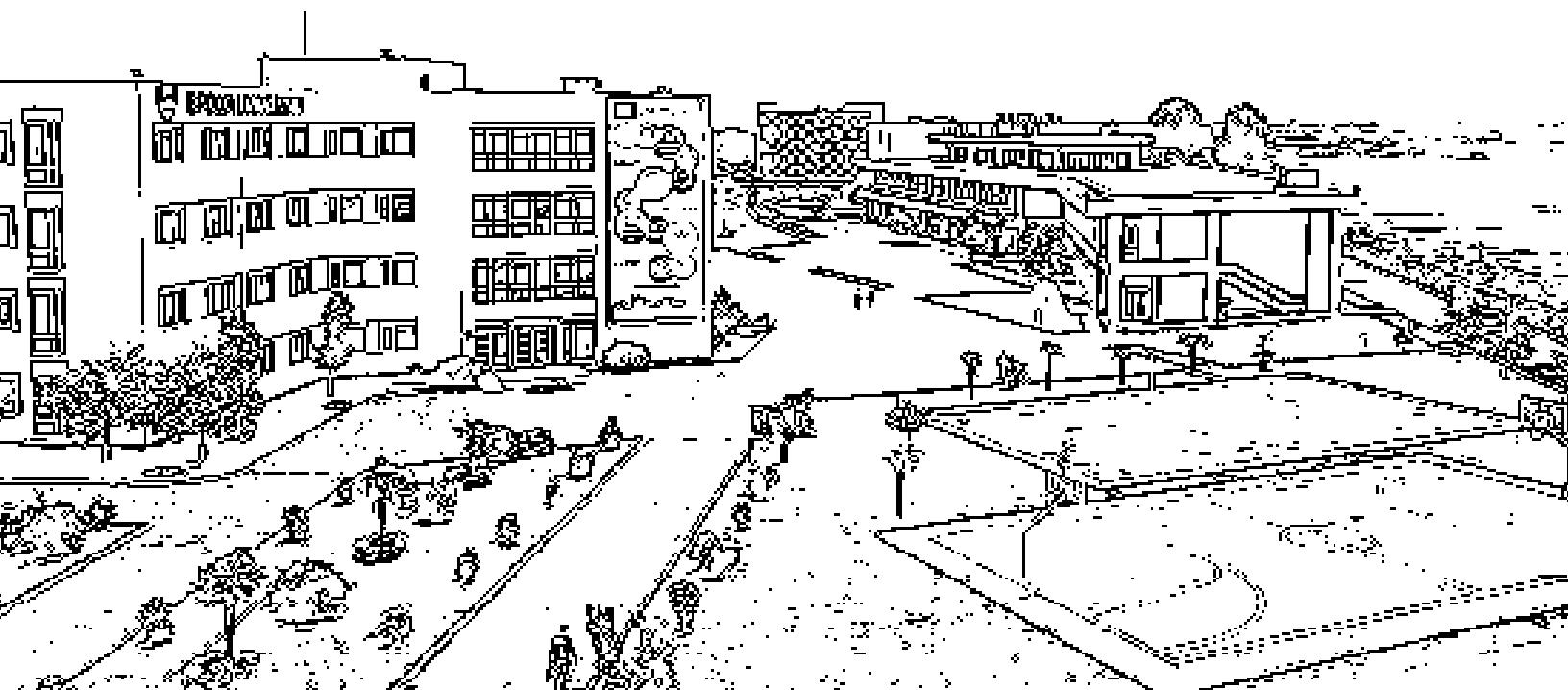




**Software Modeling and Design
Travel Services
Version 1.3**



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Preface

Welcome to our travel service software documentation project! With the help of this document, our objective is to provide an in-depth overview of the software's features, functionalities, and technical requirements for all the individuals who might be interested in learning more about it.

This document is meant for system administrators, system agents, software engineers, and software testers who are in charge of developing and maintaining the functionality of the product. It offers thorough information about the architecture, design patterns and data structures of the product. Understanding the software's core codebase with the aid of this documentation will make it simpler for the parties involved to add new features, correct errors, and enhance performance.

This documentation is organized with a table of contents, glossary, and index to make it simpler to find the information needed. In order to clarify important ideas, examples, graphs, and code samples are also included.

We hope that this documentation serves as a useful tool for anyone interested in learning more about our project and enables them to use our software to its full potential.

We appreciate your interest in our product and welcome any critiques to help it grow and succeed.

1. Executive Summary

1.1 Project overview

This application is an interactive platform made to help people and travel companies manage their travel plans. Below, you will find listed some of the application's key features and major benefits.

Key features:

1. ***Car rental and hotel booking:*** Our application allows you to hire a driver, rent a car or book your hotels all in one place, making the process of booking much easier and convenient.
2. ***Travel tips and advice:*** Our application provides useful travel tips and advice to help you make the most of your trip.
3. ***24/7 support:*** Our application provides 24/7 support to ensure that you have assistance whenever you need it.
4. ***Reviews and ratings:*** Our application allows you to read reviews and ratings from other users of the platform, helping you make informed decisions about your trip.
5. ***Customized alerts:*** Our application sends customized alerts about your traveling plans and booking arrangements.
6. ***"Thank you" benefits:*** Our application offers rewards to frequent travelers, allowing them to earn points and discounts on their bookings.

Benefits:

1. ***Time-saving:*** Our application saves you time by providing a space that contains everything you might need for all your travel needs.
2. ***Cost-effective:*** Our application offers exclusive deals along with various payment methods.
3. ***Convenience:*** Our application allows you to manage all your travel details in one place.
4. ***Safety and security:*** Our application ensures that each customer stays informed and ***protected during their trip.***
5. ***User-friendly:*** Our application is designed with user-friendliness in mind, ensuring that every user can easily navigate and use all its features.

In conclusion, our travel software offers the best solution for each customer who seeks to plan, reserve and relish their trip. With a variety of features and benefits, our application ensures a worry-free and effortless travel experience.

1.2 Scope and Purpose

The purpose of this software is to simplify the process of booking and managing travel arrangements. It is designed to provide an intuitive and user-friendly interface that allows users to navigate the system quickly and efficiently.

The scope of the application includes providing a user-friendly platform for managing travel arrangements and reporting features to help car rentals and hotels monitor bookings, track payments, and generate reports.

In scope:

1.Resources

- Team (6 people)
- Car rental owners, hotel owners and clients
- IT review and testers

2.Deliverables

- Travel services application delivered by June 2023

3.Project roadmap and timeline

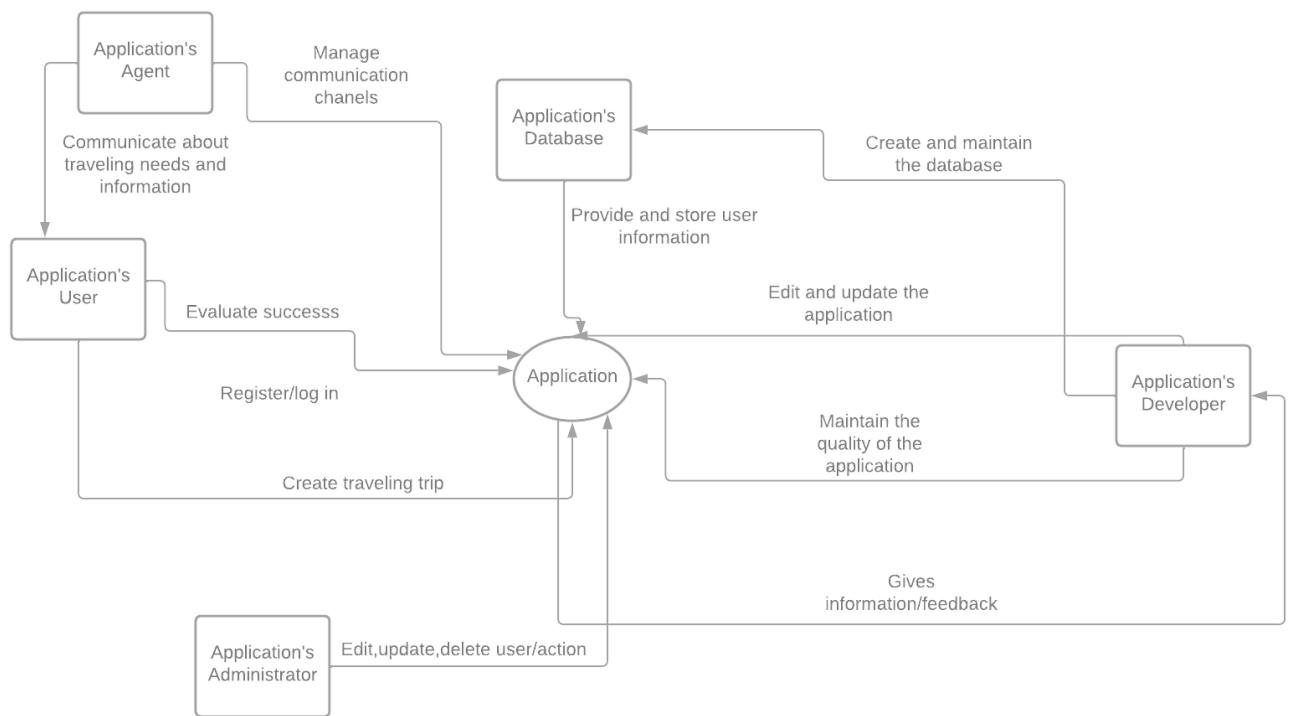
- March 16,2023 : Creation of the team
- March 18-20,2023: Defining the requirements of the application
- March 21-30,2023: Documentation of the software
- April 1-20,2023 : First phase of creating the software
- April 21-30,2023 : Optimization of the first piece of the software
- May 1-15,2023: Finishing the creation of the software
- May 16-30,2023 : Final touches of the software and its documentation
- June 2023: Presentation of the software

Out of scope:

- New features included in the software

2. Product/service description

2.1 Product context



2.2 User characteristics

Customer profile: Every individual

Our software can be used by every person who is in need to make traveling arrangements. There is no age, gender, racial limit to the use of this software. It is created for everyone. Every person has the ability to express their thoughts and give reviews, in order for the software to get better and more useful for them. This software is intended to be of service to, indeed, every kind of individual wanting to have a platform where they can access all their travel plans.

2.3 Assumptions

- *Resources*

1. Meetings will be held frequently, with each member being present
2. Each member, despite their role, will be able to participate in the software's creation and documentation
3. All members will be equipped with the needed hardware and software pieces
4. Any essential information will be delivered prior to starting the project
5. All facilities will be available when needed
6. End users will have access to the software, as well as, the possibility to test it in their desired date

- *Delivery*

1. The software will be delivered and presented on time
2. The software will be delivered with all the requested features
3. The software will be user friendly, making it easy for every kind of user to access and use it
4. Necessary documentation and user manual will be delivered to the user

- *Budget-estimated cost of the project*

1. Project costs will stay the same as the initially budgeted cost (*moderate expenses*)
2. This budget will cover every possible expense: hardware, software and other possible resources
3. In case of needing to commit changes, the stakeholders will be informed immediately

- *Scope*
 1. *The project scope will not change*
 2. *This scope will be defined and documented*
 3. *The scope needs to be reviewed before implementation*
- *Schedule*
 1. *Materials will arrive as planned within the project schedule*
 2. *Deadlines of each task need to be met*
 3. *Changes will be made in accordance with unexpected occurrences that might occur*
 4. *Changes will be made known to stakeholders immediately*
- *Methodology*
 1. *Project will follow the parallel process flow type.*
 2. *Project will follow the unified process model.*

2.4 Constraints

- ***Technology limitations :***
 1. The IDE used, access of the needed amount of devices such as computers, mobile phones, iPads etc
 2. Additional resources may be needed later on in the project
- ***Scheduling limitations:***
 1. Planned meetings and their scheduled times need to be favorable for all the included members
- ***Adaptability limitations:***
 1. Members of the team have to be able to compromise and make changes to their personal schedules when needed
- ***Construction and design limitations:***
 1. A good understanding of the programming language used and well-defined knowledge of its libraries, functions and features it provides
- ***Delivery limitations:***
 1. The application needs to be delivered in the appointed time
- ***Testing limitations:***

1. The scheme/method used for testing the application needs to be efficient

- ***Budget limitations:***

1. Unexpected changes may occur, creating a need for more investment

2.5 Dependencies

- *This new product presents the need to download distinct features on the IDE such as specific libraries and extensions to be executed*
- *This new product presents the need to have access to all kinds of technological devices*
- *This new product presents the need to have a basic understanding of using third party applications such as Booking.com.*

3. Requirements

3.1 Functional Requirements:

| Req# | Requirement | Comments | Priority | Date reviewed | SME reviewed/approved |
|------|---|--|----------|---------------|---|
| R_01 | The app can offer different views/functions for different user levels (customer, agent, admin). | Based on the user role, the user will have different views and different functions they can use. | 1 | 19.03.2023 | A.Toska A.Bitri I.Kociu K.Llaca T.Malasi Xh.Baze |
| R_02 | The admin is the only person who can change/add information about the inventory. | The admin is able to view everything at any time, and has the access change, add cars. | 1 | 19.03.2023 | A.Toska A.Bitri I.Kociu K.Llaca T.Malasi Xh.Baze |
| R_03 | Users should log in in order to proceed. | The user should have an account so he can book and look at the cars. | 1 | 19.03.2023 | A.Toska A.Bitri I.Kociu K.Llaca T.Malasi Xh.Baze |
| R_04 | Users should create account if they don't already have one. | In order to look at our website and gain access to it you must have an account. | 1 | 19.03.2023 | A.Toska A.Bitri I.Kociu K.Llaca T.Malasi Xh.Baze |
| R_05 | Users fill a form when registering of all their information including the driver license. | Since you can rent a car from our website, we need to be sure you are capable of doing so. | 1 | 19.03.2023 | A.Toska A.Bitri I.Kociu K.Llaca T.Malasi Xh.Baze |
| R_06 | Agents must be available 24 hours so that they can offer help to customers. | Since customers from around the globe are able to rent our cars when they come on holidays or trips to Albania, they might want to book at anytime of day. | 1 | 19.03.2023 | A.Toska A.Bitri I.Kociu K.Llaca T.Malasi Xh.Baze |
| R_07 | Customers should give agents every information that is needed in order to book. | They should provide information about themselves, if they want a driver and their card details. | 1 | 19.03.2023 | A.Toska A.Bitri I.Kociu K.Llaca T.Malasi Xh.Baze |

| | | | | | |
|------|--|---|---|------------|---|
| R_08 | The user should be able to book a hotel If wanted/needed. | After securing their travel the user can also secure their hotel. | 2 | 19.03.2023 | A.Toska A.Bitri I.Kociu K.Llaca T.Malasi Xh.Baze |
| R_09 | The website should allow customers to browse through a wide selection of car models, including small cars, SUVs, and premium vehicles. | The website should provide all the necessary information about each car model, such as specifications, features, and photos | 1 | 19.03.2023 | A.Toska A.Bitri I.Kociu K.Llaca T.Malasi Xh.Baze |
| R_10 | The website should offer flexible rental options to customers. | The customer can choose between including one-way rentals, long-term leases, and hourly, daily, weekly, or monthly rentals. | 2 | 19.03.2023 | A.Toska A.Bitri I.Kociu K.Llaca T.Malasi Xh.Baze |
| R_11 | The website should allow customers to easily book a car by choosing their pick-up and drop-off locations, dates and times of rental, and any additional drivers. | This will make the rental process a whole lot easier. | 1 | 19.03.2023 | A.Toska A.Bitri I.Kociu K.Llaca T.Malasi Xh.Baze |
| R_12 | The website should offer customers a variety of insurance options. | This can make the customer and us feel more secure. | 2 | 19.03.2023 | A.Toska A.Bitri I.Kociu K.Llaca T.Malasi Xh.Baze |
| R_13 | The website should provide customers with a range of unique offers and travel packages. | These include airport pick-up and drop-off, pick-up and drop-off to a far-off location, and monthly/yearly contracts with various bonuses. | 3 | 19.03.2023 | A.Toska A.Bitri I.Kociu K.Llaca T.Malasi Xh.Baze |
| R_14 | The website should provide customer support from agents | Agents should also be able to answer questions, provide details about various vehicles and their features, assist customers with reservations, and address any issues that may arise during a rental. | 1 | 19.03.2023 | A.Toska A.Bitri I.Kociu K.Llaca T.Malasi Xh.Baze |

| | | | | | |
|------|--|---|---|------------|---|
| R_15 | Administrators should also have access to customer data, payment processing, and analytics . | This way the administrators can improve the user experience. | 1 | 19.03.2023 | A.Toska A.Bitri I.Kociu K.Llaca T.Malasi Xh.Baze |
| R_16 | The car selection and home page are available by all users. | Every user needs to be able to look and select them. | 1 | 19.03.2023 | A.Toska A.Bitri I.Kociu K.Llaca T.Malasi Xh.Baze |
| R_17 | The cars should provide a GPS navigation system to help customers navigate new routes and reach their destination safely and easily. | Since a lot of customers can be tourists, they are unfamiliar with the routes so this is a important feature. | 2 | 19.03.2023 | A.Toska A.Bitri I.Kociu K.Llaca T.Malasi Xh.Baze |
| R_18 | The administrator will provide clear pictures of inside and outside of the cars | This is important in order to create a clear view for the user, making the selection easier. | 2 | 19.03.2023 | A.Toska A.Bitri I.Kociu K.Llaca T.Malasi Xh.Baze |
| R_19 | The customer while booking has a option to choose a driver too if they are available. | There will be a description for each driver and their years of experience. | 1 | 19.03.2023 | A.Toska A.Bitri I.Kociu K.Llaca T.Malasi Xh.Baze |
| R_20 | Our website will be responsive. | This will make it possible to work at different screen sizes. | 1 | 19.03.2023 | A.Toska A.Bitri I.Kociu K.Llaca T.Malasi Xh.Baze |
| R_21 | The administrator can see the work done by each employee. | This will help track the work that everyone has done. | 2 | 19.03.2023 | A.Toska A.Bitri I.Kociu K.Llaca T.Malasi Xh.Baze |
| R_22 | The system should be able to verify a card | This will make possible that the bookings are done | 1 | 19.03.2023 | A.Toska A.Bitri I.Kociu |

| | | | | | |
|------|---|--|---|------------|---|
| | and withdraw money from it. | online and the money is secured for each one. | | | K.Llaca T.Malasi Xh.Baze |
| R_23 | The system should allow users to log in and log out after each session. | This way the user's information is secured. | 2 | 19.03.2023 | A.Toska A.Bitri I.Kociu K.Llaca T.Malasi Xh.Baze |
| R_24 | Customers will be able to contact agents through email, phone or live chat. | They can choose the form they are most comfortable in. | 2 | 19.03.2023 | A.Toska A.Bitri I.Kociu K.Llaca T.Malasi Xh.Baze |
| R_25 | The website should have a search feature that allows customers to filter results based on specific criteria, such as car type, price, and location. | This will help the customer choose what they want and faster. | 2 | 19.03.2023 | A.Toska A.Bitri I.Kociu K.Llaca T.Malasi Xh.Baze |
| R_26 | The website should display the total cost of the rental, including taxes, fees, and any additional charges. | Based on the car and extra services a customer wants the price varies, so before making the payment they should be able to see the result. | 1 | 19.03.2023 | A.Toska A.Bitri I.Kociu K.Llaca T.Malasi Xh.Baze |
| R_27 | The website should allow customers to modify or cancel their reservations easily, with clear guidelines about any applicable fees or restrictions. | The customer this way knows that they can cancel their reservation but a % of the total is still going to be paid. | 1 | 19.03.2023 | A.Toska A.Bitri I.Kociu K.Llaca T.Malasi Xh.Baze |
| R_28 | The website should have a user-friendly interface that is easy to navigate and understand. | The easier the website the more booking, less traffic on agents. | 2 | 19.03.2023 | A.Toska A.Bitri I.Kociu K.Llaca T.Malasi Xh.Baze |
| R_29 | The website should be secure and protect customer data with encryption and other security measures. | Since we require credit card and driver license information the system should be secured. | 1 | 19.03.2023 | A.Toska A.Bitri I.Kociu K.Llaca T.Malasi Xh.Baze |

| | | | | | |
|------|---|---|---|------------|---|
| R_30 | The company should have a customer feedback system in place, such as customer surveys or ratings and reviews, to gather feedback. | This helps improve service quality. | 3 | 19.03.2023 | A.Toska A.Bitri I.Kociu K.Llaca T.Malasi Xh.Baze |
| R_31 | The company should have a strong social media presence and actively engage with customers on social media platforms | This will help to build brand awareness and customer loyalty. | 3 | 19.03.2023 | A.Toska A.Bitri I.Kociu K.Llaca T.Malasi Xh.Baze |
| R_32 | The social media platforms should be available at the end of the website(footer). | The customers this way can see more about us and what we offer. | 3 | 19.03.2023 | A.Toska A.Bitri I.Kociu K.Llaca T.Malasi Xh.Baze |
| R_33 | The company should have a mobile app. | The more platforms the better reach. | 3 | 19.03.2023 | A.Toska A.Bitri I.Kociu K.Llaca T.Malasi Xh.Baze |
| R_34 | Some of the additional services the customer can select are child seats, VIP treatment, Destination guides etc. | The goal is to fulfill every need and wish the customer has. | 3 | 19.03.2023 | A.Toska A.Bitri I.Kociu K.Llaca T.Malasi Xh.Baze |

3.2 Non-Functional Requirements:

3.2.1 Product requirements

3.2.1.1 User interface requirements

- The user interface will consist of 3 views, depending on the level of the user.
- The first page will consist of a sign up/ log in page.
 - 1) These pages will be available to all types of users. They are used to gather the credentials of the users, including: full name, username, email address, password and phone number. After completing the required fields, the user will log in to the application using a “Login” button.

- **CUSTOMER INTERFACE**

1. Firstly, the home page will be displayed. The user will be able to choose where they'd like to be redirected next: to the “Browse Vehicles” page, the “Hire a Driver” page, or the “Book a hotel” page. There will also be another section, labeled as “Other Options”. If the user clicks this, they will be redirected to another page, which will display different operations the user can do like: check their profile, manage their reservation, contact customer service etc. Each of these operations will have distinct icons and labels.
2. In the “Browse Vehicles” page, the user will be able to look through photos of different vehicles, as well as their different information such as: brand, model, year of manufacture etc.
3. In the “Hire a driver” page, the user will be able to fill out a form with driver preferences.
4. In the “Book a hotel” page, the user will be able to browse through different hotel options and their prices and photos.

- **ADMINISTRATOR INTERFACE**

1. Firstly, the administrator will be displayed their account details. They will be able to choose to be redirected either to a “Manage inventory” page, or “Manage service” page.
2. In the first option, the page will have a few different sections, for different operations such as:
 01. Add vehicle
 02. Remove vehicle
 03. Update prices
 04. Update other information
 05. Add/ remove additional photos

3. In the second option, the page will have many different sections, for different functionalities such as:

01. Check out and update staff members' information
02. Check out and update vehicles' information
03. Check out and update pricing guidelines
04. Check out and communicate with contributors and investors

- AGENT INTERFACE

1. The first page will consist of a list of all the customers who have contacted customer service. The agent can filter this list to display the calls in a specific, limited time period. When a customer calls, data such as: first name, last name and phone number will be displayed.
2. The second page will consist of a map, to track the drivers. Also, a "Call me" button will be displayed, in case of needing to contact the driver.

3.2.1.2 Usability

The software will be user friendly, providing ease of using for every user level.

Accessibility:

The software needs to be accessible in all kinds of hardware and software platforms. However, it will need data connection such as mobile data or WiFi to be used.

Responsiveness:

The software will be highly responsive in design, as well as data transactions. There will be little to no delays while using the software.

Flexibility:

The software will be easy to update and maintain. Any possible bugs that may be encountered will be able to be handled.

Effectiveness:

The software will be easy to navigate and no prior knowledge will be needed to learn how to use it. This applies to all levels of users: customers, agents and administrators.

Efficiency:

The software will offer the possibility to do specific actions effortlessly, taking as little time as possible. Bugs and other complications will be limited and fixable in each case imaginable.

Consistency:

The software will showcase consistency in its design and layout throughout all its services, with minimal to no changes made.

Customizability:

The software will present the possibility of customization to every user. Each user, no matter their user level, will be able to customize the software according to their preferences.

3.2.1.3.1 Performance Requirements

- The software will be mobile and web based for all user levels.
- The software will provide access to users who have an account at any given time, considering their device will be connected to a data source.
- The software will provide a need to access third-party applications for some functionalities, but this option will be optional.
- The software will be designed to be able to handle large amounts of user input and user data.
- The software will respond to user requests quickly. Depending on the strength of the connection to the data source for each user, this response may vary from 2-5 seconds per request.
- The software will be designed to prevent data loss, using methods such as: data backup.

3.2.1.3.2 Responsiveness

- The software will give priority to the interactions and specific actions that the user may perform.

If the software gets interrupted unexpectedly, the information provided must be saved. When reopened again, the software will provide the latest data saved, meaning, it will return to its previous state.

3.2.1.4 Dependability

Availability

- The software can only be accessed if the users are connected to some form of internet data
- If connected to an internet source, the software will be available at any given time
- All the services provided by the software can be accessed everywhere

Satisfaction

- The software will be designed in such a way that it can provide all the desired services of the user, making the user's satisfaction a priority.

Errors

- Small errors might occur while using the software. To be able to resolve them, communication with the developers will be made possible. In case of possible crashes or other failures, the software will be able to recover quickly.

3.2.1.5 Security

The software will protect all users' data and sensitive information:

- Each customer is able to see only their personal information.
- Each agent is able to see only the needed information about the customers such as name, and phone number, while interacting with the said customer.
- Each administrator is able to see the customers' information only if given permission by the customer.
- Each user will be granted access only to the services they need to perform based on their user level.
- Each user will be provided with different options for authentication, including : face authentication, password authentication or PIN authentication.
- Sensitive information such as passwords and personal PINs will be encrypted using industry-standard encryption protocols. These passwords and PINs need to meet certain criteria to be used.

3.2.2 Organizational Requirements

3.2.1.1 Environmental Requirements

Our software needs to integrate with the agency's existing system without presenting any issues while doing this. This way, all the sensitive information will be imported and received in our software. This information needs to be saved in the software's database,in order to be used for the different actions that each user will be doing through the software.Other issues such as the confidentiality of the information, legal issues and hardware issues will be taken into consideration.

3.2.1.2 Operational Requirements

- 1.User needs to create an account in order to have access to the software
- 2.User needs to log in in order to use the software
- 3.The software should be available at any time
- 4.Software needs to be connected with a data source to perform any function
- 5.User must operate under some constraints
- 6.Administrator can create,remove and update inventory
- 7.Administrator can create,remove and update the accounts of the staff members
- 8.Administrator needs to monitor and commit any possible change that is needed
- 9.Administrator needs to approve of any changes made to the system by other staff members
- 10.User needs to check and approve any major transaction before committing it

3.2.1.3 Development Requirements

The software will be created using Python and different frameworks provided by the language. A data source is required to use the software. Other database and network issues will be resolved using Firebase Infrastructure.

3.2.3 External Requirements

3.2.3.1 Regulatory Requirements

The OnTheGo software will operate for a travel services agency. To make sure that our software is in accordance with the guidelines, ethical and legal requirements of the Republic of Albania, we use regulation records. Below you'll find some of these laws and norms:

- 1.Law on Personal Data Protection (no. 9887, dated 10.03.2008)
- 2.Law on Electronic Communications (no. 9918, dated 19.05.2008)
- 3.Law on Compulsory Insurance in the Transport Sector (no. 10076, dated 29.05.2009)

3.2.3.2 Ethical Requirements

Users' sensitive,personal information should not be revealed nor exchanged to other individuals,institutions,organizations.

This will be disregarded in cases of a crime,accident or other highly sensitive occurrences.

3.2.3.3 Legislative Requirements

- 1.Road Code of The Republic of Albania (no. 8378, dated 22.07.1998)

2. Law on Licenses,Authorizations and Permits(nr.10081, dated 23.2.2009)
3. Law on Tax Procedures(nr.8560, dated 22.12.1999)

3.2.3.3.1 Accounting Requirements

No accounting requirements will be implemented for the time being.

4. DIAGRAMS

Use Cases

1. *Customer*

| | |
|--------------------------|--|
| Use Case(UC_1.1): | Log in |
| Scope: | Travel services (OnTheGo) |
| Level: | User level |
| Intention Context: | Firstly , the costumer needs to log in and later to use it |
| Minimum Guarantees: | Costumers data has been recorded but can not log in . |
| Success Guarantees: | Costumers have marked their data and have successfully logged in |
| Primary Actor: | Costumers |
| Stakeholder's Interest: | To have costumers who knows and use the application for different travel services. |
| Precondition | The costumer must download the application |

| | |
|--------------------------|--|
| Use Case(UC_1.2): | Browse and search through many cars |
| Scope: | Travel services (OnTheGo) |
| Level: | User level |
| Intention Context: | After logging, every patient can browse and search through different options of vehicles. |
| Minimum Guarantees: | Costumer do not choose any car or do not even browse for it. |
| Success Guarantees: | Costumer have already browsed and picked a vehicle |
| Primary Actor: | Costumer. |
| Stakeholder's Interest: | To see the costumers choices and what they are interested for in order to extend the opportunities provided. |
| Precondition | Costumer is logged in the system. |

| | |
|--------------------------|--|
| Use Case(UC_1.3): | Pick extra services like insurance or GPS |
| Scope: | Travel services (OnTheGo) |
| Level: | User level |
| Intention Context: | Each costumer has the right to decide if he/she wants extra service after choosing the car |
| Minimum Guarantees: | The costumer choose the extra service he/she wants but has not submitted this form. |
| Success Guarantees: | Costumer has already filled the form and provided with the chosen services |
| Primary Actor: | Costumer. |
| Stakeholder's Interest: | Administrator can see the preferences of costumers by seeing their choices and also add other services |
| Precondition | Costumers should have picked a vehicle for rental. |

| | |
|--------------------------|--|
| Use Case(UC_1.4): | Make safe payments by using the app |
| Scope: | Travel services (OnTheGo) |
| Level: | User level |
| Intention Context: | The costumer can pay in order to get the service choosed by the company in a safe way. |
| Minimum Guarantees: | The payment does not go to the company bank account. |
| Success Guarantees: | Costumer makes the payment through the app in a safer way. |
| Primary Actor: | Costumer. |
| Stakeholder's Interest: | Choosing to do the payments by using the app and to receive the money. |
| Precondition | Costumer should have an account and add their bank account data before. |

| | |
|--------------------------|---|
| Use Case(UC_1.5): | Manage reservations |
| Scope: | Travel services (OnTheGo) |
| Level: | User level |
| Intention Context: | Costumer has the right to manage reservations done by him/her like make changes based on their needs. |
| Minimum Guarantees: | Can not manage their reservations or can not make different changes due to application problems. |
| Success Guarantees: | Change details about reservations and the application successfully approve them |
| Primary Actor: | Costumer. |
| Stakeholder's Interest: | To fulfill costumer needs and choices in order to have more costumers using the app. |
| Precondition | Costumers should make a reservation firstly and let the reservations opened until he/she fully decides what he/she wants. |

| | |
|--------------------------|--|
| Use Case(UC_1.6): | Choose if he/she wants a driver |
| Scope: | Travel services (OnTheGo) |
| Level: | User level |
| Intention Context: | Costumer can choose if he/she wants a driver to drive them in specific location |
| Minimum Guarantees: | There are no driver available in the moment when the costumer chooses to have one. |
| Success Guarantees: | After costumer decides to have a driver , a personal driver is assigned to the costumer. |
| Primary Actor: | Costumer. |
| Stakeholder's Interest: | Make's the trip of the costumer safer and easier for them. |
| Precondition | Costumer should have payed for extra service. |

| | |
|--------------------------|--|
| Use Case(UC_1.7): | Choose if he/she wants a driver |
| Scope: | Travel services (OnTheGo) |
| Level: | User level |
| Intention Context: | Costumer can choose if he/she wants a driver to drive them in specific location |
| Minimum Guarantees: | There are no driver available in the moment when the costumer chooses to have one. |
| Success Guarantees: | After costumer decides to have a driver , a personal driver is assigned to the costumer. |
| Primary Actor: | Costumer. |
| Stakeholder's Interest: | Make's the trip of the costumer safer and easier for them. |
| Precondition | Costumer should have payed for extra service. |

| | |
|-------------------------|---|
| Use Case(UC_1.8) | Log Out |
| Scope: | Travel Services |
| Level: | User Level |
| Intention Context: | Costumer logs out when they finish using the app. |
| Minimum Guarantees: | Costumers can not log out and their data is not protected. |
| Succes Guarantees: | Costumers log out successfully. |
| Primary Actor: | Costumer |
| Stakeholder's Interest: | If the costumer does not log out, data may leak and be used for other operations. |

2. *Agent*

| | |
|--------------------------|--|
| Use Case (UC_2.1) | Log In |
| Scope: | Travel Services |
| Level: | User Level |
| Intention Context: | Firstly, the agent needs to log in to the application to use it. |
| Minimum Guarantees: | Agent marks its data but can not log in. |
| Success Guarantees: | The agent enter its data and logs in successfully to the app. |
| Primary actor: | Agent |
| Stakeholder's Interest: | To have the agent as company representatives. |
| Precondition: | The agent must download the application. |

| | |
|--------------------------|---|
| Use Case (UC_2.2) | Company's representatives |
| Scope: | Travel Services |
| Level: | User Level |
| Intention Context: | An agent should respond to client questions and offer details about vehicles. |
| Minimum Guarantees: | Can not communicate with clients due to technical errors and so does not inform costumers at all. |
| Success Guarantees: | Costumer successfully communicate with agents and discuss about choices and details. |
| Primary actor: | Agent |
| Stakeholder's Interest: | The agent should fulfill the customer needs. |
| Precondition: | Agents should be online 24/7. |

| | |
|--------------------------|---|
| Use Case (UC_2.3) | Offer details about vehicles |
| Scope: | Travel Services |
| Level: | User Level |
| Intention Context: | The agent should explain in details everything about a vehicle to the costumer so costumer should know what to choose and why based on their needs. |
| Minimum Guarantees: | Agent does not give informations about vehicles to the costumers. |
| Success Guarantees: | Costumers get all the details needed to chose a car by agents. |
| Primary actor: | Agent |
| Stakeholder's Interest: | Agent reach to do their job perfectly and satisfy costumer needs. |
| Precondition: | Some basic informations should be added by agents in the application for each specific vehicle. |

| | |
|--------------------------|--|
| Use Case (UC_2.4) | Assist customers with reservations. |
| Scope: | Travel Services |
| Level: | User Level |
| Intention Context: | Each costumer should make at least one reservation in the company using the application. |
| Minimum Guarantees: | Costumers does not get the assistance needed to book due to technical problems. |
| Success Guarantees: | Agent helps the costumer to book or reserve successfully. |
| Primary actor: | Agent |
| Stakeholder's Interest: | To earn more since costumers will book more by using the application. |
| Precondition: | Agent should be online the moment a costumer opens the application. |

| | |
|--------------------------|---|
| Use Case (UC_2.5) | Notify drivers in case of the customer requesting this service. |
| Scope: | Travel Services |
| Level: | User Level |
| Intention Context: | Costumers get extra services and responsible for this is the agent |
| Minimum Guarantees: | Drivers do not get notify due to application problems and so this service is not provided to the costumers. |
| Success Guarantees: | Costumers choose this extra service and so a specific driver is picked to serve . |
| Primary actor: | Agent |
| Stakeholder's Interest: | If the costumer choose to have a driver then he/she has to pay extra money to get this type of service. |
| Precondition: | Costumer should have chose previously if he/she wants a driver as extra service. |

| | |
|--------------------------|---|
| Use Case (UC_2.6) | Log Out |
| Scope: | Travel Services |
| Level: | User Level |
| Intention Context: | Agent logs out whenever he/she finishes using the system. |
| Minimum Guarantees: | Agent can not log out and his/her data is not protected |
| Success Guarantees: | Agent decides to press the log out button and ends the connection with the application. |
| Primary actor: | Agent |
| Stakeholder's Interest: | If agent does not log out their data may leak and be used for different operations. |

3. Administrator

| | |
|--------------------------|--|
| Use Case (UC_3.1) | Log In |
| Scope: | Travel Services |
| Level: | User Level |
| Intention Context: | Firstly , the administrator needs to log in the app in order to use it. |
| Minimum Guarantees: | Administrator marks its data but can not log in. |
| Success Guarantees: | Administrator gives the credentials and logs successfully in to the application. |
| Primary actor: | Administrator |
| Stakeholder's Interest: | Administrator log in is important because he is the one who manage the application and have important functionalities. |
| Precondition: | The administrator must have a device and stable internet connection , as well as an account. |

| | |
|--------------------------|--|
| Use Case (UC_3.2) | Manage the service |
| Scope: | Travel Services |
| Level: | Administrator Level |
| Intention Context: | Administrator should be able to manage the overall functionalities of the application. |
| Minimum Guarantees: | Due to different technical and non technical issues the admin is unable to manage and offer good service to costumers. |
| Success Guarantees: | Admin manage to successfully manage the services and satisfy costumers needs. |
| Primary actor: | Administrator |
| Stakeholder's Interest: | If admin manages the service in a better way then costumers will be satisfied by choosing this application. |
| Precondition: | Manager should have an account to the application and has to stay logged in. |

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|--------------------------|--|
| Use Case (UC_3.3) | Control the inventory |
| Scope: | Travel Services |
| Level: | Administrator Level |
| Intention Context: | Administrator is responsible for controlling if there is any car available for renting. |
| Minimum Guarantees: | The system does not work and it shows that there is no car left for rental, meanwhile there are many options that costumer can choose. |
| Success Guarantees: | Administrator controls the inventory and the system is updated successfully and so the customer can be notified. |
| Primary actor: | Administrator |
| Stakeholder's Interest: | To make sure that there are vehicles available if any costumer wants to rent one. |
| Precondition: | The inventory should be made by the others and every detail must be noted down. |

| | |
|--------------------------|---|
| Use Case (UC_3.4) | Add or remove vehicles. |
| Scope: | Travel Services |
| Level: | Administrator Level |
| Intention Context: | Administrator is responsible for controlling if there is any car available for renting and if not he/she has to add new ones. |
| Minimum Guarantees: | The system does not work properly and so it does not notify when there are no cars left in order to add new ones. |
| Success Guarantees: | The system notify when there are no cars left and so admin is responsible to add some vehicles and if not to remove some. |
| Primary actor: | Administrator. |
| Stakeholder's Interest: | The costumer should have a variety of options to choose and every type of vehicle should be available to satisfy its needs. |
| Precondition: | The system should have the data of the inventory related to the cars and should be updated. |

| | |
|--------------------------|---|
| Use Case (UC_3.5) | Establish price guidelines. |
| Scope: | Travel Services |
| Level: | Administrator Level |
| Intention Context: | The administrator has the rights to set up prices for each car that has to be rented and the prices for extra services. |
| Minimum Guarantees: | Due to different economic factors costumers can not accept the prices set up by the admin. |
| Success Guarantees: | Admin set up suitable prices for every costumer and also costumer are satisfied by these prices. |
| Primary actor: | Administrator. |
| Stakeholder's Interest: | Higher prices , higher profit to the company. |
| Precondition: | Firstly , reasonable prices for each category of costumers should be set. |

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|--------------------------|---|
| Use Case (UC_3.6) | Oversee the upkeep and safety of the fleet. |
| Scope: | Travel Services |
| Level: | Administrator Level |
| Intention Context: | Administrator is the one responsible for the maintenance of the vehicles and so for the safety of the costumers. |
| Minimum Guarantees: | Different car problems and issues may occur every time and the admin was not updated about these problems due to technical issues or misunderstanding/misscommunication |
| Success Guarantees: | Administrator is informed about the overall performance of the vehicle and knows the issues that it can have and manage to fix up those issues. |
| Primary actor: | Administrator. |
| Stakeholder's Interest: | The car has to be in good condition when presented to costumers in order to not spent extra money repairing it and also compensating the costumer. |
| Precondition: | When the company decide to buy all the cars it has to make sure it choses the right cars that are in good condition. |

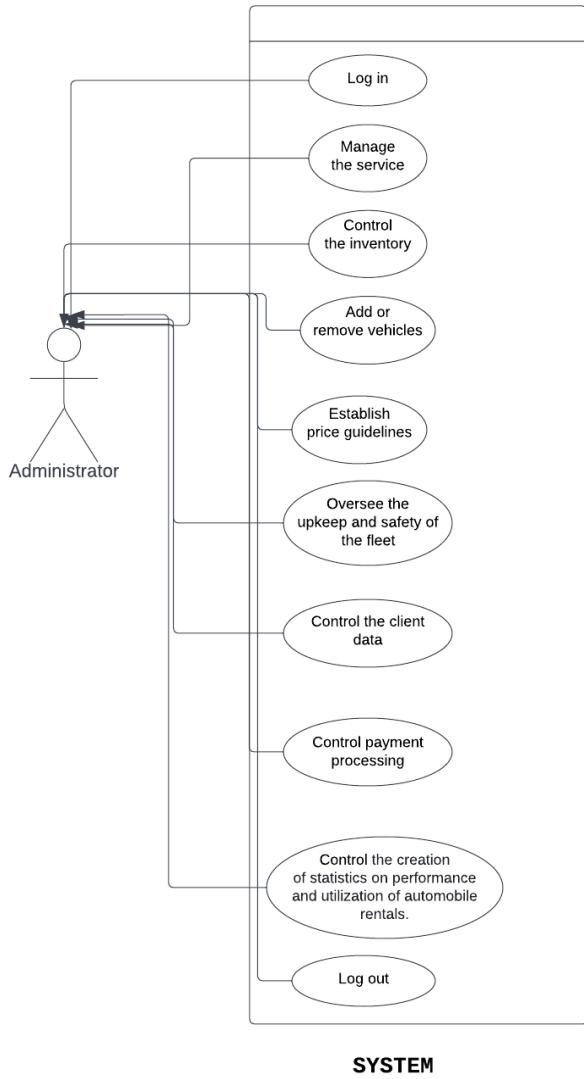
| | |
|--------------------------|--|
| Use Case (UC_3.7) | Control the client data |
| Scope: | Travel Services |
| Level: | Administrator Level |
| Intention Context: | Administrator has to make sure that client data is safe and not hacked. |
| Minimum Guarantees: | Due to technical problems of the system client data and private informations may be leaked |
| Success Guarantees: | Administrator manages to control client data without getting leaked by using a specific system software to protect them. |
| Primary actor: | Administrator. |
| Stakeholder's Interest: | The most important things at all is to protect clients data. |
| Precondition: | Costumers have to sign in the application and save their log infos. |

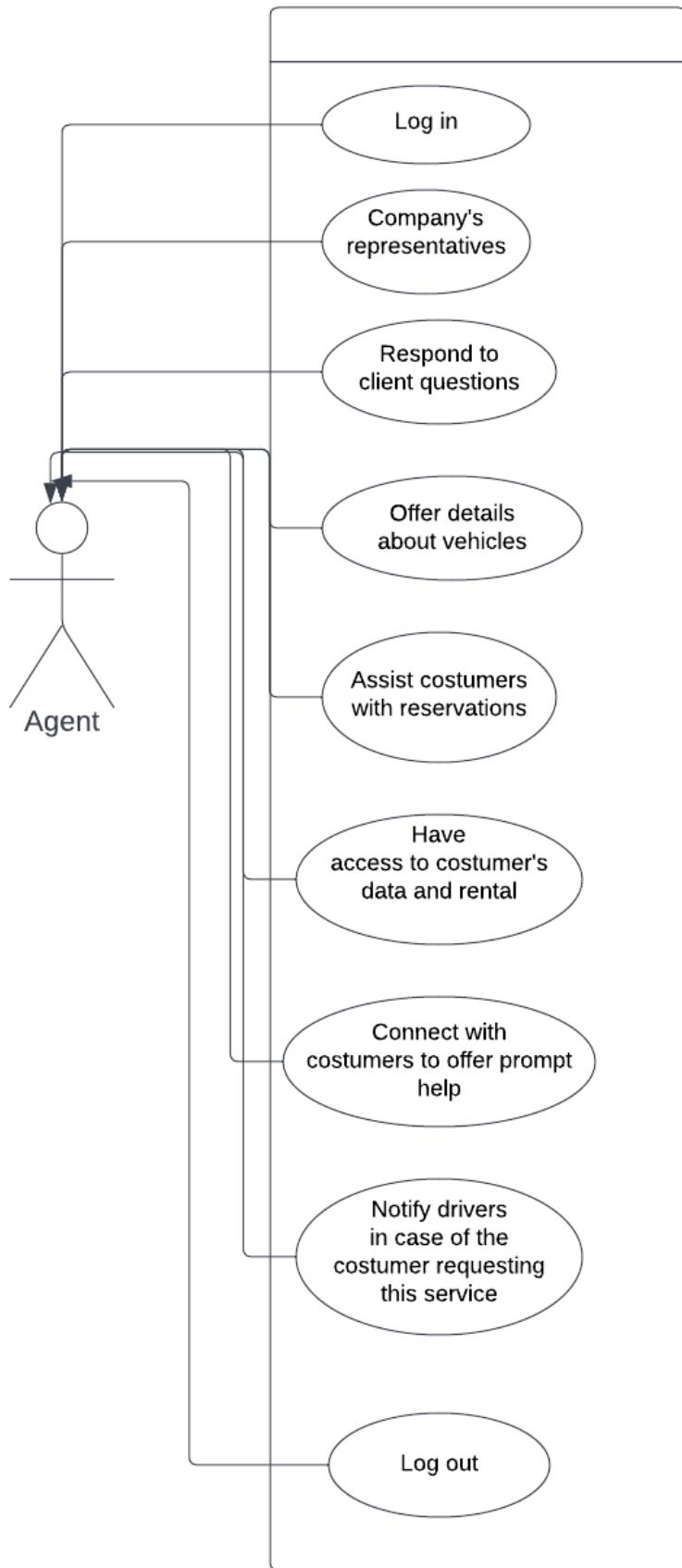
| | |
|--------------------------|---|
| Use Case (UC_3.8) | Control payment processing. |
| Scope: | Travel Services |
| Level: | Administrator Level |
| Intention Context: | Administrator has to make sure that client payment goes to the right account. |
| Minimum Guarantees: | Payment process is not completed due to internet problems or other technicals problems like (bank problems etc). |
| Success Guarantees: | Costumers pay for the services they got by using the application as a safer method. |
| Primary actor: | Administrator. |
| Stakeholder's Interest: | By using the application to do the payment processes , client data is safer and also the payment process is faster. |
| Precondition: | Costumers should have an account and mark their data. |

| | |
|--------------------------|--|
| Use Case (UC_3.9) | Control the creation of statistics on performance and utilization of automobile rentals. |
| Scope: | Travel Services. |
| Level: | Administrator Level. |
| Intention Context: | Admin has to view the number of times a car was rented and how much the costumer has liked the service. |
| Minimum Guarantees: | A car was at least picked once and customers did not liked the performance of the car , or the vehicle was not picked. |
| Success Guarantees: | Different vehicles were chosen by many costumers and their performance was the highest as described by them. |
| Primary actor: | Administrator. |
| Stakeholder's Interest: | The best performance of the automobile rentals the more satisfied the customers by the services they got. |
| Precondition: | A vehicle has to be at least chosen one time and has to be in good condition to has a better performance. |

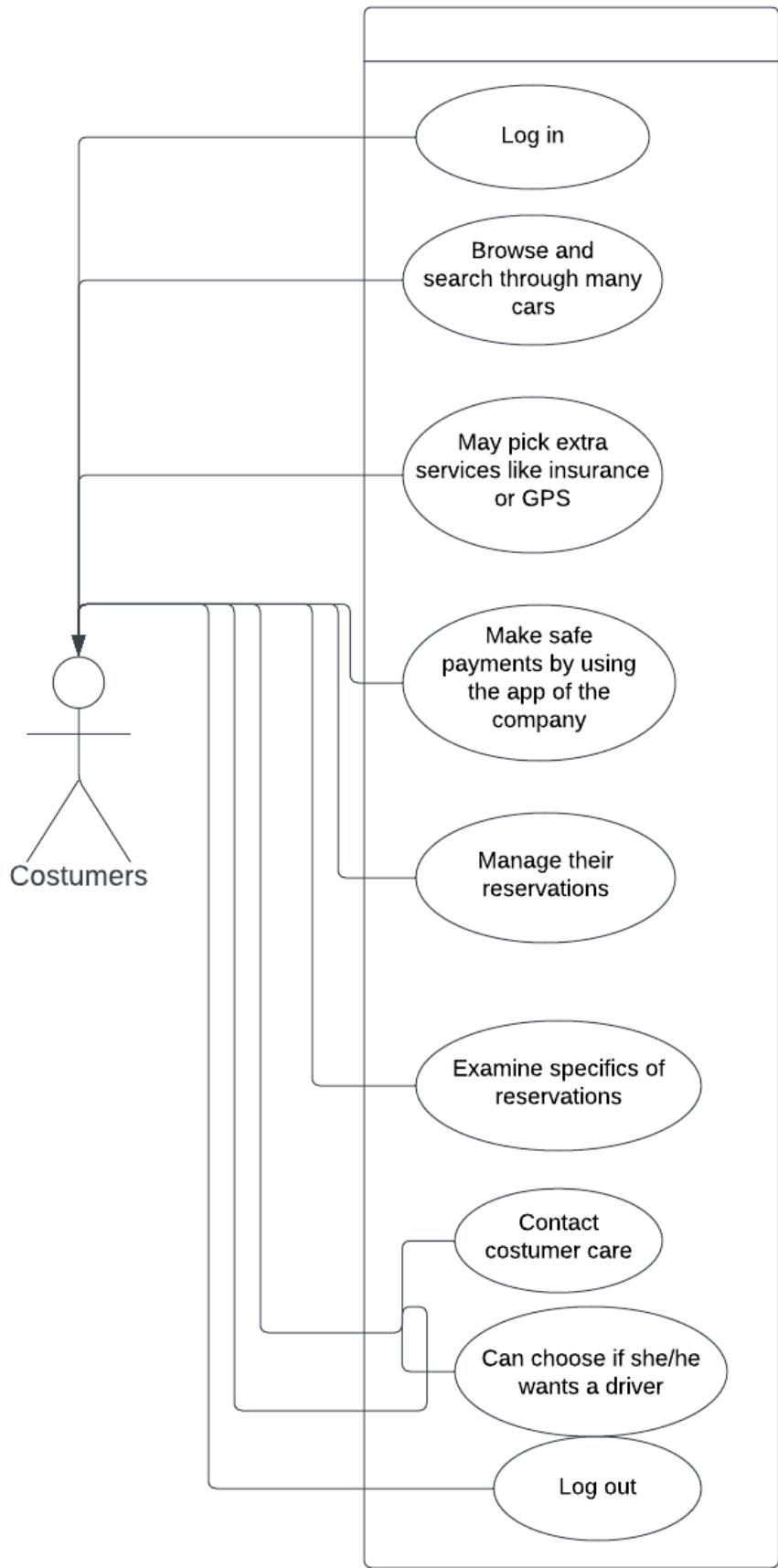
| | |
|---------------------------|---|
| Use Case (UC_3.10) | Log Out |
| Scope: | Travel Services |
| Level: | Administrator Level |
| Intention Context: | Administrator logs out when they finish using the application. |
| Minimum Guarantees: | Administrator cannot log out and his acces is not protected. |
| Success Guarantees: | Administrator presses the log out button and ends the connection with the app. |
| Primary Actor: | Administrator. |
| Stakeholder's Interest: | If the administrator does not log out, their information may leak and be used for other operations. |

Use Case Diagrams

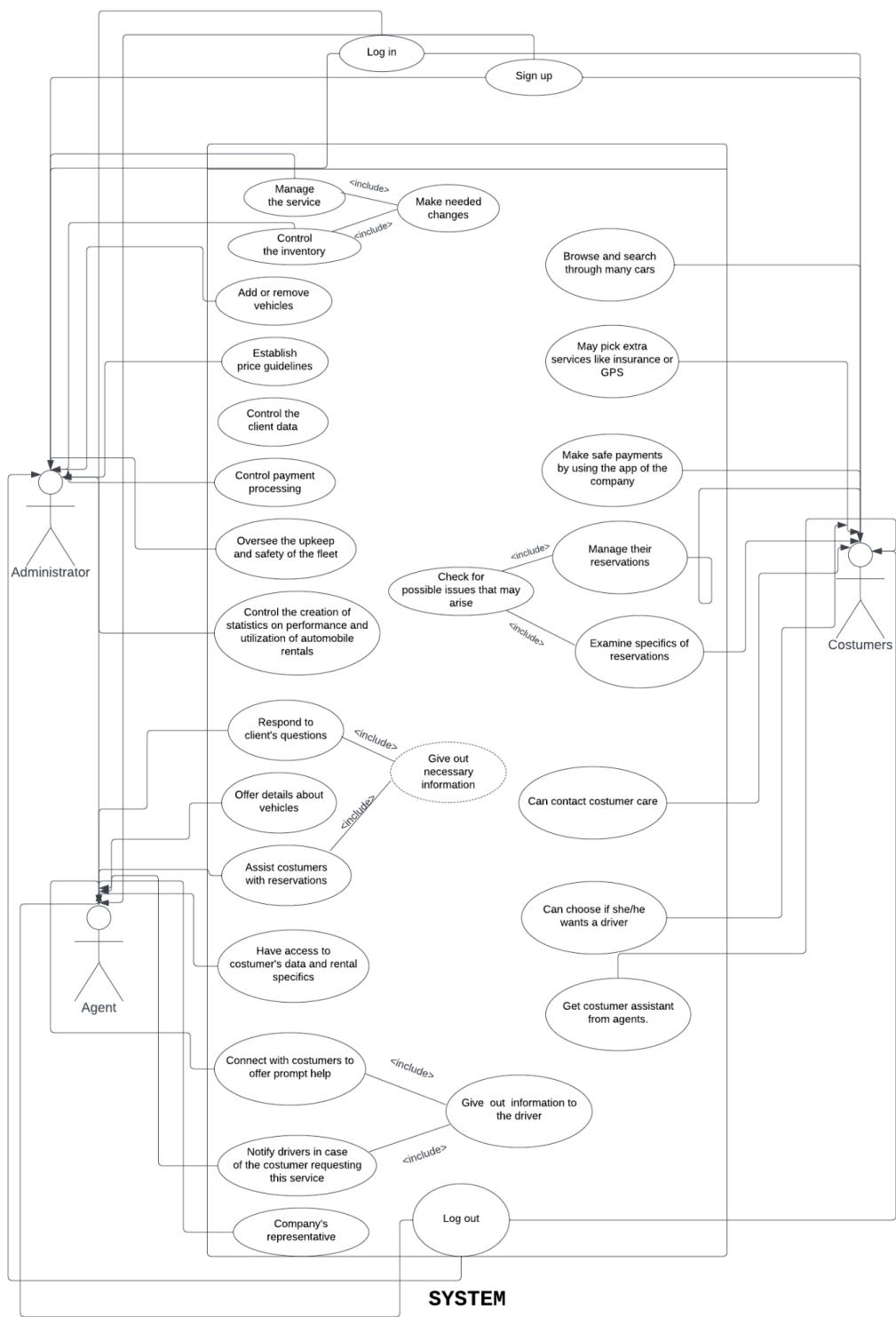




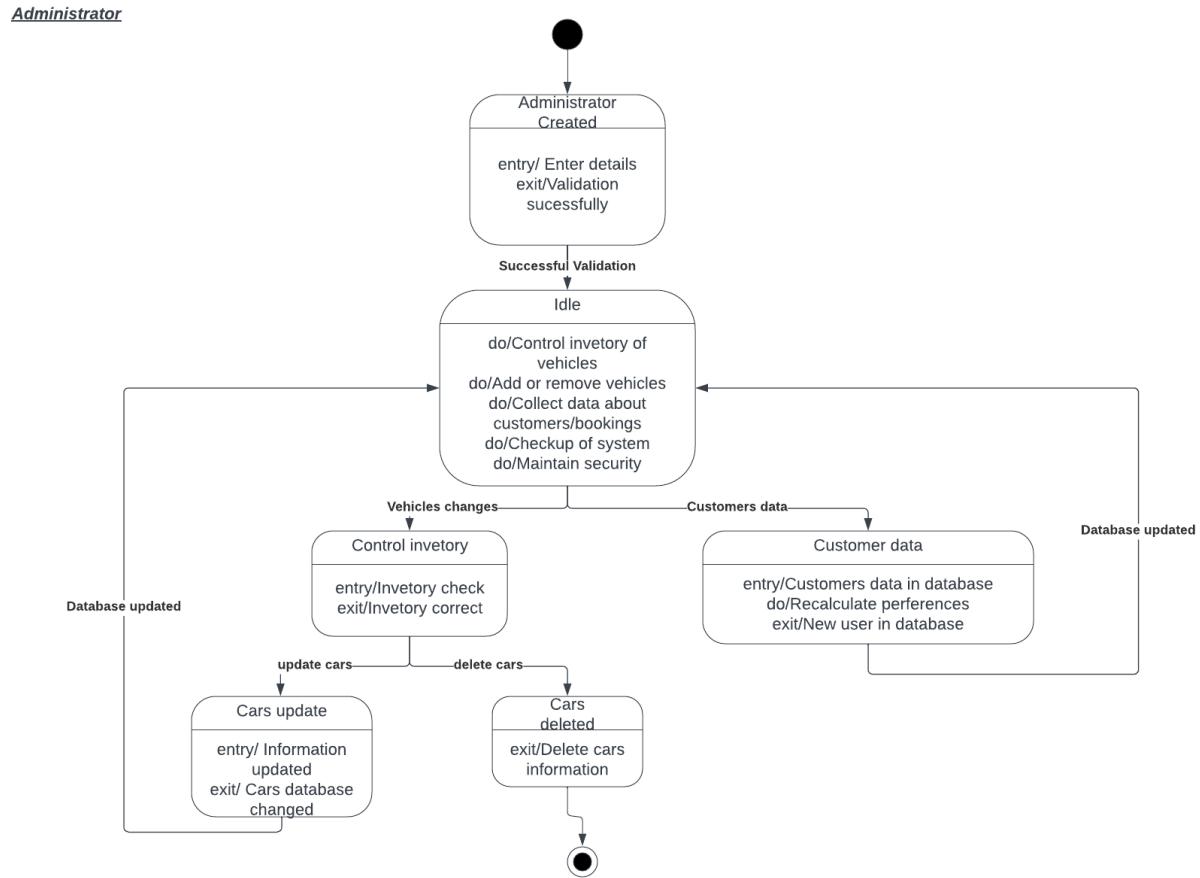
SYSTEM

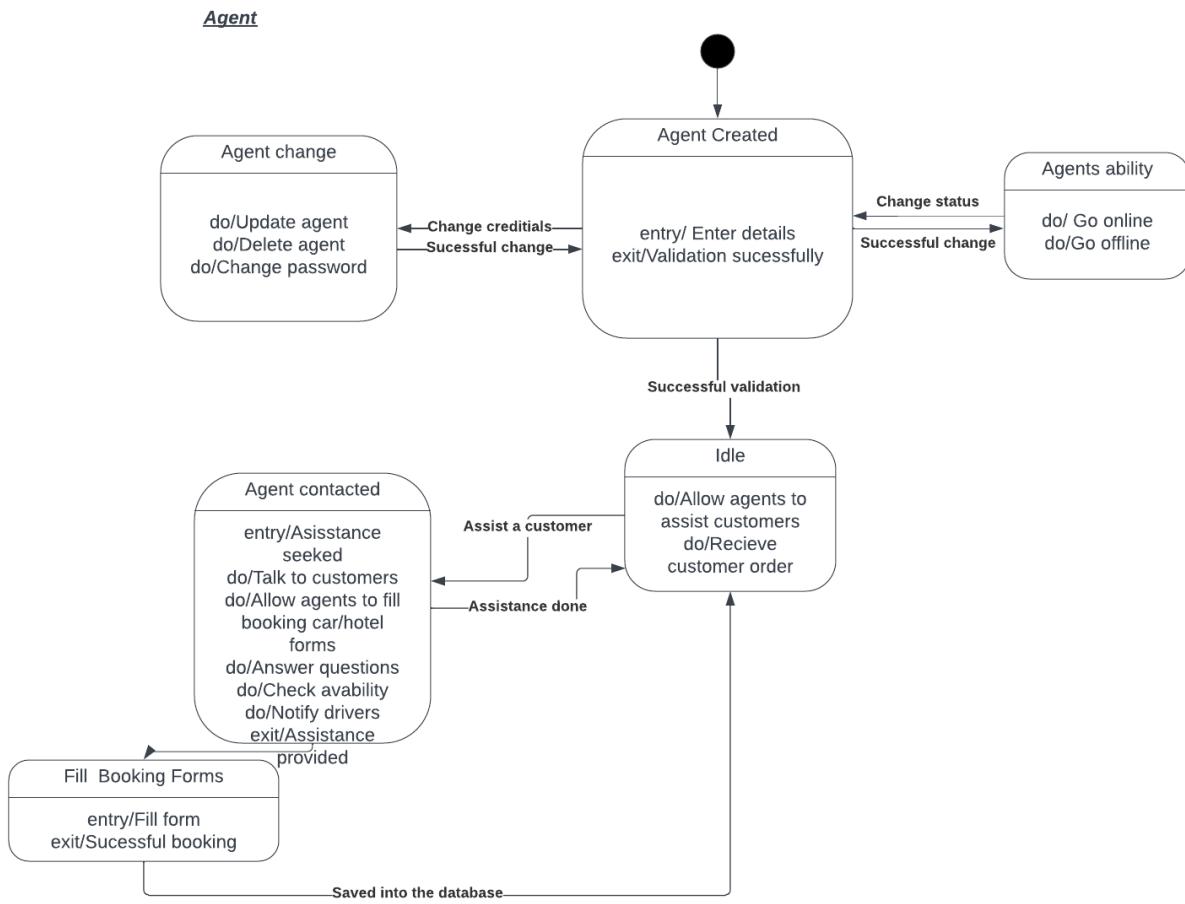


SYSTEM

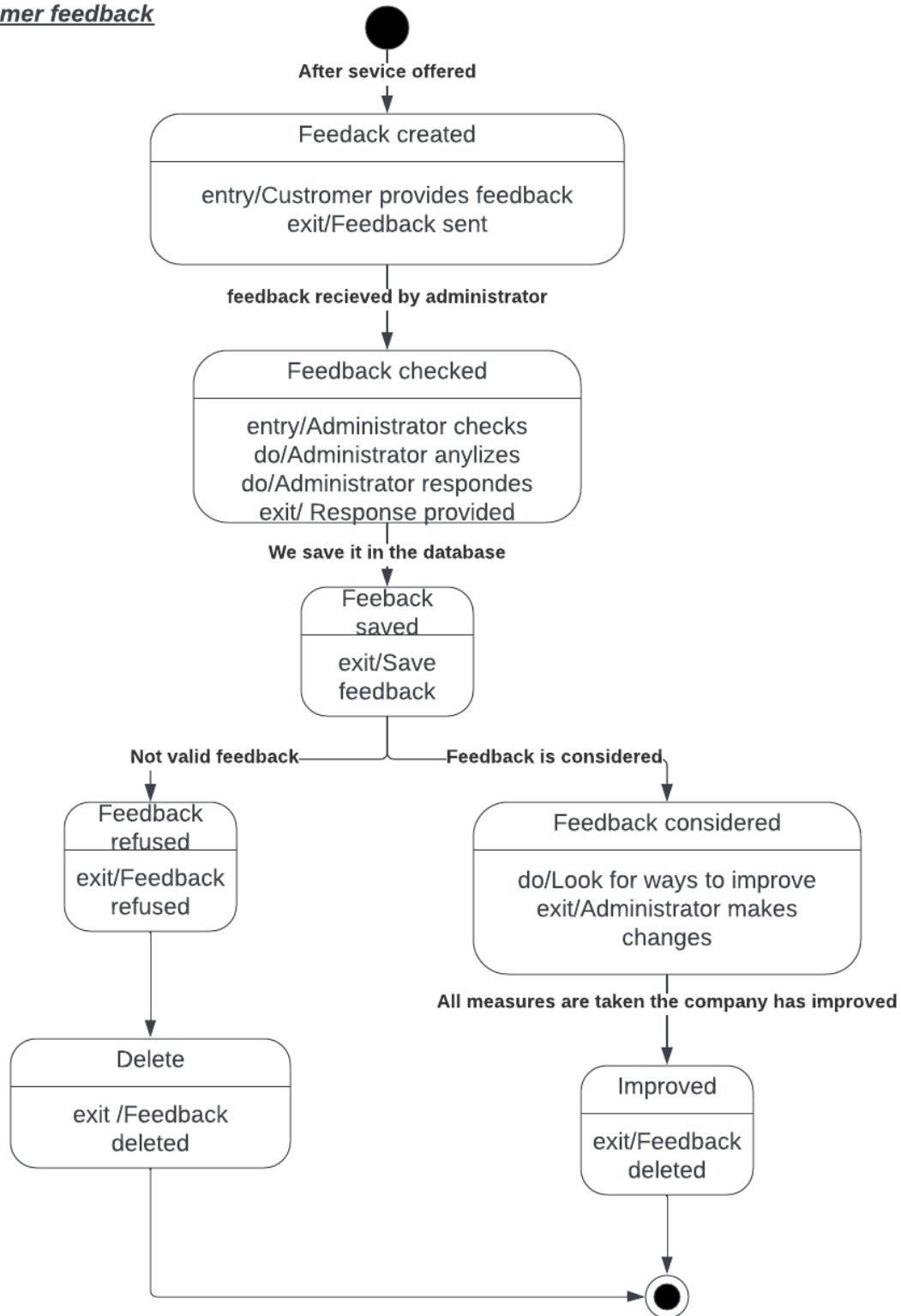


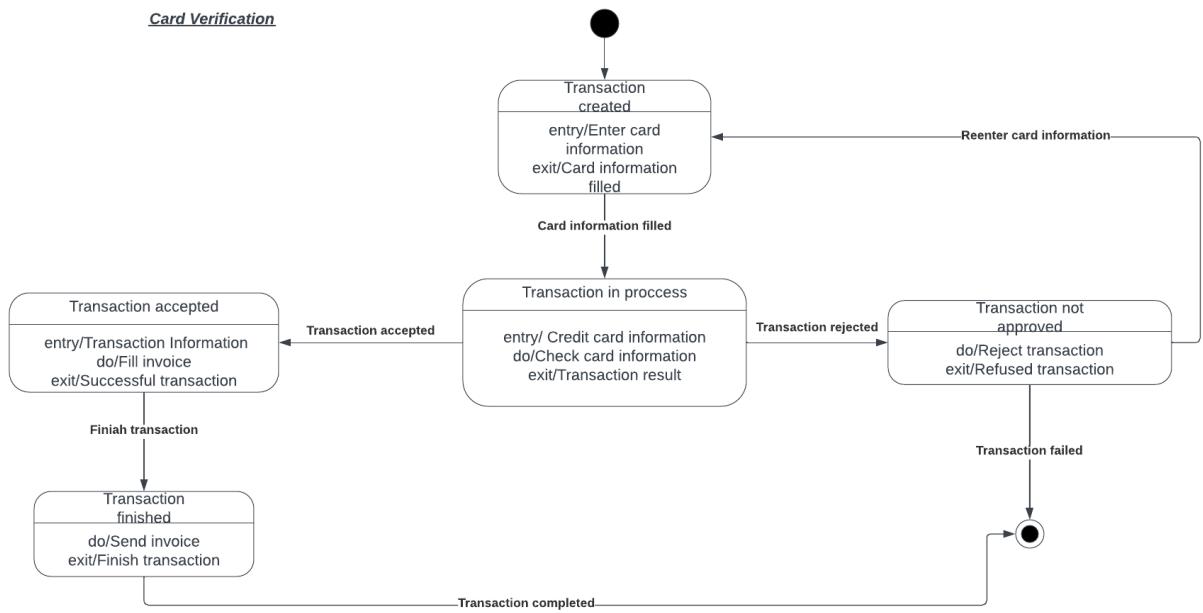
State Diagrams

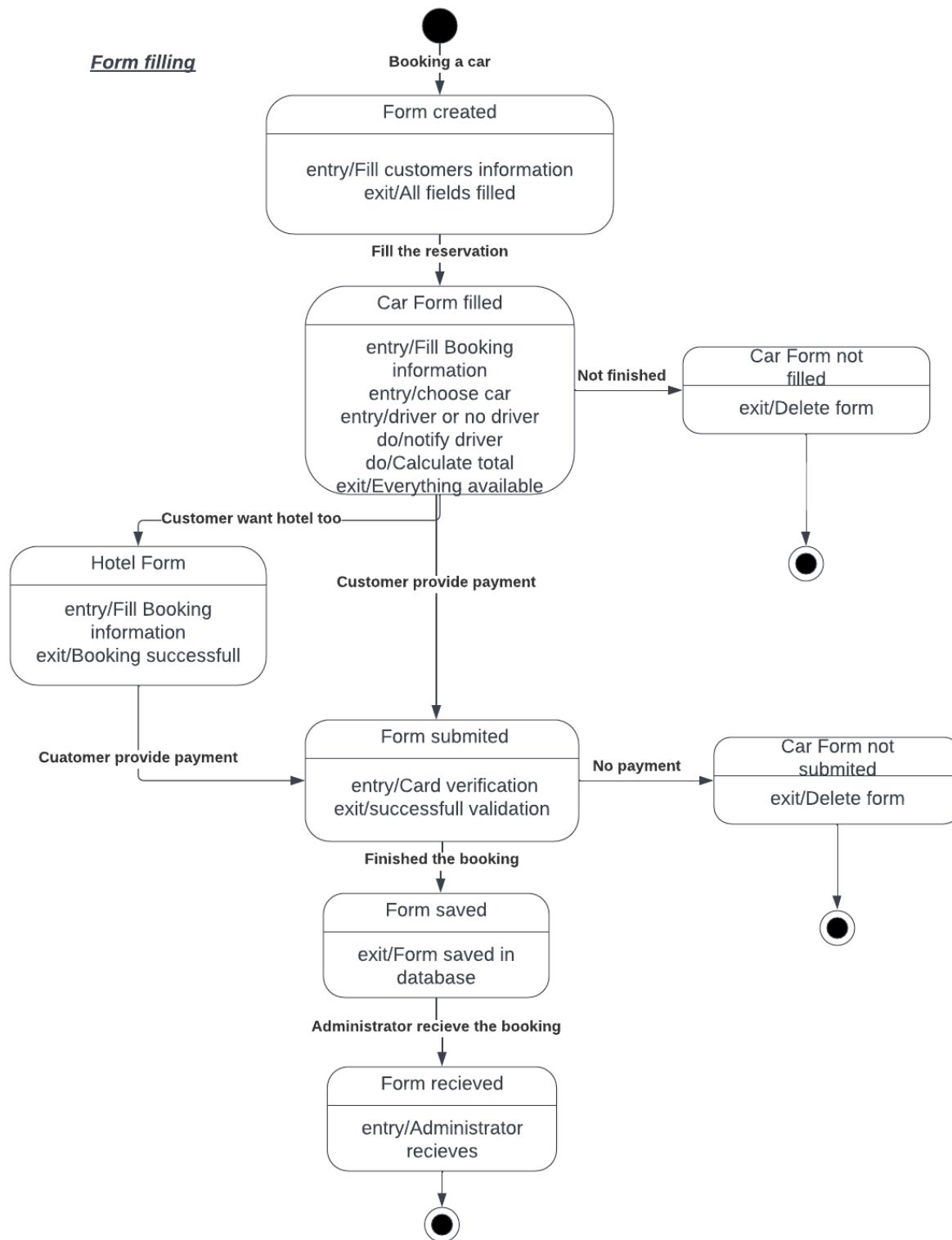




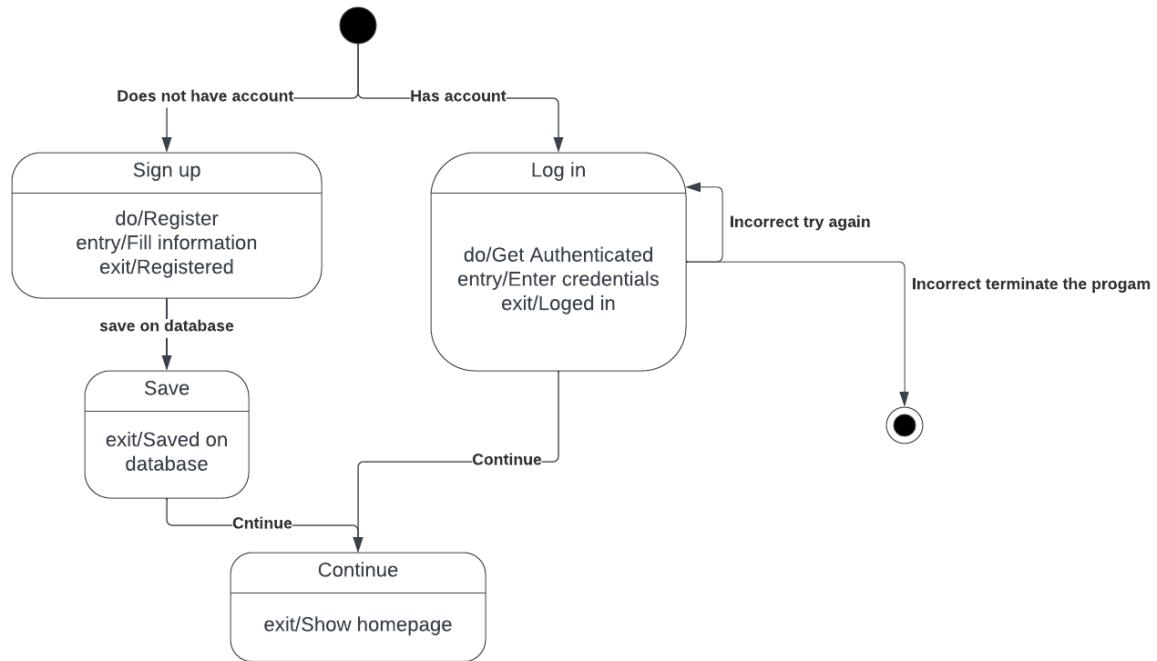
Customer feedback

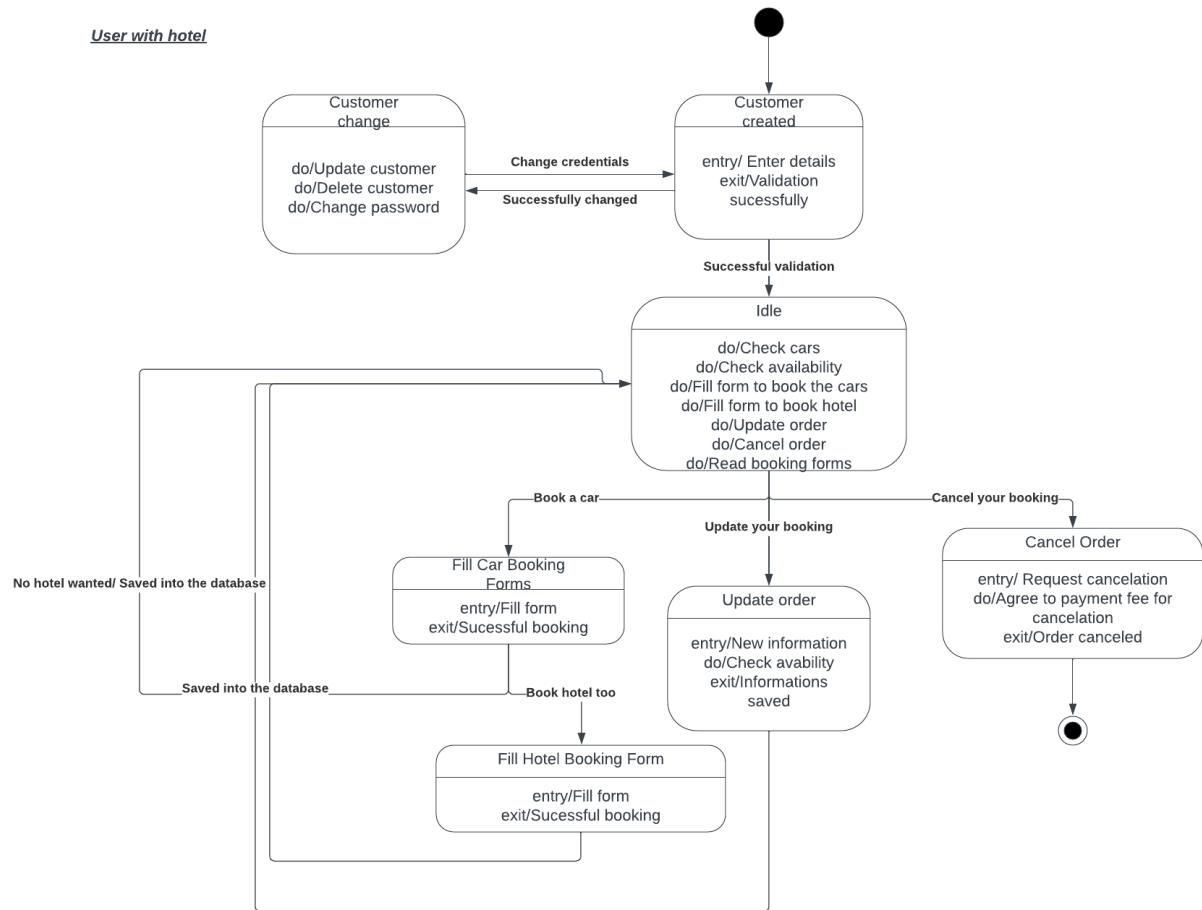


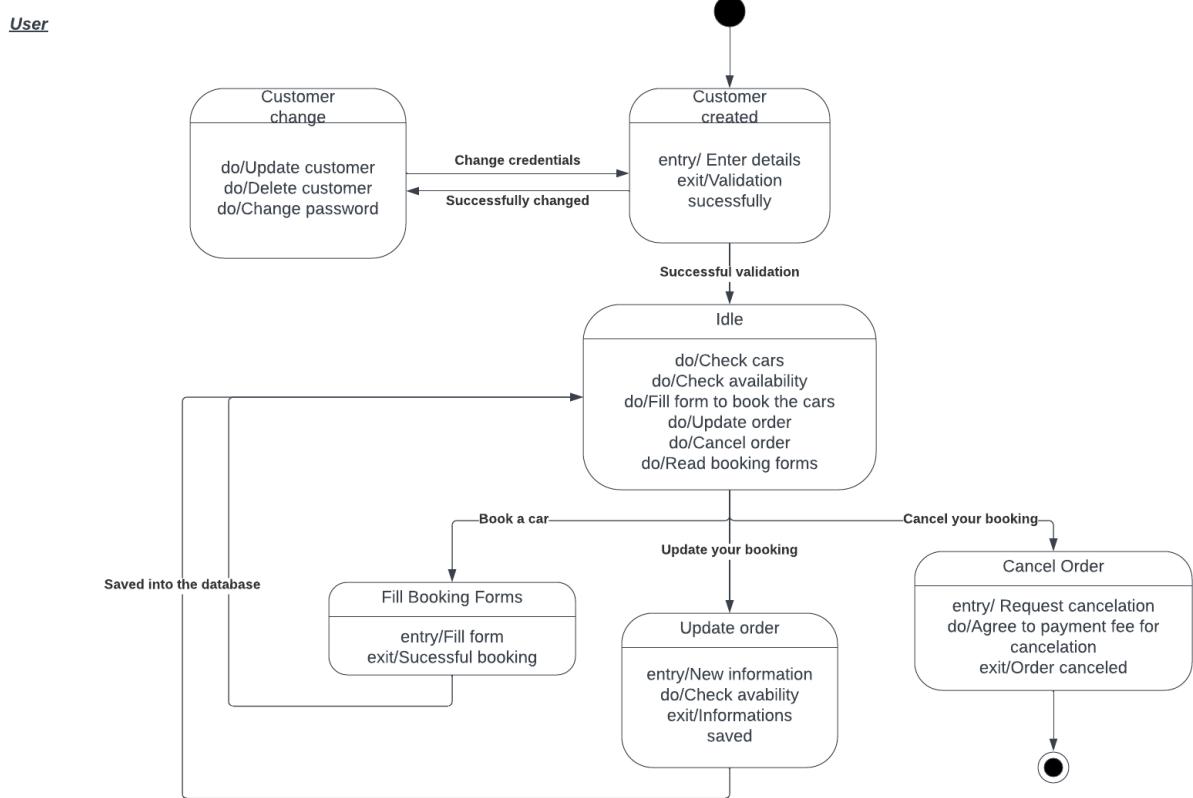




Log in/Sign up



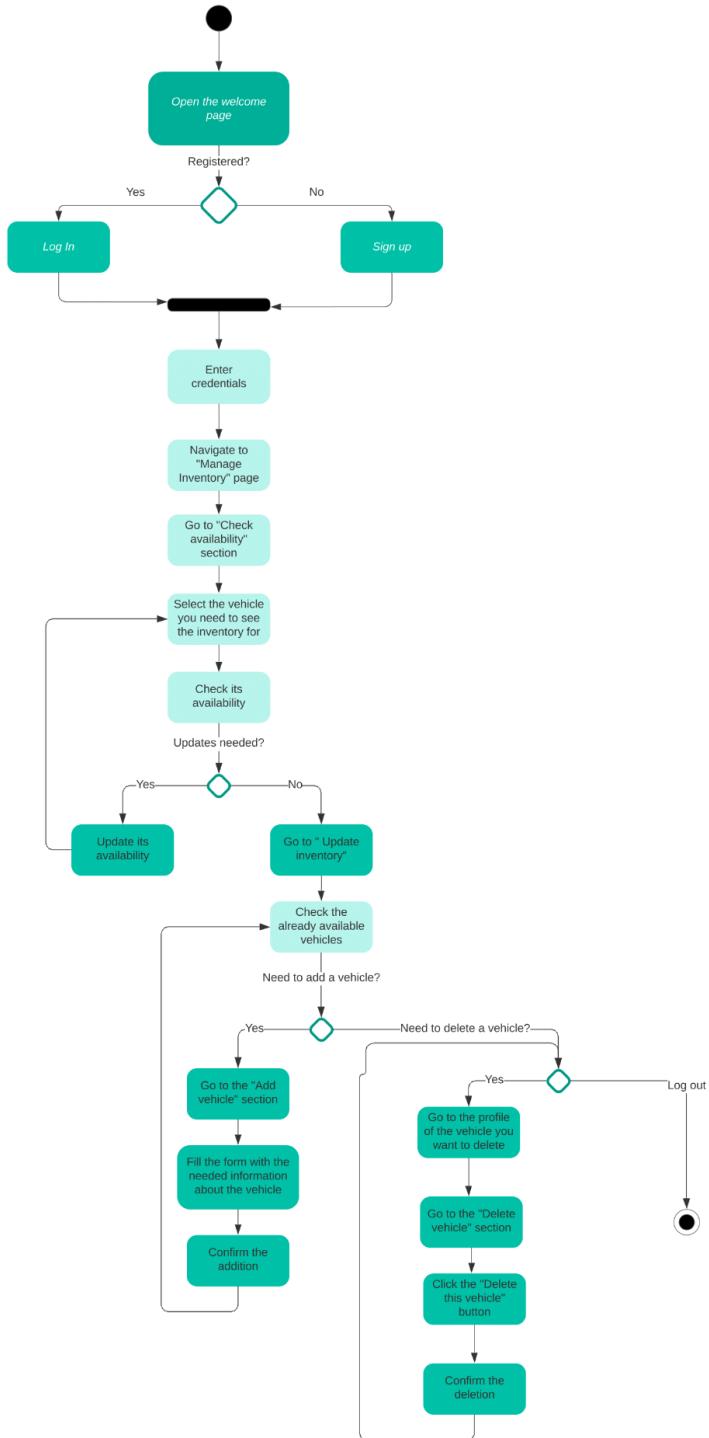




Activity Diagrams

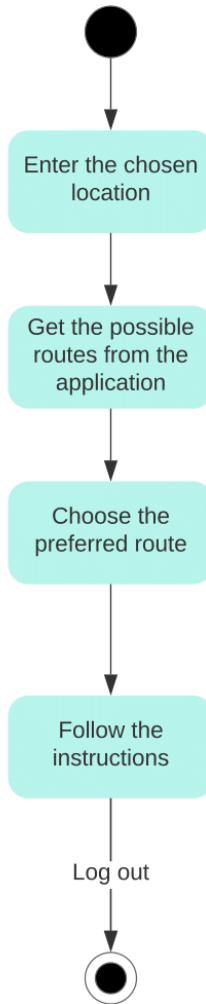
Managing the inventory

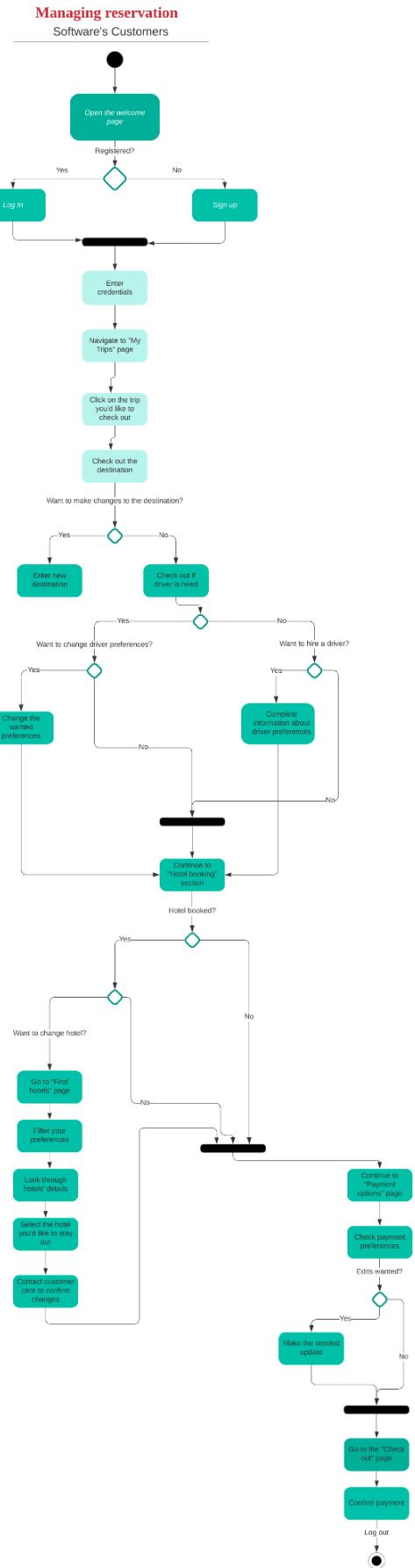
Software's Administrators



GPS Navigation

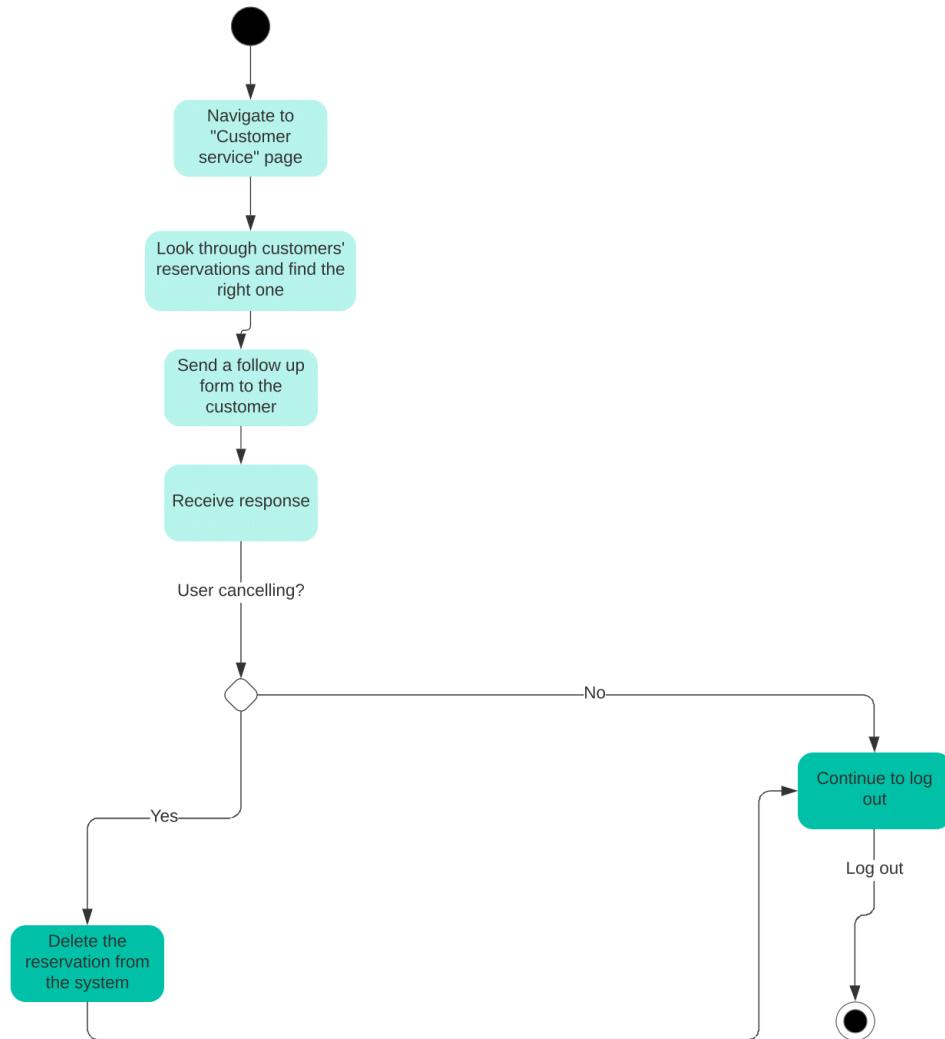
Software's Customers





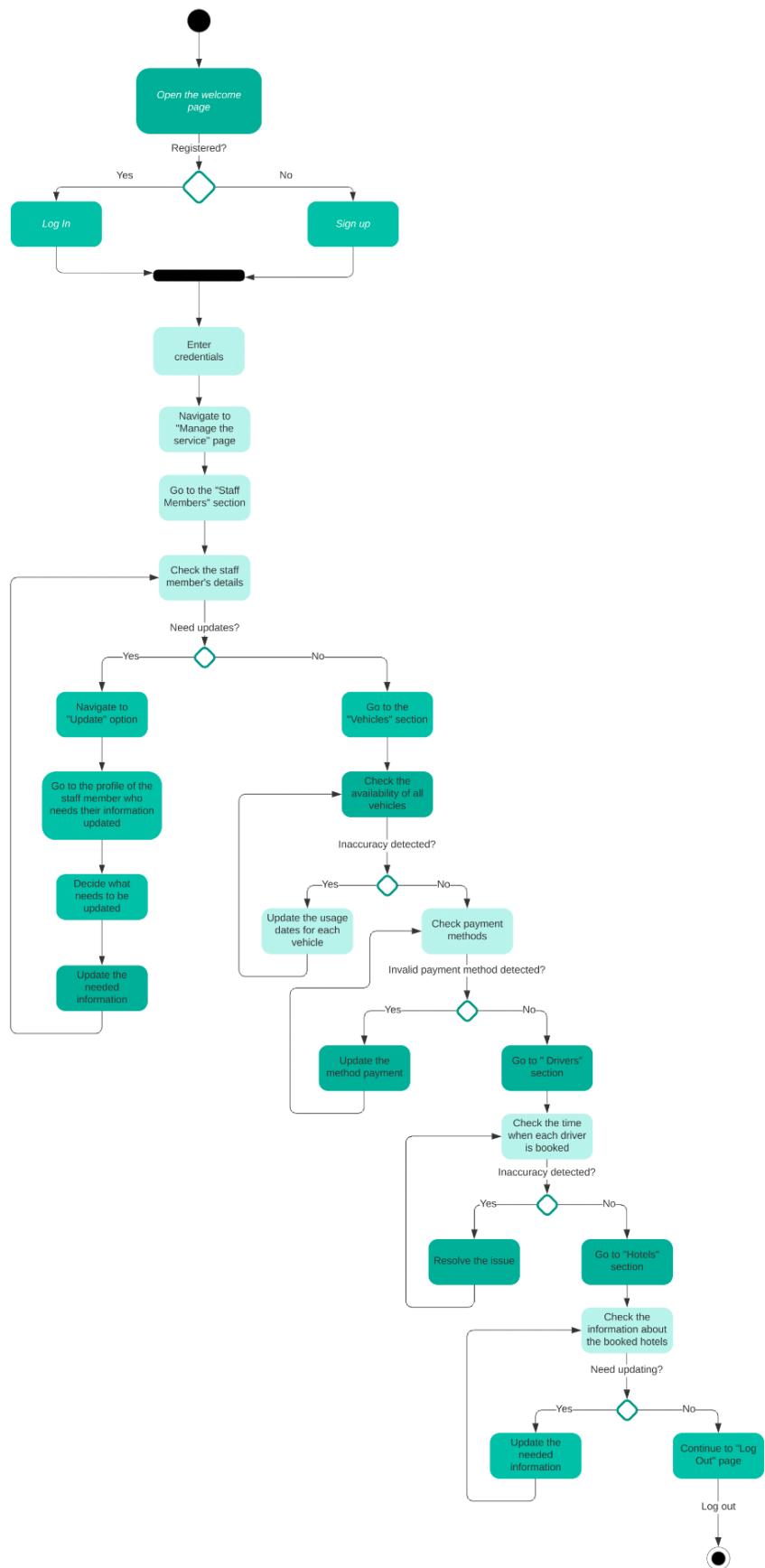
Reservation Follow Up

Software's Agents



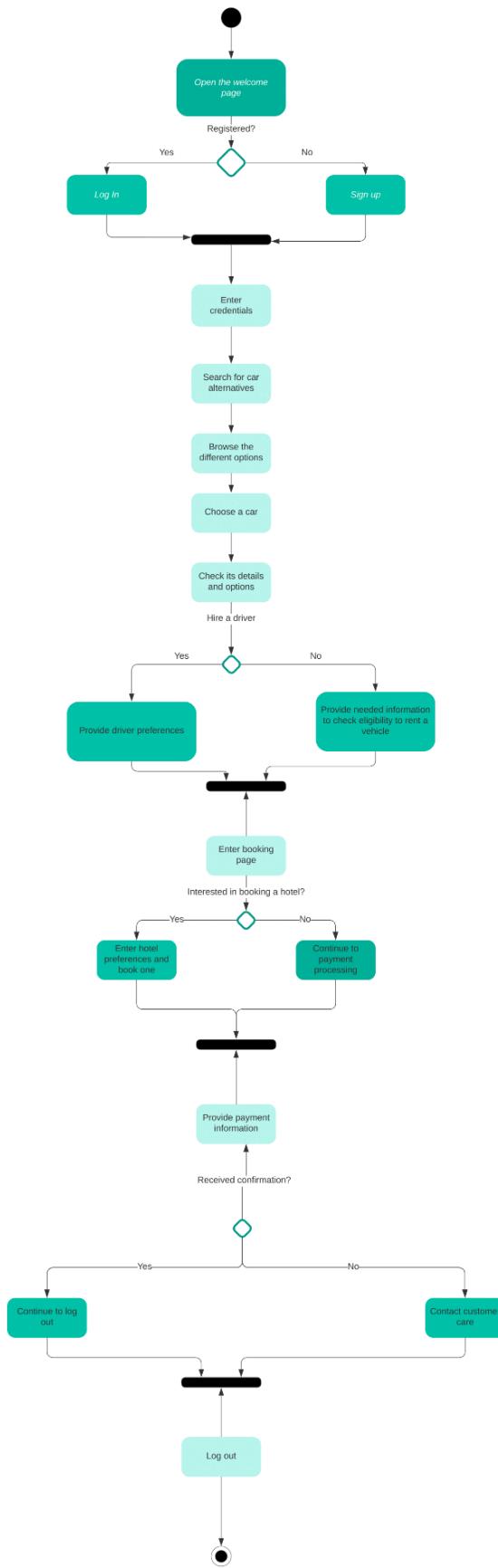
Managing the service

Software's Administrators



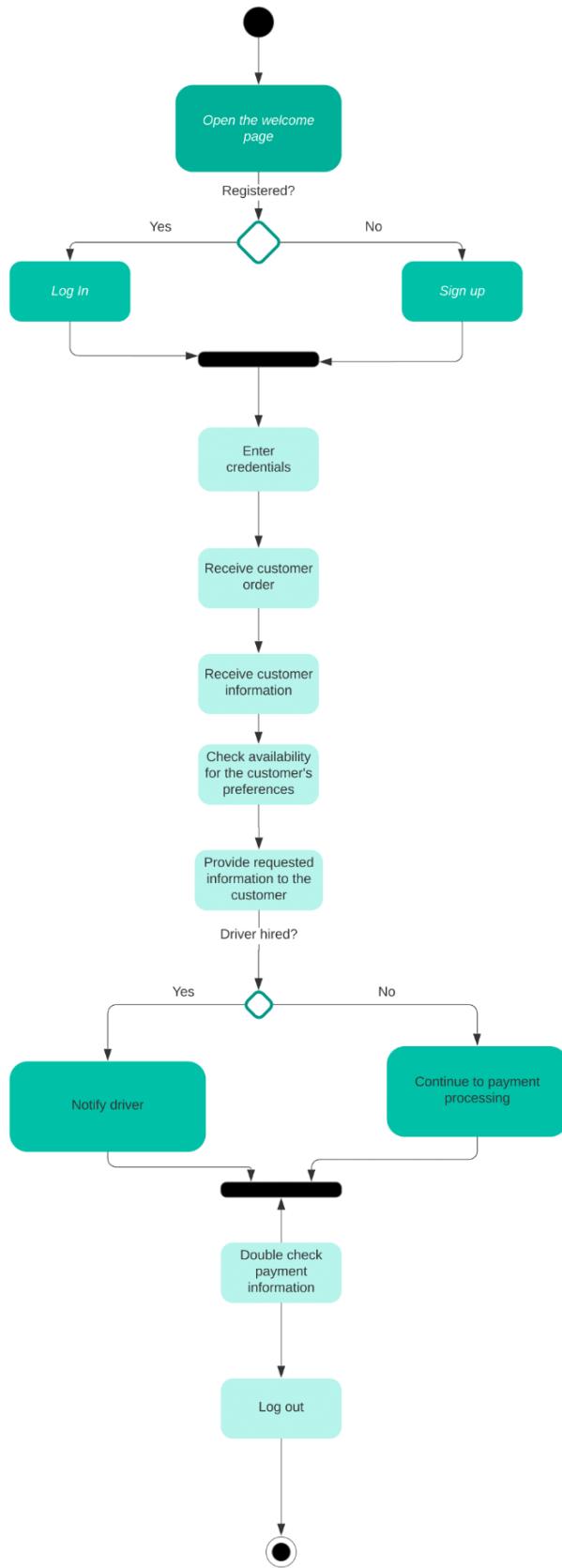
User Activity Diagram

Software's Users



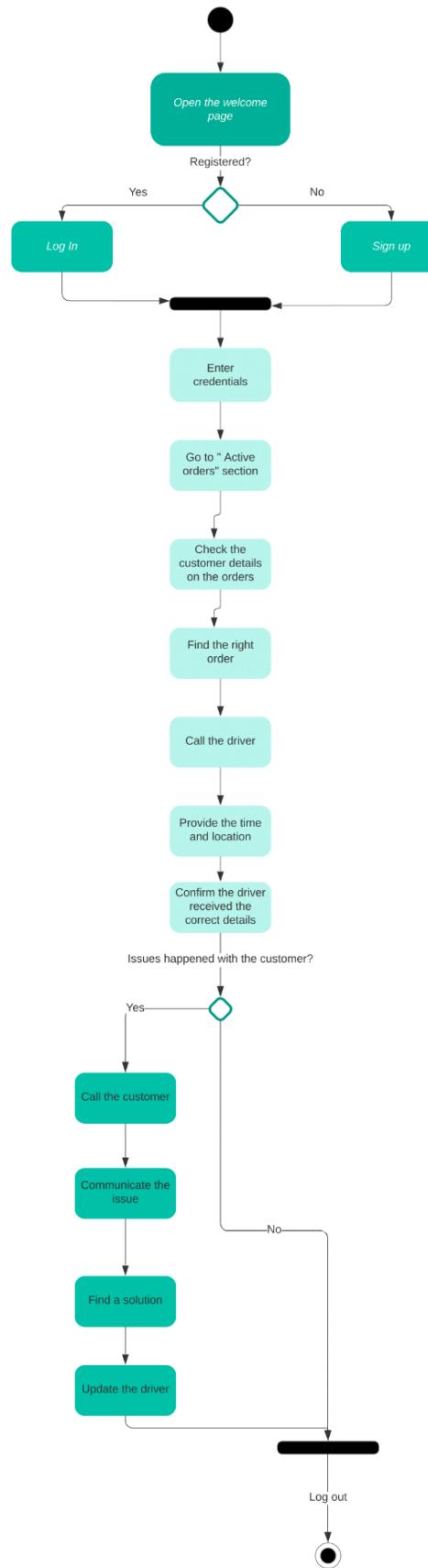
User Activity Diagram

Software's Agents



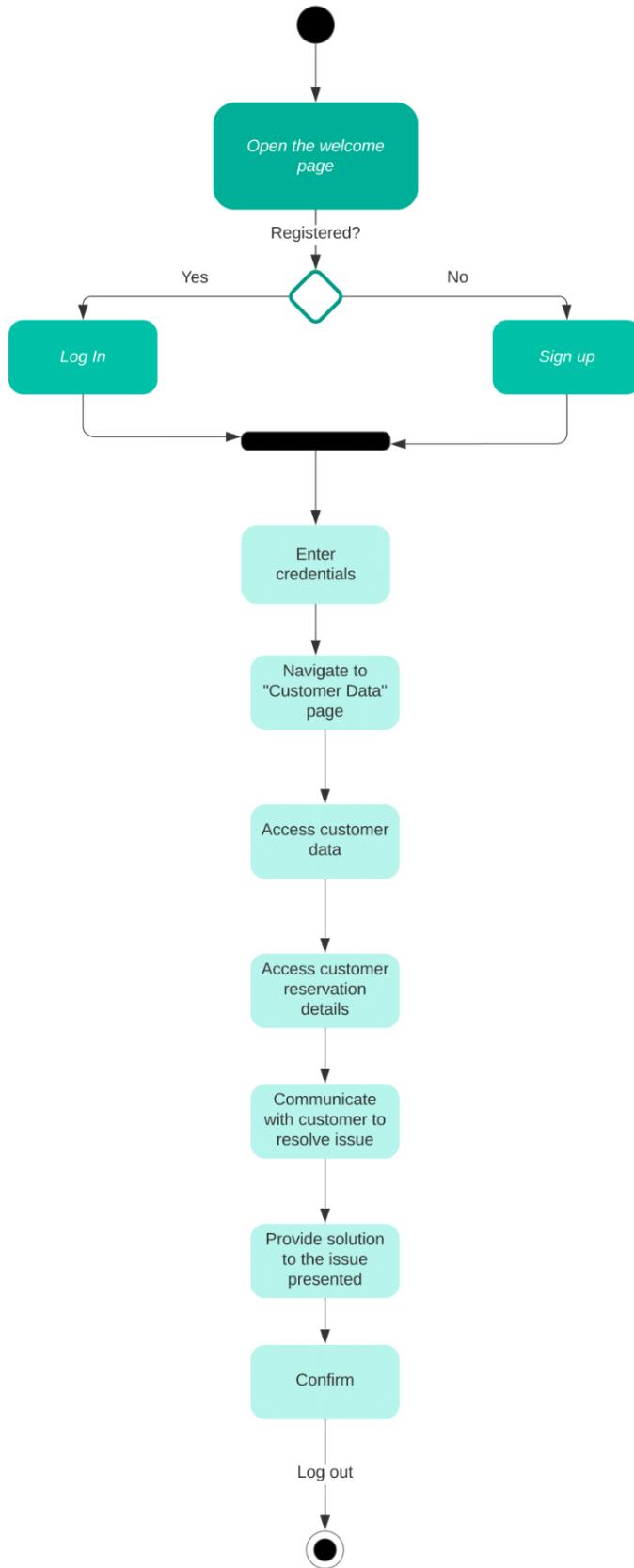
Communicating with the driver

Software's Agents



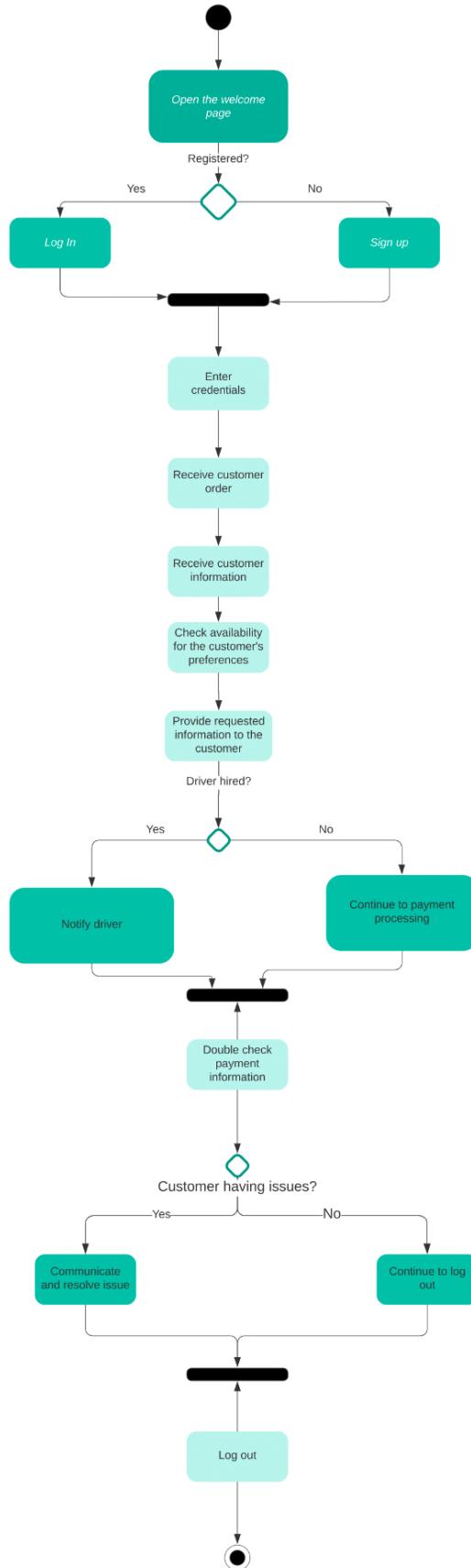
Customer Issue Service

Software's Agents



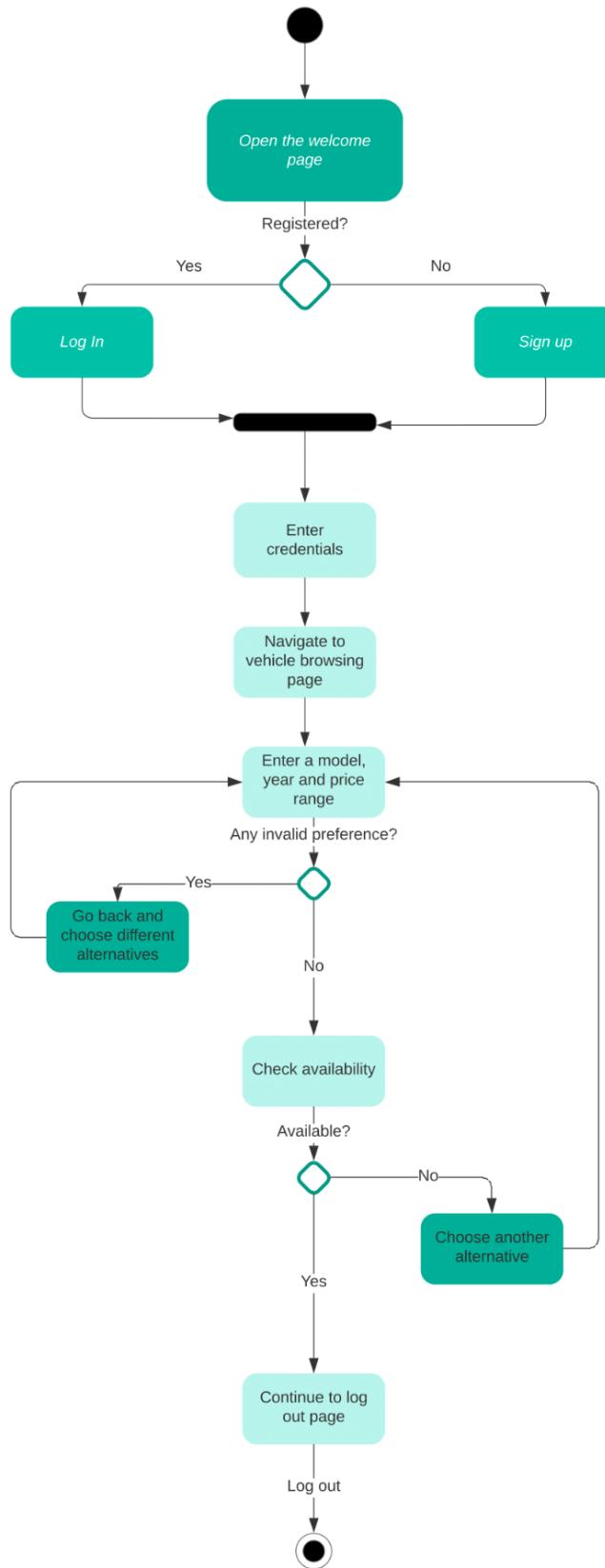
Agent Activity Diagram

Software's Agents



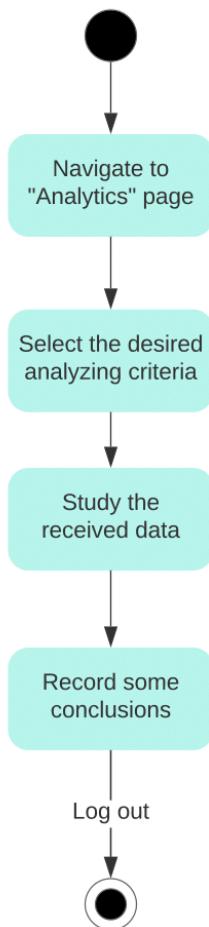
Browsing for a vehicle

Software's Customers



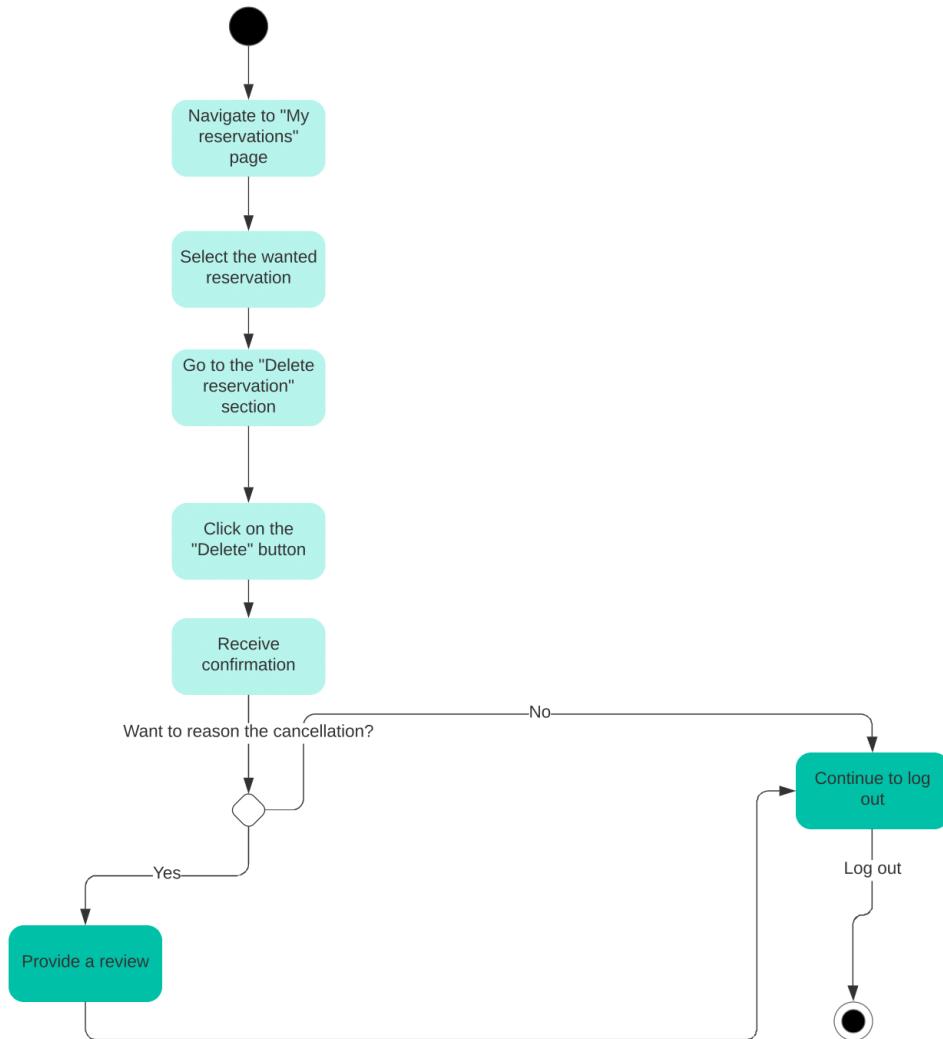
Analyze Analytics

Software's Administrators



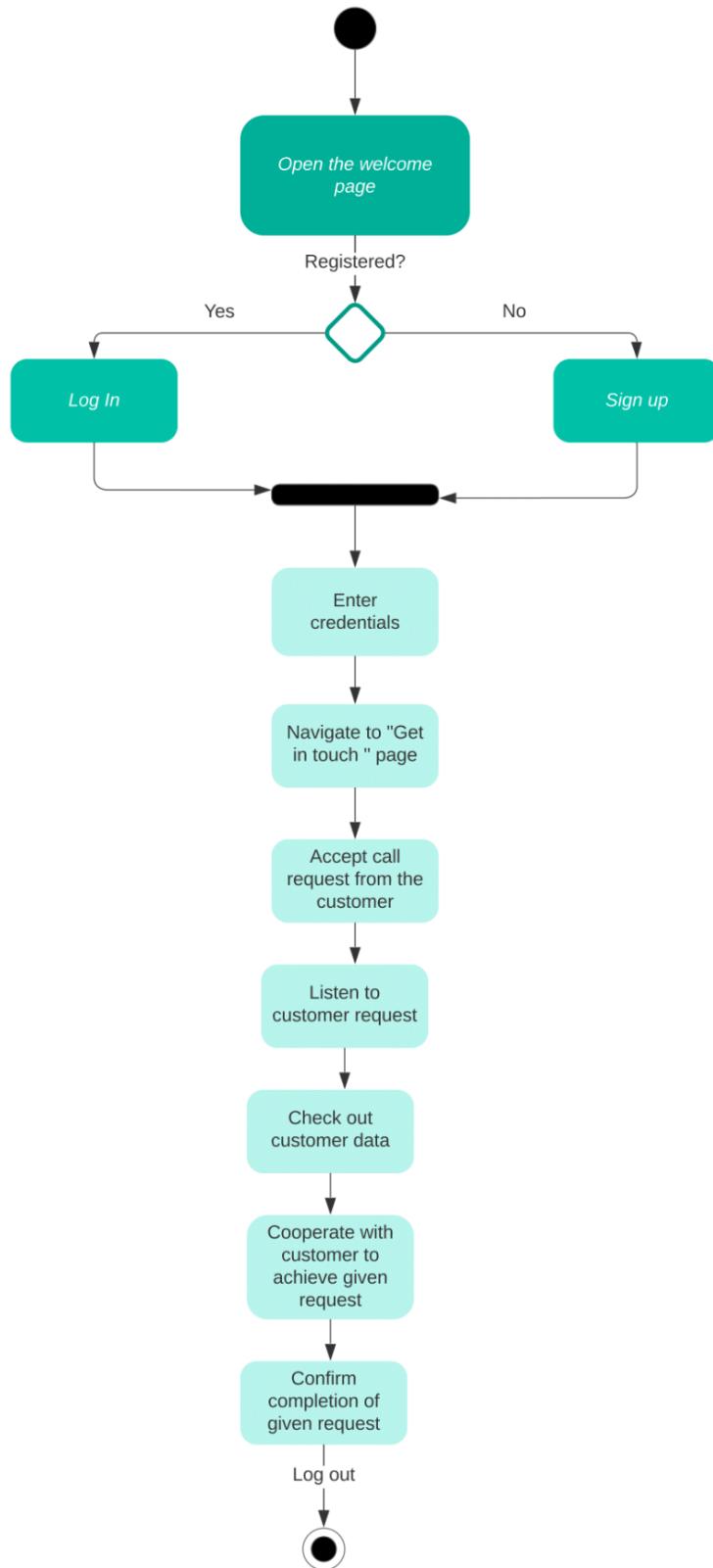
Cancelling Reservation

Software's Customers



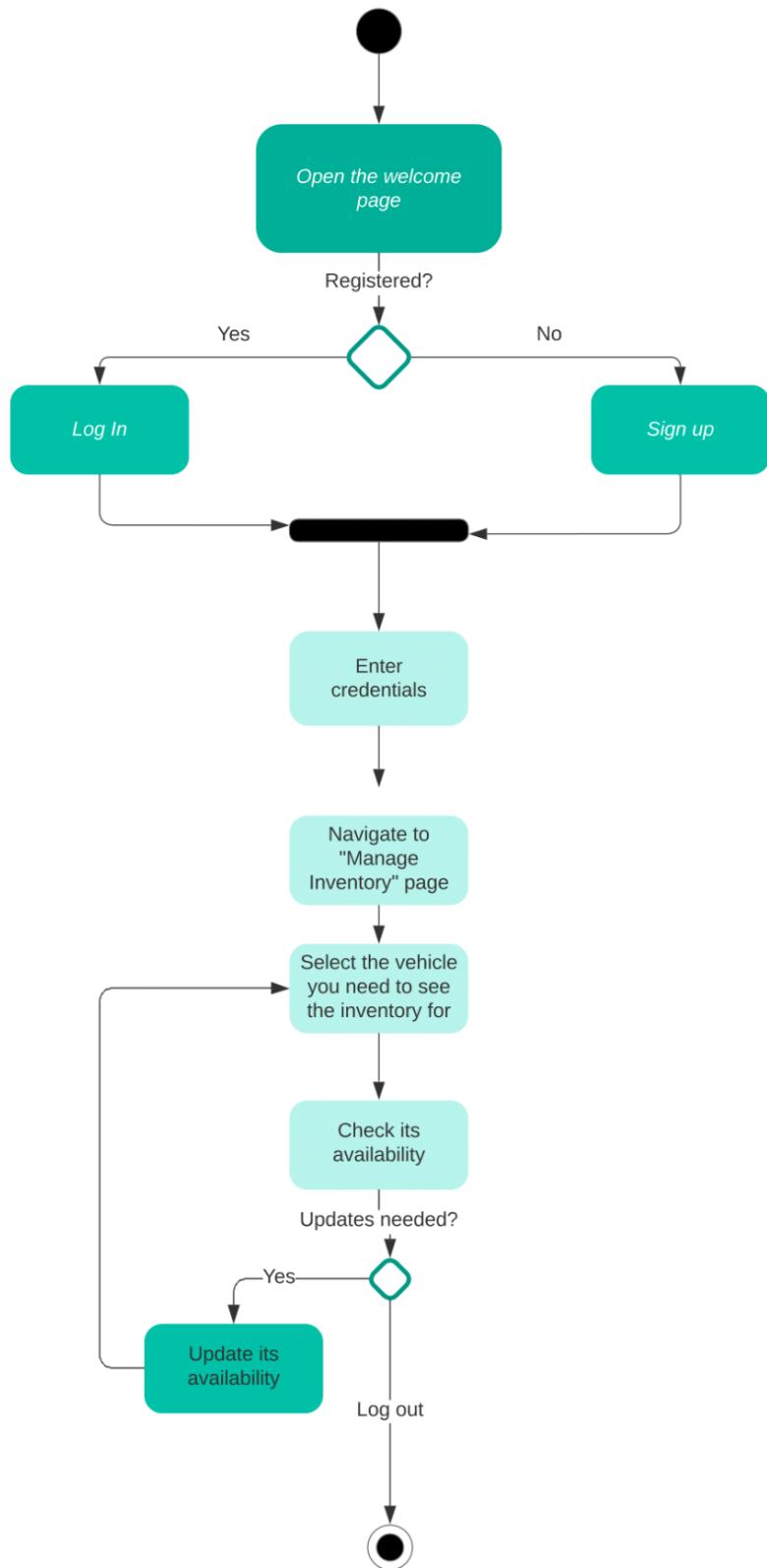
Communicating with the customer

Software's Agents



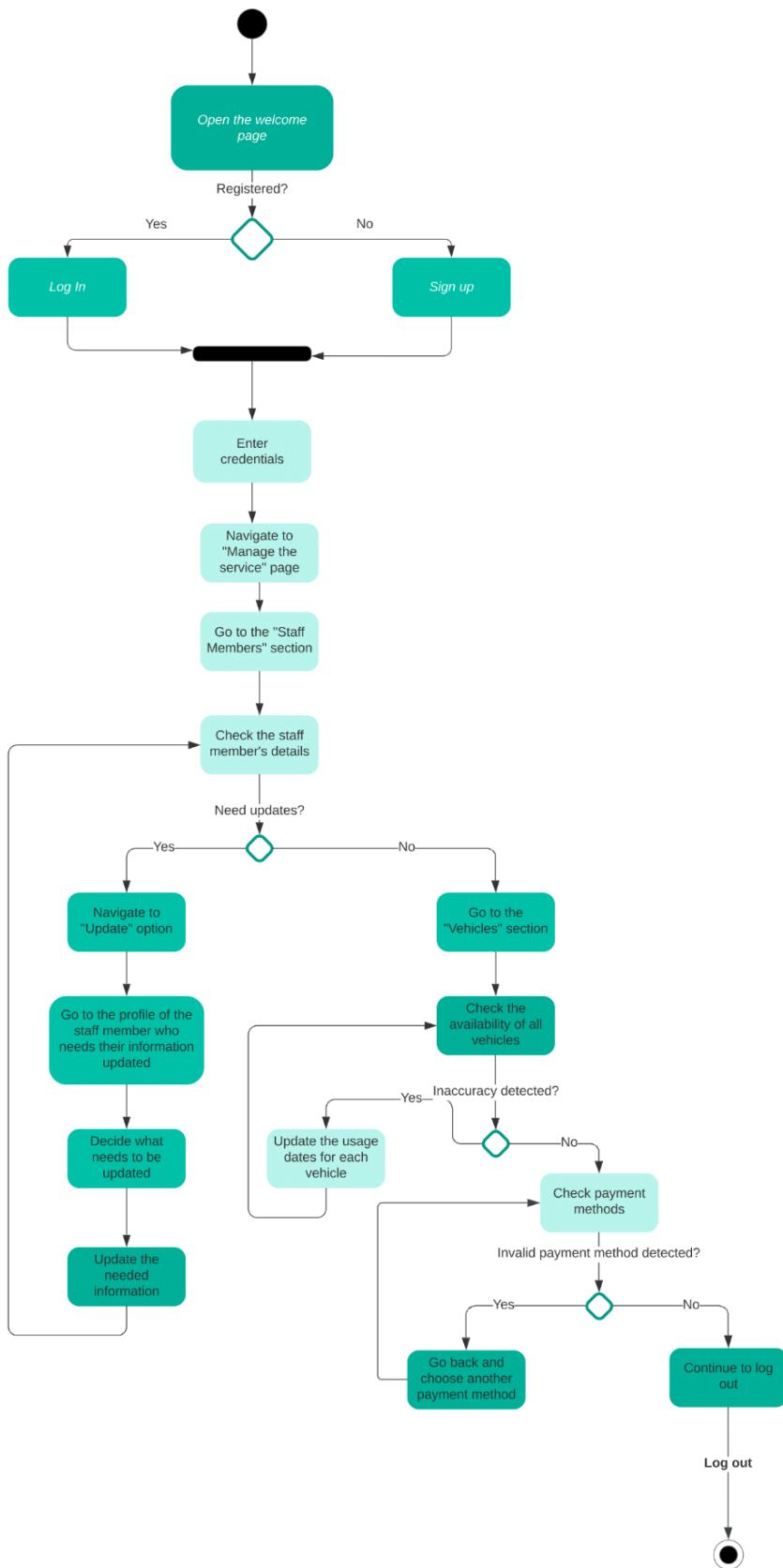
Controlling the inventory

Software's Administrators



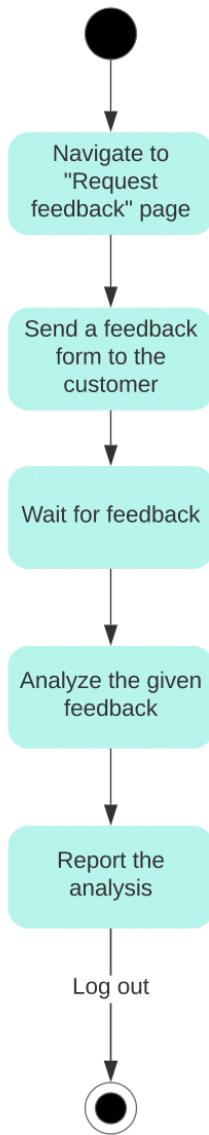
Managing the service

Software's Administrators



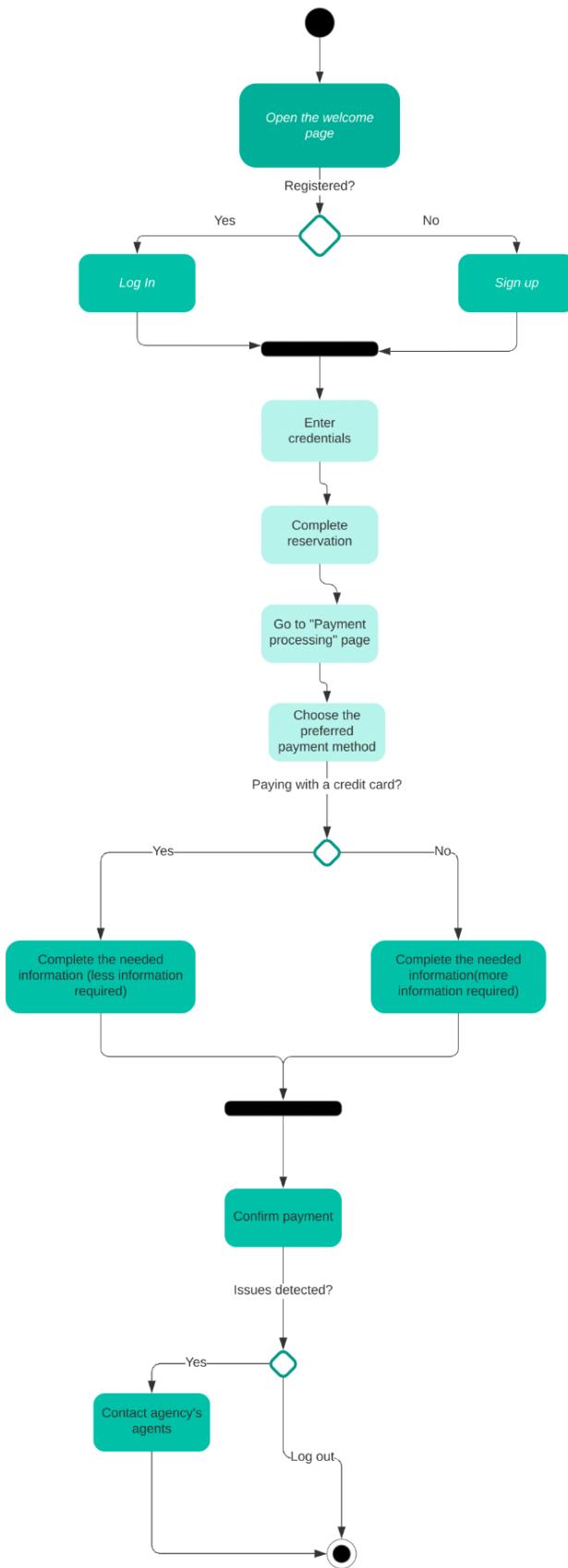
Receiving Feedback

Software's Administrators



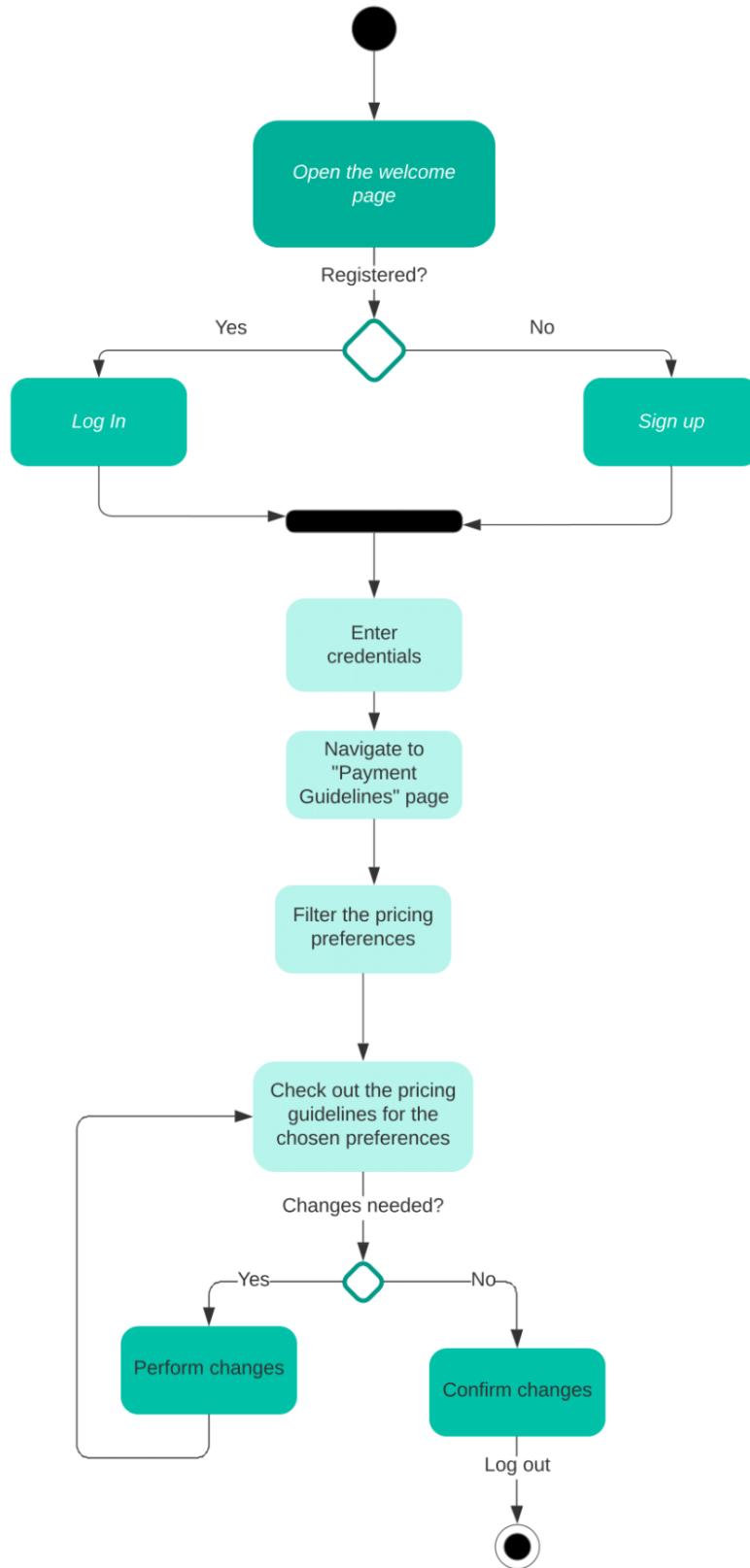
Payment process

Software's Customers



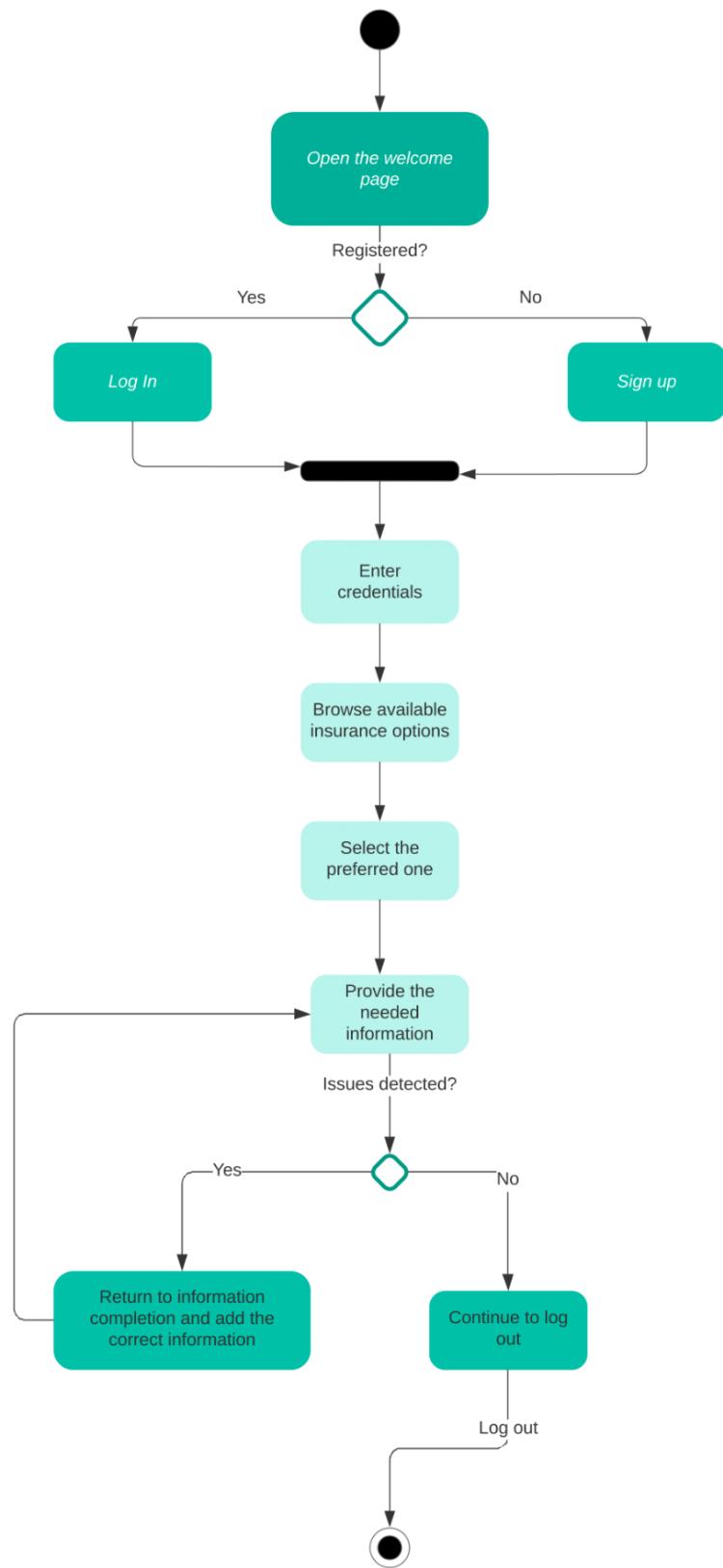
Establishing price guidelines

Software's Administrators



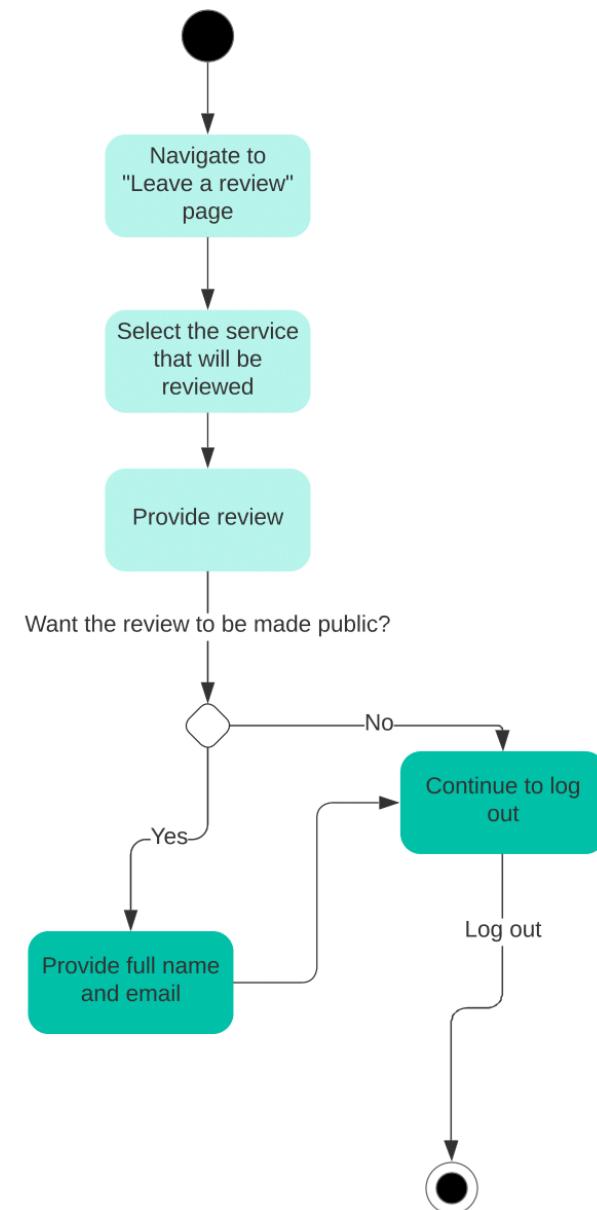
Choosing Insurance

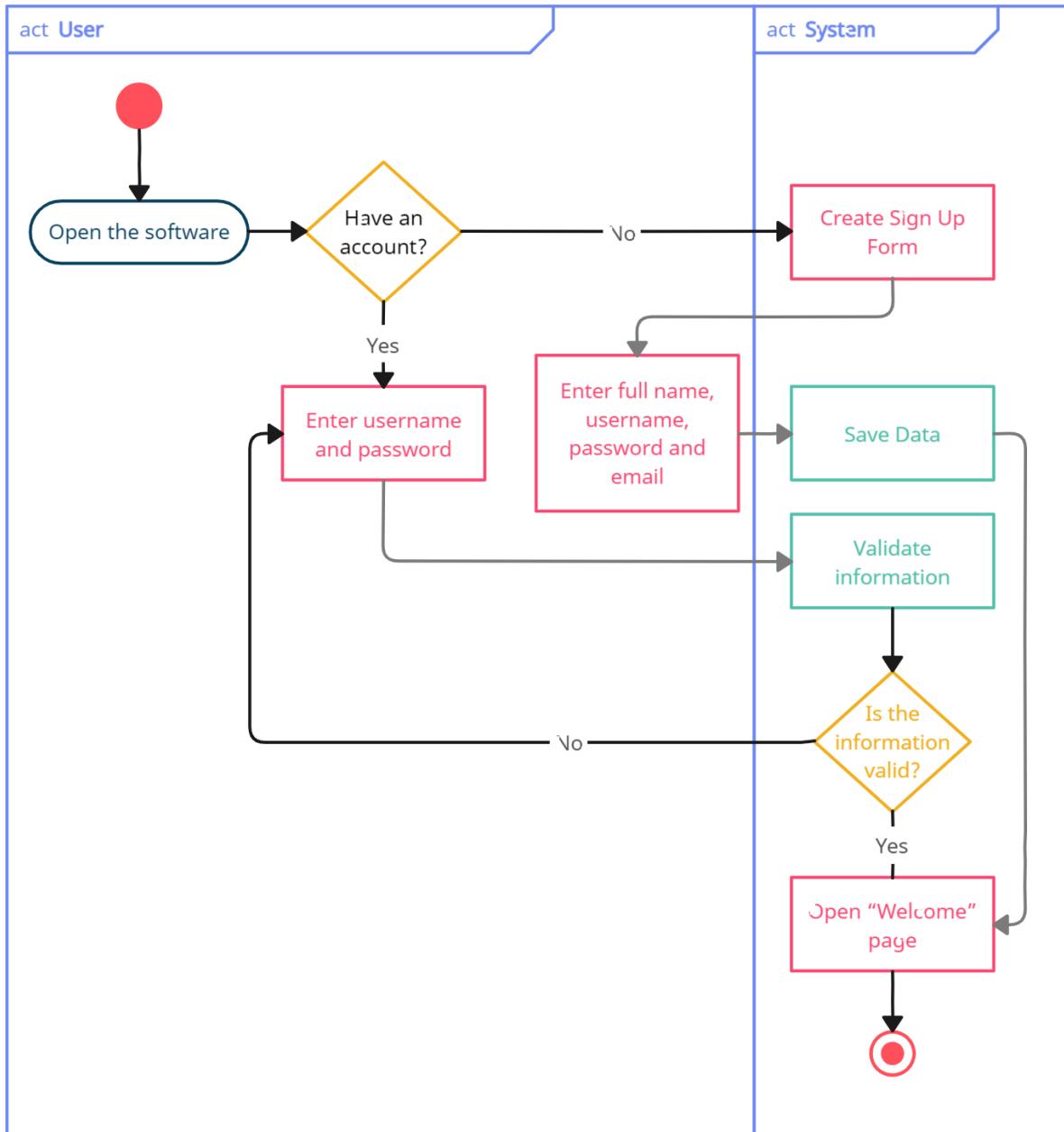
Software's Customers



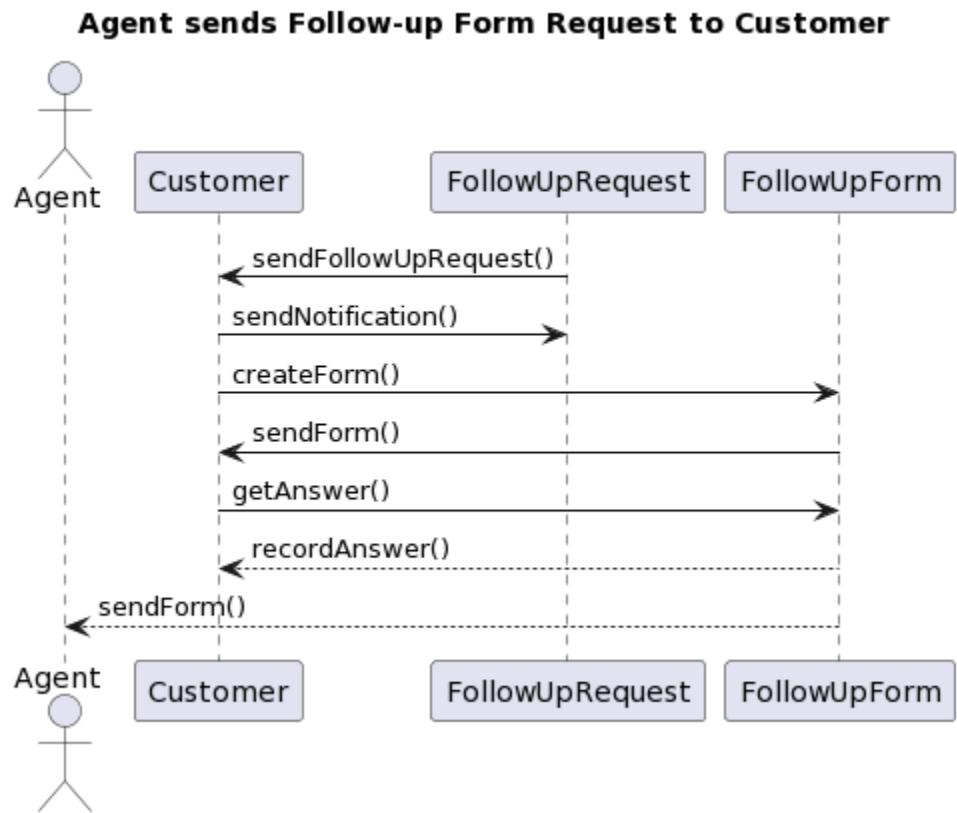
Leaving Review

Software's Customers

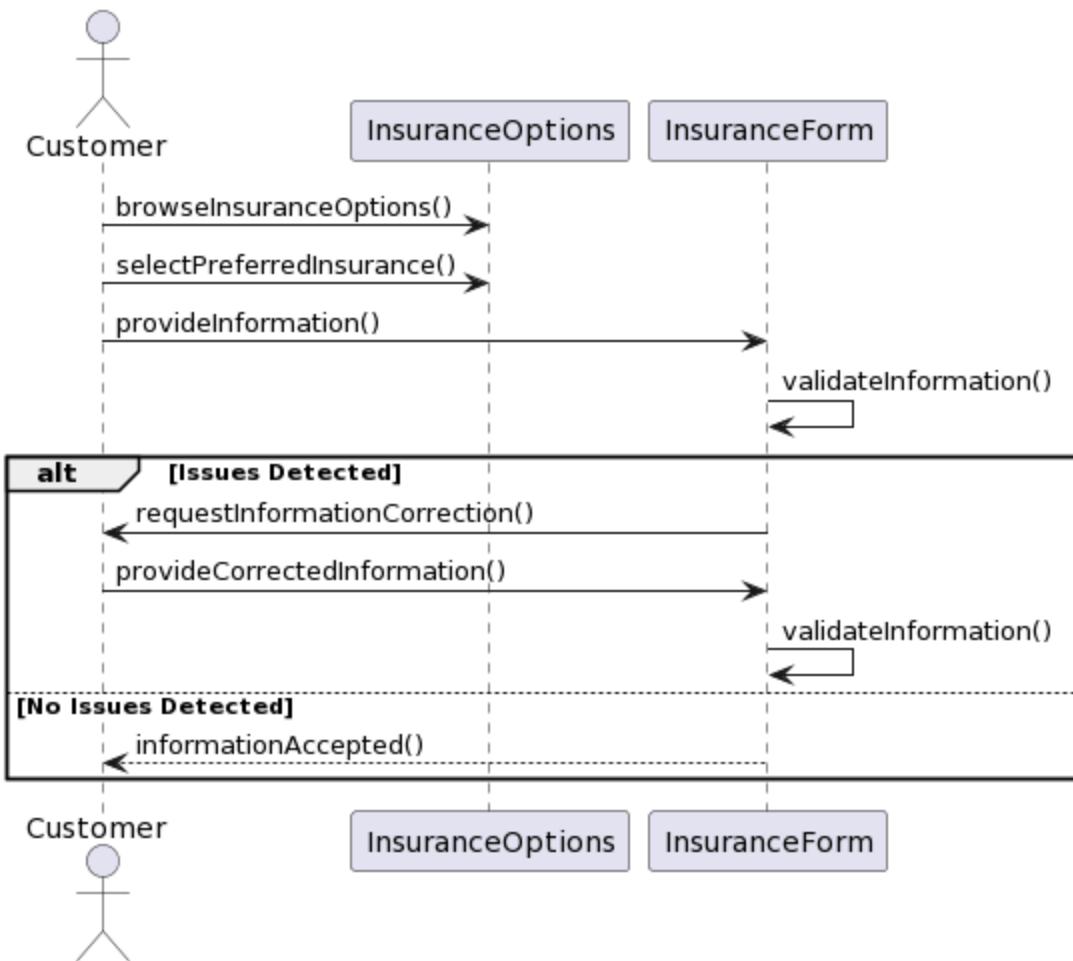




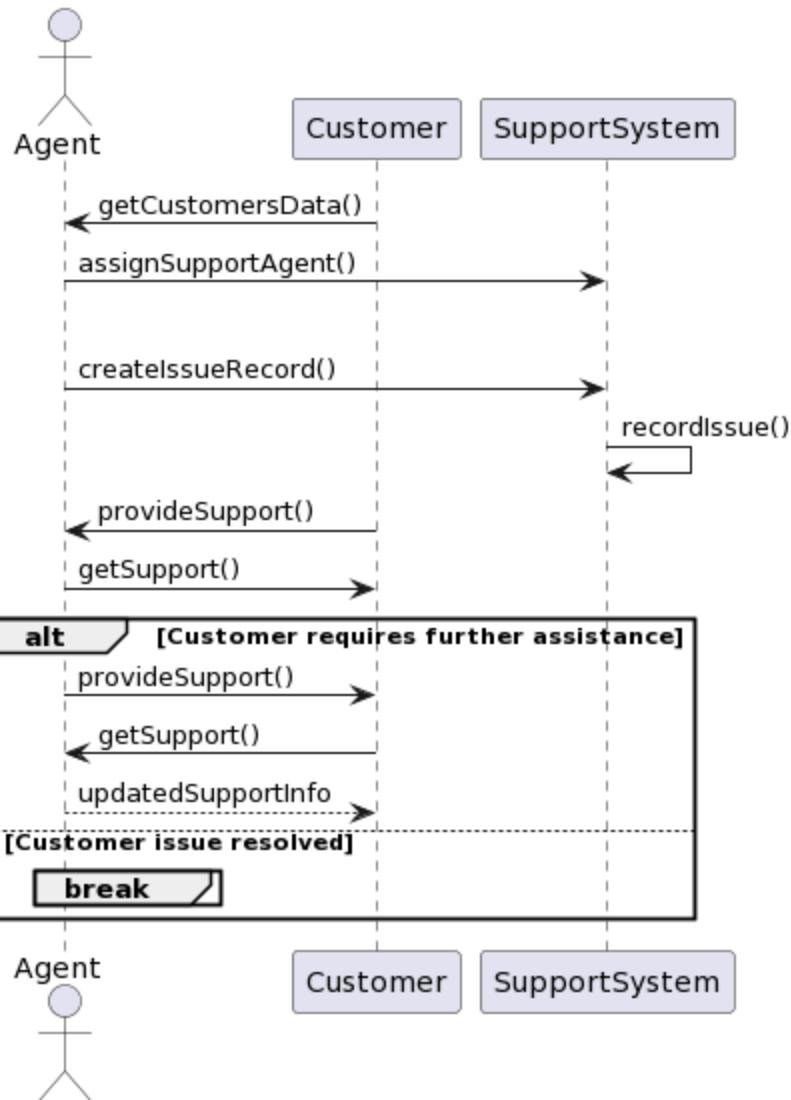
Sequence Diagrams



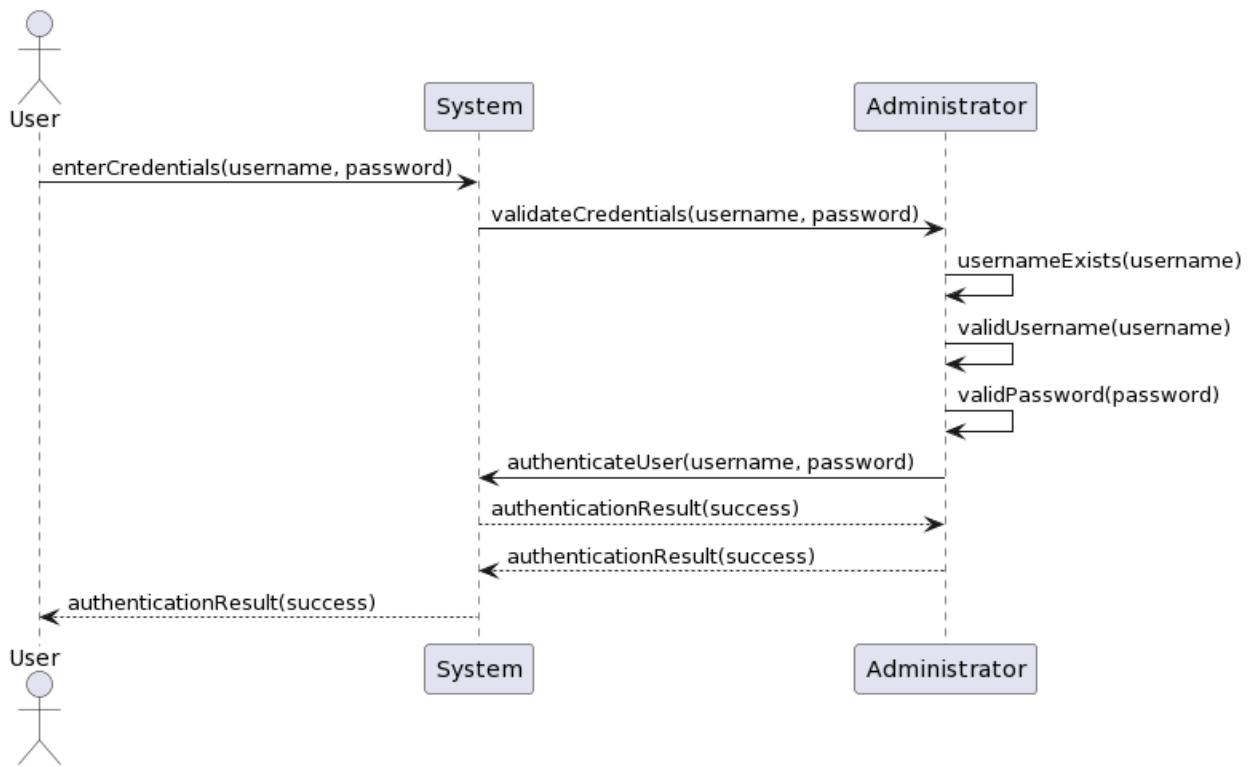
Customer Insurance Selection Sequence Diagram



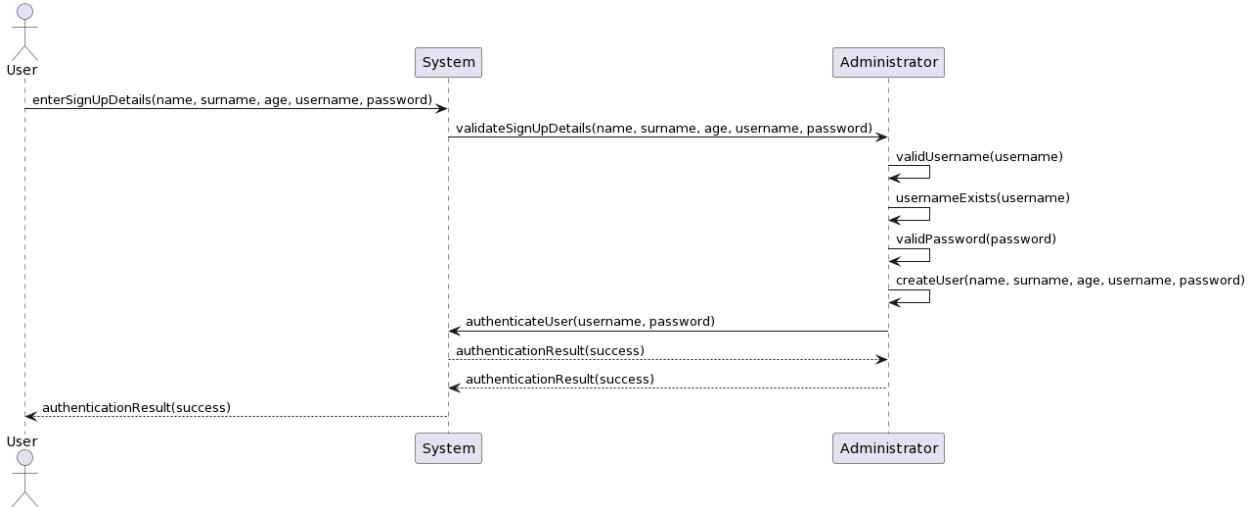
Agent Resolving Customer Issues



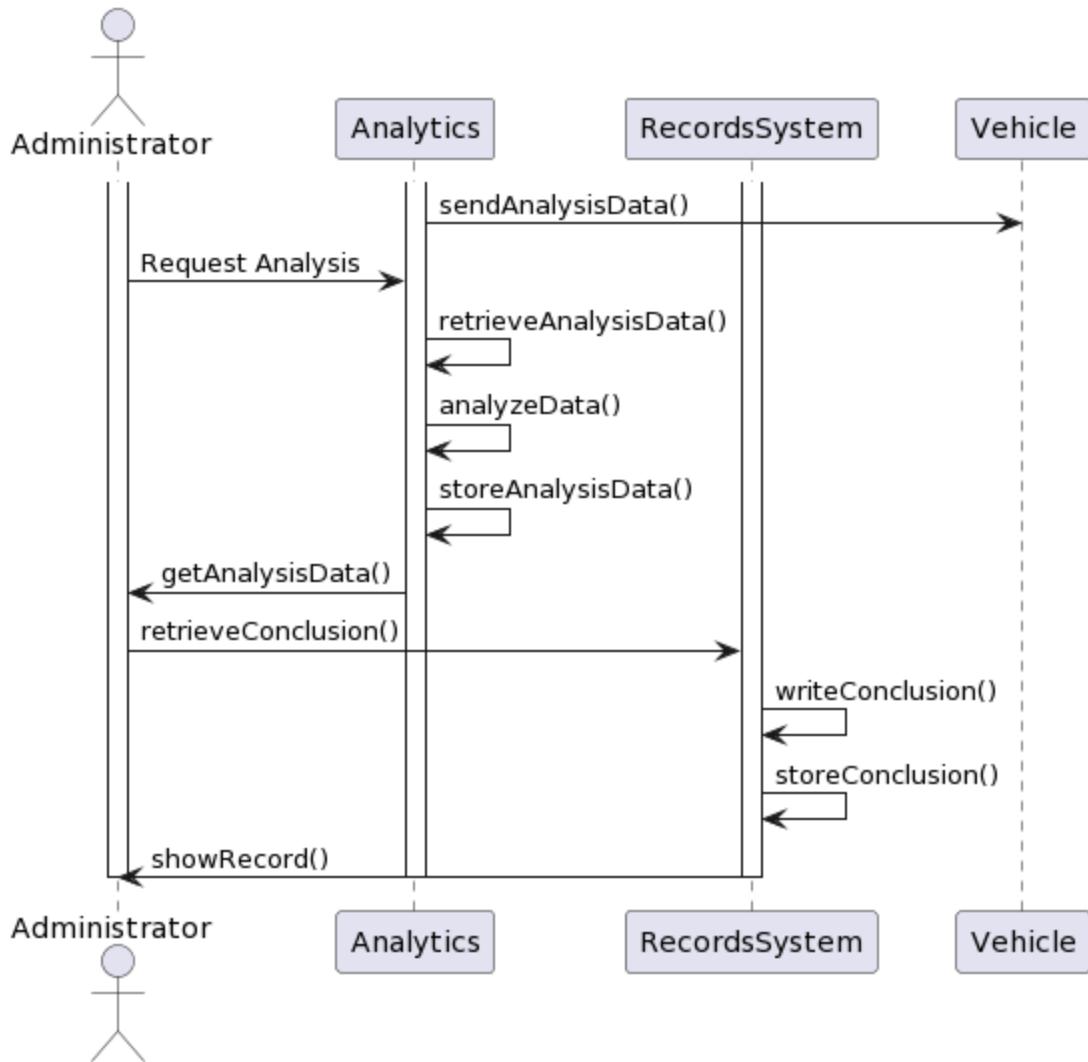
User Logging In



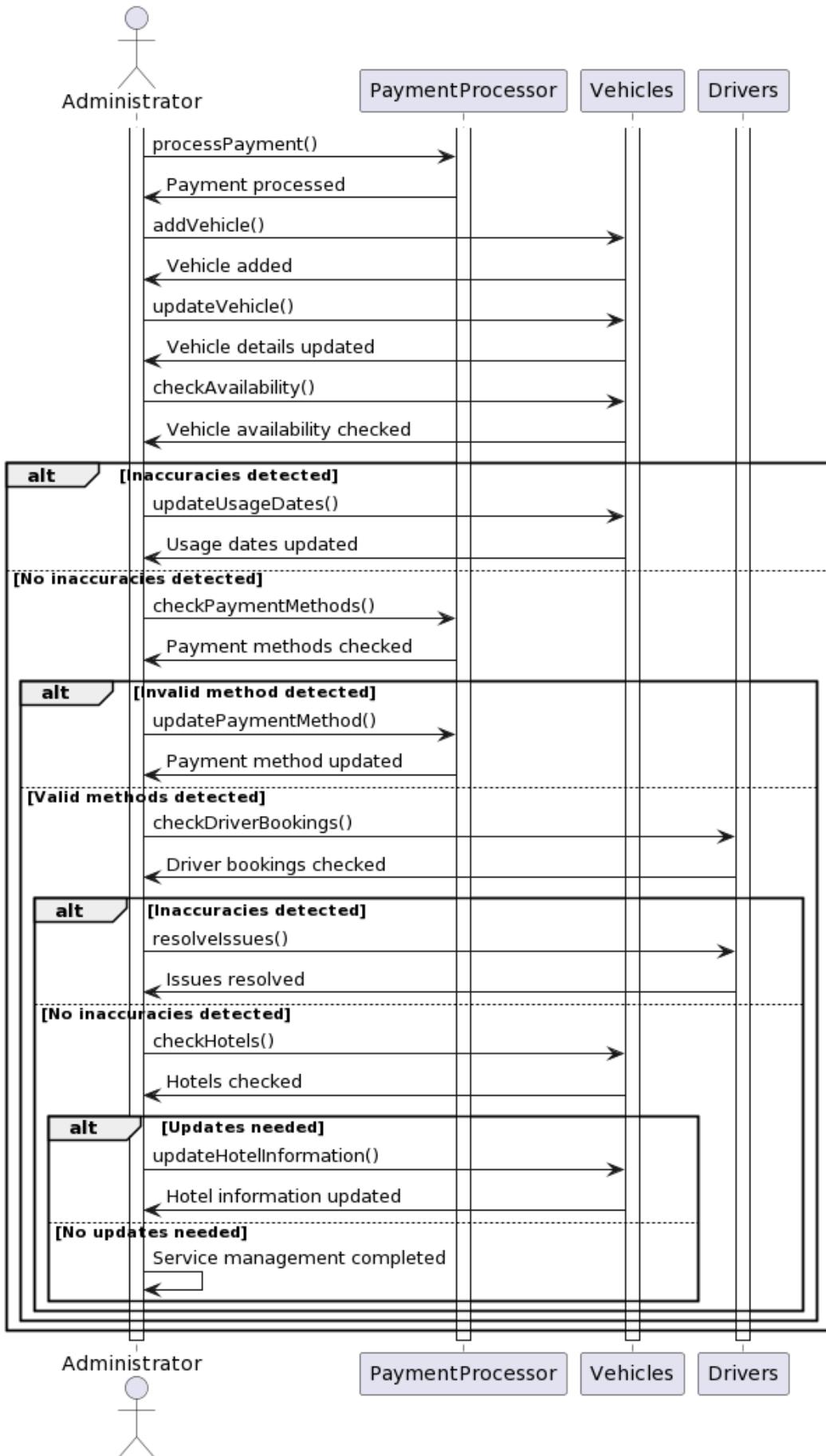
User Sign-Up



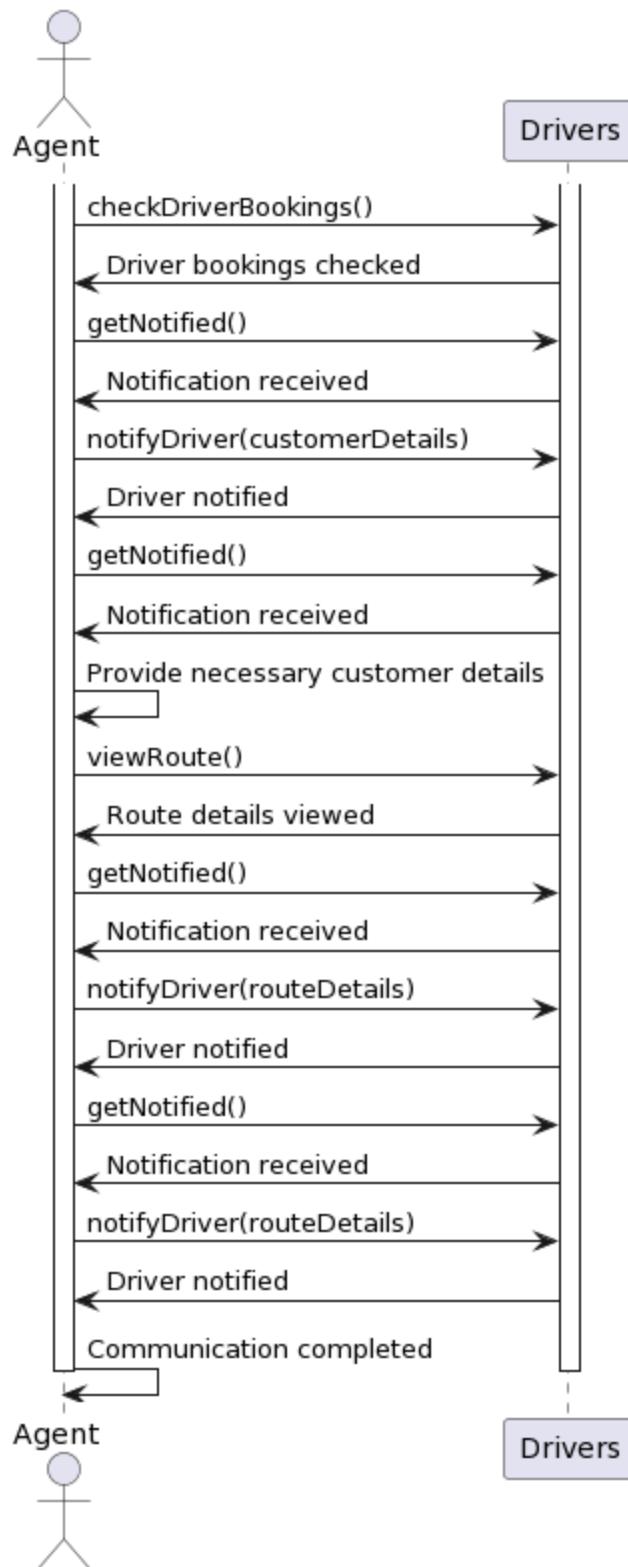
Administrator Analysis Sequence Diagram



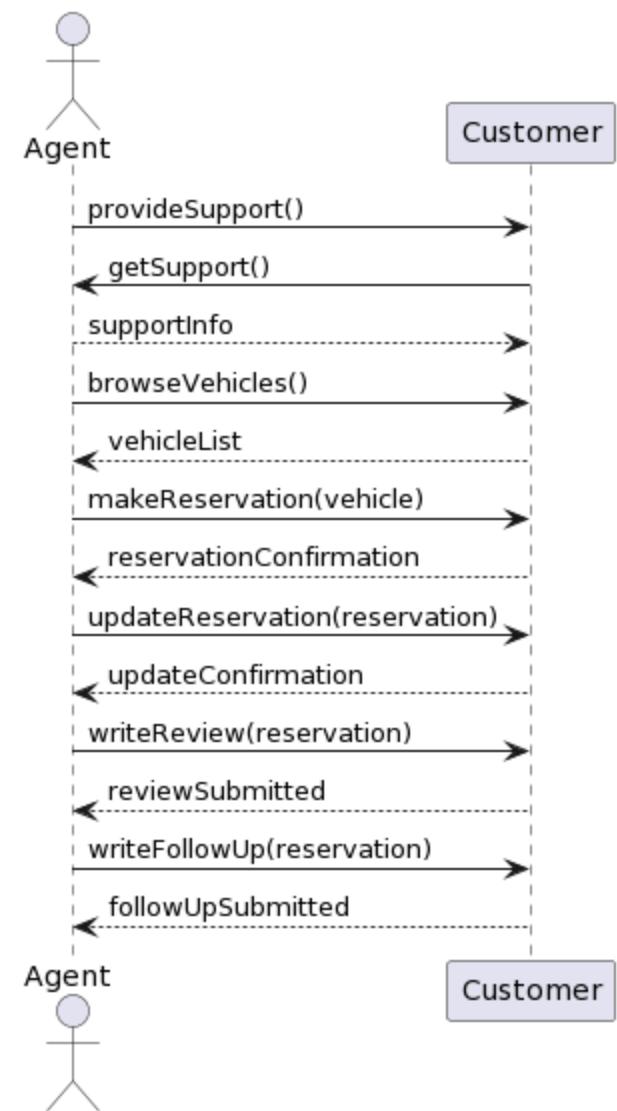
Administrator Service Management Sequence Diagram



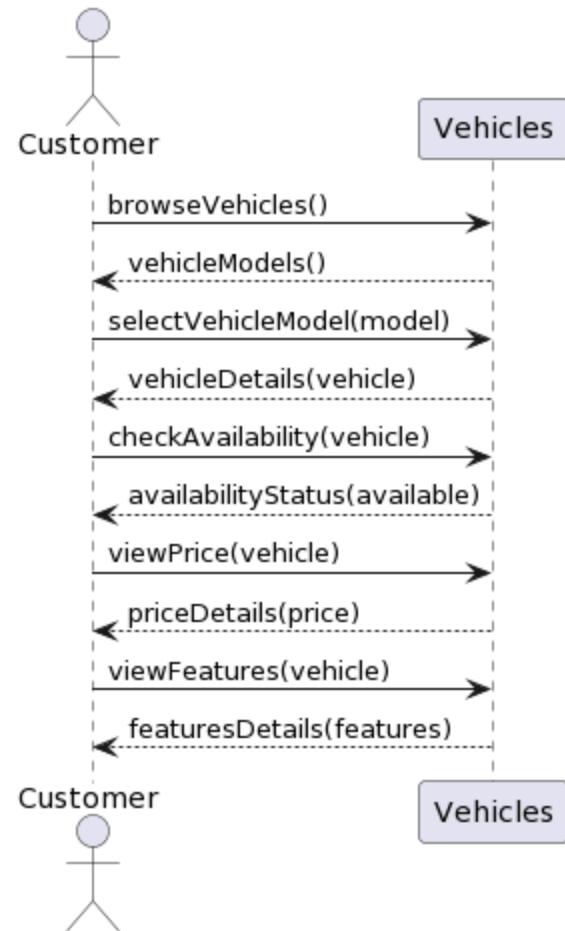
Agent-Driver Communication Sequence Diagram



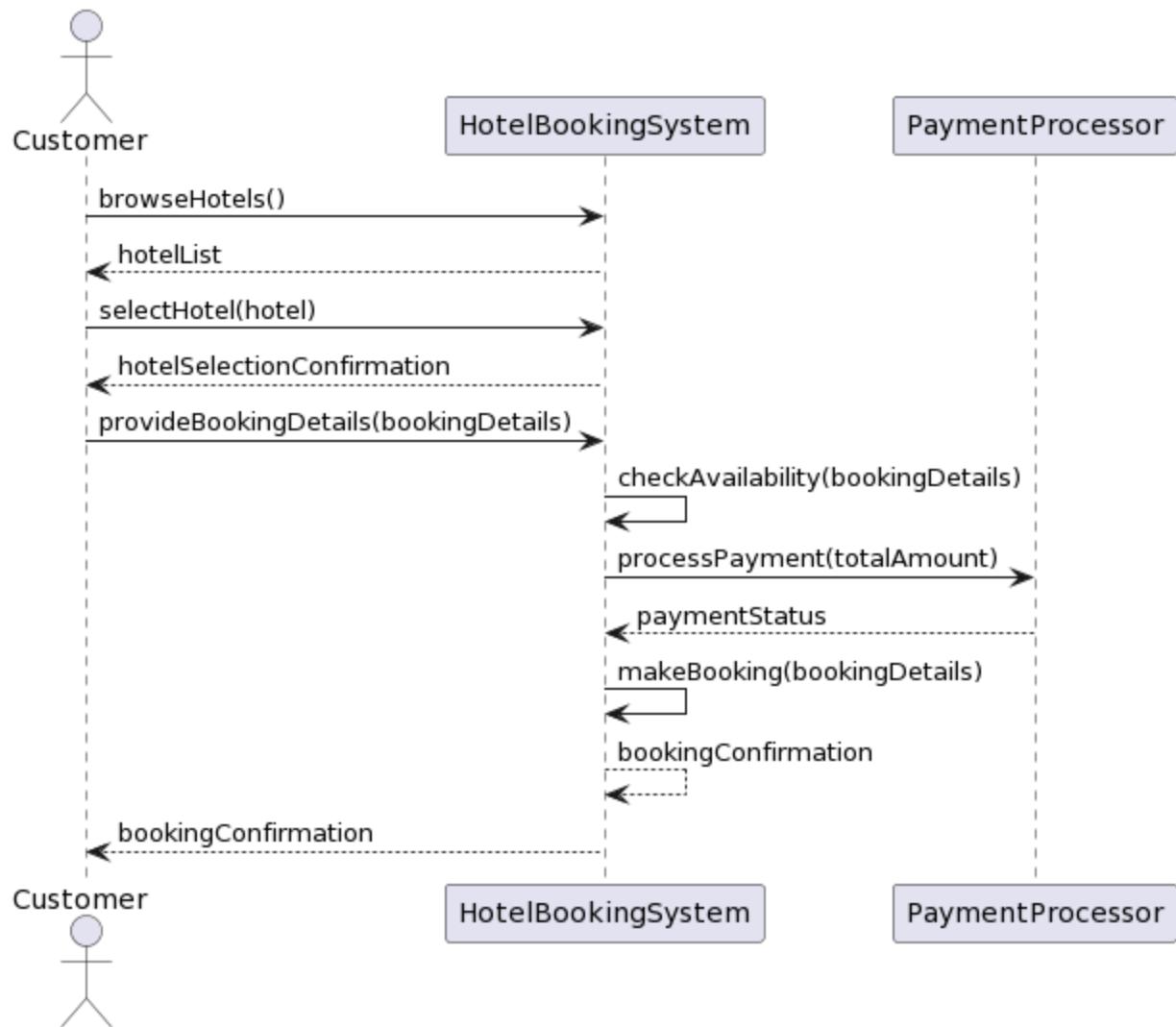
Agent Communicating with Customer



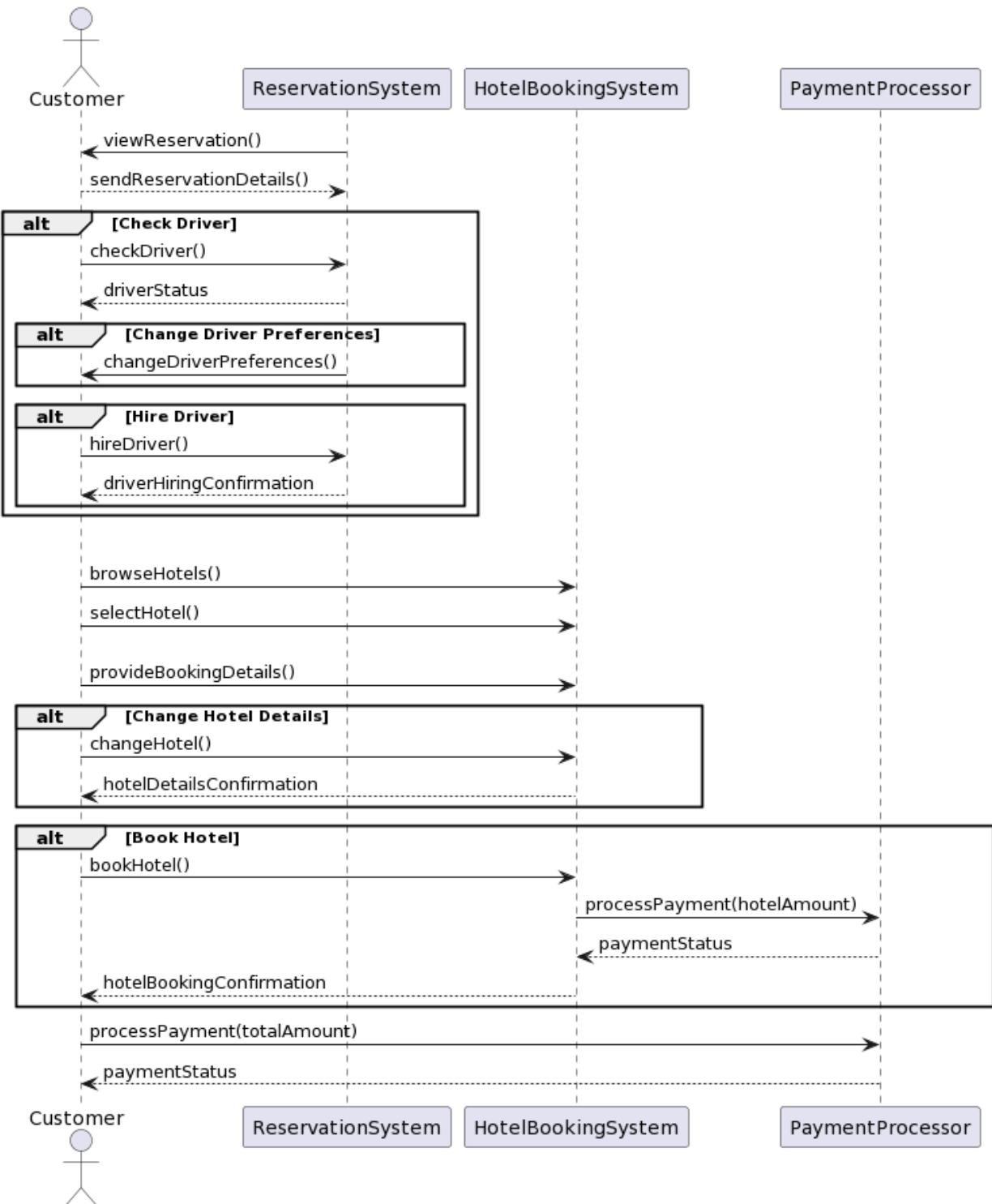
Customer Browsing Vehicle Models



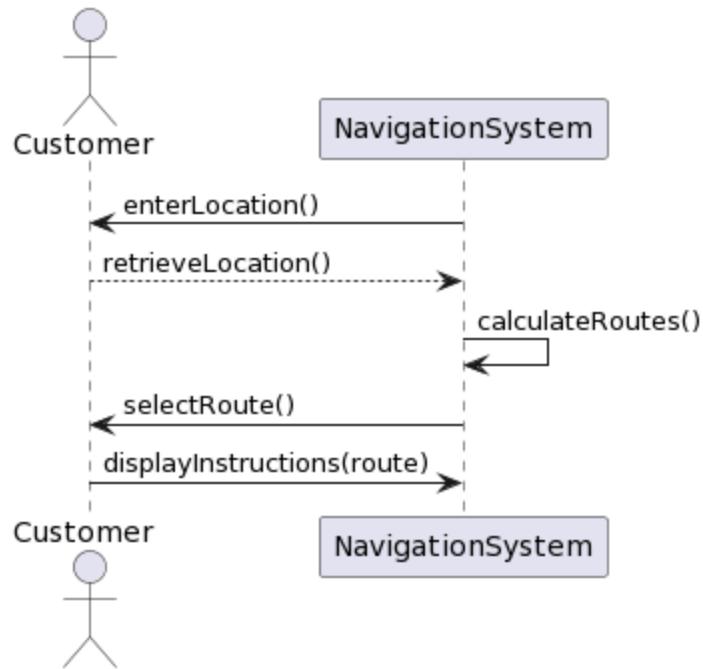
Customer - Hotel Booking



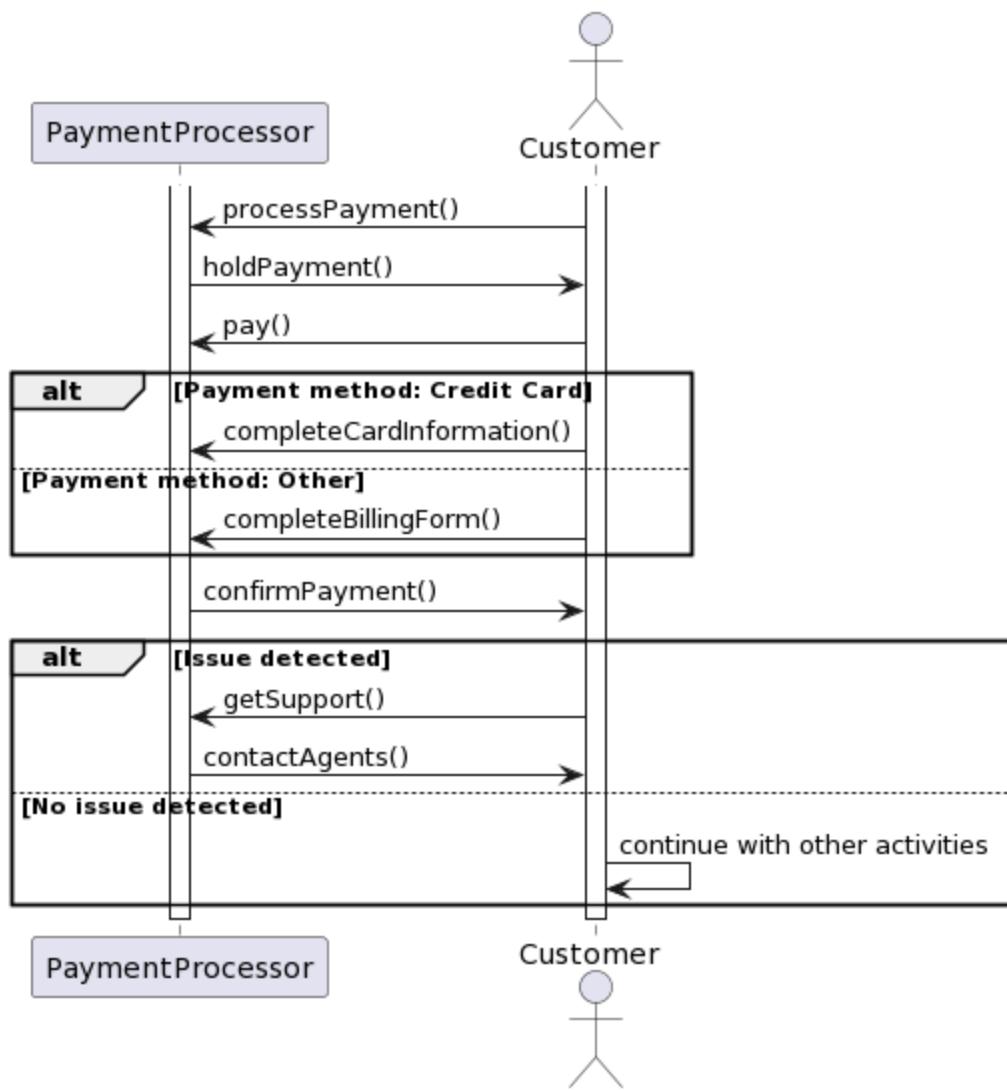
Customer - Manage Reservation



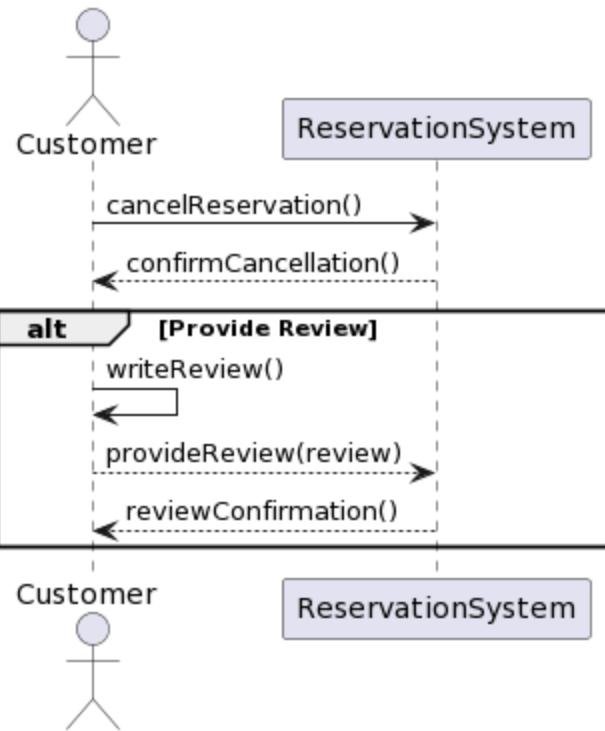
Customer Navigation



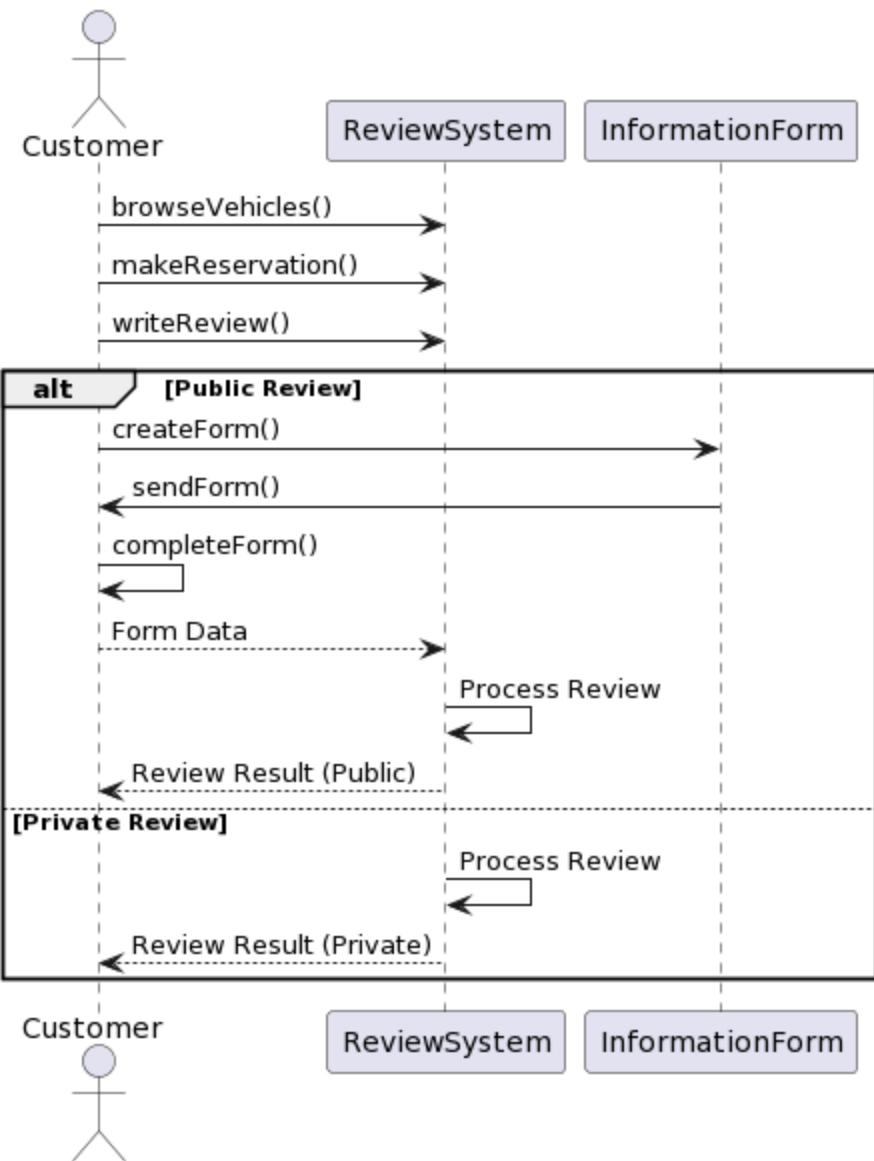
Customer Payment Processing Sequence Diagram



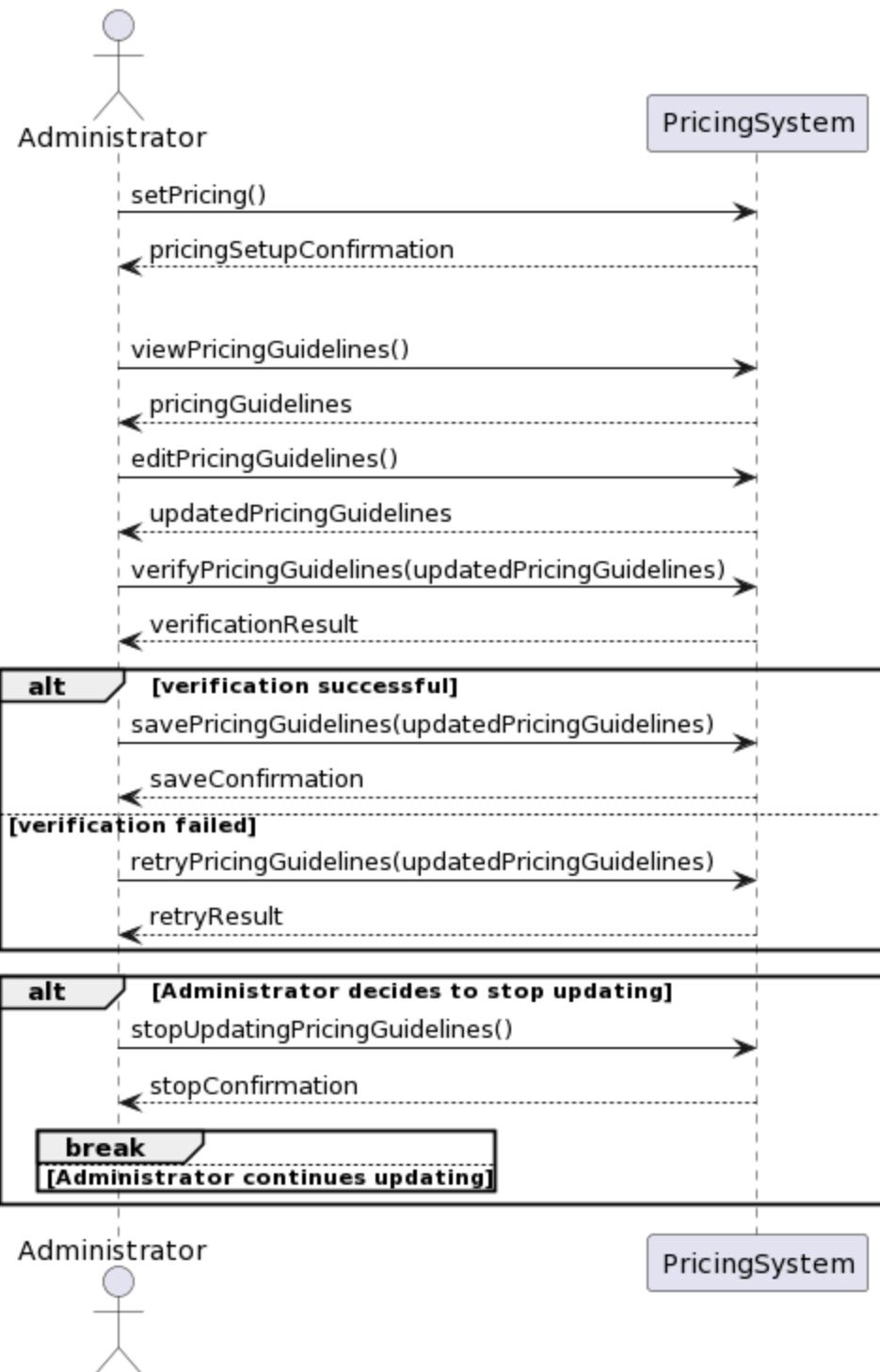
Customer Reservation Cancellation



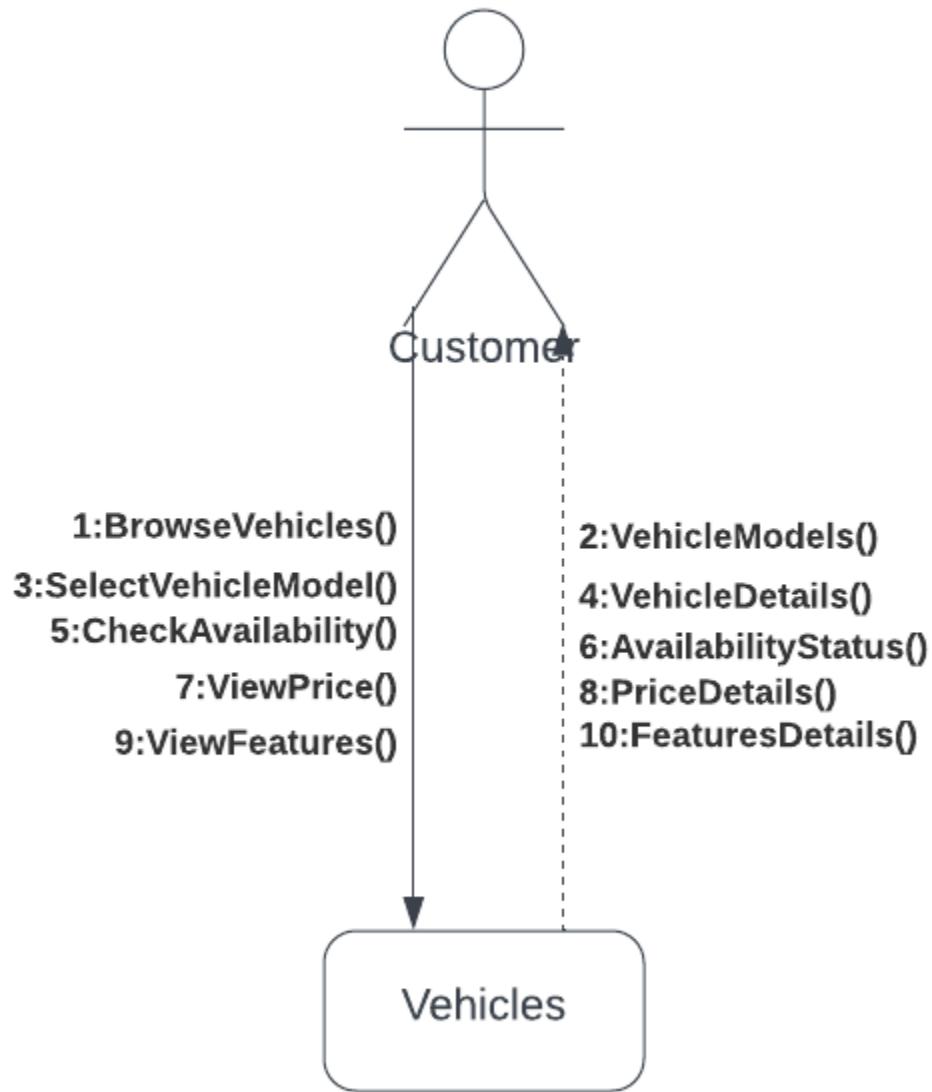
Customer Review Process Sequence Diagram

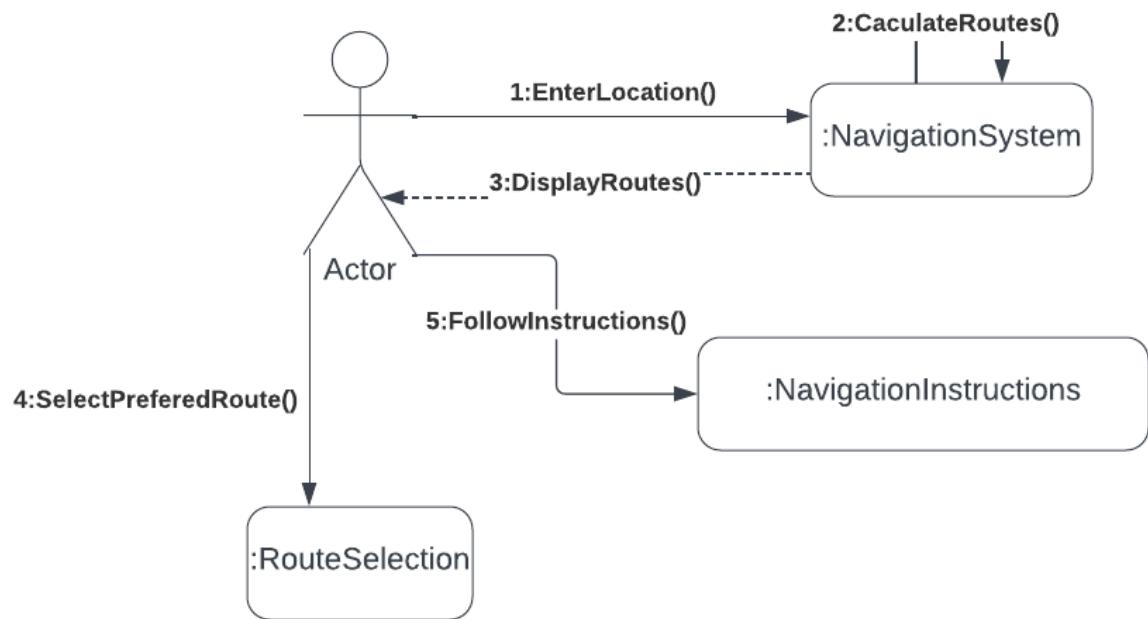
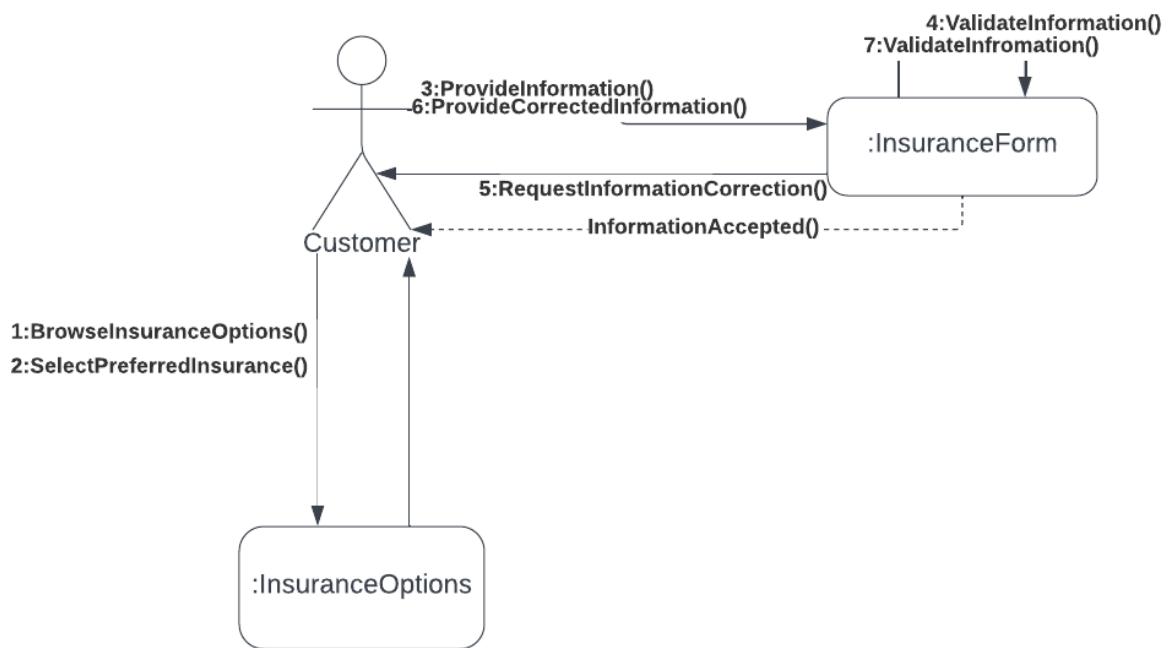


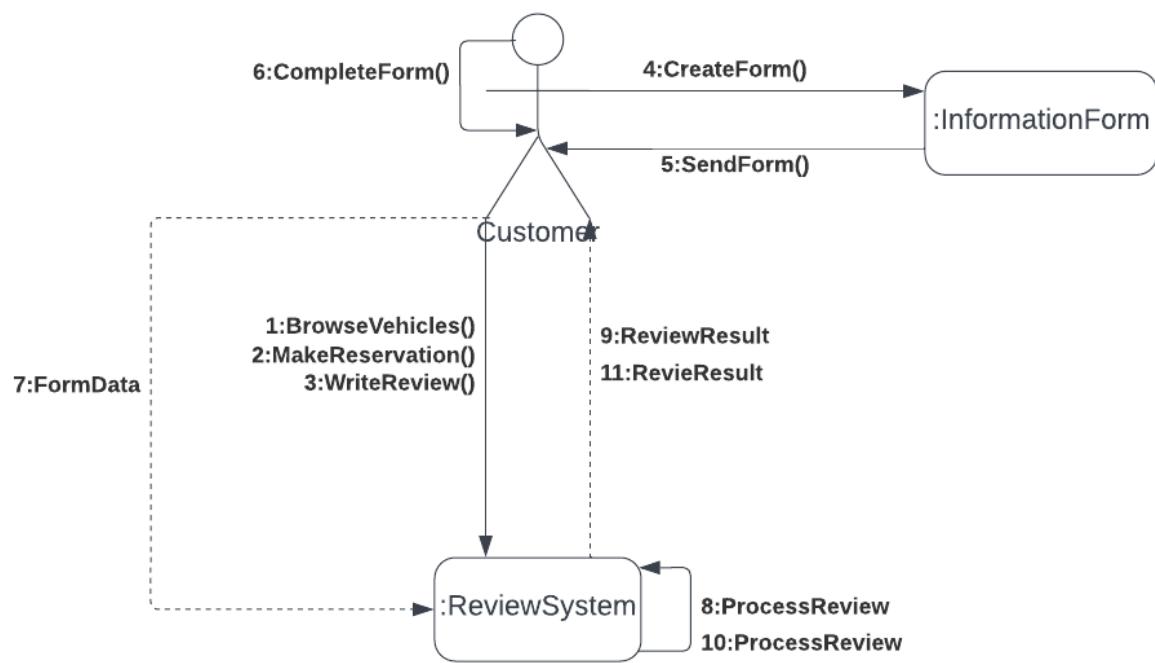
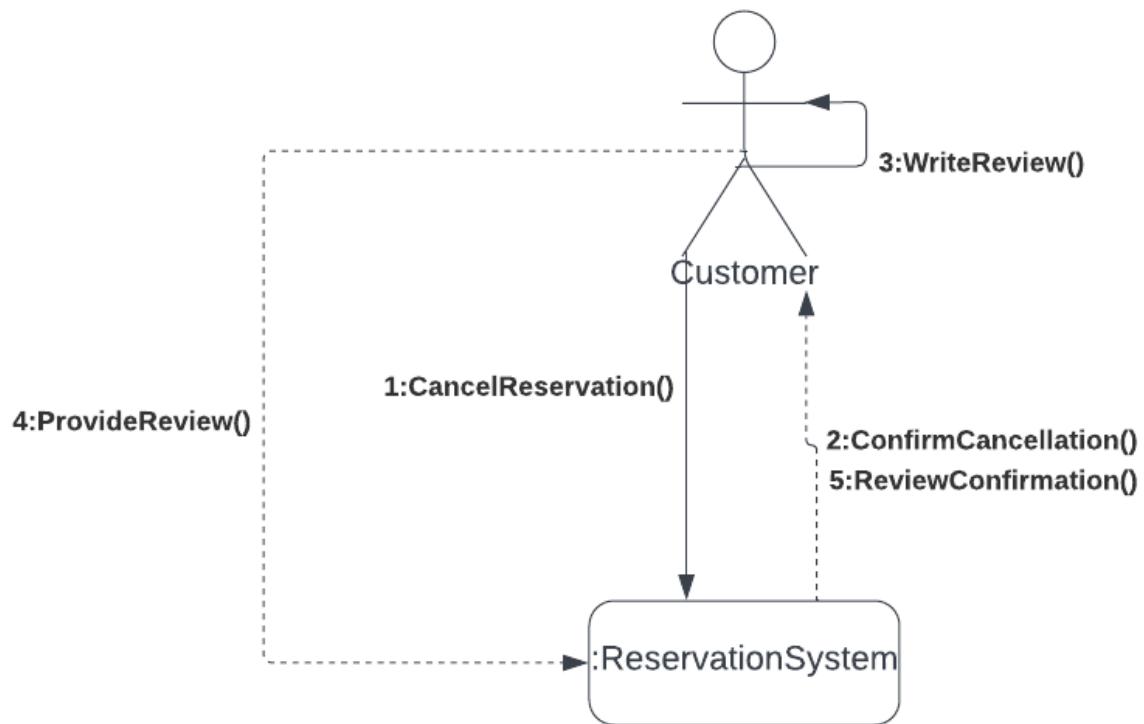
Administrator - Establishing Pricing Guidelines

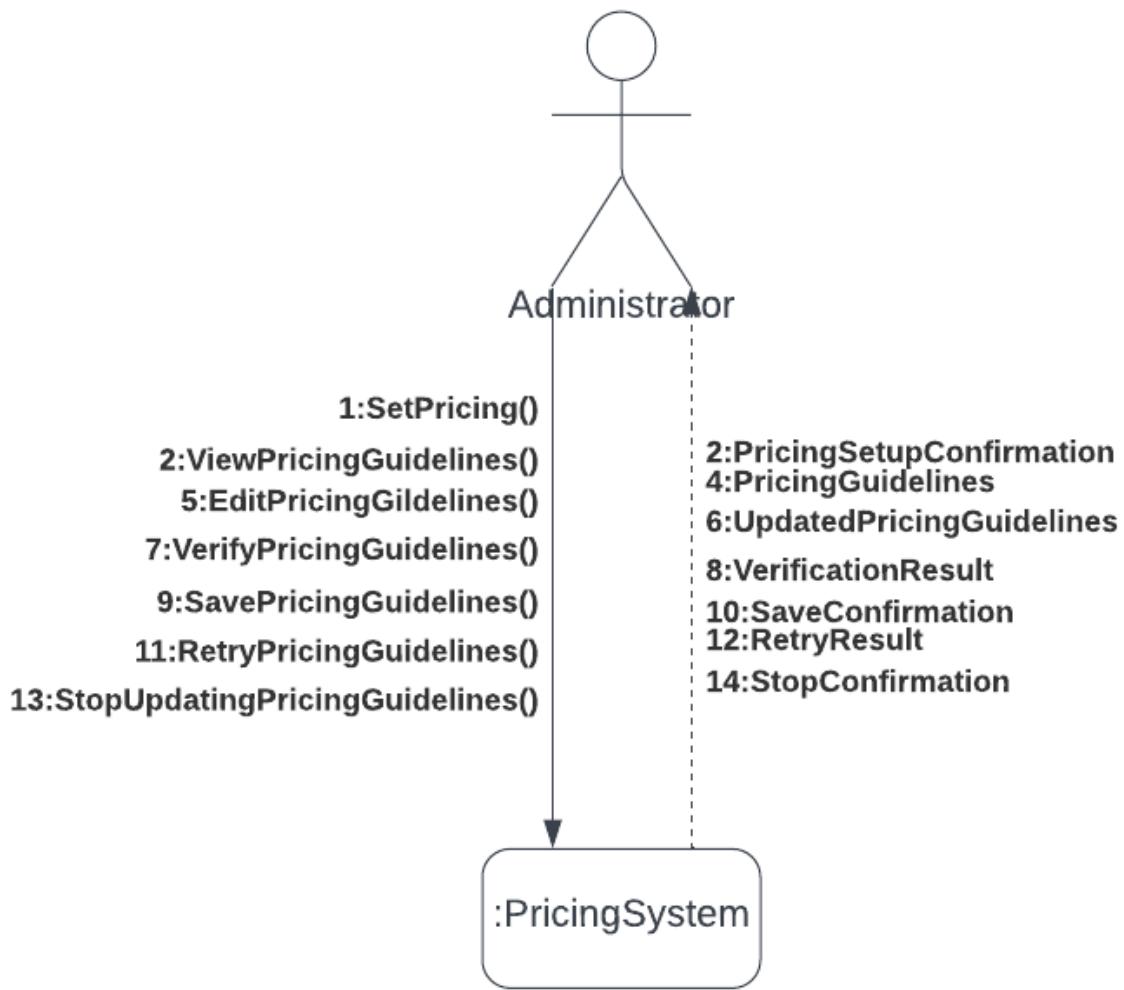


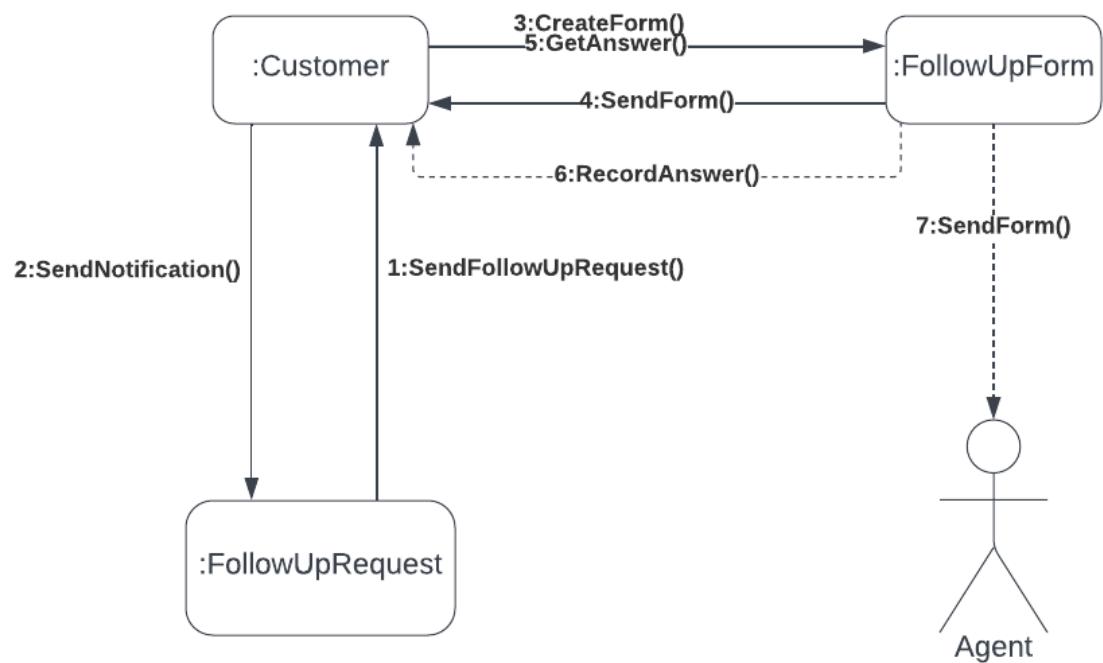
Communication Diagrams

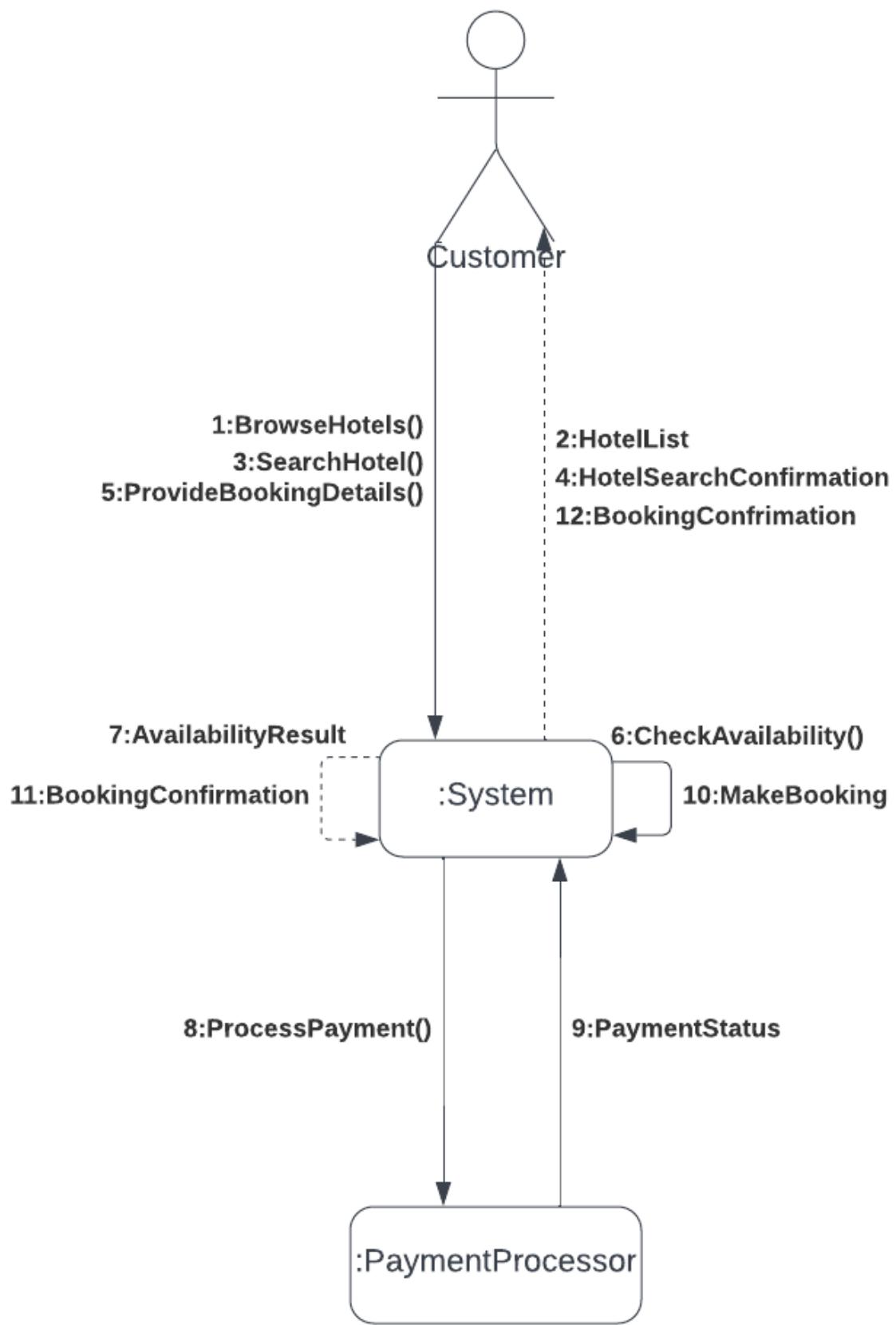


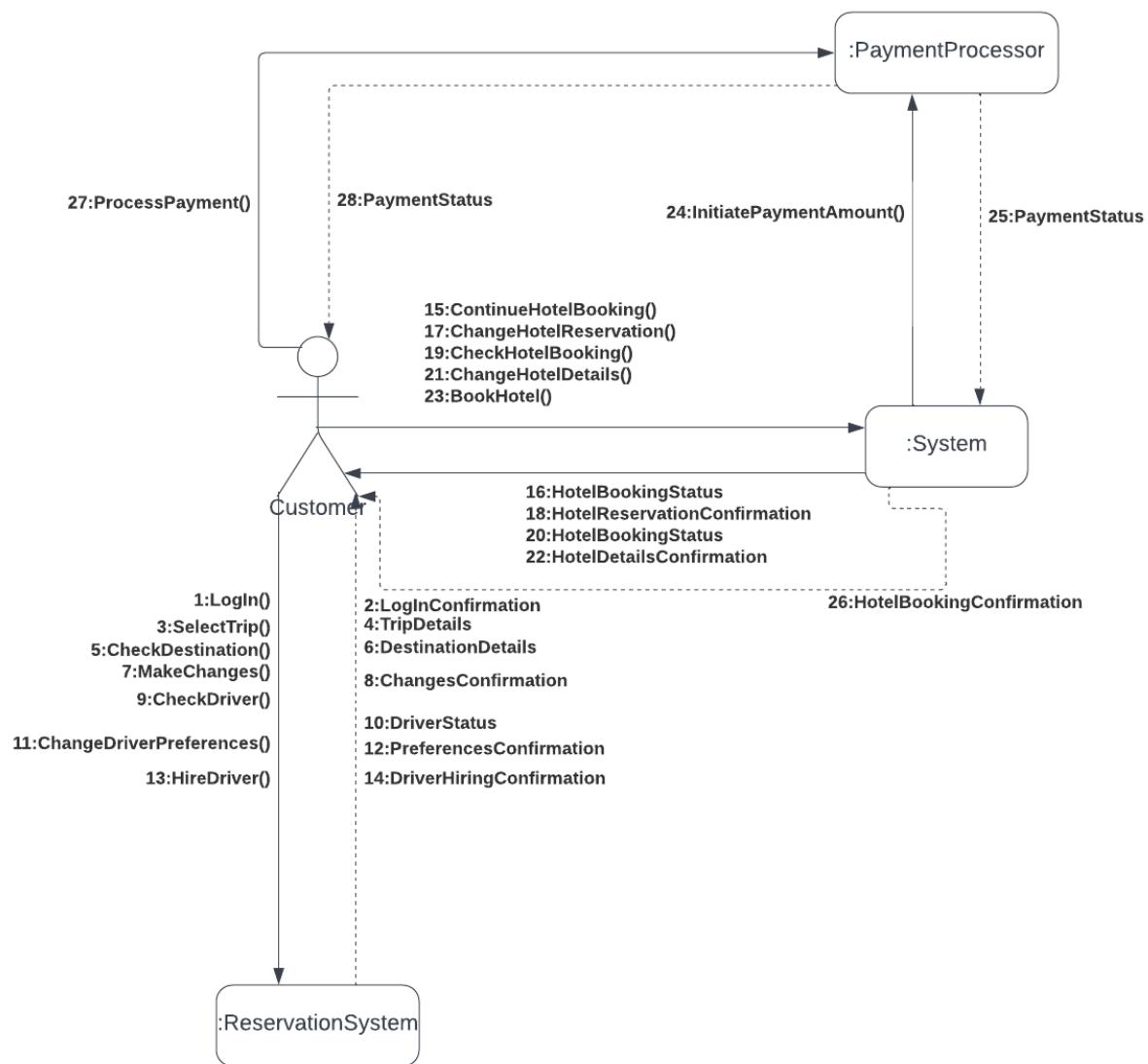


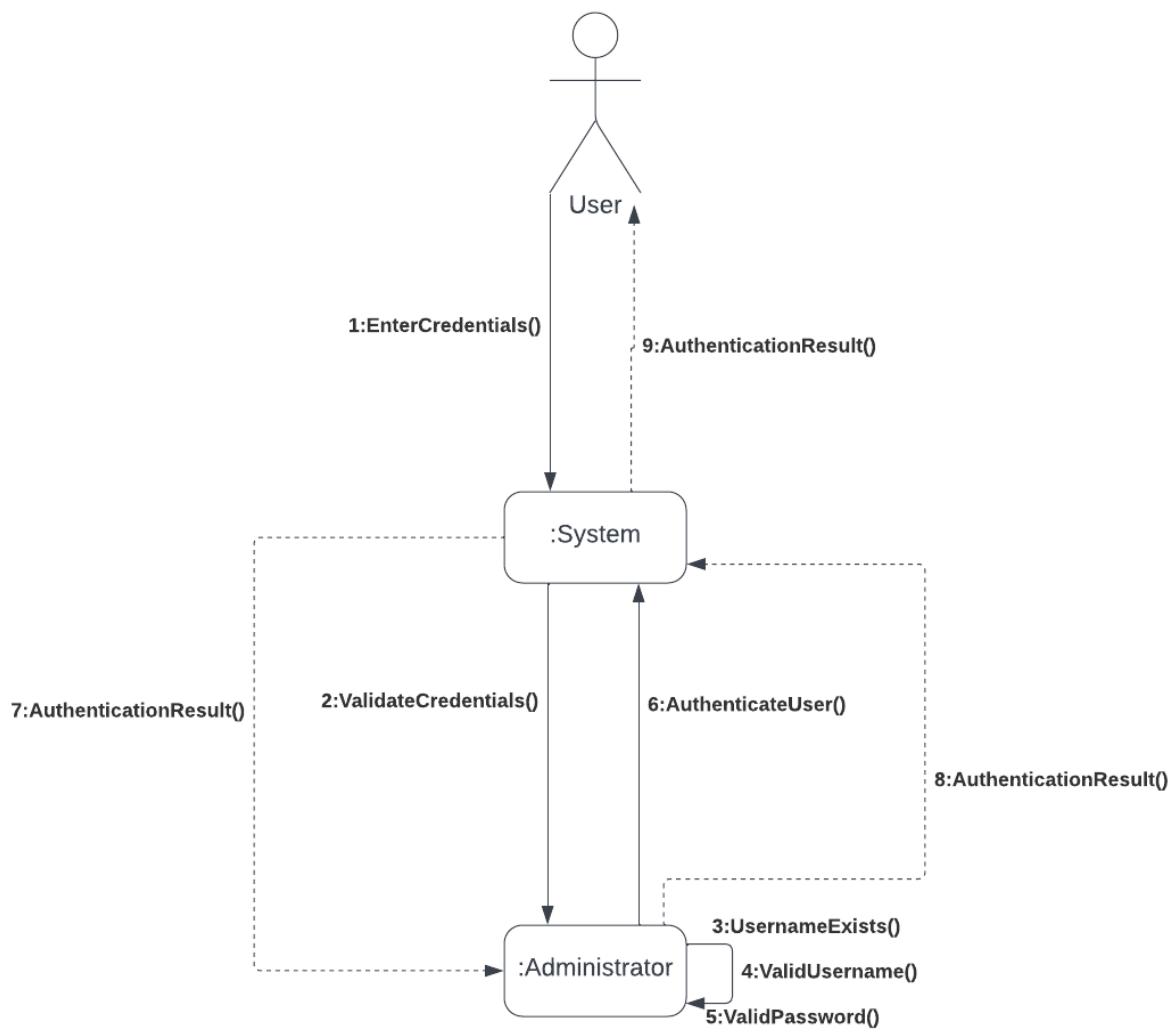


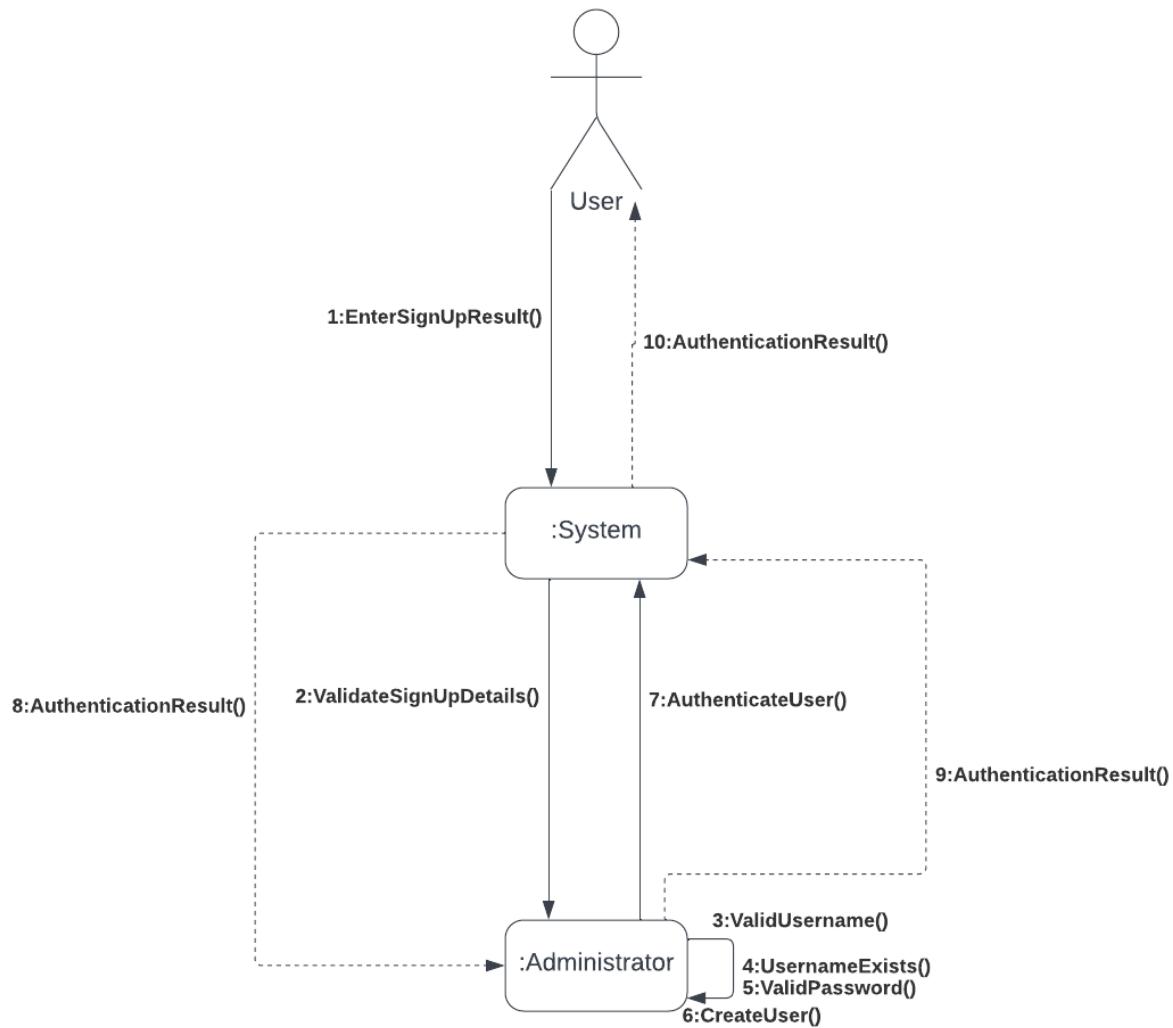


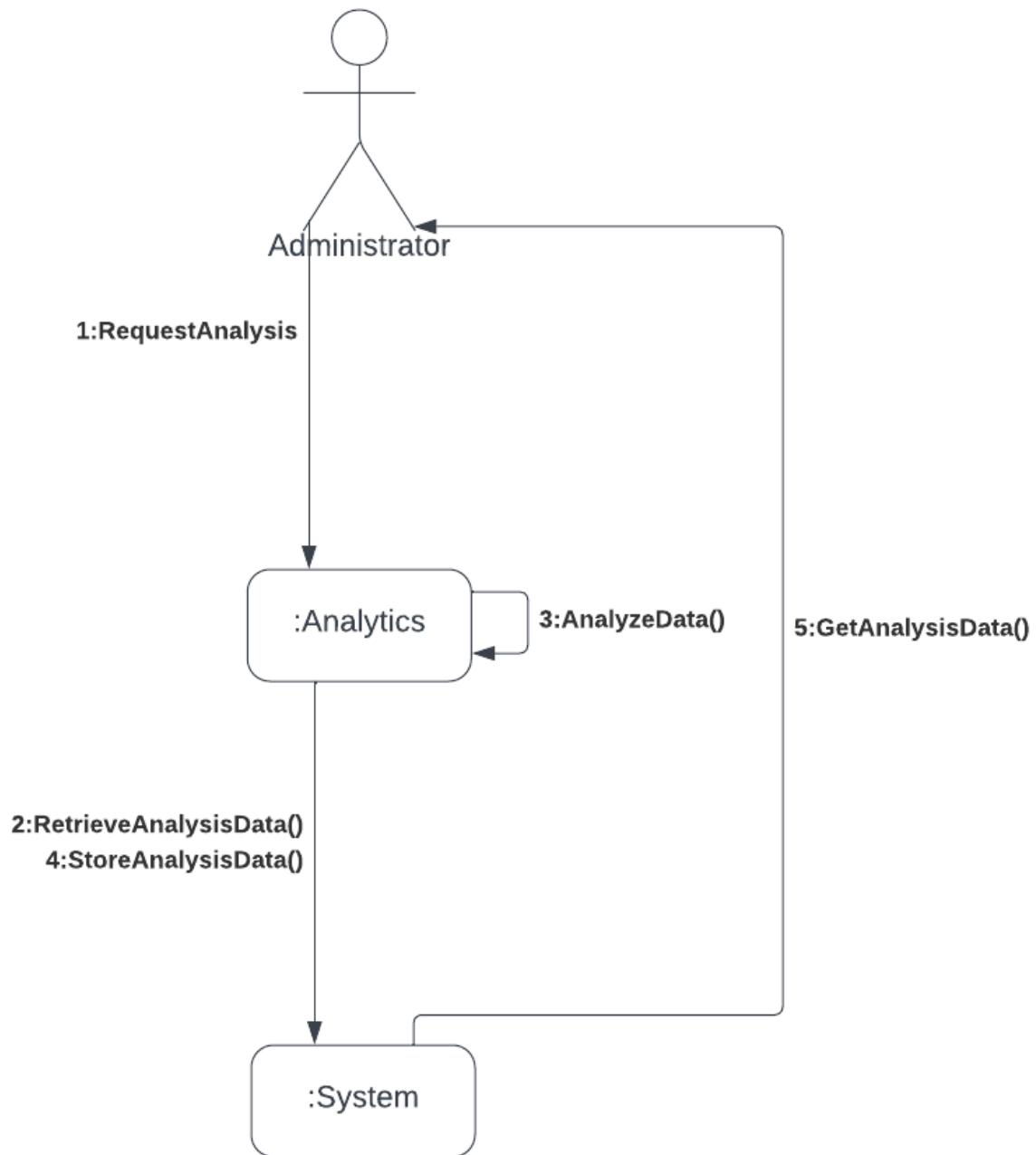


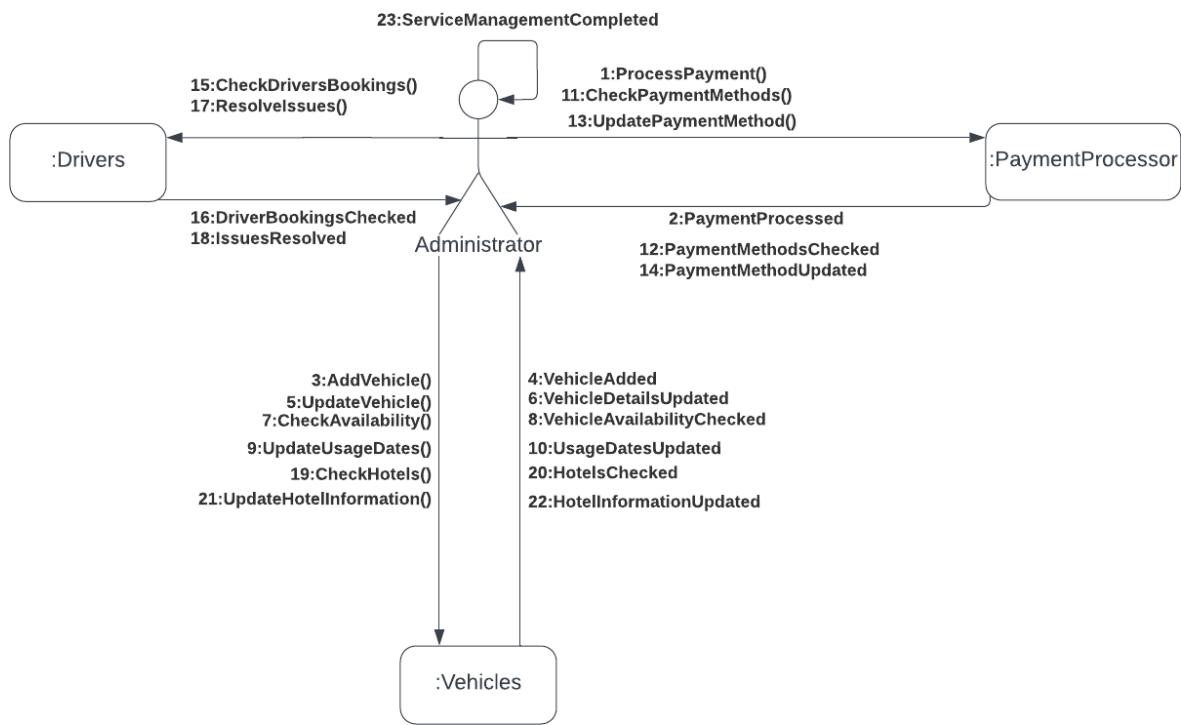


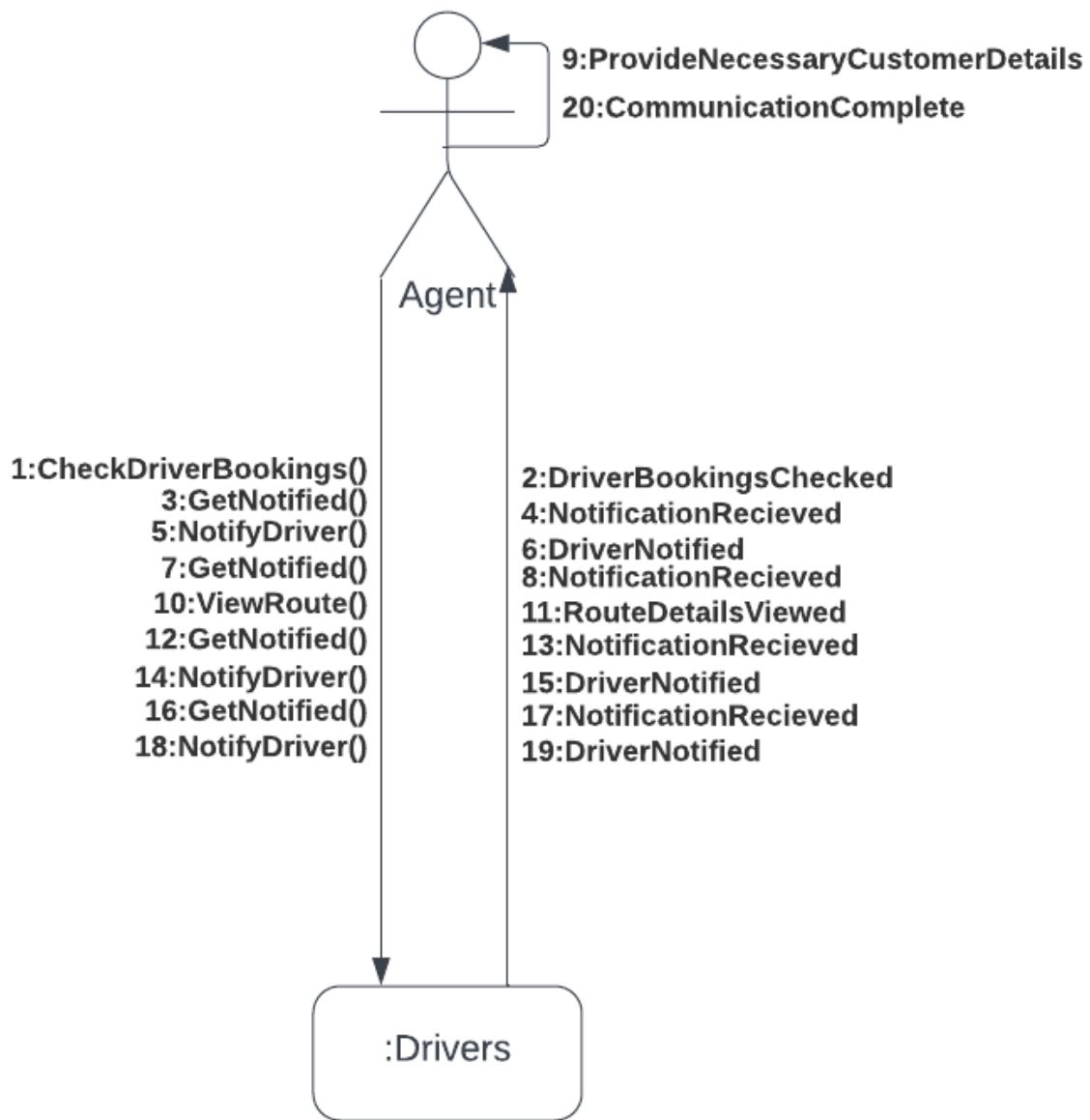


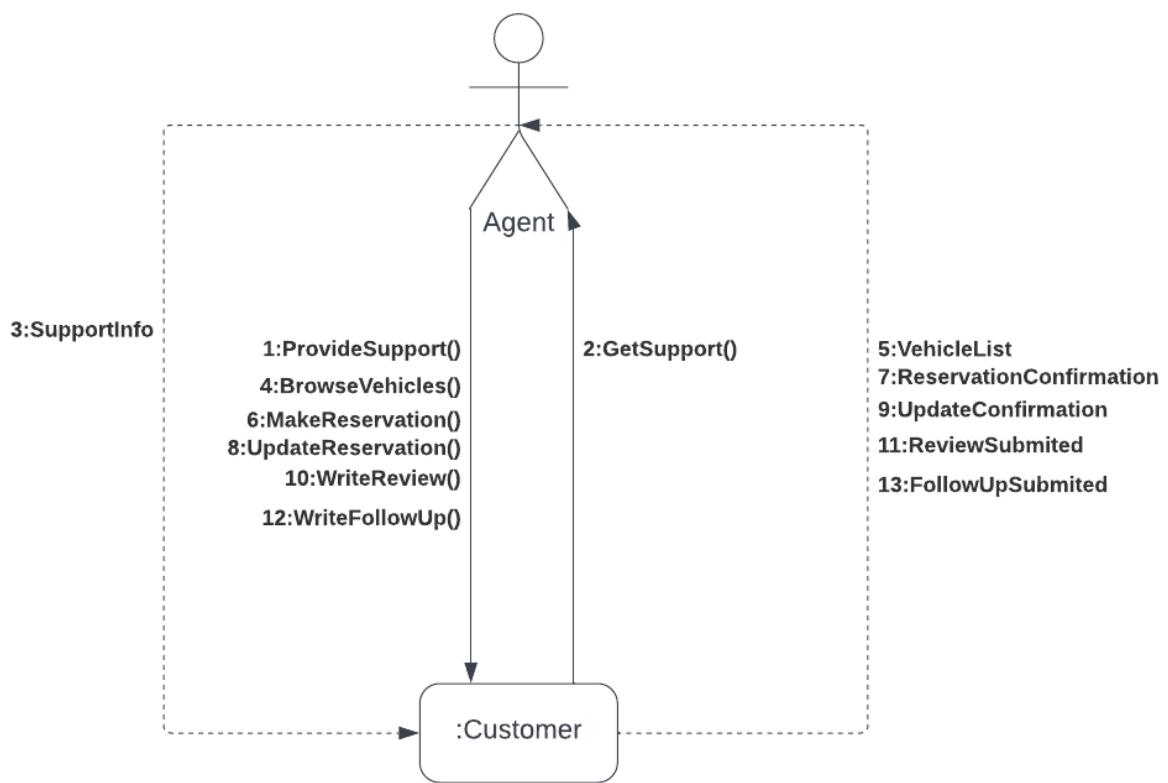
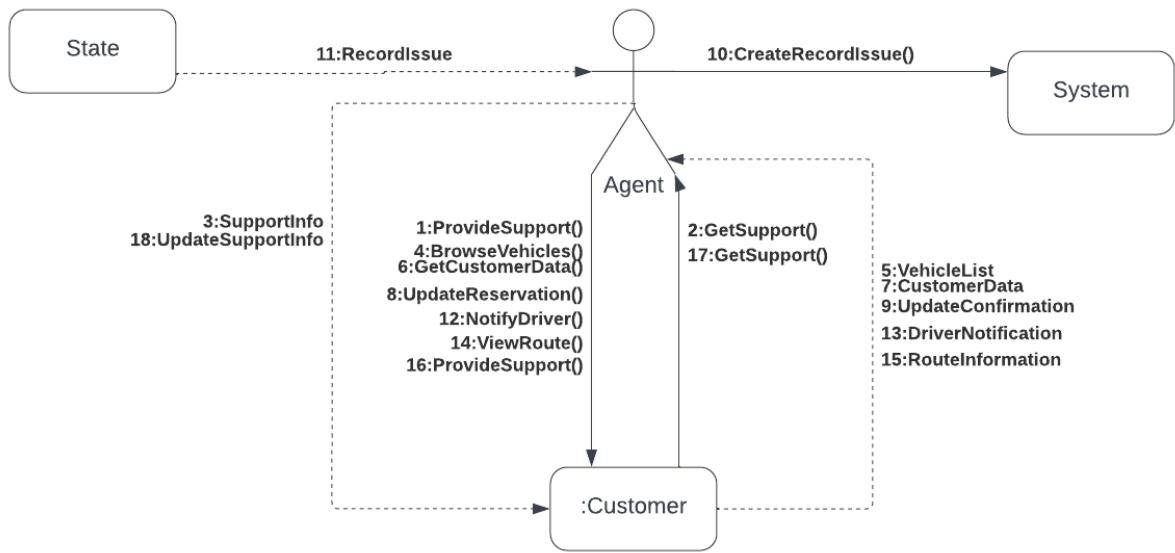


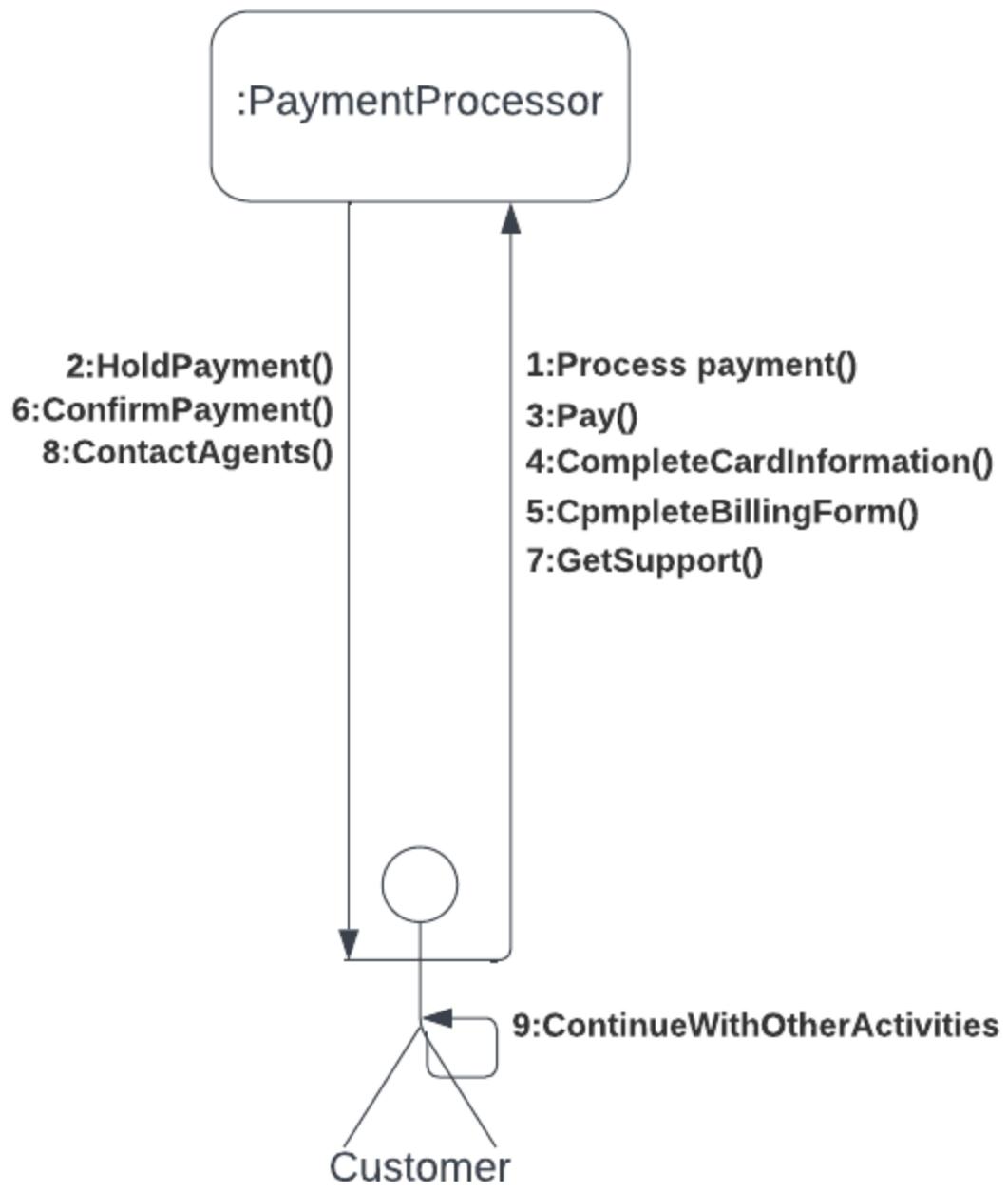




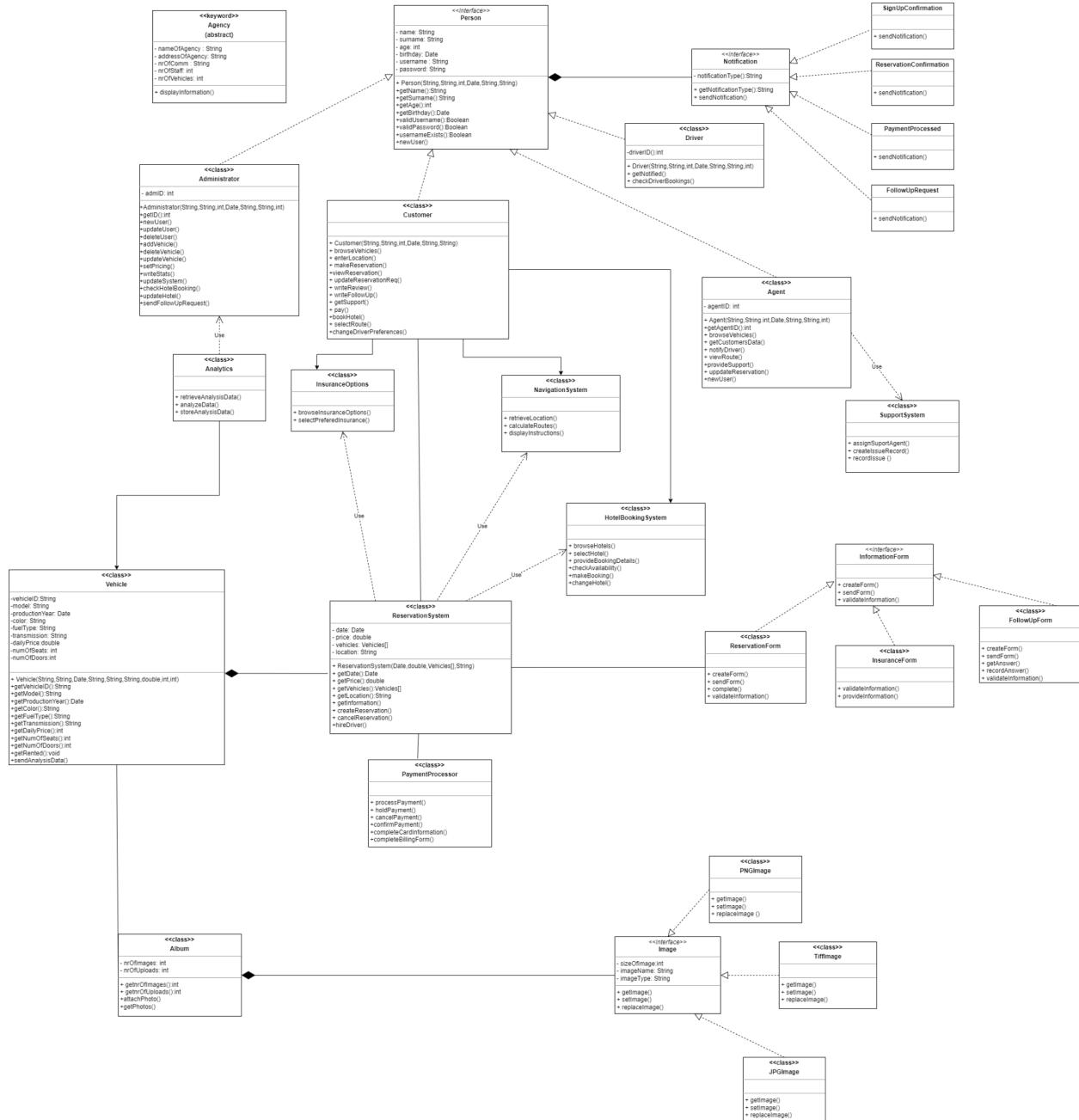




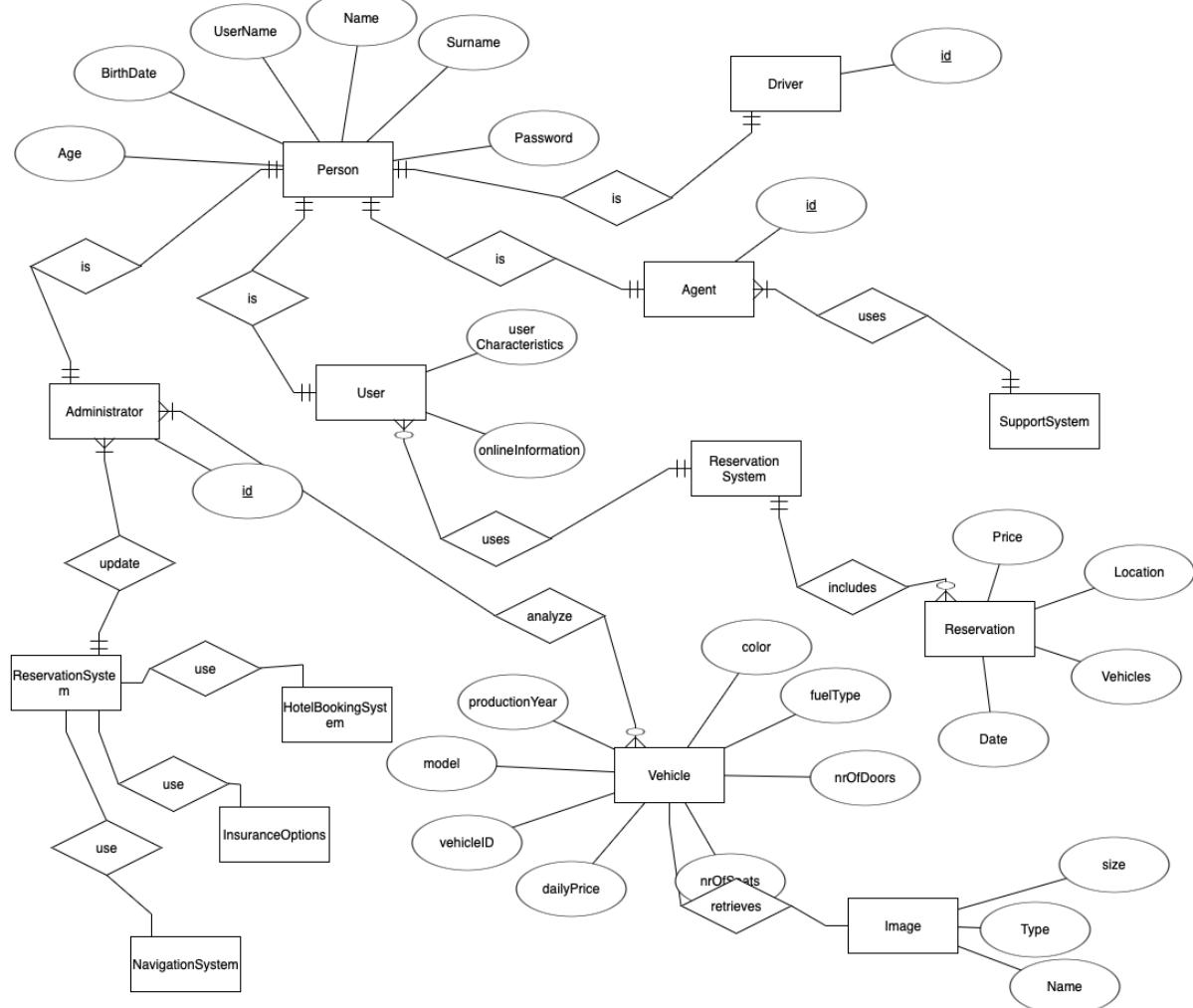




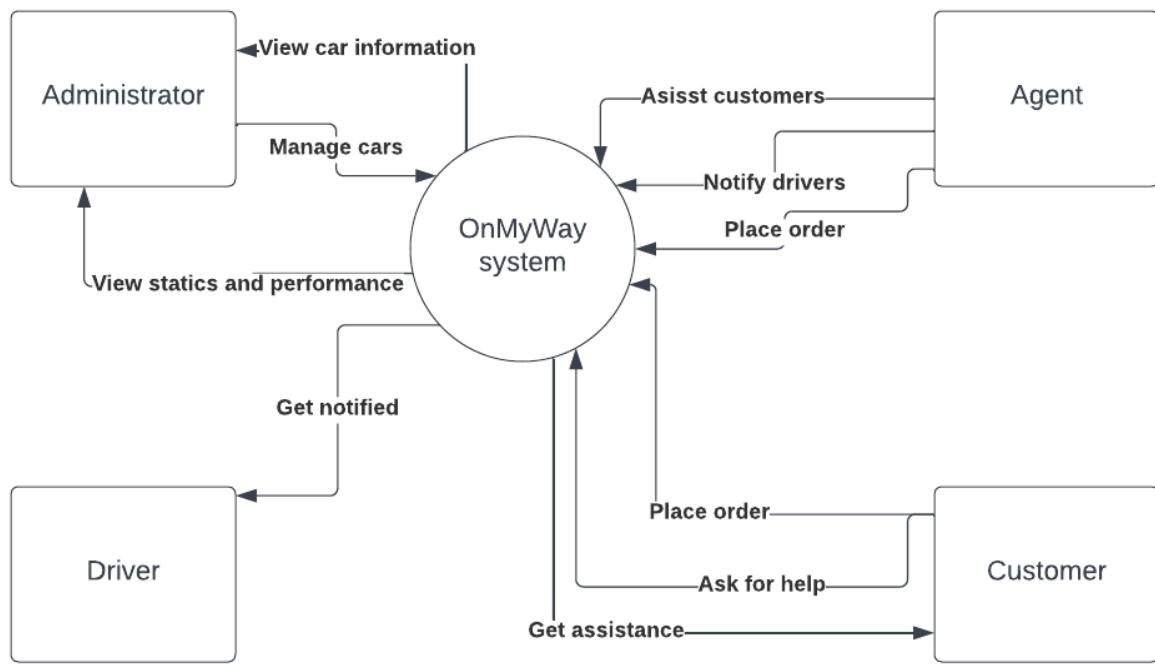
Class Diagram

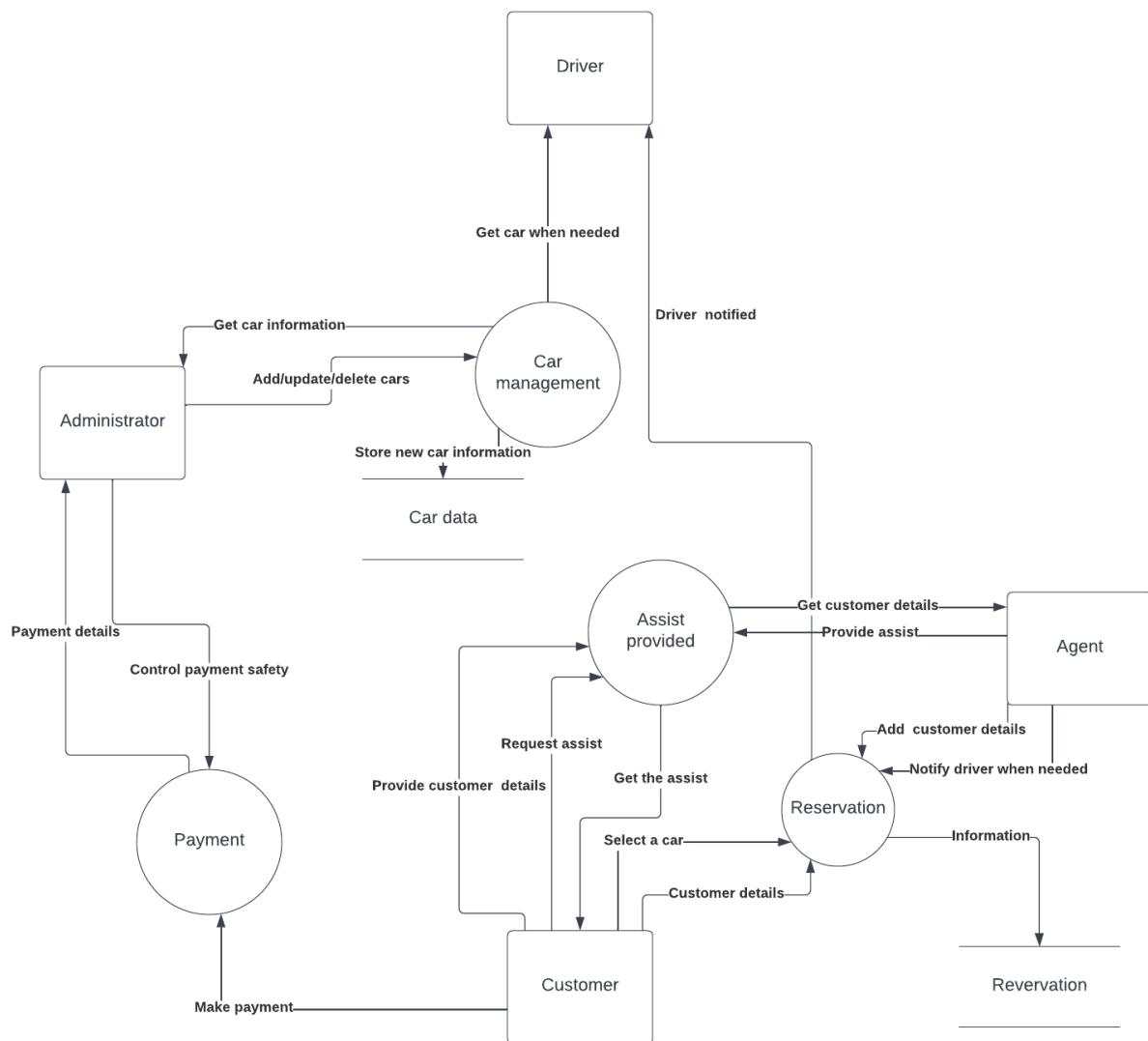


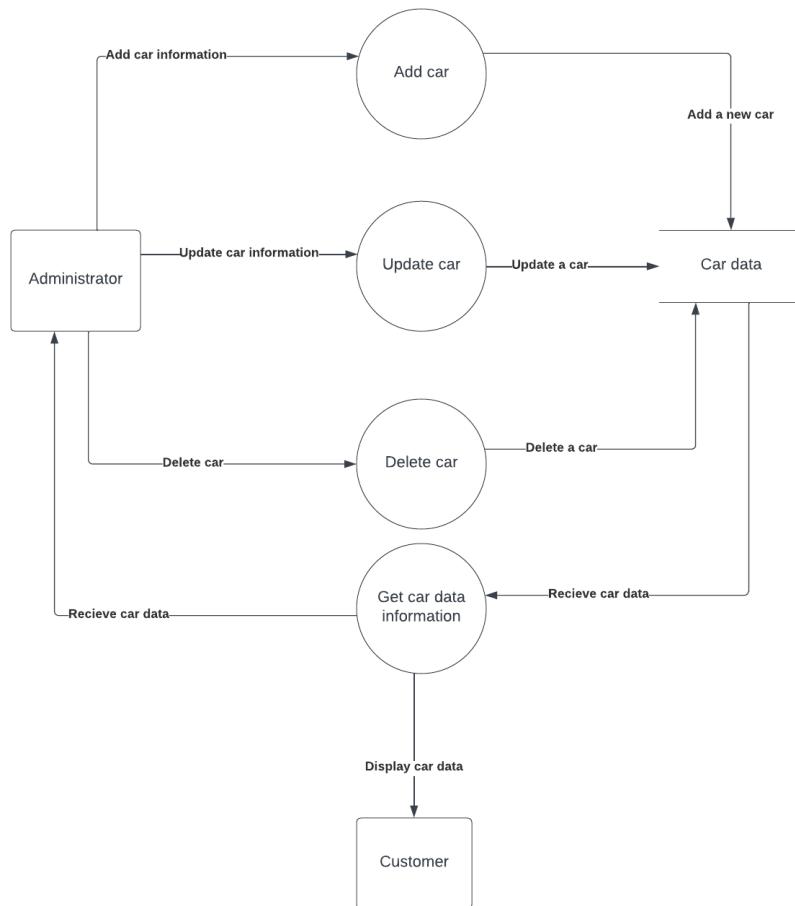
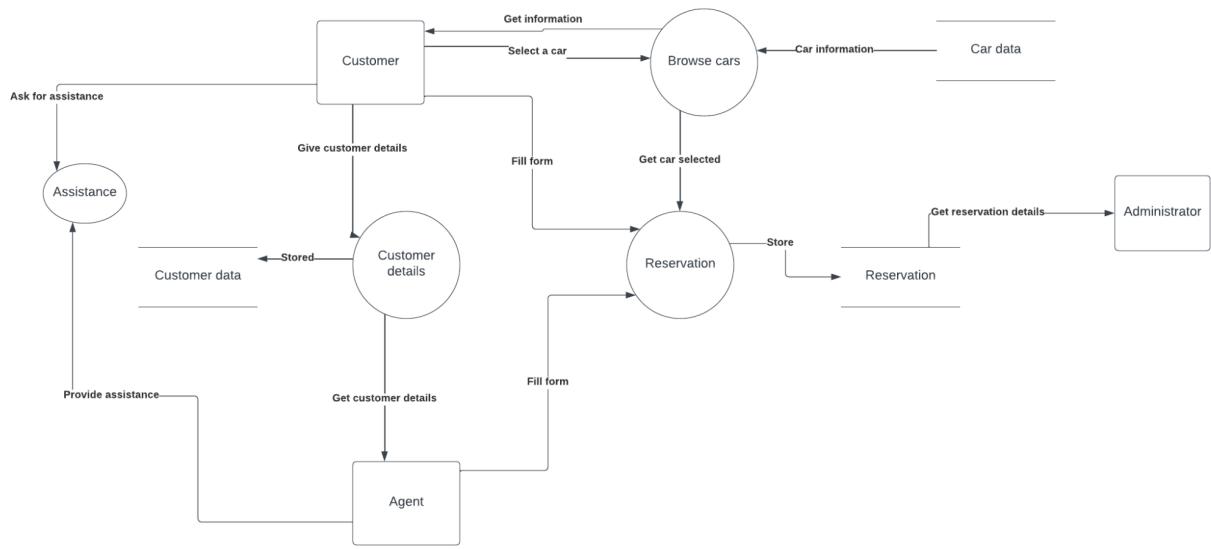
Entity Relationship Diagram



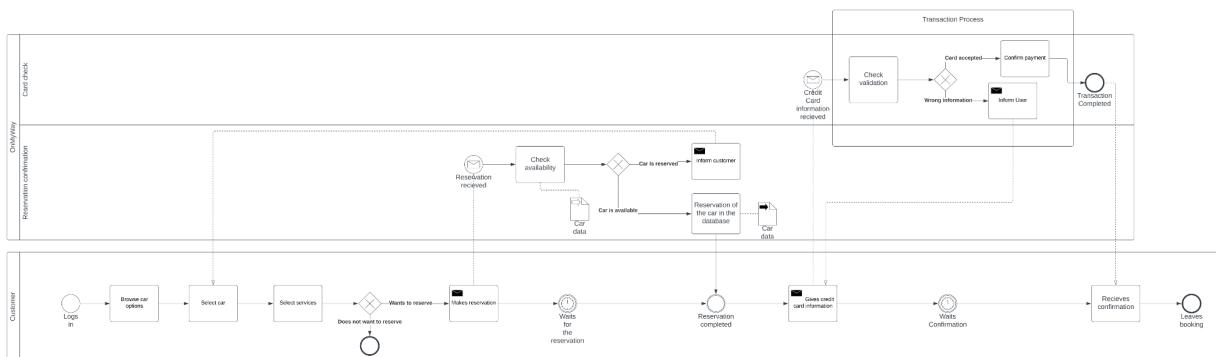
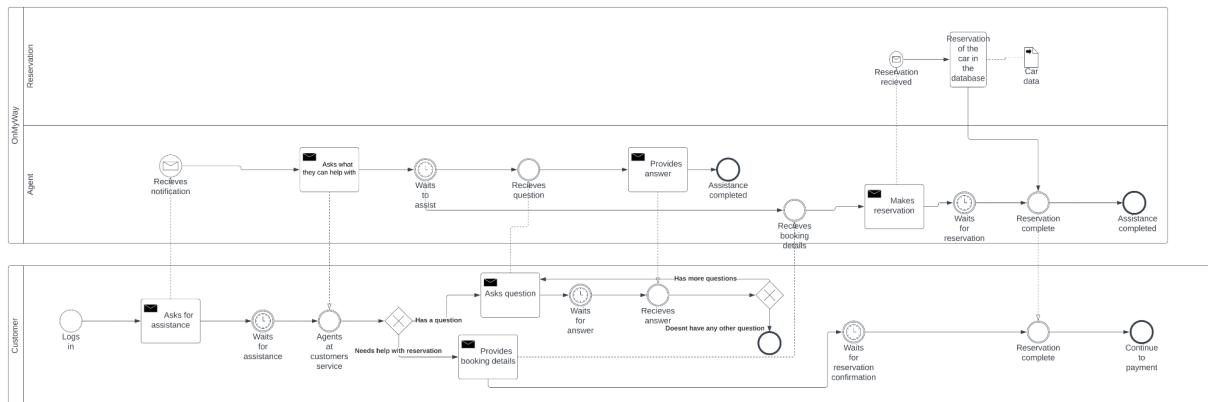
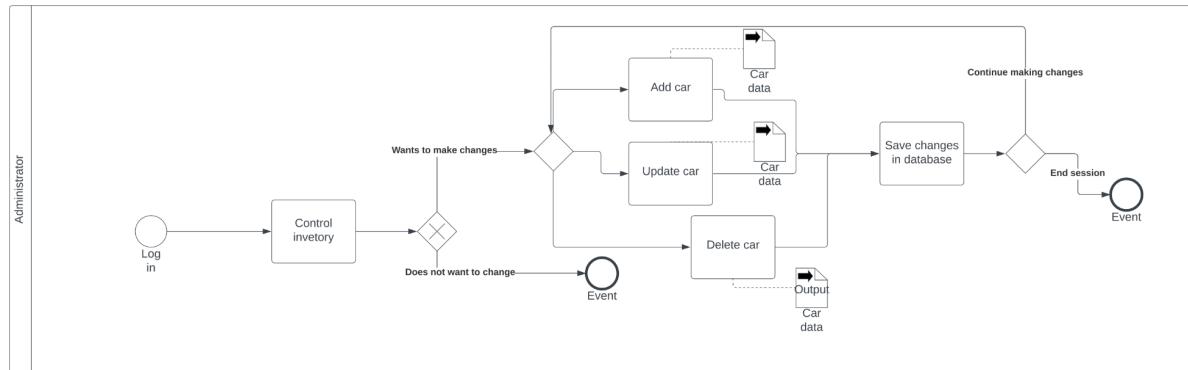
Data Flow Diagrams

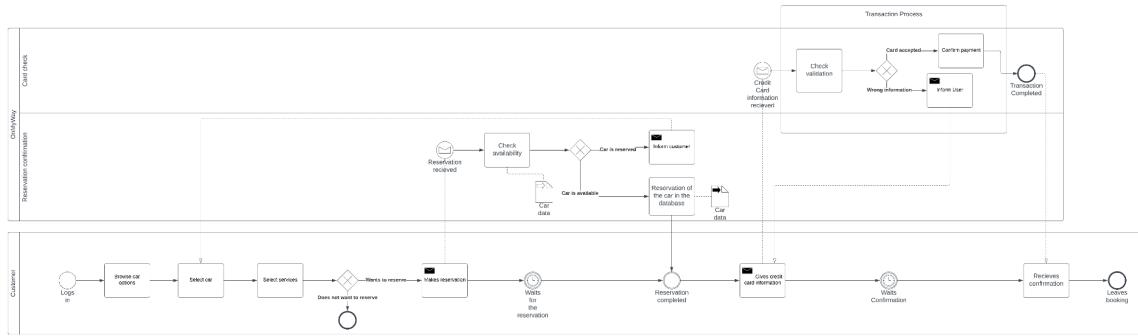






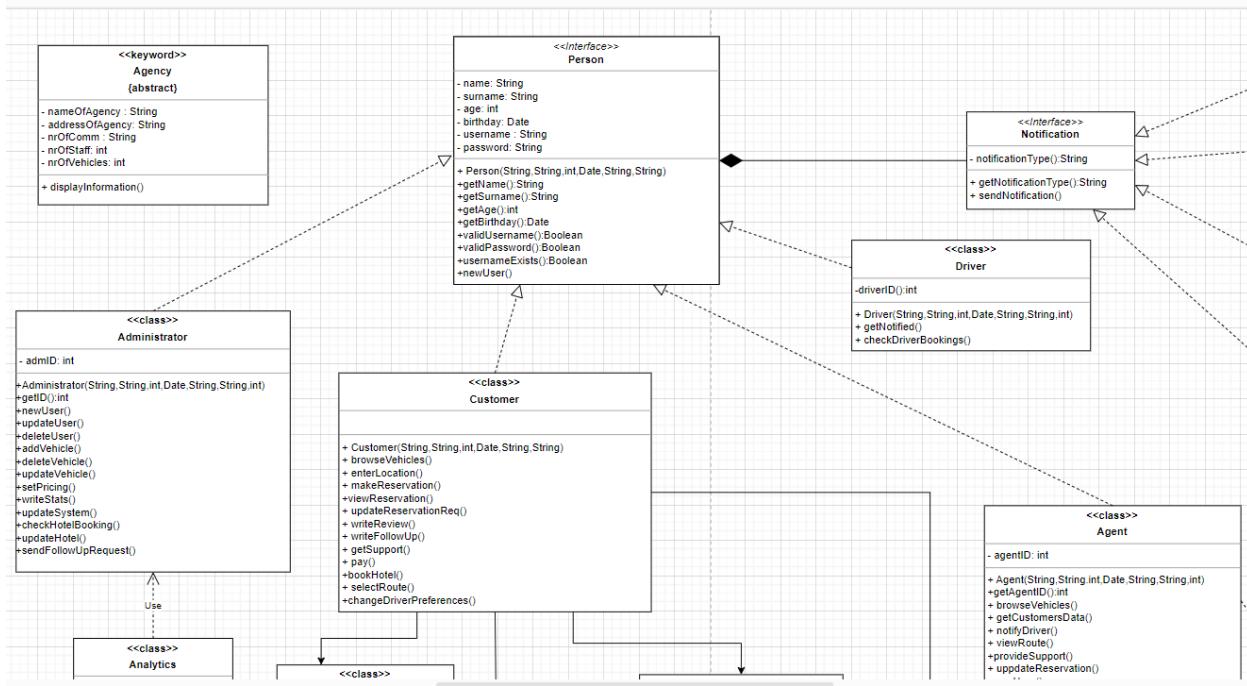
BPMN Diagrams



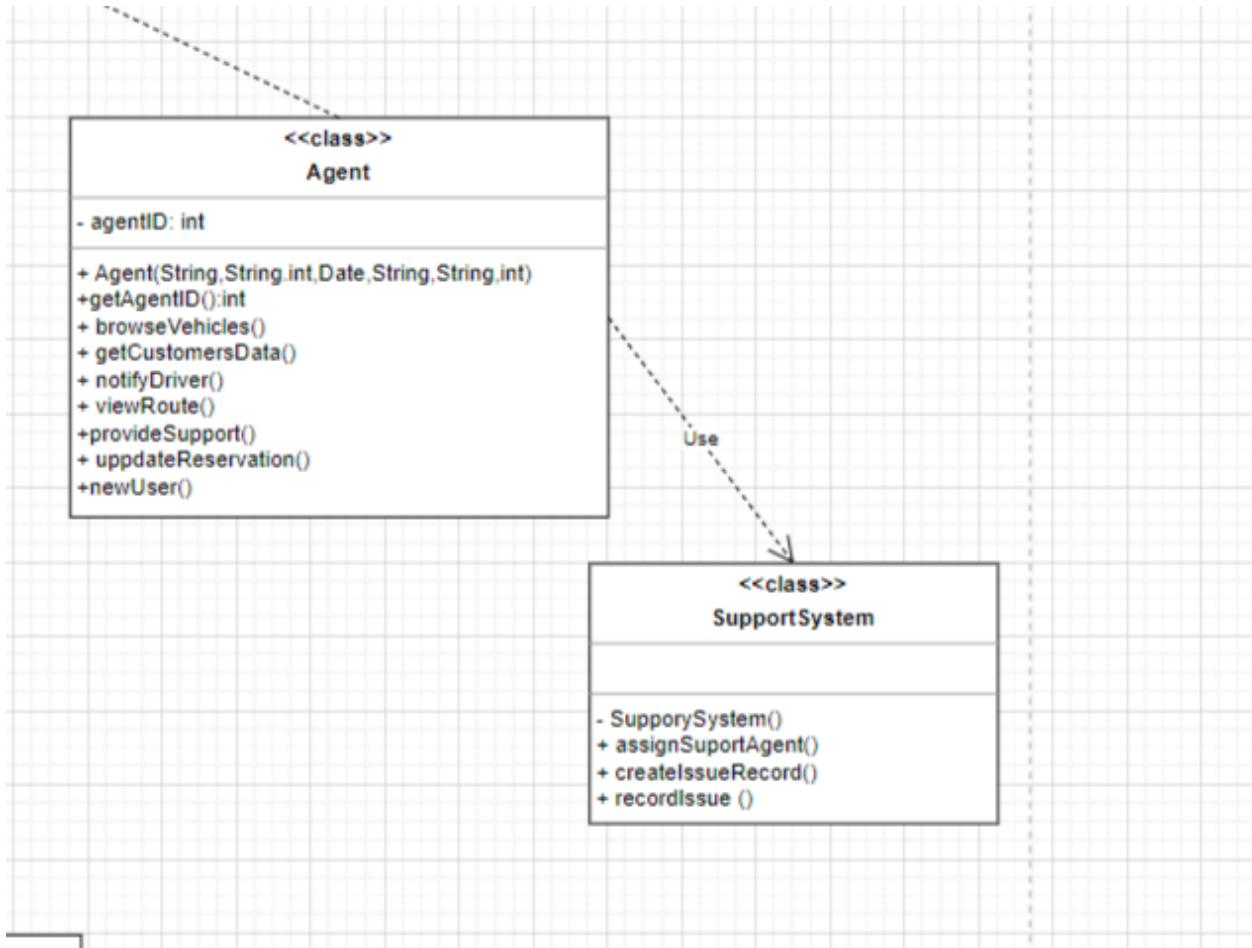


5. Design patterns

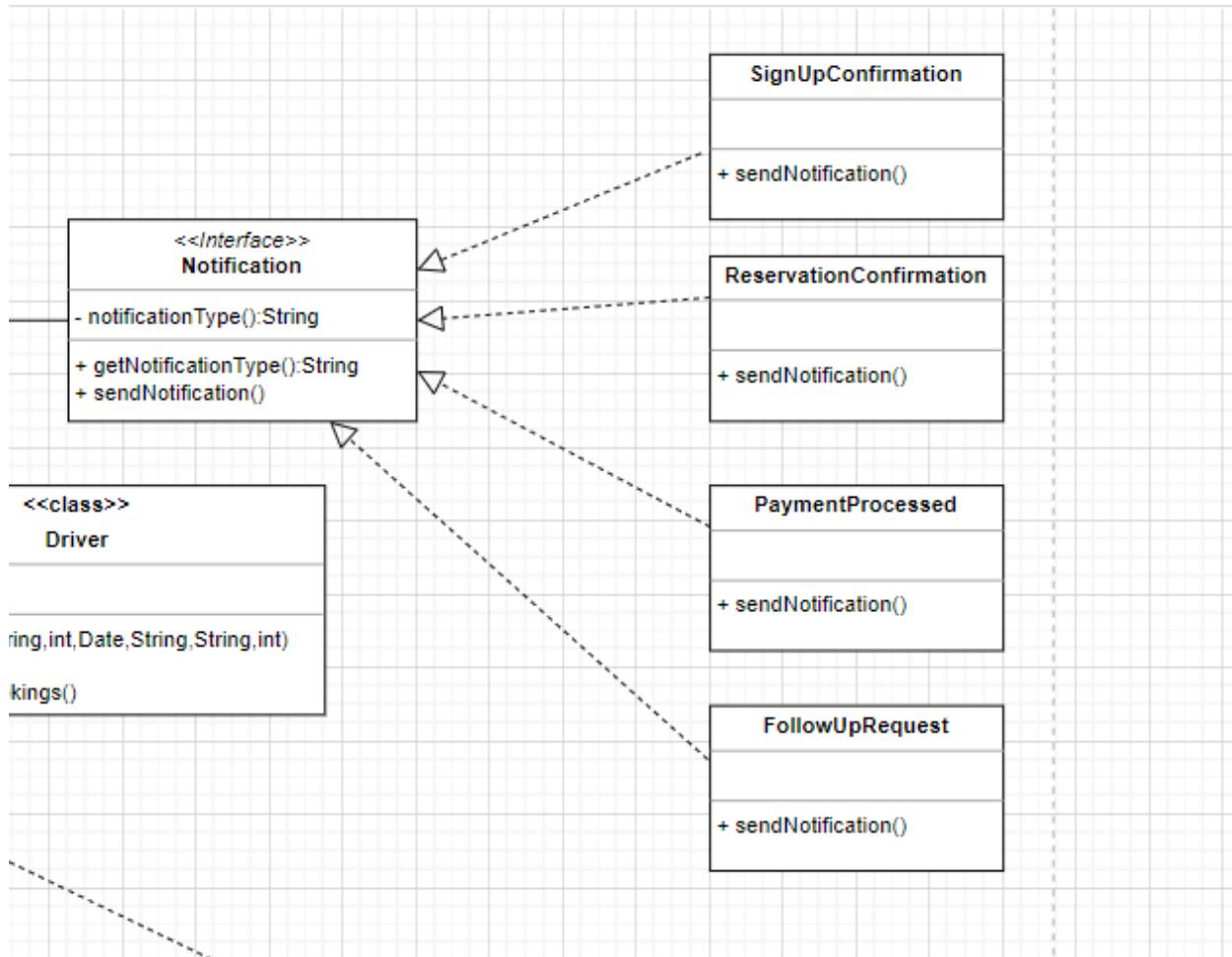
1.FACTORY: We replace direct object building calls with the new operator with calls to a specific factory method when we use this design pattern. In our project, we utilized the factory design pattern to create several sorts of objects of classes with the interface Person. So newUser() is one factory function. The client is aware that all objects are expected to contain the newUser() function, but it is unimportant to the client how it works.



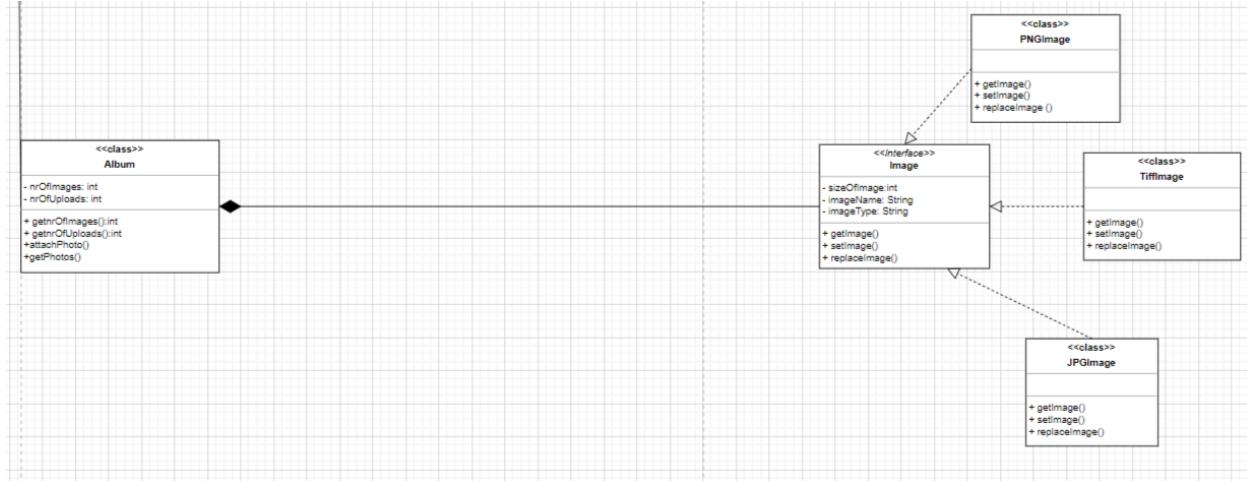
2.SINGLETON: It is a creational design pattern that allows you to ensure that a class only has one instance while still offering a global access point to this instance. We just need to construct the Support System for an agent once in this software. In the case of the SupportSystem class, the design pattern singleton is employed. The SupportSystem object is only generated once when an agent is created.



3.OBSERVER: This is a behavioral design pattern that enables the establishment of a subscription mechanism in which all things watching a certain change will be alerted whenever this event is fired. This was utilized for the Notifications system, which comprises the procedure that notifies a confirmation based on its category.



4.ADAPTER: This design pattern increases the application's quality. Because the photographs scanned must be of high quality in order to properly observe the state of the cars, we must use an adapter that converts images of any kind to PNG, which is a lossless format with the highest quality. It is utilized once it has been transformed.



5.BRIDGE: Using this design pattern, we divided the image class into subclasses that correspond to the image types: jpg, png, and tiff. This design pattern enhances the Image class's functionality.

