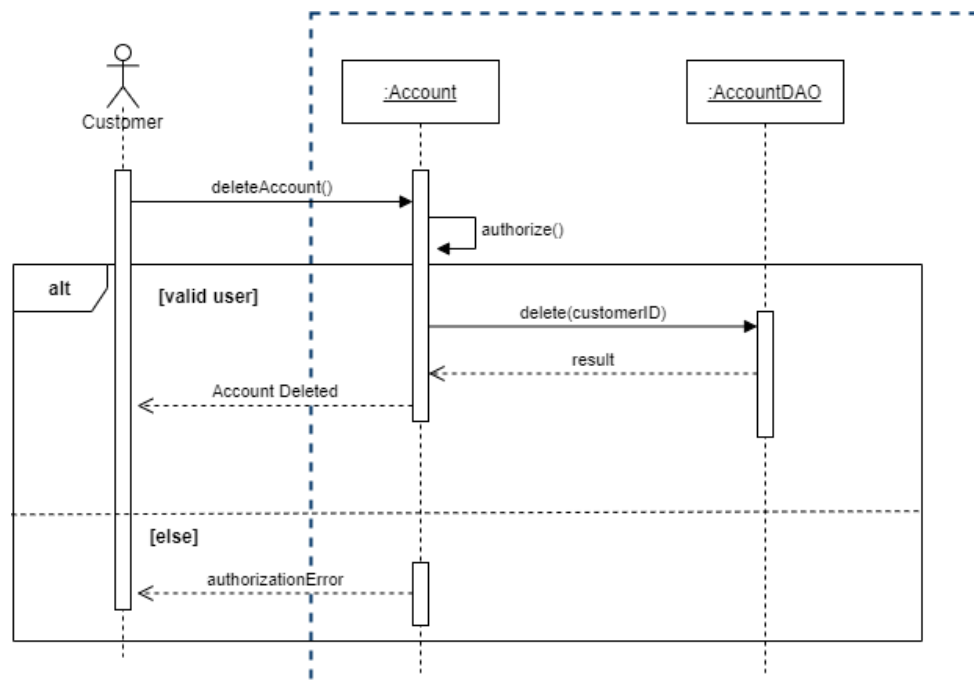


Figure 15: Sequence Diagram - Delete Account

View and Assign STL for Reservations

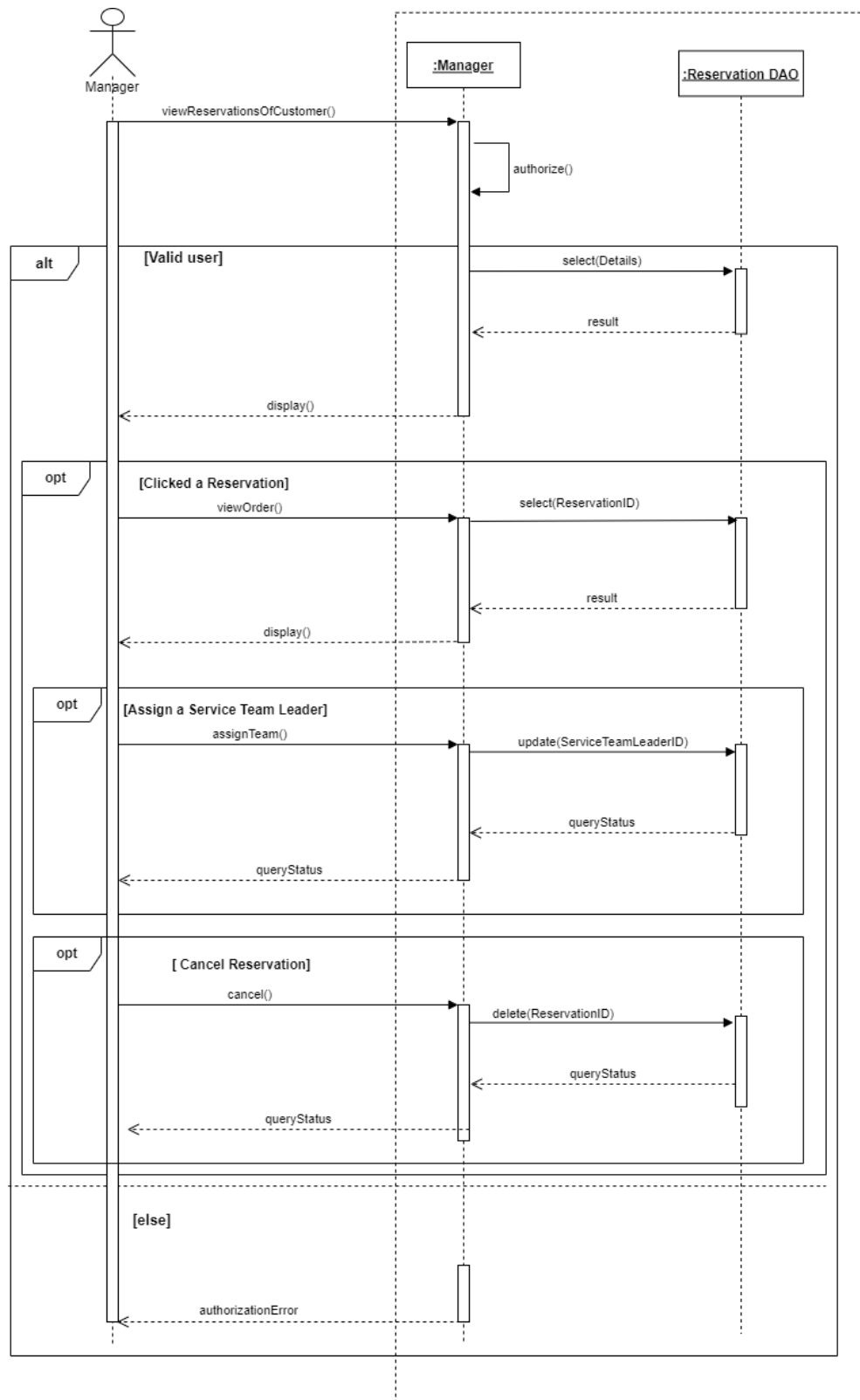


Figure 16: Sequence Diagram - View and Assign STL for Reservations

View Completed Reservations

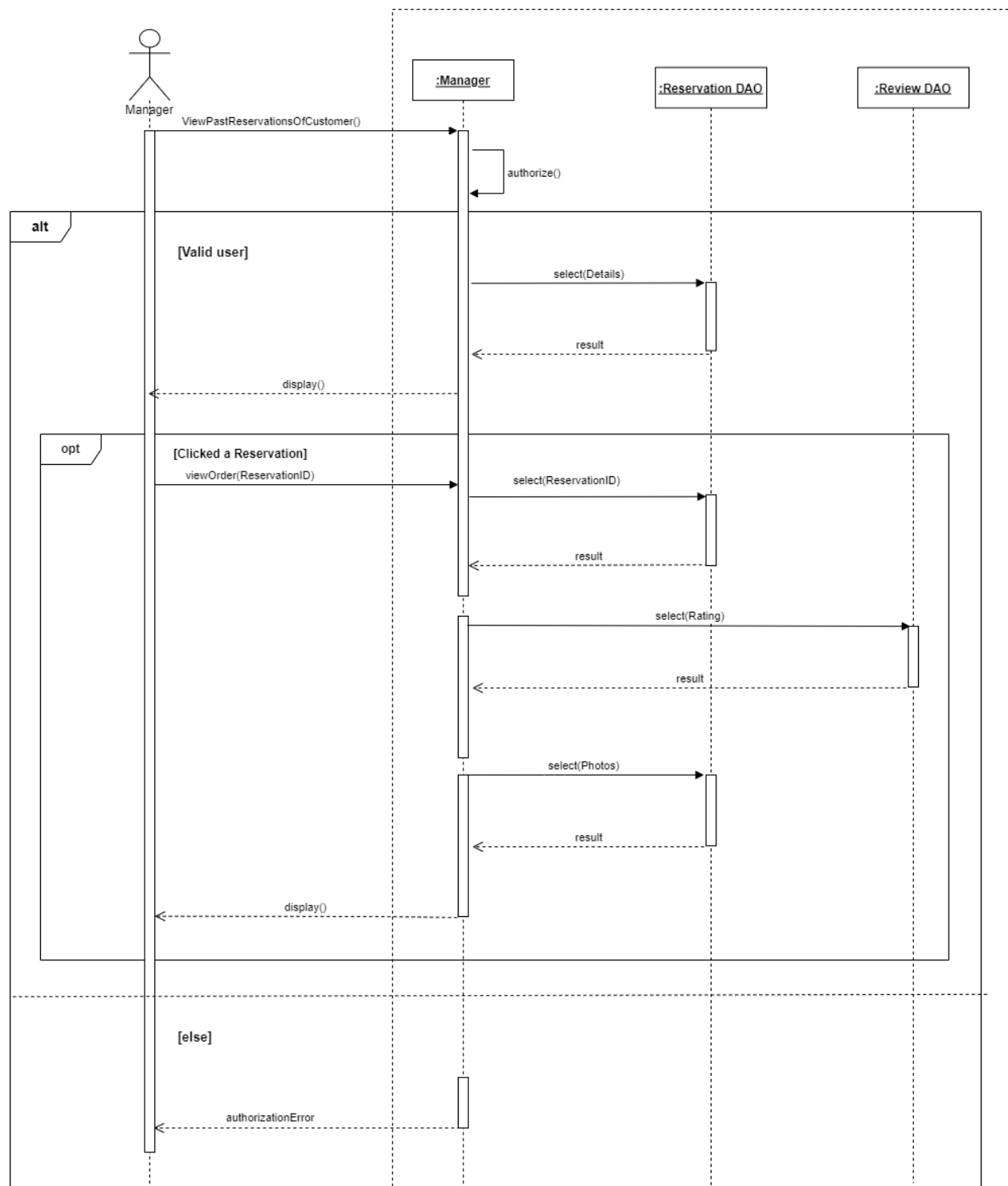


Figure 17: Sequence Diagram - View Completed Reservations

View Dashboard

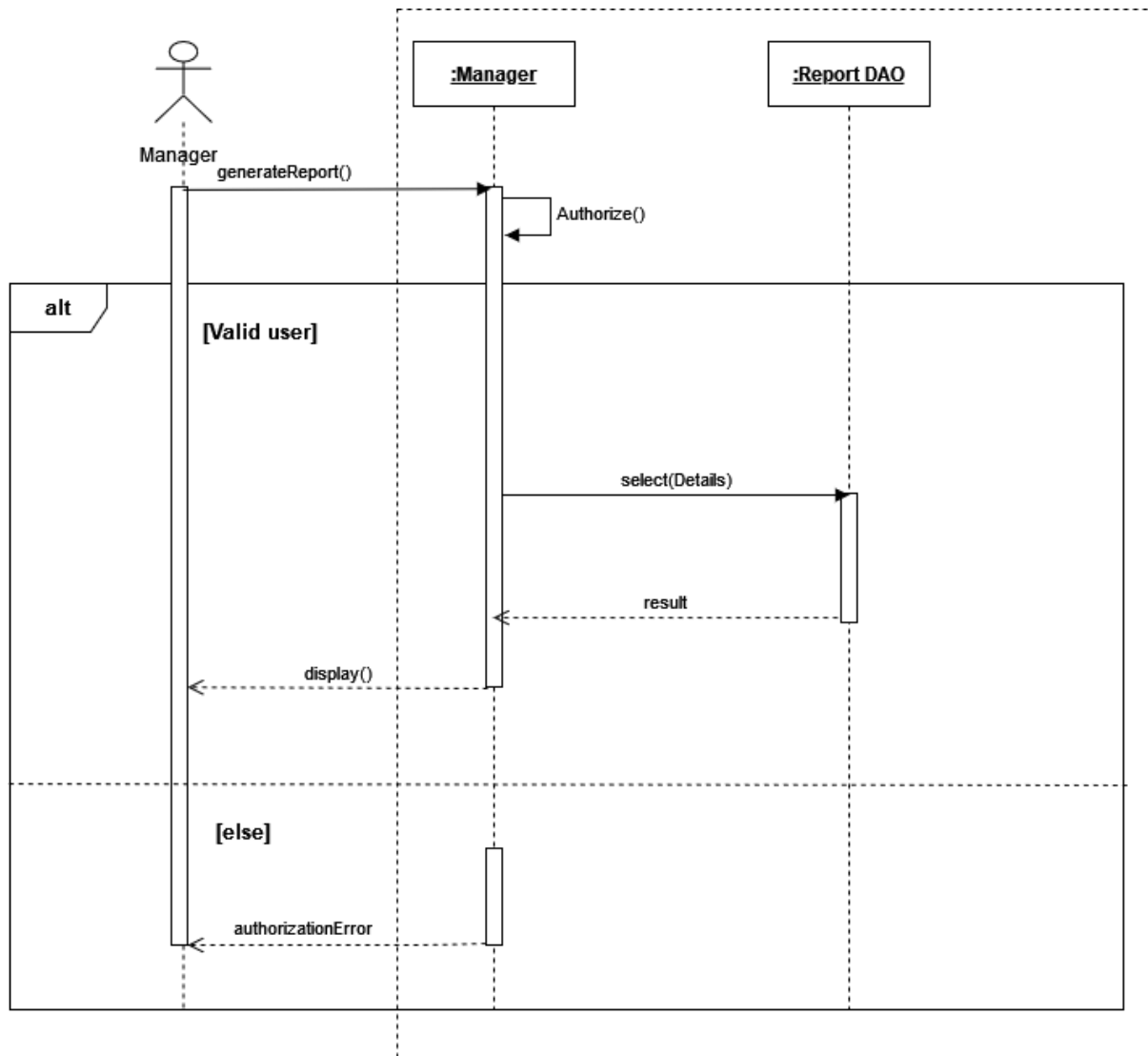


Figure 18: Sequence Diagram - View Dashboard

Add/Update/Delete Employee

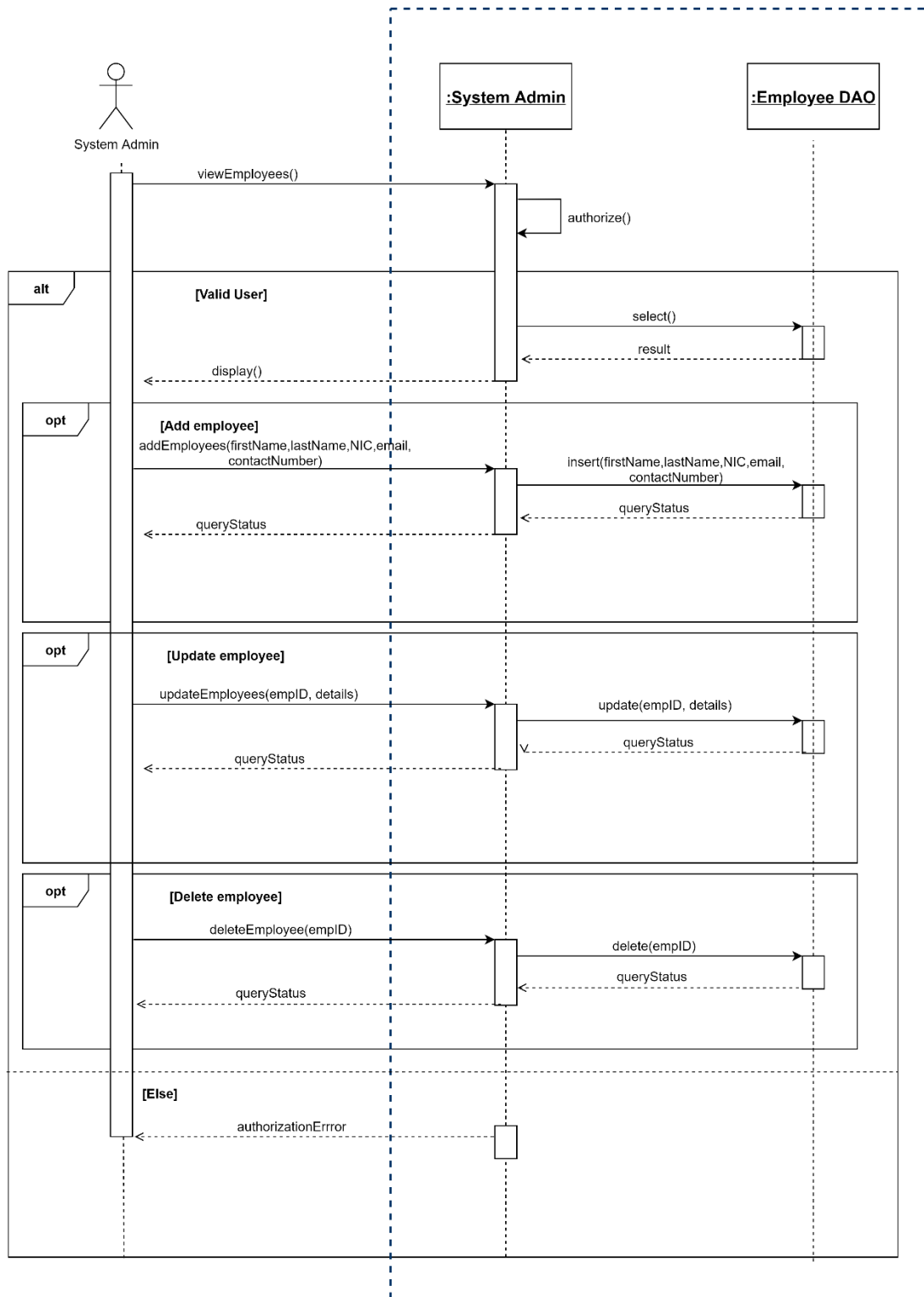


Figure 19: Sequence Diagram - Add/Update/Delete Employee

Add/Update/Delete Equipment

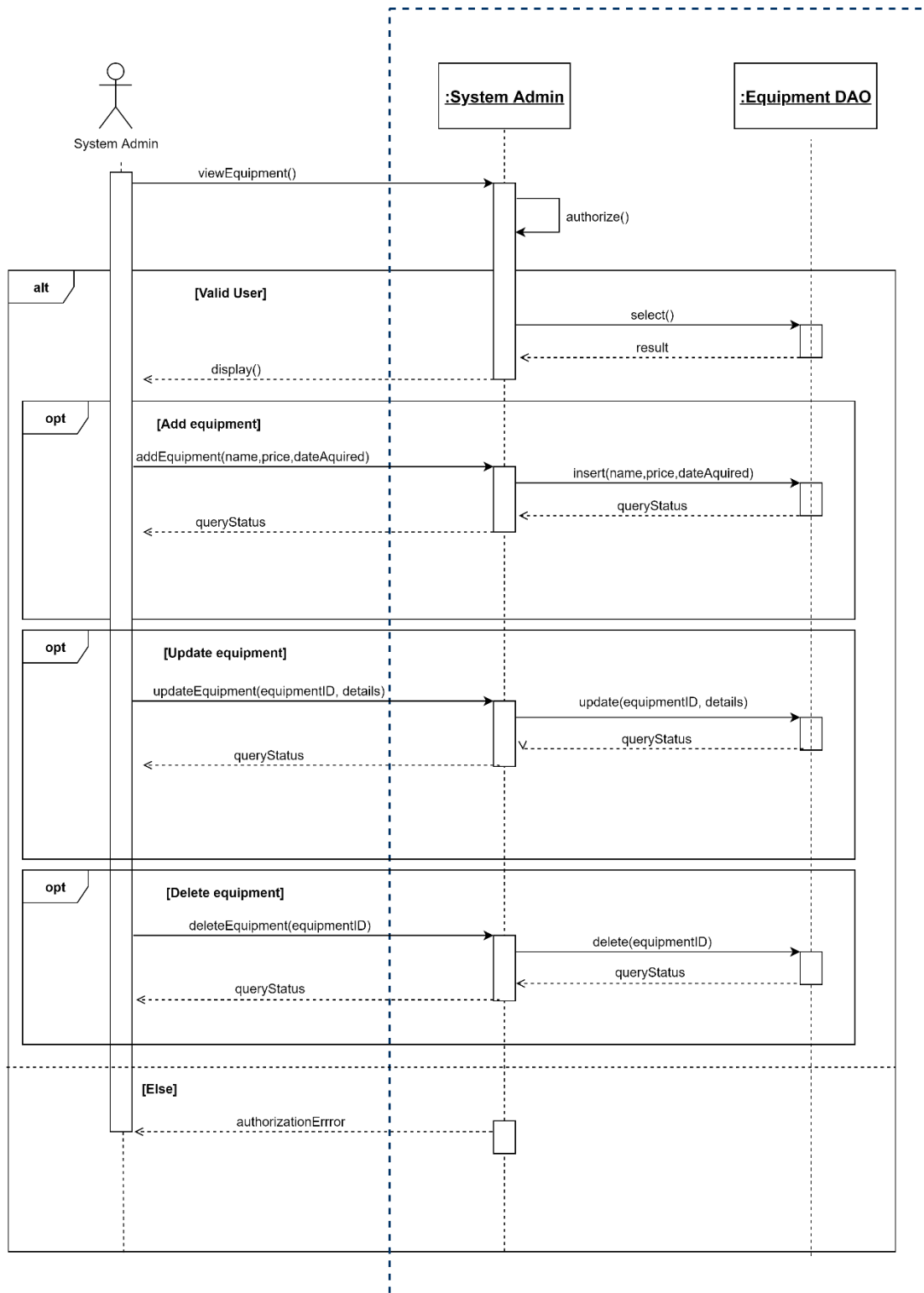


Figure 20: Sequence Diagram - Add/Update/Delete Equipment

Add/Update/Delete Service Details

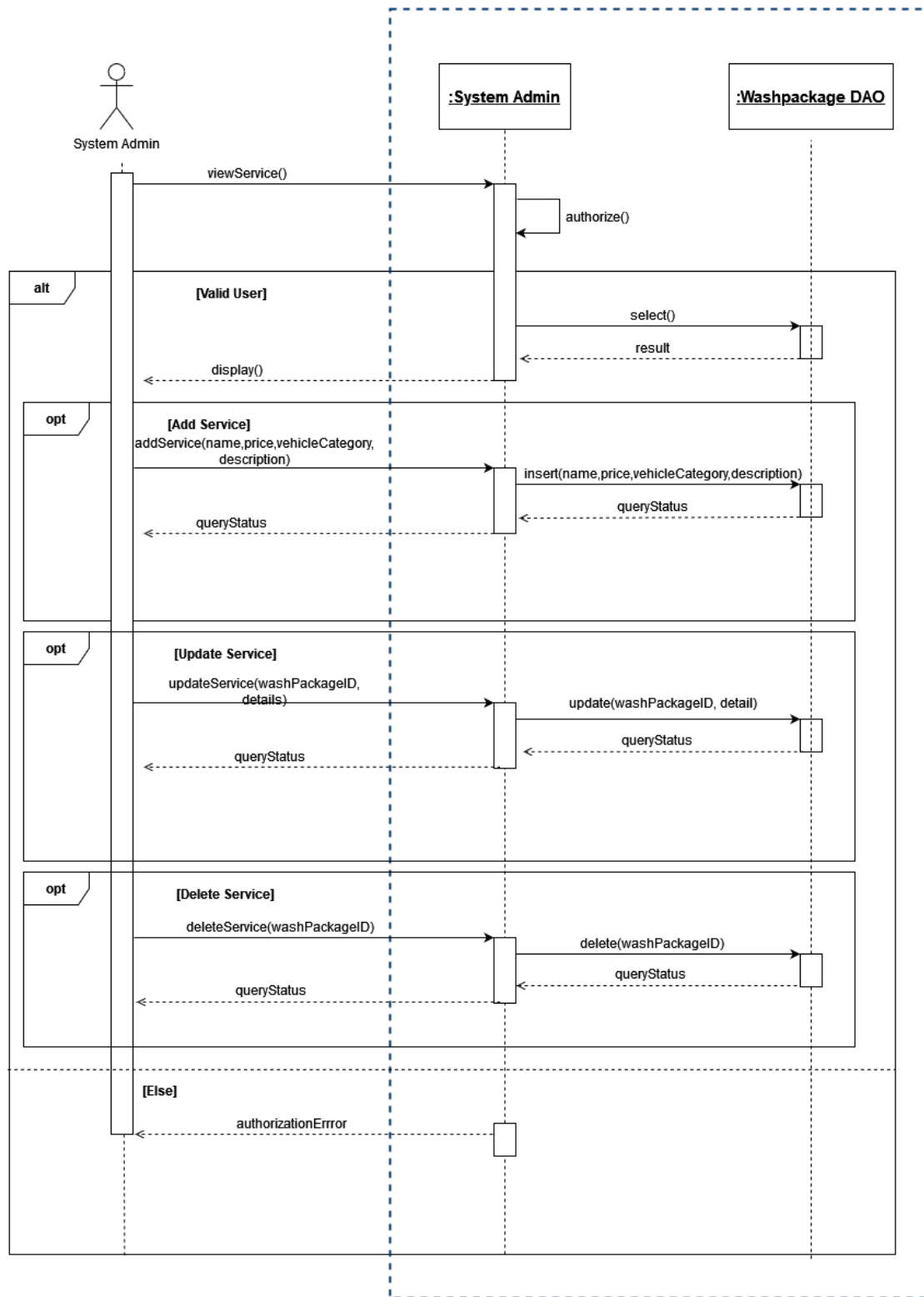


Figure 21: Sequence Diagram - Add/Update/Delete Service Details

Add/Update/Delete Service Team Leader

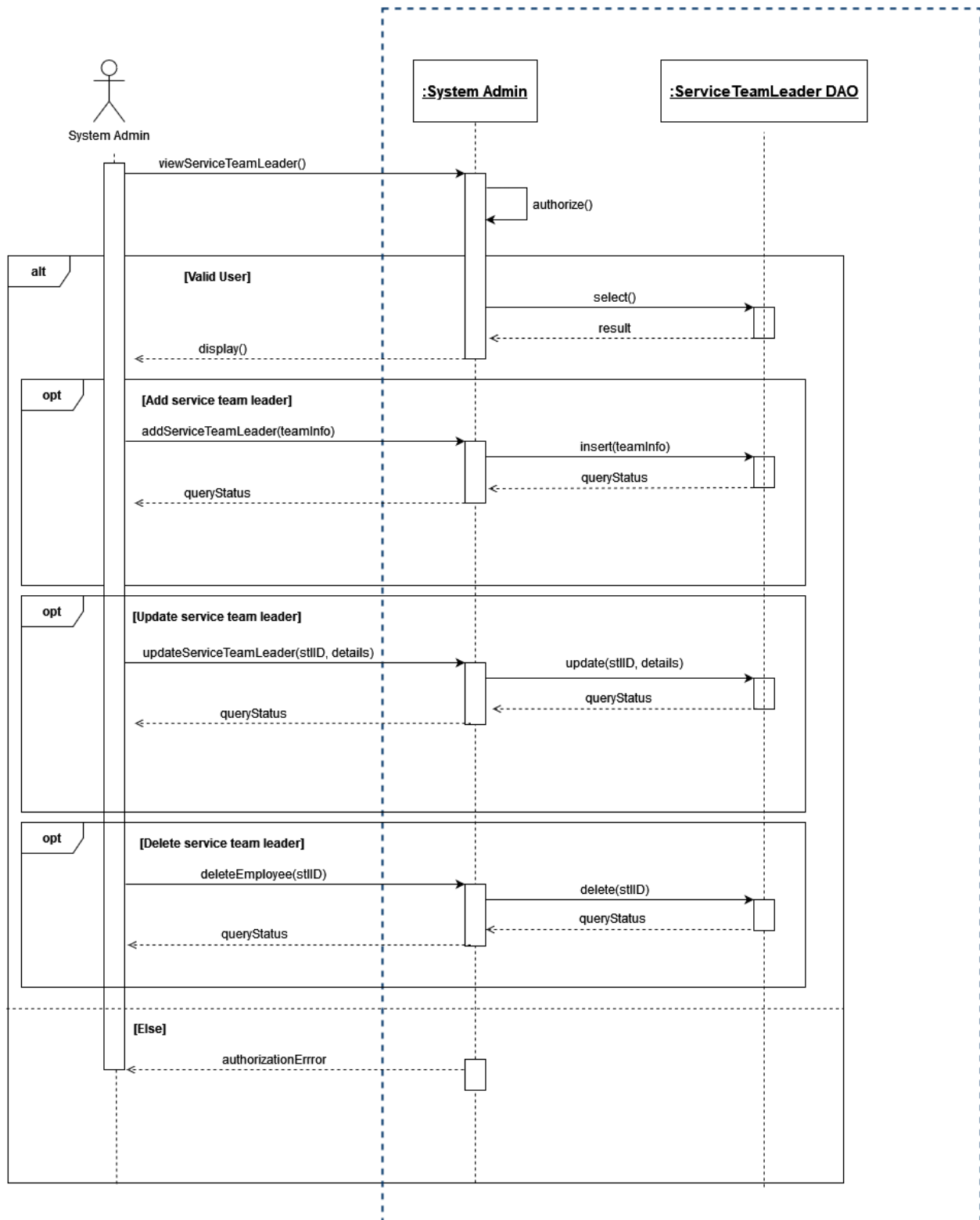


Figure 22: Sequence Diagram - Add/Update/Delete Service Team Leader

View/Search Employee

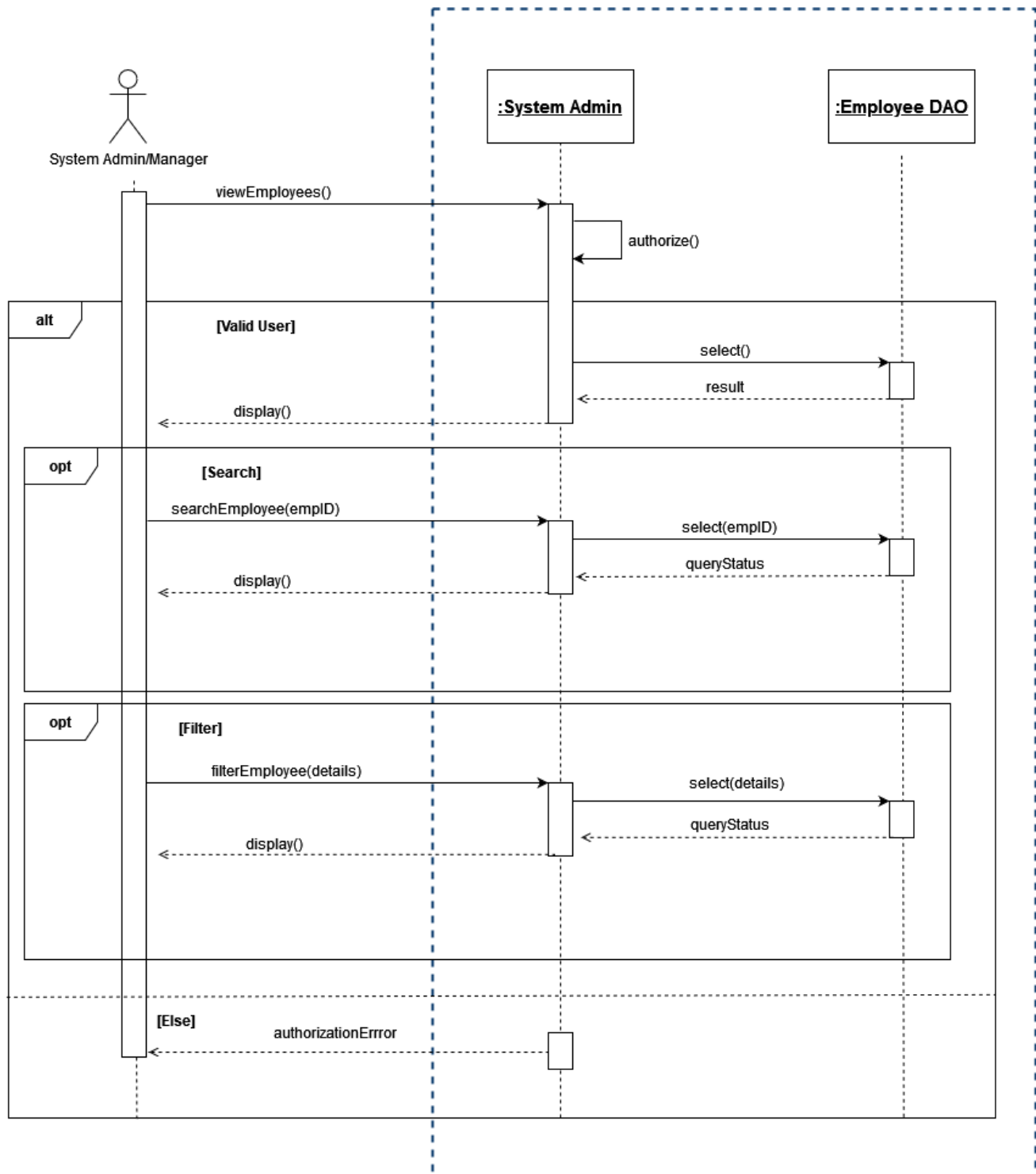


Figure 23: Sequence Diagram - View/Search Employee

View/Search Equipment

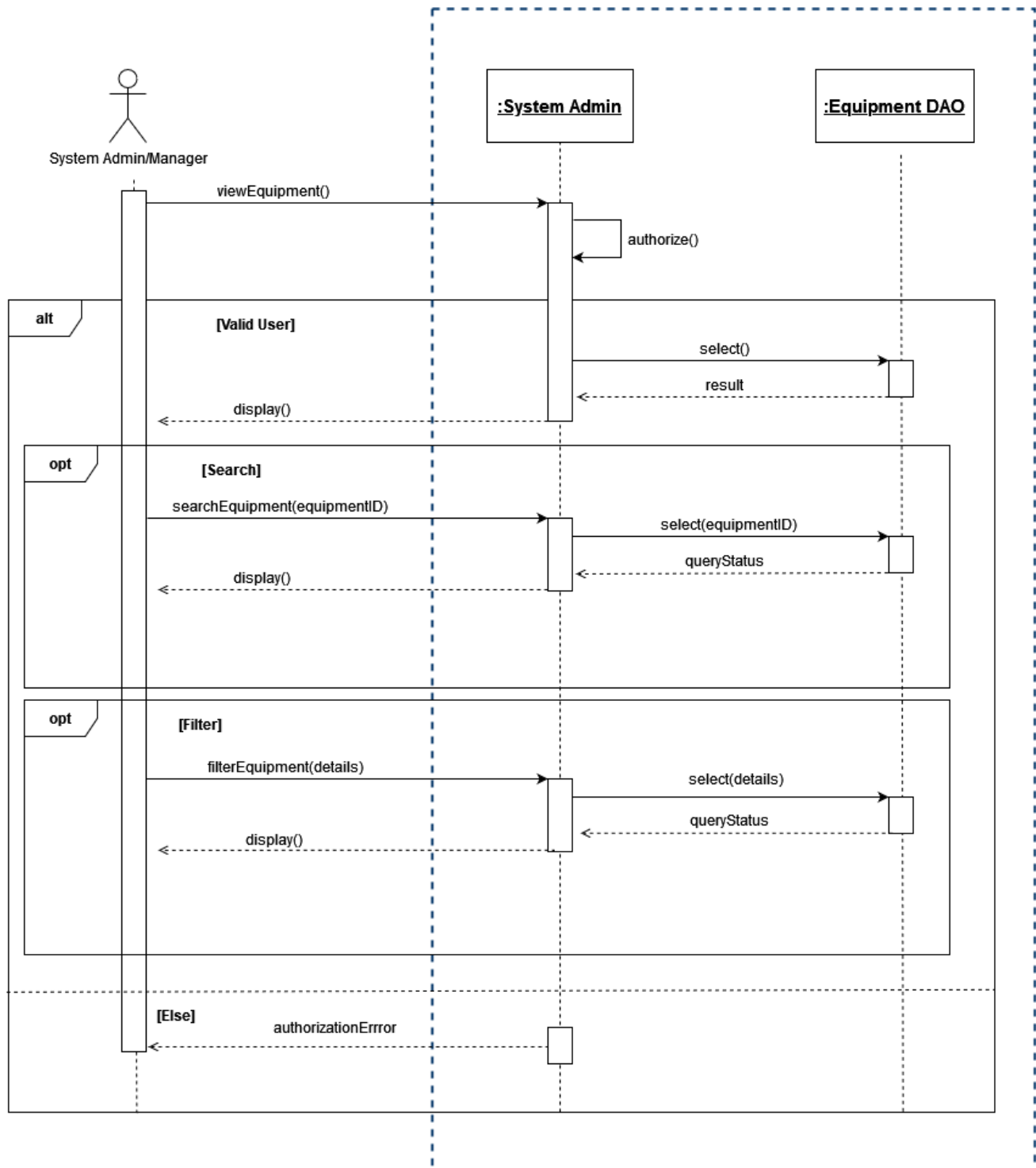


Figure 24: Sequence Diagram - View/Search Equipment

View/Search Service Details

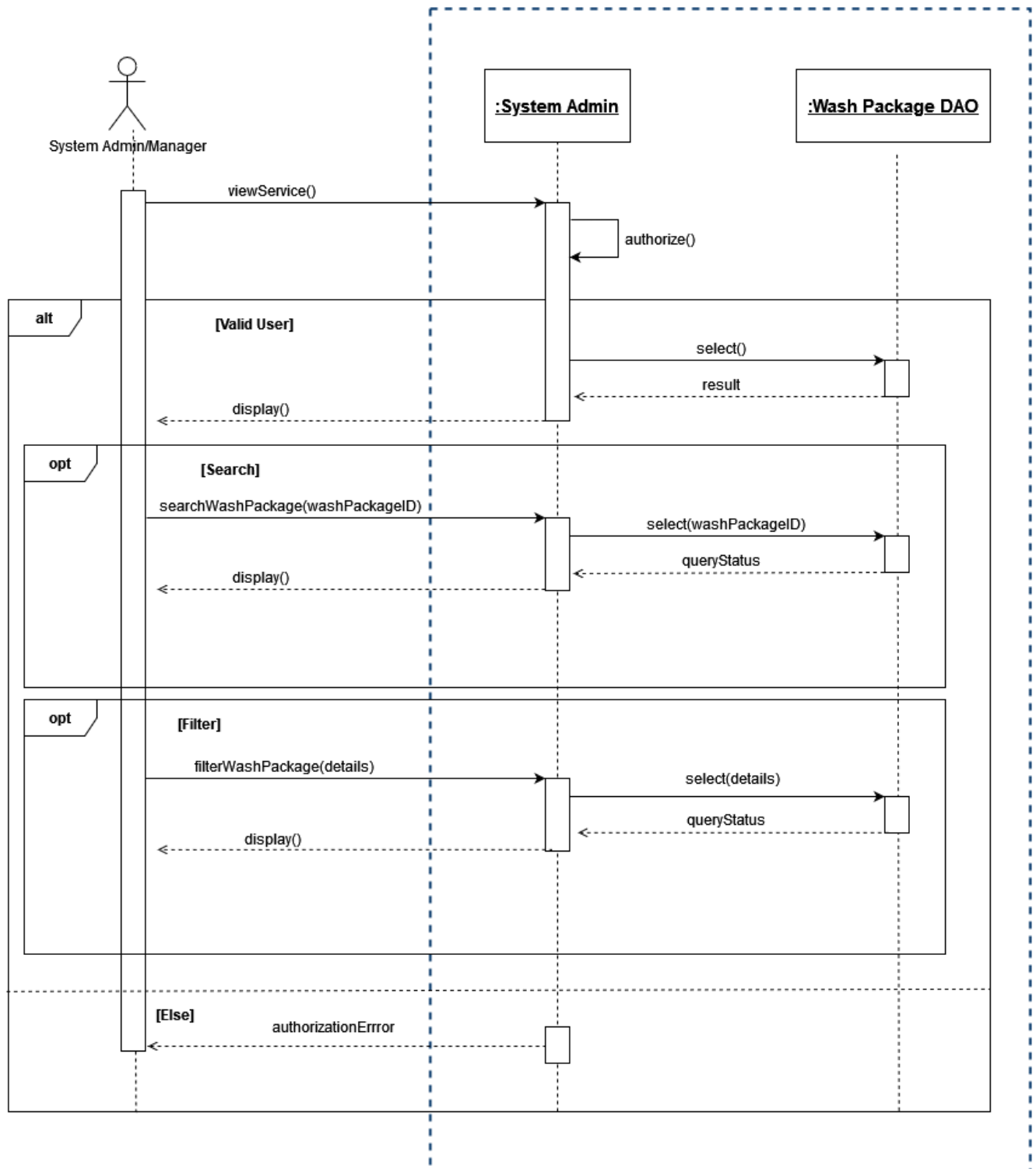


Figure 25: Sequence Diagram - View/Search Service Details

View/Search Service Team Leader

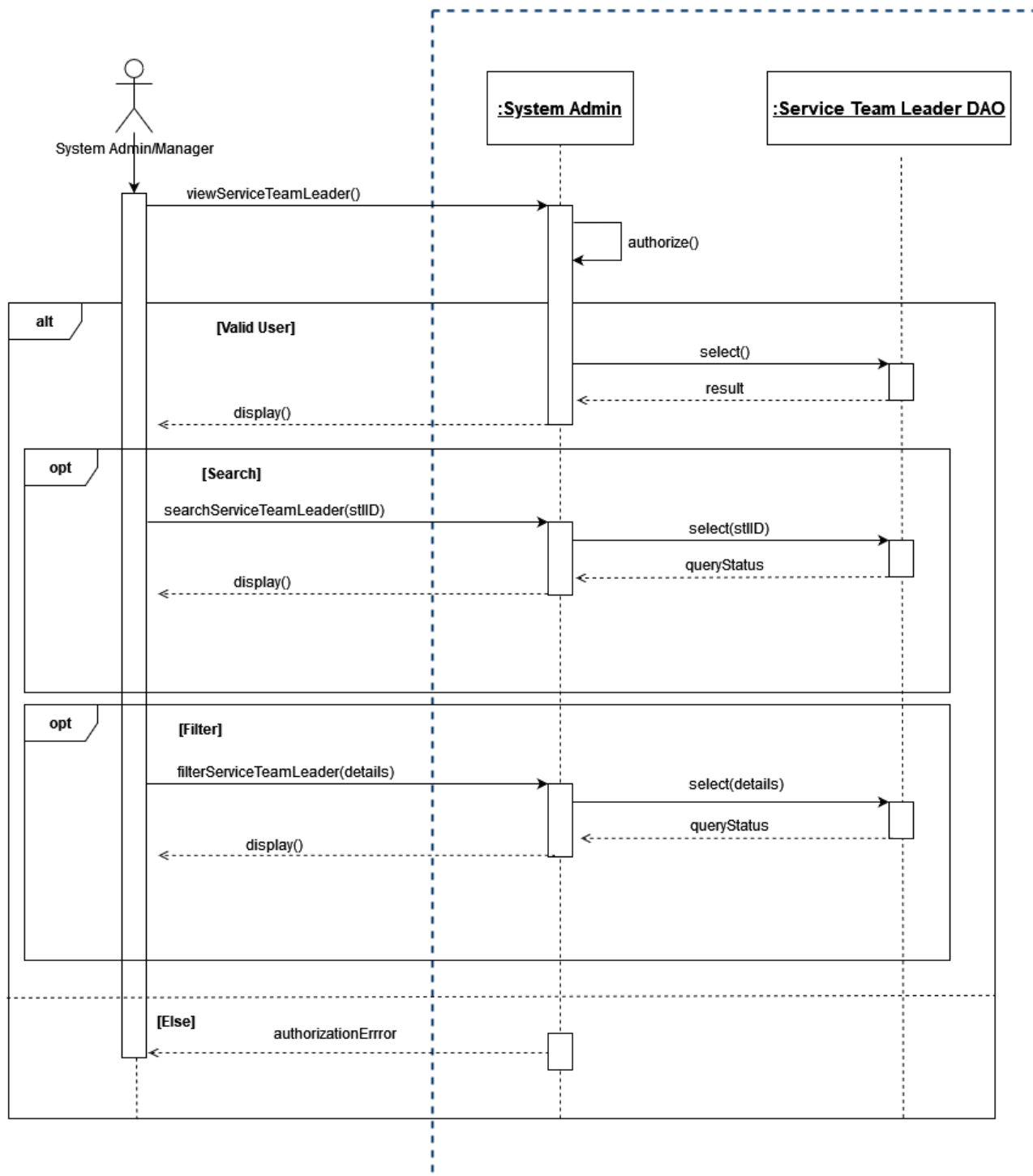


Figure 26: Sequence Diagram - View/Search Service Team Leader

View Service Dashboard

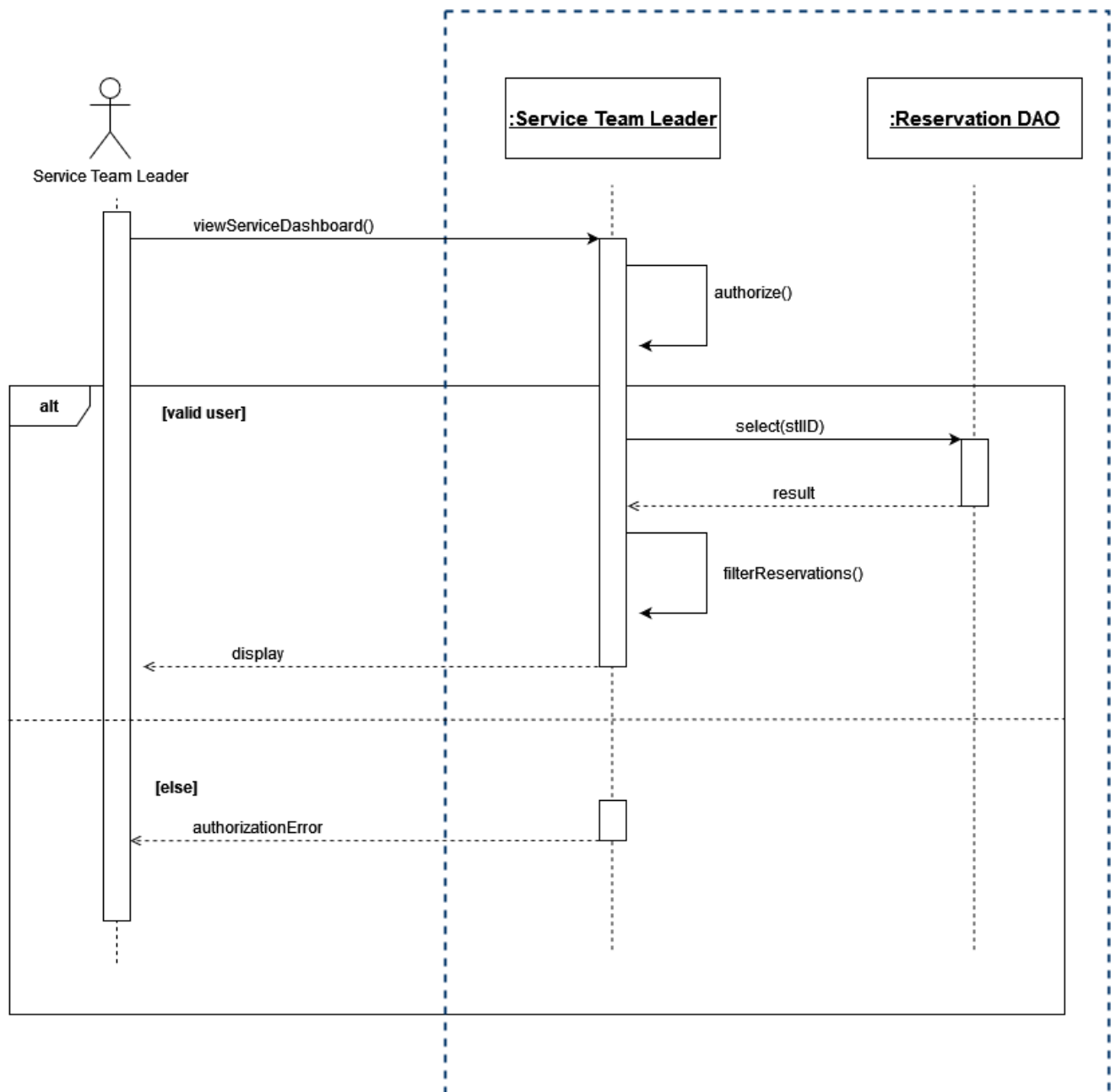


Figure 27: Sequence Diagram - View Service Dashboard

View Calendar

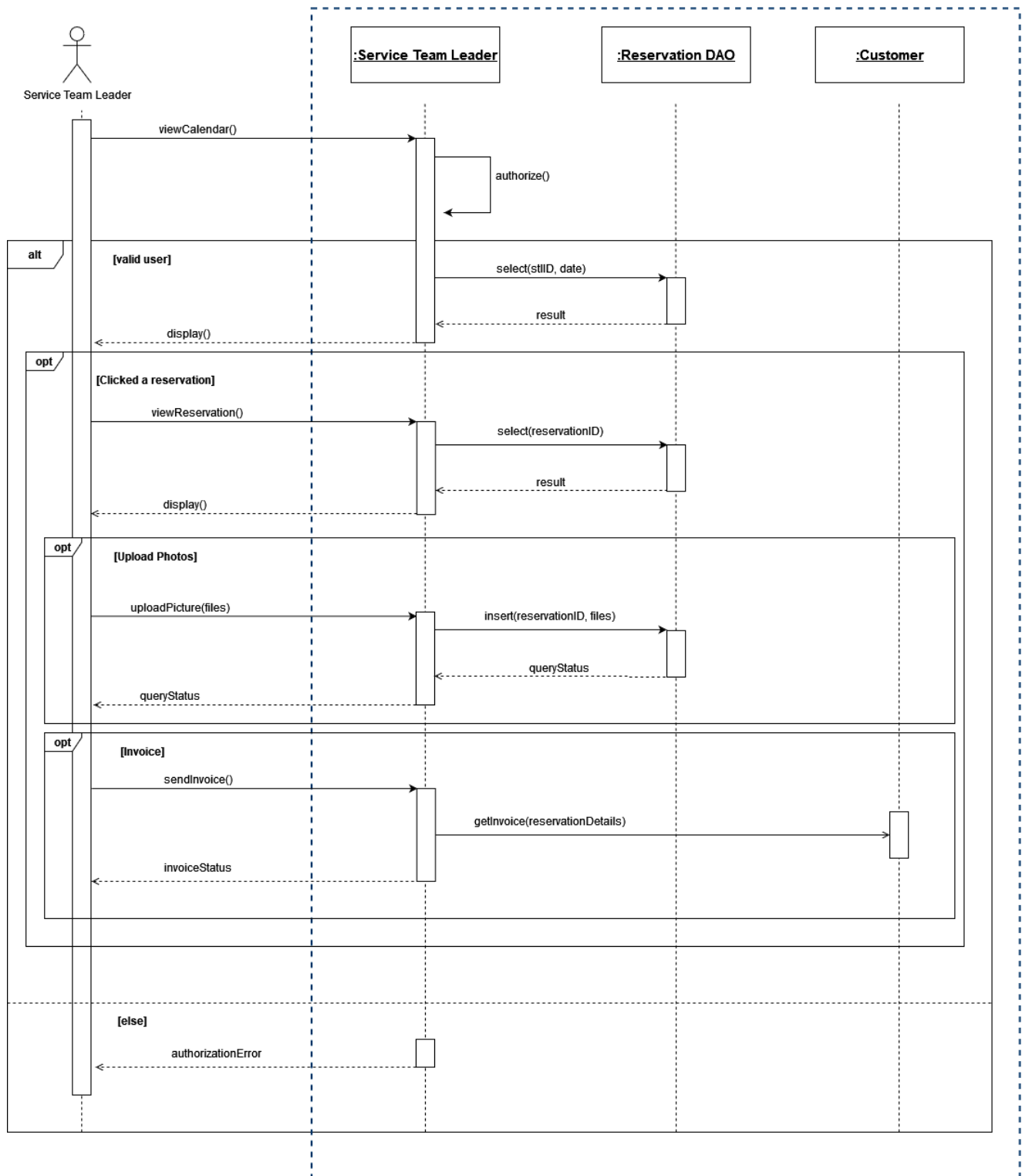


Figure 28: Sequence Diagram - View Calendar

Add Employee Attendance

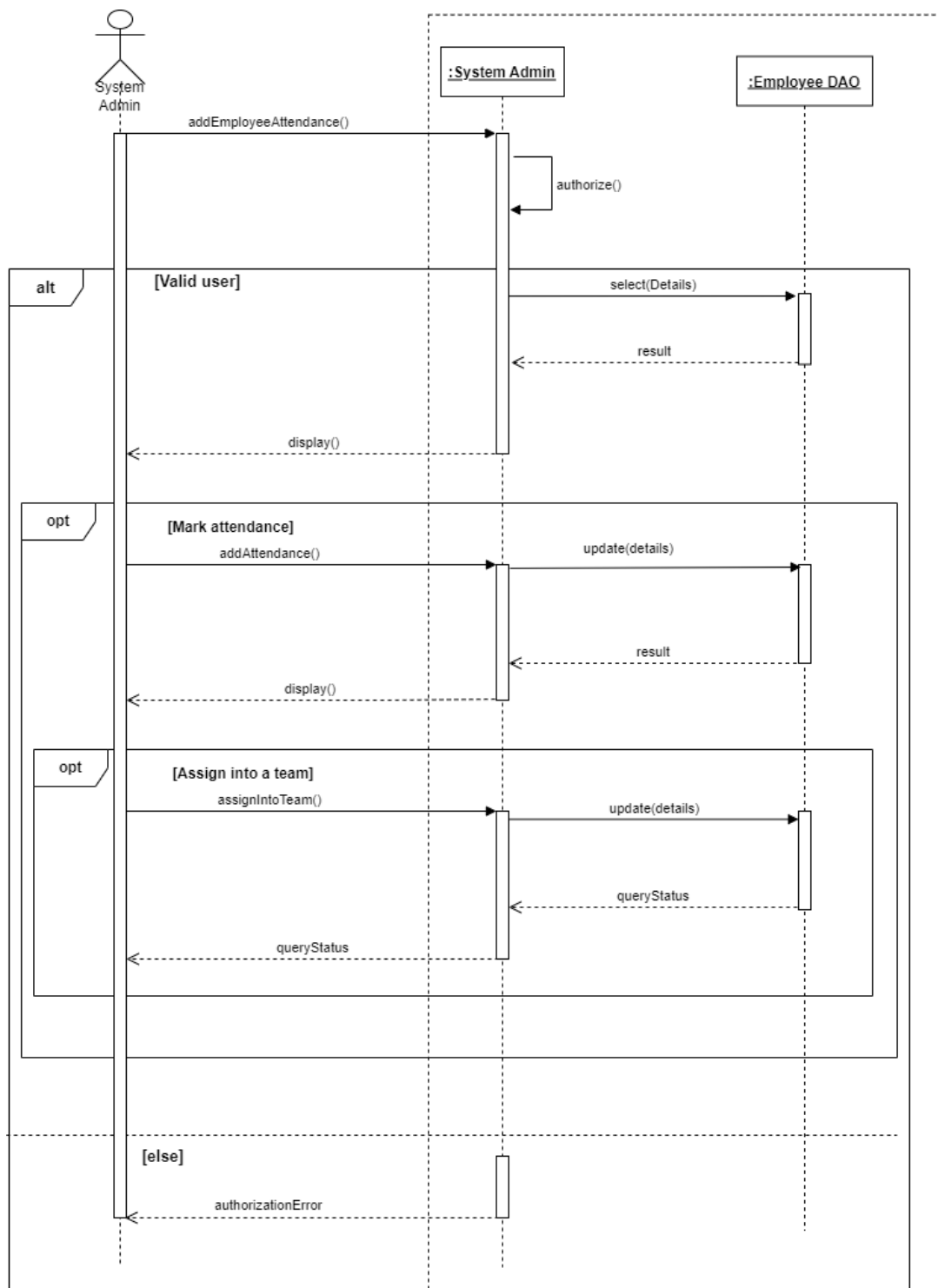


Figure 29: Sequence Diagram - Add Employee Attendance

3.5 Activity Diagrams

The following activity diagrams are drawn to show the flow of activities of the use cases.

User Login

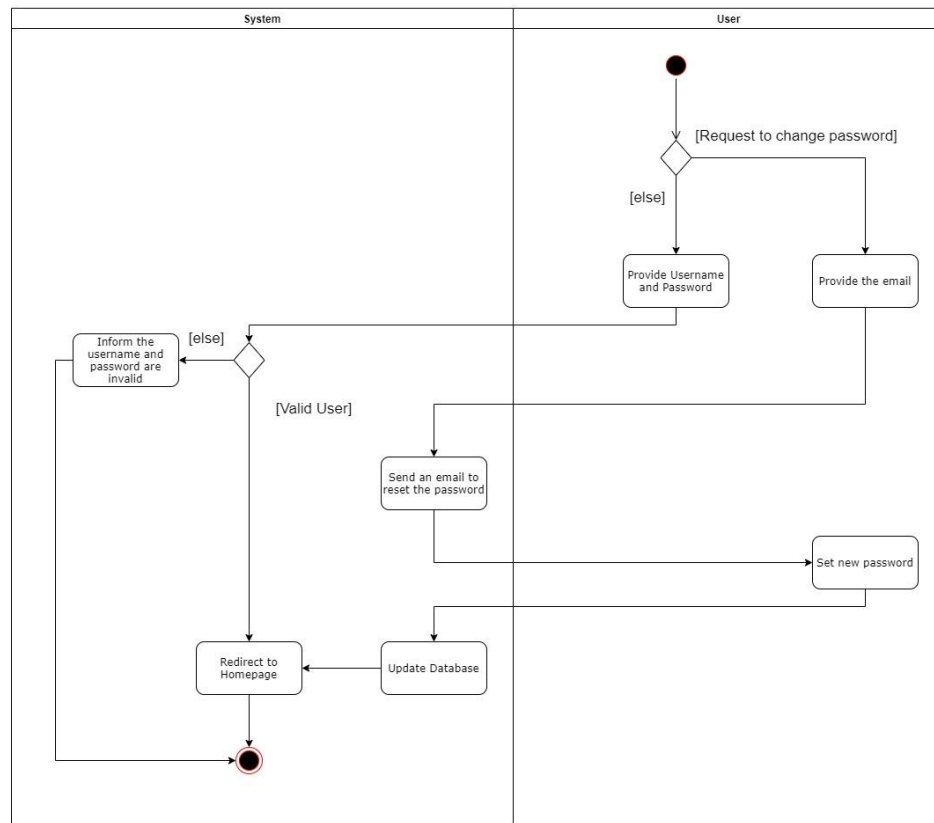


Figure 30: Activity Diagram - Login

View Reviews

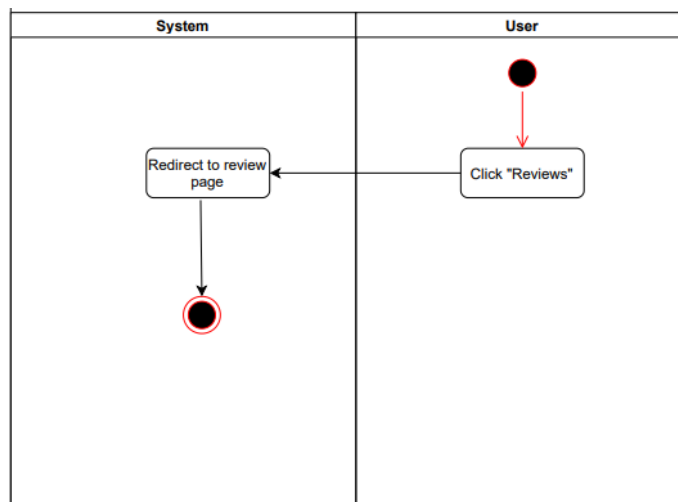


Figure 31: Activity Diagram - View Reviews

Registration

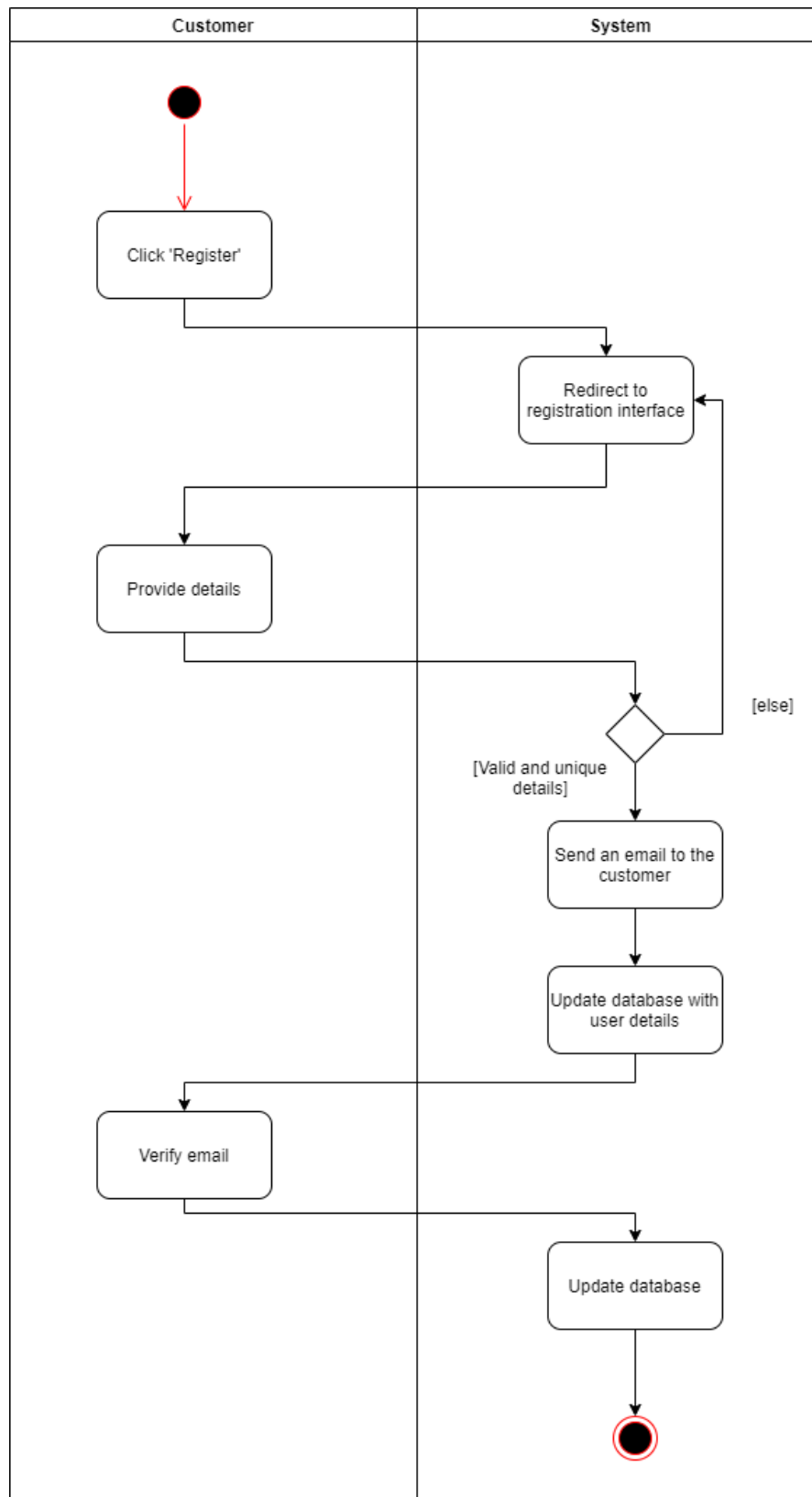


Figure 32: Activity Diagram - Register

Make Reservation

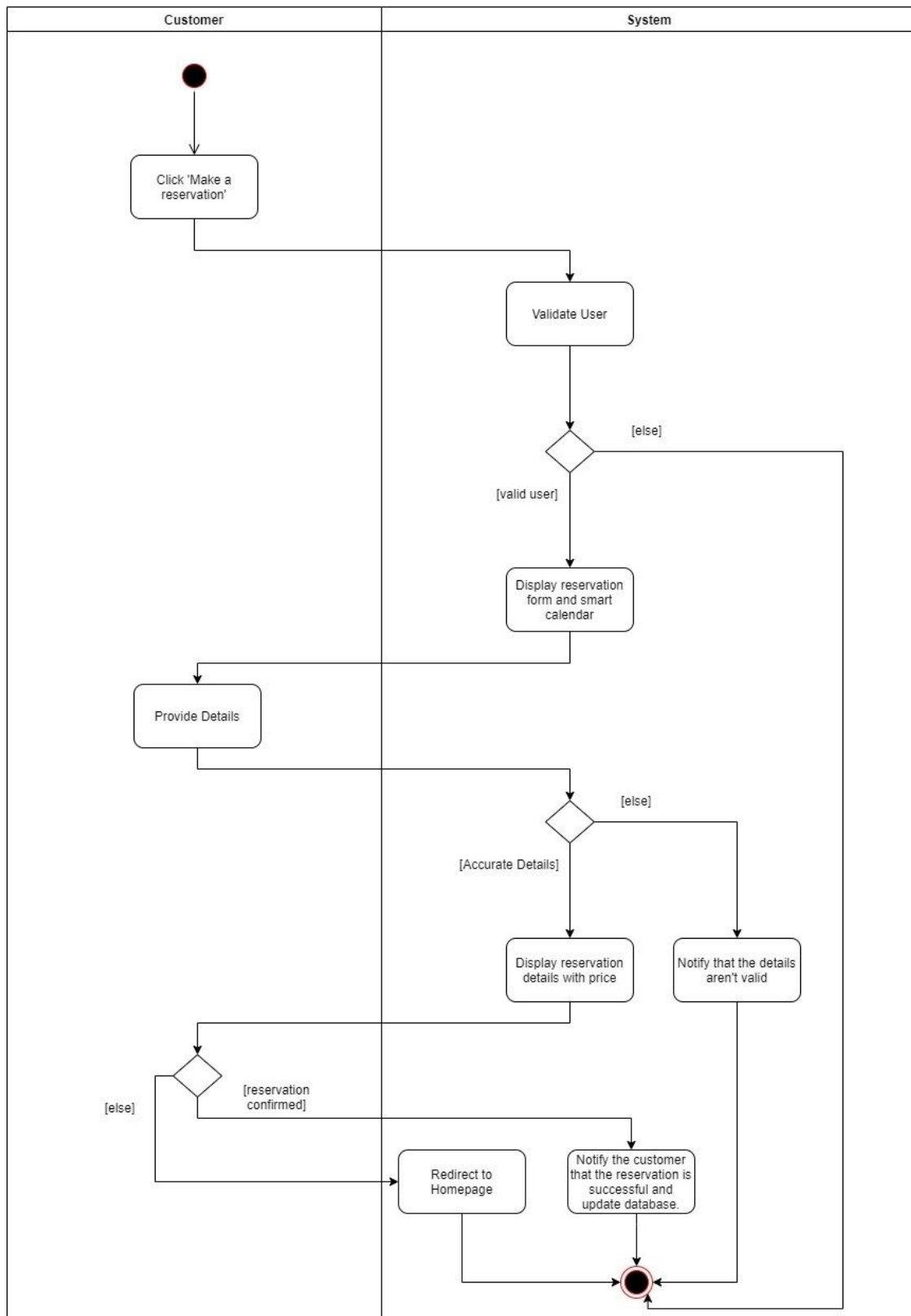


Figure 33: Activity Diagram - Make Reservation

View Upcoming Reservations

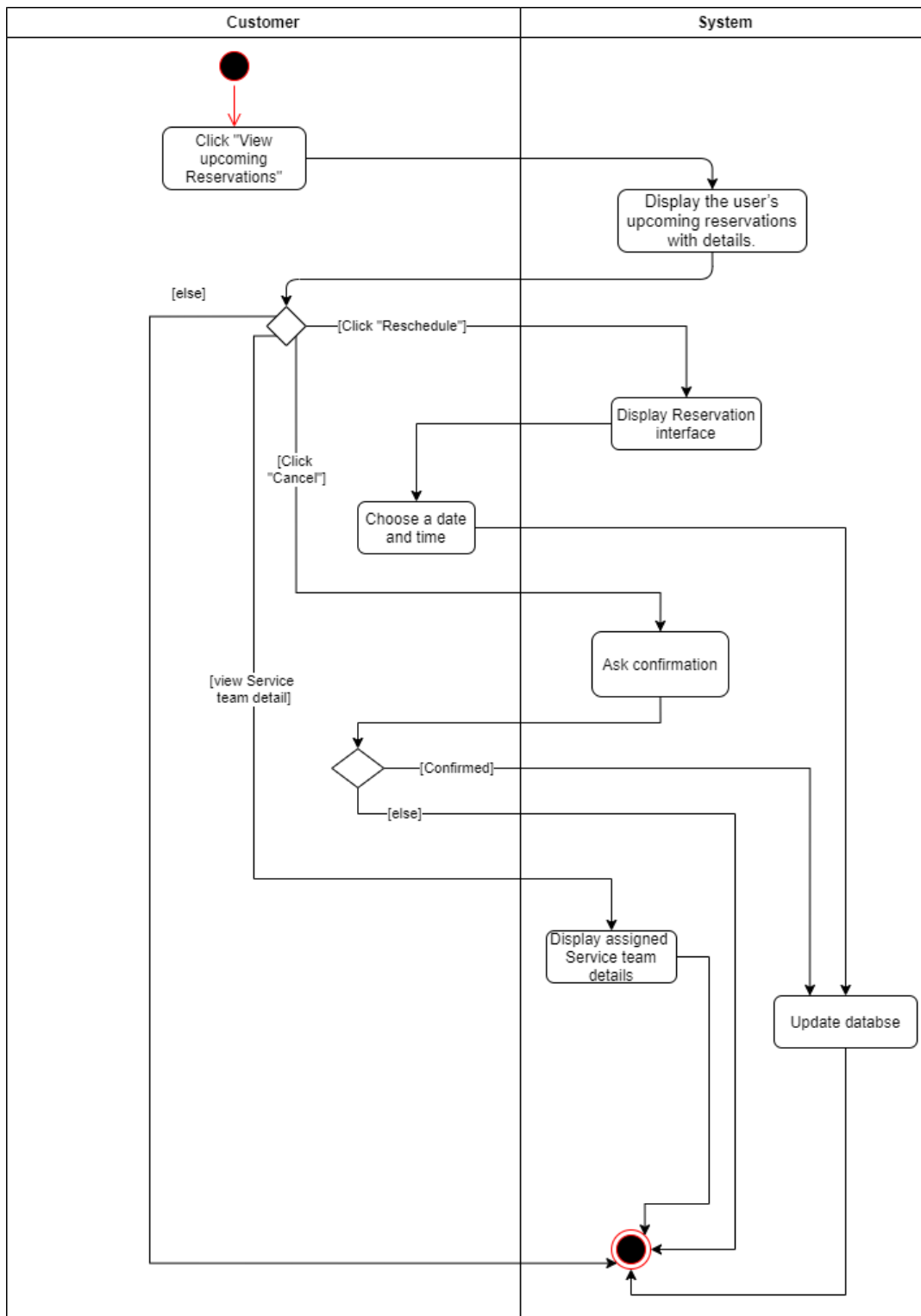


Figure 34: Activity Diagram - View Upcoming Reservations

View Past Reservations

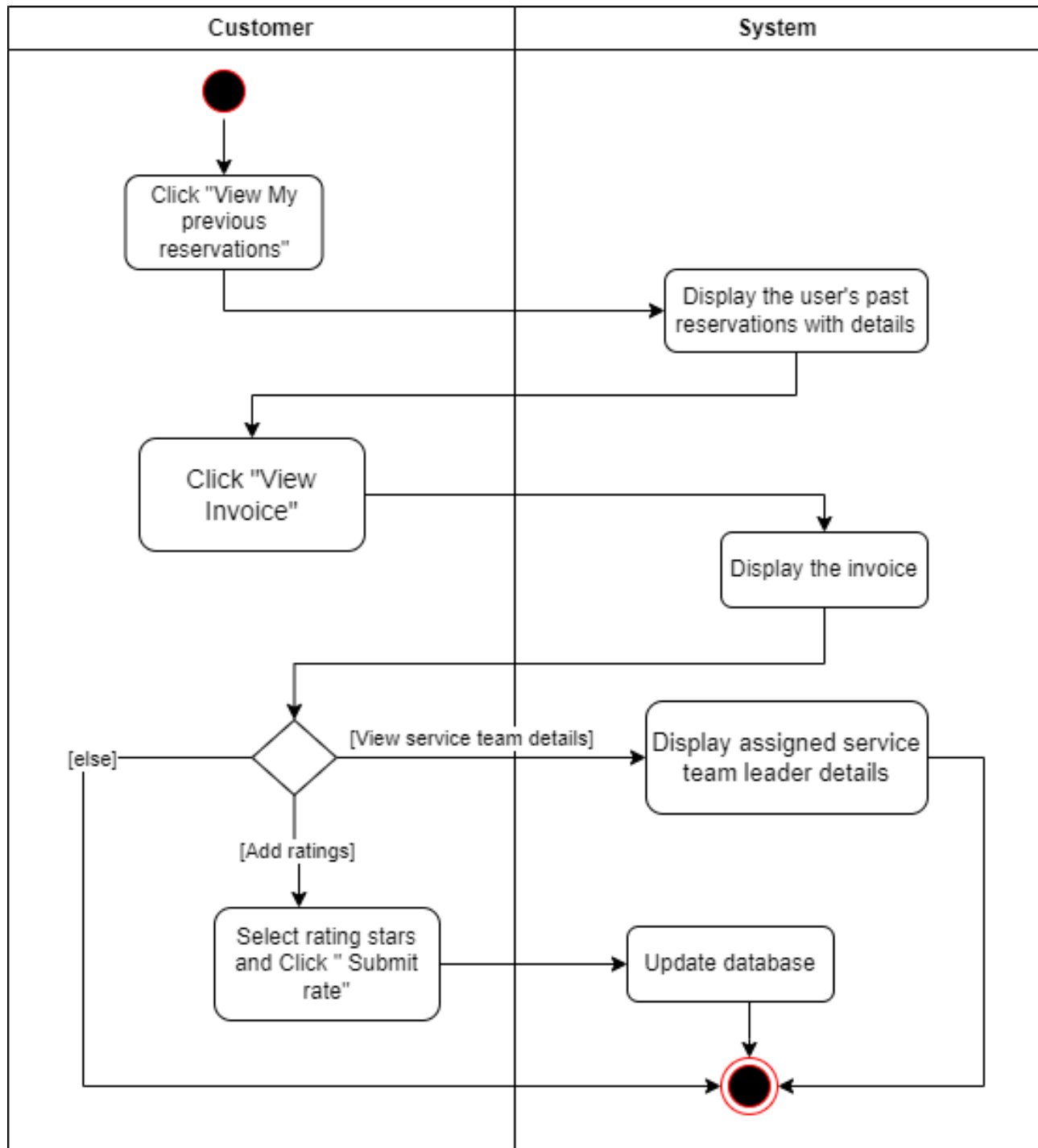


Figure 35: Activity Diagram - View Past Reservations

Give Reviews

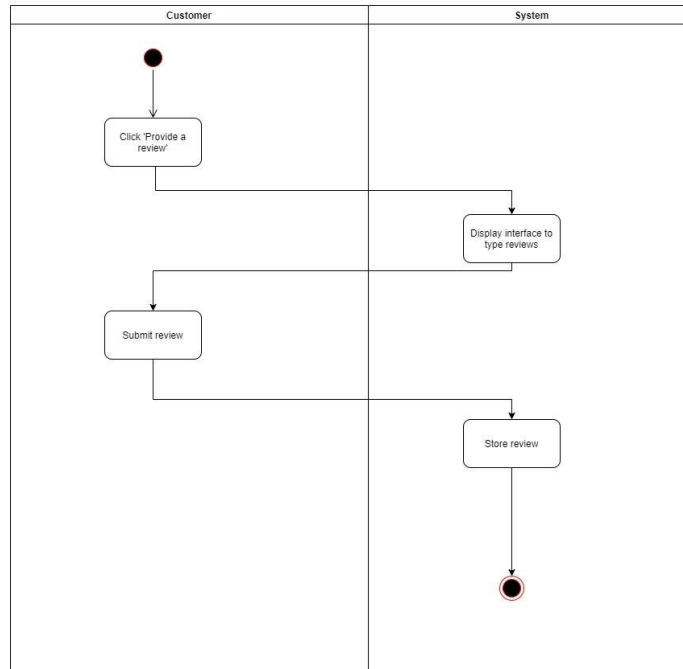


Figure 36: Activity Diagram - Give Reviews

Edit Account Details

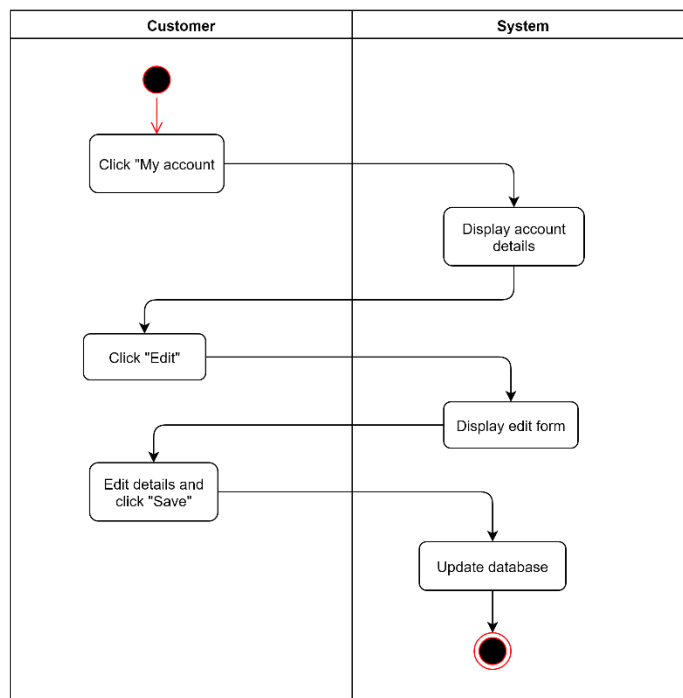


Figure 37: Activity Diagram - Edit Account Details

Delete Account

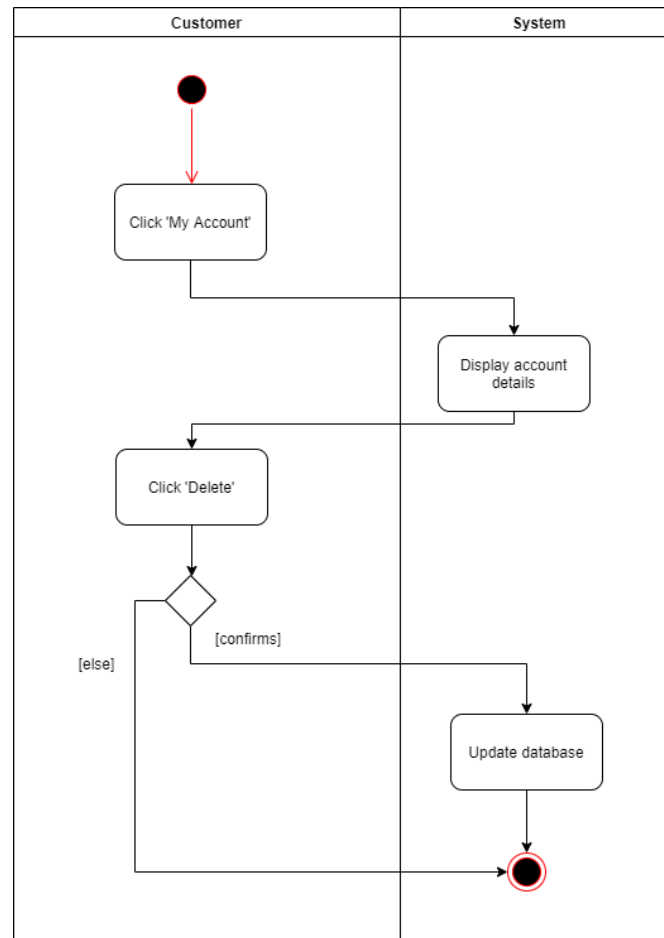


Figure 38: Activity Diagram - Delete Account

View Reservations

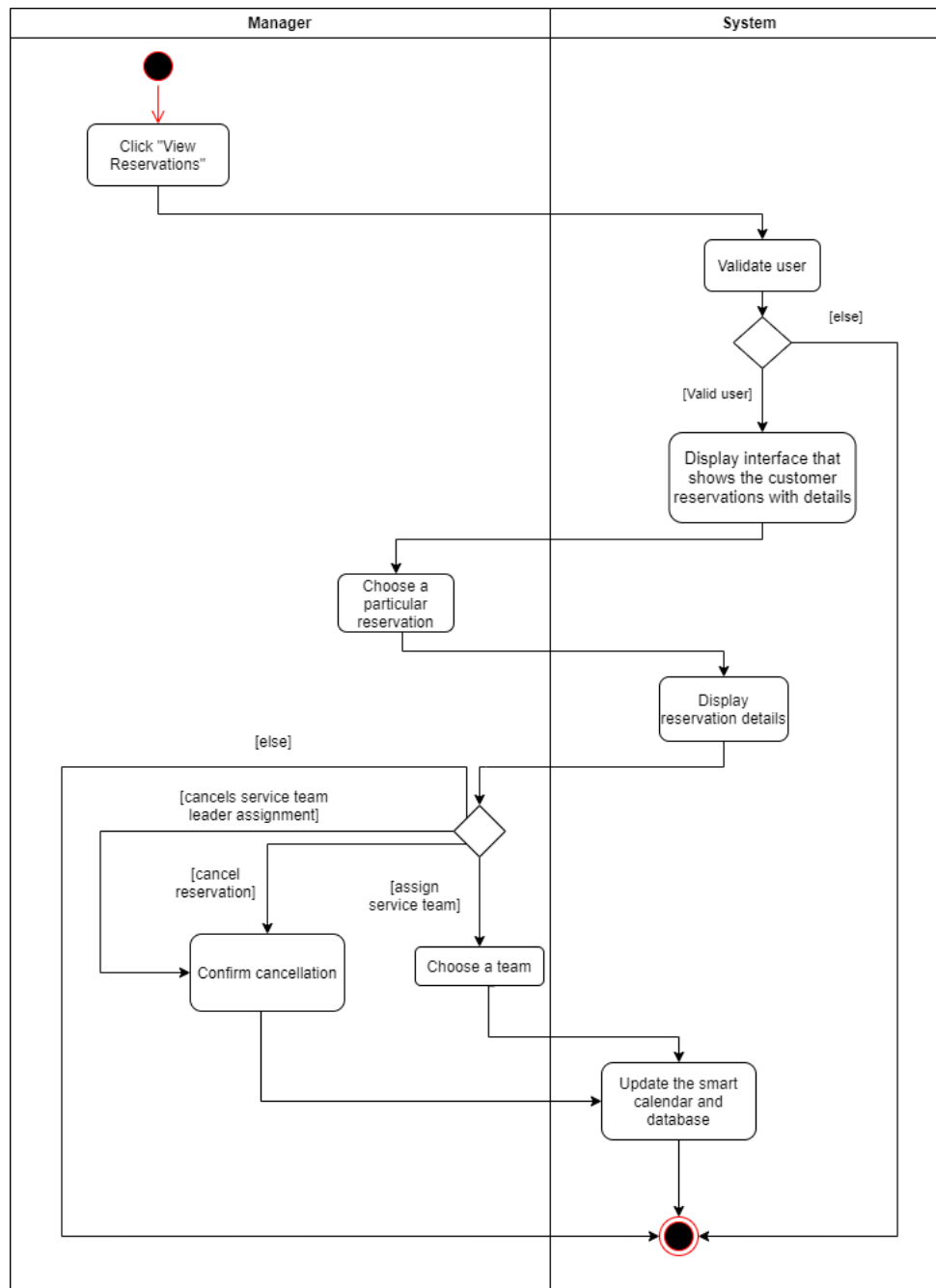


Figure 39: Activity Diagram - View Reservations

View Completed Reservations

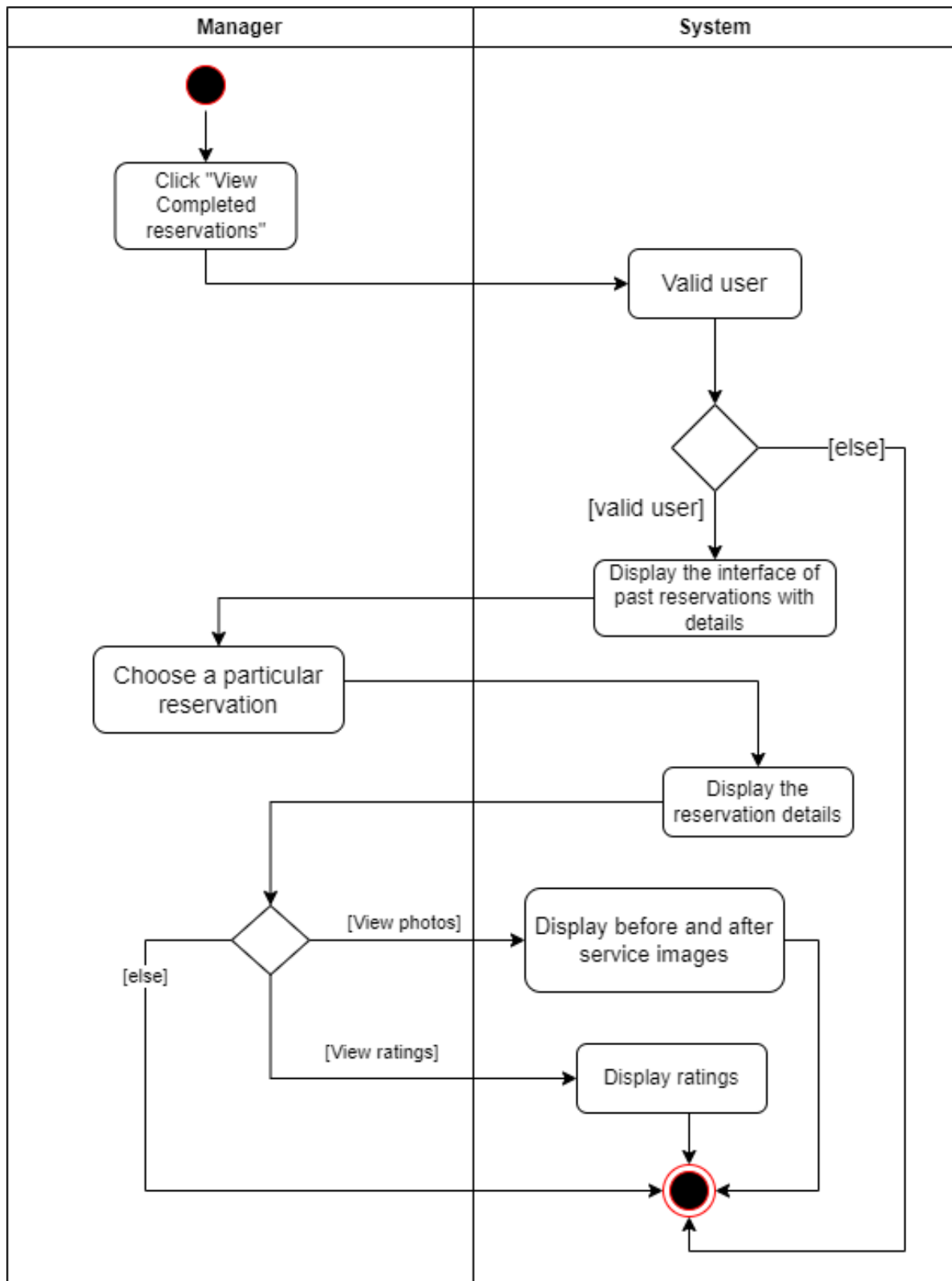


Figure 40: Activity Diagram - View Completed Reservations

View Dashboard

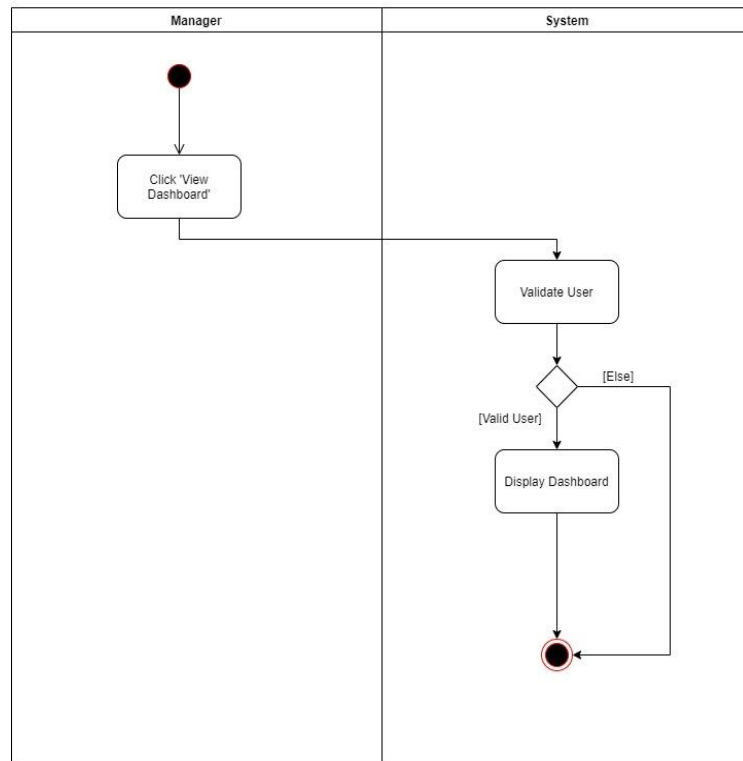


Figure 41: Activity Diagram - View Dashboard

View Service Dashboard

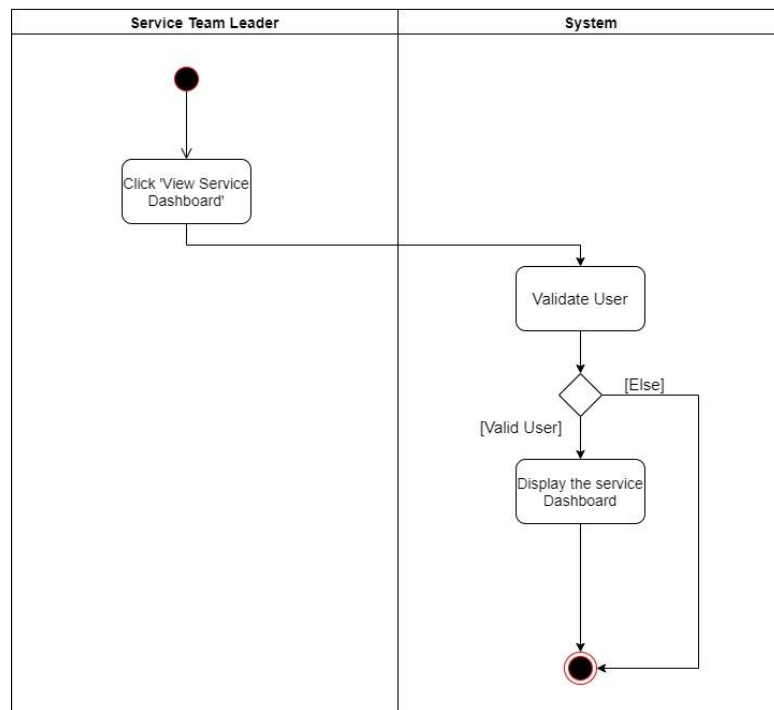


Figure 42: Activity Diagram - View Service Dashboard

Add/Update/Delete Employee

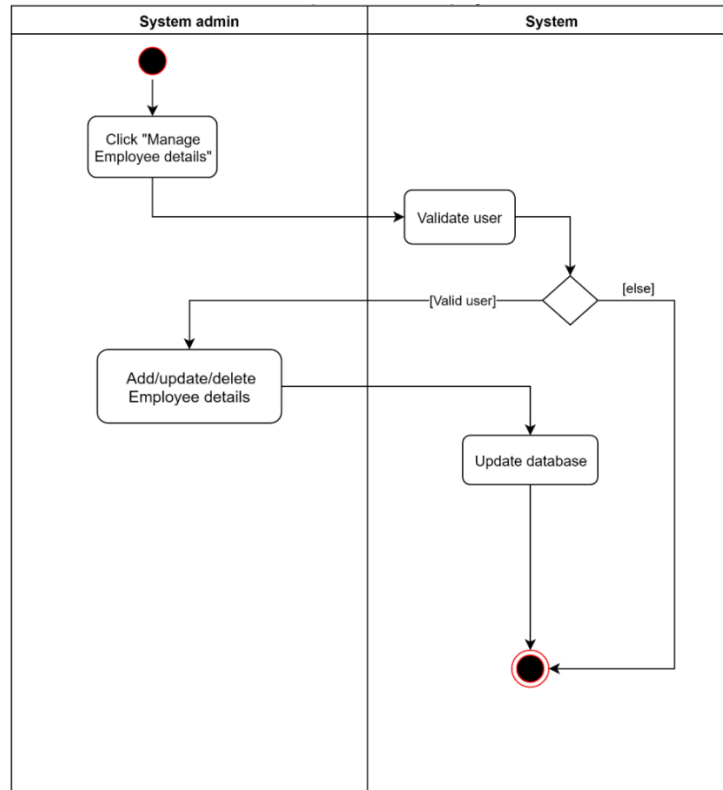


Figure 43: Activity Diagram - Add/Update/Delete Employee

Add/Update/Delete Service Team Leader

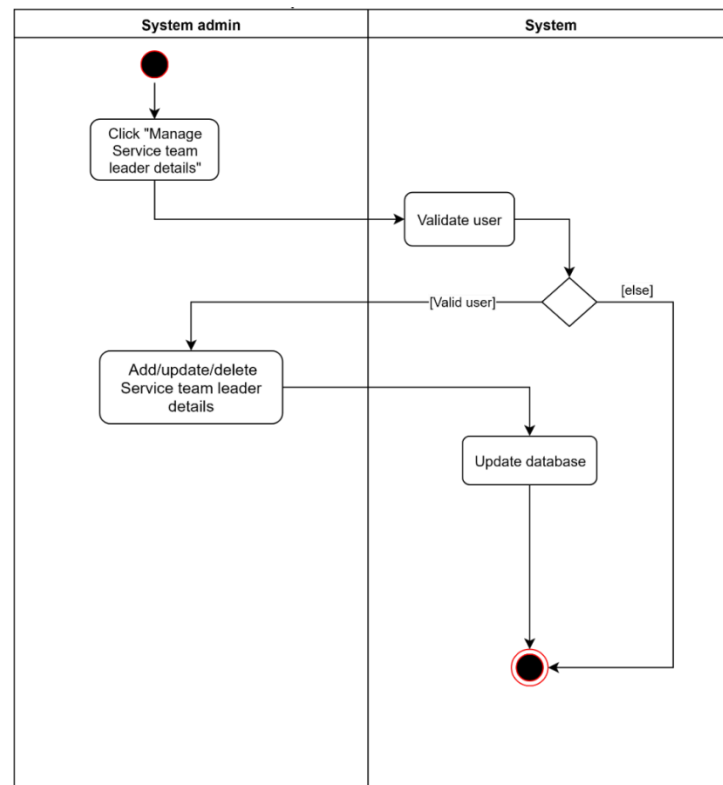


Figure 44: Activity Diagram - Add/Update/Delete Service Team Leader

View/Search Employee

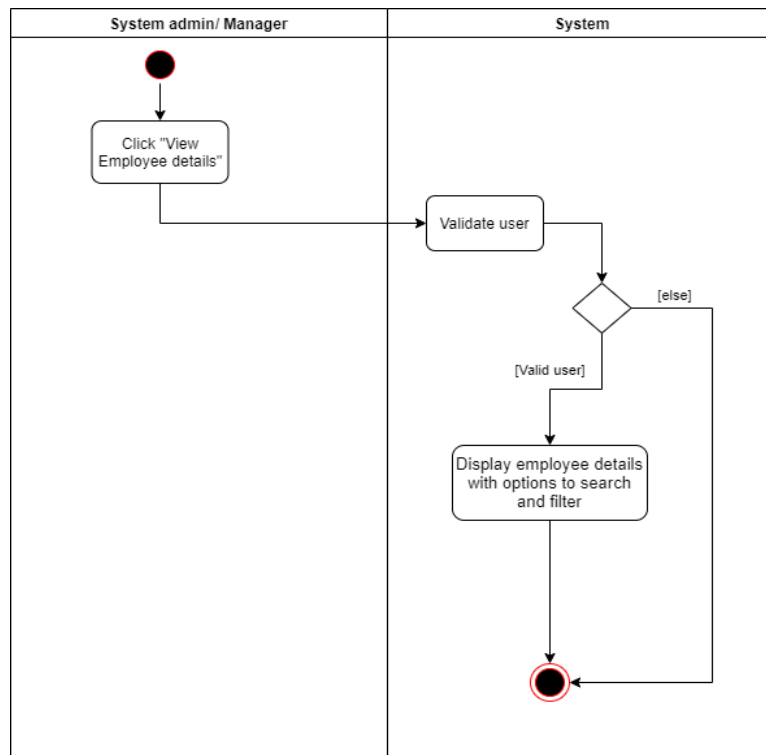


Figure 45: Activity Diagram - View/search Employee

View/Search Service Team Leader

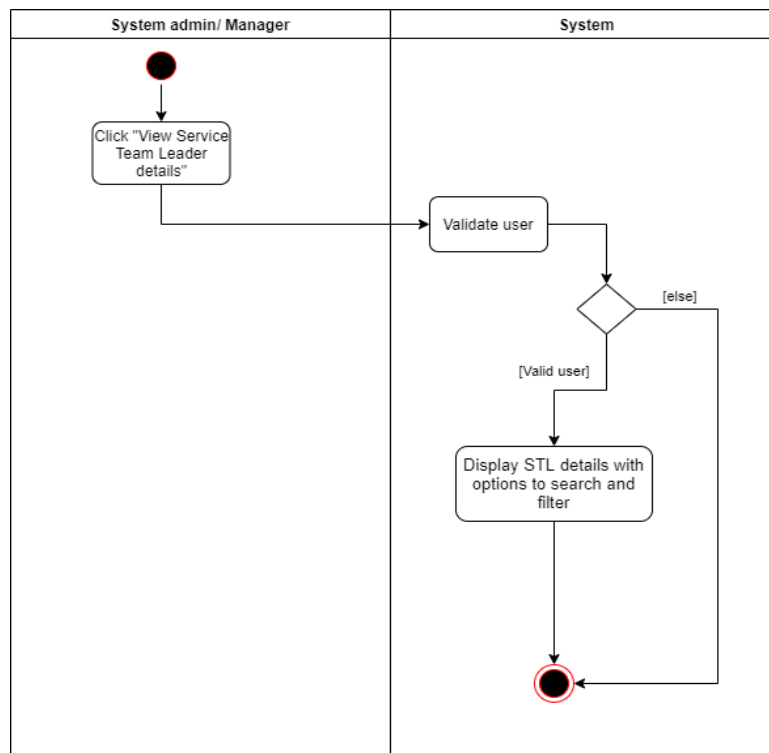


Figure 46: Activity Diagram - View/search Service Team Leader

Add/Update/Delete Service Details

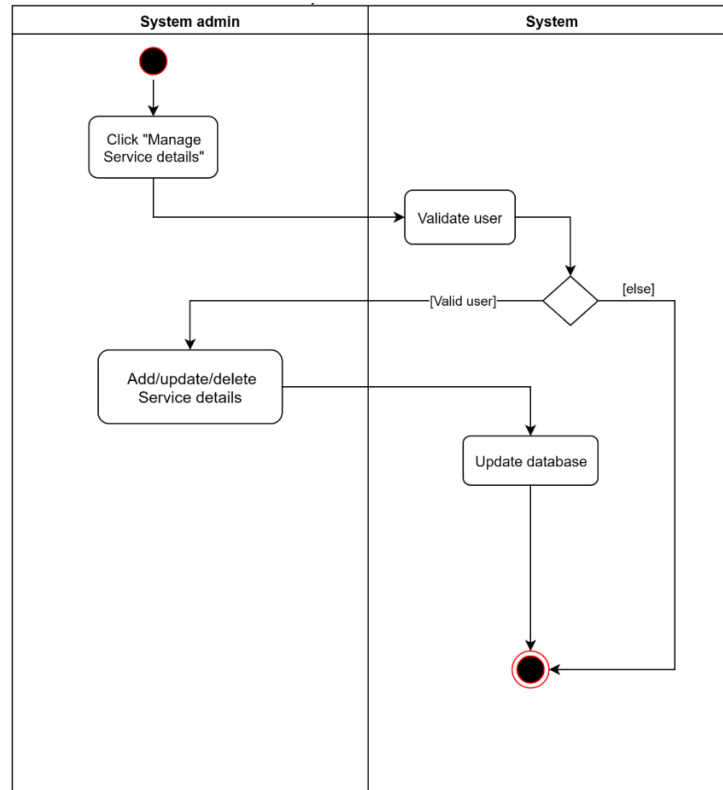


Figure 47: Activity Diagram - Add/Update/Delete Service Details

Add/Update/Delete Equipment Details

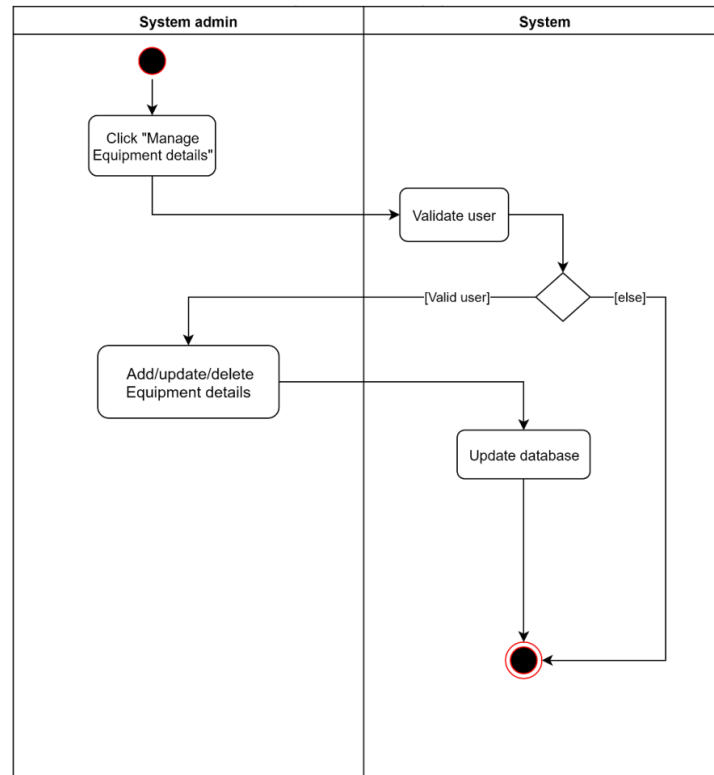


Figure 48: Activity Diagram - Add/Update/Delete Equipment

View/Search Service Details

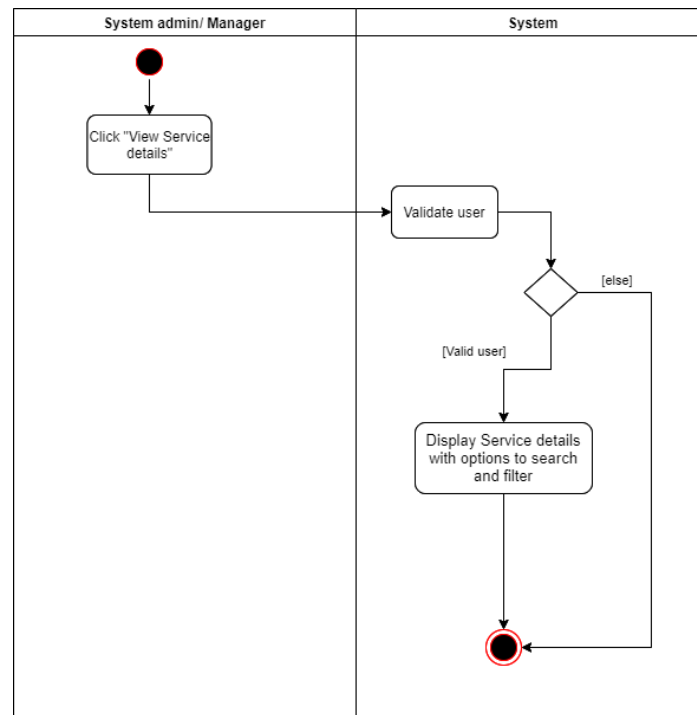


Figure 49: Activity Diagram - View/Search Service Details

View/Search Equipment

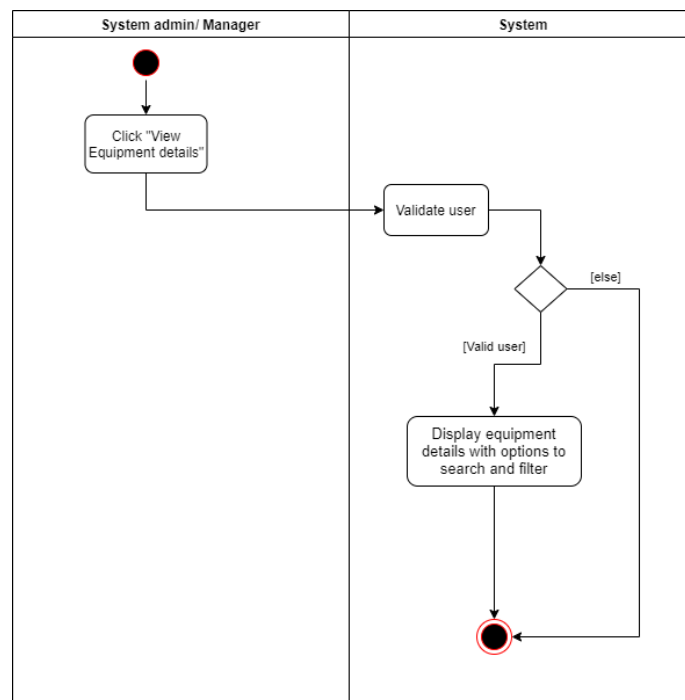


Figure 50: Activity Diagram - View/Search Equipment

View Calendar

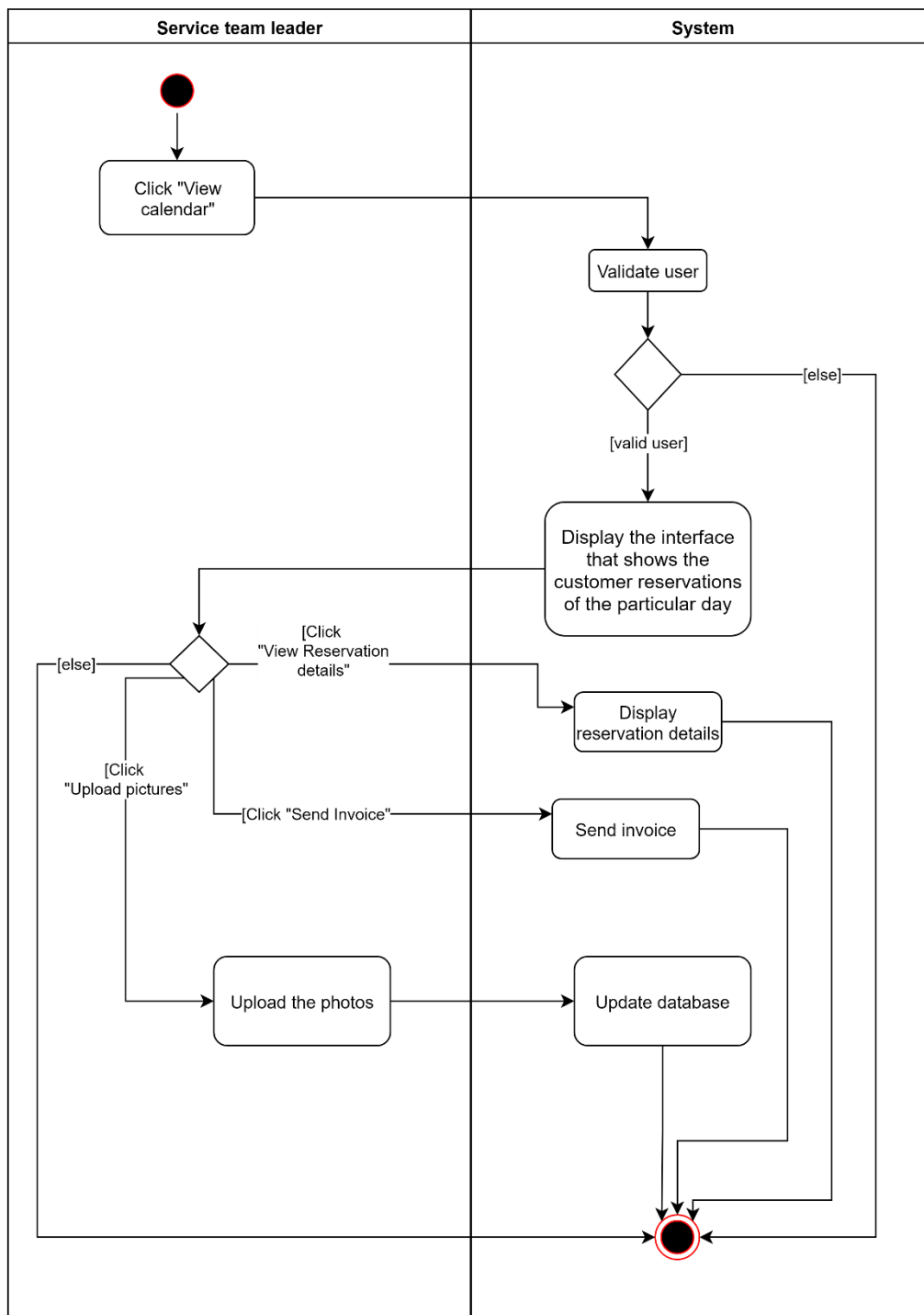


Figure 51: Activity Diagram - View Calendar

Add Employee Attendance

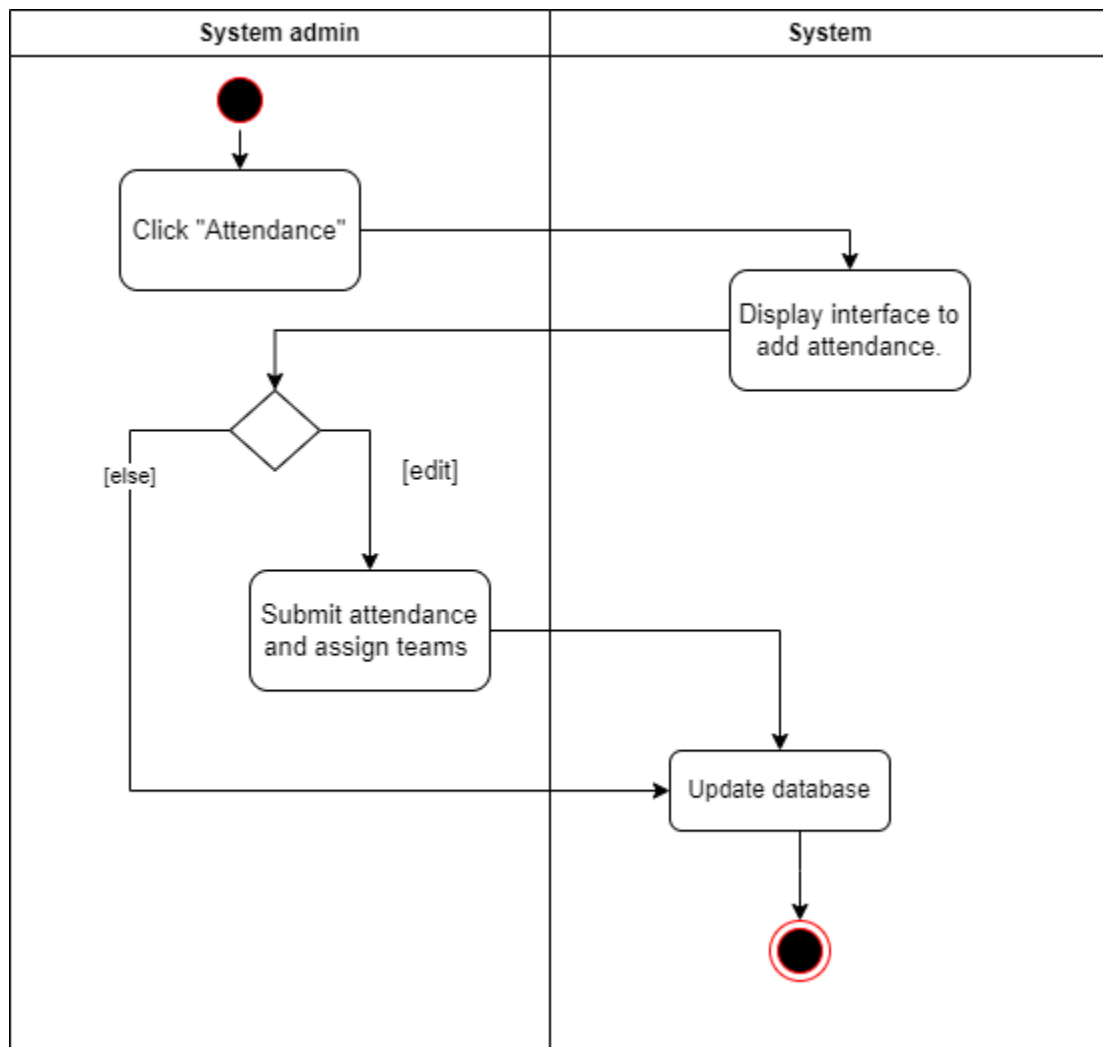


Figure 52: Activity Diagram - Add Employee Attendance

3.6 State Transition Diagrams

There are four dynamic components of the system. The triggers and the transitions regarding the four state machines are shown below.

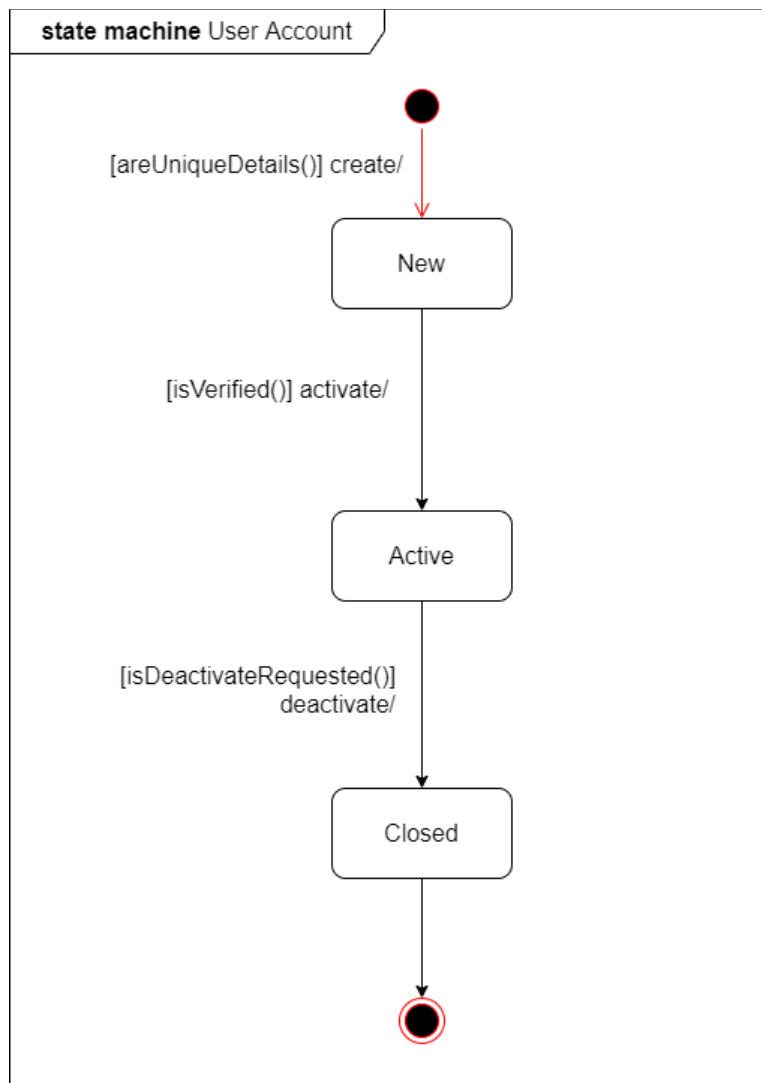


Figure 53: State Transition Diagram - User Account

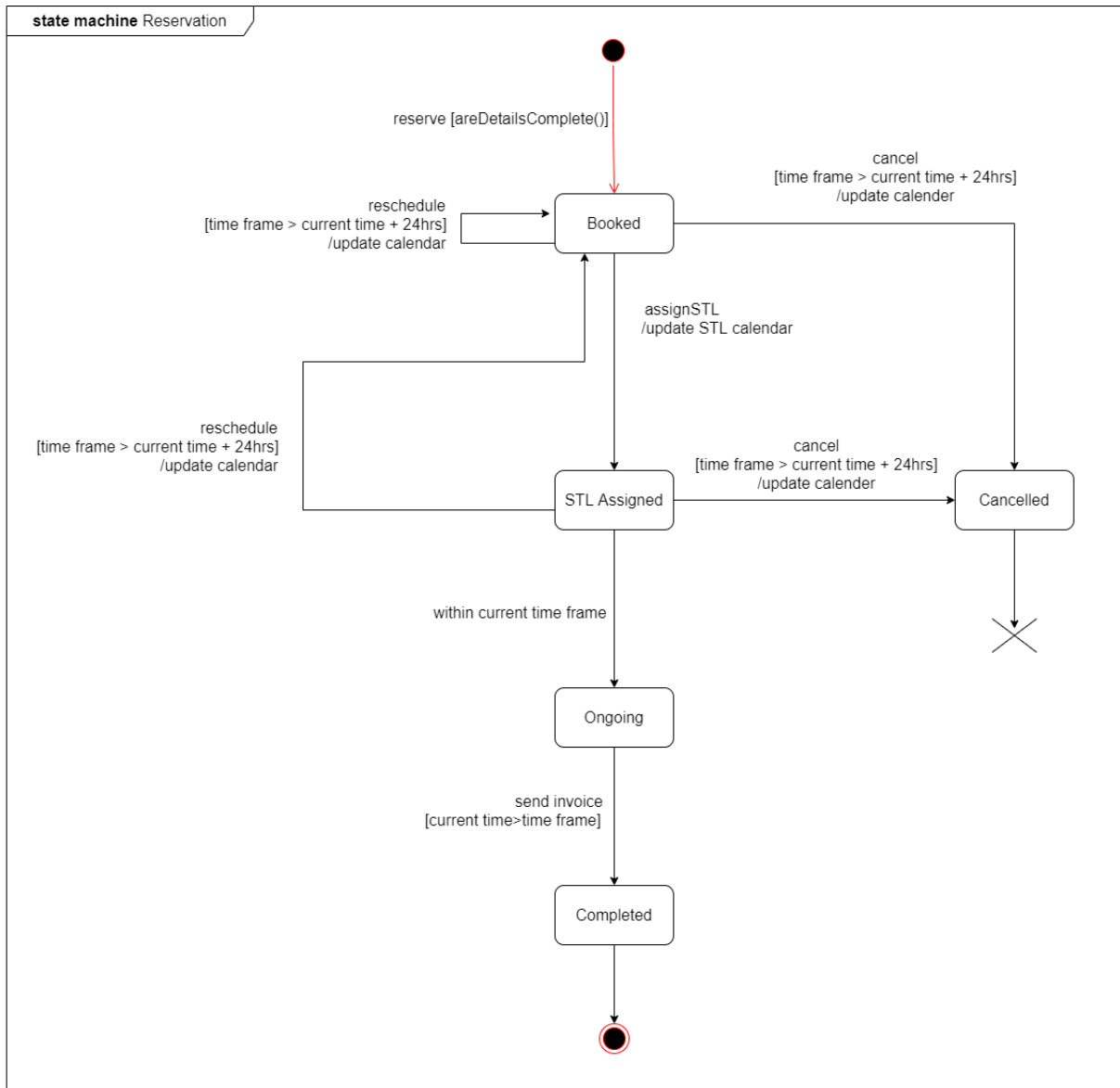


Figure 54: State Transition Diagram - Reservation

The below state machine depicts the states and transitions of a service team for a particular time slot.

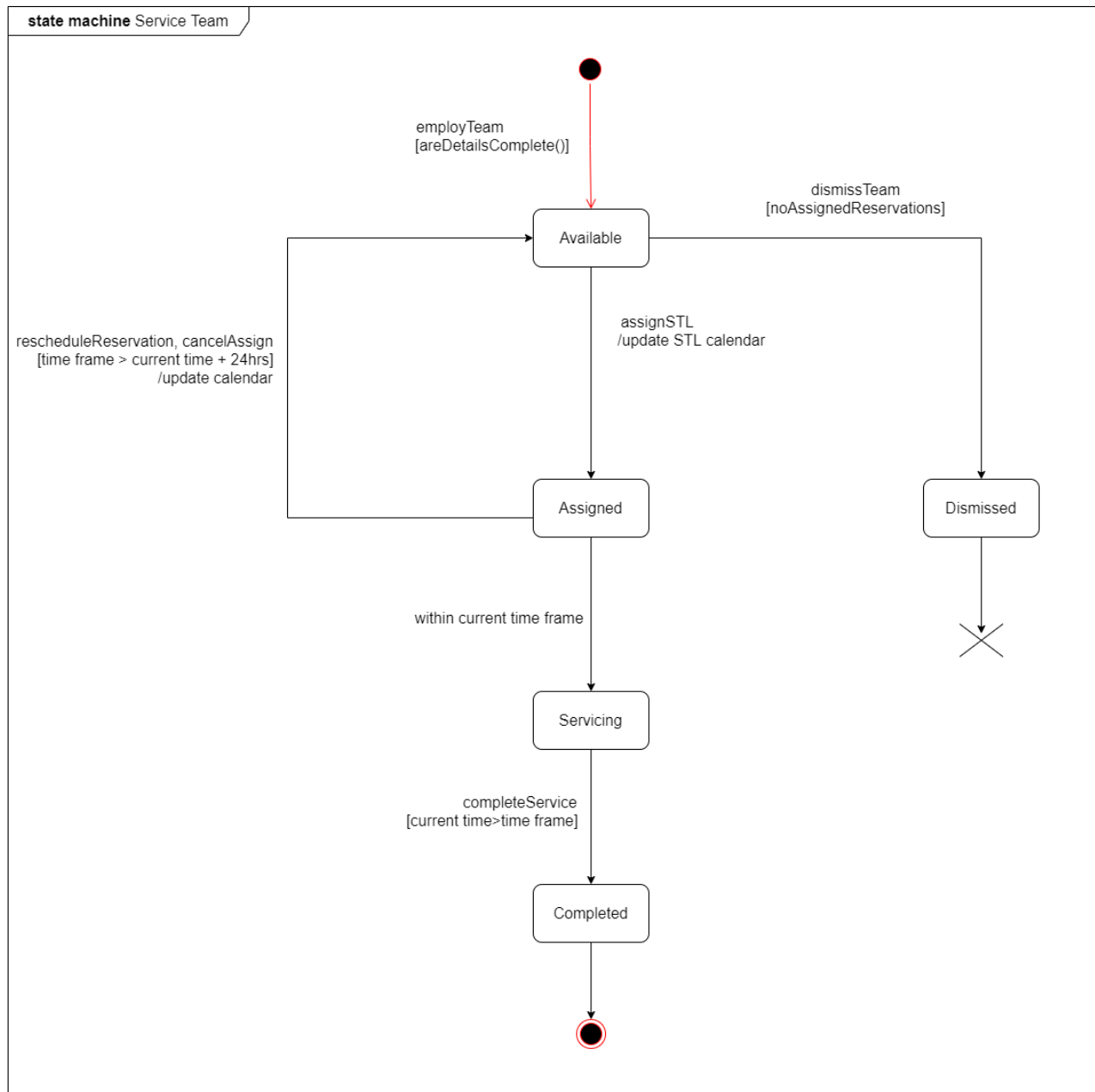


Figure 55: State Transition Diagram - Service Team

The below state machine depicts the states and transitions of equipment for a particular time slot.

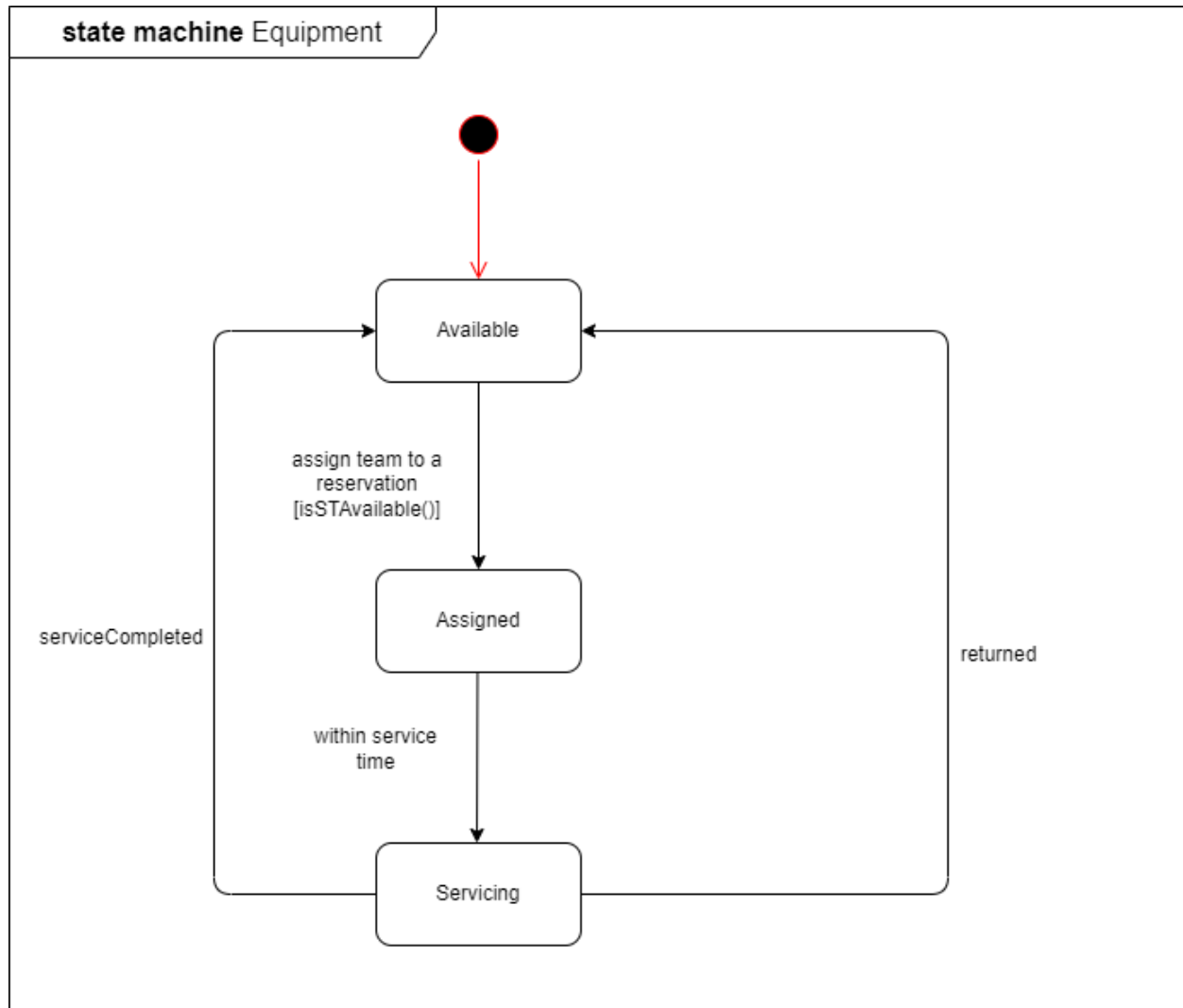


Figure 56: State Transition Diagram - Equipment

4 Test Cases

4.1 Scenario: User - Login

Test Case	Test Case Description	Test Data	Expected Result	Actual Result	Pass/Fail
1	Check response when valid username and password is inserted	Username/Email – bfilma Password – Ilma1234	User successfully logs in.	User logged in.	Pass
2	Check response when valid email and password is inserted	Username/Email – leyakat.organa@gmail.com Password – Ilma1234	User successfully logs in.	User logged in.	Pass
3	Check response when invalid email/username and password is inserted	Username/Email – leyakat.organa@gmail.com Password – Ilma12345	User does not log in.	User not logged in.	Pass
4	Check response when invalid email/username and password is inserted more than three times .	Username/Email – leyakat.organa@gmail.com Password – Ilma12345 Username/Email – leyakat.organa@gmail.com Password – Ilma12345 Username/Email – leyakat.organa@gmail.com Password – Ilma12345	User locked for 30 seconds.	User locked for 30 seconds.	Pass

4.2 Scenario: User – Change Password

Test Case	Test Case Description	Test Data	Expected Result	Actual Result	Pass/Fail
1	Check response when valid email is inserted	Email – leyakat.organa@gmail.com	Email successfully sent	Email successfully sent	Pass
2	Check response when valid username is inserted	Username – bfilma	Email successfully sent	Email successfully sent	Pass
3	Check response when invalid email/username is inserted	Username/Email – leyakat.organa	Email/username not found in records.	Email/username not found in records.	Pass
4	Check response when empty input is inserted	Username/Email – “”	Email/username not found in records.	Email/username not found in records.	Pass

4.3 Scenario: Customer – Give reviews & User – View reviews

Test Case	Test Case Description	Test Data	Expected Result	Actual Result	Pass/Fail
1	Check response when valid review is posted	Review – SSS	Review should be successfully added and displayed in a manner such that the latest reviews must be displayed at the top with the customer’s name and the date and type he/she posted the review.	Review added and displayed successfully	Pass
2	Check response when empty string is posted	Review – “”	Review should not be added	Review not added	Pass
3	Check response when character limit is exceeded	Review – XXX	Review should not be added	Review not added	Pass

Note: Length of XXX > 255 characters, length of SSS > 0 characters

4.4 Scenario: Customer – Add/Edit & View vehicle

Test Case	Test Case Description	Test Data	Expected Result	Actual Result	Pass/Fail
1	Check response when valid vehicle data is inserted	VIN – KP 8741 Model – Aqua Color - #A25D75 Vehicle Type – Sedan Manufacturer - Toyota	Vehicle should be successfully added	Vehicle added and displayed successfully	Pass
2	Check response when default vehicle type is chosen	VIN – KP 8741 Model – Aqua Color - #A25D75 Vehicle Type – “Choose a vehicle” Manufacturer - Toyota	Vehicle should not be added	Vehicle not added	Pass
3	Check response when vehicle data is left blank	VIN – “” Model – “” Color – black – default Vehicle Type – “” Manufacturer - “”	Vehicle should not be added	Vehicle not added	Pass
4	Check response when character limit is exceeded	VIN – XXX Model – MMM Color – black – default Vehicle Type – SUV Manufacturer - SSS	Vehicle should not be added	Vehicle not added	Pass

Note: Length of XXX, MMM, SSS > 50 characters

4.5 Scenario: Customer – Add Location

Test Case	Test Case Description	Test Data	Expected Result	Actual Result	Pass/Fail
1	Check response when valid address is inserted	Latitude - 7.26772022247314450000000000000000 Longitude - 80.64691162109375000000000000000000	Location should be successfully added	Location added and displayed successfully	Pass
2	Check response when invalid address is chosen	Latitude - 6.57517671585083000000000000000000 Longitude - 80.39422607421875000000000000000000	Location should not be added	Location not added	Pass
3	Check response when empty address is inserted	Latitude – “” Longitude – “”	Location should not be added	Location not added	Pass

4.6 Scenario: Customer – Edit Mobile Number

Test Case	Test Case Description	Test Data	Expected Result	Actual Result	Pass/Fail
1	Check response when valid mobile number is inserted	Mobile number – 0713198819	Number should be successfully added	Number added and displayed successfully	Pass
2	Check response when invalid mobile number is inserted	Mobile number – 012423	Number should not be added	Number not added	Pass
3	Check response when existing mobile number is added.	Mobile number – 0713198819	Number should not be added	Number not added	Pass

4.7 Scenario: Customer – Make a Reservation

Test Case	Test Case Description	Test Data	Expected Result	Actual Result	Pass/Fail
1	Check response when valid details are inserted	Date – 2021.01.16 Timeslot – 08-10 A.M. Vehicle – KP 8718 Wash Package – Sanitizing Address – Ampitiya Ratemulla Rd,Ampitiya,Kandy,Central Province,Sri Lanka	Reservation successfully made.	Reservation successfully made.	Pass
2	Check response when invalid date is inserted	Date – 2008.01.16 Timeslot – 08-10 A.M. Vehicle – KP 8718 Wash Package – Sanitizing Address – Ampitiya Ratemulla Rd,Ampitiya,Kandy,Central Province,Sri Lanka	Reservation should not be made.	Reservation not made.	Pass
3	Check response when invalid timeslot is added. (Time slot already has maximum number of reservations allocated)	Date – 2021.01.16 Timeslot – 08-10 A.M. Vehicle – KP 8718 Wash Package – Sanitizing Address – Ampitiya Ratemulla Rd,Ampitiya,Kandy,Central Province,Sri Lanka	Reservation should not be made.	Reservation not made.	Pass
4	Check response when any of the details are incomplete .	Date – “” Timeslot – 08-10 A.M. Vehicle – KP 8718 Wash Package – Sanitizing Address – Ampitiya Ratemulla Rd,Ampitiya,Kandy,Central Province,Sri Lanka	Reservation should not be made.	Reservation not made.	Pass
5	Check response when there is more than one reservation for the same vehicle at the same date and	Date – 2021.01.16 Timeslot – 08-10 A.M. Vehicle – KP 8718 Wash Package – Sanitizing Address – Hindagala,Kandy,Central Province,Sri Lanka	Reservation should not be made.	Reservation not made.	Pass

	time.				
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4.8 Scenario: System Admin – Add & view equipment

Test Case	Test Case Description	Test Data	Expected Result	Actual Result	Pass/Fail
1	Check response when valid equipment data is inserted	Category – Compressor Model – C1 ItemCode - 0012 Price – Rs. 18500 Date Acquired– 2021.10.01	Equipment data successfully inserted and displayed.	Equipment data successfully inserted and displayed.	Pass
2	Check response when invalid price is inserted	Category – Compressor Model – C1 ItemCode - 0012 Price – abc Date Acquired– 2021.10.01	Equipment data not inserted.	Equipment data not inserted.	Pass
3	Check response when character length is exceeded.	Category – Compressor Model – XXX ItemCode - ZZZ Price – Rs. 18500 Date Acquired– 2021.10.01	Equipment data not inserted.	Equipment data not inserted.	Pass
4	Check response when invalid date is inserted.	Category – Compressor Model – C1 ItemCode – 0012 Price – Rs. 18500 Date Acquired– 2031.10.01	Equipment data not inserted.	Equipment data not inserted.	Pass

Note: Length of XXX , ZZZ> 50 characters

4.9 Scenario: System Admin – Add & view employee

Test Case	Test Case Description	Test Data	Expected Result	Actual Result	Pass/Fail
1	Check response when valid employee data is inserted	First Name – Jagath Last Name - Perera Contact No - 0768987654 Email – jagathp@gmail.com Date Enrolled – 2021.10.01 Salary – 30000 NIC No – 243565789V	Employee data successfully inserted and displayed.	Employee data successfully inserted and displayed.	Pass
2	Check response when invalid first name is inserted	First Name – Jagath12 Last Name - Perera Contact No - 0768987654 Email – jagathp@gmail.com Date Enrolled – 2021.10.01 Salary – 30000 NIC No – 243565789V	Employee data not inserted.	Employee data not inserted.	Pass
3	Check response when invalid last name is inserted	First Name – Jagath Last Name – Perera12 Contact No - 0768987654 Email – jagathp@gmail.com Date Enrolled – 2021.10.01 Salary – 30000 NIC No – 243565789V	Employee data not inserted.	Employee data not inserted.	Pass
4	Check response when invalid mobile number is inserted	First Name – Jagath Last Name – Perera Contact No - 1768987654 Email – jagathp@gmail.com Date Enrolled – 2021.10.01 Salary – 30000 NIC No – 243565789V	Employee data not inserted.	Employee data not inserted.	Pass
5	Check response when invalid email is inserted	First Name – Jagath Last Name – Perera Contact No - 0768987654 Email – jagathpgmail.com Date Enrolled – 2021.10.01 Salary – 30000 NIC No – 243565789V	Employee data not inserted.	Employee data not inserted.	Pass
6	Check response when invalid salary is inserted	First Name – Jagath Last Name – Perera Contact No - 0768987654 Email – jagathp@gmail.com	Employee data not inserted.	Employee data not inserted.	Pass

		Date Enrolled – 2021.10.01 Salary – abcde NIC No – 243565789V			
7	Check response when character limit is exceeded	First Name – XXX Last Name – SSS Contact No - NNN Email – MMM Date Enrolled – 2021.10.01 Salary – 30000 NIC No – CCC	Employee data not inserted.	Employee data not inserted.	Pass
8	Check response when employee data is left blank.	First Name – “” Last Name – “” Contact No - “” Email – “” Date Enrolled – “” Salary – “” NIC No – “”	Employee data not inserted.	Employee data not inserted.	Pass

Note: Length of XXX, MMM, SSS, CCC > 50 characters, length of NNN > 10 digits

4.10 Scenario: System Admin – Add & view Service Team Leader (STL)

Test Case	Test Case Description	Test Data	Expected Result	Actual Result	Pass/Fail
1	Check response when valid STL data is inserted	NIC No – 243565789V Username – jagath99 Email – jagathp@gmail.com Password – Jagath1324 Confirm Password – Jagath1324 Photo – file.jpg	STL data successfully inserted and displayed.	Employee data successfully inserted and displayed.	Pass
2	Check response when invalid (non-existing) NIC is inserted	NIC No – abcdefg Username – jagath99 Email – jagathp@gmail.com Password – Jagath1324 Confirm Password – Jagath1324 Photo – file.jpg	STL data not inserted.	STL data not inserted.	Pass

3	Check response when existing username is inserted	NIC No – 243565789V Username – jagath99 Email – jagathperera@gmail.com Password – Jagath1324 Confirm Password – Jagath1324 Photo – file.jpg	STL data not inserted.	STL data not inserted.	Pass
4	Check response when existing email is inserted	NIC No – 243565789V Username – jagathP99 Email – jagathp@gmail.com Password – jagath1234 Confirm Password – jagath1324 Photo – file.jpg	STL data not inserted.	STL data not inserted.	Pass
5	Check response when invalid email is inserted	NIC No – 243565789V Username – jagathP99 Email – jagathprgmail.com Password – Jagath1324 Confirm Password – Jagath1324 Photo – file.jpg	STL data not inserted.	STL data not inserted.	Pass
6	Check response when password format is not valid.	NIC No – 243565789V Username – jagath99 Email – jagathp@gmail.com Password – Jagath Confirm Password – Jagath Photo – file.jpg	STL data not inserted.	STL data not inserted.	Pass
7	Check response when character limit is exceeded	NIC No – 243565789V Username – XXX Email – jagathp@gmail.com Password – Jagath1234 Confirm Password – Jagath1234 Photo – file.jpg	STL data not inserted.	STL data not inserted.	Pass
8	Check response when STL data is left blank.	NIC No – “” Username – “” Email – “” Password – “” Confirm Password – “” Photo – “”	STL data not inserted.	STL data not inserted.	Pass

Note: Length of XXX > 50 characters

4.11 Scenario: System Admin – Manager Services

Test Case	Test Case Description	Test Data	Expected Result	Actual Result	Pass/Fail
1	Check response when valid service data is inserted	Service Type – Interior Cleaning Vehicle Type – Sedan Price – Rs. 1200	Service data successfully inserted and displayed.	Service data successfully inserted and displayed.	Pass
2	Check response when character limit exceeds .	Service Type – XXX Vehicle Type – CCC Price – Rs. 1200	Service data not inserted.	Service data not inserted.	Pass
3	Check response when invalid price is inserted	Service Type – Interior Cleaning Vehicle Type – Sedan Price – abcd	Service data not inserted.	Service data not inserted.	Pass
4	Check response when empty price is inserted	Service Type – Interior Cleaning Vehicle Type – Sedan Price – Rs. ""	Service data not inserted.	Service data not inserted.	Pass

Note: Length of XXX, CCC > 50 characters

4.12 Scenario: Customer – Sign up

Test Case	Test Case Description	Test Data	Expected Result	Actual Result	Pass/Fail
1	Check response when valid data is inserted	First Name – BF Last Name – Ilma Username - bfilma Email – leyakat.organa@gmail.com Mobile No – 0713198819 Password – Ilma1234 Confirm Password – Ilma1234	Customer registered successfully and verification email is sent.	Customer registered successfully and verification email is sent.	Pass
2	Check response when duplicate username is inserted	First Name – Abdulla Last Name – Nalim Username - bfilma Email – abdullanalim1999@gmail.com Mobile No – 0769099126 Password – Abdulla1234 Confirm Password – Abdulla1234	Customer should not be registered	Customer not registered	Pass
3	Check response when duplicate Email is inserted	First Name – Prasadi Last Name – Aluthwaththa Username - prasadi Email – leyakat.organa@gmail.com Mobile No – 0752197452 Password – Prasadi1234 Confirm Password – Prasadi1234	Customer should not be registered	Customer not registered	Pass
4	Check response when duplicate Mobile No is inserted	First Name – Prasadi Last Name – Aluthwaththa Username - prasadi Email – nadeesha.aluthwaththa@gmail.com Mobile No – 0713198819 Password – Prasadi1234 Confirm Password – Prasadi1234	Customer should not be registered	Customer not registered	Pass
5	Check response when the first name has non alphabetical characters	First Name – Sahan12 Last Name – Dias Username – sahan12 Email – sahan.dias47@gmail.com Mobile No – 0713197719 Password – SahanD1234 Confirm Password – SahanD1234	Customer should not be registered	Customer not registered	Pass
6	Check response when the last name	First Name – Sahan Last Name – Dias12 Username – sahan12 Email – sahan.dias47@gmail.com	Customer should not be registered	Customer not registered	Pass

	has non alphabetical characters	Mobile No – 0713197719 Password – SahanD1234 Confirm Password – SahanD1234			
7	Check response when the email is not in correct format	First Name – Sahan Last Name – Dias Username – sahan12 Email – sahan.dias47 Mobile No – 0713197719 Password – SahanD1234 Confirm Password – SahanD1234	Customer should not be registered	Customer not registered	Pass
8	Check response when the mobile number is not in correct format	First Name – Sahan Last Name – Dias Username – sahan12 Email – sahan.dias47@gmail.com Mobile No – 1713197719 Password – SahanD1234 Confirm Password – SahanD1234	Customer should not be registered	Customer not registered	Pass
9	Check response when the password does not contain an upper-case letter	First Name – Sahan Last Name – Dias Username – sahan12 Email – sahan.dias47@gmail.com Mobile No – 0713197719 Password – sahand1234 Confirm Password – sahand1234	Customer should not be registered	Customer not registered	Pass
10	Check response when the password does not contain a lower-case letter	First Name – Sahan Last Name – Dias Username – sahan12 Email – sahan.dias47@gmail.com Mobile No – 0713197719 Password – SAHAND1234 Confirm Password – SAHAND1234	Customer should not be registered	Customer not registered	Pass
11	Check response when the password does not contain a number	First Name – Sahan Last Name – Dias Username – sahan12 Email – sahan.dias47@gmail.com Mobile No – 0713197719 Password – SahanDabcd Confirm Password – SahanDabcd	Customer should not be registered	Customer not registered	Pass
12	Check response when the password does not	First Name – Sahan Last Name – Dias Username – sahan12 Email – sahan.dias47@gmail.com Mobile No – 0713197719	Customer should not be registered	Customer not registered	Pass

	contain minimum 8 characters	Password – Sahan1 Confirm Password – Sahan1			
13	Check response when the password and confirm password do not match	First Name – Sahan Last Name – Dias Username – sahan12 Email – sahan.dias47@gmail.com Mobile No – 0713197719 Password – SahanD12345 Confirm Password – SahanD1234	Customer should not be registered	Customer not registered	Pass
14	Check response when the character limit exceeds	First Name – FFF Last Name – LLL Username – UUU Email – EEE Mobile No – MMM Password – PPP Confirm Password – PPP	Customer should not be registered	Customer not registered	Pass
15	Check response when the input data are left blank	First Name – “” Last Name – “” Username – “” Email – “” Mobile No – “” Password – “” Confirm Password – “”	Customer should not be registered	Customer not registered	Pass

Note: Length of FFF, LLL, UUU, EEE > 50 characters, length of MMM > 10 digits, length of PPP > 255 characters

5. Individual Contribution

5.1 Member 1

Student ID – 19000618 (Index Number) , 2019/CS/061 (Registration Number)

Student Name – B.F.Ilma

Group ID – CS-01

Group Name - Wandiwash

Functional Requirements

User

Name	Description
Users should be able to login/logout to and from their accounts.	<p>In the login process, the login page is first rendered to the user. The username inserted is first checked against all the usernames. If it exists, the hash value of the password is checked against the hash of the entered password. Then the user's role is identified and the user is directed to the relevant homepage.</p> <p>When the user clicks logout, the user controller destroys all the session variables and redirects the user to the homepage.</p>
Users should be able to view customer reviews.	All reviews the customers make about wandiwash are fetched from the database and displayed to all users with date and time and name of the customer. Reviews are sorted in a way the latest are on top.

Customer

Name	Description
Customers should be able to register into the system by creating an account and providing their details.	Customers can sign up to the system by providing their name, email, phone number, username and password. All input data are validated (client-side and server-side). A verification email is sent to the customer and after the customer clicks the URL sent via email,

	customer can log into their account.
Customers should be able to update their account details and delete their account if needed.	Customers can edit their vehicle details and delete their locations by going into the 'My Account' interface. They can also delete their account. In this case a flag is set to indicate that account is no longer in use.
Customers should be able to add one or more locations to their account using Google Maps.	Google Map APIs have been used to provide the customer a map to search and add their locations to their account. All customer locations must be within the distance that wandiwash provides service (Kandy).
Customers should be able to request a wash package for their vehicle at any given location on an available time slot at a given day by making a reservation through the web app.	Customer details are gathered such as their preferred wash package, vehicle and location and an available date and time. The service price and total price is displayed to the customer. The customer can then confirm and receive an email that their reservation is successfully made.
Customers should be able to view upcoming/past bookings through their accounts.	All upcoming/past reservations and their details are fetched from the database and displayed to the customer through different interfaces.
Customers should be able to give reviews about the service.	Customers can provide reviews about the service and the reviews are displayed to all the users.

Manager

Name	Description
The manager should be able to view upcoming reservations.	Upcoming reservations of all the customers are fetched from the database and displayed to the manager. The manager can filter the reservations by date or by customer name.
The manager should be able to view reservation details such as details of the customer, vehicle, address and wash package chosen.	By clicking a reservation, all the details of it filtered using the reservation ID and are displayed to the manager through a separate interface.
The manager should be able to select and assign a service team leader to each reservation.	The system searches and gives a list of service team leaders that are on work that day and are free on that particular time slot of the reservation. The manager can then change the assignment of a service team leader or assign a service team leader for the reservation.
The manager should be able to access the dashboard and view monthly reports of the business as graphs and charts.	Details of the reservations completed in the past month are fetched from the database and displayed to the manager. Manager sees the number of reservations on each week, revenue

	made each week, popularity of the wash packages and the service teams' work of the past month on the charts.
The manager should be able to view the details of all the service packages.	Manager can see the wash packages, vehicle types and their prices on a separate interface.

System Admin

Name	Description
The system admin should be able to view/add/update/delete service records in the system.	The system admin can view/add/update and delete wash packages, vehicle types and their relevant prices.

Service Team Leader

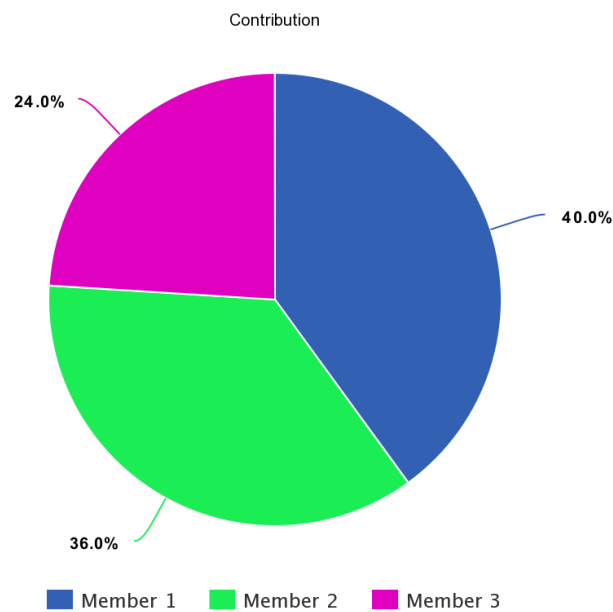
Name	Description
Service Team Leaders should be able to view the customer location of a reservation in Google Maps.	Latitude and Longitude of the location provided by the customer for a reservation are taken and displayed in Google Maps using APIs.
Service Team Leaders should be able to send an invoice through the system to a customer after they are done providing the service.	After completing the service, the service team leader can click 'Complete Service' and the system sends an email to the customer providing them an invoice with all the reservation details and the price.

Quality Attributes

Name	Description
SQL prepared statements	Prepared statements have been used as a security measure against SQL injection and also to increase performance.
Password hashing.	User passwords are stored as hashes using PHP PASSWORD_BCRYPT.
Lock computer after three failed login attempts.	System maintains a count of incorrect login attempts. If the count is greater than three, the login is locked for 40 seconds.

Interfaces

- User
 - Logged-in header
 - Reviews
- Admin
 - Service
- Customer
 - Account
 - Completed Order
 - Give Review
 - Order Summary
 - Reservation Error
 - Upcoming Order
 - Verify
- Manager
 - Dashboard
 - Service
 - Upcoming Order



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My contribution - ■

Percentage of work – 40%

5.2 Member 2

Student ID – 19000014 (Index Number) , 2019/CS/001 (Registration Number)

Student Name – Abdulla Nalim

Group ID – CS-01

Group Name – Wandiwash

Functional Requirements

User

Name	Description
Users should be able to change their account passwords.	<p>First, the system renders an interface to enter his/her username or email to send a link to his/her email. The email entered is first checked to see if the user is already in the system. If yes, an email will be sent to the user including a link that redirects to the new password entering page. Then the user can enter his new password. Then the password will be updated on the database.</p> <p>If the user does not click the link on the email before 24 hrs the link will expire.</p>

Customer

Name	Description
Customers should be able to reschedule their reservations up until 24 hrs before the reserved time.	<p>When the customer clicks the 'Reschedule' button the system will render an interface to enter/change details of the reservation.</p> <p>When the current time is less than a difference of 24 hrs of the reserved time, the reschedule option will not be available to the customer.</p>
Customers should be able to cancel their reservations up until 24 hrs before the reserved time.	<p>When the customer clicks the 'Cancel' button system will delete the relevant reservation from the reservation table on the database.</p> <p>When the current time is less than a difference of 24 hrs of the reserved time, the cancel option will not be available to the customer.</p>

Manager

Name	Description
Manager should be able to cancel reservations	<p>When the manager clicks the 'Cancel' button, system will delete the relevant reservation from the reservation table on the database.</p> <p>When the current time is less than a difference of 24 hrs of the reserved time, the cancel option will not be available to the manager.</p>
Manager should be able to view the details of all employees.	The interface will render all the details of the employees and service team leaders with attendance details of the current date and the assigned team number of the employees.

System Admin

Name	Description
The System Admin should be able to view/add/update/delete employee records in the system.	<p>The admin can add employees to the system. In addition, admin can edit or delete the employee from the relevant tables.</p> <p>Admin can mark the attendance of employee and can assign each employee to a service team daily.</p>
The System Admin should be able to view/add/update/delete service team leader records in the system.	<p>The admin can add service team leaders to the system. System first checks if the service team leader is an employee, then inserts that employee as a Service team leader to the database.</p> <p>In addition, the admin can update or delete the relevant service team leader details. Then the system will update the relevant tables on the database.</p> <p>Admin can mark the attendance of service team leaders daily.</p>

Service Team Leader

Name	Description
Service team leader should be able to see reports of their past reservations in the dashboard.	The interface renders two charts which shows the number of bookings per week on the last month and the number of bookings per wash package on past month.

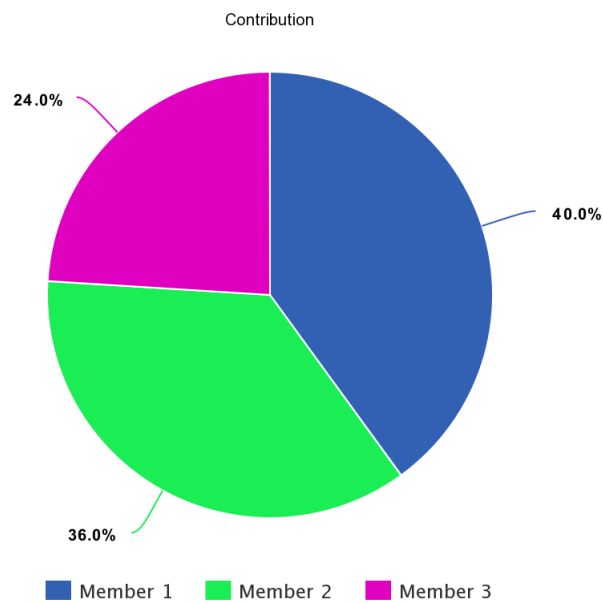
Quality Attributes

Name	Description
Help feature for customer	The customer is provided an interface where they are shown the procedure of how to make a reservation and how to use the web application.
User authorization	Each user is assigned a role through session variables and each user is checked before doing an operation if he has the authority to perform the specific task.
Choosing a good web host	The web application runs on Hostinger server.

Interfaces

- User
 - Home
 - Change Password
 - Footer
 - Forgot Password
 - Header
 - Login
- Admin
 - Home
 - Manage Employee
- Customer
 - Home
 - Book a wash

- Book a wash 2
- Calendar
- Completed Reservations
- Help
- Reschedule
- Reschedule 2
- Reschedule Summary
- Signup
- Upcoming Reservations
- Manager
 - Home
 - Completed Reservations
 - Employee
 - Upcoming Reservations
- Service Team Leader
 - Home
 - Dashboard



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My contribution - ■

Percentage of work – 36%

5.3 Member 3

Student ID – 19000057 (Index Number) , 2019/CS/005 (Registration Number)

Student Name – A.G.N.P.Aluthwathta

Group ID – CS-01

Group Name - Wandiwash

Functional Requirements

Customer

Name	Description
Customers should be able to rate the service provided after a reservation.	<p>When the customer views his selected completed order details, we have provided a feature that the customer can rate the service.</p> <p>First, we check whether particular order has been rated already or not. If it is null then the customer is free to select the rating stars and submit them. Then the database will be updated and the user is redirected to his “My previous reservations” page.</p> <p>The rating value is an integer value between 0-5 and not null. After rating, the customer can view the rate that he provided and cannot select stars and submit a rate again.</p>

Manager

Name	Description
The manager should be able to view past reservations and the relevant details.	<p>When the manager clicks “Completed jobs”, he can view orders as a list with basic details such as order ID.</p> <p>He can select a date from the calendar and filter orders by date. Also, he can filter orders customer-wise by typing the customer’s name.</p> <p>By clicking “View order”, the manager can view the relevant details of the particular order.</p>
The manager should be able to view the details of all the equipment.	When the manager clicks “Equipment details” on his home page, he can view all the equipment categories as a table with number of all items

	<p>and free items that are updated by the system admin.</p> <p>He can filter equipment that has been assigned to teams by filtering team-wise. Also, he can search for categories by typing category names.</p> <p>By clicking “view all items” he can view all the equipment in that category with free and assigned equipment as a table. In here also he is able to filter equipment team-wise.</p> <p>By clicking “free items” he can view all the free equipment in that category.</p>
The manager should be able to view the ratings of a particular reservation.	When the manager views the completed jobs, he is able to view the customer rating in 5 rating stars.
The manager should be able to see the photos of a reservation uploaded by the service team leader.	When the manager views the completed jobs, he can view before and after service images that are uploaded by the service team leader.

System Admin

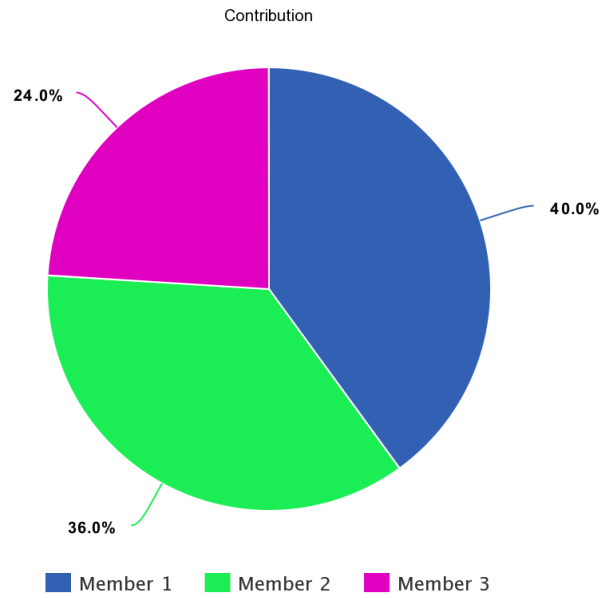
Name	Description
The system admin should be able to view/add/update/delete equipment records in the system.	<p>Equipment management is a major part of the system admin.</p> <p>He can view all the equipment categories as a table with number of all items and free items.</p> <p>Then if he needs to add equipment to an existing category then he can choose the category from the drop-down and type the item code and other details. The item code is the key to identifying each item.</p> <p>He can assign an equipment to a team or mark it as returned.</p> <p>Also, he is able to delete an item and the database will store that as out of service.</p>

Service Team Leader


Name	Description
Service Team Leaders should be able to view the daily reservations assigned by the manager on their calendar.	On the service team leader's home page, he is able to view the daily reservations assigned by the manager as "Today reservations".
Service Team Leaders should be able to view details of a reservation assigned to them.	The service team leader can select an order and see the details such as vehicle details, wash package details, and location.
Service Team Leaders should be able to upload photos of a reservation after providing the service.	After providing the service, the team leader should upload two images of before and after service so that the manager can see them. Without uploading the images the order will not be completed.

Interfaces

- Admin
 - Equipment
- Manager
 - Completed Order
 - Equipment
- Service Team Leader
 - Assigned Orders
 - Order Details



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My contribution - 
Percentage of work – 24%