

SRS-2 Software Requirement and Analysis

INDUSTRIAL TRANSPORT MANAGEMENT SYSTEM

An efficient transport renting service for business
organization

Software Project Lab -2

Industrial Transport Management System

An efficient transport renting service for business organization

Submitted to

SPL-Coordiators
Institute of Information Technology
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LETTER OF TRANSMITTAL

20th March 2018

SPL-2 Co-Ordinator

Institute of Information Technology,

University of Dhaka

Subject: Submission of SPL-2 SRS term report Industrial Transport Management System

Sir,

With due respect, we are submitting the report on the above topic you assigned to us. In this report, we have given our best effort albeit some shortcomings. We earnestly hope that you would excuse our errors and oblige thereby.

Yours sincerely

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Purpose

This document initially describes the Software Requirement of automated Industrial Transport Management. It contains functional, non-functional and supporting requirements and establishes a requirements baseline for the development of the system.

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Chapter 1: Introduction

1.1 Purpose

This document is the Software Requirements Specification (SRS) for Industrial Transport Management System. It contains detailed functional, non-functional and support requirements. The requirements contained in the SRS are independent, uniquely numbered and organized by topic. The SRS serves as the official means of communicating user requirements to the developer and provides a common reference point for both the developer team and stakeholder community. The SRS will evolve over time as users and developers work together to validate, clarify and expand its contents.

1.2 Intended Audience

This SRS is intended for several audiences, including the customer, as well as the project managers, designers, developers, and testers.

- The customer will use this SRS to verify that the developer team has created a product that is acceptable to the customer.
- The project managers of the developer team will use this SRS to plan milestones and a delivery date and ensure that the developing team is on track during development of the system.
- The designers will use this SRS as a basis for creating the system's design. The designers will continually refer back to this SRS to ensure that the system they are designing will fulfill the customer's needs.
- The developers will use this SRS as a basis for developing the system's functionality.

1.3 CONCLUSION

This analysis helped us to focus on the users who will be using our analysis. This overall document will help each and every person related to this project to have a better idea about the project and their requirements.

Chapter 2: Inception of ITMS

In this chapter, the Inception part of the SRS will be discussed briefly.

2.1 Introduction

Inception is the initial phase of requirements engineering. It defines how a software project gets started and what the scope and nature of the problem to be solved. The goal of the inception phase is to identify concurrent needs and conflicting requirements among the stakeholders of a software project. At project inception, we establish a basic understanding of the problem, the people who want a solution, the nature of the solution that is desired and the effectiveness of preliminary communication and collaborations between the other stakeholders and the software team.

To establish the groundwork, we have worked with the following factors related to the inception phases:

- List of stakeholders
- Recognizing multiple viewpoints
- Working towards collaboration
- Requirements questionnaire

2.1.1 List of Stakeholders

Stakeholder refers to any person or group who will be affected by the system directly or indirectly. Stakeholders include end-users who interact with the system and everyone else in an organization that may be affected by its installation. At inception, a list of people who will contribute input as requirements are elicited. The initial list will grow as stakeholders are contacted because every stakeholder will be asked:

“Whom else do you think I should talk to?”

To identify the stakeholders, we consulted with pharmacy owner and asked him following questions:

- Who is paying for the project?
- Who will be using the project outcomes?
- Who gets to make the decisions about the project (if this is different from the money source)?
- Who has resources I need to get the project done?
- Whose work will my project affect? (During the project and also once the project is completed).

Stakeholders

Stakeholders are those people who get affected by the overall System directly or indirectly. In this project we initially find out the stakeholders of this project. Stakeholders are:

1. Vehicle Owner
2. Vehicle Borrower (Client)

2.1.2 Multiple Viewpoints

Owner's Viewpoints:

- Suggestion on vehicle selection according to start place, destination place, date of journey and vehicle's weight carrying capability.
- Notification after completion of booking to owner and customer.
- Capability of tracking vehicle for truck owners and customers.
- Should contain messaging system for communication.
- Cost policy according to journey length and seasons.
- May have features to renew account and vehicles.
- Account recovery
- Capability of storing trip history and details for every single trip.

Client's Viewpoints:

- Capability of storing trip history and details for every single trip.
- Must contain features to provide feedback.
- Must contain support to handle emergency and accidental situation through messaging.
- May have features and technical support if a customer cancels a trip.
- Should have filters to select destination and vehicle according to journey date and weight capability of truck.
- Notification after completion of booking to owner and customer.

2.1.3 Working Towards Collaboration

Common Viewpoints:

- Capability of storing trip history and details for every single trip.
- Account recovery
- Notification after completion of booking to owner and customer.

Conflicting Viewpoints:

- May have features and technical support if a customer cancels a trip.

Final Requirements:

- Suggestion on vehicle selection according to start place, destination place, date of journey and vehicle's weight carrying capability.
- Notification after completion of booking to owner and customer.
- Capability of tracking vehicle for truck owners and customers.
- Should contain messaging system for communication.
- Cost policy according to journey length and seasons.
- May have features to renew account and vehicles.
- Account recovery
- Capability of storing trip history and details for every single trip.
- Must contain features to provide feedback.
- Must contain support to handle emergency and accidental situation through messaging.
- Should have filters to select destination and vehicle according to journey date and weight capability of truck.

2.1.4 Requirements Questionnaire

We asked the stakeholders some context free questions to understand the project's overall performances and the goals of the project. Those context free questions have been added to section 2.1.1. These questions have helped us to identify the stakeholders. Then we asked our next question.

2.2 Conclusion

The Inception phase helped us to establish basic understanding about the Industrial Management System, identify the stakeholders who will be benefited if this system becomes automated, define the nature of the system and the tasks done by the system, and establish a preliminary communication with our stakeholders.

Chapter 3: Elicitation of ITMS

3.1 Introduction:

Elicitation is a task that helps the customer to define what is required. To complete the elicitation step, we face many problems like problems of scope, problems of volatility and problems of understanding. However, this is not an easy task. To help overcome these problems, we have worked with the Eliciting requirements activity in an organized and systematic manner.

3.2 Eliciting Requirements

Unlike inception where Q&A (Question and Answer) approach is used, elicitation makes use of a requirements elicitation format that combines the elements of problem solving, elaboration, negotiation, and specification. It requires the cooperation of a group of end-users and developers to elicit requirements. To elicit requirements, we completed following three works.

1. Collaborative Requirements Gathering
2. Quality Function Deployment
3. Usage Scenario

3.2.1 Collaborative Requirements Gathering

Many different approaches to collaborative requirements gathering have been proposed. Each makes use of a slightly different scenario. We completed the following steps to do it:

- The meetings were conducted with Program Chair. He was questioned about their requirements and expectations from the Result Analysis Tool.

- He was asked about the problems he is facing with the current manual system. We also inquired regarding the efficiency of the current process. At last we selected our final requirement list from the meetings.

3.2.2 Quality Function Deployment

Quality Function Deployment (QFD) is a quality management technique that translates the needs of the customer into technical requirement for software. QFD's main aim is understanding that what is valuable to the customer and then deploys these values throughout the engineering process.

There are mainly three types of requirements as QFD:

Normal Requirements: Normal requirements include the objectives and goals that are stated during meeting with customer for a product or system. We found some such objectives and goals during requirement analysis in inception step:

- Suggestion on vehicle selection according to source place, destination place, date of journey and vehicle's weight carrying capability.
- Notification after completion of booking to administrator, owner and customer.
- Account recovery of truck owners and customers.
- Capability of tracking vehicle for truck owners and customers.
- Capability of storing trip history and details for every single trip.

Expected Requirement: These requirements may not have described by the users but they are so fundamental that the absence of them will cause significant dissatisfaction.

- Have filters to select destination and vehicle according to journey date and weight capability of truck.
- Cost policy according to journey length and seasons.
- Must have features to rank vehicles for customers.
- Have features to renew account and vehicles.
- Must have features and technical support if a customer cancels a trip.

Exciting Requirement: These requirements are beyond customers expectation but proved to be very exciting.

- Contains messaging system for communication.
- Contains features to provide feedback

Sub-System: Authentication

Users (Vehicle Owner, Customer) login to the system in order to interact with the system. When user login to the system, users must provide a username (only characters included in the username) and password (must be greater than 5 characters and less than 12 characters contains number and alphabets). The system checks the username and password to the database. If username and password match, users will eligible for their task. The system shows the content page to the users. When users enter wrong username or password, the system will show wrong password or username message. Users can try maximum three unsuccessful chances to log in to the system. In case of users want to try for the fourth time to log in to the system, the system will block users for a certain time (for designed system, it will be 5 minutes) and will try after that time passed. If users forget his/her password, users can change password by forget-password option. In this time users need to enter a username, mobile number, email address. Users select an option (via voice call, via SMS, via email) by which he/she gets the verification code. If users enter the required information successfully, system will send the verification code to the users by the selected option which is chosen by the users. Users enter the verification code successfully. Users can set new password. System store the new password in database. After that users can login to the system. If users fail to enter the correct verification code. System shows message of wrong verification code and an option of send new verification code. Whereas users select "send new verification code", system sends new verification code to the users by the selected option (via voice call, via SMS, via email). System provides maximum three-time chances to the users to send new verification code. Initially users have no username and password to login to the system. For this reason, users need to sign up the system. For signing up to the system, Users have to provide some information (first name/company Name, mobile-number, email, password and date of birth (for customer) and address. After signing up to the system a verification code is sent to the users and users enter the verification code and system verifies the user profile and store it to the database for the next use. Users

can edit their profile. For editing user's profile, they need to login to the system. When users want to leave from the system, they need to log out the system.

Sub-system: Search

There are two types of search. First one is searching of vehicles available to the system. Client can search a vehicle by date, name, capacity, model, location. Available vehicles on a particular date or according to transportation capability so that he/she can schedule a vehicle later. A client can also search for trips that are already scheduled by him/her.

Sub-system: Vehicle maintenance

As a vehicle owner a person will be able to add, renew, remove a vehicle into the system. After logging in into the system as a vehicle owner and to add a new vehicle he/she must enter all necessary details about the vehicle to be added such as license no, chassis no, capability, add date, expire date, journey from, journey to etc. To remove a vehicle, a vehicle owner must visit the page which contains all vehicles of his/her, after selecting a vehicle to be removed the owner must click a button named confirm removed. To renew a vehicle an owner must visit the web page containing all expired vehicles of his/her. The owner must select a vehicle and choose a new expire date to renew the selected vehicle. To track a vehicle which are on the way to serve clients the owner selects a vehicle and position of the vehicle will showed up in a new window.

Sub-system: Booking

Customers can book any vehicles that are included in the system. The customers go to the booking page, write journey date, a journey starting place, Vehicle's weight holding capability and click to the search button. Customers can also filter the search by vehicle's model, company name. The system will provide bidding option and instant booking option for vehicles. In case of the customer are agreed with the book price, they can book vehicle instantly. Otherwise the customer with start from a fixed lower price than the booking price for bidding. After a certain time before the

journey date of the vehicles, the bidder with the highest price will get the booking for that particular vehicle. The user can not cancel the booking after the confirmation is complete or bidding is running. In case of canceling the booking, the customer must pay a damage fee 80% of booking fee in case of any problem considering customer purposes, the customer must pay damage money to the truck owner which will be under terms and condition. The term and condition will be added to the system and will be shown before booking procedure begins. After the booking is completed, the system will show a pop-up message and an email will be sent to the customers. The cost policy will be based on terms and condition of vehicle owner's opinions and business policy alongside the government's and authority's policy.

Sub-system: Notification Management

After successful booking, a notification will be sent to the customer and vehicle's owner with payment details. On weekly basis, a transaction will be sent to the customers and vehicle owners. A history will be preserved of every transaction as well.

Sub-system: Communication

Although a client will be notified with all necessary details of a booking but he/she may require extra information to be served which is also true for an owner as well so it can be assumed that existence of a communication system will take the entire management system further level. To communicate a new window will be showed up with all information of the owner along with a chat option. Then clients can continue communication with the owner. The procedure is also true for an owner as well but instead of using owner id the owner must use id of client to whom he wants to communicate.

Sub-system: Confirmation

Every client id, owner id and vehicle must be certified and confirmed by the administrator of the system. A person can use the system after being identified by the administrator. So, the confirmation sub-system can be divided into two parts, first is user (both client and owner) confirmation and second is vehicle confirmation. To confirm a person who wants to be added into the system as a user the administrator must visit the page with pending requests and check validity of information provided by the person who requested and click the confirm button. Same procedure goes as well for vehicles. The administrator must check all provided documents of a new vehicle that an owner wants to add for certain period.

Chapter 4: Scenario Based Model

4.1 Introduction

In this model the system is described from the user's point of view. As this is the first model, it serves as input for creation of other modeling elements.

4.2 Use Case Scenario

As requirements are gathered, an overall vision of system functions and features begins to materialize. To understand how these functions and features will be used by different classes of end users, developers and users create a set of scenarios, called use case scenario, that identify a thread of usage for the system to be constructed.

Use Case:

Use case diagrams are usually referred to as behavior diagrams used to describe a set of actions that some system or sub-systems can perform in collaboration with one or more external users of the system. Each use case should provide some observable and valuable result to the actors or other stakeholders of the system.

The first step in writing a use case is to define the set of actors that will be involved in the story. Actors represent the roles that people play as the system operators. Every user has one or more goals when using system.

Primary Actor:

Primary actors interact directly to the system function to achieve a goal. They work directly and frequently with the software.

Secondary Actor:

Secondary actors support the system so that primary actors can do their work. They either produce or consume information.

Use Case Diagram:

Description of Use Case Diagram Level-0:

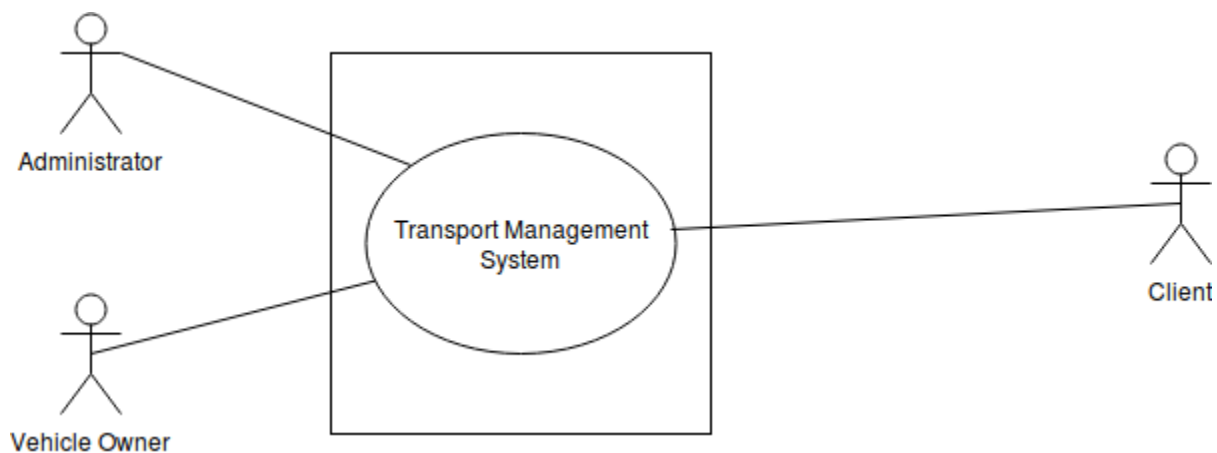


Figure 1: Level-0 Use Case Diagram

Primary actor: Administrator, Vehicle owner, Client.

Goal in Context: To set the users to use the pharmacy management system.

Precondition: Users has opened the system for using.

Post condition: Users will successfully use the system.

There are six sub-system in this transport management system. They are:

- Authentication.
- Search.
- Vehicle maintenance
- Plan trip
- Communication

- Administrator activity

Description of Use Case Diagram Level-1:

Authentication

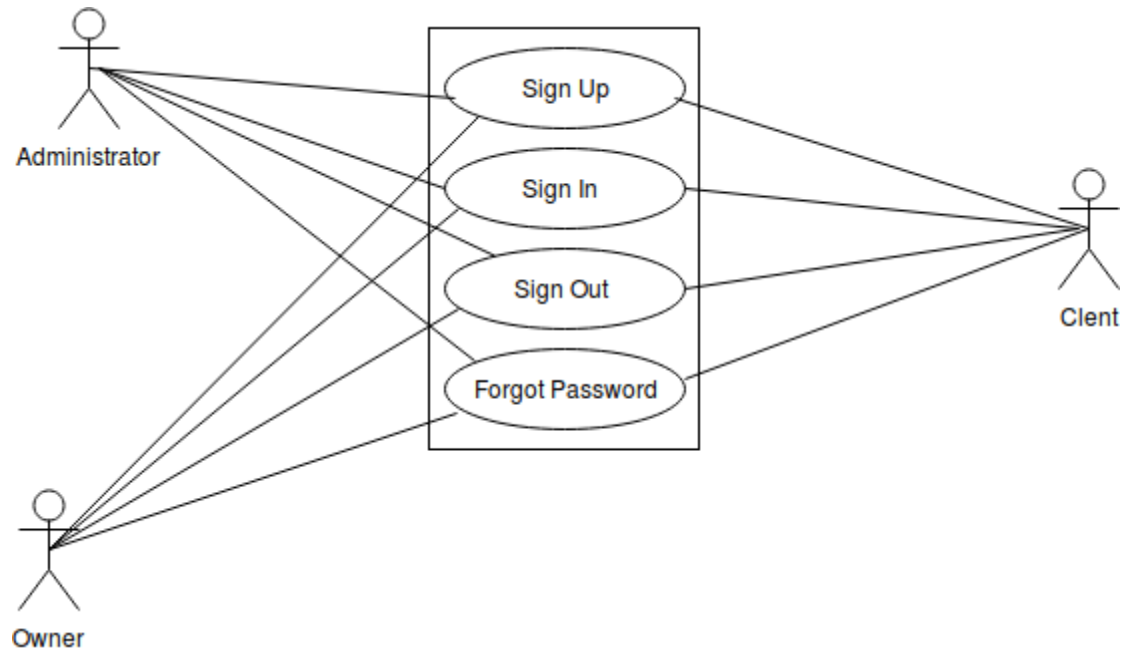


Figure 2: Level-1 Use Case Diagram Subsystem

Authentication system is divided into four sub-systems.

- Sign up
- Sign in
- Sign out
- Forgot password

Use Case: Sign Up

Primary Actors: Vehicle owner, Client.

Goal in context: To register in the system

Precondition:

- System has been programmed for add new user in database
- System has interface for registration

Scenario:

- Visit the register page
- Input required information
- Check availability for user name and check validity of Password
- Authentication and Robot checking
- E-mail sent to user e-mail address
- User confirm from his/ her e-mail address
- Confirmation message showed

Exception:

- User in not authorized for registration
- Ambiguous Input
- Authentication Fail

Action-reply:

Action: Enter user name, mobile number, email-address and new password.

Reply: if all the input is correct then go to the next step.

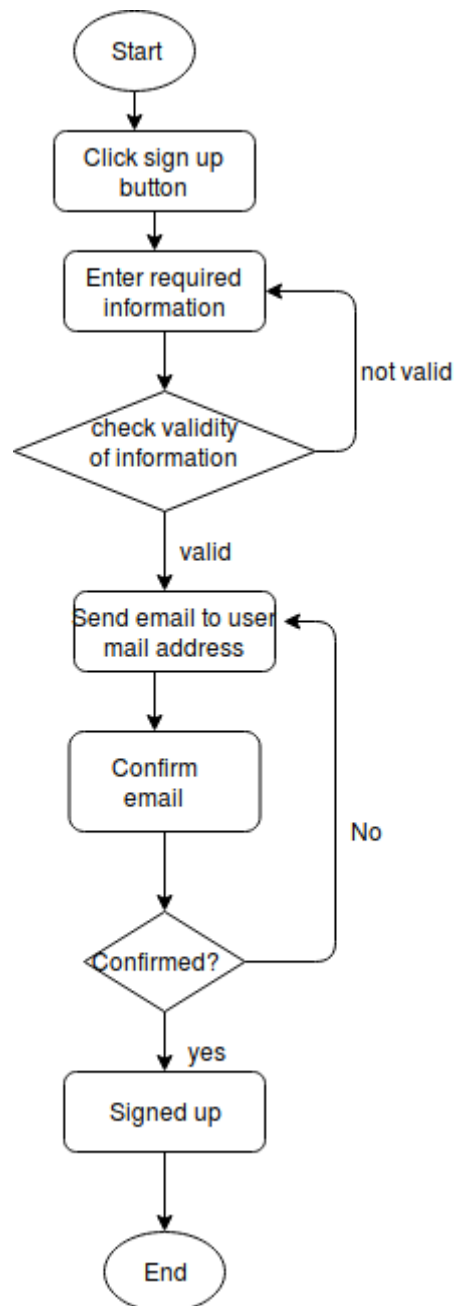


Figure 3: Activity Diagram of Sign Up

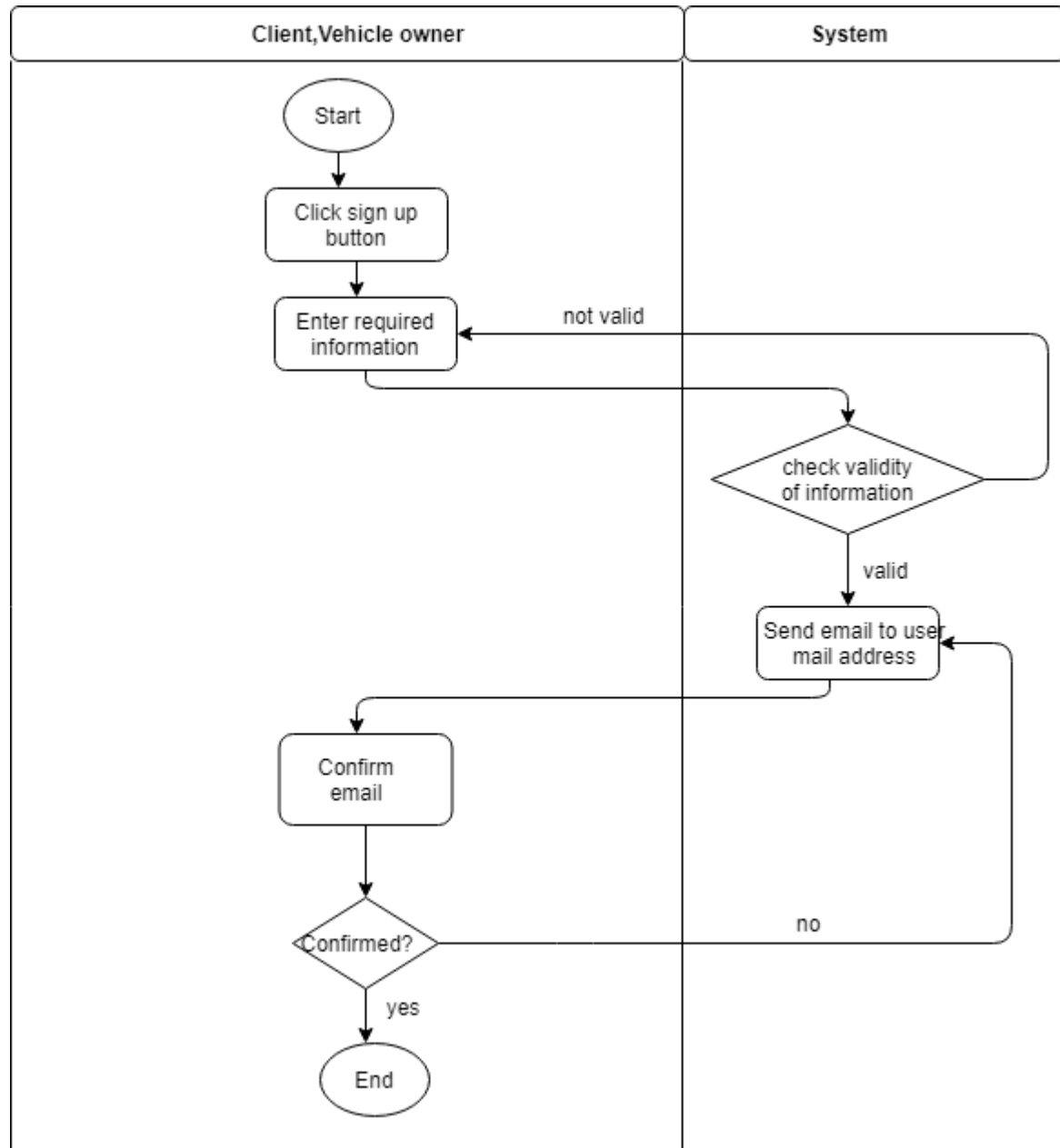


Figure 4: Swim-Lane Diagram of Sign Up

Use Case: Sign In

Primary Actors: Administrator, Client, Owner

Goal in context: To enter the system

Precondition: Must be registered

Scenario:

- Visit the login page
- Input User name and Password
- Proceed to the next activity

Exception:

- Unrecognized Username
- Wrong Password
- User is blocked

Action-reply

Action: User provides valid user name and password.

Reply: Allow user to enter into the system.

Action: User provides wrong user name and password.

Reply: Show a message to provide valid user name and password.

Action: User provided user name and password not found in system's database.

Reply: Allow user to register into the system.

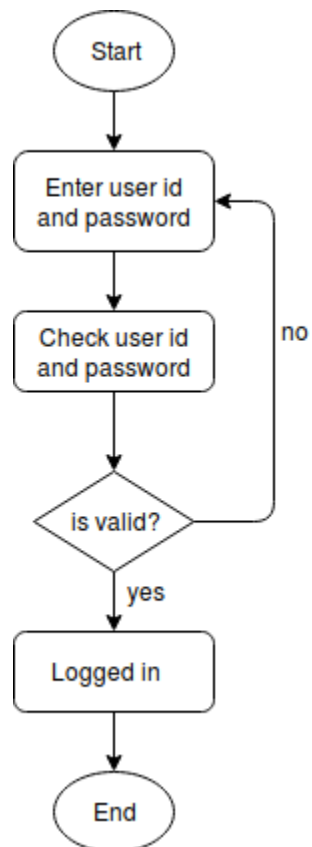


Figure 5: Activity Diagram of Sign In

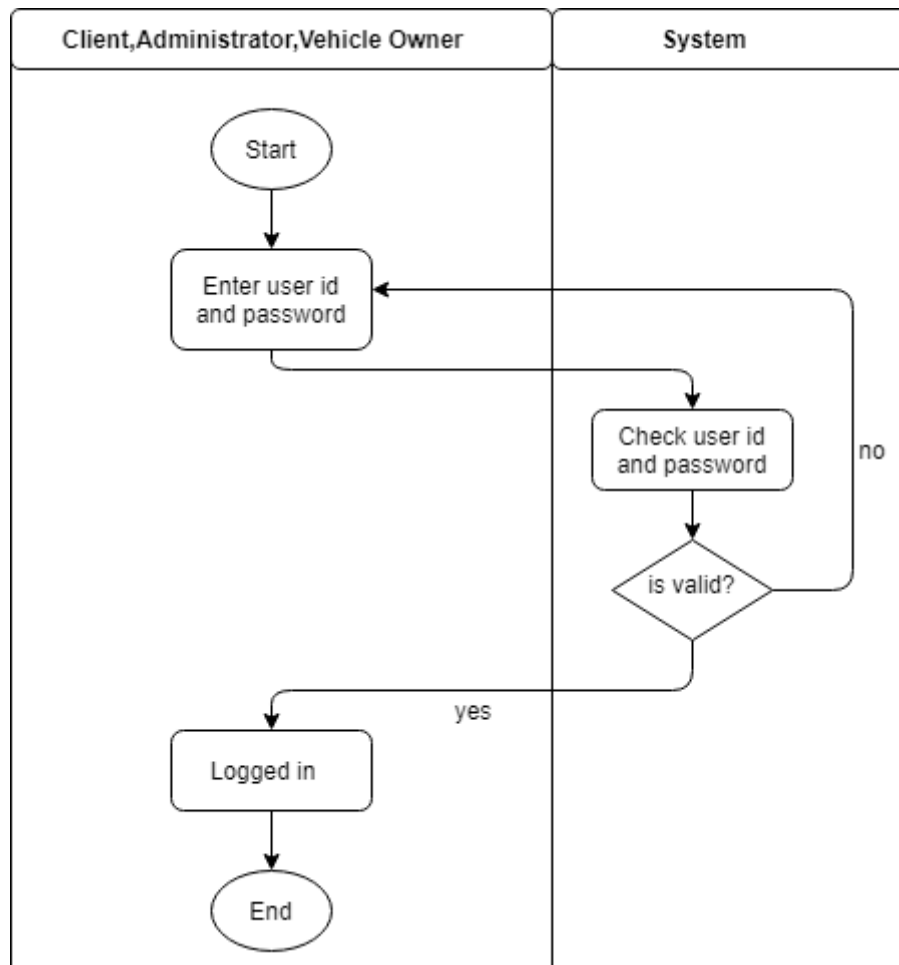


Figure 6: Swim-Lane Diagram of Sign In

Use Case: Sign Out

Primary Actors: Administrator, Client, Owner.

Goal in context: To exit from the system

Precondition: Must be logged in

Triggers: Need to log out from the system

Scenario: Click the logout button

Use Case: Change Password

Primary Actors: Administrator, Client, Owner.

Goal in context: To change the existing password to a new password

Precondition: System has been programmed for a password

Scenario:

- Visit the login page and login
- Click on Edit button
- Change Password
- Confirm with email or phone.
- Proceed to the next activity

Exception:

- Weak Password
- Password length is too short

Action-reply

Action: Enter user name, mobile number, email-address and new password.

Reply: if all the input is correct then go to the next step.

Action: select an option for getting verification code.

Reply: system sends verification code through the chosen option.

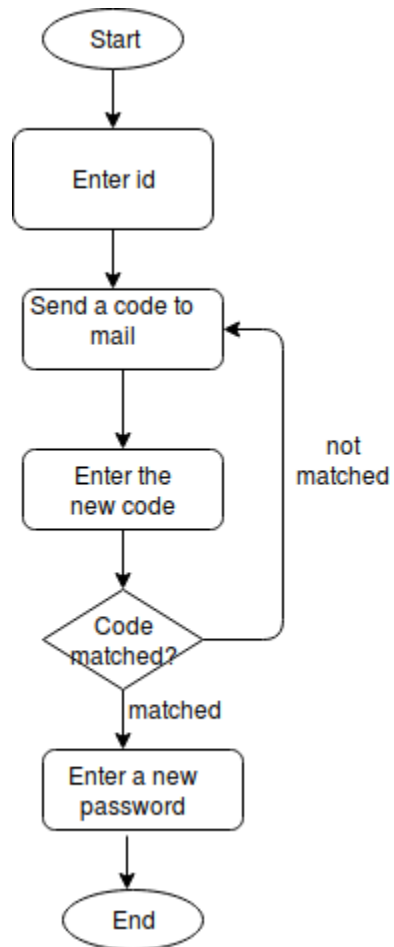


Figure 7: Activity Diagram of Forget Password

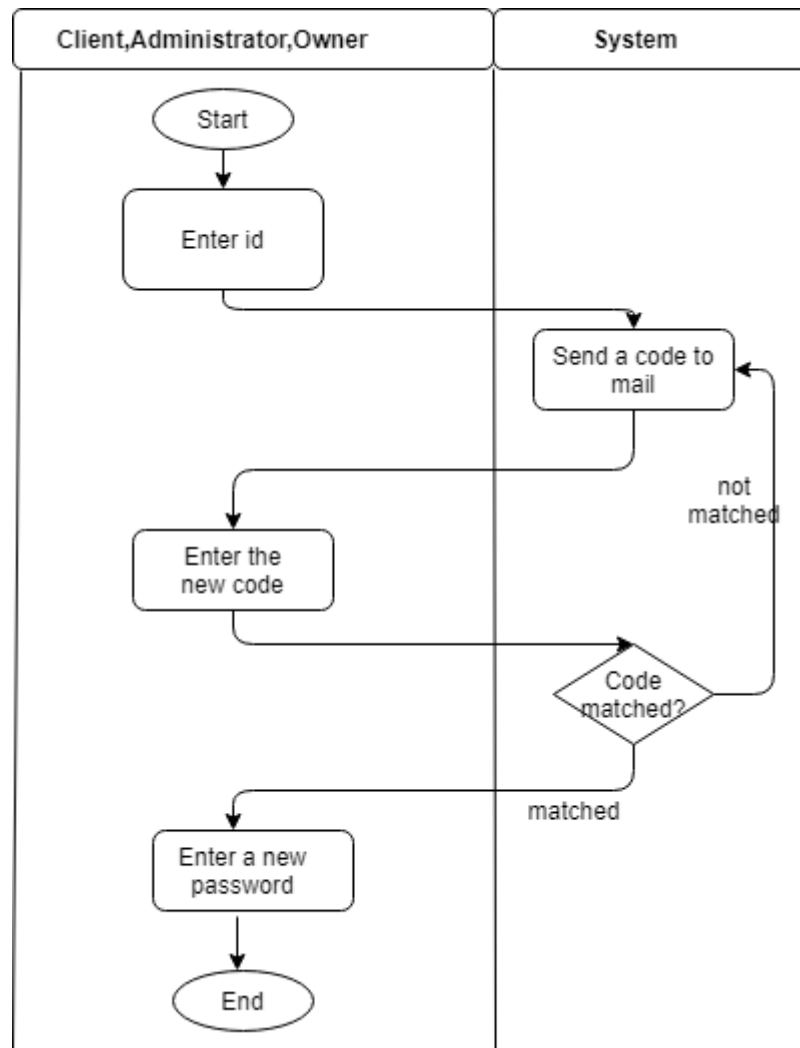


Figure 8: Swim-Lane Diagram of Forget Password

Search Vehicles

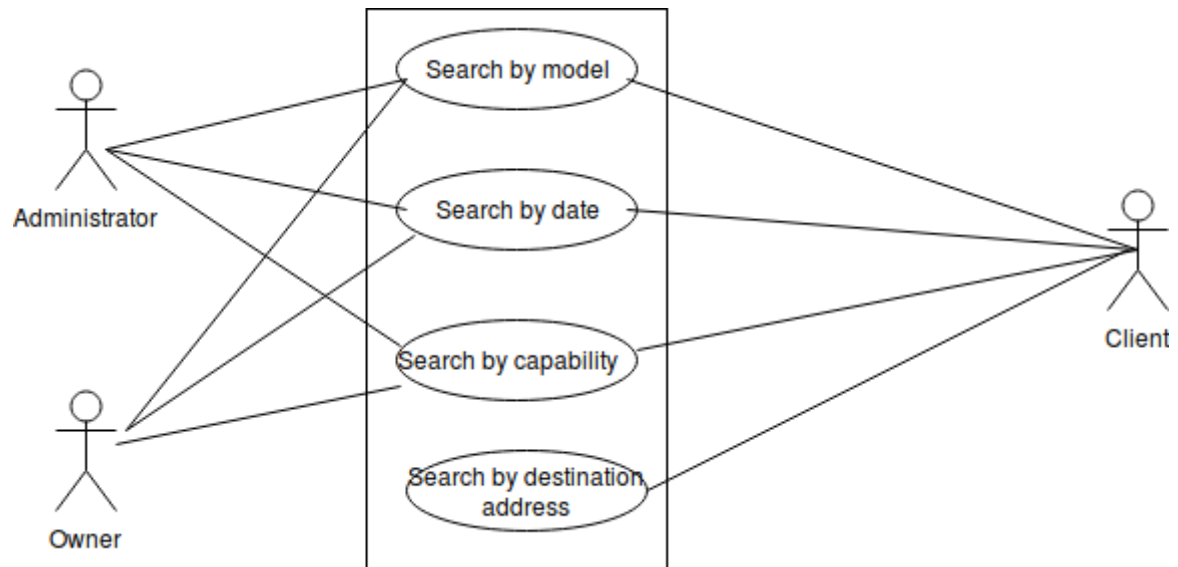


Figure 9: Use Case Diagram of Search Vehicle

Searching system is divided into four sub-systems.

- Search by model
- Search by date
- Search by capability
- Search by Location

Use Case: Search by Model

Primary Actors: Client

Goal in context: To find vehicles of a particular model.

Precondition: Must be logged in as client or administrator

Scenario:

- Visit login page and log in into the system
- Enter vehicle model into the text entry
- Click the search button
- View search result
- Proceed to the next activity

Exception:

- User may not be eligible for that type
- User does not exist
- Vehicle not found

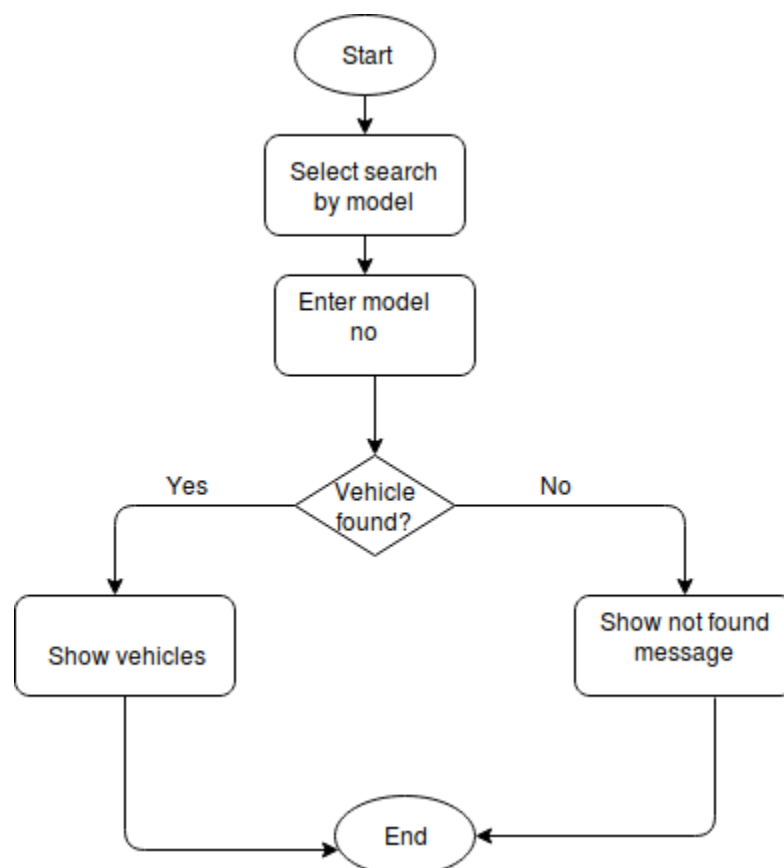


Figure 10: Activity Diagram of Search by Model

Use Case: Search by Date

Primary Actors: Client

Goal in context: To find information about vehicles available on a particular date.

Precondition: Must be logged in as client or administrator

Scenario:

- Visit login page and log in into the system
- Select date from calendar.
- Click the search button
- View search result
- Proceed to the next activity

Exception:

- User may not be eligible for that type
- User does not exist
- Vehicle not found

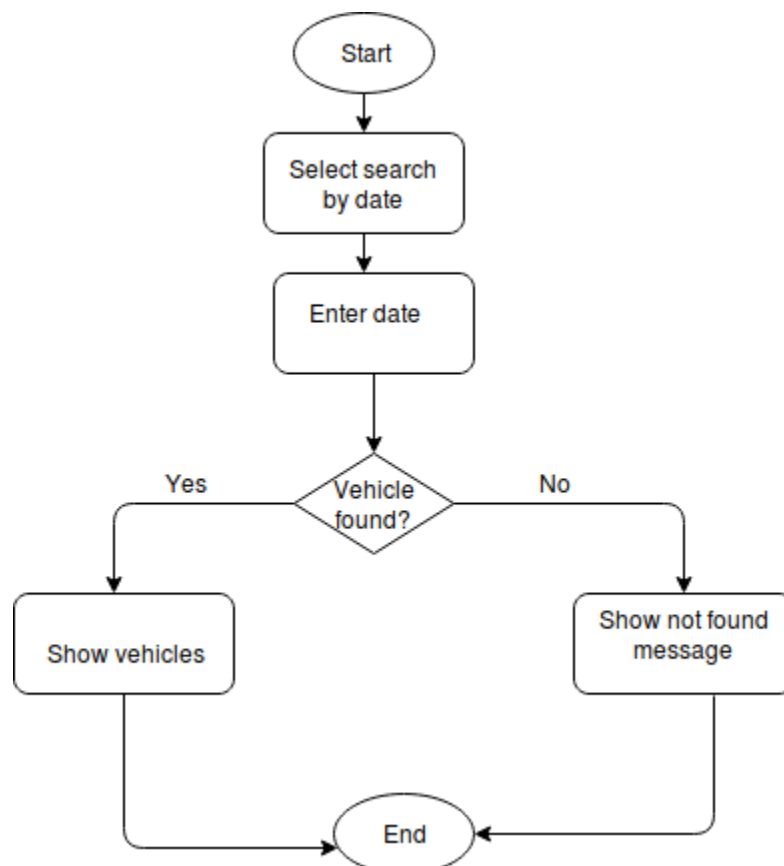


Figure 11: Activity Diagram of Search by Model

Use Case: Search by Vehicle Capability

Primary Actors: Client

Goal in context: To find information about vehicles capable of transporting greater than or equals to a particular weight.

Precondition: Must be logged in as client or administrator

Scenario:

- Visit login page and log in into the system
- Select a weight category from a drop down box and write weight
- Click the search button
- View search result
- Proceed to the next activity

Exception:

- User may not be eligible for that type
- User does not exist
- Vehicle not found

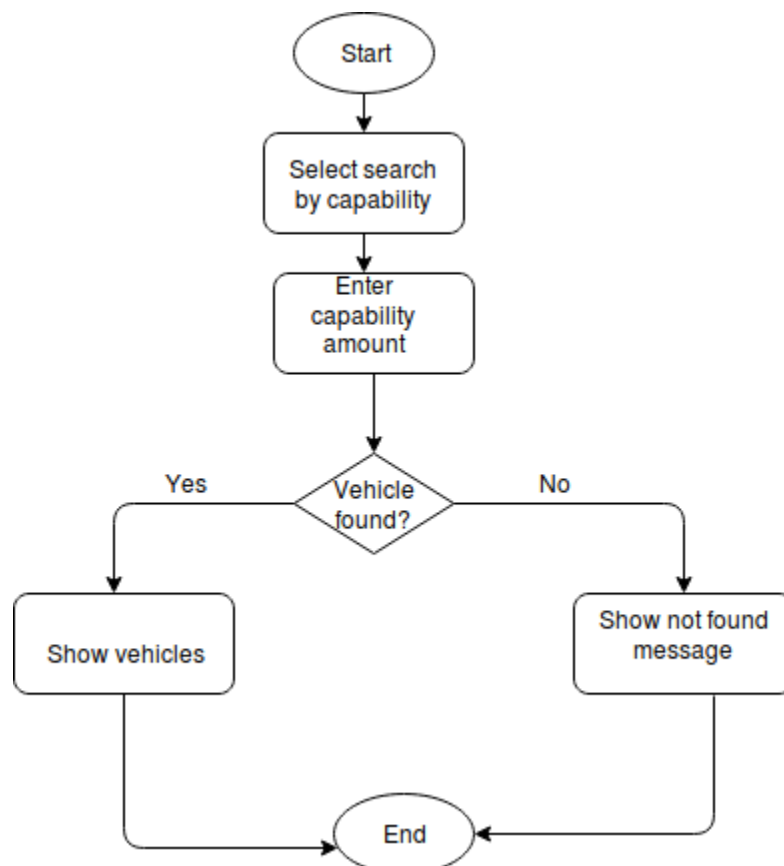


Figure 12: Activity Diagram of Search by Model Capability

Use Case: Search by Location

Primary Actors: Client

Goal in context: To find information about vehicle's destination and starting place of their journey

Precondition: Must be logged in as client or administrator

Scenario:

- Visit login page and log in into the system
- Input destination and starting place of journey.
- Click the search button
- View search result
- Proceed to the next activity

Exception:

- User may not be eligible for that type
- User does not exist
- Vehicle not found

Vehicle Maintenance

Vehicle Maintenance system is divided into four sub-systems.

- Add Vehicles
- Remove Vehicles
- Renew Vehicles
- Track Vehicles

Use Case: Add Vehicles

Primary Actors: Vehicle owner

Goal in context: To add new vehicle into the system

Precondition: Must be logged in as vehicle owner

Scenario:

- Visit login page and log in into the system as vehicle owner
- Click the add new vehicle button
- Enter vehicle model no, license, chassis no, expire date, capability into text entries.
- Click the confirmation button
- Proceed to the next activity

Exception:

- Invalid User: User may not be eligible for that type
- Unrecognized: User does not exist

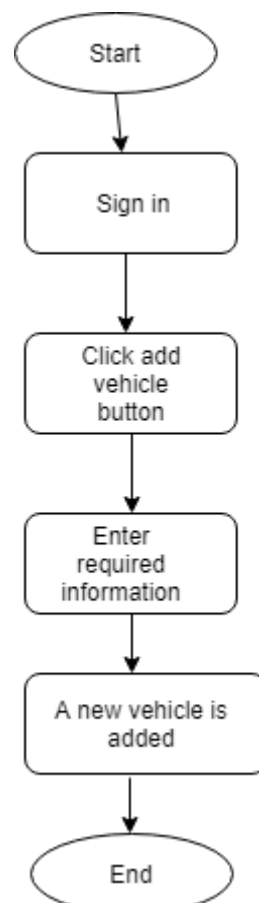


Figure 13: Activity Diagram of Add Vehicle

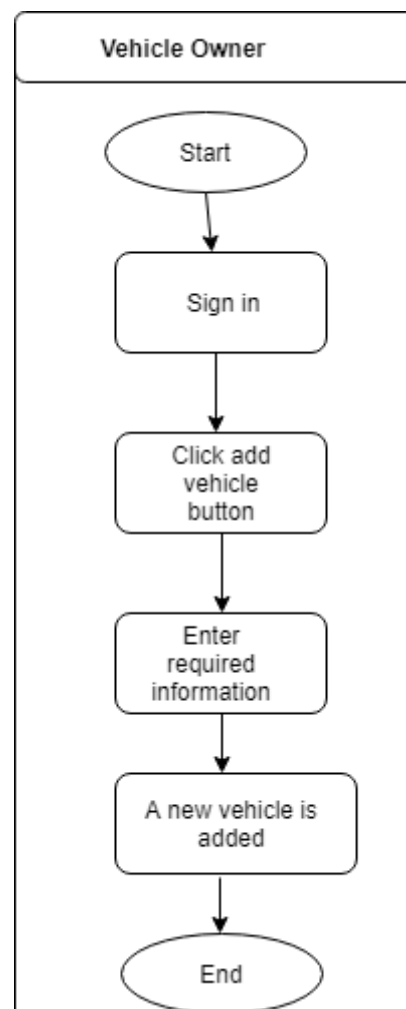


Figure 14: Swim-Lane Diagram of Add Vehicle

Use Case: Remove Vehicles

Primary Actors: Vehicle owner

Goal in context: To remove existing vehicle from the system

Precondition: Must be logged in as vehicle owner

Scenario:

- Visit login page and log in into the system as vehicle owner
- Click the button named existing vehicles.
- Select a vehicle to remove
- Click the remove button
- Proceed to the next activity

Exception:

- User may not be eligible for that type
- Can't remove a vehicle because it is on trip or scheduled for trips in future

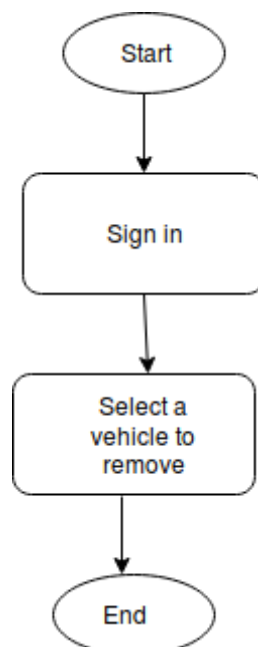


Figure 15: Activity Diagram of Remove Vehicle

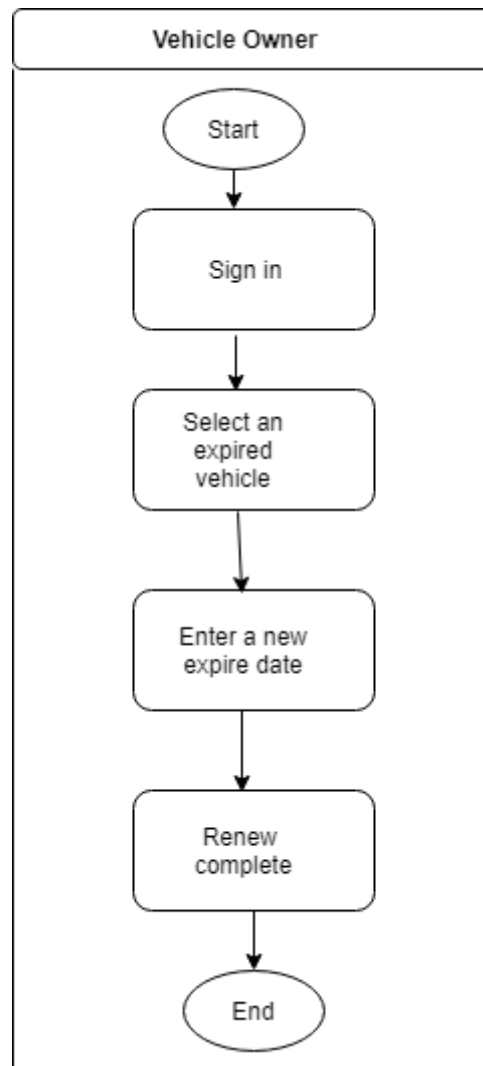


Figure 16: Swim-Lane Diagram of Remove Vehicle

Use Case: Renew Vehicles

Primary Actors: Vehicle owner

Goal in context: To renew an expire vehicle to make available to transport

Precondition: Must be logged in as vehicle owner

Scenario:

- Visit login page and log in into the system as vehicle owner
- Click the button expired vehicles.
- Select a vehicle to renew
- Select a new expire date
- Proceed to the next activity

Exception:

- User may not be eligible for that type
- Can't renew a damaged vehicle

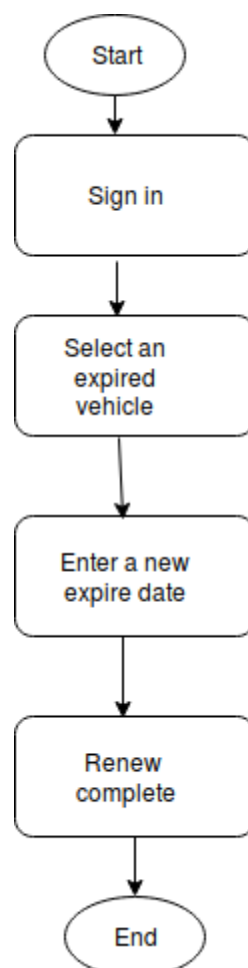


Figure 17: Activity Diagram of Renew Vehicle

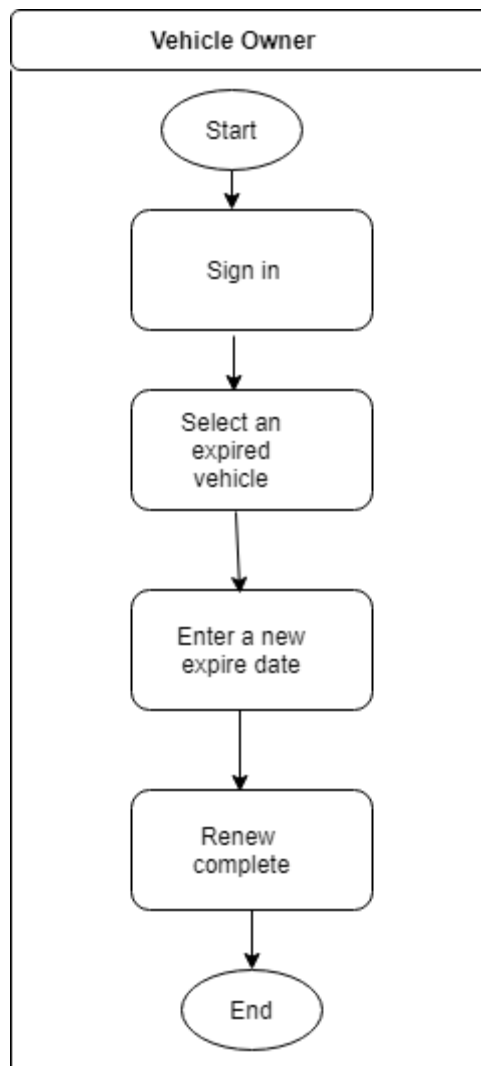


Figure 18:Swim-Lane Diagram of Renew Vehicle

Use Case: Track Vehicles

Primary Actors: Vehicle owner, Clients

Goal in context: To know current position vehicles and to spot vehicles.

Precondition: Must be logged in as vehicle owner or administrator or client

Scenario:

- Visit login page and log in into the system as vehicle owner or administrator or client
- Click the button titled vehicles on trip to view vehicles performing transportation.
- Select a vehicle to track
- View the selected vehicle position on google map.
- Proceed to the next activity

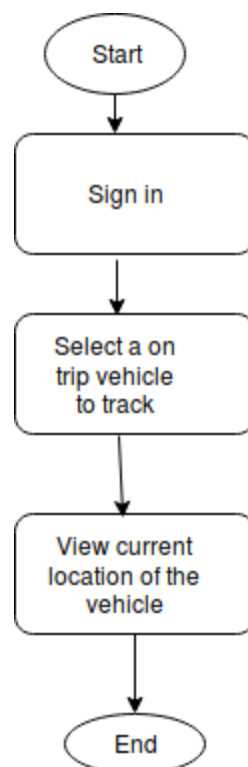


Figure 19: Activity Diagram of Track Vehicle

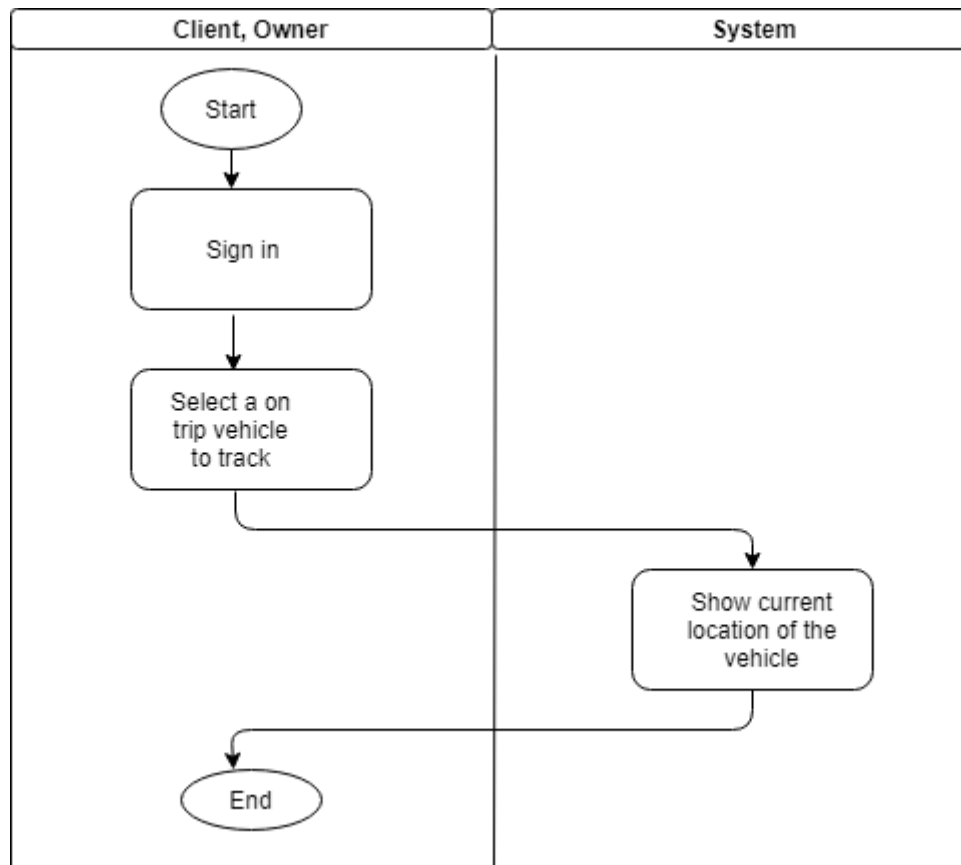


Figure 20: Swim-Lane Diagram of Track Vehicle

Plan Trip

Trip planning system is divided into two sub-systems.

- Schedule a trip
- Cancel a trip

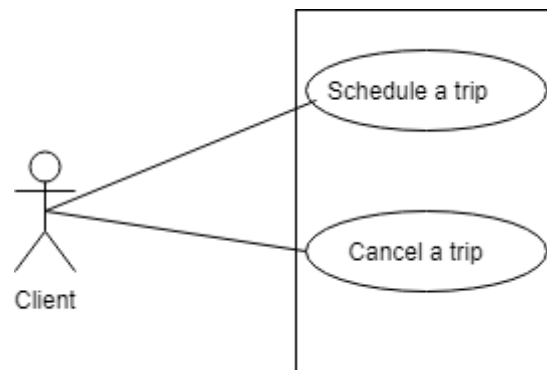


Figure 21: Use Case Diagram of Plan Trip

Use Case: Schedule a Trip

Primary Actors: Clients

Goal in context: To schedule a trip to transport goods and supplies.

Precondition: Must be logged in as a registered client.

Scenario:

- Visit login page and log in into the system as client or as an owner
- Click the list of owners button or enter owner's name into the search entry to find owner.
- Select the owner and a new page with the owner's information will showed up.
- To communicate with the owner, click the chat button.
- Proceed to next activity

Exception:

- No owner found.

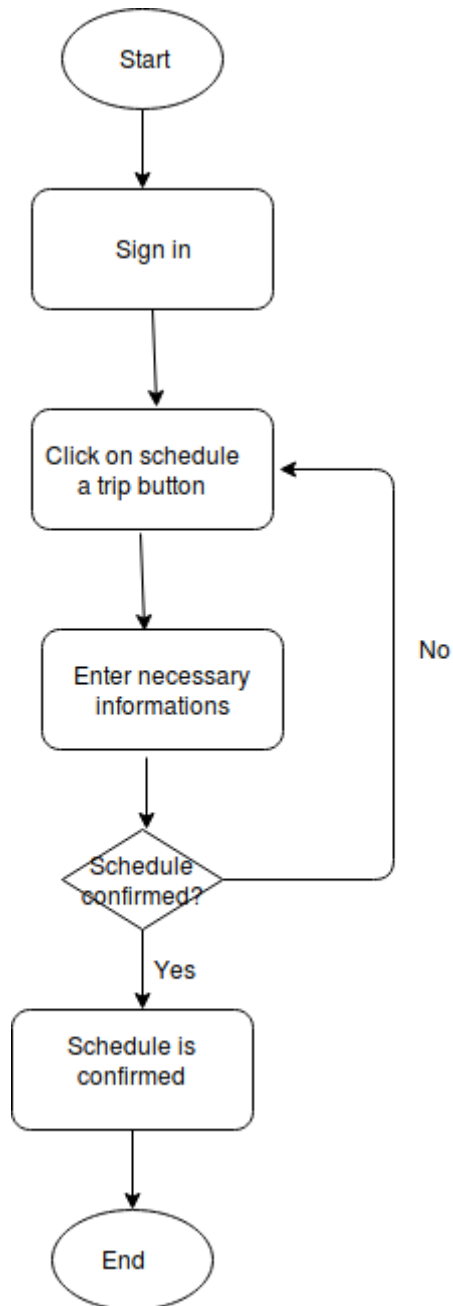


Figure 22: Activity Diagram of Schedule

Communication

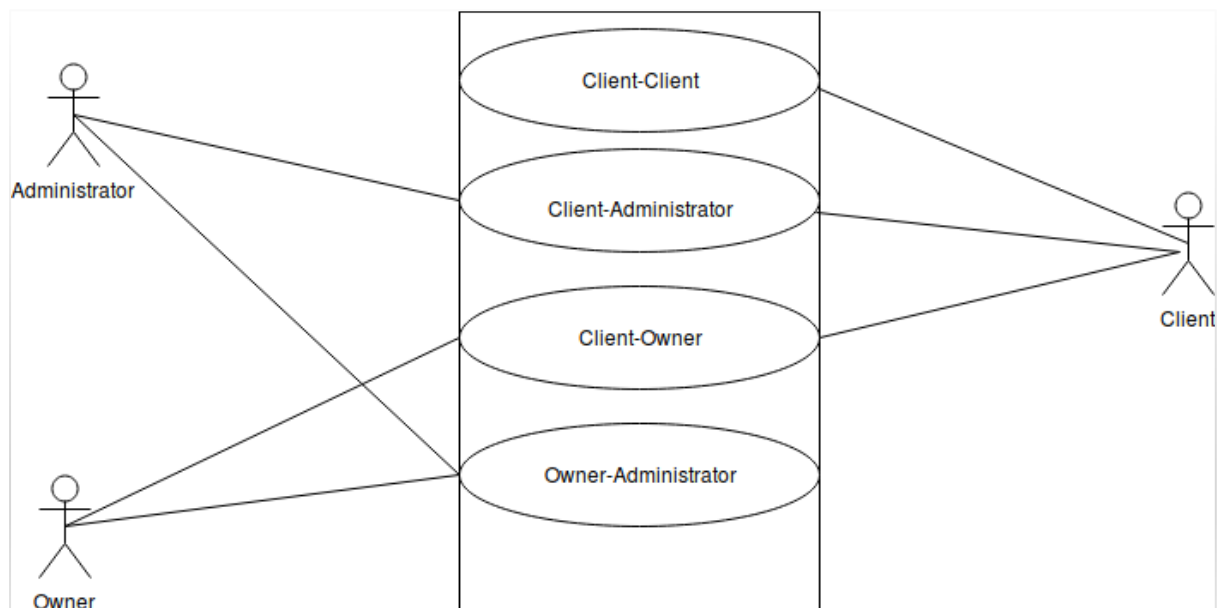


Figure 23: Use Case Diagram of Communication

Communication system is divided into one sub-systems.

- Client-Owner communication

Use Case: Client-Owner communication

Primary Actors: Clients, Vehicle owner

Goal in context: To provide inter communication between clients and vehicle owner.

Precondition: Must be logged in as client or vehicle owner

Scenario:

- Visit login page and log in into the system as client or as an owner
- Click the list of owners button or enter owner's name into the search entry to find owner.
- Select the owner and a new page with the owner's information will showed up.
- To communicate with the owner click the chat button.
- Proceed to next activity

Exception:

- No owner found.

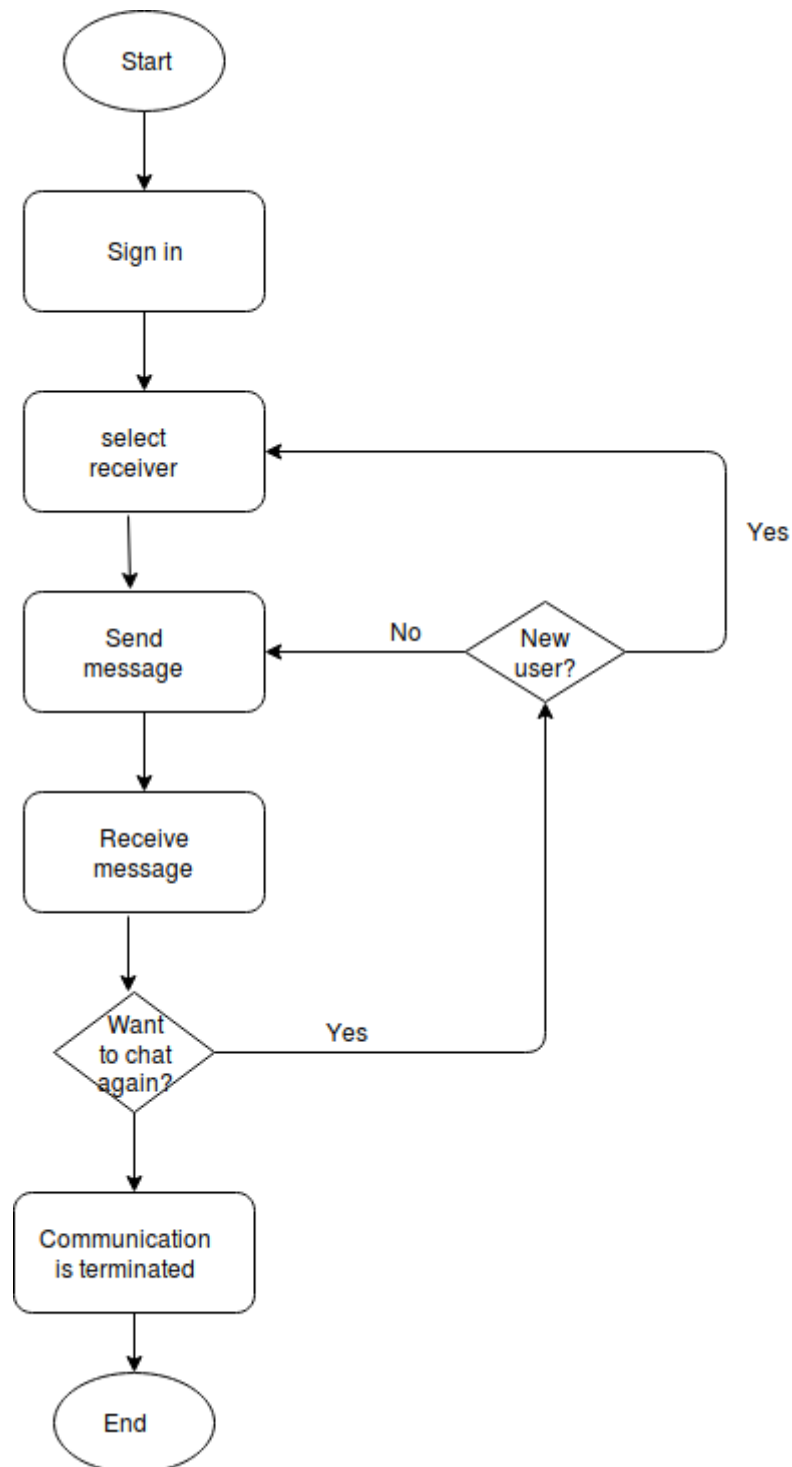


Figure 24: Activity Diagram of Communication

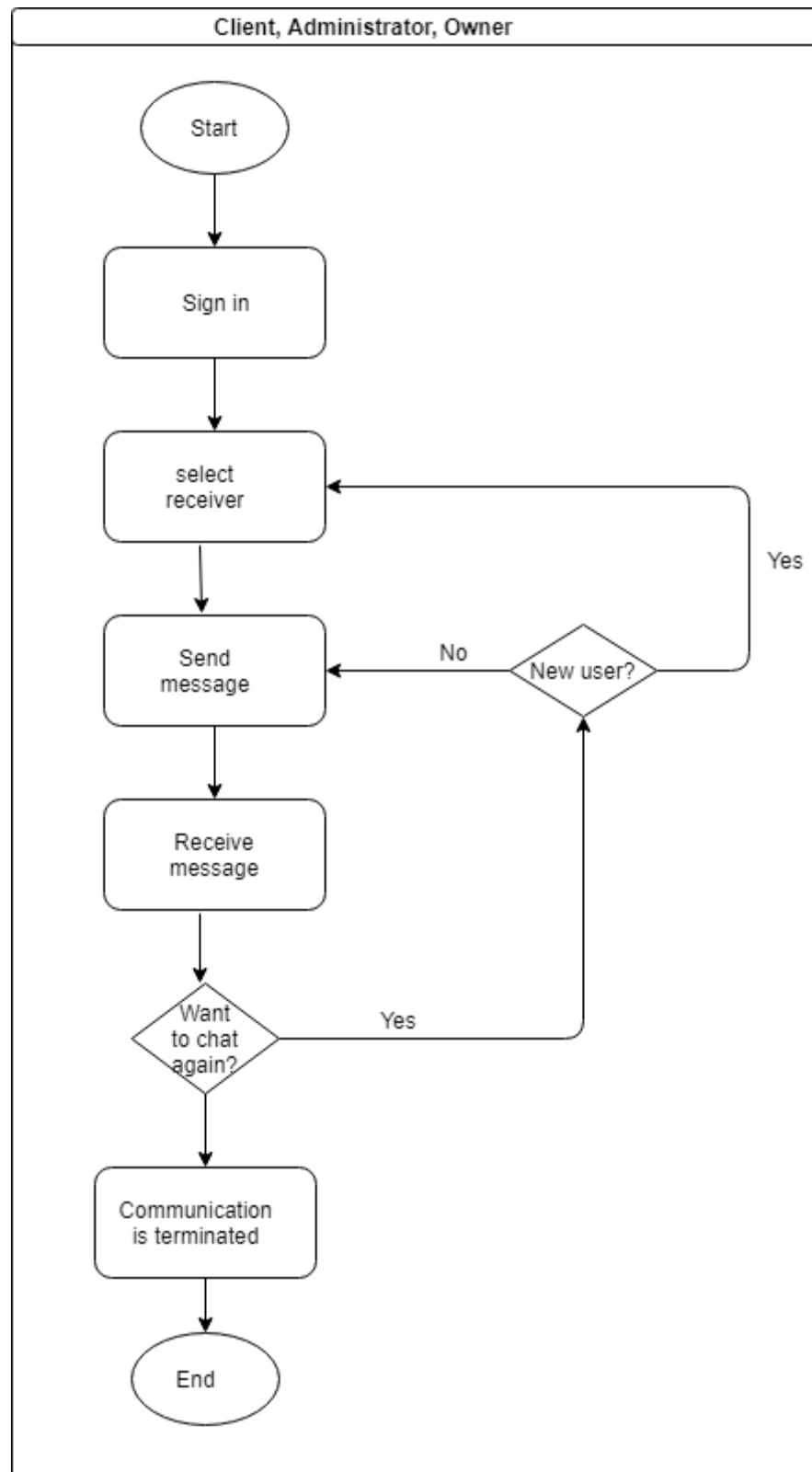


Figure 25: Swim-Lane Diagram of Communication

Administrator activity

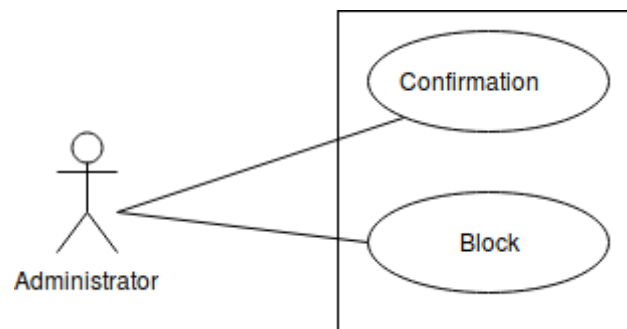


Figure 26: Use Case of Administrator Activity

Administrator activity sub system is divided into two sub-systems.

- Confirmation
- Blocking

Confirmation sub system is divided into three sub-systems.

- Confirmation of new clients
- Confirmation of new vehicles
- Confirmation of new owners

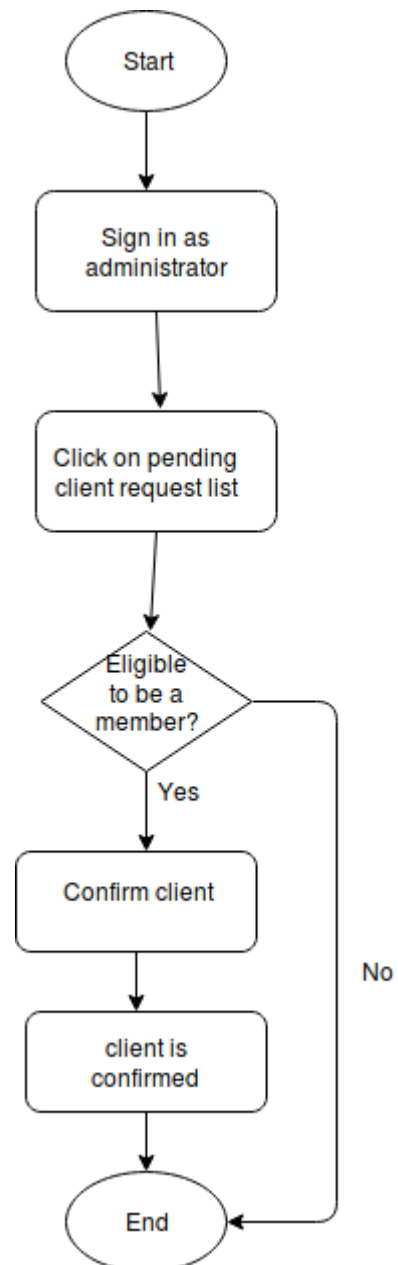


Figure 27: Activity Diagram of Client Confirmation

Use Case: Confirmation of new clients

Primary Actors: Administrator

Goal in context: To confirm new client's requests.

Precondition: Must be logged in as administrator.

Scenario:

- Visit login page and log in into the system as system administrator
- Click the pending client requests button.
- Select clients who are eligible to be a member of the system.
- Confirm clients.
- Proceed to next activity.

Exception:

- No pending requests.
- Clients are eligible.

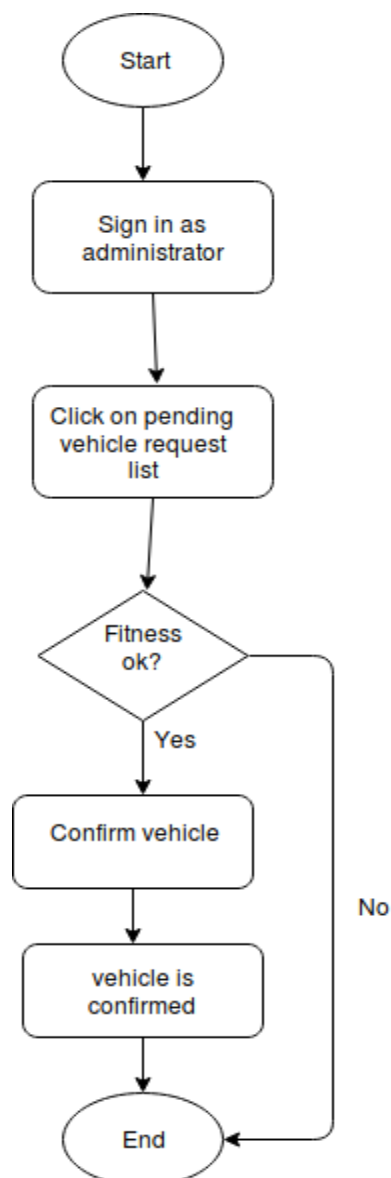


Figure 28: Activity Diagram of Vehicle Confirmation

Use Case: Confirmation of new vehicles

Primary Actors: Administrator

Goal in context: To confirm new vehicle.

Precondition: Must be logged in as administrator.

Scenario:

- Visit login page and log in into the system as system administrator
- Click the pending vehicles requests button
- Select vehicles which are eligible and have good fitness.
- Confirm vehicles.
- Proceed to next activity.

Exception:

- No pending requests.
- Vehicles are not fit enough to transport goods.

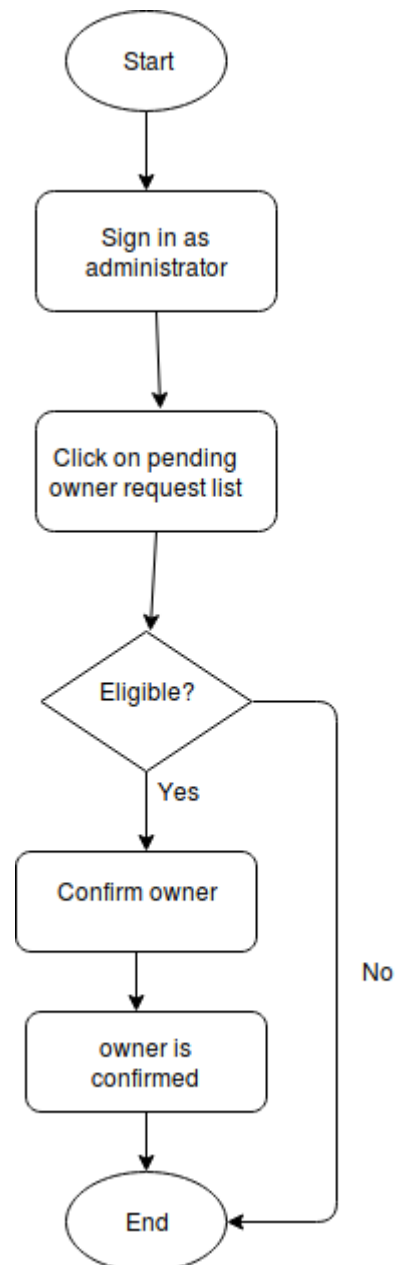


Figure 29: Activity diagram of Owner Confirmation

Use Case: Confirmation of new owners

Primary Actors: Administrator

Goal in context: To confirm new owner's requests.

Precondition: Must be logged in as administrator.

Scenario:

- Visit login page and log in into the system as system administrator
- Click the pending owner requests.
- Select owners who are eligible to be a member of the system.
- Confirm owners.
- Proceed to next activity.

Exception:

- No pending requests.
- Owners are eligible.

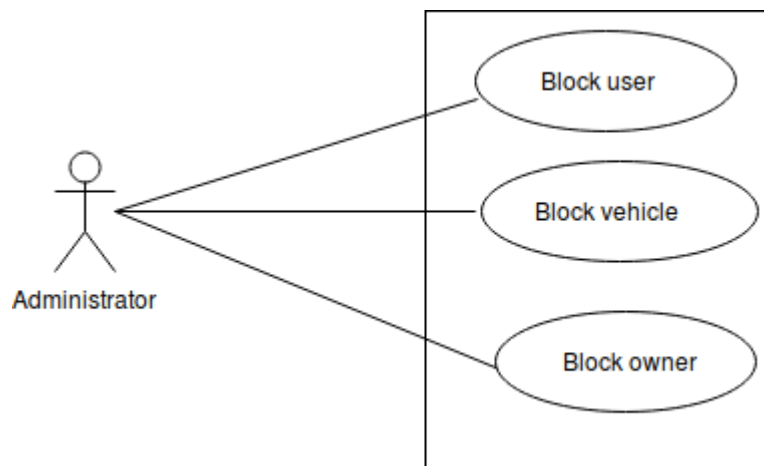


Figure 30: Use Case Diagram of Blocking

Blocking sub system is divided into three sub-systems.

- Blocking clients
- Blocking vehicles
- Blocking owners

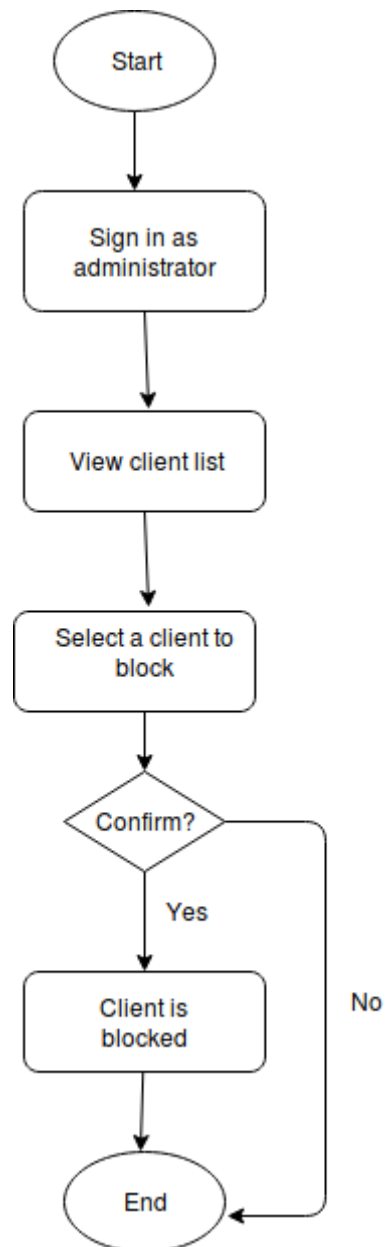


Figure 31:Activity Diagram of Client Blocking

Use Case: Blocking clients

Primary Actors: Administrator

Goal in context: To block existing clients.

Precondition: Must be logged in as administrator.

Scenario:

- Visit login page and log in into the system as system administrator
- Click the client list button.
- Select a client to block.
- Confirm block.
- Proceed to next activity.

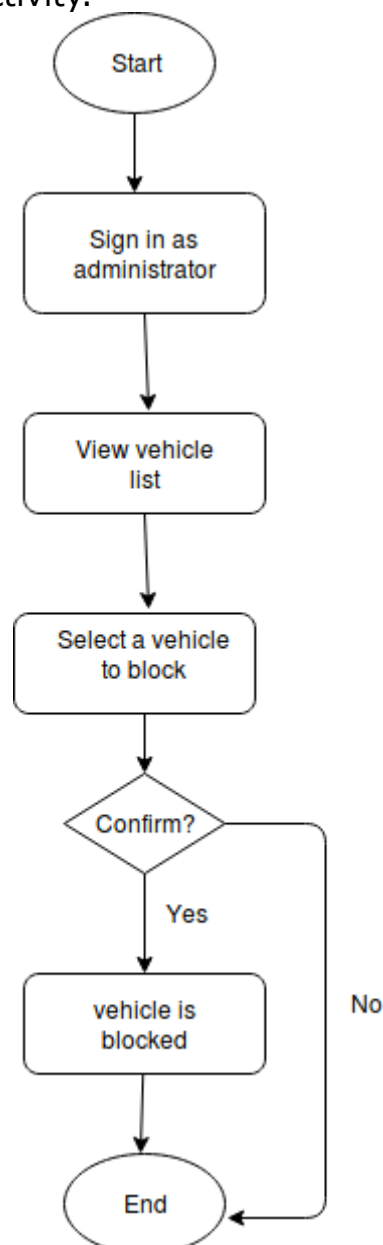


Figure 32: Activity Diagram of Vehicle Blocking

Use Case: Blocking vehicles

Primary Actors: Administrator

Goal in context: To block existing vehicles.

Precondition: Must be logged in as administrator.

Scenario:

- Visit login page and log in into the system as system administrator
- Click the vehicles list button.
- Select a vehicle to block.
- Confirm block.
- Proceed to next activity.

Use Case: Blocking owners

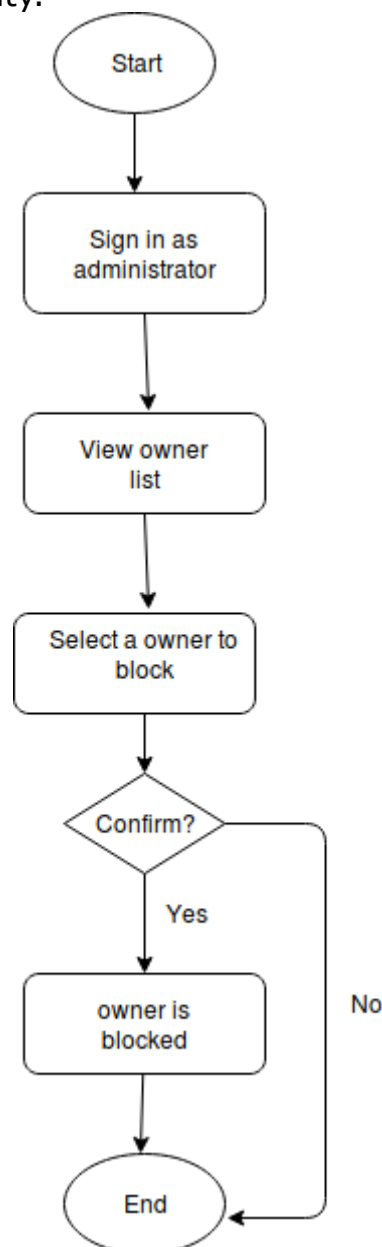
Primary Actors: Administrator

Goal in context: To block existing owners.

Precondition: Must be logged in as administrator.

Scenario:

- Visit login page and log in into the system as system administrator
- Click the owners list button.
- Select an owner to block.
- Confirm block.
- Proceed to next activity.



• Figure 33: Activity Diagram of Owner Blocking

Chapter 5: Data Model

Introduction

Software requirements include the need to create, extend, or interface with a database or if complex data structures must be constructed and manipulated, the software team may choose to create a data model as part of overall requirements modeling.

Data Object Selection

A data object is a representation of information which has different properties or attributes that must be understood by software. Here is the table of potential data objects.

5.2.1 Noun Identification

Numbers	Nouns	Problem Space/Solution Space	Attributes
1	Confirmation	S	
2	Authority	P	
3	Administrator	S	8,57
4	Voice	P	
5	Maintenance	P	
6	Purposes	P	
7	Notification	S	
8	Date	S	
9	Password	P	
10	Way	P	
11	Position	P	
12	Address	S	67,121,122,123,124
13	Authentication	S	
14	Sub-system	P	
15	Completion	P	
16	Owner	S	57,12,31,116

17	Documents	P	
18	Chat	S	
19	Booking	S	
20	Transportation	S	
21	Requests	S	
22	Bidding	S	
23	Basis	P	
24	Window	P	
25	Login	S	
26	Searching	S	
27	Case	P	
28	Number	P	
29	Mobile-number	S	
30	Addition	S	87,117
31	Email	S	
32	Bidder	S	
33	Option	P	
34	Alphabets	P	
35	Profile	S	
36	Terms	P	
37	Customers	S	
38	Button	P	
39	Person	P	
40	Types	P	
41	Transaction	S	
42	Verification	P	
43	Border	P	
44	Truck	S	
45	Vehicle	S	93,60,100,88,114,115
46	History	S	
47	Birth	P	
48	Journey	P	
49	Policy	P	
50	Procedure	P	
51	Validity	P	
52	Time	P	
53	Message	S	
54	Term	P	
55	Storage	P	
56	User	S	
57	Name	S	
58	Business	P	
59	Cost	S	
60	License	S	
61	Client	S	57,12,31,15
62	Price	S	
63	Sms	P	
64	Company	P	

65	Place	P	
66	Chance	P	
67	Id	S	
68	Reason	P	
69	Page	P	
70	Existence	P	
71	Communication	P	
72	Characters	P	
73	name	S	
74	Period	S	
75	Book	P	
76	Management	P	
77	Company-name	S	
78	System	P	
79	Details	P	
80	Minutes	P	
81	Surname	S	
82	Opinions	P	
83	Condition	P	
84	Database	P	
85	Problem	P	
86	Customer	S	
87	Expire date	S	
88	Model	S	
89	Call	P	
90	Trips	S	
91	Level	P	
92	Money	P	
93	Capability	P	
94	Parts	P	
95	Payment	S	
96	Code	P	
97	Task	P	
98	Government	P	
99	Information	P	
100	Chassis-no	S	
101	Completion	P	
102	Week	P	
103	Capability	S	
104	Due	S	
105	Demand	P	
106	Current	P	
107	Suggestion	P	
108	Register	S	
109	Content	S	
110	Screen	P	
111	Unit	S	
112	Memory	P	

113	Technique	P	
114	Image	S	
115	Manufacturing date	S	
116	Phone	S	
117	Start date	S	
118	Borrowing	S	8,119,120
119	Initial price	S	
120	Current bid	S	
121	District	S	
122	Sub-district	S	
123	City	S	
124	Zip	S	
125	permanent-address-id	S	
126	temporary-address-id	S	

Table 1: Noun Identification

5.2.2 Potential data objects

Vehicle: 93,60,100,88,114,115

Client: 57,12,31,15

Owner: 57,12,31,116

Address: 67,121,122,123,124

Administrator: 8,57

Permanent address: 67,121,122,123,124,127

Temporary address: 67,121,122,123,124,128

5.2.3 Analysis for finalizing Data Objects

1) Permanent address and temporary address are an extension of address data objects so permanent address and temporary address data objects can be extended to address data object.

2) Address data object requires an id to identify an address uniquely so an attribute id is added to address.

5.2.4 Finalized data objects

No	Entity	Attributes
1	Client	Phone, name, email, client-id, password
2	Vehicle	Capability, model, start price, license no, chassis no, start date, vehicle id
3	Owner	Phone, name, email, owner-id, password
4	Address	City, zip, sub-district, district
5	Permanent address	City, zip, sub-district, district, permanent-address-id
6	Temporary address	City, zip, sub-district, district, temporary-address-id

Table 2: Finalized Data Objects

5.3 Data Objects Relation:

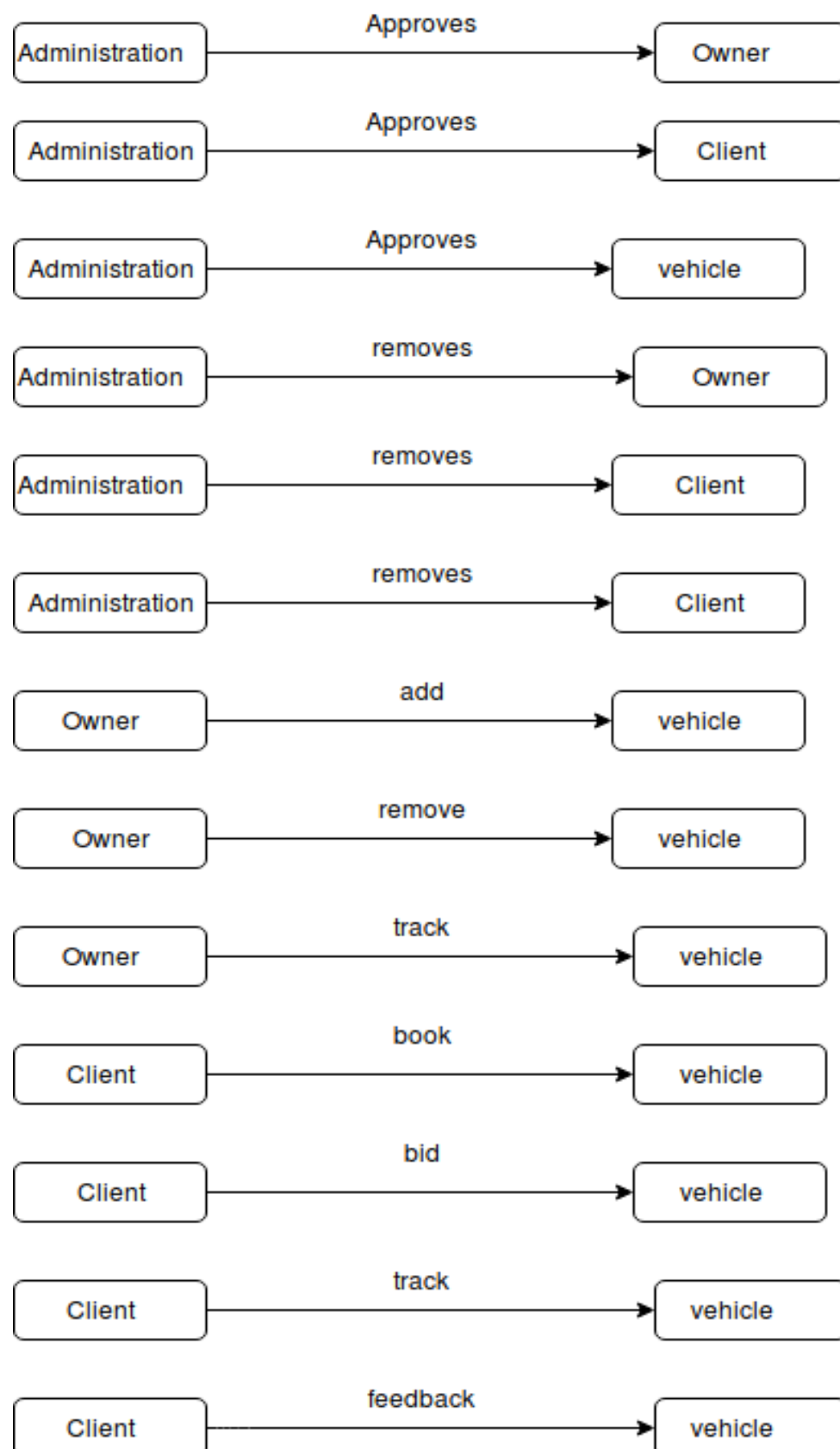


Figure 34: Data Objects Relationship

5.4 Entity Relationship Diagram:

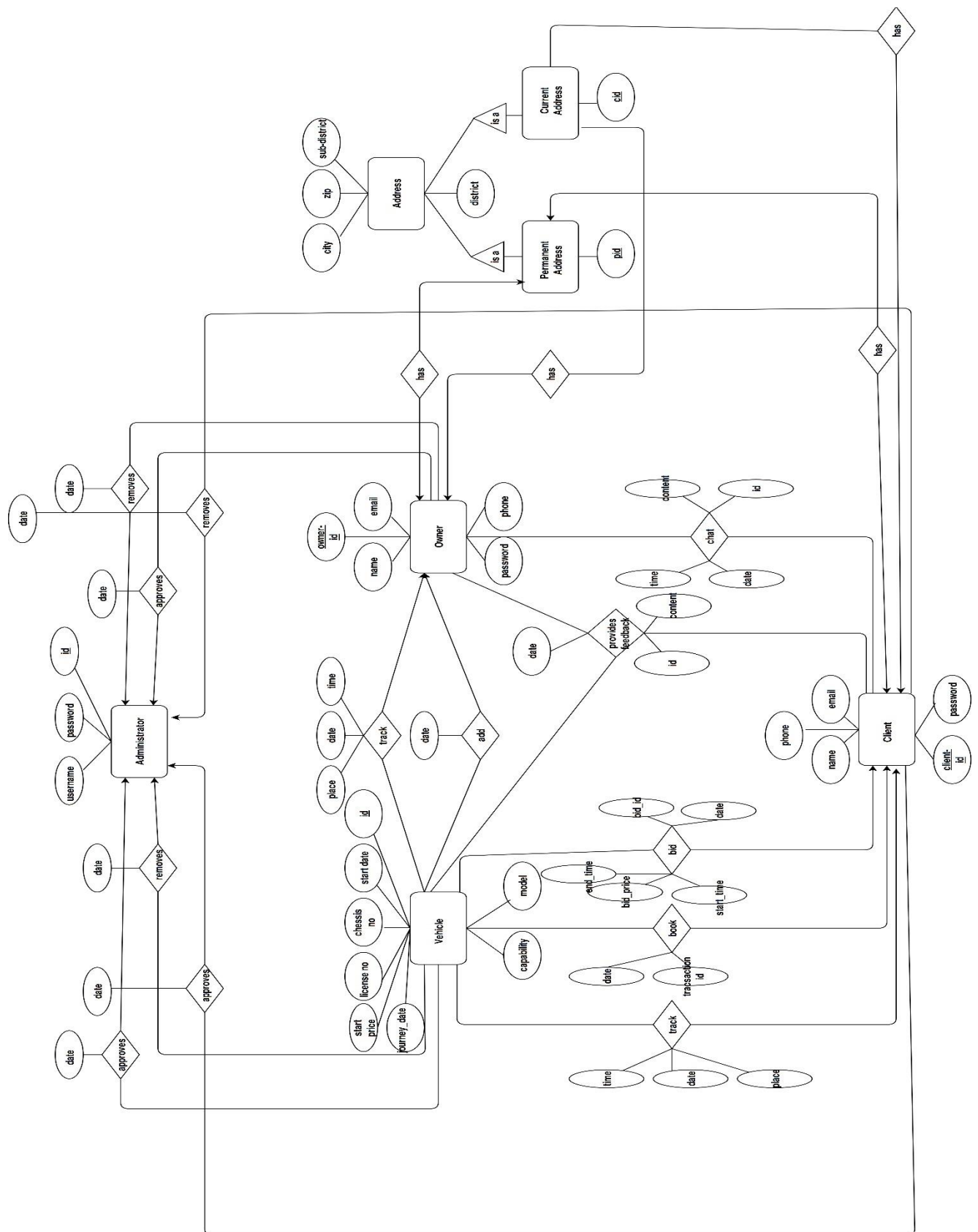


Figure 35: Entity Relationship Diagram

5.5 Schema Diagram:

Vehicle		
Attribute	Type	Size
<u>Vehicle_id</u>	VARCHAR2	20
License_no	VARCHAR2	20
Chassis_no	VARCHAR2	20
Start_date	DATE	15
Journey_date	DATE	15
Capacity	NUMBER	16
Model	VARCHAR2	20
Start_Price	NUMBER	15

Table 3: Schema Diagram of Vehicle

Owner		
Attribute	Type	Size
<u>Owner_id</u>	VARCHAR2	20
Owner_name	VARCHAR2	20
<u>P_id</u>	NUMBER	16
<u>C_id</u>	NUMBER	16
Email	VARCHAR2	16
Password	VARCHAR2	20
Phone_number	VARCHAR2	16

Table 4: Schema Diagram of Owner

Client		
Attribute	Type	Size
<u>Client_id</u>	VARCHAR2	20
<u>P_id</u>	NUMBER	16
<u>C_id</u>	NUMBER	16
Owner_name	VARCHAR2	20
Email	VARCHAR2	16
Password	VARCHAR2	20
Phone_number	VARCHAR2	16

Table 5: Schema Diagram of Client

Chat		
Attribute	Type	Size
<u>Chat_id</u>	VARCHAR2	20
<u>Owner_id</u>	VARCHAR2	20
<u>Client_id</u>	VARCHAR2	20
time	TIME	10
Date	DATE	15
Content	VARCHAR2	30

Table 6: Schema Diagram of Chat

Permanent Address		
Attribute	Type	Size
<u>P_id</u>	NUMBER	16
District	VARCHAR2	20
Sub-district	VARCHAR2	20
City	VARCHAR2	15
Zip	NUMBER	16

Table 7: Schema Diagram of Permanent Address

Current Address		
Attribute	Type	Size
<u>C_id</u>	NUMBER	16
District	VARCHAR2	20
Sub-district	VARCHAR2	20
City	VARCHAR2	15
Zip	NUMBER	16

Table 8: Schema Diagram of Current Address

Add Vehicle		
Attribute	Type	Size
<u>Owner_id</u>	VARCHAR2	20
<u>Vehicle_id</u>	VARCHAR2	20
Add_date	DATE	15

Table 9: Schema Diagram of Add Vehicle

Owner Track Vehicle		
Attribute	Type	Size
<u>Owner_id</u>	VARCHAR2	20
<u>Vehicle_id</u>	VARCHAR2	20
Place	VARCHAR2	20
Date	DATE	15
Time	TIME	10

Table 10: Schema Diagram of Owner Track Vehicle

Client Track Vehicle		
Attribute	Type	Size
<u>Client_id</u>	VARCHAR2	20
<u>Vehicle_id</u>	VARCHAR2	20
Place	VARCHAR2	20
Date	DATE	15
Time	TIME	10

Table 11: Schema Diagram of Client Track Vehicle

Borrowing		
Attribute	Type	Size
<u>Client_id</u>	VARCHAR2	20
<u>Vehicle_id</u>	VARCHAR2	20
Date	DATE	15
Borrow_Price	NUMBER	20

Table 12: Schema Diagram of Borrowing

Bidding		
Attribute	Type	Size
<u>Client_id</u>	VARCHAR2	20
<u>Vehicle_id</u>	VARCHAR2	20
Start_date	DATE	15
Bid_Price	NUMBER	15
End_date	DATE	15

Table 13: Schema Diagram of Bidding

Administrator		
Attribute	Type	Size
<u>Admin_id</u>	VARCHAR2	20
Name	VARCHAR2	20
Password	VARCHAR2	20

Table 14: Schema Diagram of Administrator

Approve_Owner		
Attribute	Type	Size
<u>Admin_id</u>	VARCHAR2	20
<u>Owner_id</u>	VARCHAR2	20
Approve_Bool	BOOLEAN	5
Date	DATE	15

Table 15: Schema Diagram of Approve Owner

Approve_Client		
Attribute	Type	Size
<u>Admin_id</u>	VARCHAR2	20
<u>Client_id</u>	VARCHAR2	20
Approve_Bool	BOOLEAN	5
Date	DATE	15

Table 16: Schema Diagram of Approve Client

Approve_Vehicle		
Attribute	Type	Size
<u>Admin_id</u>	VARCHAR2	20
<u>Vehicle_id</u>	VARCHAR2	20
Approve_Bool	BOOLEAN	5
Date	DATE	15

Table 17: Schema Diagram of Approve Vehicle

Remove_Owner		
Attribute	Type	Size
<u>Admin_id</u>	VARCHAR2	20
<u>Owner_id</u>	VARCHAR2	20
Date	DATE	15

Table 18: Schema Diagram of Remove Owner

Feedback		
Attribute	Type	Size
<u>Feedback_id</u>	VARCHAR2	20
<u>Owner_id</u>	VARCHAR2	20
<u>Client_id</u>	VARCHAR2	20
<u>Vehicle_id</u>	TIME	10
Date	DATE	15
Content	VARCHAR2	30

Table 19: Schema Diagram of Feedback

Chapter 6: Class Based Model

This Chapter is intended to describe class-based modeling of Pharmacy Management System.

6.1 CLASS BASED MODELING CONCEPT

Class-based modeling represents the objects that the system will manipulate, the operations that will applied to the objects, relationships between the objects and the collaborations that occur between the classes that are defined.

6.2 General Classifications

To identify the potential class, we have to first select the nouns from the solution space of the story. These were then characterized in seven general classifications. The seven general characteristics are as follows:

1. External entities
2. Things
3. Events
4. Roles
5. Organizational units
6. Places
7. Structures

Following are the specifications of the nouns according to the general classifications:

Numbers	Nouns	Problem Space/Solution Space	General Classification
1	Confirmation	S	3
2	Authority	P	1,5
3	Administrator	S	4,5
4	Voice	P	
5	Maintenance	P	3
6	Purposes	P	
7	Notification	S	2,3,7
8	Date	S	
9	Password	S	
10	Way	P	
11	Position	S	
12	Address	S	
13	Authentication	S	1,3
14	Sub-system	P	1,7
15	Completion	P	3
16	Owner	S	4,5,7
17	Documents	P	
18	Chat	S	3
19	Booking	S	3
20	Transportation	S	3
21	Requests	S	3
22	Bidding	S	3
23	Basis	P	
24	Window	P	
25	Login	S	3
26	Searching	S	3
27	Case	P	

28	Number	P	
29	Mobile-number	S	
30	Addition	S	
31	Email	S	2,3
32	Bidder	S	4,5
33	Option	P	
34	Alphabets	P	
35	Profile	S	2,7
36	Terms	P	
37	Customers	S	4,5,7
38	Button	P	
39	Person	P	
40	Types	P	
41	Transaction	S	3
42	Verification	S	3
43	Border	P	
44	Truck	S	2
45	Vehicle	S	2
46	History	S	2
47	Birth	P	
48	Journey-date	S	3
49	Policy	S	2
50	Procedure	P	
51	Validity	P	
52	Time	S	
53	Message	S	2,3
54	Term	P	
55	Storage	P	
56	User	S	4,5,7
57	Name	S	
58	Business	P	
59	Cost	S	

60	License	S	
61	Client	S	4,5,7
62	Price	S	
63	Sms	P	
64	Company	S	5
65	Place	P	
66	Email	S	2,3
67	Chance	P	
68	Id	S	
69	Reason	P	
70	Page	P	
71	Existence	P	
72	Communication	P	
73	Characters	P	
74	Username	S	
75	Period	S	
76	Book	P	4
77	Management	P	
78	Company-name	S	
79	System	P	
80	Details	P	
81	Minutes	P	
82	Surname	S	
83	Opinions	P	
84	Condition	P	
85	Database	P	
86	Problem	P	
87	Customer	S	4,5,7
88	Expire date	S	
89	Model	S	
90	Call	P	
91	Trips	S	

92	Level	P	
93	Money	P	
94	Capability	P	
95	Parts	P	
96	Payment	S	
97	Code	P	
98	Task	P	
99	Government	P	
100	Information	P	
101	Chassis-no	S	
102	Completion	P	
103	Week	P	
104	Capability	S	
105	Due	S	
106	Demand	P	
107	Current	P	
108	Suggestion	P	
109	Register	S	3
110	Content	S	2
111	Screen	P	
112	Unit	S	
113	Memory	P	
114	Technique	P	
115	Image	S	
116	Manufacturing date	S	
117	Phone	S	
118	Start date	S	
119	Borrowing	S	3
120	Initial price	S	
121	Current bid	S	

Table 20: Table of General Classification

6.3 Selection Criteria

The potential classes were then selected as classes by six Selection Criteria. A potential class becomes a class when it fulfills all six characteristics.

1. Retained Information
2. Needed Services
3. Multiple Attributes
4. Common attributes
5. Common operations
6. Essential requirements

Numbers	Nouns	Problem Space/Solution Space	Selection Criteria
1	Confirmation	S	
2	Authority	P	
3	Administrator	S	1,2,3,4,5
4	Maintenance	P	
5	Notification	S	1,3,4
6	Authentication	S	1,2,3,4,5
7	Sub-system	P	6
8	Completion	P	
9	Owner	S	1,2,3,4,5
10	Feedback	S	1,2,3,4
11	Chat	S	1,2,3,4
12	Booking	S	1,2,3,4
13	Transportation	S	
14	Requests	S	
15	Bidding	S	1,2,3,4

16	Login	S	1,2,3,4,5
17	Searching	S	1,2,3,4
18	Bidder	S	
19	Profile	S	1,2,3,4
20	Customers	S	1,2,3,4,5
21	Transaction	S	1,2,3,4,5
22	Verification	S	1,2,3
23	Truck	S	
24	Vehicle	S	1,2,3,4,5
25	History	S	1,3,4
26	Policy	S	
27	Message	S	
28	User	S	1,2,3,4,5
29	Client	S	1,2,3,4,5
30	Company	S	
31	Book	P	1,2,3,4,6
32	Customer	S	1,2,3,4,5
33	Register	S	1,2,3,4,5
34	Content	S	
35	Borrowing	S	1,2,3

Table 21: Table of Selection Criteria

6.4 Associated Noun and Verb Identification:

No	Potential Class	Associated Noun	Associated Verb
1	Owner	Name, Email, Password, Phone, Id	Add, Remove, Generate, track
2	Vehicle	License No, Add Date, Capacity, Model, Id	Show, Generate, Update, Change
3	Invoice	Id, Amount	
4	Client	Name, Email, Password, Phone, Id	Search, Show, Track, Bid, Borrow, Generate
5	Admin	Name, Password, Id	Add, Remove, Approve
6	Notification	Message	Show, Hide
7	Feedback	Text	Complain, Show
8	Chatting	Client, Owner, Message,	Send, Receive, Link
9	Searching	Name, capacity, Journey Date, Model	Search
10	Booking	Id	Book, Generate
11	Bidding	Id	Bid, Generate
12	Profile	Name, email, password, phone	Add, Remove, Update
13	Authentication	Name, Email, Password, Phone, Id	Log in, Log out, Submit
14	Address	Sub-urbs, Zip Code, Sub-District, District	Show
15	Track	Id, Time, Location	Show
16	Database		Store, Retrieve

Table 22: Table of Associated Noun and Verb Identification

6.5 Attribute Selection

No	Potential Class	Attributes
1.	Owner	First_Name, Last_Name, Email, Password, Phone, Owner_id
2.	Vehicle	Vehicle_id, License_no, Chassis_no, Add_date, Location_From, Location_To
3.	Client	First_Name, Last_Name, Email, Password, Phone, Client_id
4.	Admin	Name, Email, Password
5.	Chatting	Client_id ,Owner_id, Bool_Client_Send, Bool_Owner_Send, Content, Chat_Id
6.	Booking	Transaction_id, Amount, Owner_Id, Client_Id, Date
7.	Bidding	Bidding_id, Vehicle_Id, Client_Id
8.	Profile	
9.	Authentication	First_Name, Last_Name, Email, Password, Phone, Permanent_Address, Current_Address
10.	Address	Sub-urbs, Zip_Code, Sub_District, District
11.	Tracking	Tracking_Id, X_Cordinate, Y_Cordinate, Time
12.	Database	DB_Name , Password, DB User

Table 23: Table of Attribute Selection

6.6 Method Selection

No	Potential Class	Method
1	Owner	AddVehicle() RemoveVehicle() GenerateCoin() SubtractCoin() GenerateOwnerId() SearchByDate() SearchforTrip() SerachByModel() SearchByCapacity() SearchByLocation() ReceiveVerifictionCode()
2	Vehicle	ShowVehicleInfo() GenerateVehiclePostId() ChangeExpireDate()
3	Client	ShowHistory() SearchByDate() SearchforTrip() SerachByModel() SearchByCapacity() SearchByLocation() GenerateClientId() ReceiveVerifictionCode() GiveFeedBack()
4	Admin	AddVehicle()

		DeleteVehicle() AddOwner() DeleteOwner() AddClient() DeleteClient() ApproveCoinInAccount() SendNotificationVaiMail()
5	Chatting	SendMsg() ReceiveMsg() LinkClientAndOwner() GenerateChatId()
6	Booking	InstantBooking() BookingAfterBid() GenerateBookingId() GeneratePaymentDetails() SendBookingdetails() StoreBookingHistory()
7	Bidding	BidVehicle() GenerateVehicleId() BidNotification()
8	Profile	ChangeName() ChangePassword() ChangePhone() AddEmail() AddPhone() ShowProfile()
9	Authentication	SignUp(), ReceiveVerificationCode() SignIn() CheckFirstName() CheckLastname()

		CheckPhoneNumber() CheckEmail() CheckAddress() GenerateVarificatioCode() StoreOwnernInformationInDatabase() StoreClientInformationInDatabase()
10	Address	AddPermanentAddress() AddCurrentAddress()
11	Tracking	TrackVehicle() GenerateTrackID()
12	Database	StoreOwnernInformationInDatabase() StoreClientInformationInDatabase() StoreVehicleformationInDatabase() StoreTransctionInformationInDatabase() GetOwnernInformationFromDatabase() GetClientInformationFromDatabase() GetVehicleformationFromDatabase() GetTransctionInformationFromDatabase()

Table 24: Table of Method Selection

6.7 Class Cards

After identifying our final class, we have generated the following class cards.

Owner	
Attribute	Method
Owner_id First_Name Last_Name Email Password Phone	AddVehicle() RemoveVehicle() GenerateCoin() SubstractCoin() GenerateOwnerId() receiveVerifictionCode() SearchByDate() SearchforTrip() SerachByModel() SearchByCapacity() SearchByLocation()
Responsibility	Collaborative Class
Add and remove the vehicles Add pre-paid Verification Searching	Vehicle Authentication Tracking Permanent_Adress Current_Adress Database

Table 25: Class Card of Owner Class

Vehicle	
Attribute	Method
Vehicle_id License_no Chassis_no Add_date Journey_date Location_From Location_To	ShowVehicleInfo() GenerateVehiclePostId() ChangeExpireDate()
Responsibility	Collaborative Class
Show vehicle details	

Table 26: Class Card of Vehicle Class

Client	
Attribute	Method
Client_id First_Name Last_Name Email Password Phone	ShowHistory() SearchByDate() SearchByName() SerachByModel() SearchByCapacity() SearchByLocation() GenerateClientId() Receiveverificationcode() GiveFeedBack()
Responsibility	Collaborative Class
Searching Verify	Vehicle Authentication Tracking Permanent_Address Current_Address Database

Table 27: Class Card of Client Class

Admin	
Attribute	Method
Name Email Password	AddVehicle() DeleteVehicle() AddOwner() DeleteOwner() AddClient() DeleteClient() ApproveCoinInAccount()
Responsibility	Collaborative Class
Approve and manage owner Approve and manage client Approve and manage vehicle	Owner Client Vehicle Database

Table 28: Class Card of Admin Class

Chatting	
Attribute	Method
Chat_Id Client_id Owner_id Bool_Client_Send Bool_Owner_Send Msg_Content	SendMsg() ReceiveMsg() LinkClientAndOwner() GenerateChatId()
Responsibility	Collaborative Class
Stablish connection between owner and client Manage Chatting	Owner Client Database

Table 29: Class Card of Chatting Class

Booking	
Attribute	Method
Transaction_id Amount Owner_Id Client_Id Date	InstantBooking() BookingAfterBid() GenerateBookingId() GeneratePaymentDetails() SendBookingdetails() StoreBookingHistory
Responsibility	Collaborative Class
Booking vehicle	Vehicle Bidding Database

Table 30: Class Card of Booking Class

Bidding	
Attribute	Method
Bidding_id Vehicle_Id Client_Id	BidVehicle() GenerateVehicleId() BidNotification()
Responsibility	Collaborative Class
Manage Bidding information	Vehicle Client Database

Table 31: Class Card of Bidding Class

Profile	
Attribute	Method
	Changename() Changepassword() Changephone() Addemail() Addphone() Showprofile()
Responsibility	Collaborative Class
Edit and update profile	Owner Client Parmanent_Address Current_Address Database

Table 32: Class Card of Profile Class

Authentication	
Attribute	Method
First_Name Last_Name Email Password Phone_no Permanent_Address Current_Address	Signup(), Receiveverificationcode() Signin() Checkfirstname() Checklastname() Checkphonenumber() Checkemail() Checkaddress() Generatevarificatiocode() Storeownerninformationindatabase() Storeclientinformationindatabase() Logout()
Responsibility	Collaborative Class
Sign up Sign in Verification of users Check profile information Secure disconnection	Client Owner Admin Database

Table 33: Class Card of Authentication Class

Tracking	
Attribute	Method
Tracking_Id X_Cordinate Y_Cordinate,Time	Trackvehicle() Generatetrackid()
Responsibility	Collaborative Class
Show vehicle details	

Table 34: Class Card of Tracking Class

Permanent_Address	
Attribute	Method
Sub-urbs Zip_Code Sub_District District	addPermanentAddress() generatePermanentAddressID()
Responsibility	Collaborative Class
Add Permanent Address	

Table 35: Class Card of Permanent Address Class

Current_Address	
Attribute	Method
Sub-urbs Zip_Code Sub_District District	addCurrentAddress() generateCurrentAddressID()
Responsibility	Collaborative Class
Add Current Address	

Table 36: Class Card of Current Address Class

Database	
Attribute	Method
DB_Name password DB_User	storeOwnernformationInDatabase() storeClientInformationInDatabase() storeVehicleformationInDatabase() storeTransctionInformationInDatabase() getOwnernformationFromDatabase() getClientInformationFromDatabase() getVehicleformationFromDatabase() getTransctionInformationFromDatabase() updateOwnernformationInDatabase() updateClientInformationInDatabase() updateVehicleformationInDatabase() updateTransctionInformationInDatabase()
Responsibility	Collaborative Class
Store all the data Update all the data Delete data Search data	

Table 37: Class Card of Database Class

Chapter 7: Behavior Model

7.1 Introduction

Behavior modeling is also referred to as State modeling, State machines. Behavior modeling is when one thinks of his ideas in terms of states and transitions. This requires both identifying all of the interesting states of being that software or its components are likely to be in. And also, at a high level, abstracting what events are likely to cause software or its components to change between states of being.

7.2 Identifying Events

Here we have identified events from the **Usage Scenario** and listed their corresponding initiators & collaborators.

Events	Primary Object	Collaborative Object	Invoked Methods
Input log in information	Owner,Admin, Client	Authentication	login()
Check information validity	Authentication		checkFirstName() checkLastName() checkEmail()
Input information to register	Owner,Client	Authentication	signup()
Generate verification code	Authentication	Owner,Client	generateVerificationCode()
Send verification code	Authentication	Owner,Client	sendVerificationCode()
Input verification code	Owner,Client	Authentication	confirmUser()
Show warning	Authentication		checkFirstName() checkLastName() checkEmail()
Log out from the system	Authentication		logout()
Input email to get verification code	Owner,Client	Authentication	changePassword()
Input model of vehicle	Client	Searching	searchByModel()

Input date to schedule	Client	Searching	searchByDate()
Input capability to search	Client	Searching	searchByCapability()
Select search button	Client	Searching	SearchByModel() searchByDate() searchByDate() showVehicleList
Show found vehicle list	Searching		showVehicleList
Input information of a new vehicle	Owner	Database	addVehicle()
Click on the add new vehicle button	Owner		addVehicle()
Store information of a new vehicle button	Database	Database	storeInformationOfNewVehicle()
Select a vehicle to remove	Owner	Database	removeVehicle()
Click on remove button	Owner		removeVehicle()
Input a date to renew	Owner	Database	renewVehicle()
Click on renew button	Owner		renewVehicle()
Choose a vehicle on trip	Owner, Client	Tracking	trackVehicle()
Click on track button	Owner, Client	Tracking	trackVehicle()
Input information to schedule a vehicle	Client	Booking	bookVehicle()
Click on schedule button	Client	Booking	bookVehicle()
Choose a scheduled vehicle	Client	Booking	viewbookedVehicle()
Click on cancel button	Client	Cancel	cancelTrip()
Click on chat	Client	Chatting	sendMessage()
Send message	Client	Chatting	sendMessage()
Input new bid value	Client	Bidding	bidVehicle()
Confirm vehicle	Bidding	Client	GenerateVehicleId()
Block users	Administrator	Owner, Client	blockOwner() blockClient
Block vehicles	Administrator	Vehicle	blockVehicle()

Table 38: Table of Identifying Events

7.3 State Transition Diagram

State Transition Diagram represents active states for each class and the events (triggers) that cause changes between these active states. Here we have provided diagram for each of the actors.

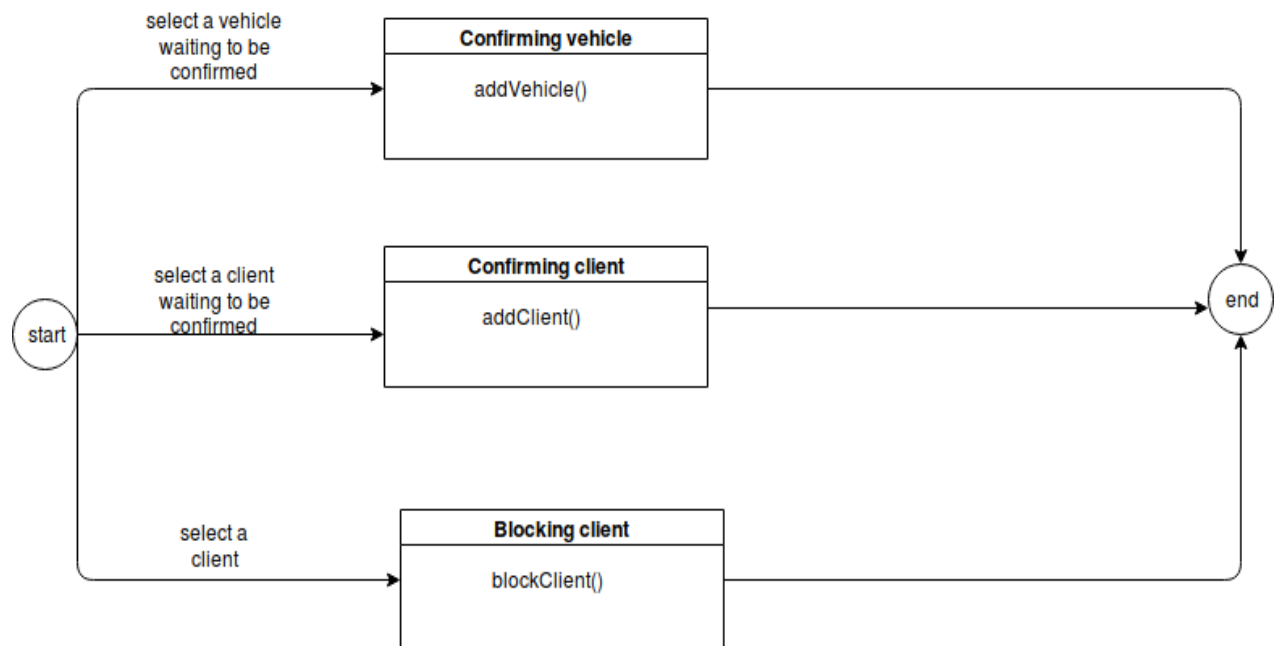


Figure 36: State Transition Diagram of Administrator

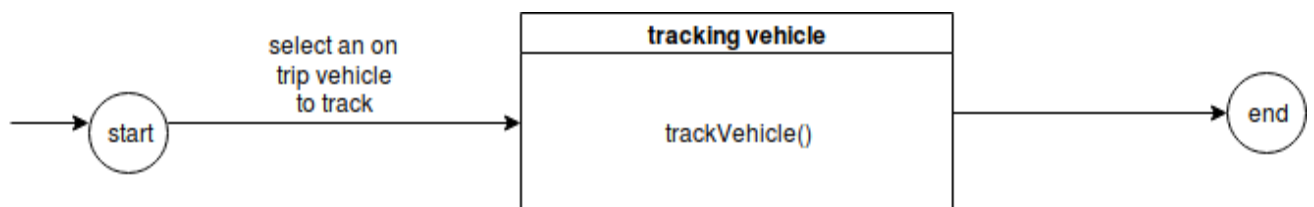


Figure 37: State Transition Diagram of Tracking

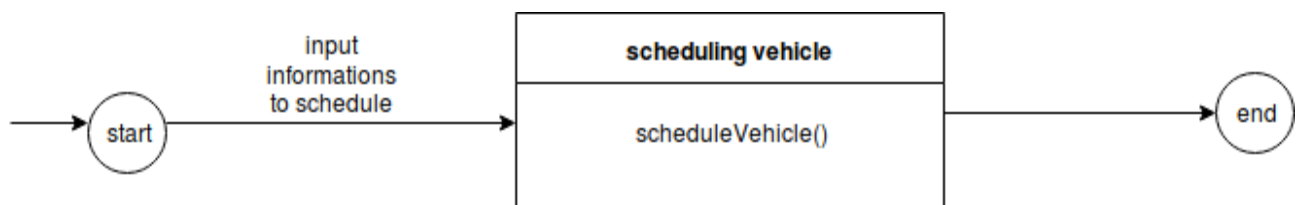


Figure 38:: State Transition Diagram of Booking

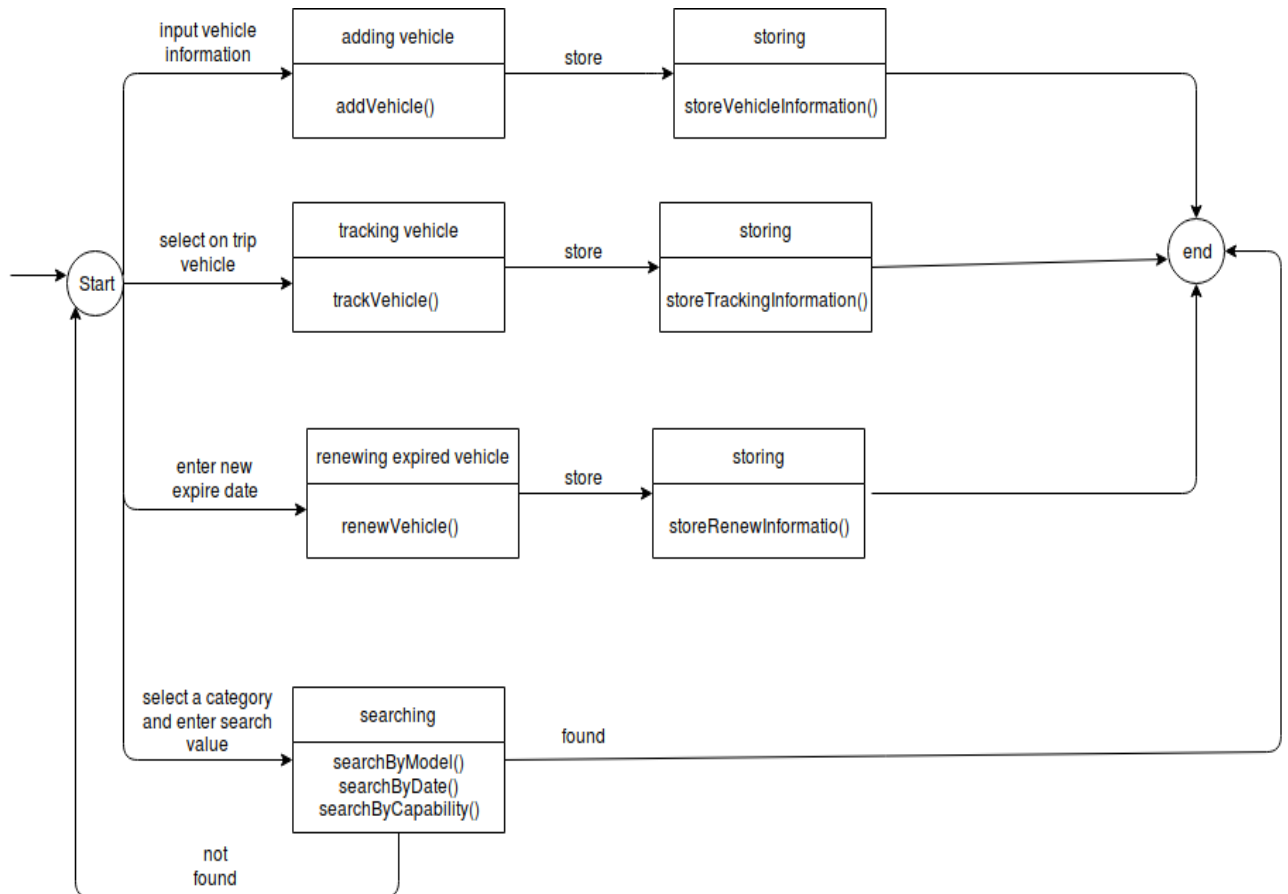


Figure 39: : State Transition Diagram of Owner

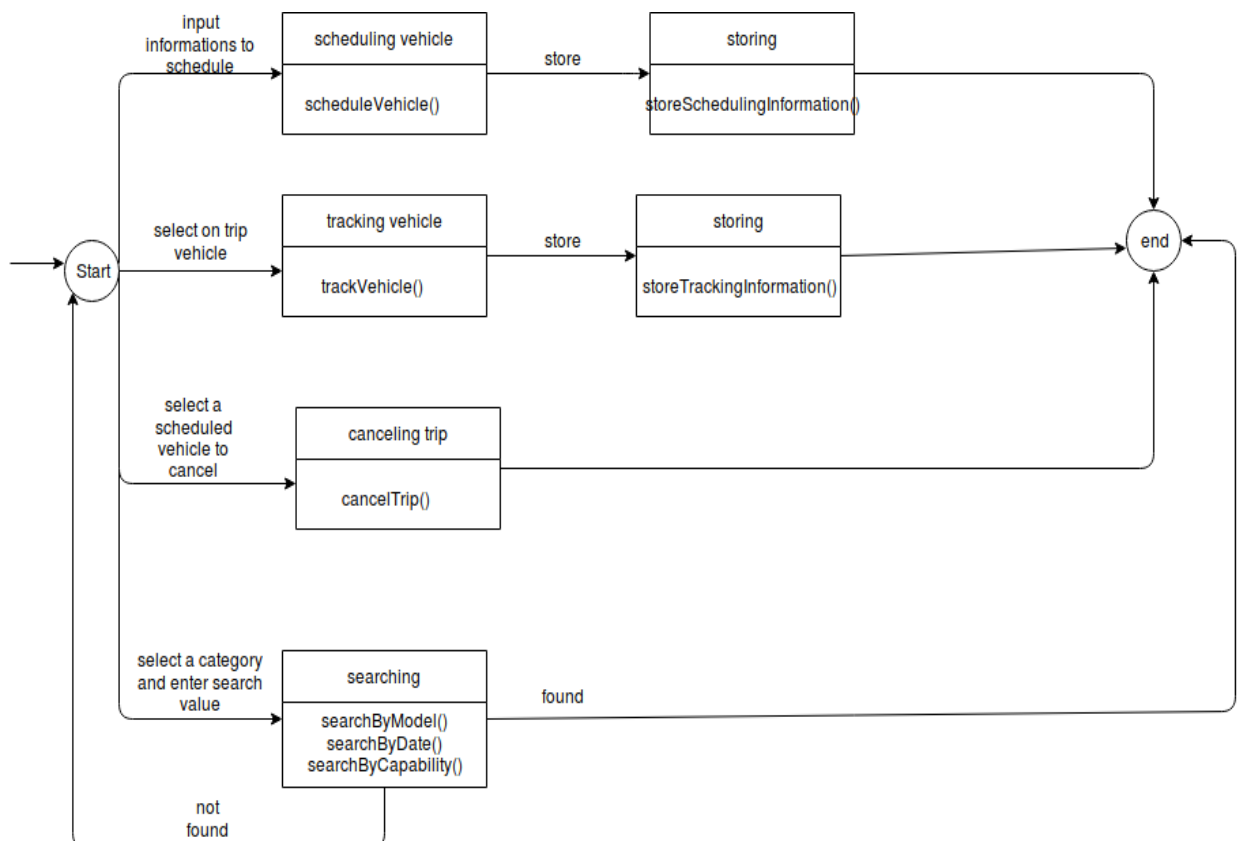


Figure 40: State Transition Diagram of Client

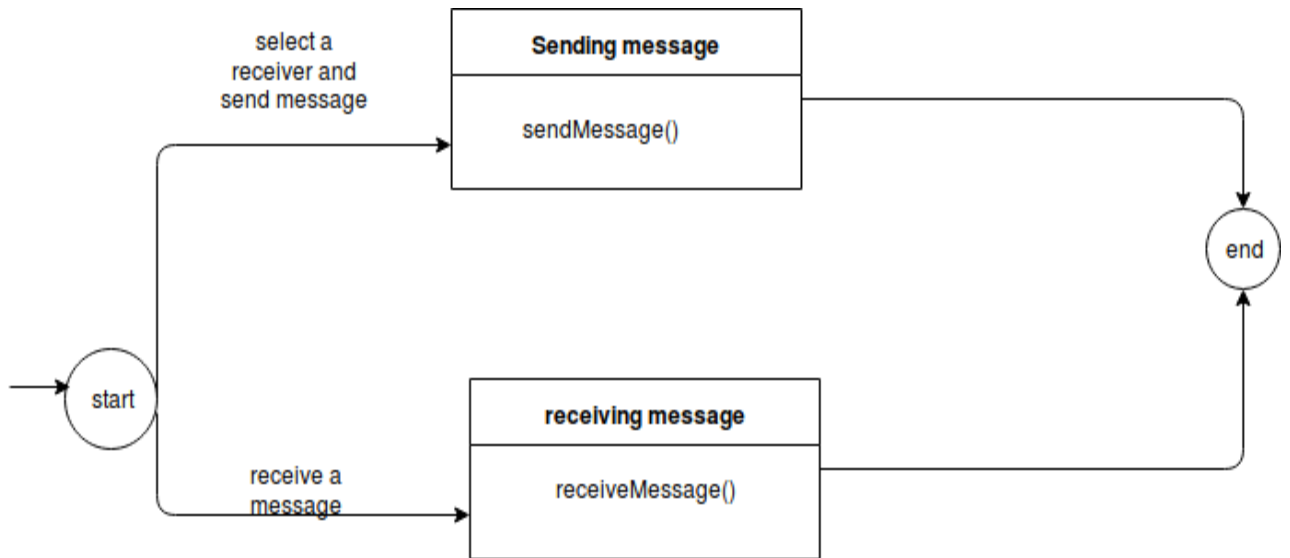


Figure 41: State Transition Diagram of Chatting

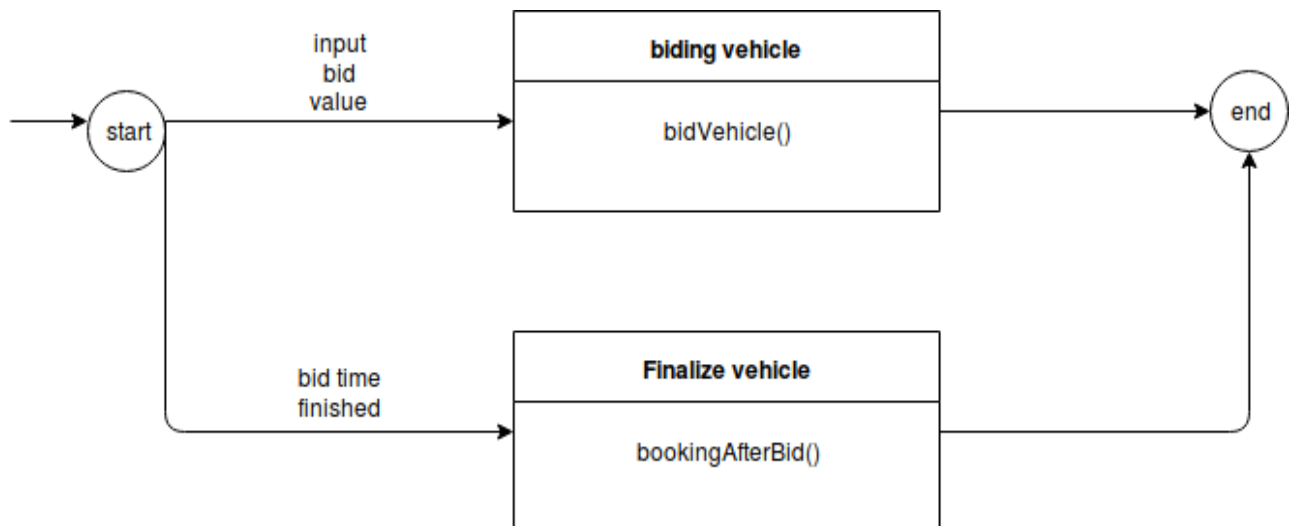


Figure 42: State Transition Diagram of Bidding

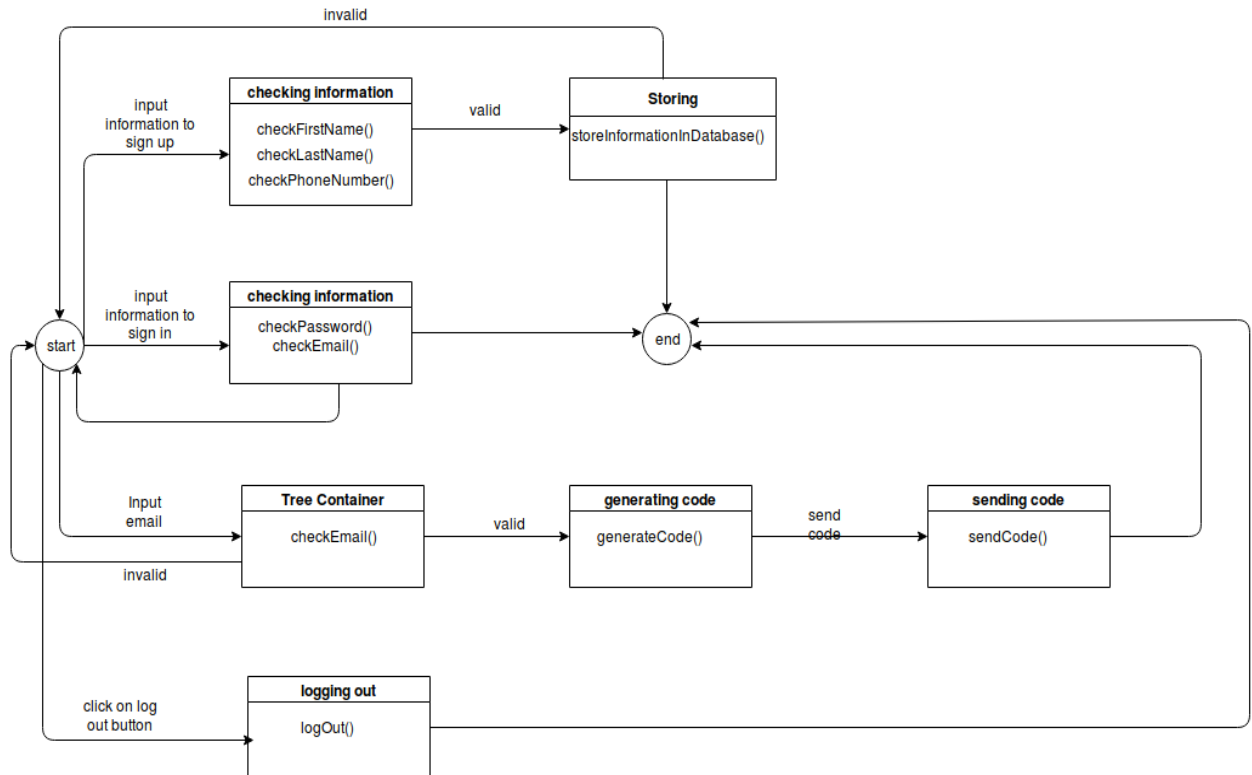


Figure 43: State Transition Diagram of Authentication

Chapter 8: Data flow Diagram

8.1 Introduction

A data flow diagram (DFD) maps out the flow of information for any process or system. It uses defined symbols like rectangles, circles and arrows, plus short text labels, to show data inputs, outputs, storage points and the routes between each destination. Data flowcharts can range from simple, even hand-drawn process overviews, to in-depth, multi-level DFDs that dig progressively deeper into how the data is handled. They can be used to analyze an existing system or model a new one. Like all the best diagrams and charts, a DFD can often visually “say” things that would be hard to explain in words, and they work for both technical and nontechnical audiences, from developer to CEO. That’s why DFDs remain so popular after all these years. While they work well for data flow software and systems, they are less applicable nowadays to visualizing interactive, real-time or database-oriented software or systems.

8.2 ITMS Data Flow Diagram

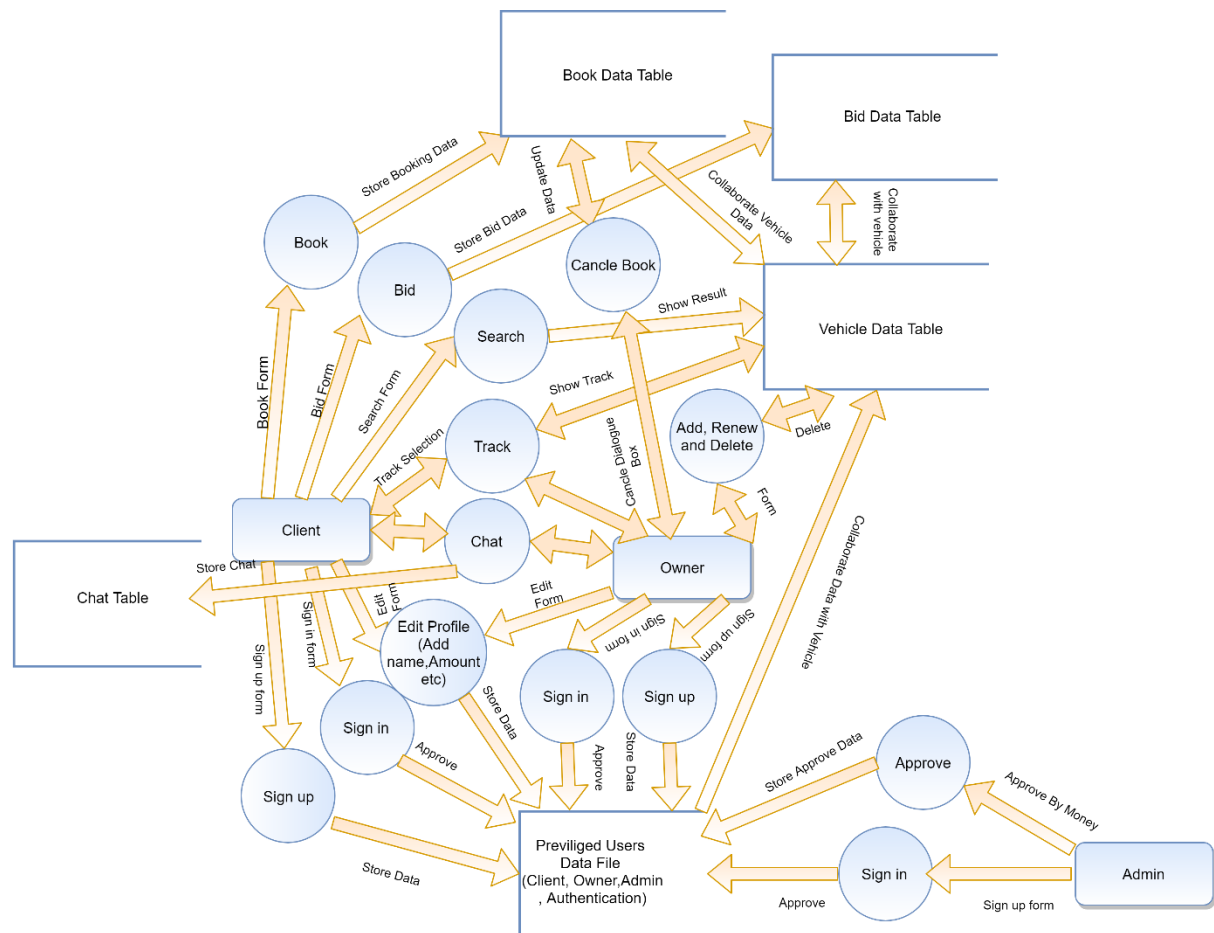


Figure 44: Data Flow Diagram of ITMS

Chapter 9: Appendix

9.1 Sequence Diagram

9.1.1 Full Diagram

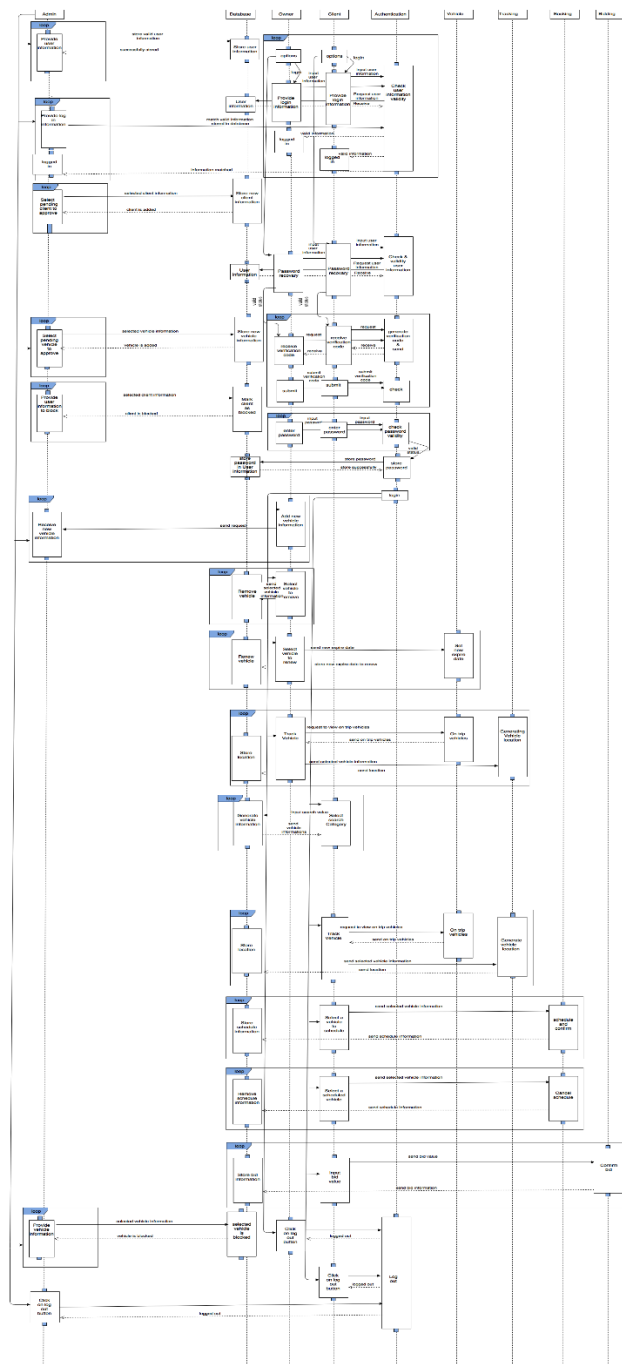
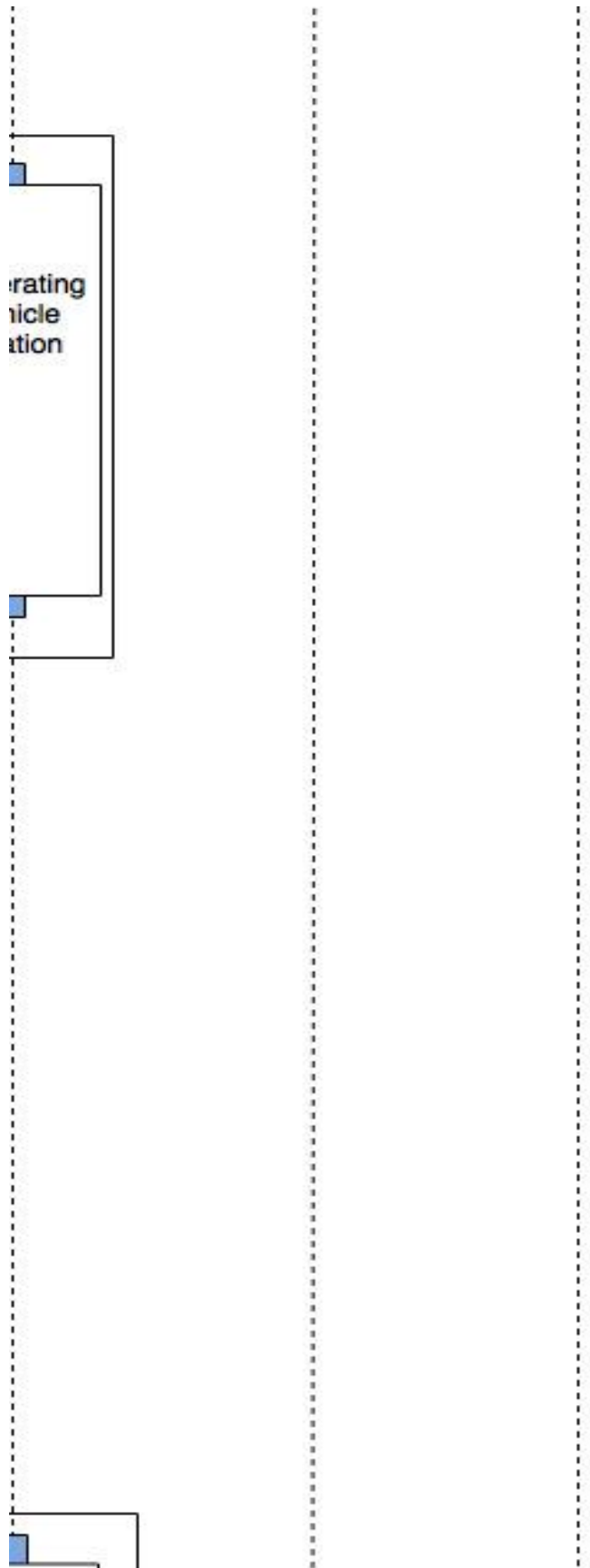
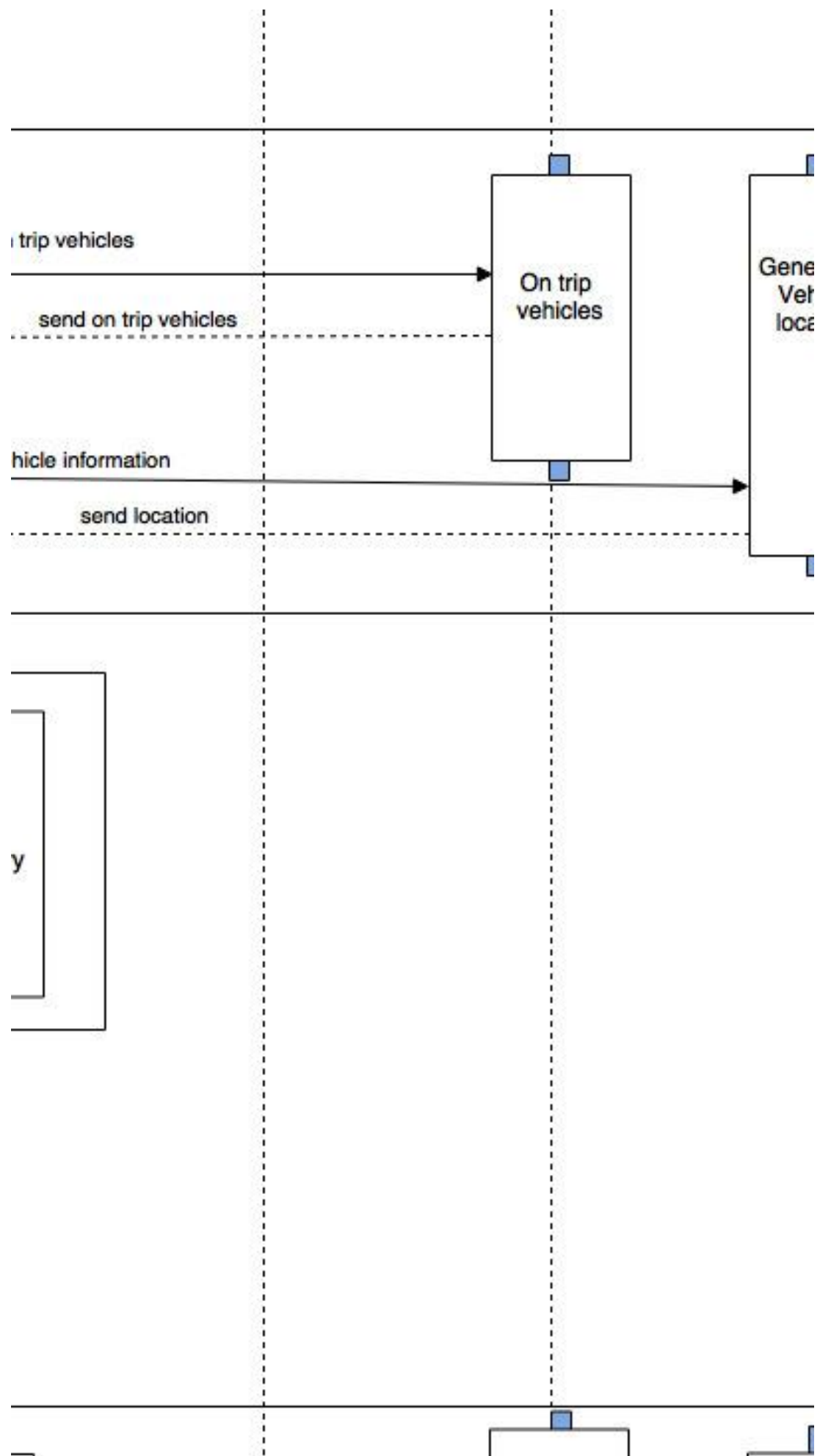
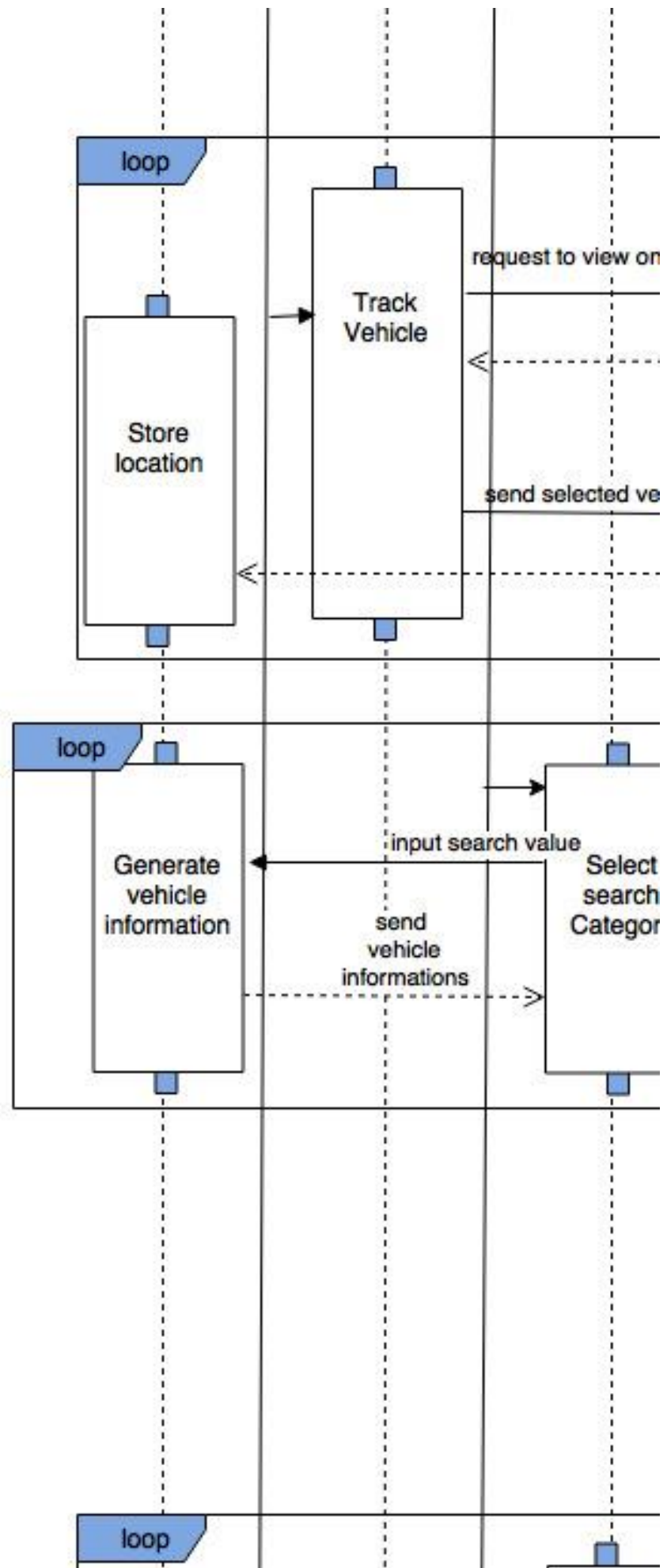


Figure 45: Sequence Diagram

9.1.2 Parts of Diagram





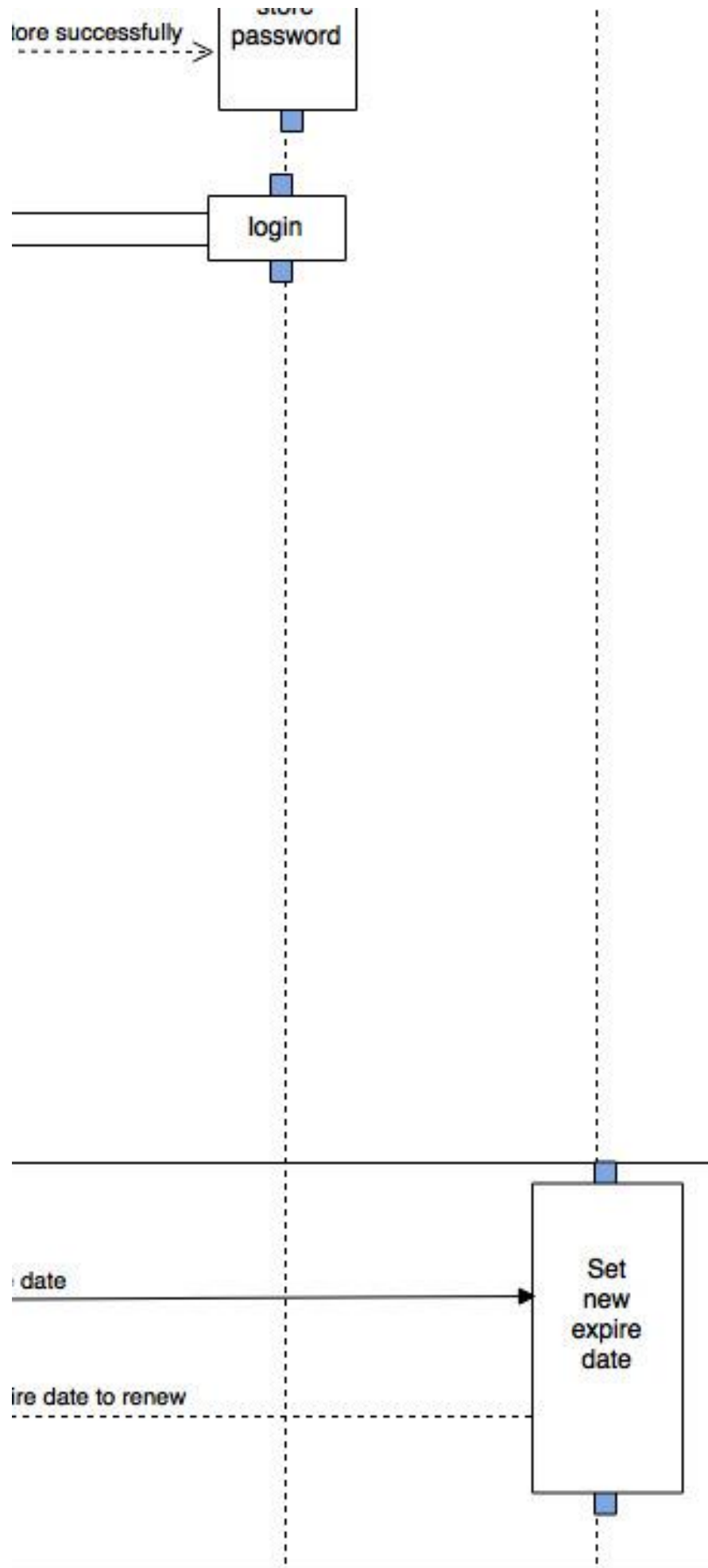


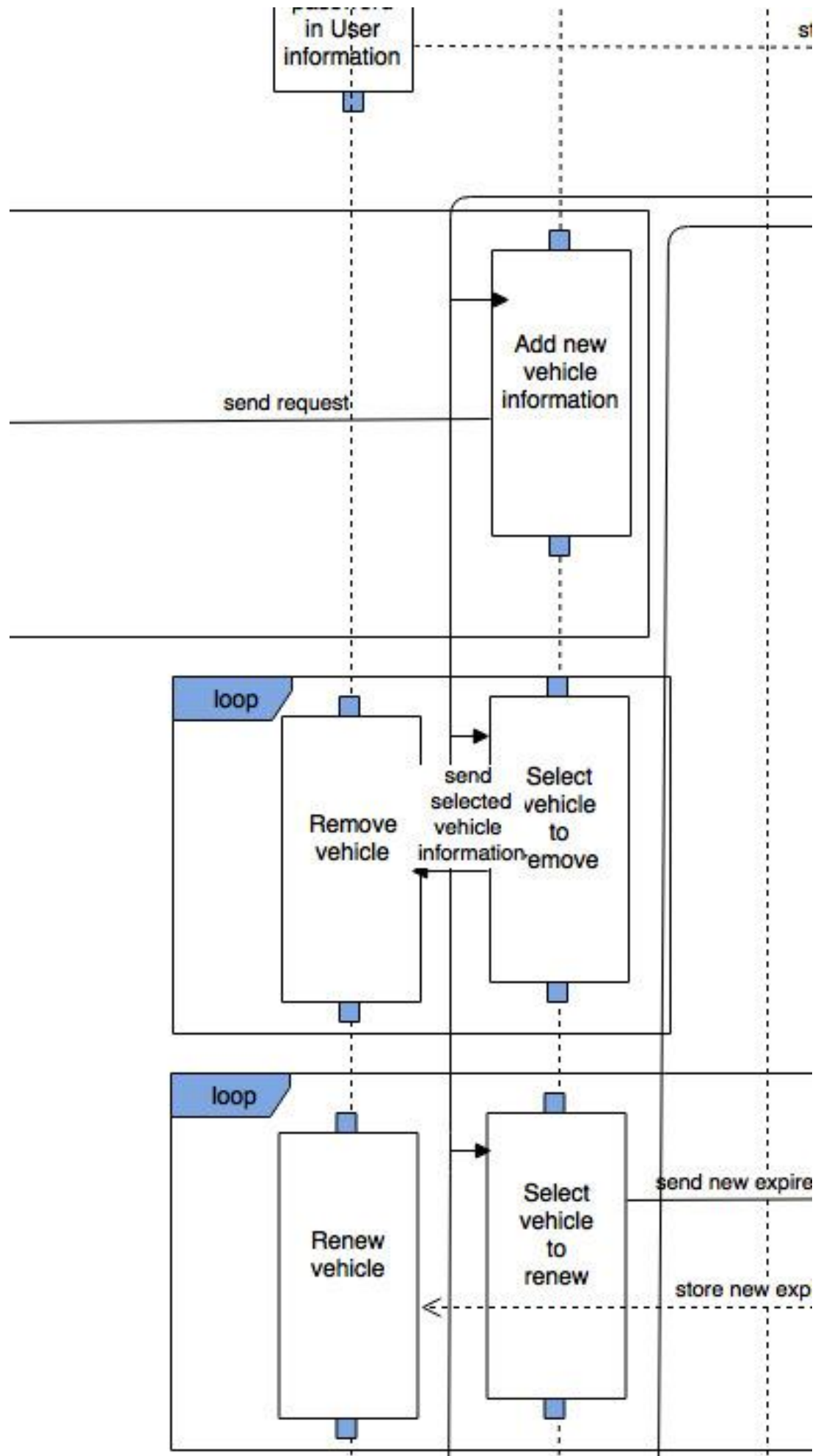
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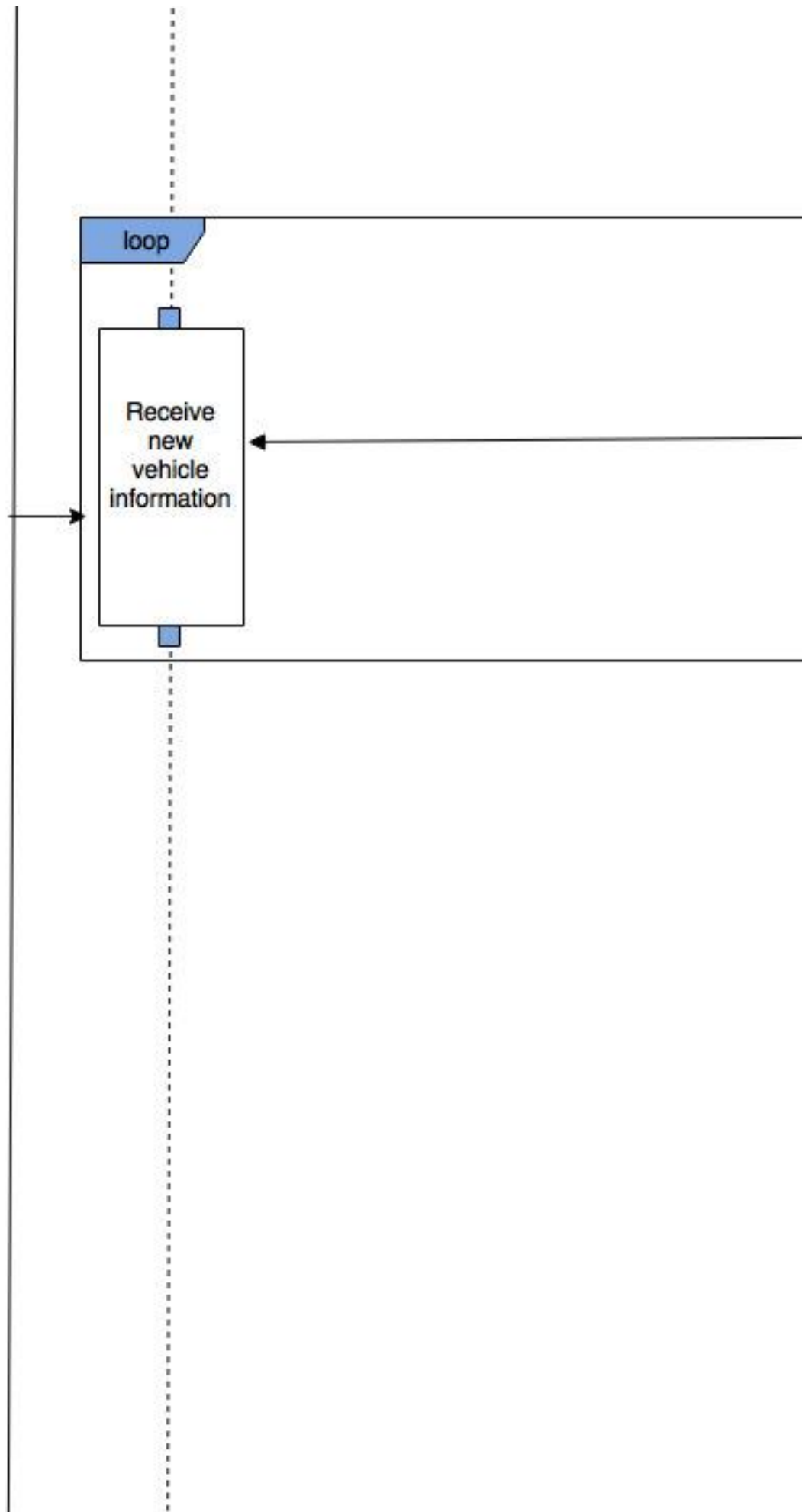
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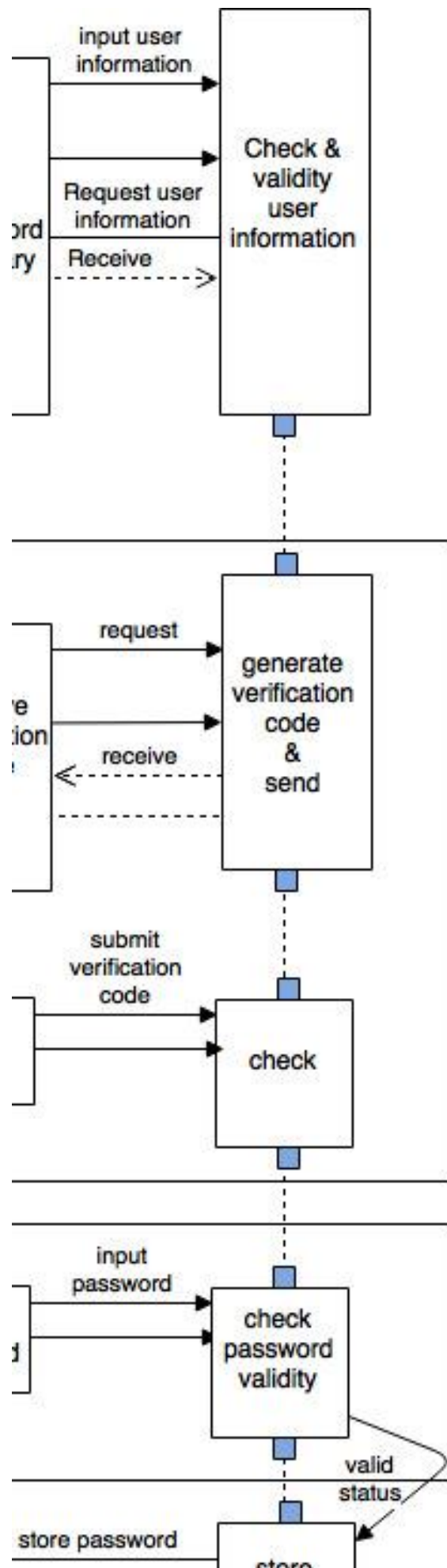


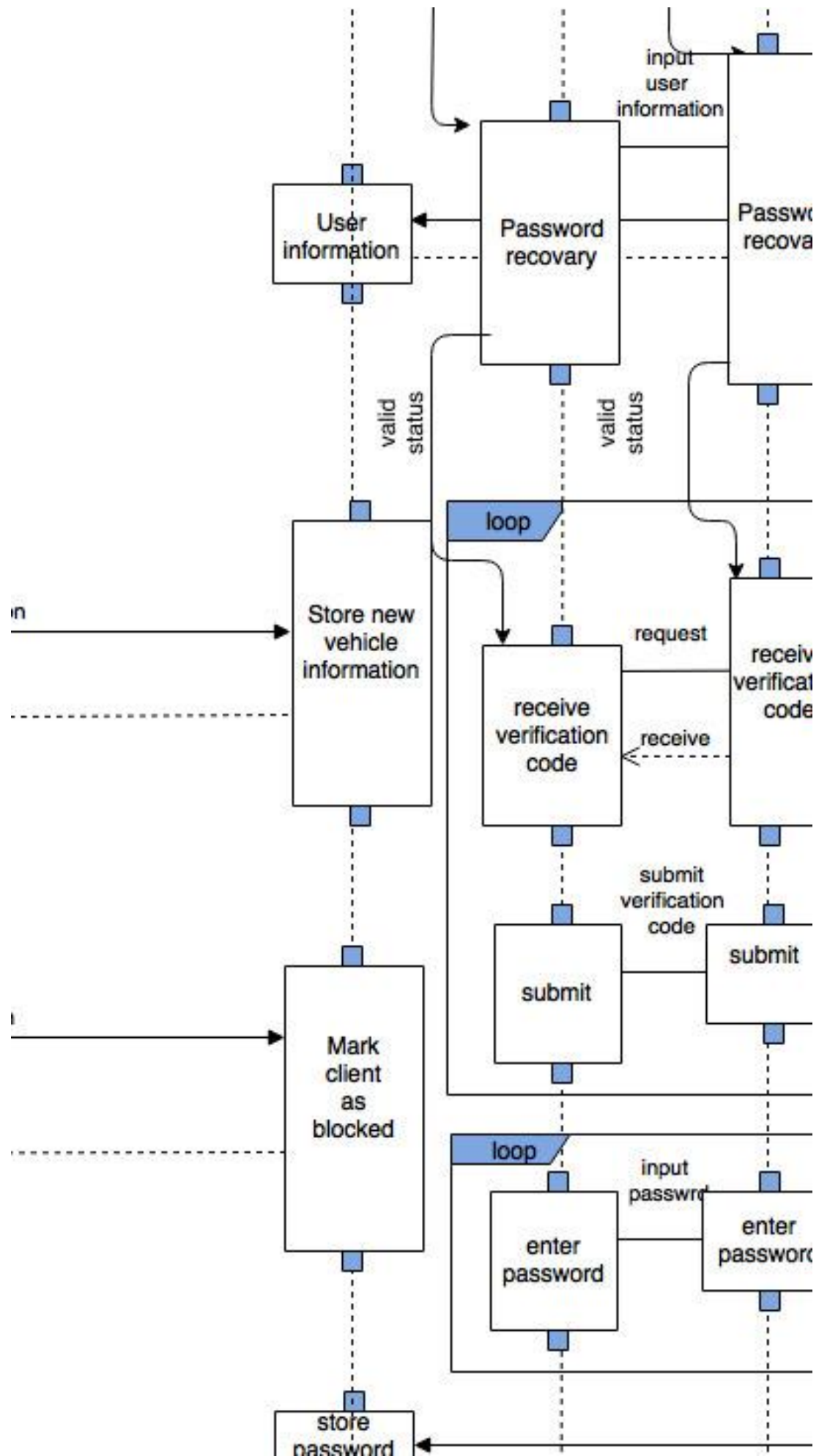


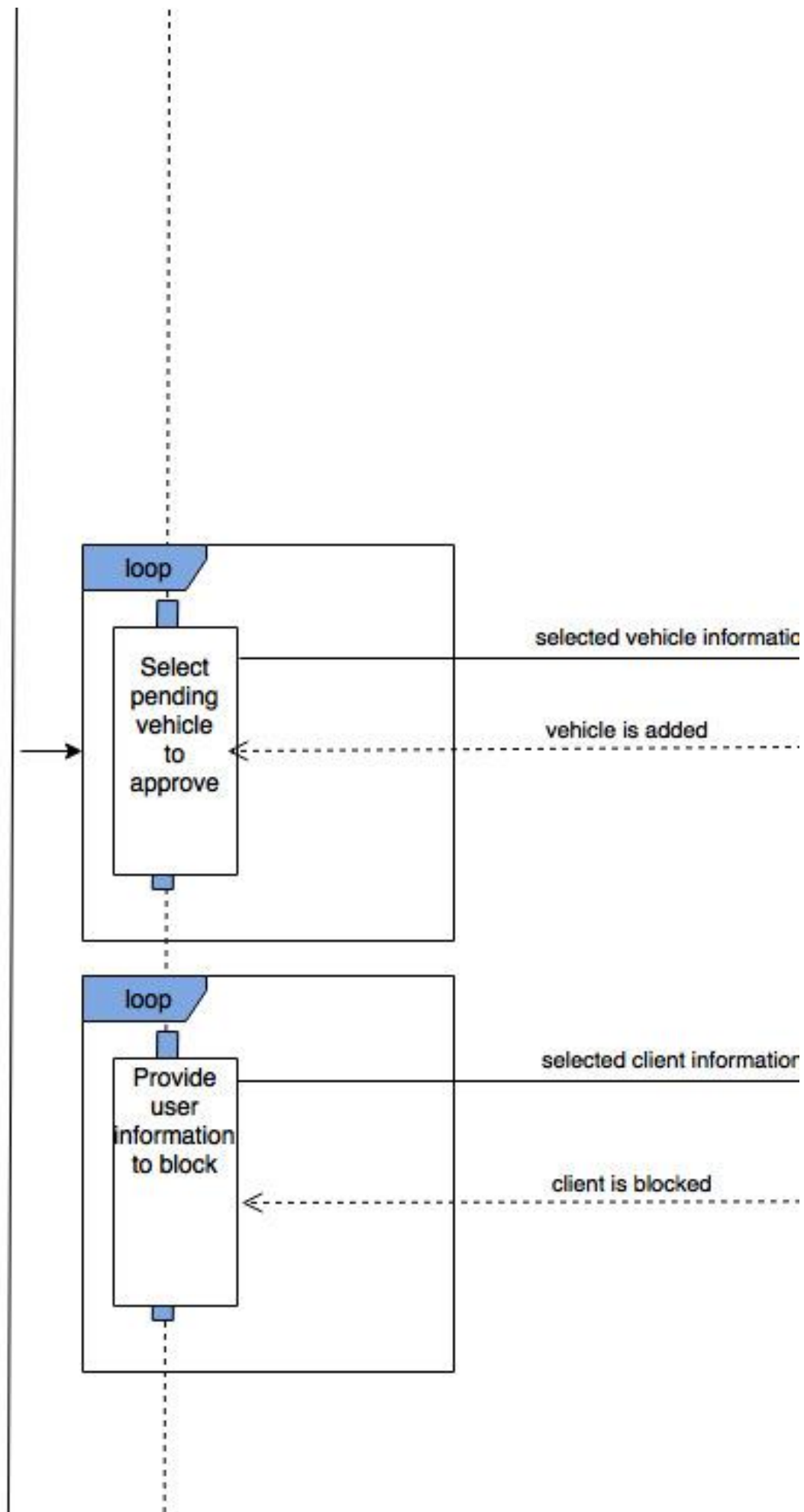
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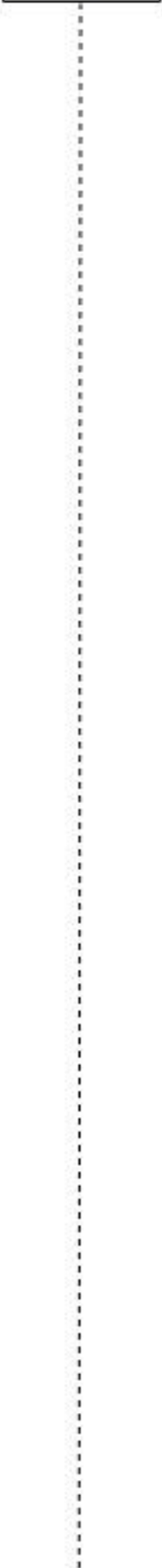


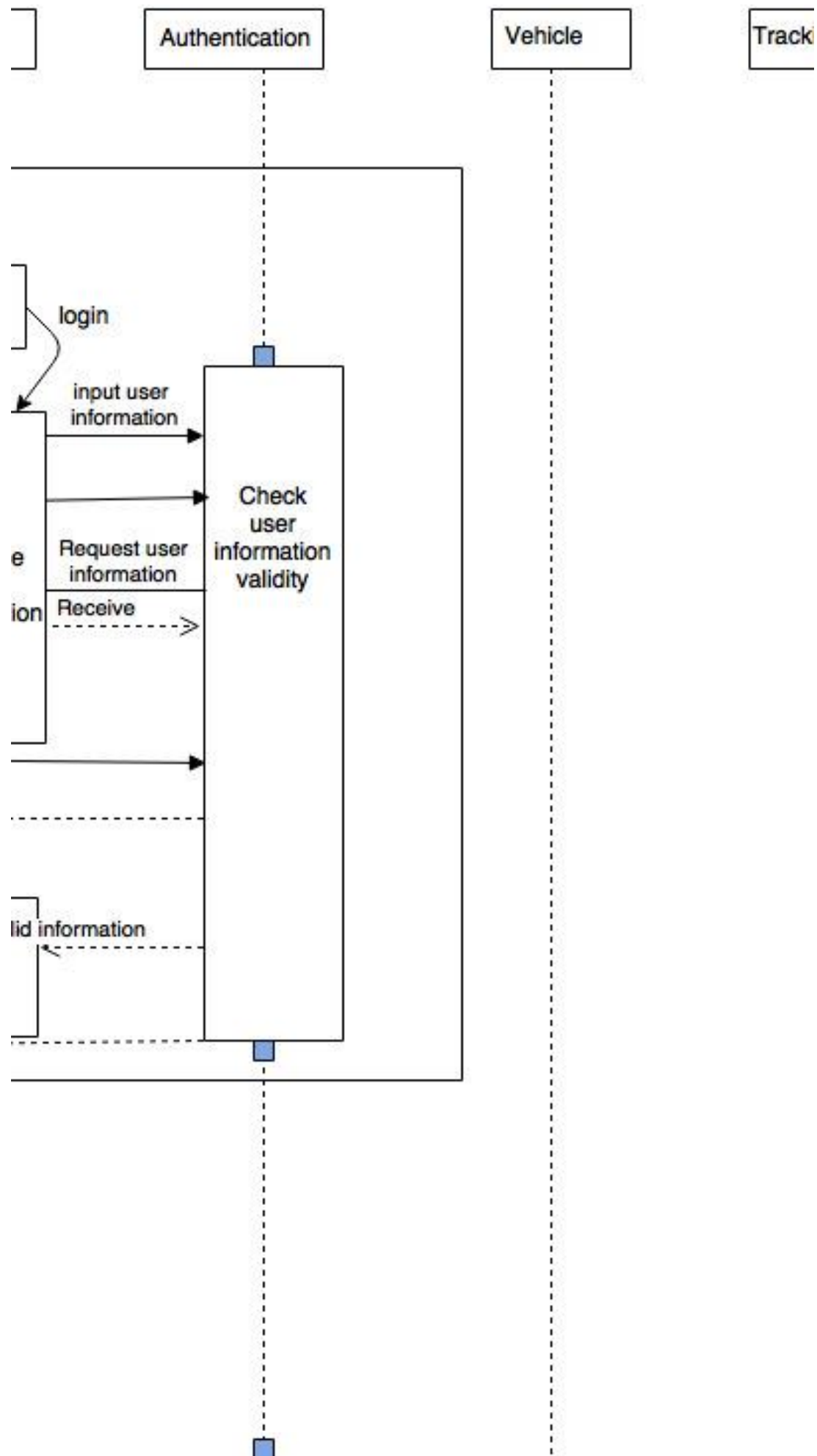


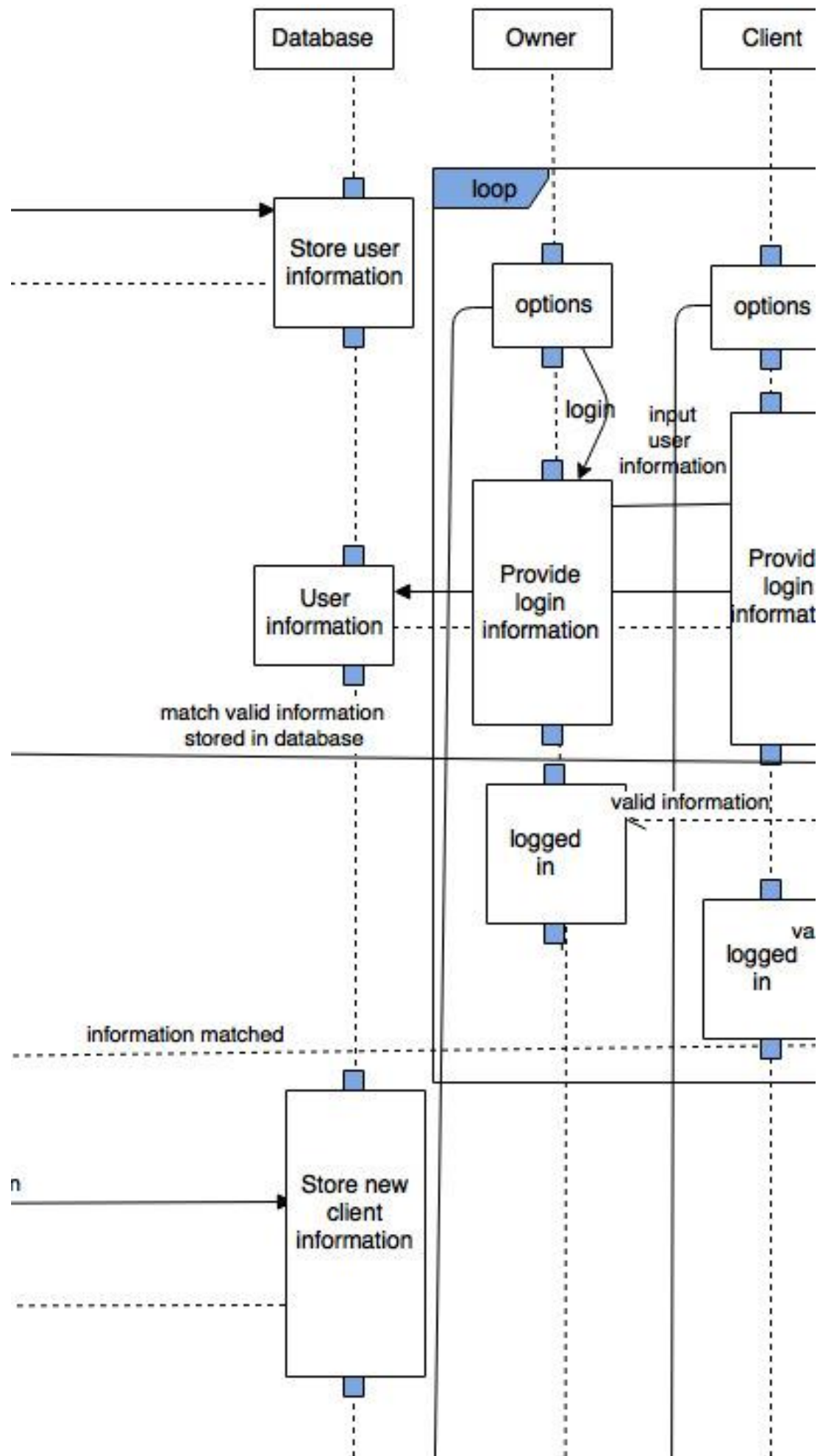
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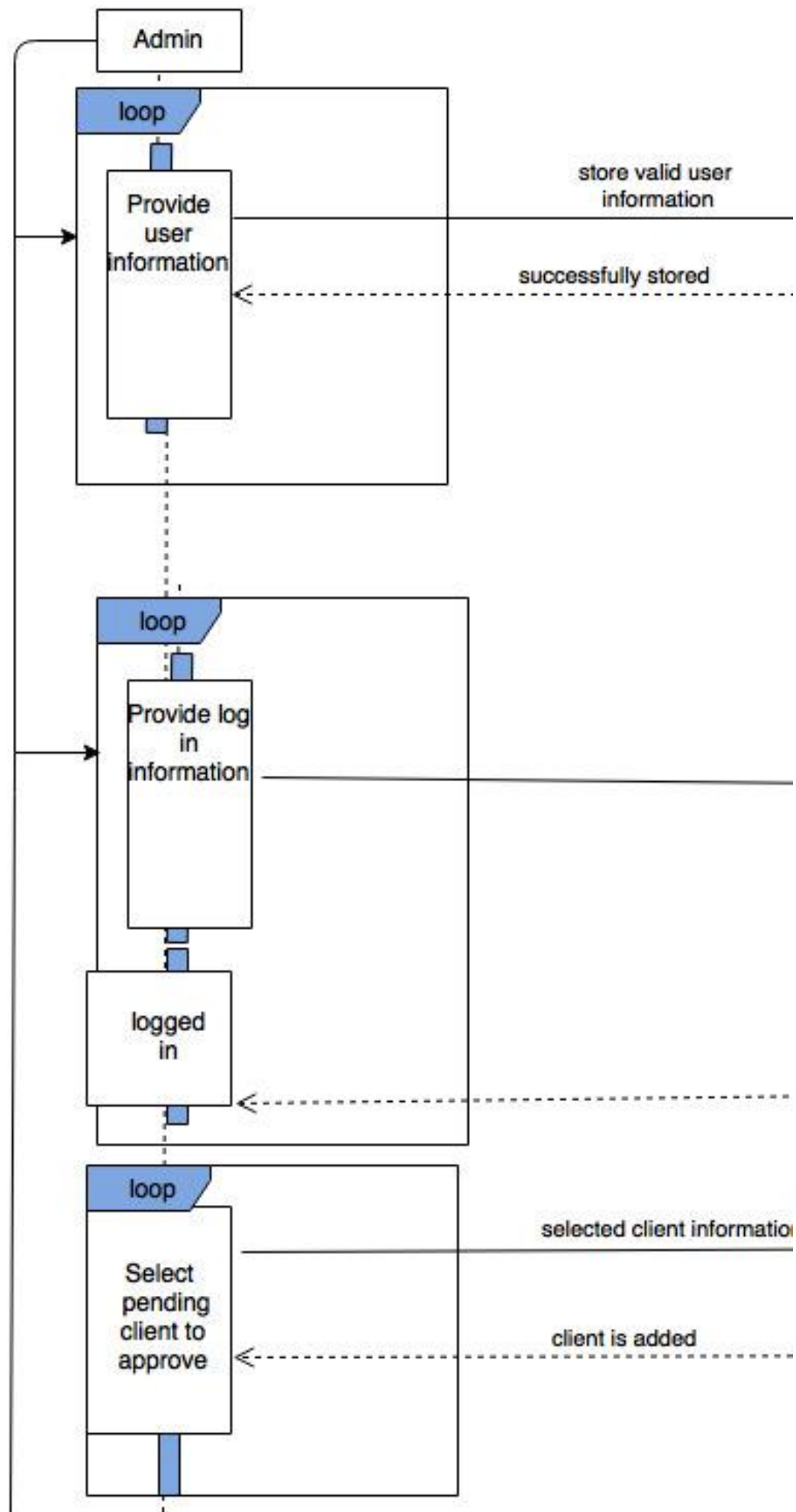
Booking

Bidding

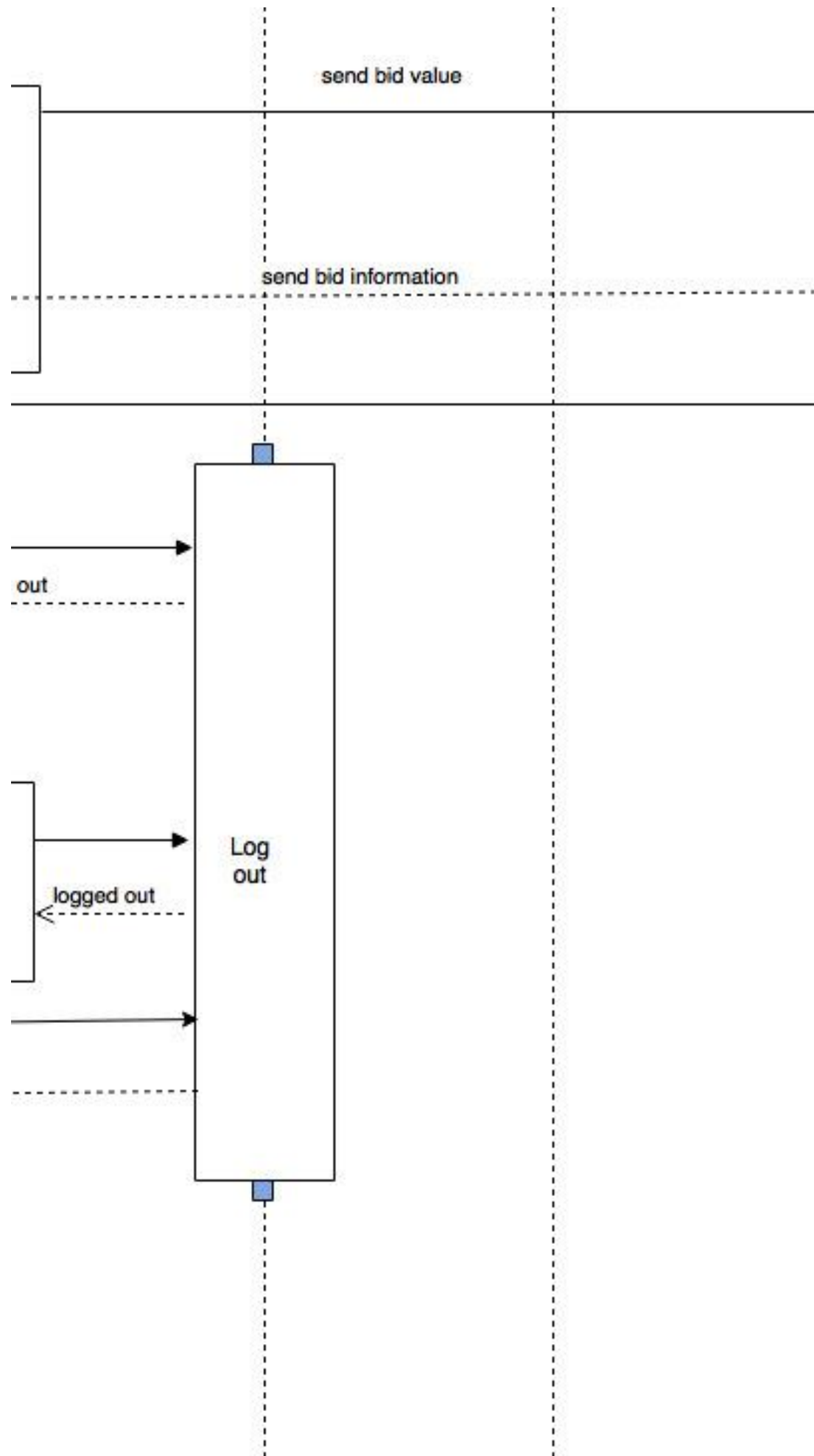


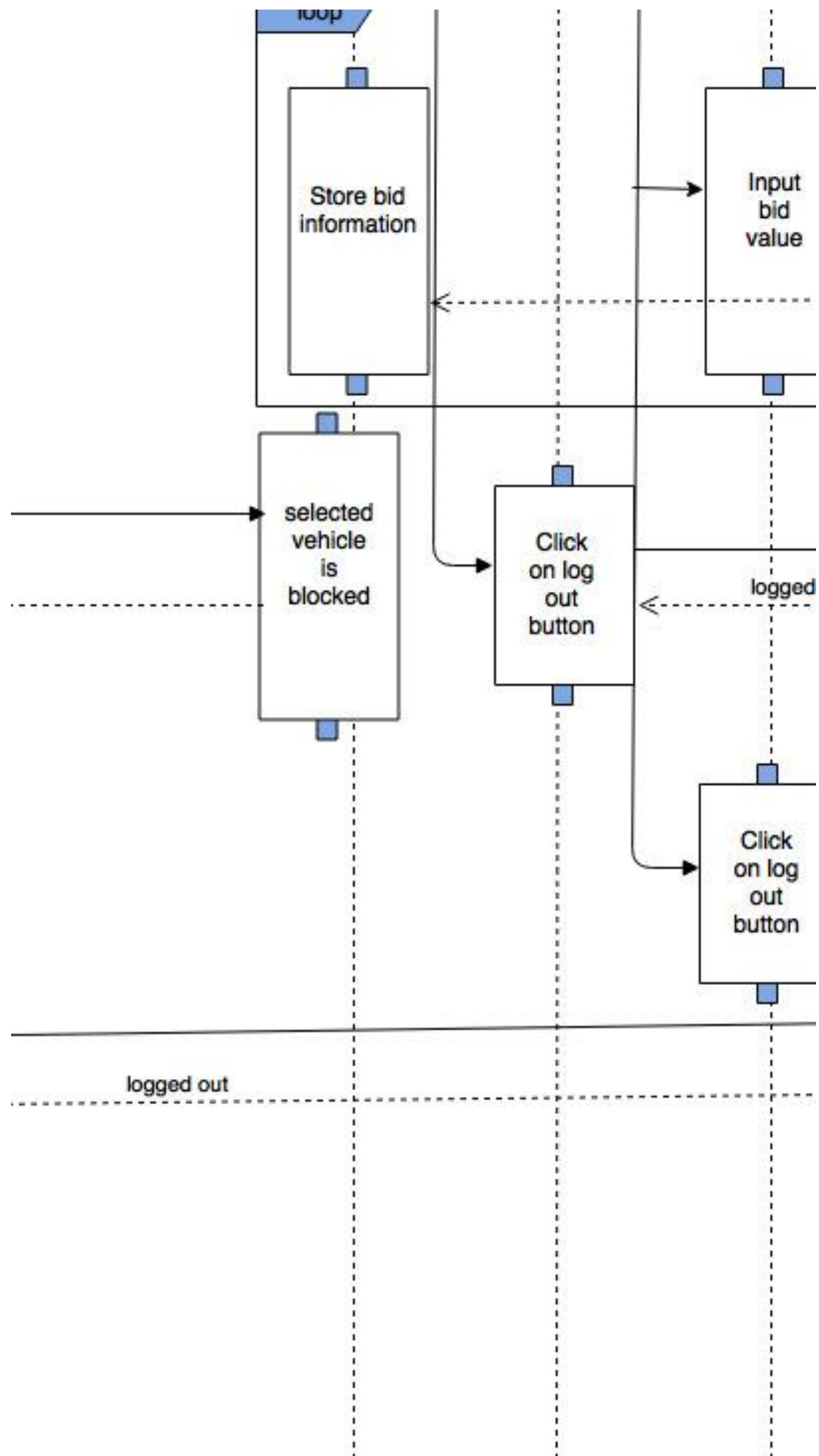


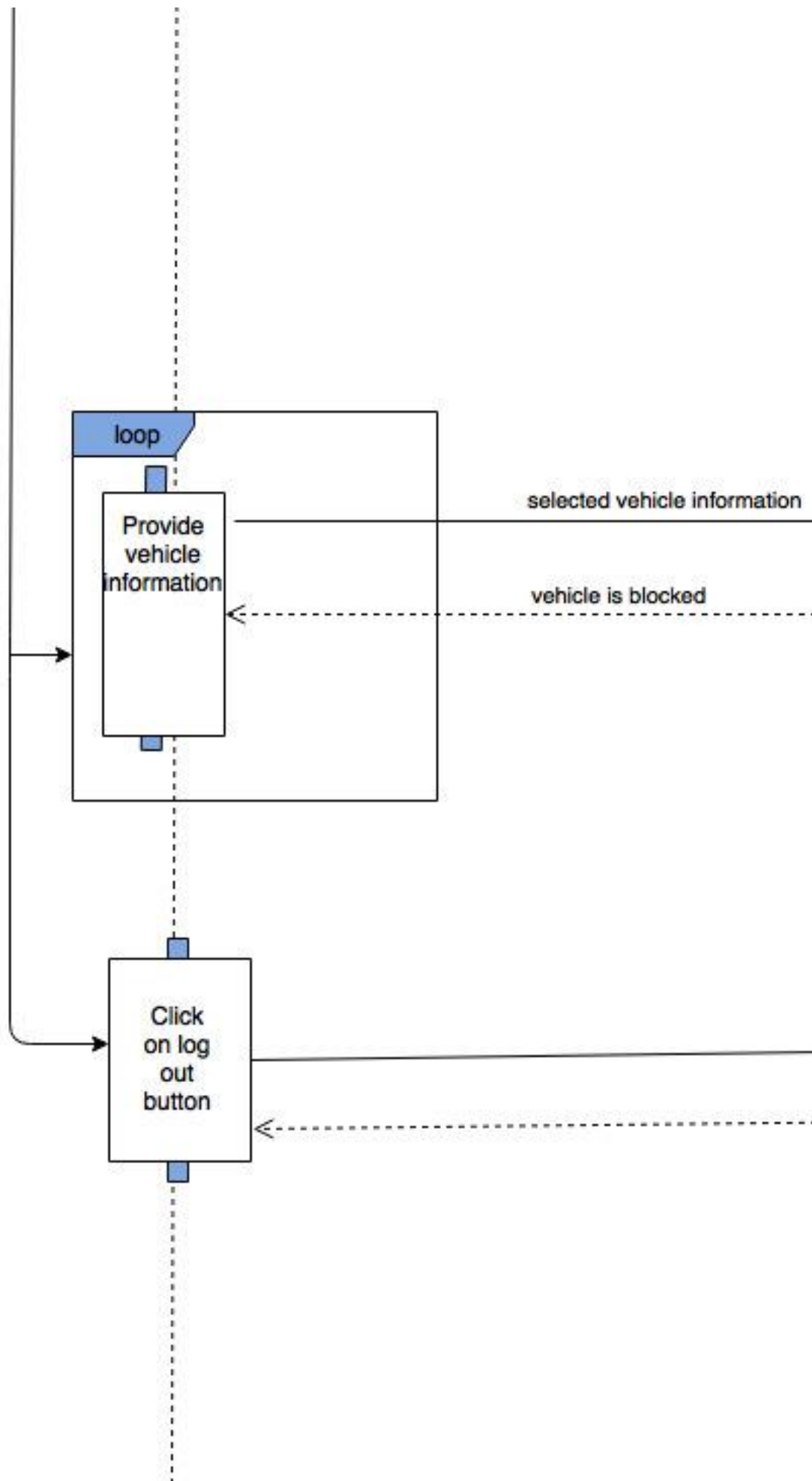


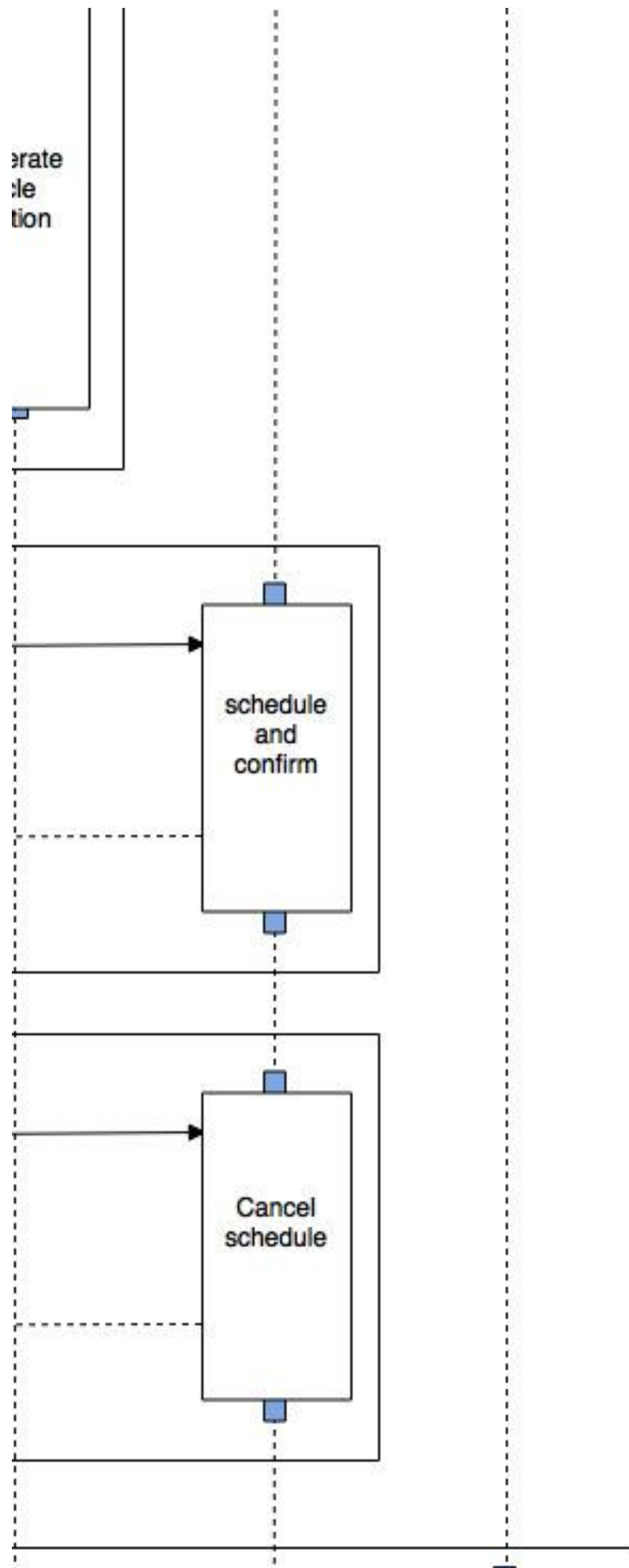


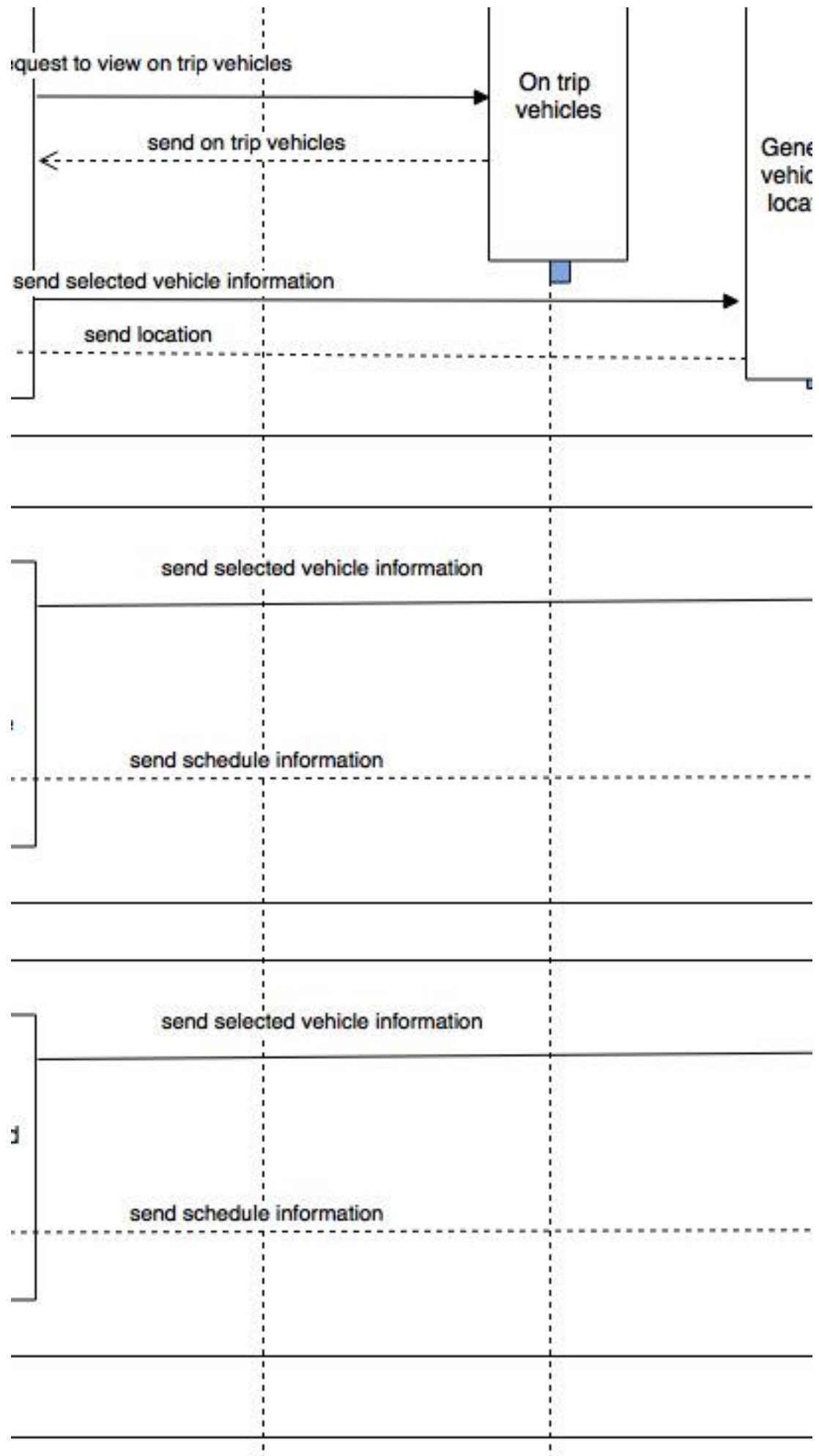


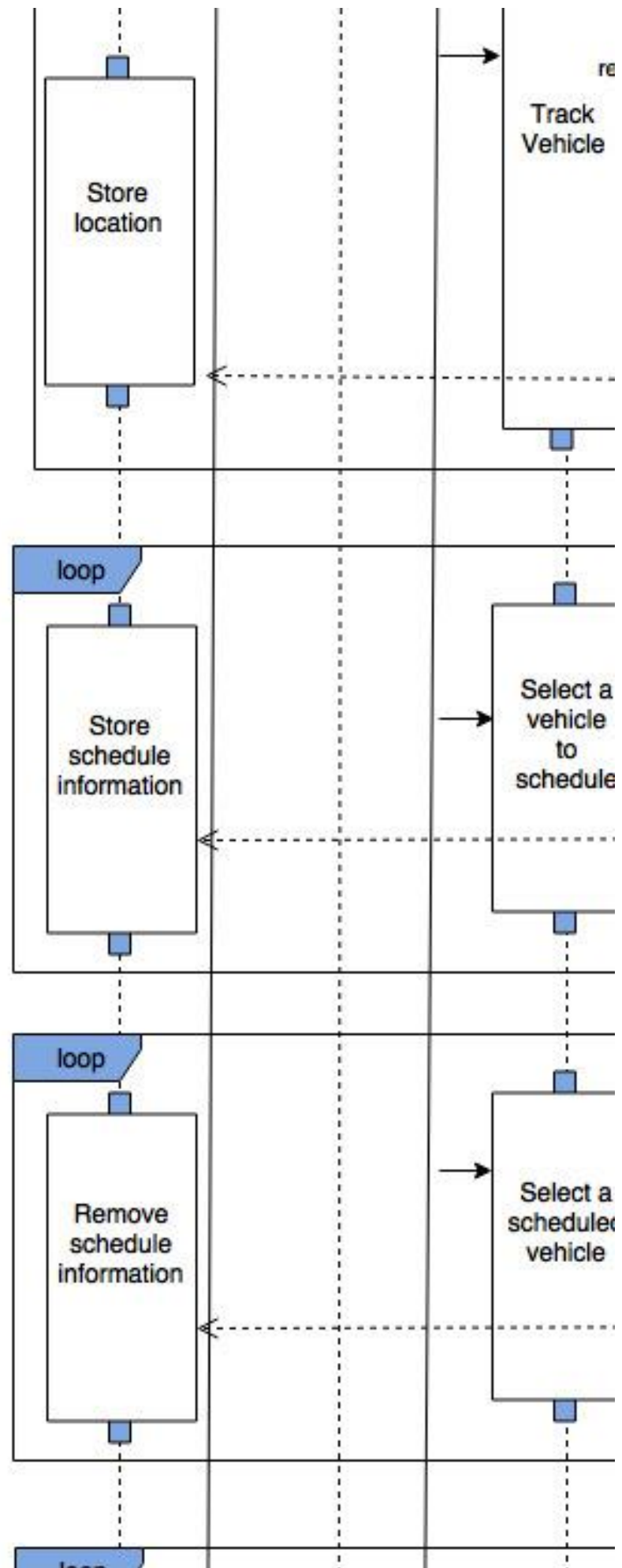












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9.2 Meeting Report

9.2.1 Meeting report-1

Meeting Information

Date: 20-01-2018

Location: IIT, DU, Lab402

Time: 4:30-5:00 pm

Attendance:

ROLL	NAME
0807	Mahir Mahbub
0839	Sefat-E-Mahadi

Discussion Agenda

- Introducing with each other in the group.
- Discussing about the basic of our project topic.
- Selecting stakeholders to visit for the project.

Achievements

- Came to the point that we would visit the medium and large size companies and transport organizations to identify the stakeholders.
- Selected the visiting areas.

Next Meeting

Date: 30-01-2018

9.2.2 Meeting report-2

Meeting Information

Date: 30-01-2018

Location: IIT, DU, Lab402

Time: 4:30-5:00 pm

Attendance:

ROLL	NAME
0807	Mahir Mahbub
0839	Sefat-E-Mahadi

Discussion Agenda

- Identifying contribution of every stakeholders to maintain transport activities.
- Learning about their business policies, rules, regulations and techniques.

Achievements

1. Started conversation with the stakeholders with context free questions.
2. Discussed with them about the problems they face to with the trivial system.
3. Knew about facilities they expect from the automated software system.
4. Offered them more user-friendly features that the system should contain to help them with conveniences.

Next Meeting

Date:04-02-2018

9.2.3 Meeting report-3

Meeting Information

Date: 04-02-2018

Location: IIT, DU, Lab402

Time: 4:00-5:00 pm

Attendance:

ROLL	NAME
0807	Mahir Mahbub
0839	Sefat-E-Mahadi

Discussion Agenda

1. Finding out the problem face by the stakeholders in the trivial system by asking questionnaires.
2. Focusing on the needs of the stakeholders.
3. Discussing with them about the easiness and features they may expect in an automated system to deal with customers.
4. Offering them extra additional features to them.
5. Elaborating on quality function deployment.

Achievements

1. Recognized multiple view points of the stakeholders.
2. Worked towards collaboration by identifying common requirements, conflicting requirements and finalize requirements
3. Finalized quality function deployment.

Next Meeting

Date: 10-02-2018

9.2.4 Meeting report-4

Meeting Information

Date: 10-02-2017

Location: IIT, DU, Lab402

Time: 4:15-5:00 pm

Attendance:

ROLL	NAME
0807	Mahir Mahbub
0839	Sefat-E-Mahadi

Discussion Agenda

- Identifying the sub systems.
- Specifying the use case scenarios.
- Initiating Use Case.
- Translating to Use Case Diagram

Decisions

- Gathered the raw requirements of stakeholders and analyze those.
- Finalized the sub systems
- Determined the basic use cases and will elaborate them.
- Use case has to be written per instruction.
- Learned basic methodology of use case diagram.

Next Meeting

Date: 16-02-2018

9.2.5 Meeting report-5

Meeting Information

Date: 06-08-2017

Location: TSC, University of Dhaka

Time: 3:00-4:30 pm

Attendance:

ROLL	NAME
0807	Mahir Mahbub
0839	Sefat-E-Mahadi

Discussion Agenda

- Swim line diagram and activity diagram

Decisions

- Structure of Swim line diagram and activity diagram.
- Methodology to draw Swim line and activity diagram.

Next Meeting

Date: 20-02-2018

9.2.6 Meeting report-6

Meeting Information

Date: 20-02-2018

Location: IIT, DU LAB 402

Time: 3:15-4:30 pm

Attendance:

ROLL	NAME
0807	Mahir Mahbub
0839	Sefat-E-Mahadi

Discussion Agenda

- Identifying potential entities
- Finalizing entities and attributes of entities
- Identifying relationship between entities
- Developing the ER diagram
- Constructing schema tables

Decisions

- Identified potential entities
- Finalized entities and attributes of entities
- Identified relationship between entities
- Developed the final ER diagram
- Constructed schema tables

Next Meeting

Date: 24-02-2018

9.2.7 Meeting report-7

Meeting Information

Date: 24-02-2018

Location: Fazlul Haque Muslim Hall, University of Dhaka

Time: 3:15-4:30 pm

Attendance:

ROLL	NAME
0807	Mahir Mahbub
0839	Sefat-E-Mahadi

Discussion Agenda

- Post vacation re-union
- Noun identification for data modeling

Decisions

- Basic Methodology of Noun identification
- Noun parsing from story

Next Meeting

Date: 28-02-2018

9.2.8 Meeting report-8

Meeting Information

Date: 28-02-2018

Location: IIT, DU LAB 406

Time: 3:15-4:30 pm

Attendance:

ROLL	NAME
0807	Mahir Mahbub
0839	Sefat-E-Mahadi

Discussion Agenda

- Performing general classification
- Performing selection criteria
- Identifying potential classes
- Identifying associated nouns and verbs of each potential classes
- Identifying attributes of each potential classes
- Identifying methods of each potential classes
- Finalizing classes for the entire system
- Constructing class cards

Decisions

- Performed general classification
- Performed selection criteria
- Identified potential classes

- Identified associated nouns and verbs of each potential classes
- Identified attributes of each potential classes
- Identified methods of each potential classes
- Finalized classes for the entire system
- Constructed class cards

Next Meeting

05-03-2018

9.2.9 Meeting report-9

Meeting Information

Date: 05-03-2018

Location: IIT, DU LAB 402

Time: 3:15-4:30 pm

Attendance:

ROLL	NAME
0807	Mahir Mahbub
0839	Sefat-E-Mahadi

Discussion Agenda

- Constructing a table that includes all events, initiator classes of events, collaborator classes of events and associated methods.
- Constructing the state transition diagram of the entire system to be developed

Decisions

- Constructed a table that includes all events, initiator classes of events, collaborator classes of events and associated methods.
- Constructed the state transition diagram of the entire system to be developed

Next Meeting

Date: 10-03-2018

9.2.10 Meeting report-10

Meeting Information

Date: 10-03-2018

Location: IIT, DU LAB 402

Time: 3:15-4:30 pm

Attendance:

ROLL	NAME
0807	Mahir Mahbub
0839	Sefat-E-Mahadi

Discussion Agenda

- Writing and finalizing reports
- Drawing posters for the final presentation

Decisions

- Wrote and finalized reports
- Drawn posters for the final presentation

9.3 References

- [1] <https://www.cs.ox.ac.uk/softeng/handbook/projects.html> 12:04 PM 3/12/2018
- [2] <http://www.innovationforgrowth.co.uk/Blog/transportation-management-system-an-introduction/> 9:10 PM 1/23/2018
- [3] <https://freight.uber.com/> 10:10 PM 1/23/2018
- [4] <https://www.goshare.co/uber-for-moving/> 7:56 PM 2/16/2018
- [5] <https://www.uber.com/info/atg/truck/> 9:33 PM 2/7/2018
- [6] <https://play.google.com/store/apps/details?id=com.pickupnow.customer&hl=en> 10:45 PM 2/12/2018
- [7] <https://www.softwareadvice.com/scm/freightview-profile/> 11:15 PM 3/19/2018
- [8] <https://www.freightview.com/> 11:55 PM 3/4/2018
- [9] Pressman, Roger S. Software Engineering: A Practitioner's Approach (7th Edition)

