Final Year Project 2019-2020

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Final Report

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ABSTRACT

This project is related or concerned about the car rental management system. This rental management is named as “Dai Call Rental Management System”. There are several modules in this system: they are client information module, Car information module, booking management module, renting out module, Staff information module, returning module.

This report consists of introduction, methodology, analysis, design, implementation and testing. Agile Methodology is used in this report. Dai Car Rental System is web based management system. As IDE, laravel software is used. MYSQL is used as a database. As a programming language, php, JavaScript, html, css, bootstrap languages are used. To execute the system, designs had been made that represents or covers the system architecture, database design.

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List of Acronyms

FAQ- Frequently Asked Question

SDLC-Software Development Life Cycle

RAD-Rapid Application Development

SQL-Structured Query Language

XAMPP-Cross-Platform(X), Apache(A), MySQL(M), PHP(P) and Perl(P)

SRS-System Requirement Specification

1. INTRODUCTION (Section 1)

1.1. Introduction to subject matter

Dai Car Rental System is a private company that provide customers a short time leasing cars at relevant price. It is online based car rental management system. Customers can view register, view profile, and book a car. This site helps customer to rent cars over the internet or via phone. The customer can input car hiring details. After request for booking of car. Credit or debit both are accepted to pay the bill. In today generation rental company have mushroomed all over the world. It has its own high demand. People tend to hire cars and other vehicles more often at unprecedented rate. As world being more globalized people tend to travel more and hire a car very often.

1.1.1. PROJECT DESCRIPTION

This project is about renting a car for several days for estimated price. This project serves a customer good service in their entire journey. It is and online based system where customer can view register, view profile and book car by choosing their own car and favorite driver. This site helps customer to rent cars over the internet or via phone.

1.1.2. CURRENT SCENARIO

In world

According to the world car rental service over the world. This system is almost expanding all over the world. Every country is trying their best to develop and run this system. Web based may or may not be the rental factor but renting car is traditional since ages in different countries.

In Nepal

According to the Nepal Scenario, It's found that though the many web, desktop or mobile rental companies are implemented they lack various functions and they are not available at the time of need. Company lacks data handling method. Some rental service does not have any management system. Management system is way more effective than writing tons of data's in books. It more fun and realistic.

1.1.3. PROBLEM DOMAIN

Searching the client details is big deal for this project. User or company have to record the booking manually which is obviously a difficult task to execute a monthly report. This system makes system simplificable which leads to increase in customer difficulty. Customer must contact company to rent a vehicle. Renting cars helps person who do not own their own vehicle.

- Customer needs to register their information and login in order to view or rent any car.
- Customer should be able to understand the basic use of site in order to do any renting.
- Payment should be done in estimated time through debit or credit or hand cash.

1.1.4. Project as a solution

Working of the system is as simple as using the system is. This system allows new users to register online. It also provides certain discount to daily user and membership holder. This system helps customer to make booking in easy manner. They can view profile of the company. The new user can register whether membered user can login to the system and view all the detail about car and also the driver. Policy of driver is fully handled by the company. Once reservation is made or any booking is done it automatically update the data in database. Additional effort is not applied by admin to update the data in database. There is also policy of the company by which you can trust the driver and staffs of the system. Feedback option is also available if the customers want to provide any feedback. The system is available 24/7. It is surely a good way in a case of emergency. In any occurrence of system malfunction, the system starts within 1 to 2 days which makes the company good in sight of client. Error handling is nicely done by the system. In occurrence of any error in the system error handling is done within 2 3 minutes. Security is highly concerned in this system. Valid id and password holder can only login into their profile.

1.1.5. Project Impact

This project will help basic people to know about the car rental option. Family without any vehicle can easily hire and enjoy their vacation. It is real life application which will surely benefit user in various ways. It saves time of the customer. This site is user friendly and non-technical person can easily use it. This project will help people in emergency factors.

1.1.6. AIM AND OBJECTIVE

Aims and objective of this project are as below:

- Application is user friendly. Anyone with simple knowledge can use this application.
- Fast service in moderate time i.e. user can get any car at any time when they're in need of it.
- System is open 24/7. This will help every user who are in need of it at any time.
- This system will help the owner to maintain or manage the rental business effectively.
- This system helps people to choose car of their own choice and also the driver.
- Price is sustainable. Anyone who wants to travel around can afford this rental service.
- To develop a web-based system that helps user to register and reserve the car of their choice.

1.1.7. STRUCTURE OF THE REPORT

1.1.7.1. Introduction

This report contains all the factor which is related to the making of the project. There's introduction to the project, project description, current scenario, problem domain, project as solution, project impact, aim and objective.

1.1.7.2. BACKGROUND

This part consists of all the data's or information about the client or end users, tools and technologies used, literature review, similar projects and comparisons of projects.

1.1.7.3. DEVELOPMENT

This part consists methodology used. Phases of methodology used in project is described in this part. And all the steps involved in methodology is also described. Surveys result (post and pre) are also there, analysis of the requirement, core design of the system according to the methodology used, architecture, screenshots are there in this development part.

1.1.7.4. TESTING

This part consists of all the testing performed. Unit testing, system testing with their test plan is described here. And also critical analysis of this chapter is listed here.

1.1.7.5. CONCLUSION

All the tasks to be done in next phase are described here in short. Legal issues, social issues, ethical issues of the project topic are performed here. It consists of the task to be carried out in future. Limitations of the report topic is elaborated here.

1.1.7.6. REFERENCES AND BIBILOGRAPHY

All the cites and research done are listed here.

1.1.7.6.1. Appendix

This part consists of survey form, survey result, sample of code, designs such as Gantt chart, WBS, algorithm, flowchart, hardware architecture, use case diagram, wireframes, user feedbacks form and screenshot of system.

2. BACKGROUND (Section2)

2.1. ABOUT THE END USERS

Actor	Requirements	Description
Driver	Booking detail	This requirement describes the booking detail of any customer which driver need to know for further process.
	Customer detail	This requirement describes the customer detail to the driver who the customer is and where they want to travel.
	Payment detail	This requirement describes the payment the driver takes from customer and also receives from the admin.
Admin	Add a new car	This requirement describes the addition of new car to the system database.
	Car details	This requirement describes the edition of new car and other details of the company to keep up to date record of their fleet.
	Replying customer's feedback	This requirement provides the feedback answer to the customer.
	Rental detail	This requirement gives pick up and returning car detail to update on the system.

	Driver detail	This requirement update the driver details and payment to give to the driver.
Customer	Feedback	This requirement describes the after feedback. The customer can give feedback about car, driver and over all facilities.
	Payment	This requirement describes the full payment through any source after the end date of reservation is finished.
	Return Car	This requirement describes the returning of car after the use booking date is finished.
	Make Reservation	This requirement describes to reserve any vehicle available according to their preference. Notification is sent to the customer once the reservation is done. This reservation requires at least 20% of payment.
	Register a member	This requirement describes about the registration of any customer before renting any car. Login details is automatically sent once the user is registered successfully.

Table 1: Table of end user requirements

2.2. UNDERSTANDING THE SOLUTION

This report simplifies all the qualities and behavior that any website should have. This report is done with great research and guidelines. This documentation is last translated to development part. Where a proper e commerce site is developed with all the information which this report contains. This application surely is user friendly. This application will save people time, money and effort.

2.2.1. Tools and Technologies Description

2.2.1.1. Design Mockup

Mockup of the wireframe is drawn in draw.io. It is an open source technology. It is used for building/ diagramming applications. It is used all over the world. Every data is saved in google drive so file is protected. It has free desktop versions for Linux, macOS and windows too. Flowcharts, network diagram, UML, entity and son on are drawn in draw.io application. It is easy to use. Rich functions are carried out by this application. It is mostly secure application. The produced content is ours, they don't use our data or store it. Offline and online facility of it is main key. Works both on desktop and mobile devices.

Figure 1: Draw.io

2.2.1.2. Programming Language

PROGRAMMING LANGUAGE

Php, JavaScript, html, css, bootstrap languages are used in this project for development. Php stands for Hypertext Preprocessor. It is a server-side, open source, scripting language used for web development projects. Lines of codes are conducted to implement a project. JavaScript is also a scripting language used for creating web pages. It is used to ad special effects and rollover and out and other many graphics. HTML stands for Hypertext Markup Language. It is used to create documents or pages which are displayed on World Wide Web. Hyperlinks are used to create pages over pages. CSS describes the layout of the web page. It is the key to make the outlook of project better and attractive. XML-based markup language also can be used with css. And CSS is independent of HTML. Bootstrap is a framework used to design websites. It makes the project fast and easy. HTML and css based template are used by bootstrap. It also supports on JavaScript plugins.

Figure 2: PhpStorm:

IDE

As IDE, laravel is used. Laravel is a framework of web application projects. It is free. It is open-source PHP web framework. Authentication, routing, session and caching are the tasks handled by laravel. It is cost-effective and software made are delivered in time. PhpStorm is used as platform. It is a commercial, integrated development environment for PHP.

2.2.1.3. Database

MYSQL is used as a database in this project. Data warehousing, logging applications and e- commerce are done in this application. Web database is made out of this application. It is freely available open source Relational Database Management system which use Structured Query Language to perform., It is easy, flexible to use. Quick processing and its reliability are its good features. PhpMyAdmin is used to handle the administration of MySQL over the web.

2.3. Literature review

The history of car rental can be traced far back. Firstly, it all started when a bicycle shop started to offer renting cars. As by then German company after few years started off rented three cars at a time and by the time quickly it was expanded. 'Saunders Drive-It-Yourself System' was first company which was developed by Joe Saunders of Omaha in 1915. He offered Frank Arndt from Germany to drive and started renting out Arndt's' Model T all over his place. As the company turned out to be successful and it had branches in over 85 cities. As well in Chicago, person named Walter L Jacobs started to rent model T Fords which was 12 of them. The company earned a lot and crossed $million in no time. It was huge amount at that time. And by time he sold his company to John D Hertz. And in 1920 first British car rental company was also established by Godfrey Davis UK. And in 1981 French company Europcar bought this company too for the growth.

After the car rental system was expanded so did others. These rental companies become international. People started to travel across the world and hire a car for months and long. By the time growth of rental companies became high internationally.

2.4. SIMILAR PROJECTS

2.4.1. Smile car rental

This smile car rental company is associated with subha laxmi transport which is registered car rental agency and company by government of Nepal. This company offers Jeep, Van, Bus, and Car rental services in Nepal. The head office of this company is in Thamel, Kathmandu.

Figure 3: Smile Car rental

2.4.2. Rental Car Nepal

Over 180 countries they have truly global user base of customers. This rental company which is located in Kathmandu, Nepal have vehicles and tour packages to more than 150 destinations all over Nepal. Rental Car Nepal dealing with major car hire companies around the world checking which local supplier is offering the best prices for the car you want on the date you need it whilst ensuring everyone. They deal with great level of service as offers.

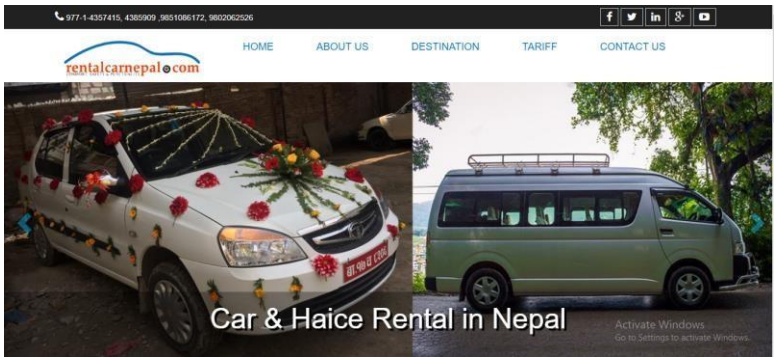

Figure 4: Rental Car Nepal

2.5. COMPARISONS

2.5.1. Tables of comparison

S.no	Smile car rental	Rental car Nepal	My application
1	Smile car rental is an application which is used to book a car.	Rental car Nepal is an application which is used to book a car.	Cab Call is an application which is used to book a cab around city at any time.
2	It is web as well as desktop application	It is web application.	It is web application.
3	Discount is not available.	Discount is not available.	Discount is available.
4	No accommodation	No accommodation.	Good accommodation.
5	In day time	In day time	Available 24/7.
6	Only for day.	Only for weeks.	Booking for months.
7	Full payment at first.	Full payment at first.	Payment 20% before reservation and 80% after returning car.
8	No details required.	No details required.	Photocopy of citizenship is required to admin for security of customer and company.
9	Rent without driver.	Renting is available with drivers.	Renting is available with drivers.

Table 2: Comparison of cars

3. DEVELOPMENT (Section 3)

3.1. CONSIDERED METHODOLOGIES

3.1.1. Waterfall Model:

It is the most commonly used software development methodology by which we can know it is most traditional. It is considered to be classic style of software development cycle. In this development cycle, first phase should be completed in order to start the second phase. This system does not allow to go back to the previous system to make the changes. This system is very simple to understand. Outcome of one phase acts input of the next phase simultaneously in this model. This model is used in smaller project where requirement is less and very well understood. This model project is completed at once in a time hence it saves a lot of time.

The phases of the waterfall model are listed below in the picture.

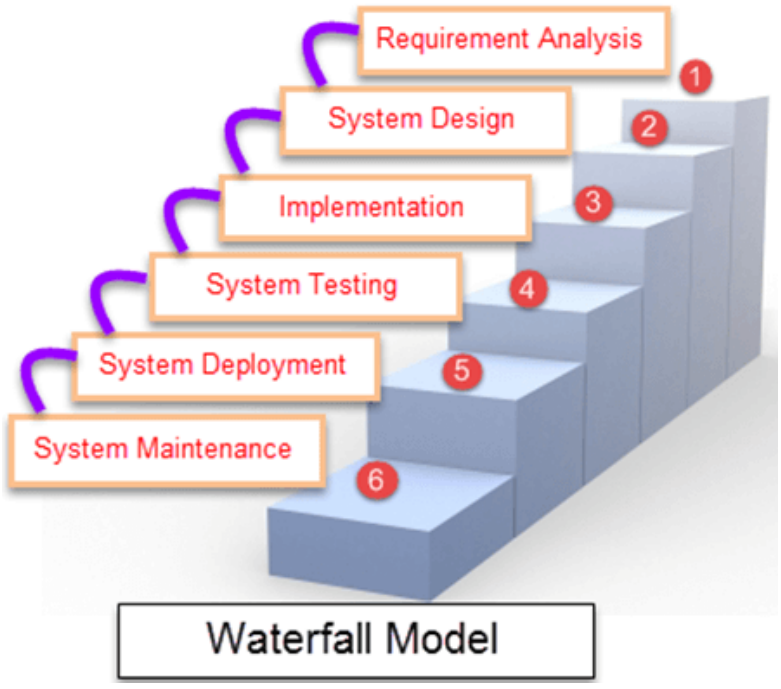

Figure 5: waterfall model

3.1.2. Spiral Model:

Combination of waterfall model and iterative development model leads to spiral model. This model is used in large projects. Completion or success of any spiral project depends on the attentive, reliable and knowledge management of the project. This model is used in critical project. Functions can be added more in later date. It is more suited in high risk projects. Changes of any functions are implemented faster.

The phases of spiral model are listed below in the picture:

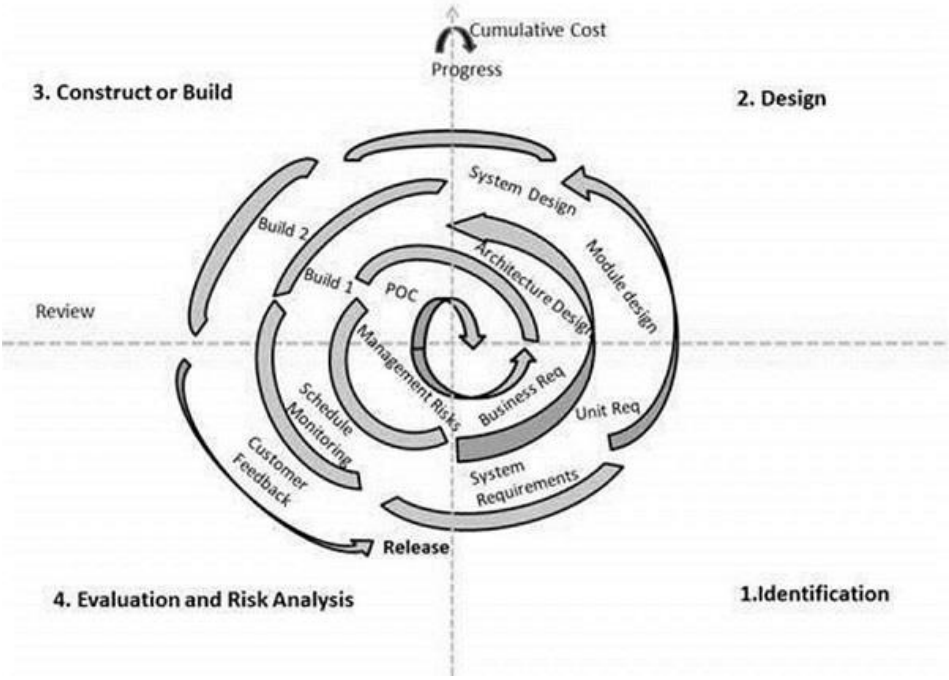

Figure 6: Spiral Model

3.1.3. RAD model:

This model provides quicker development. This model outcome is high quality in comparison to other software development methodologies. It takes maximum advantage of software development. It is done in achievable way because of the active user participation for development of the project. Clients are able to quick review the project. This model reduces the risk in project failure. Customer feedback is back to back taken which makes any software project better. Prototypes developed by this model are reusable.

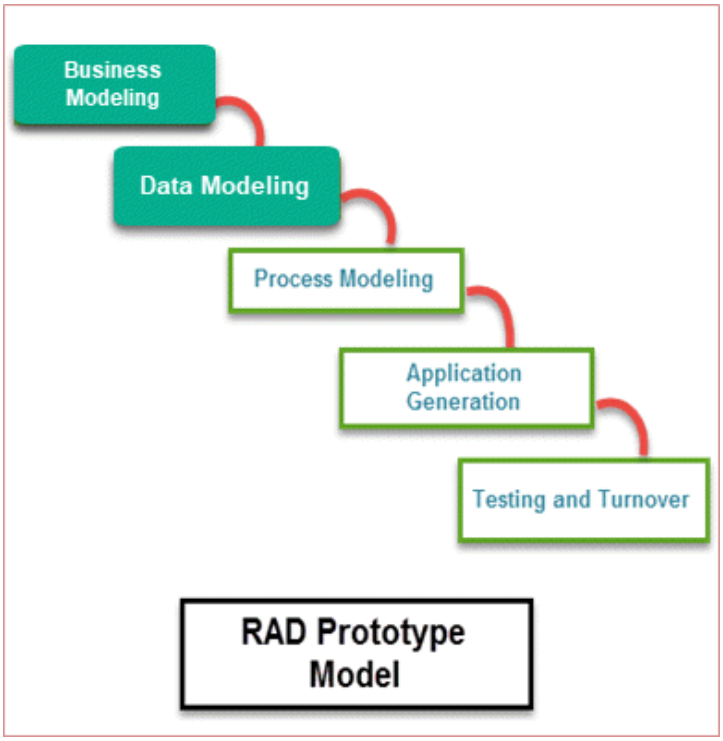

Figure 7: RAD model

3.1.4. Agile Method:

This model project is developed in disciplined software management process. This model requires direct communication with client and constant feedback is taken from them which makes the developed system great. It is one conceptual framework for undertaking various software engineering projects. This model depends on working of software development rather than documentation. Weekly development is shown to make any changes for the project.

The phases of the agile method is shown in below picture:

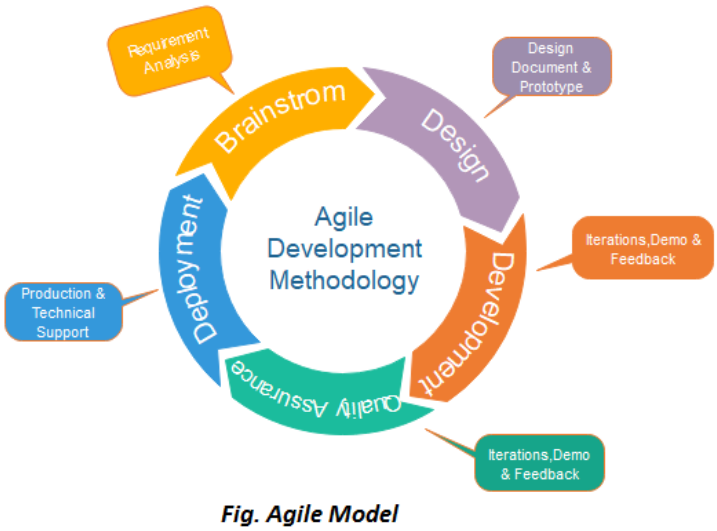

Fig. Agile Model

Figure 8: Agile method

3.2. SELECTED METHODOLOGY

Agile methodology is used for the development of the project. All the process required to achieve agile methodology is gathered using different gathering method. Agile methodology is a software development process which is framework that provides iterative approach, process adaptability and open collaboration. This process is carried out throughout the life cycle of agile methodology. The iterative approach helps with minimal planning instead of lengthy planning. This method helps to overcome or minimize risk of overall task. This method also helps to adjust changes more rapidly.

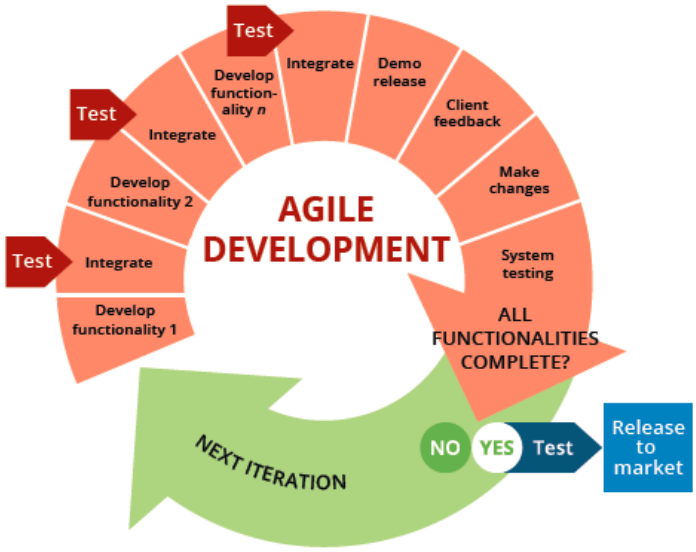

Figure 9: Agile Methodology

3.2.1. PHASES OF METHODOLOGY

3.2.1.1. Planning

The topic of the project is planned. Every details of the project is discussed. All the objectives and aims of the project is collected to start our project.

3.2.1.2. Analysis

Thus phase will decide whether the project is worth to establish or not. The estimated topic is examined properly. All the weakness and profit by this project is calculated. Efforts, knowledge, time etc. are calculated. Topic of the project is detailed or carefully examined. Scope of the project is defined in this phase.

3.2.1.3. Design

Design of the project is made. Overall design is made for the project. UI Design, layout for the project, wireframes of the project is made.

3.2.1.4. Implementation

Implementation part will be started after the design phase. Coding for the project is done here.

3.2.1.5. Testing and Integration

After the implementation is done for the project testing is started. Testing for the project is done. All the part of the project is tested properly.

3.2.1.6. Maintenance

Finally, after the project is estimated to the end user. Maintenance is frequently done. Updates and errors are handled time to time for the end user.

3.3. SDLC comparison:

Reasons for not choosing waterfall model:

- Due to less interaction between developer and client the developed project will not meet many expectations.
- This model requires excessive knowledge of technology by which only expert can deal with this type of project.
- All the requirement is taken in the starting of the phase which makes hard to change in the implementation.
- This model is not for project where changes are required frequently.
- This model handles documentation part more than development part.
- Error can be fixed only during executing the project, if any error occurs after the completion of project it will cause a lot of problem.

Reasons for not choosing spiral model:

- This model is costly and may have changes to not meet the expected schedule.
- This model is used for large projects only.
- Documentation part is more than the development part due to many intermediate phases.
- For small project it might be costly.
- It has complex phases; thus it will be difficult for intermediate developer to understand it.

Reasons for not choosing RAD model:

- This model requires high skilled developers.
- It cannot be used in small project as it cost a lot.
- It requires great team work.
- This model is not used when technical risks are high.
- Less commitment of developers results in failure of the project.
- In this model requirements may not be converging.

Reasons for choosing agile model:

- Project can be delivered in estimated time.
- This model detects problems and defects faster.
- Implementation of project is faster compared to other.
- Customer satisfaction is main key; feedback is taken frequently.
- It is used in small scale project.
- It is cheap compared to other model of software development.
- Late changes are easily maintained due to its good development phases nature.
- Technical and designs are focused mainly which makes the developed project best.

3.4. Requirement Analysis

3.4.1. External interface requirements

3.4.1.1. User Interfaces:

- Login user or the assigned user all the user will be able to see same page when they enter into the website. Page will ask for their login information like id and password.
- By login in the account respective user can obtain all the facilities provided in the site.
- User can book any item and can choose driver by their own. Any user can handle the site because of its user friendly nature.

3.4.1.2. Hardware Interfaces:

- No any extra hardware are needed in this project.
- This site uses general network connection at the server, network management tools and network server.

3.4.1.3. Application Interfaces:

0S: Windows 10

Web Browser: As this system is web bases application i.e. chrome, opera, internet explorer and Mozilla firebox.

3.4.1.4. Communication Interfaces:

Application communicate with all the booking information handled by the database. System uses communication resources i.e. HTTP protocol for communication with web server.

3.4.2. Functional Requirement:

These are the requirements which system needs to be able to provide to the user. It lists all the functionality that the developers must build into the product.

3.4.2.1. Reservation:

- System must be able to register the customer information.
- System must show all the description about the car and the driver.
- System must provide booking page to book their chosen vehicle.
- System must be able to give and take feedback.
- System must provide list of drivers and list of car which user can choose it from them.

3.4.2.2. Log in:

- System must allow all user, driver, admin to login to the system with their correct respective username and password.
- System must allow user, driver and admin to logout.
- System must allow user, driver and admin to create new account or change account password.

3.4.2.3. Rent:

- System should be able to save all the renting information of the car.
- System should be able to let admin to register all the customer's rental list.
- System should be able to let admin make changes in the booking information.
- System must display all the customers who rents cars.

3.4.2.4. Car:

- System should allow admin to register new cars.
- System should allow customers to select cars from the list.
- System should allow customers to select drivers from the list.

3.4.3. Non-Functional Requirements:

Non-functional requirements include performance, usability, security, availability, ease of use and error handling.

3.4.3.1. Performance:

Performance of the system should be fast. Response of any failure of the system must be responded in less than 10 seconds. System must be able to perform all the functions in short time spam.

3.4.3.2. Usability:

System provides faq section where person can know about all the does and don'ts of website. This system is user friendly all the non-technical person can execute the system properly.

3.4.3.3. Security:

Separate login info is required to step into the system. Incorrect password users must not be able to login in the system.

3.4.3.4. Availability:

This system is 24/7 open i.e. user can login whenever in emergency in about 24 hours. Malfunctioning of system should be managed in 2-3 hours so that business will not be in corrupted.

3.4.3.5. Ease of use:

System should be built in ease manager i.e. all the non-technical person can use and take advantage of the website.

3.4.3.6. Error handling:

Any error occurred should be handled in 15 to 20 second time. Error should be minimized and any information should be provided to user so they should know that there is something error in the system.

3.5. Design

3.5.1. Use Case Diagram

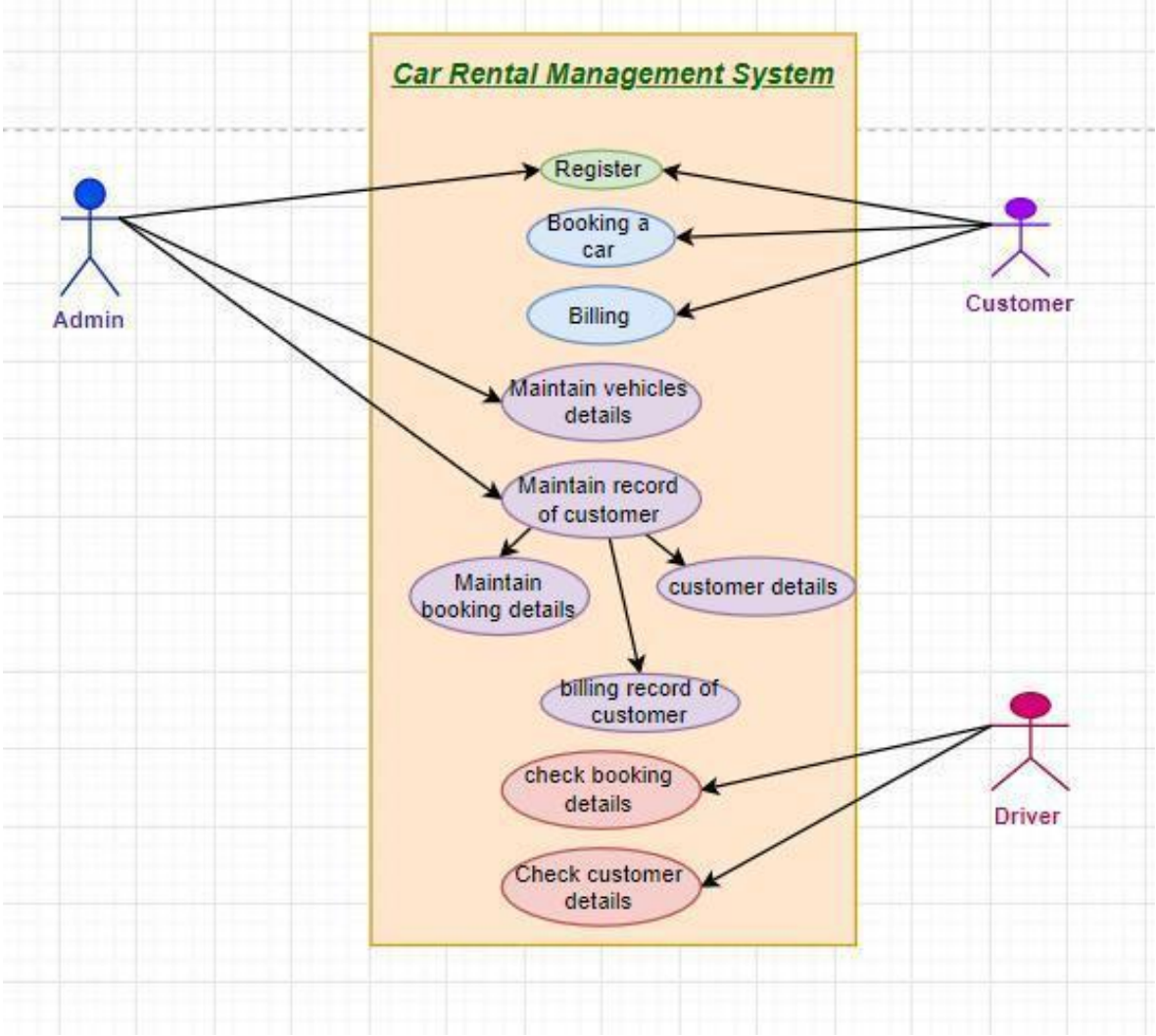

Figure 10: Use Case Diagram

3.5.2. High level use case Diagram

1. **Use Case:** Register

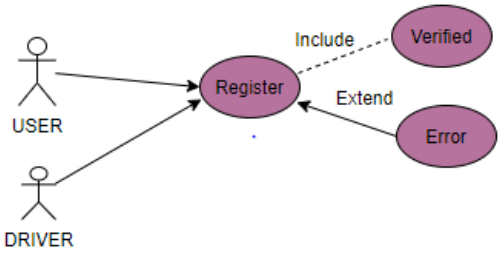

Figure 11: register

Involved Actors: User and Driver

Description: User and driver should register their id in order to enter into the account. If register is done correctly, the id is verified in other case it will leave an error message.

2. **Use Case:** Login

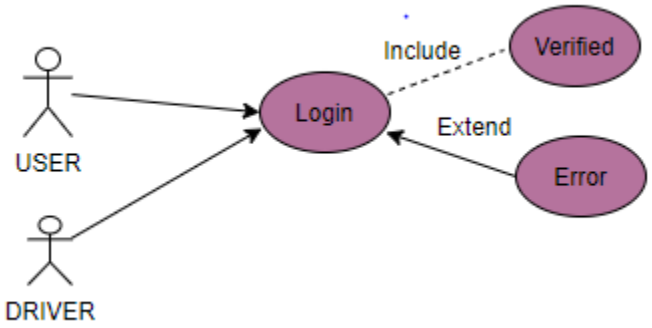

Figure 12: Login

Involved Actors: User and Driver

Description: User and Driver both should login in order to enter into their account. If login is done correctly, they can enter into the site in other case it will leave an error login message.

3. **Use Case:** Add member

Figure 13: Add member

Involved Actors: Admin

Description: Admin can add any member (user, driver).

4. **Use Case:** Booking details

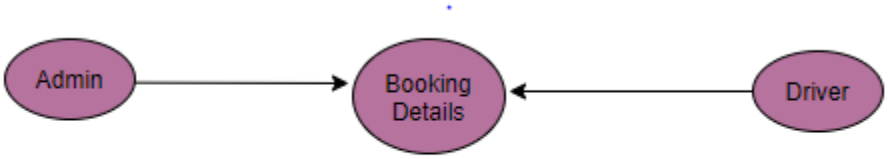

Figure 14: Booking Details

Involved Actors: Admin and Driver
Description: Admin and Driver can view booking details.

5. **Use Case:** Payment Details

Figure 15: Payment Details

Involved Actors: Admin:

Description: Admin gets to view and check payment details.

6. **Use Case:** View Events

Figure 16: View Events

Involved Actors: Driver

Description: Driver Cn view event like the booking details and their customer details.

7. **Use Case:** Request Car and Driver

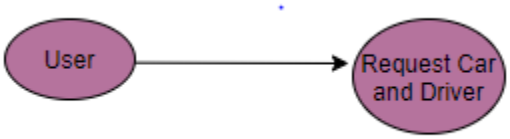

Figure 17: Request for car and driver

Involved Actors: User

Description: User requests for car and driver. Admin or driver will decide if user gets to take car or not.

8. **Use Case:** Update Profile

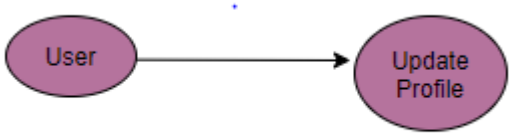

Figure 18: Update profile

Involved Actors: User

Description: User can update their profile.

9. **Use Case:** Add Car

Figure 19: Add car

Involved Actors: User

Description: Admin adds car per their choice or by evaluating the feedback of the customer.

10. **Use Case:** Update Event

Figure 20: Update event

Involved Actors: Admin

Description: Admin can update any event in order of urgent.

11. **Use Case:** Add User

Figure 21: Add user

Involved Actors: Admin

Description: Admin can add any user.

12. Use Case: Remove User

Figure 22: Remove user

Involved Actors: Admin

Description: Admin can remove any user of their choice.

13. Use Case: Contact

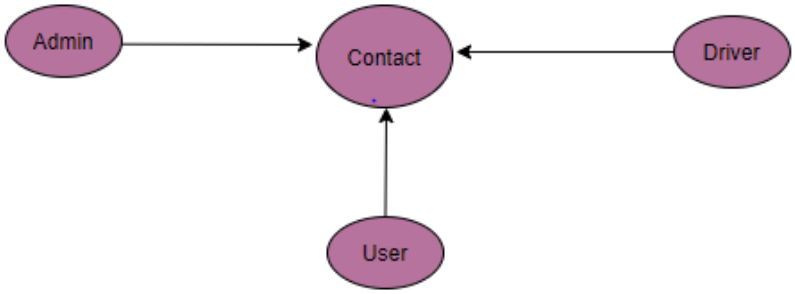

Figure 23: contact

Involved Actors: Admin, User and Driver

Description: Admin, user and driver all member can contact each other with help of number or email id.

3.5.3. Expanded Level Use Case Description

1. **Use Case:** Register

Actors: User and Driver

Motive: Registration of new member to the system.

Outline: This step is necessary to access into the system. Information like id, password, email must be provided to be registered.

Type: Essential

Typical Course of Event:

Action of Actors	Response of system
User or Driver decided to register to the page.	System displays form of registration.
User or Driver fills up the form and submit to the system.	System checks the information provided. If the information is valid, user is registered if not error message will be sent to the user.

Table 3: expand level use case of register

2. **Use Case:** Login

Actors: User and Driver

Motive: Logging into the system.

Outline: This step is necessary for any user to enter into the site. Proper id and password should be entered in order to enter into the account.

Type: Essential

Typical Course of Event:

Action of Actors	Response of system
User or Driver decided to register to the page.	System displays form of registration.
User or Driver fills up the form and submit to the system.	System checks the information provided. If the information is valid, user is registered if not error message will be sent to the user.

Table 4: expand level use case of login

3. **Use Case**: Add member

Actors: Admin

Motive: Admin can add any member as driver or users.

Outline: This step helps any member to became a driver by the admin choice.

Type: Essential

Typical Course of Event:

Action of Actors	Response of system
Admin requests to add member in the system	System displays membership field.
Admin fill up the membership field.	System checks the information provided. If the information is valid, user is registered if not error message will be sent to the user.

Table 5: expand level use case of add member

4. **Use Case:** Booking Details

Actors: Admin and Driver

Motive: This step helps admin and driver to look up into the booking details offered by user.

Outline: This step is necessary for any business as driver can look up for the new customer.

Type: Essential

Typical Course of Event:

Action of Actors	Response of system
Admin and Driver requests for booking details.	System displays Booking details.

Table 6: expand level use case of booking details

5. **Use Case:** Payment Details

Actors: Admin

Motive: Looking for payment.

Outline: Admin can view payment details payed by the users.

Type: Essential

Typical Course of Event:

Action of Actors	Response of system
Admin requests system for details of the payment.	System displays payment details by the user.

Table 7: expand level use case of payment details

6. **Use Case:** View Event

Actors: Driver

Motive: View the booking events.

Outline: This step is necessary for driver to look for the new events generated.

Type: Essential

Typical Course of Event:

Action of Actors	Response of system
Driver chooses to view the event.	System displays the event.
Driver chooses suitable event.	System provides details of the event and user information.

Table 8: expand level use case of view event

7. **Use Case:** Requests car and driver

Actors: User

Motive: To book driver and car.

Outline: This step helps user to request driver and car of their own choice.

Type: Essential

Typical Course of Event:

Action of Actors	Response of system
User requests for description of available car and available driver.	System displays the information.
User chooses suitable driver and car.	System checks the information provided and saves the request of the user.

Table 9: expand level use case of request driver and car

8. **Use Case:** Update Profile

Actors: User

Motive: To update specific or own profile from the system.

Outline: This step helps user to update their profile with new information.

Type: Essential

Typical Course of Event:

Action of Actors	Response of system
User requests for update profile form.	System displays form of updating their profile.
User edit their profile and submit to the system.	System checks the information provided and saves the changes.

Table 10: expand level use case of update profile

9. **Use Case:** Add car

Actors: Admin

Motive: Adding new car to the system.

Outline: This step is made up to add new car to the system.

Type: Essential

Typical Course of Event:

Action of Actors	Response of system
Admin requests system for car add up form.	System displays form for adding new car to the system.
Admin fills up the information and give to the system.	System add up the car to the system.

Table 11: expand level use case of add car

10. **Use Case: Update** Event

Actors: Admin

Motive: Updating about any event.

Outline: This step is about updating the new event being held in the system.

Type: Essential

Typical Course of Event:

Action of Actors	Response of system
Admin requests for updating event field form.	System displays form for updating event.
Admin fills up the form.	System displays the new event in the system.

Table 12: expand level use case of update event

11. **Use Case:** Add user

Actors: Admin

Motive: Adding new user to the system.

Outline: This step helps user to enter into the system.

Type: Essential

Typical Course of Event:

Action of Actors	Response of system
Admin requests for adding up new user form.	System displays form.
Admin fill up the form and submit to the system.	System displays new user.

Table 13: expand level use case of add user

12. **Use Case:** Remove user

Actors: Admin

Motive: Removing any user from the system.

Outline: This step is used for removing any user who are inappropriate for the system.

Type: Essential

Typical Course of Event:

Action of Actors	Response of system
Admin requests for user profile.	System displays the profile.
Admin removes the user from the system.	System updates the profile.

Table 14: expand level use case of remove user

13. **Use Case:** Contact

Actors: User, Driver and Admin.

Motive: Information about any member.

Outline: This step shows up any contact information of the user.

Type: Essential

Typical Course of Event:

Action of Actors	Response of system
User, driver or admin requests for contact page.	System displays the contact page.
User, driver or admin looks for the contact.	System responses according to the requests.

Table 15: expand level use case of contact

3.5.6. Communication Diagram for Use Case

1. **Use Case:** login

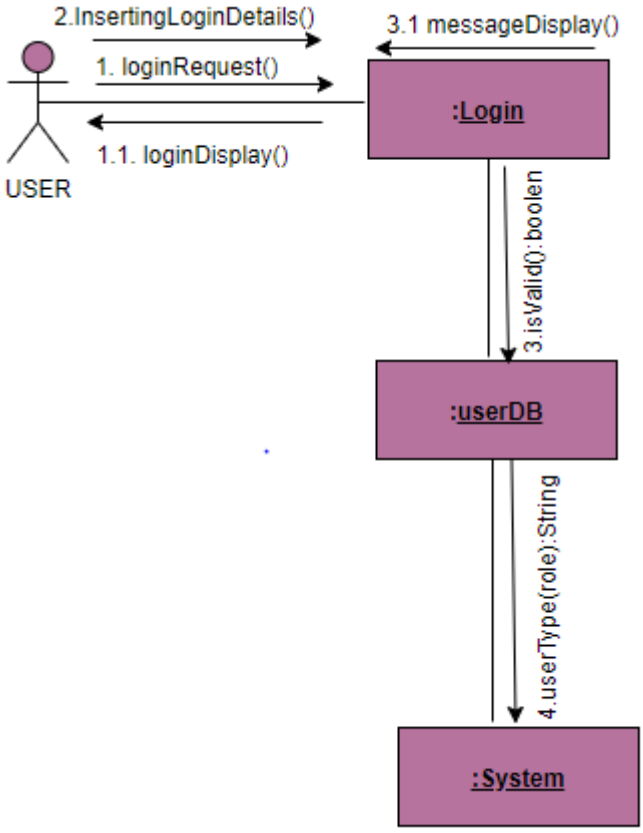

Figure 24: communication diagram of login

2. **Use case**: Register

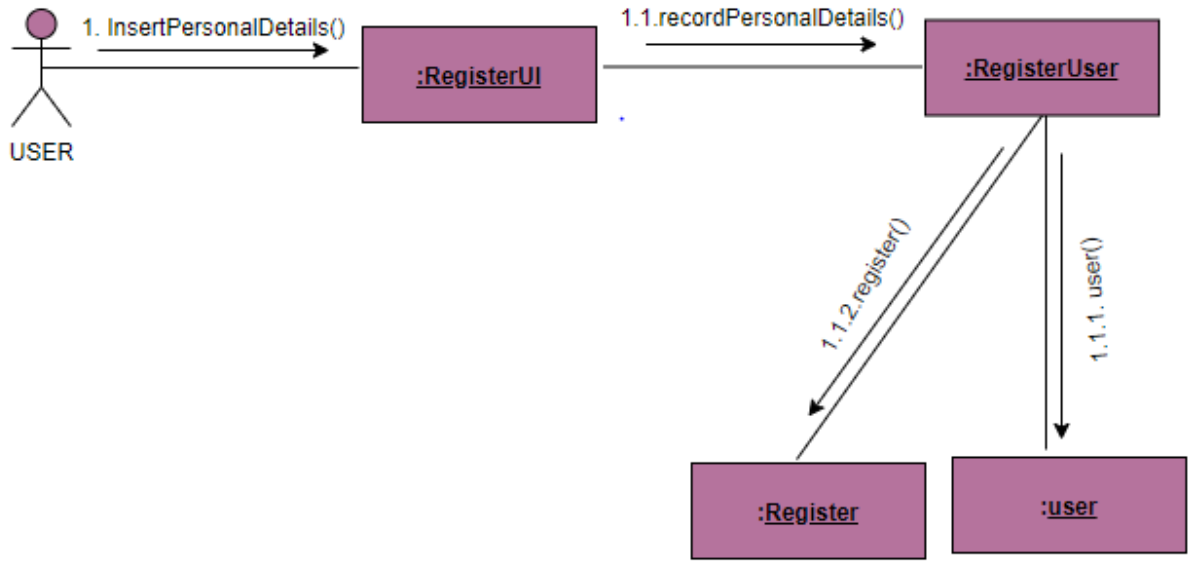

Figure 25: communication diagram of register

4. **Use Case**: Add member

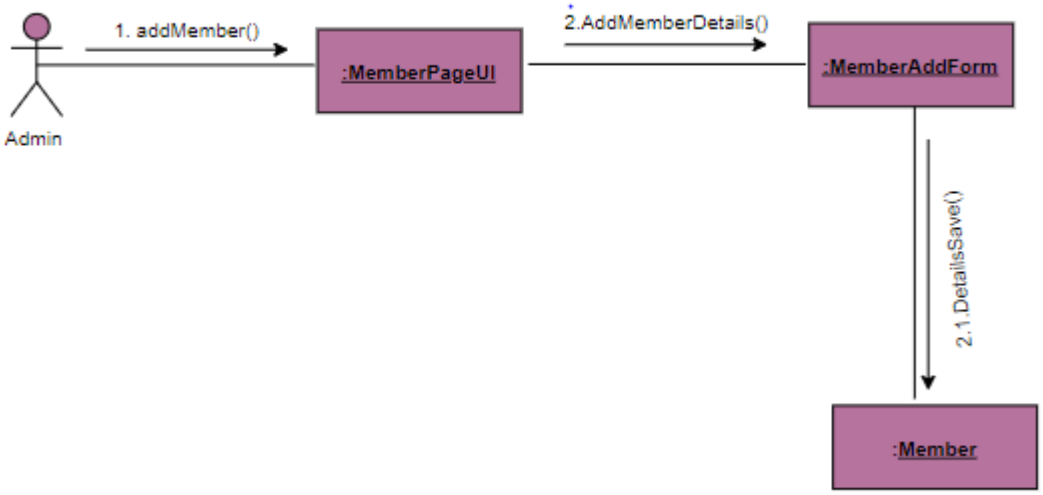

Figure 26: communication diagram of add member

5. **Use Case:** Booking Details

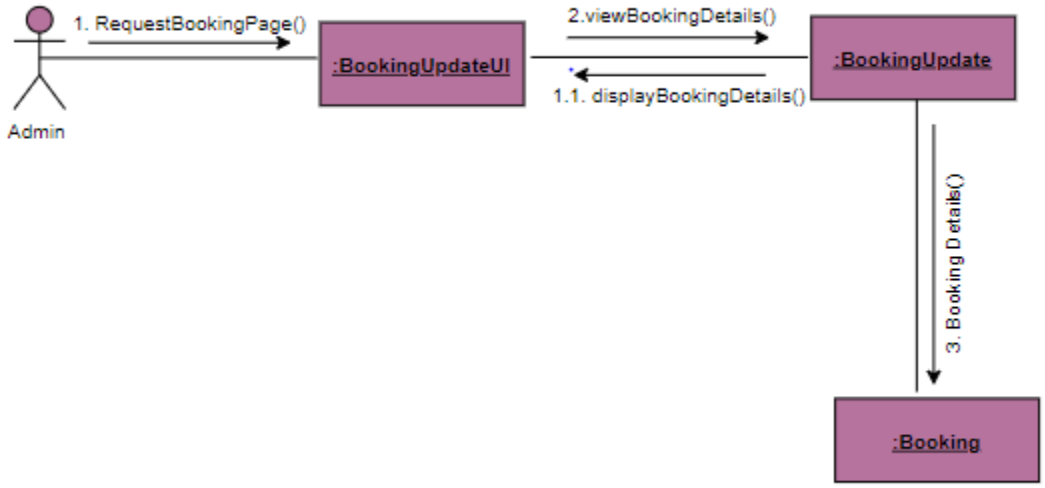

Figure 27:communication diagram of booking details

6. Use Case: Payment Details

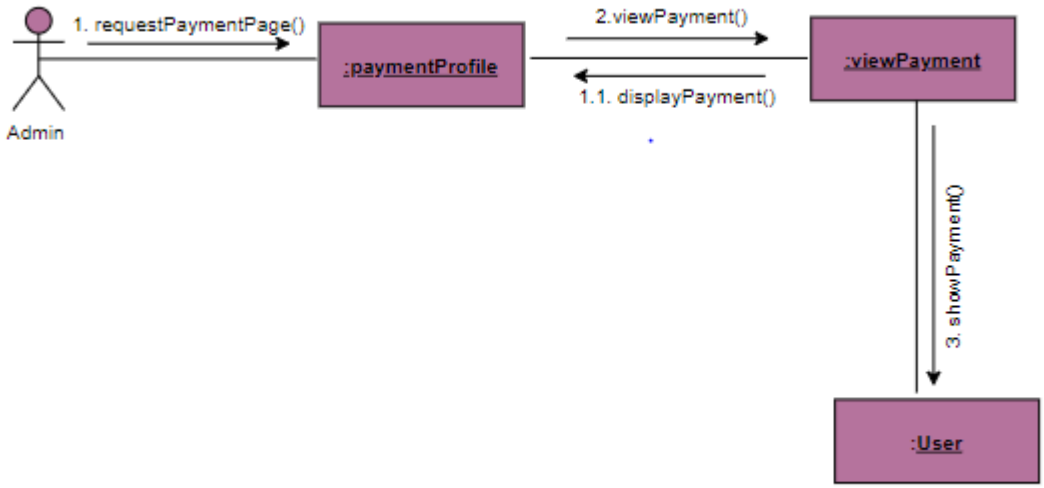

Figure 28: communication diagram of payment details

7. Use Case: View Event

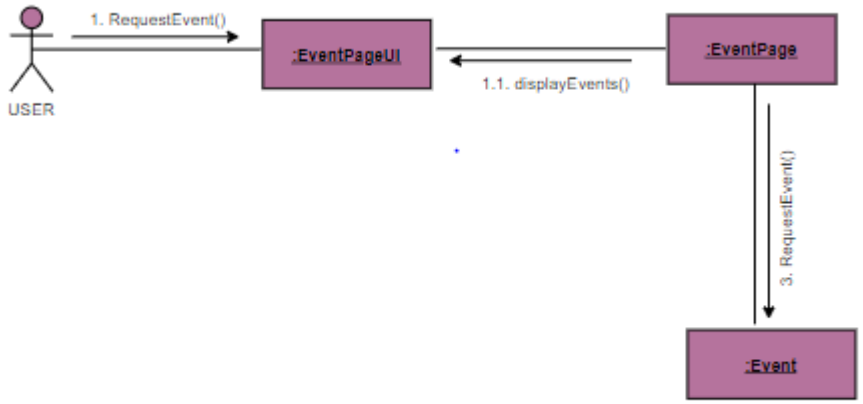

Figure 29: communication diagram of view event

8. Use Case: Request Car and Driver

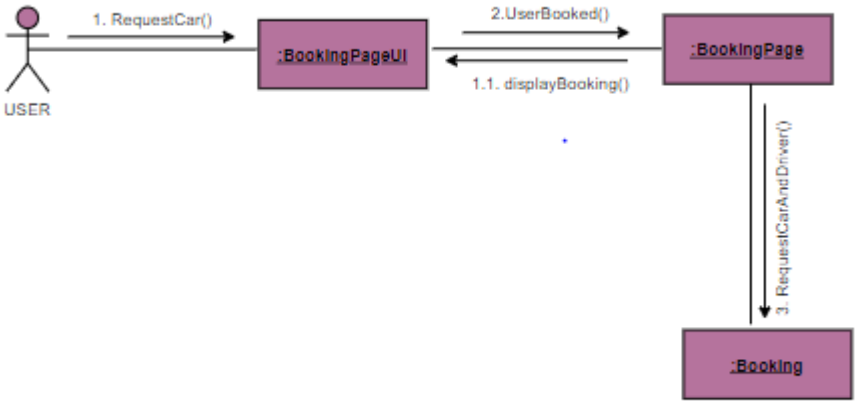

Figure 30: communication diagram of request car and driver

9. Use Case: Update Profile

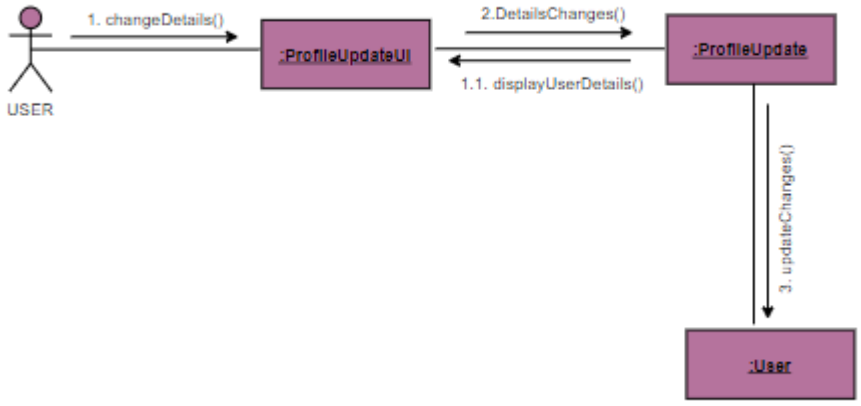

Figure 31: communication diagram of update profile

10. Use Case: Add Car

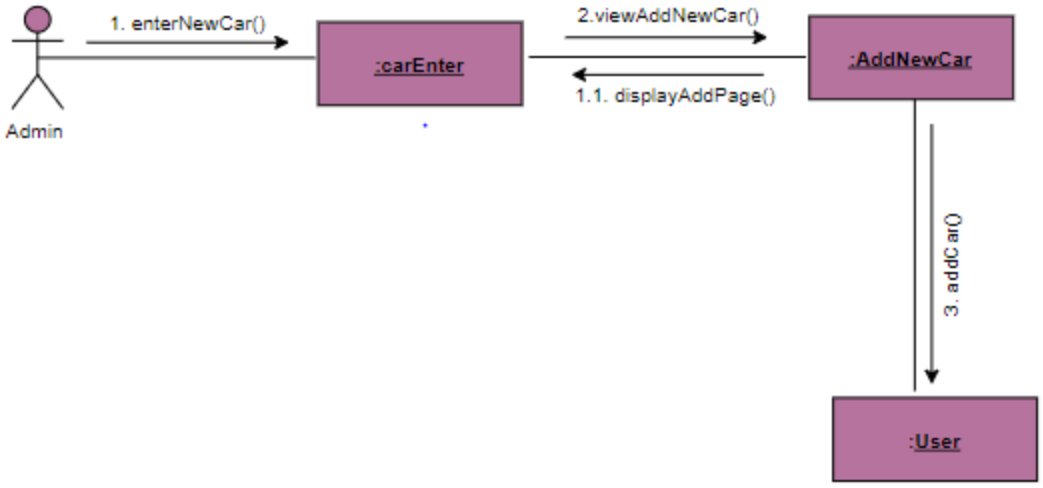

Figure 32: communication diagram of add car

11. Use Case: Update Event

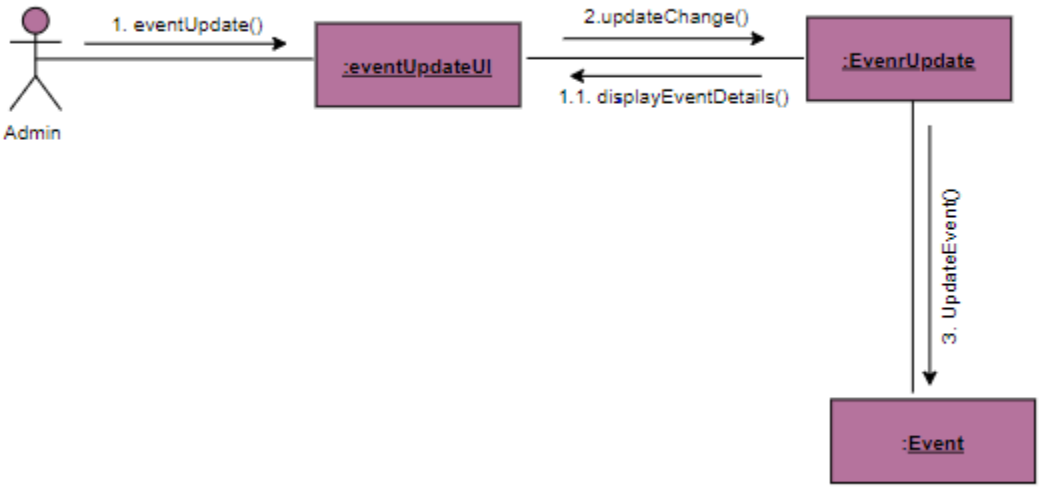

Figure 33: communication diagram of update event

12. Use Case: Add User

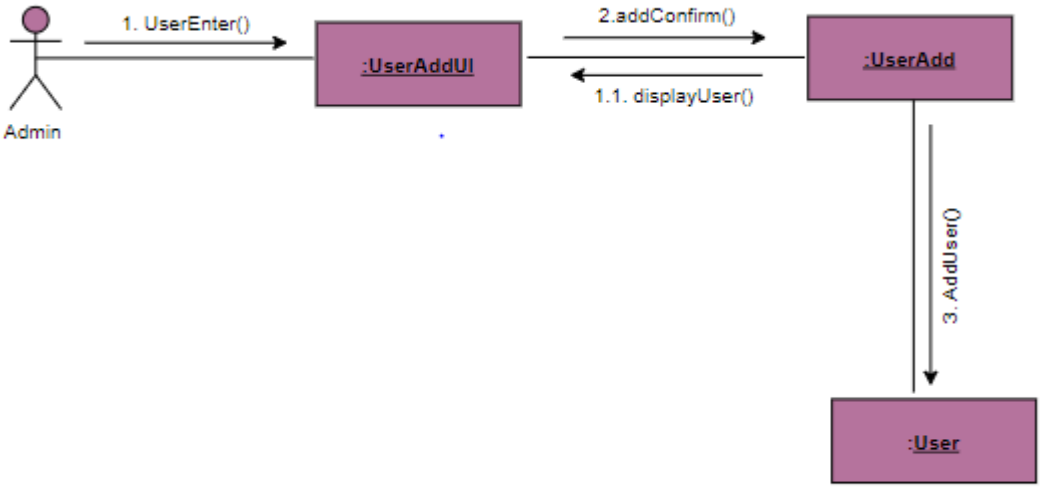

Figure 34: communication diagram of add user

13. Use Case: Remove User

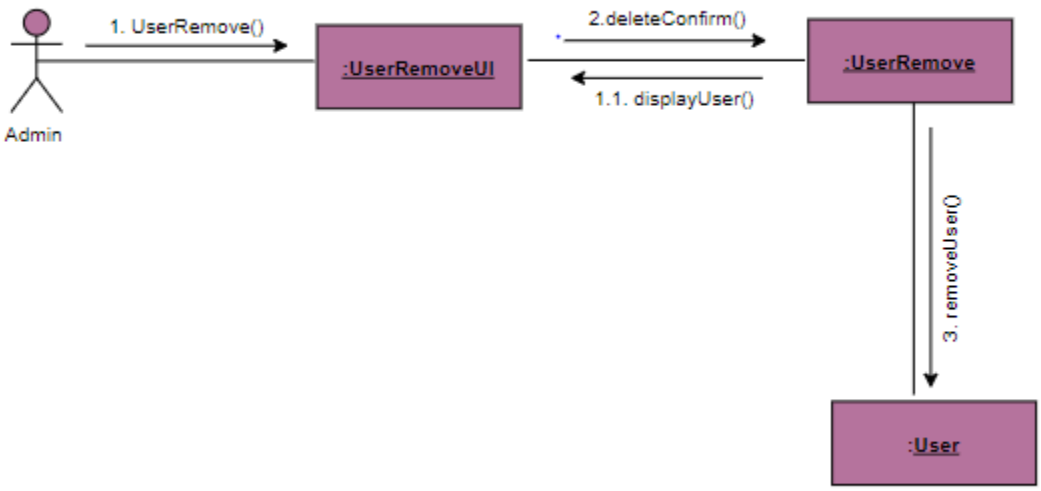

Figure 35: communication diagram of remove user

14. Use Case: Contact

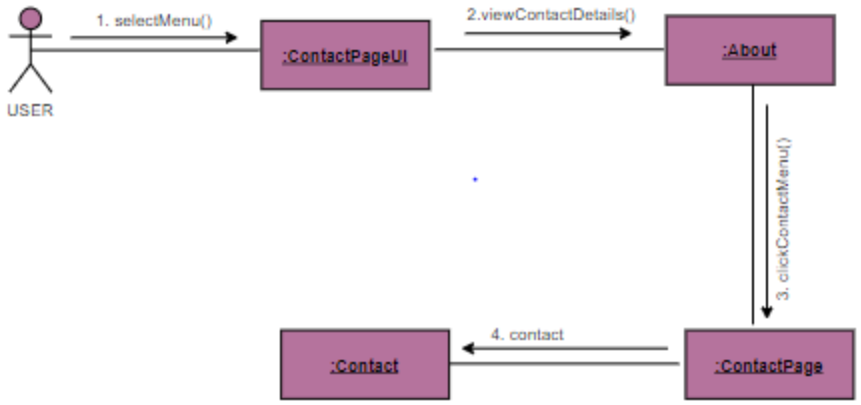

Figure 36: communication diagram for contact

4. TESTING AND ANALYSIS(Section 4)

4.1. TEST PLAN

Test Cases	objectives
1.	To login into the system.
2.	To logout from the system.
3.	To check register option.
4.	To check forgot your password option.
5.	To check all vehicle option.
6.	To check new booking option.
7.	To check in booking record option.
8.	To check in write feedback option.
9.	To check in read feedback option.
10.	To check in about us option.
11.	To check in contact option.
12.	To check info option.
13.	To check book option.
14.	To check the vehicle inventory option.
15.	To check menu option.
16.	To check search option.
17.	To check the feedback menu.
18.	To verify missing @ option.
19.	To check the password correction.
20.	To check blank submit information.
21.	To check user information.
22.	To check faq menu.

Table 16: Test plan

4.2. Test plan for unit testing

Test Cases	Objectives
1.	To login into the system.
2.	To logout from the system.
3.	To check register option.
4.	To check forgot your password option.

Table 17: Test plan for unit testing

4.2.1. Unit testing

Test Case	1
Test Objectives	To login into the system.
Test data	To input correct data and submit.
Expected Result	Should display home page.
Actual Result	Displays home page.
Conclusion	Test is successful.

Table 18: Table1Test1

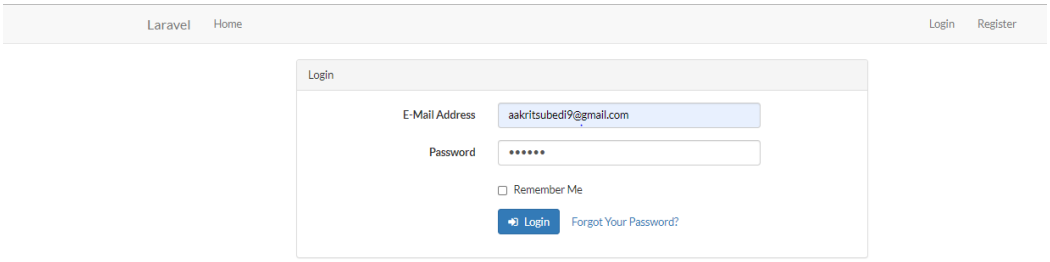

Figure 37: Test 1

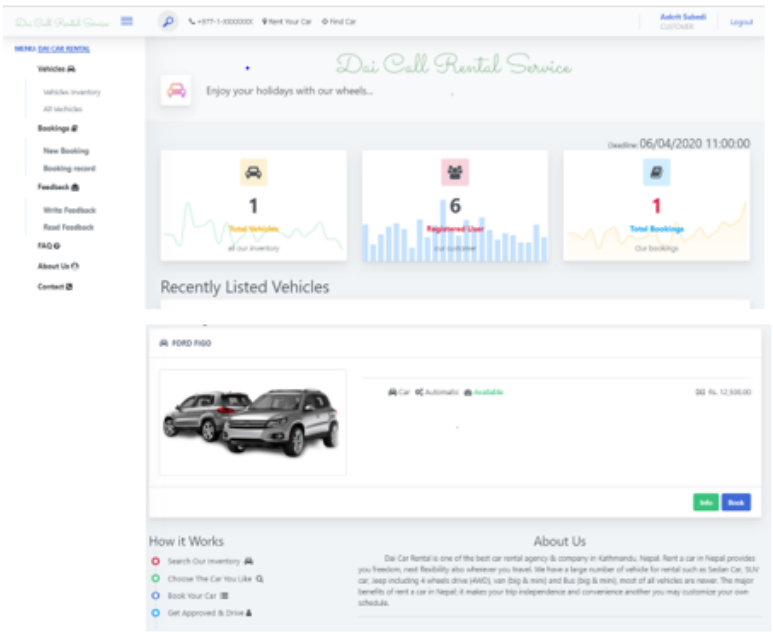

Figure 38: Test 1.1

Test Case	2
Test Objectives	To logout from the system.
Test data	To click the logout option.
Expected Result	Should logout from the home page.
Actual Result	Account is logout.
Conclusion	Test is successful.

Table 19: Table2Test2

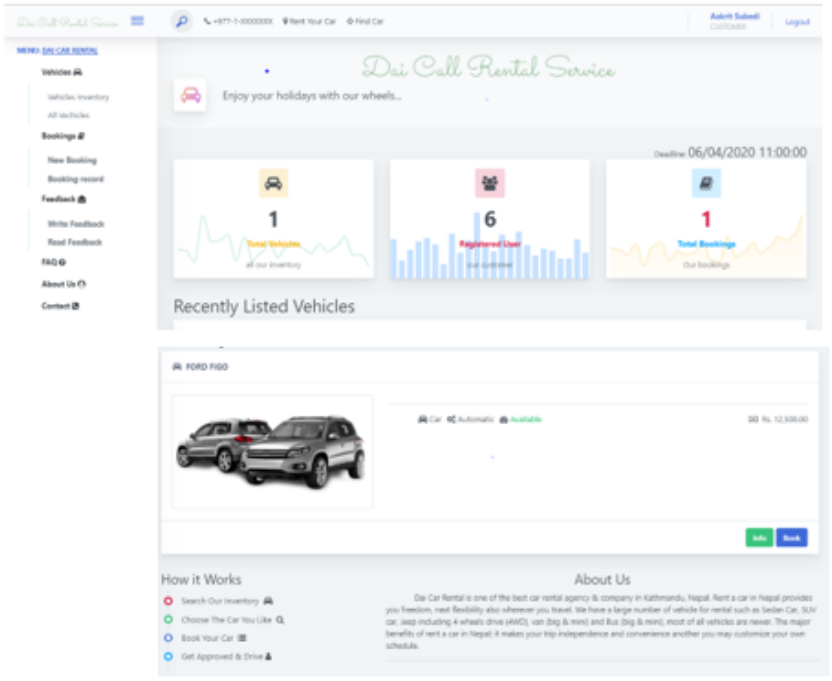

Figure 39: Test 2

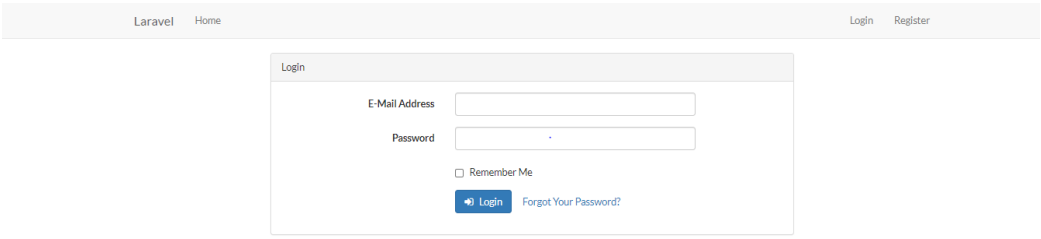

Figure 40: Test 2.1

Test Case	3
Test Objectives	To check in register option.
Test data	To click in register option.
Expected Result	Register should be done.
Actual Result	Register is done.
Conclusion	Test is successful.

Table 20: Table3Test3

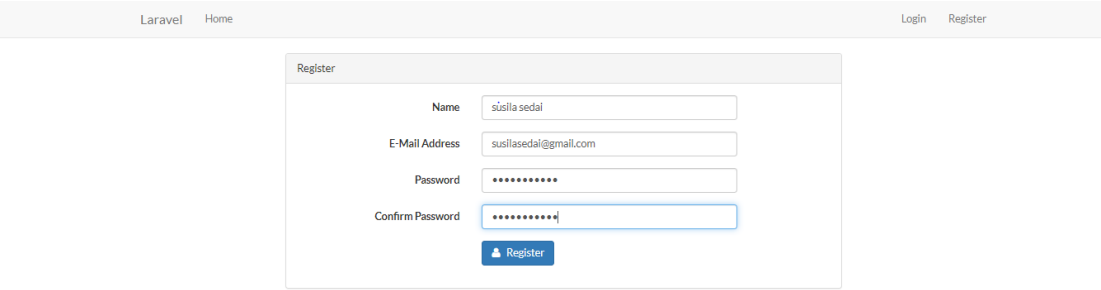

Figure 41: Test 3

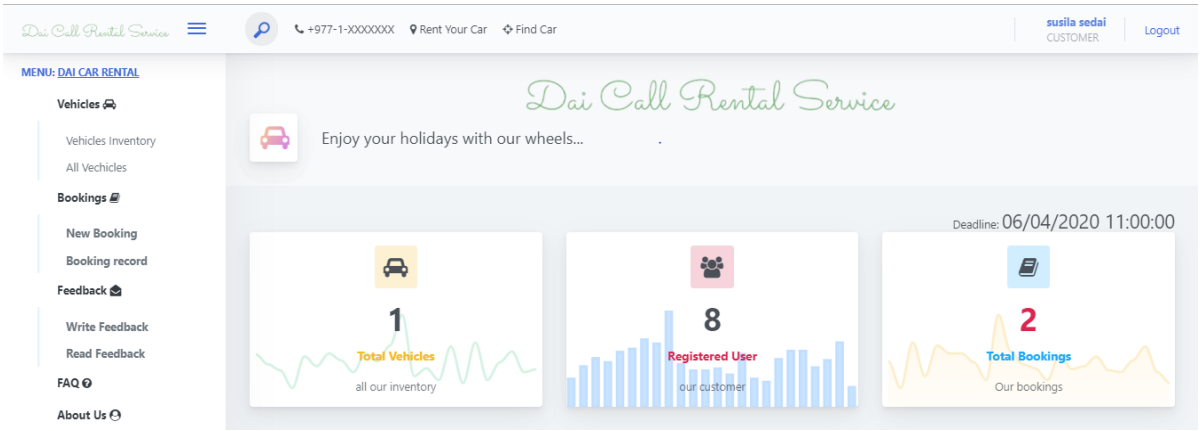

Figure 42: Test 3.1

Test Case	4
Test Objectives	To check forgot your password option.
Test data	To click in forgot your password option.
Expected Result	Option of reset popup.
Actual Result	Option popups.
Conclusion	Test is successful.

Table 21: Table4Test4

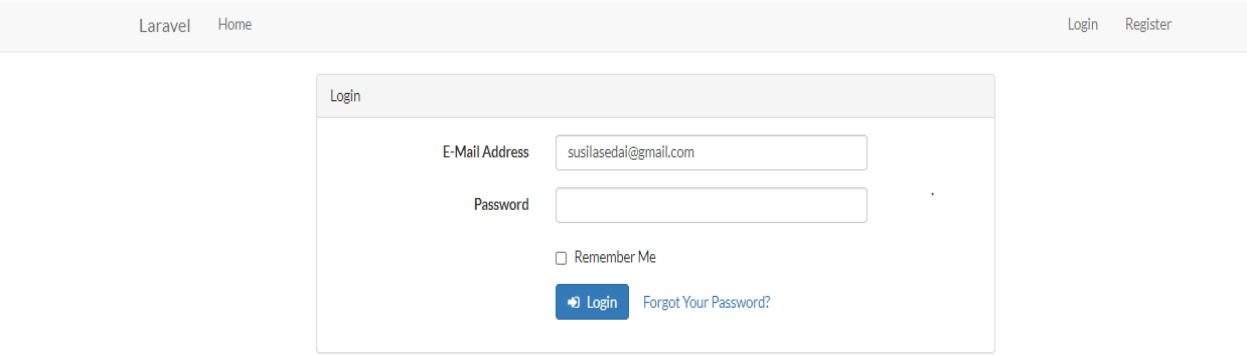

Figure 43: Test 4

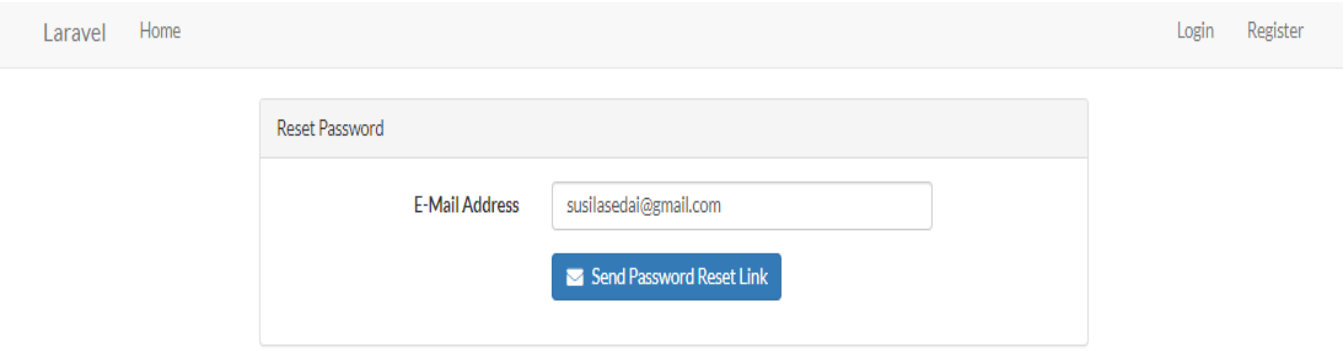

Figure 44: Test 4.1

4.3. Test plan for system testing

Test Cases	objectives
4.	To check forgot your password option.
5.	To check all vehicle option.
6.	To check new booking option.
7.	To check in booking record option.
8.	To check in write feedback option.
9.	To check in read feedback option.
10.	To check in about us option.
11.	To check in contact option.
12.	To check info option.
13.	To check book option.
14.	To check the vehicle inventory option.
15.	To check menu option.
16.	To check search option.
17.	To check the feedback menu.
18.	To verify missing @ option.
19.	To check the password correction.
20.	To check blank submit information.
21.	To check user information.
22.	To check faq menu.

Table 22: Table of test plan for system testing

4.3.1. System testing

Test Case	5
Test Objectives	To check the all vehicle option.
Test data	To click in all vehicle option.
Expected Result	Should display page of all vehicle.
Actual Result	Displays all vehicle page.
Conclusion	Test is successful.

Table 23: Table5Test5

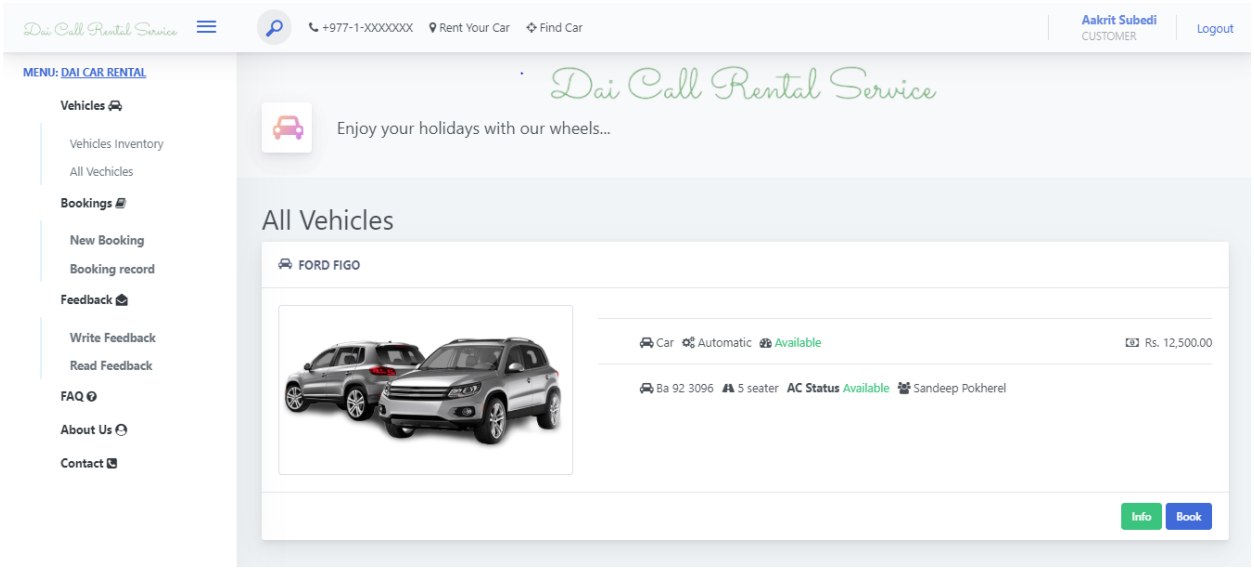

Figure 45: Test 5

Test Case	6
Test Objectives	To check new booking option.
Test data	To click in new booking option.
Expected Result	Should display booking page.
Actual Result	Displays booking page.
Conclusion	Test is successful.

Table 24: Table6Test6

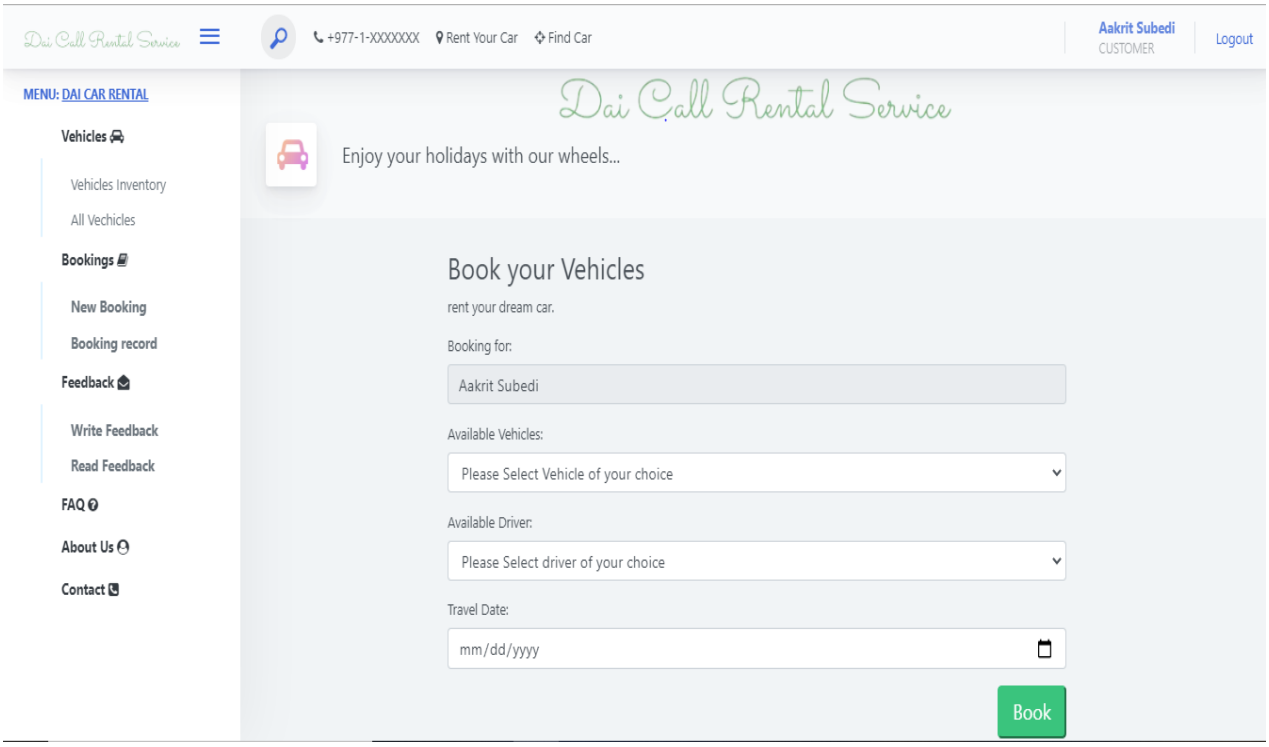

Figure 46: Test 6

Test Case	7
Test Objectives	To check in booking record option.
Test data	To click in booking record option.
Expected Result	Should display booking record page.
Actual Result	Displays booking record page.
Conclusion	Test is successful.

Table 25: Table7Test7

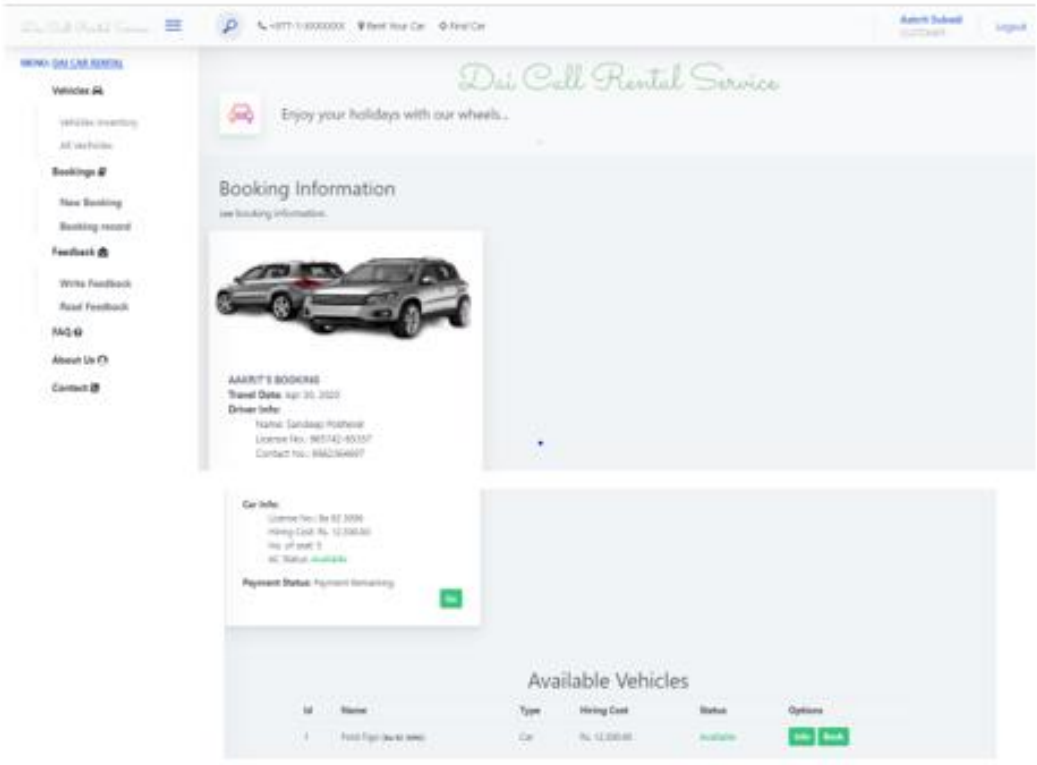

Figure 47: Test 7

Test Case	8
Test Objectives	To check in write feedback option.
Test data	To click in write feedback option.
Expected Result	Should display writing feedback page.
Actual Result	Displays writing feedback page.
Conclusion	Test is successful.

Table 26: Table8Testt

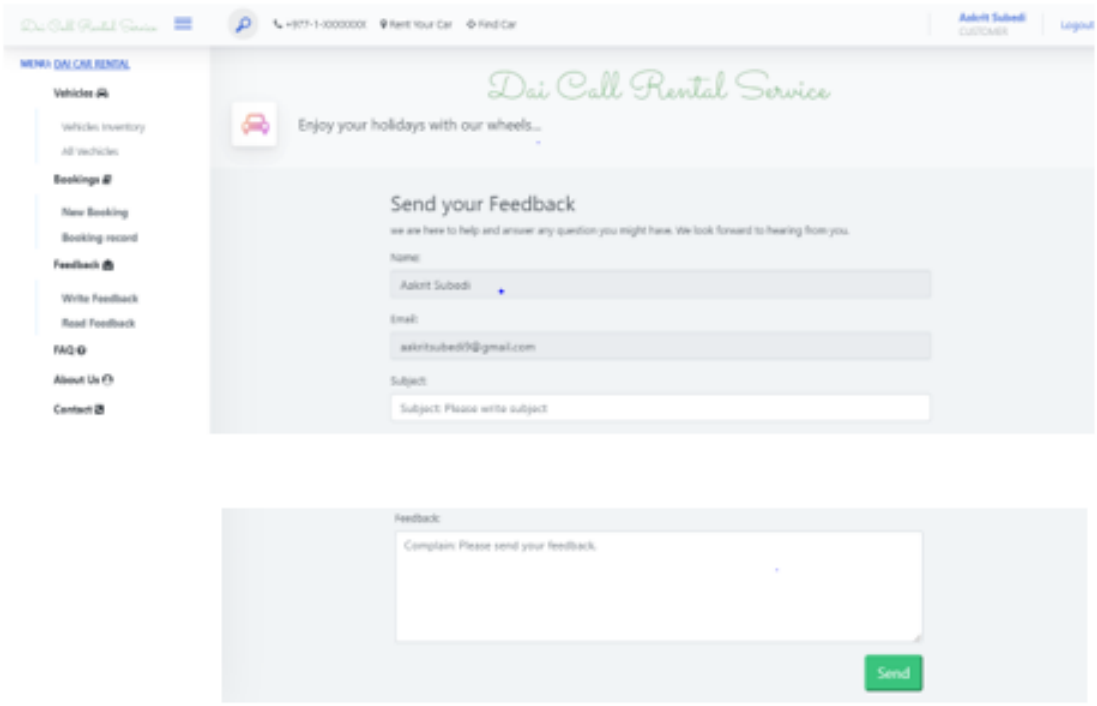

Figure 48: Test 8

Test Case	9
Test Objectives	To check in read feedback option.
Test data	To click in read feedback option.
Expected Result	Should display read feedback page.
Actual Result	Displays read feedback page.
Conclusion	Test is successful.

Table 27: : Table9Test9

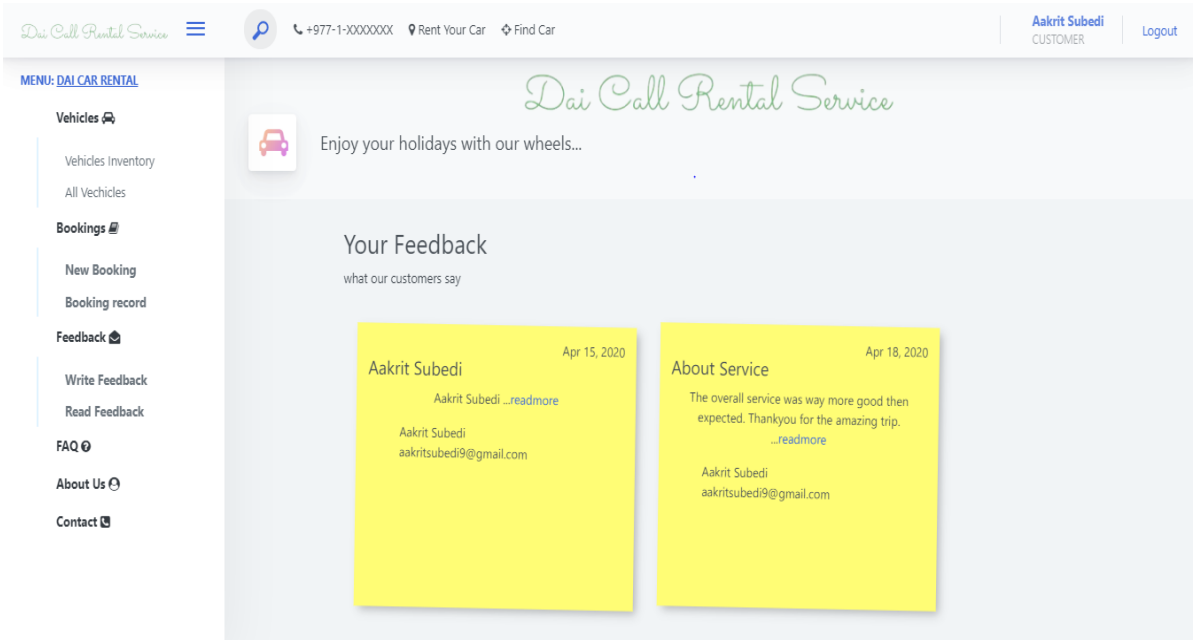

Figure 49: Test 9

Test Case	10
Test Objectives	To check in about us option.
Test data	To click in about us option.
Expected Result	Should display information of about page.
Actual Result	Displays about us page.
Conclusion	Test is successful.

Table 28: Table10Test10

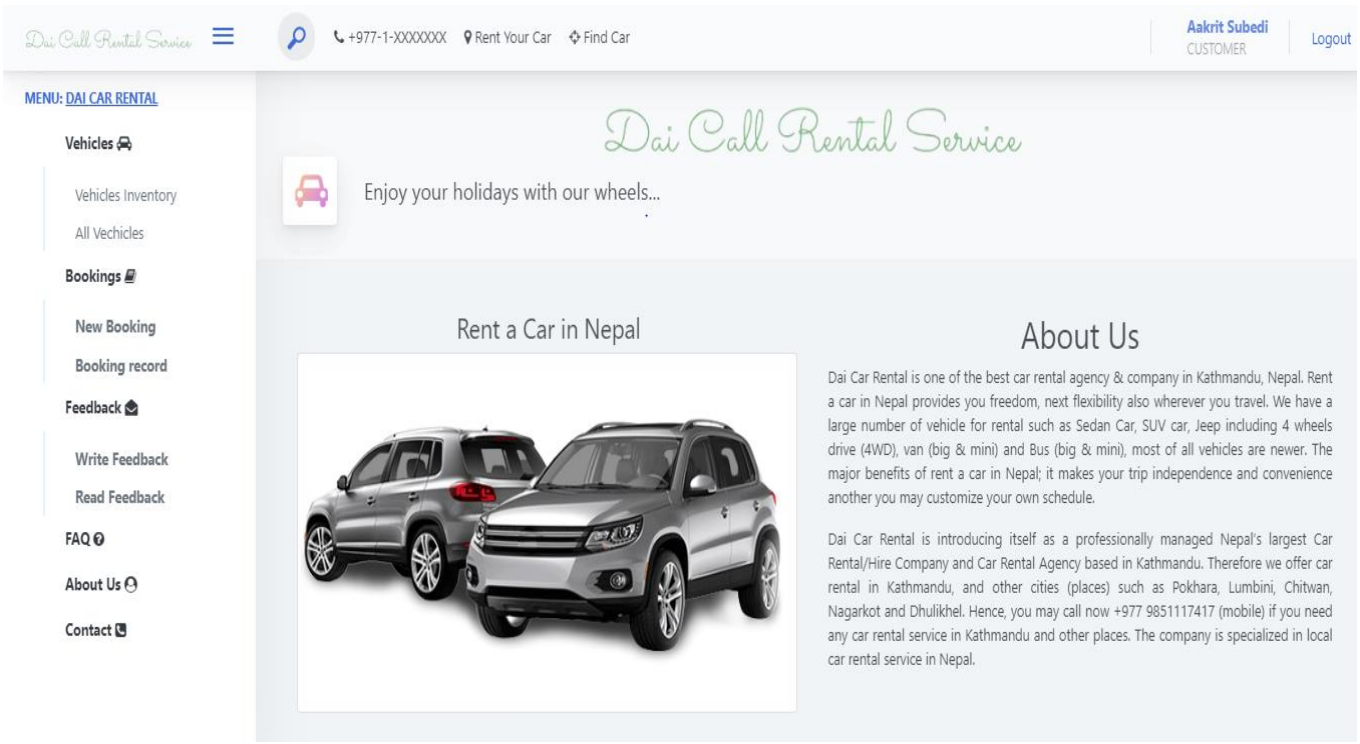

Figure 50: Test 10

Test Case	11
Test Objectives	To check in contact option.
Test data	To click in contact option.
Expected Result	Should display contact page.
Actual Result	Displays contact page.
Conclusion	Test is successful.

Table 29: Table11Test11

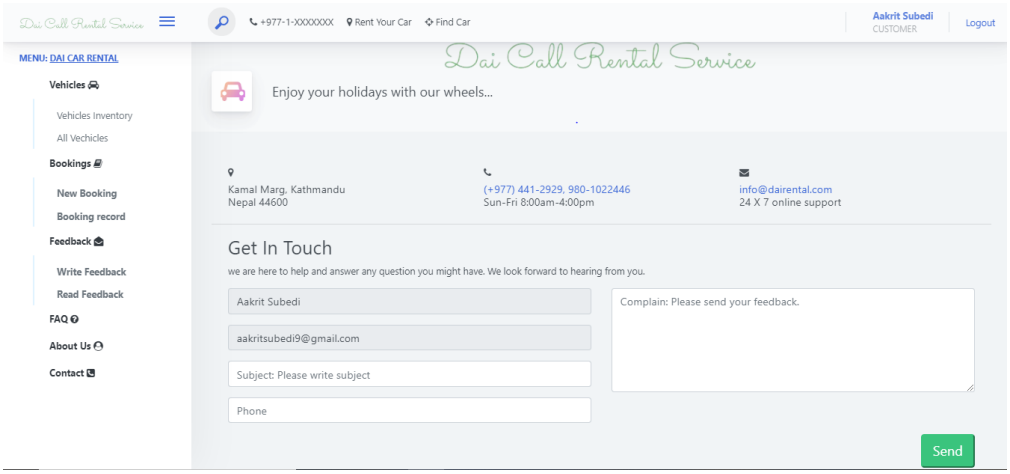

Figure 51: Test 11

Test Case	12
Test Objectives	To check in info option.
Test data	To click in info option.
Expected Result	Should display information.
Actual Result	Displays information page.
Conclusion	Test is successful.

Table 30: Table12Test12

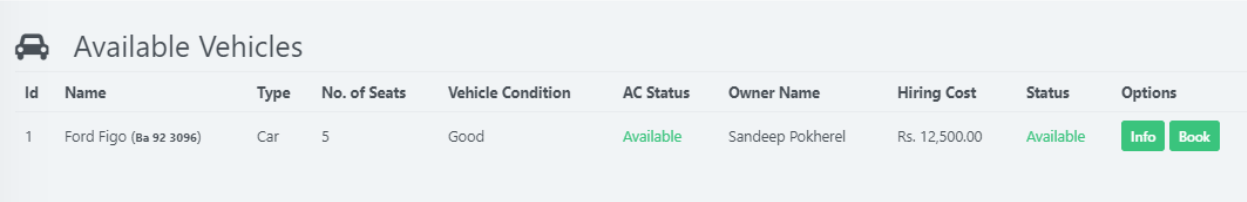

Figure 52: Test 12

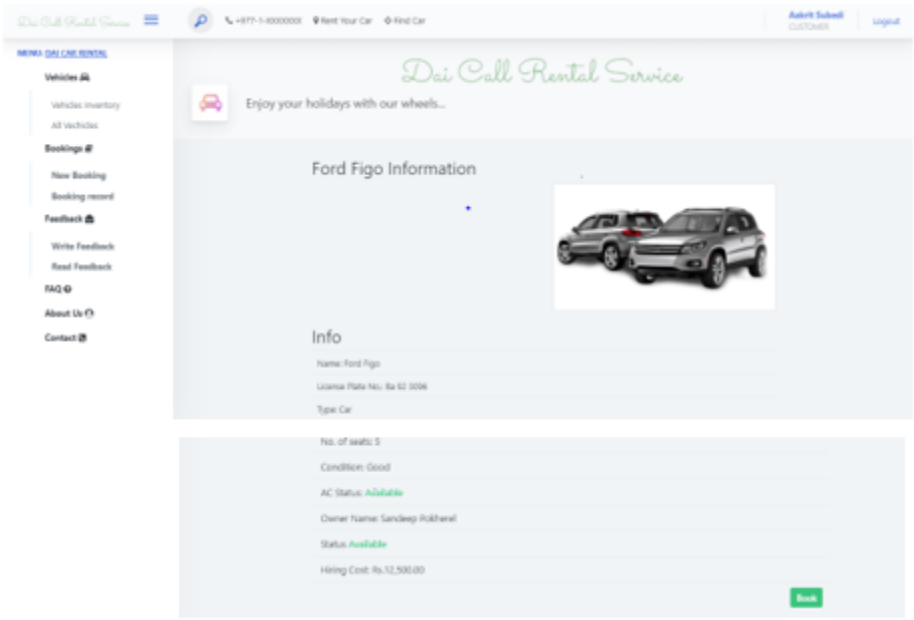

Figure 53: Test 12.1

Test Case	13
Test Objectives	To check in book option.
Test data	To click in book option.
Expected Result	Booking should be done.
Actual Result	Booking is done.
Conclusion	Test is successful.

Table 31: Table13Test13

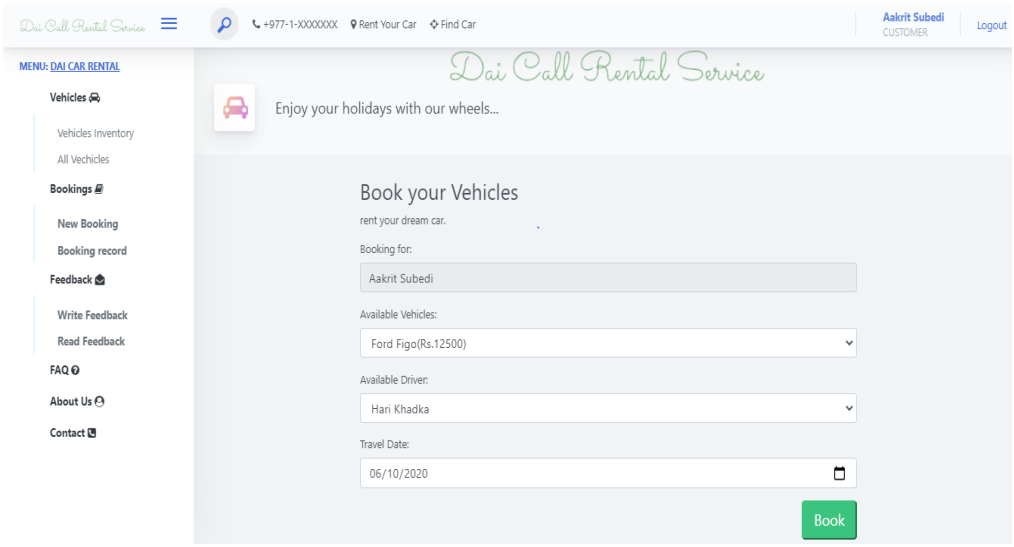

Figure 54: Test 13

Figure 55: Test 13.1

Test Case	14
Test Objectives	To check the vehicle inventory.
Test data	To click in vehicle inventory option.
Expected Result	Should display page of vehicle inventory.
Actual Result	Displays vehicle inventory page.
Conclusion	Test is successful.

Table 32: Table14Test14

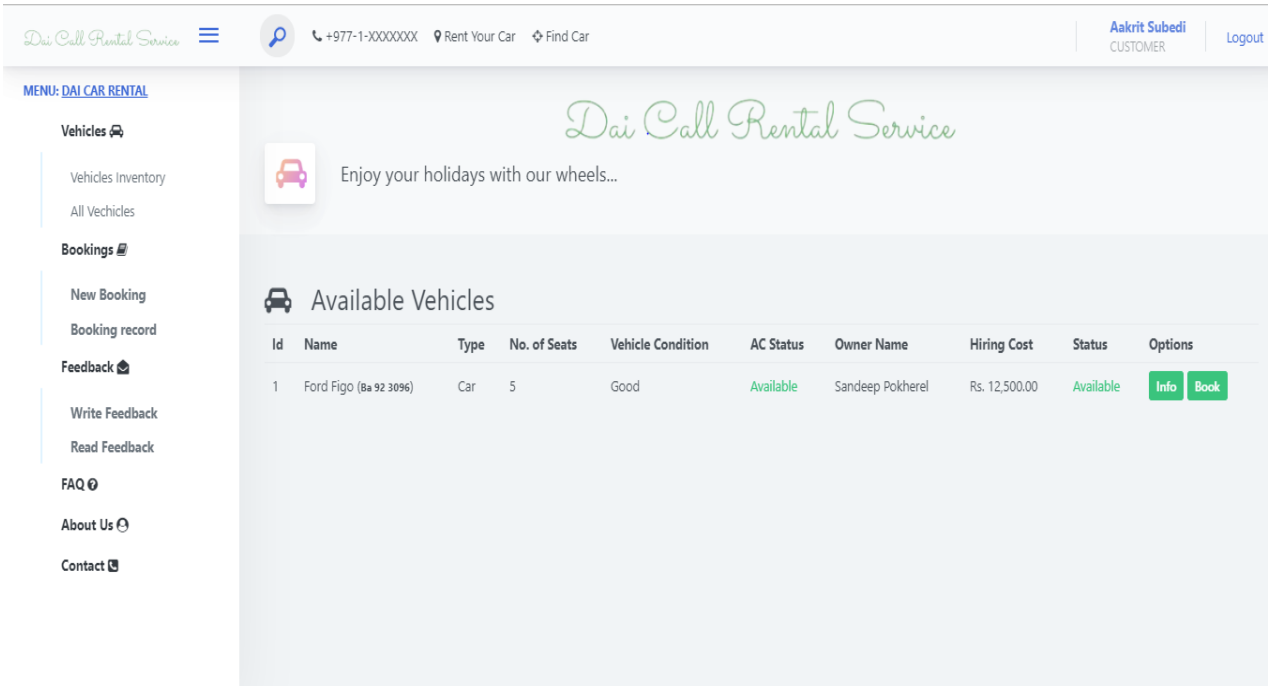

Figure 56: Test 14

Test Case	15
Test Objectives	To check the menu option.
Test data	To click in menu option.
Expected Result	Should display menus hiding.
Actual Result	Displays menus hiding.
Conclusion	Test is successful.

Table 33: Table15Test15

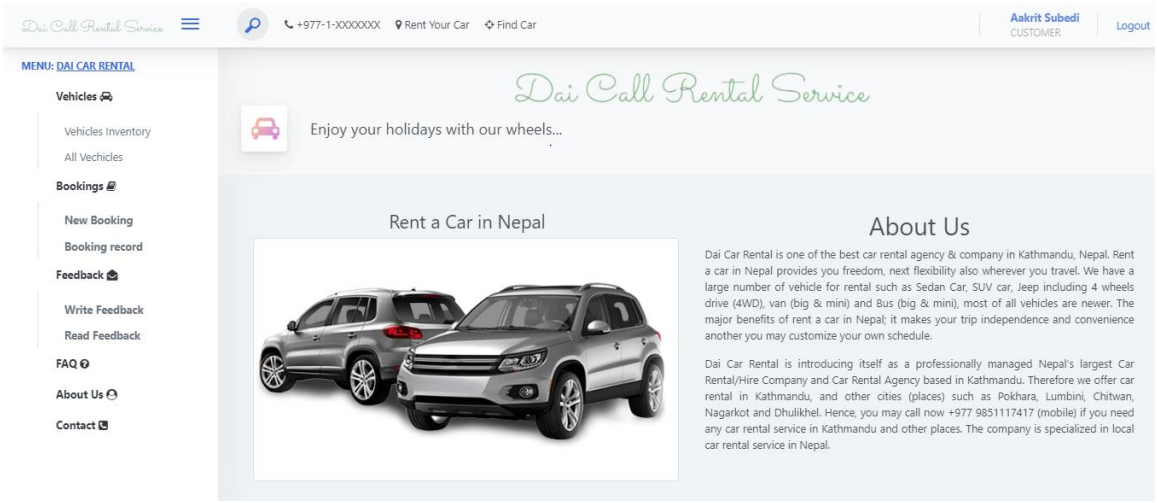

Figure 57: Test 15

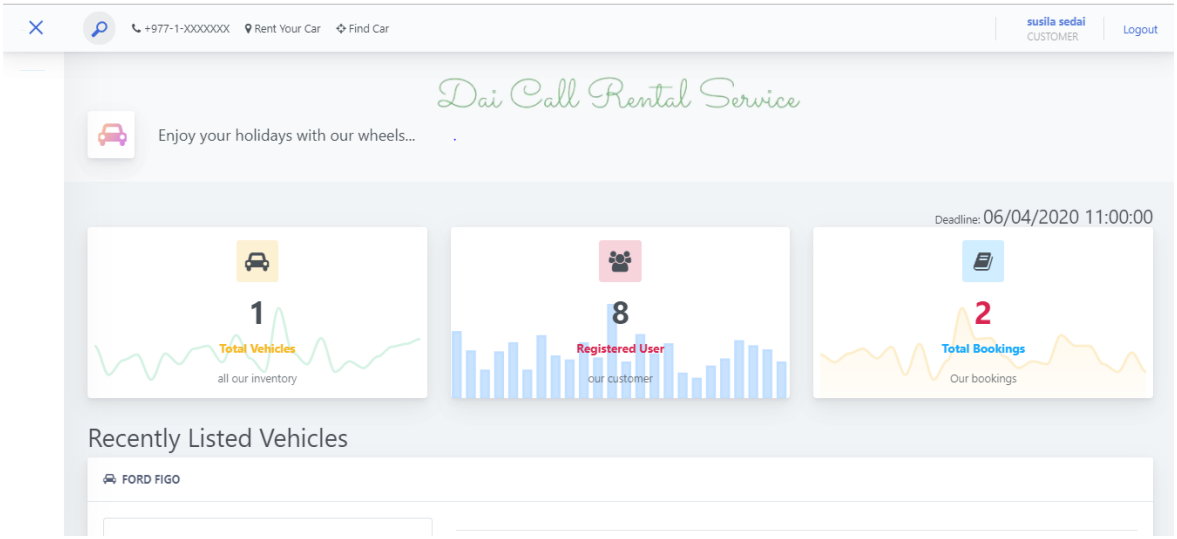

Figure 58: Test 15.1

Test Case	16
Test Objectives	To check the search option.
Test data	To click in search option.
Expected Result	Should search.
Actual Result	Displays search item.
Conclusion	Test is successful.

Table 34: Table16Test16

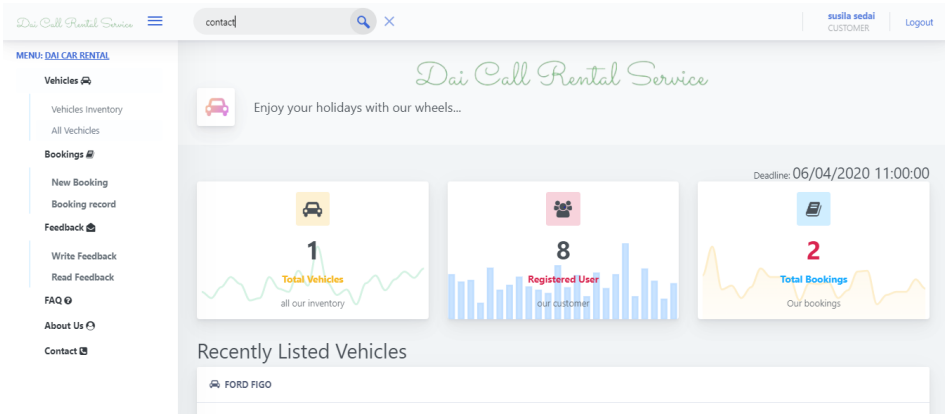

Figure 59: Test 16

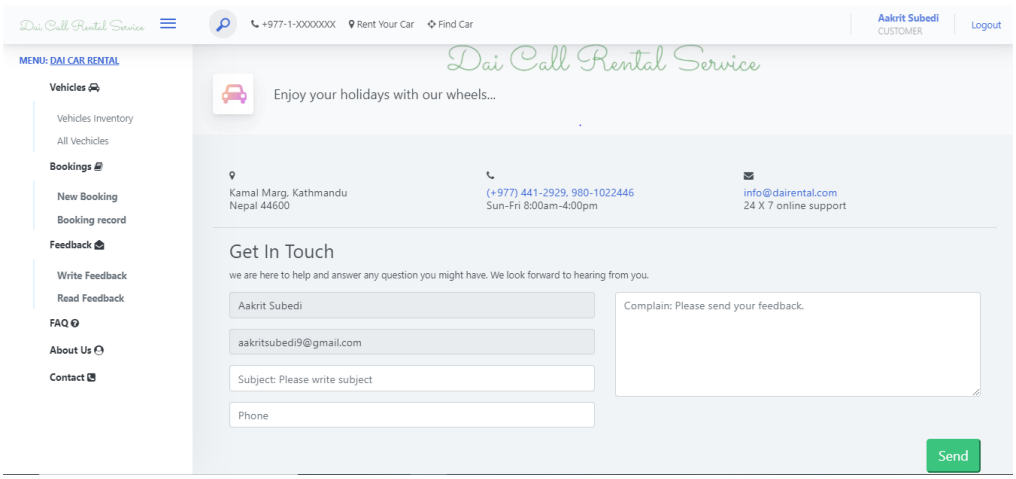

Figure 60: Test 16.1

Test Case	17
Test Objectives	To check the search option.
Test data	To click in search option.
Expected Result	Should search.
Actual Result	Displays search item.
Conclusion	Test is successful.

Table 35: Table17Test17

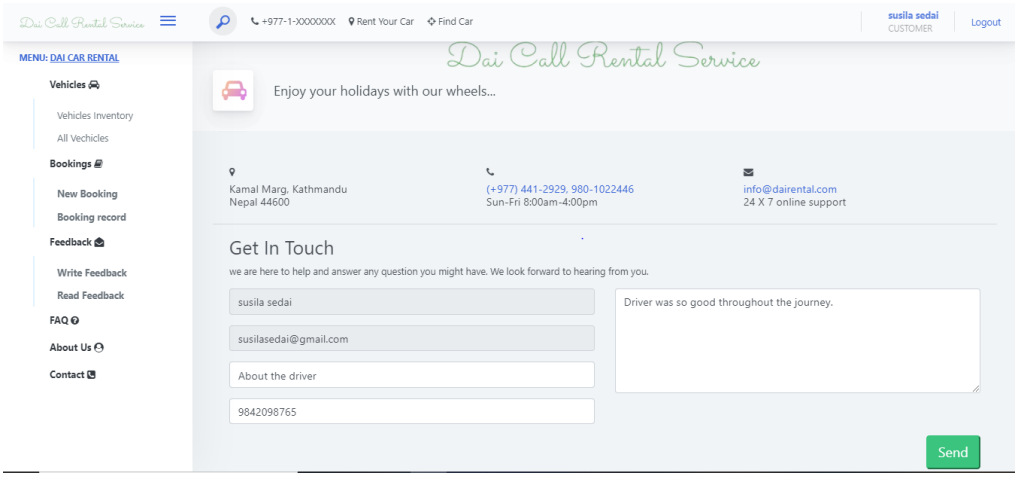

Figure 61: Test 17

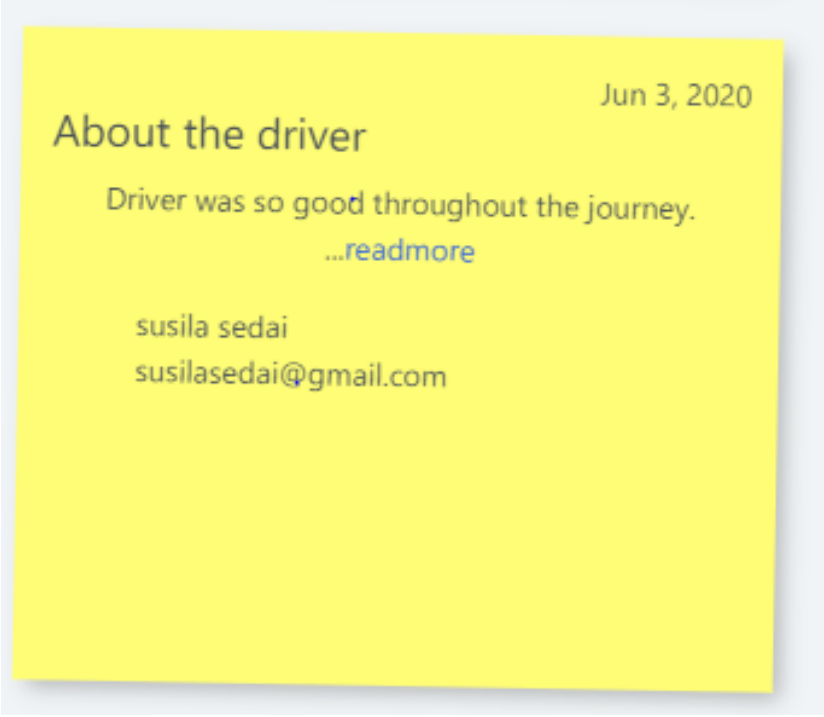

Figure 62: Test 17.1

Test Case	18
Test Objectives	To verify missing @ option.
Test data	To click in login option.
Expected Result	Missing message should popup.
Actual Result	Displays @missing message.
Conclusion	Test is successful.

Table 36: Table18Test18

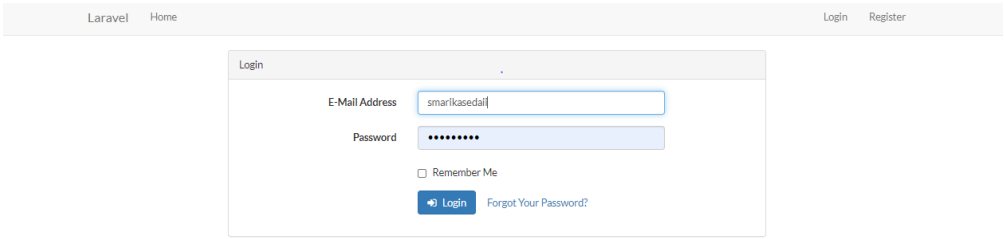

Figure 63: Test 18

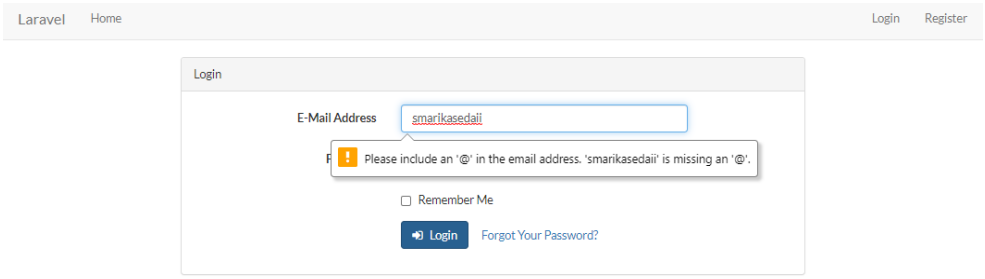

Figure 64: Test 18.1.

Test Case	19
Test Objectives	To check the password correction.
Test data	To click in register option.
Expected Result	Password does not match message popup.
Actual Result	Displays password does not match message.
Conclusion	Test is successful.

Table 37: Table19Test19

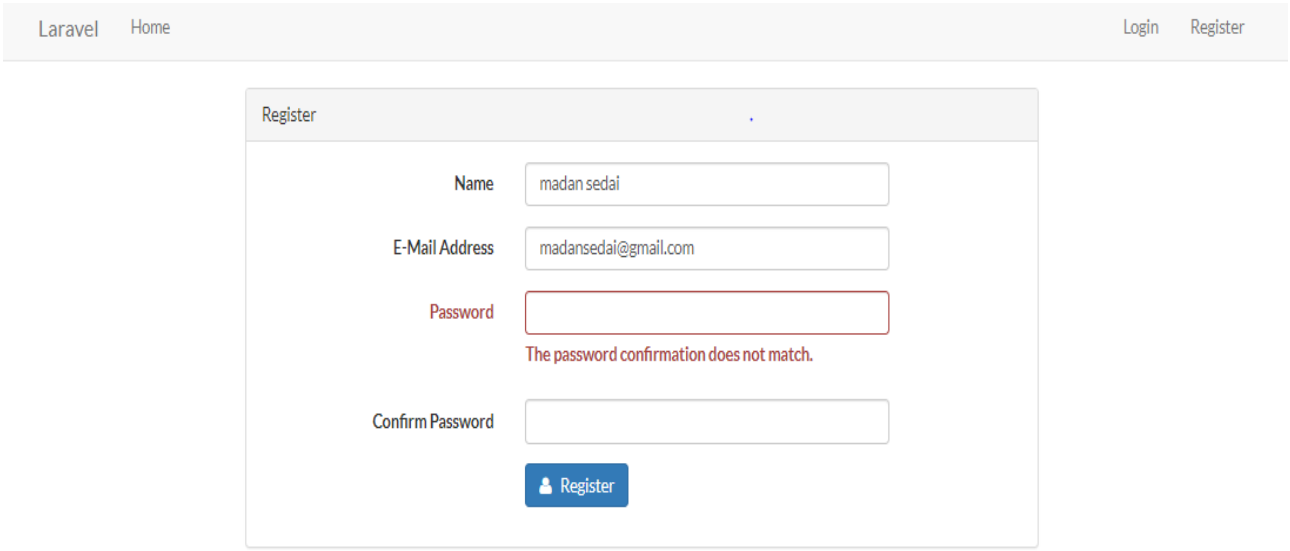

Figure 65: Test 19

Test Case	20
Test Objectives	To check blank submit information.
Test data	To click in login option.
Expected Result	Fill up the blank message should be displayed.
Actual Result	Fill up the blank message is displayed.
Conclusion	Test is successful.

Table 38: Table20Test20

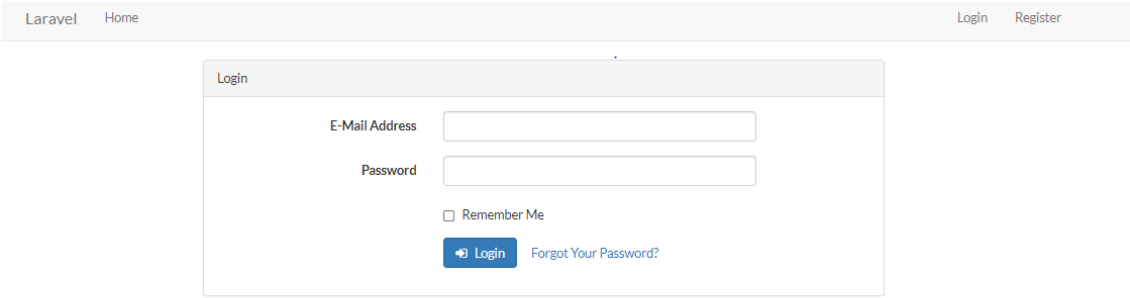

Figure 66: Test 20

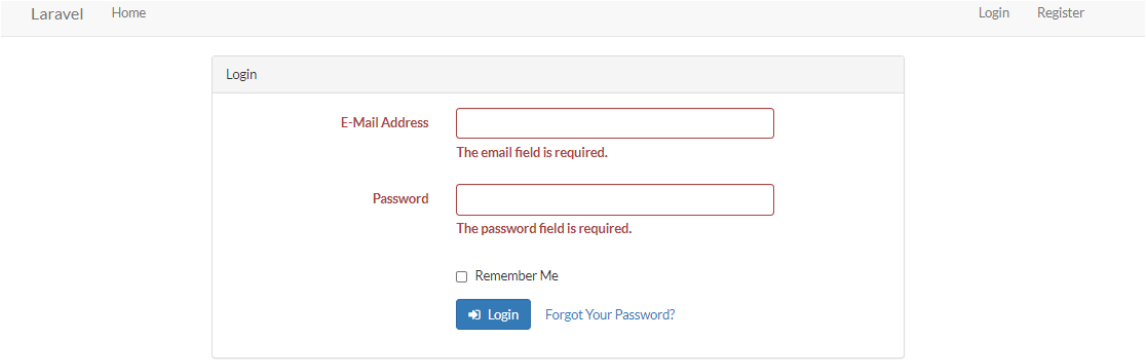

Figure 67: Test 20.1

Test Case	21
Test Objectives	To check user information.
Test data	To click in user name option.
Expected Result	Information of user should be displayed.
Actual Result	Information of user is displayed.
Conclusion	Test is successful.

Table 39: Table21Test21

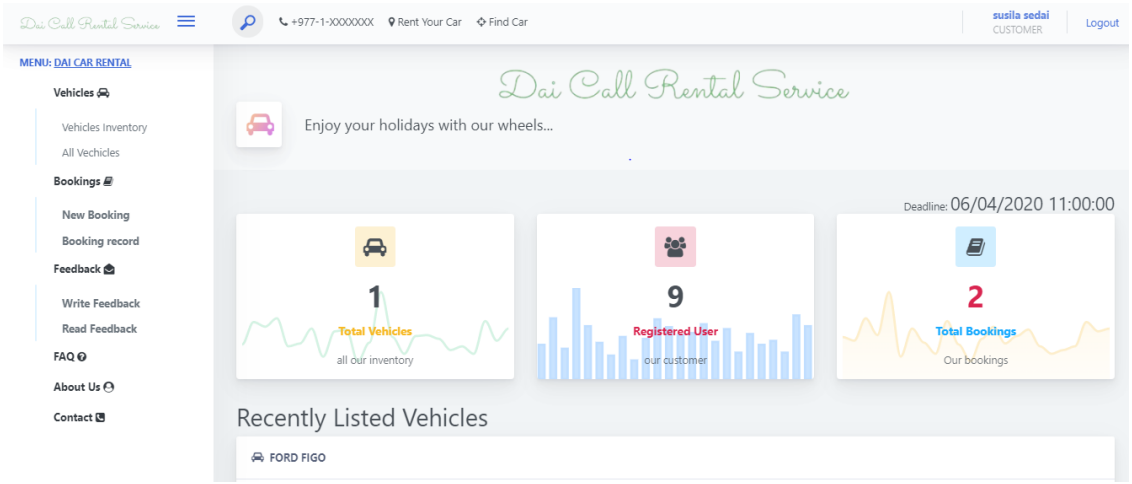

Figure 68: Test 21

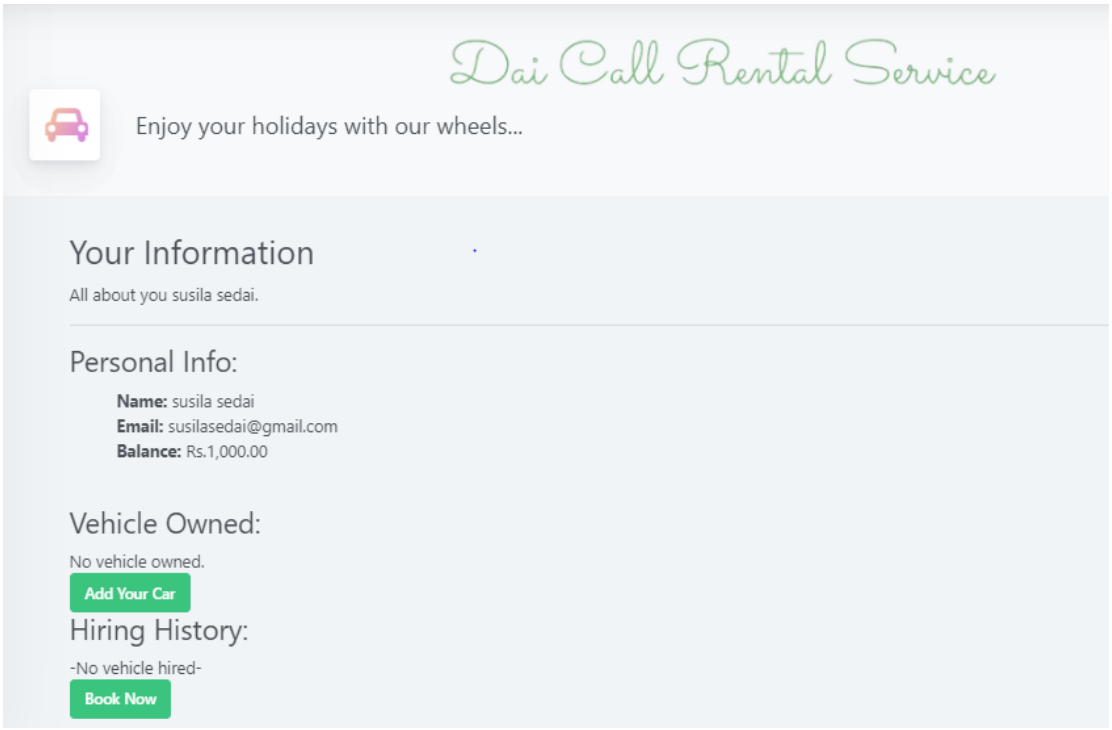

Figure 69: Test 21.1

Test Case	22
Test Objectives	To check faq menu.
Test data	To click in faq option.
Expected Result	Faq should be listed.
Actual Result	Faq is listed
Conclusion	Test is successful.

Table 40: Table22Test22

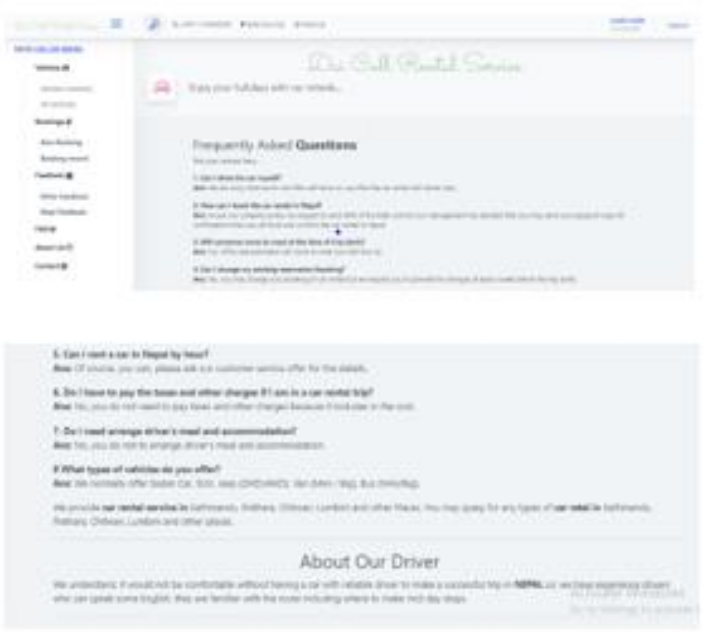

Figure 70: Test 22

4.4. Critical Analysis

I have created a car rental system which is web based application. Here admin plays as a main role among all the different users. Admin can create user, remove user, update event, edit event and so on. Admin look after everything including users and drivers detail. User can login with their login id and password and can be assessed into their account. By then they can view all the activities held in application. They can book cars and choose driver according to their choice. They can contact admin with help of contact page in web application. Driver can login into their id and can serve the users.

5: CONCLUSION (Section 5)

Car rental service is hands down the best service any people can offer. This web based car rental service has offered both customers as well as car rental company an advantage. This system efficiently and effectively manages the overall system by single click of a button. Once customer register their username their ordered car will be in their door step. This system is implemented to overcome the problem facing by the manual user. This is also a profit card for company with each of the transaction.

Some of the facilities that can be provided by this car rental services are listed below:

- Many families whether the members of family are more or less, they may not have transportation to travel. This car rental service can help those people. This system helps them to enjoy their ride with great accommodation.
- Online booking helps people by providing online facilities. Where any user can login or register any they can enjoy the facilities provided.
- All the drivers and cars are listed in the website so any user can check out and know about the driver.
- This website is user friendly any one can easily access to the website.
- In Emergency this site maybe becomes your lifeline. This site is opened 24/7 so at any emergency you can call our site.

5.1 LEGAL, SOCIAL AND ETHICAL ISSUES

5.1.1 LEGAL ISSUES

Some of the legal issues that may be charged to rental owner are as follows:

- Driver without license is legally punished.
- In the name of accommodation owner should not feed expired food to the staffs and customers.
- Owner should not charge money more than expected.

5.1.2 SOCIAL ISSUES

Some of the social issues that this rental system can take away are as follows:

- Drivers and users can communicate and build trust among themselves.
- Members can share their social values and norms.
- People tend to communicate personally rather than interacting just in internet.

5.1.3 ETHICAL ISSUES

Some of the ethical issues that maybe caused in rental system are as follows:

- No cast discrimination should be done among driver, staff, or any participants which may harm person personally.
- Gender biased should not be done among all.
- Persons health condition should be treated well rather than making joke of it.

5.2 ADVANTAGES

Some of the advantages of the dai car rental system are as follows:

- It is user friendly, any user can easily handle the website.
- Your data's and personal information are kept safe,
- This site is opened 24/7 in case of any emergency you can contact this website.
- Saves time for any person who needs car for urgent travel.
- Money is reliable. Anyone can afford the travel.
- Driver are provided.
- Accommodations are provided.
- User can choose any driver and any car as their choice or need.
- It saves a lot of time, labor and money.

5.3 FUTURE WORK CHAPTER

Application is never fulfilled. Day by day there will be many ideas which user wants in their application. So in future for the improvement of the application, the features can be added. Mobile application can be made to make people search the car easily. Map can be adding up for location searching. The search feature can be more advanced. Payment system can be expanded.

System can be implemented in various platforms. More facilities or accommodation can be added for the users. Many features of this application can be modified and make it advanced.

6. Bibliography(Section 6)

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7. APPENDIX (Section 7)

7.1. APPENDIX A: PRE-SURVEY

7.1.1. PRE-SURVEY FORM

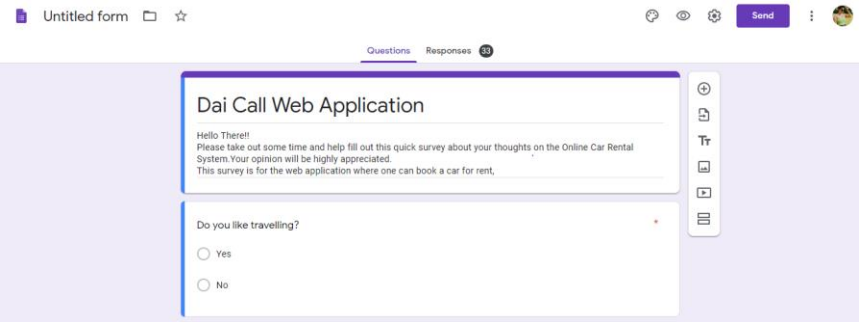


Figure 71: Survey form q1

Figure 72: Survey form q2

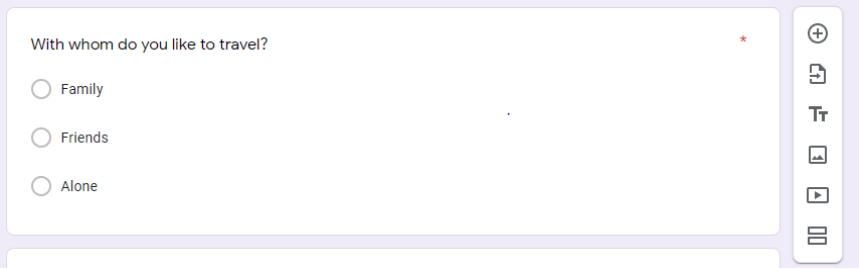


Figure 73: Survey form q3

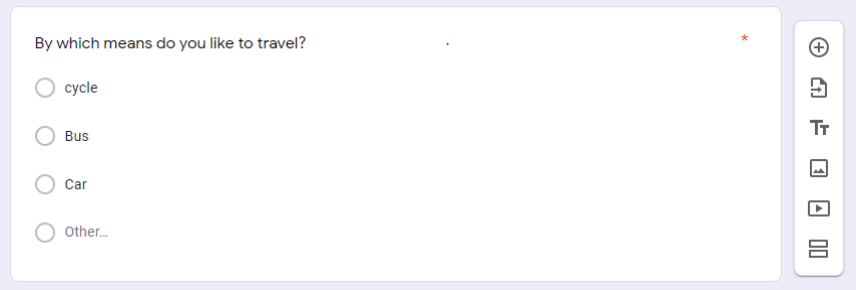


Figure 74: Survey form q4

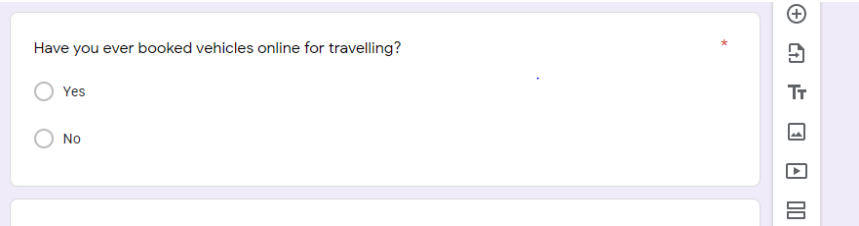


Figure 75: Survey form q5

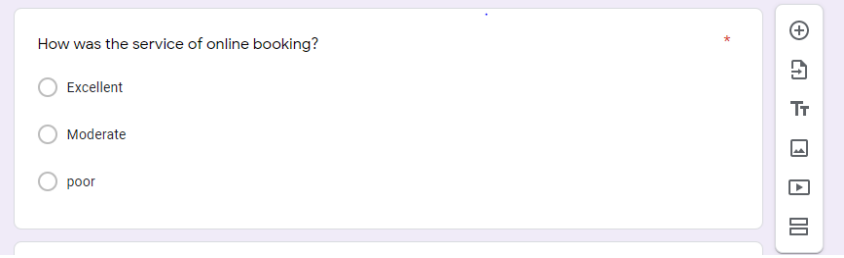


Figure 76: Survey form q6

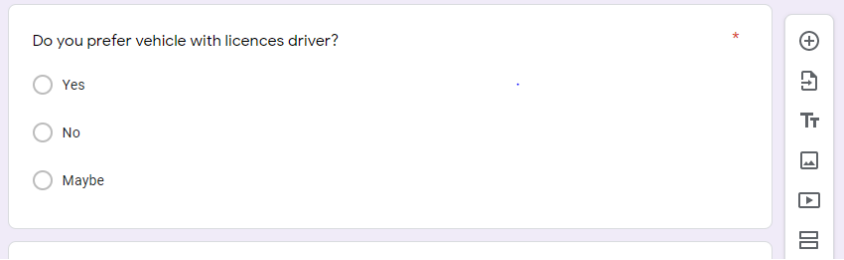


Figure 77: Survey form q7

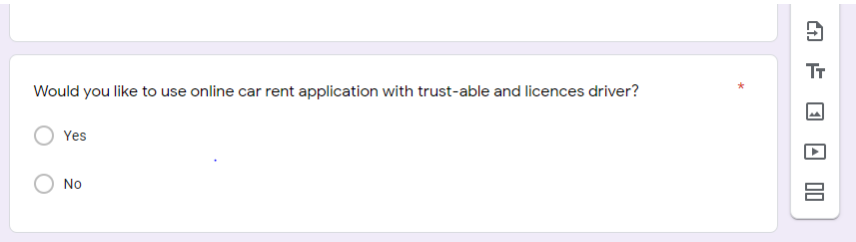


Figure 78: Survey form q8

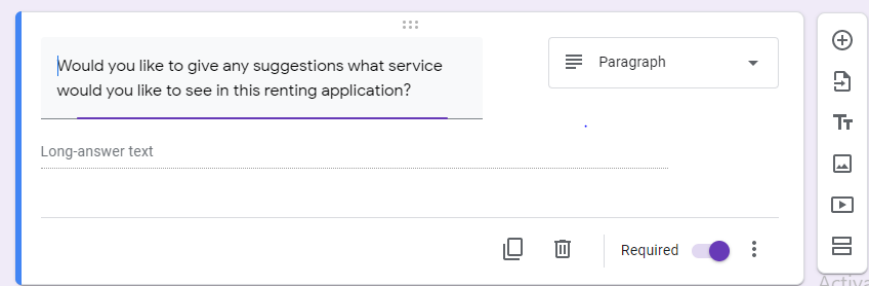


Figure 79: Survey form q9

7.1.2 SAMPLE OF FILLED PRE-SURVEY FORMS

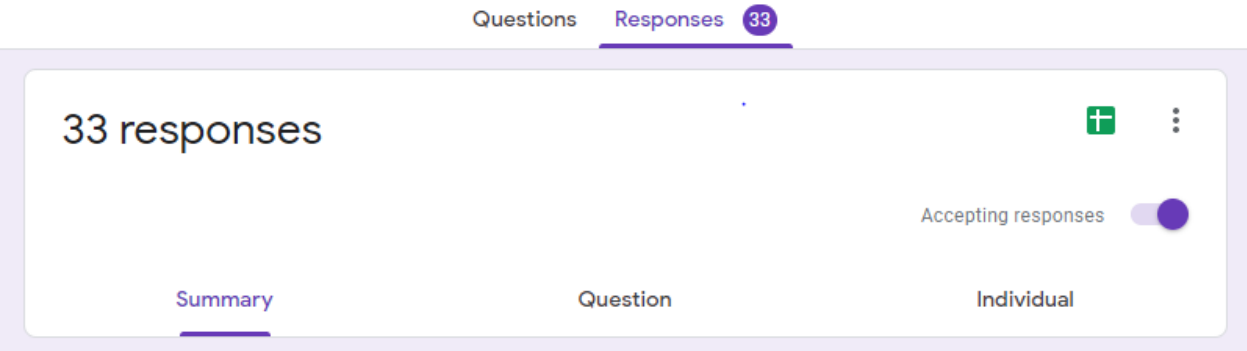


Figure 80: pre survey response

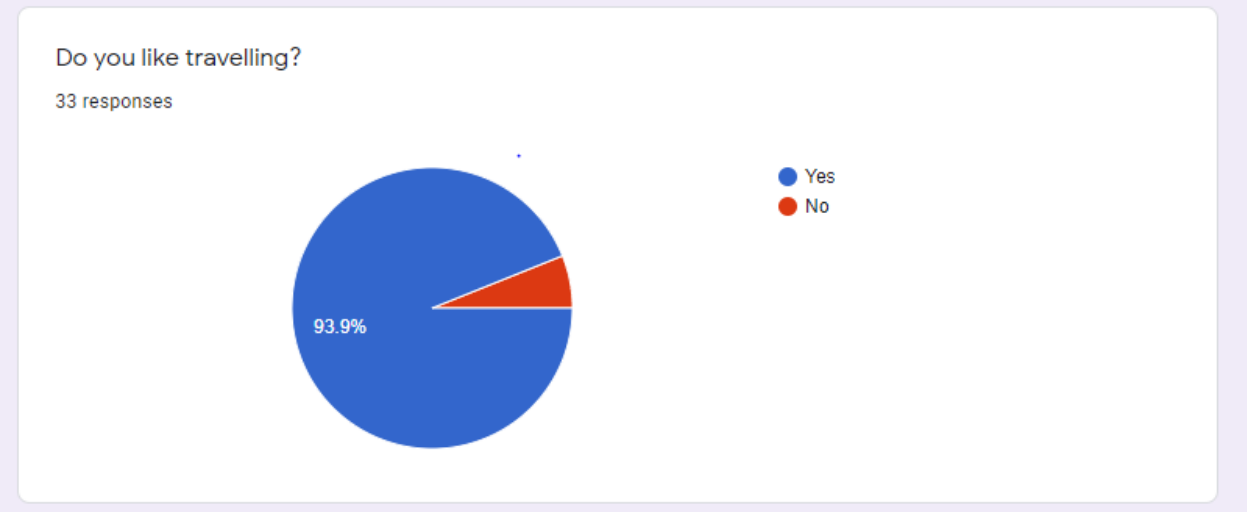


Figure 81: pre survey response 1

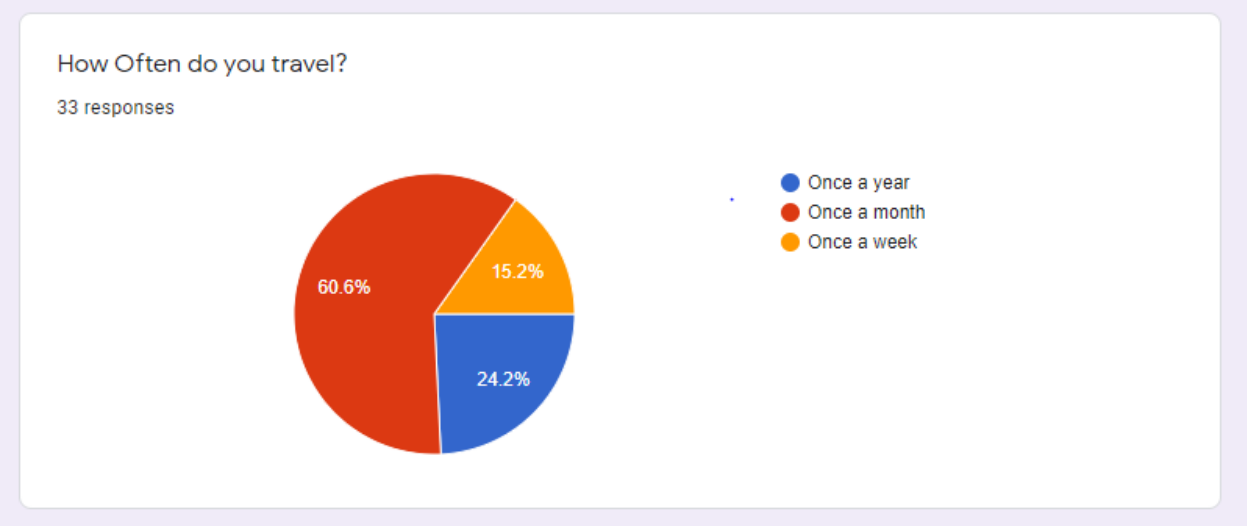


Figure 82: pre survey response 2

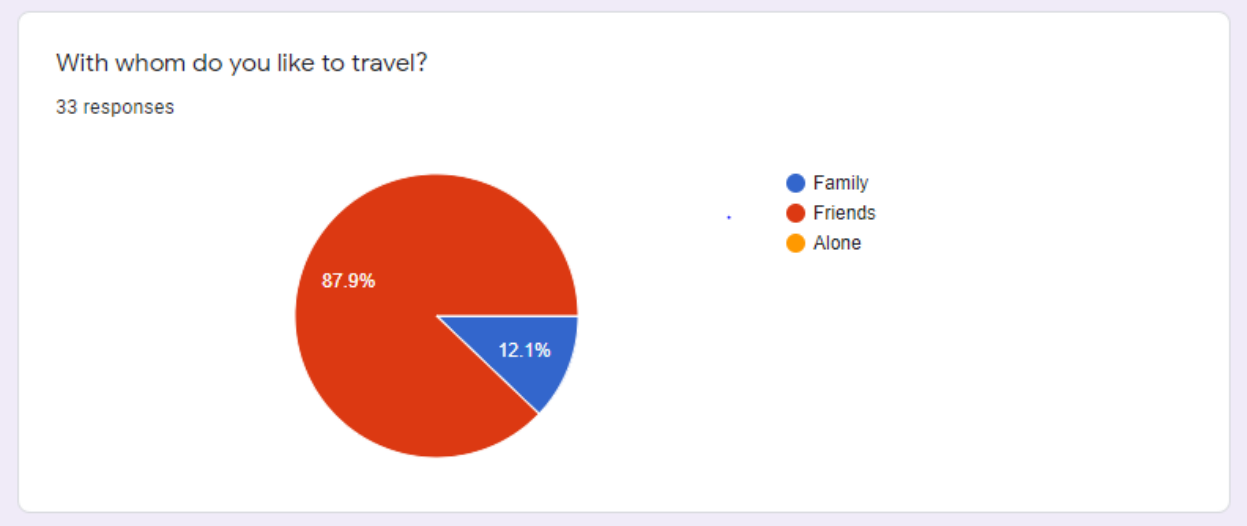


Figure 83: pre survey response 3

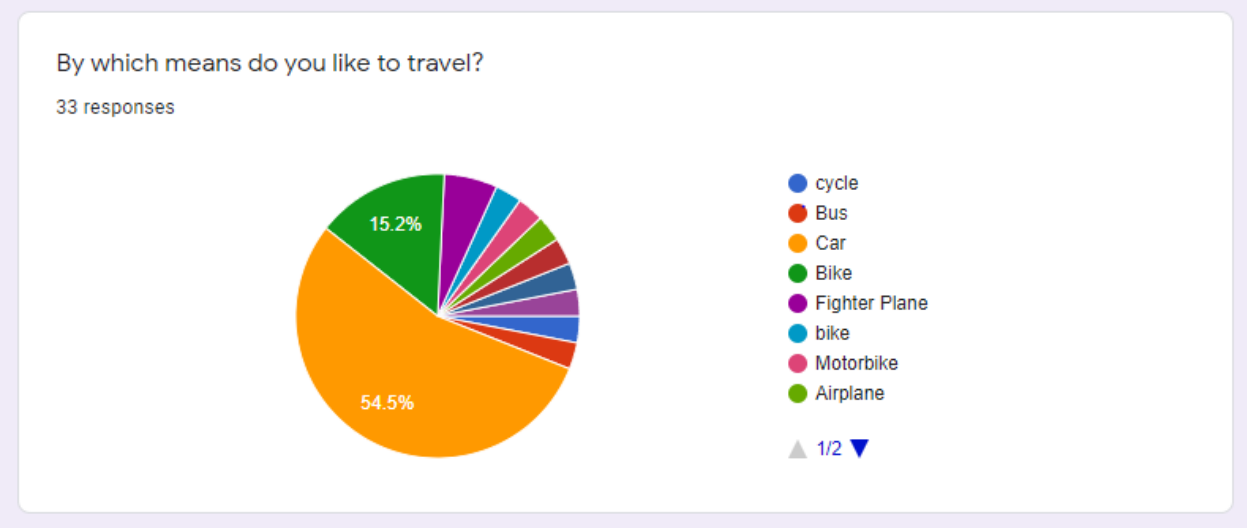


Figure 84: pre survey response 4

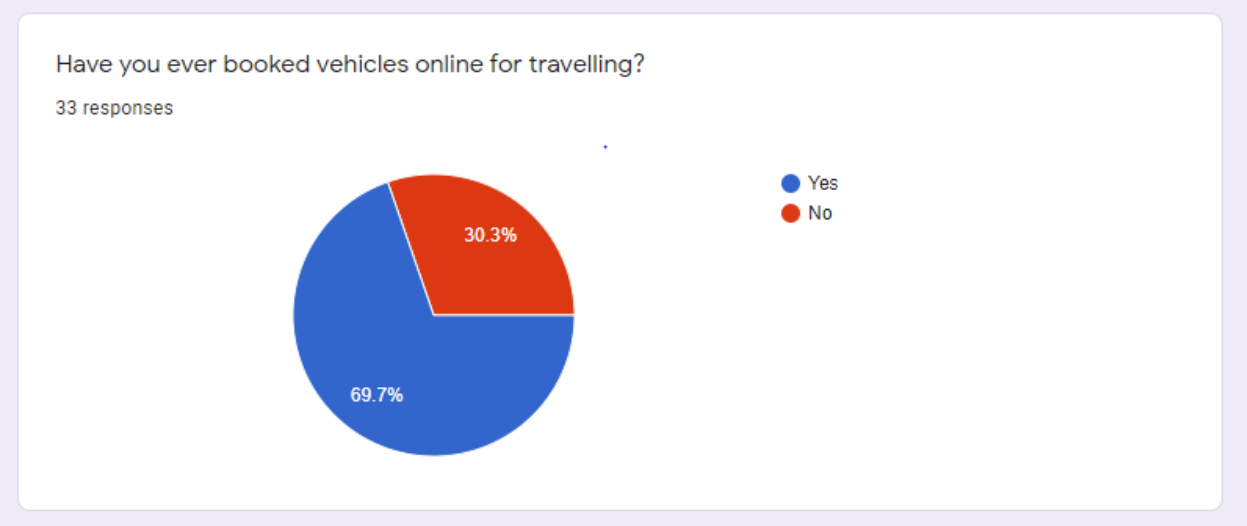


Figure 85: pre survey response 5

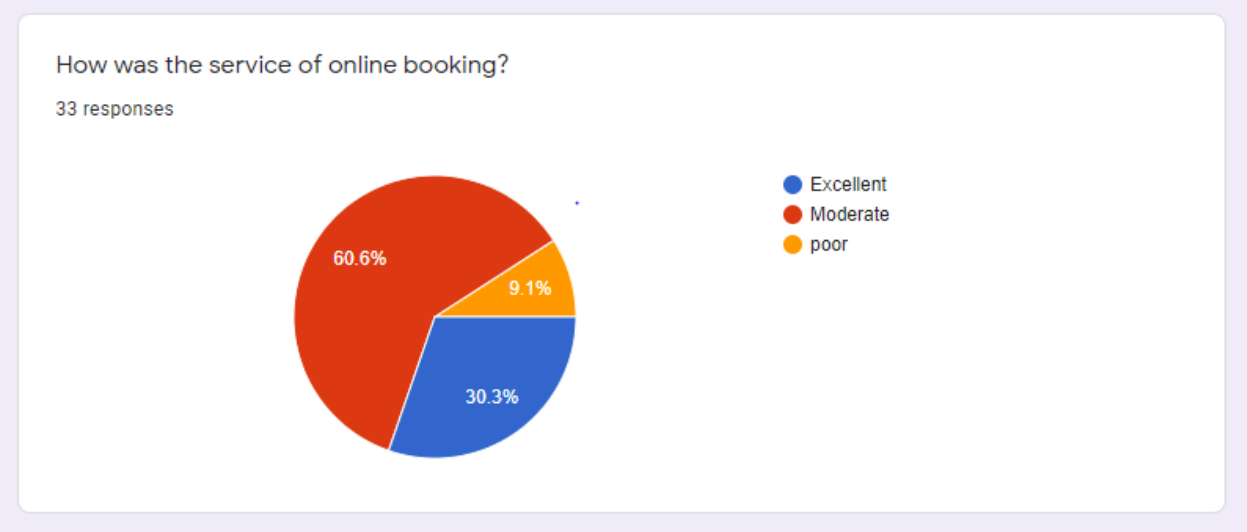


Figure 86: pre survey response 6

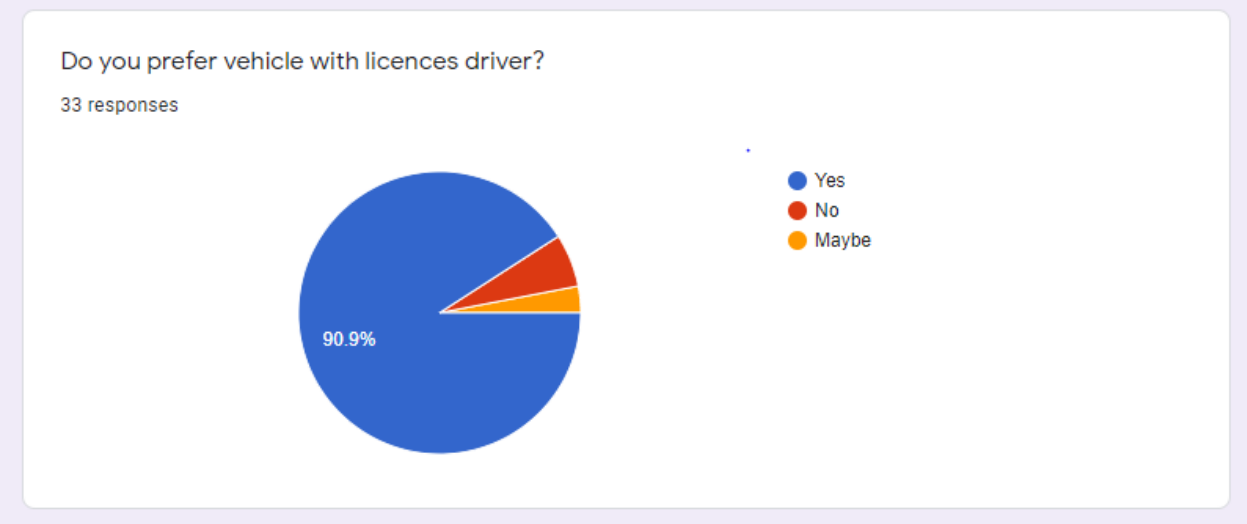


Figure 87: pre survey response 7

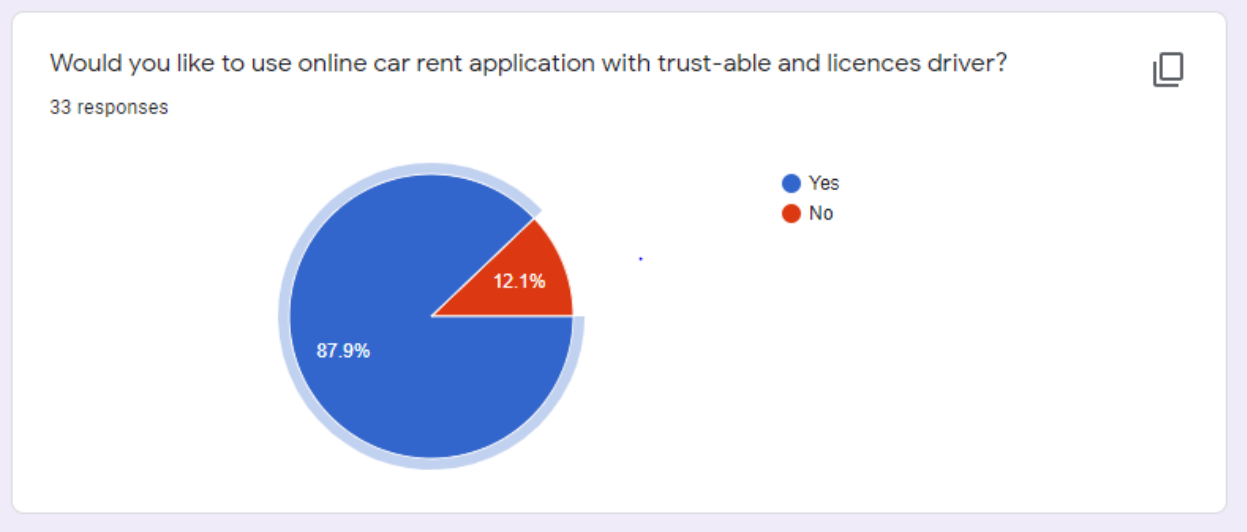


Figure 88: pre survey response 8

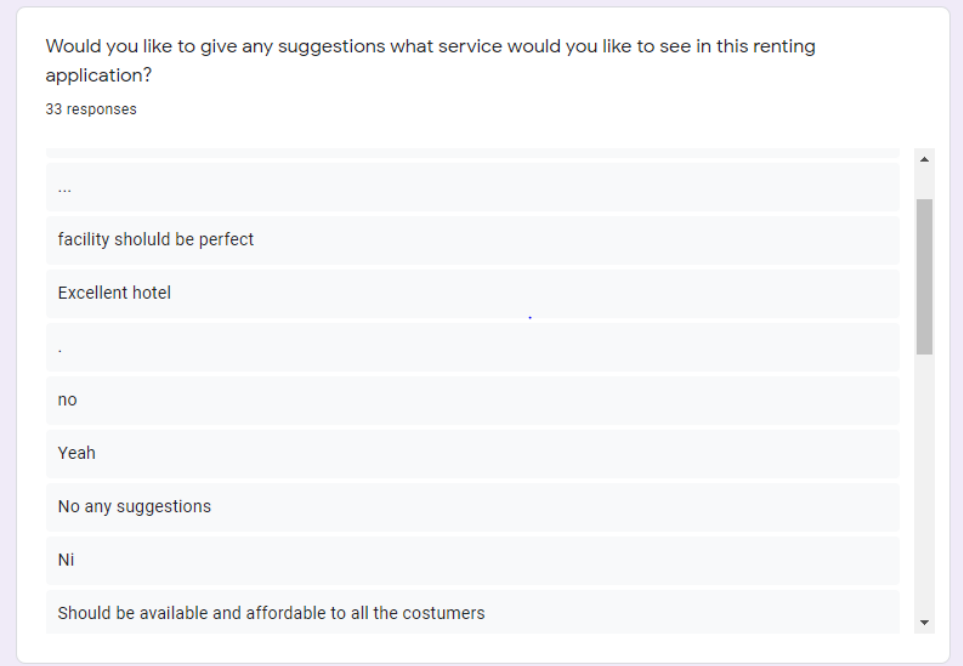


Figure 89: pre survey response 9

7.1.3 PRE-SURVEY RESULT

In pre survey result results are as follows:

a. 93.9% people are fond to travel.

b. 60.6% people travel once a month, 15.2% people travel once a week and 24.2% people travel once a year.

c. 87.9% people travel with friends, 12.1% with family and no one wants to travel alone.

d. 54.5% people travel with cars, 15.2% people travel with bike and others in different transport.

e. 69.7% people books vehicle for travelling and other 30.3% does not book while travelling.

f. 60.6% people find online booking moderate, 30.3% people find online booking excellent and other 9.1% find online booking poor.

g. 90.9% people prefers driver with license, 3% people maybe prefers driver with license and 6.1% people does not want driver with license.

h. 87.9% people prefers trustable driver and 12.1% people does not want trustable driver.

7.2 APPENDIX B: POST-SURVEY

7.2.1 POST-SURVEY FORM

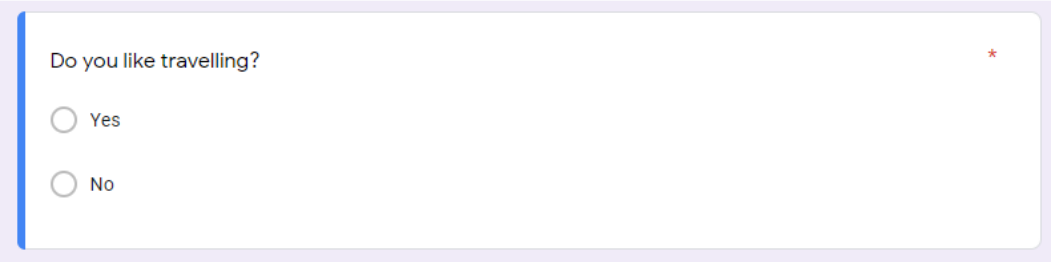


Figure 90: form q1

Figure 91: form q2

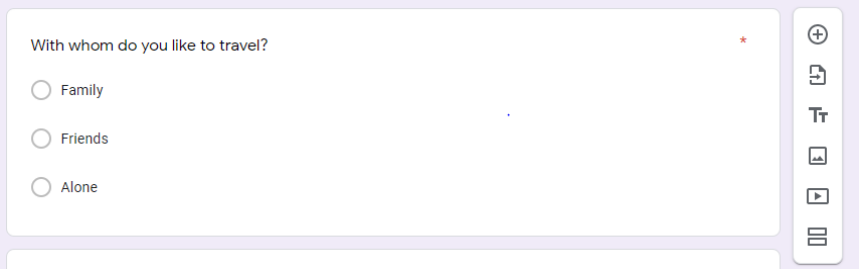


Figure 92: form q3

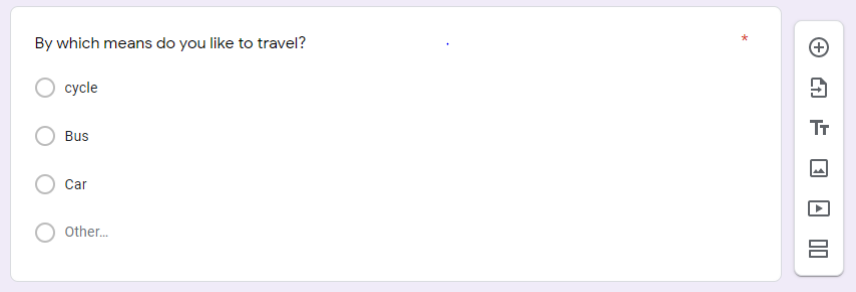


Figure 93: form q4

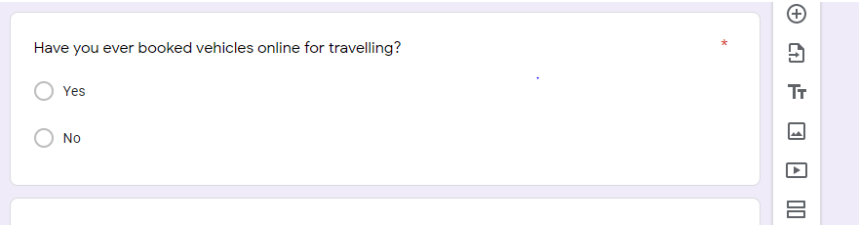


Figure 94: form q5

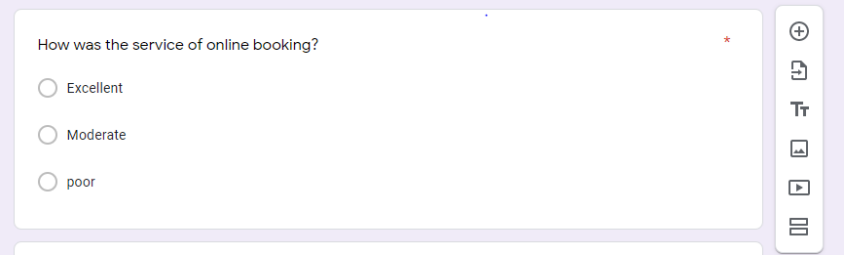


Figure 95: form q6

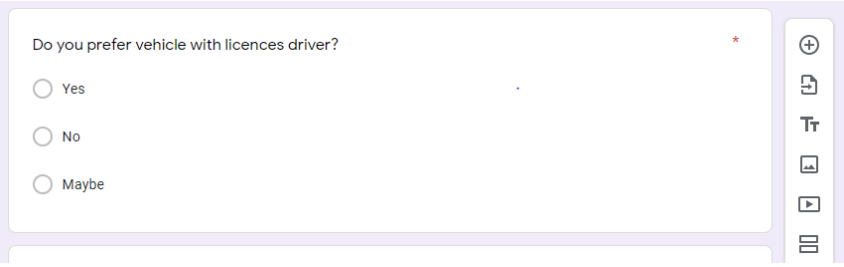


Figure 96: form q7

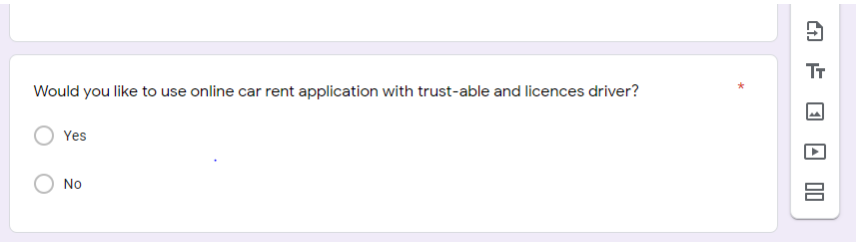


Figure 97: form q8

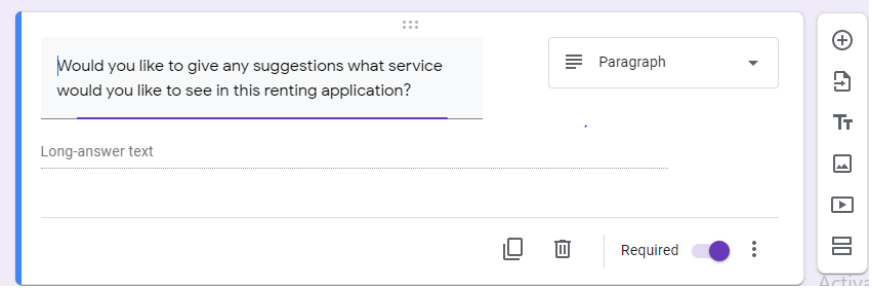


Figure 98: form q9

7.2.2 SAMPLE OF FILLED POST-SURVEY FORMS

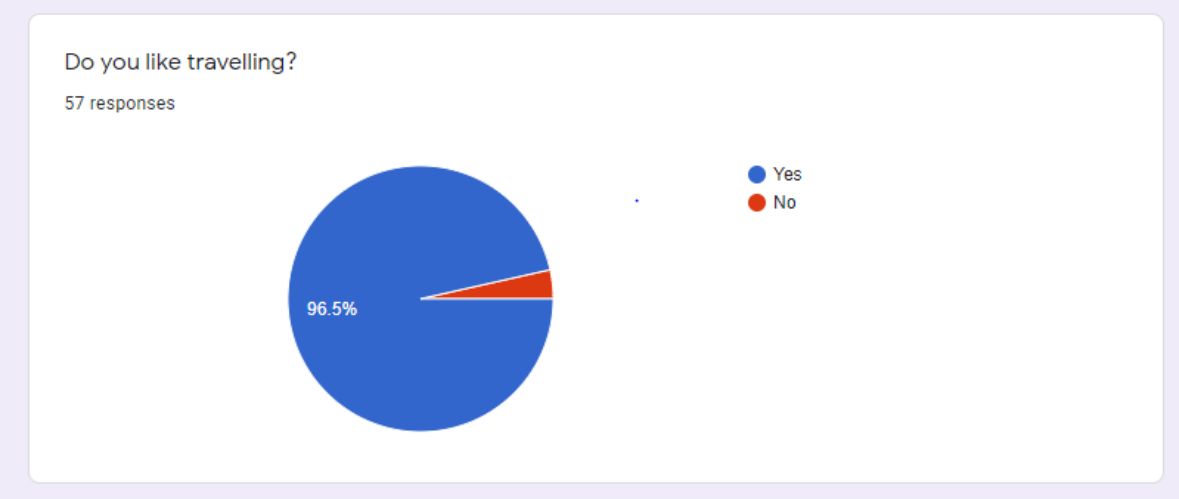


Figure 99: post survey 1

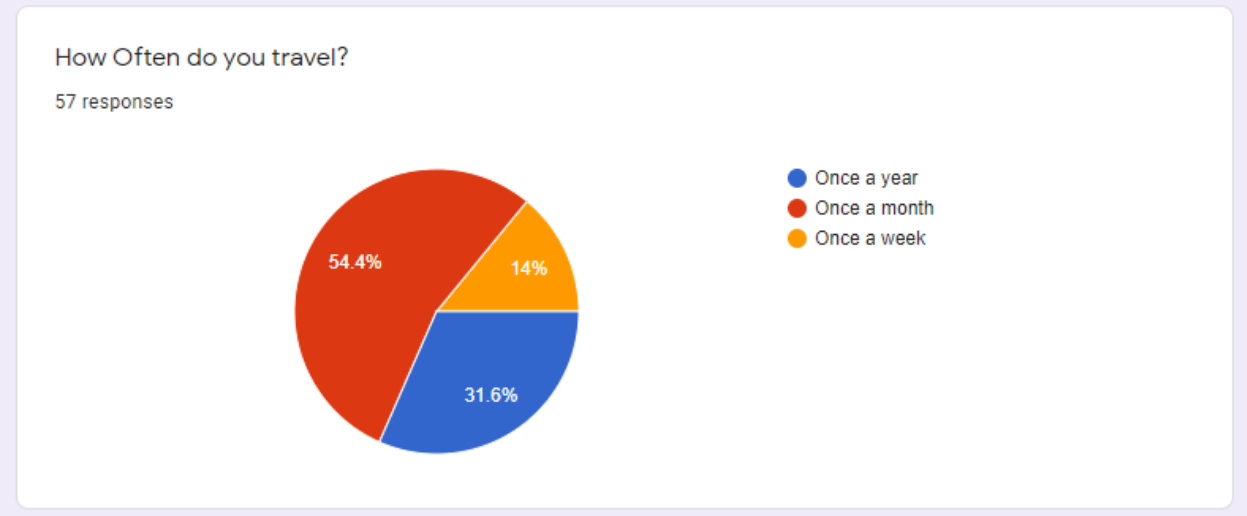


Figure 100: post survey 2

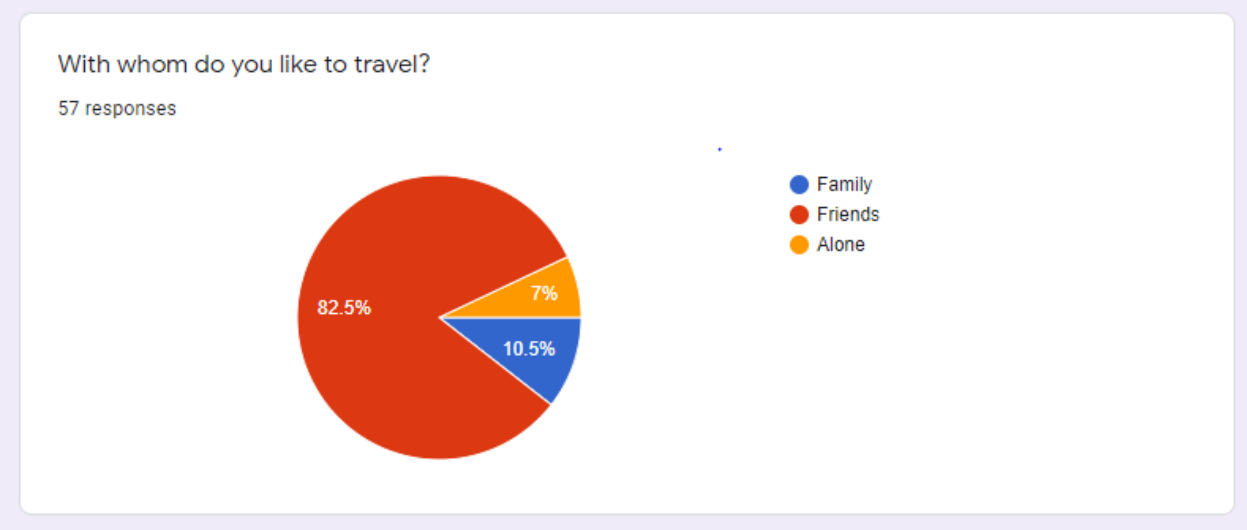


Figure 101: post survey 3

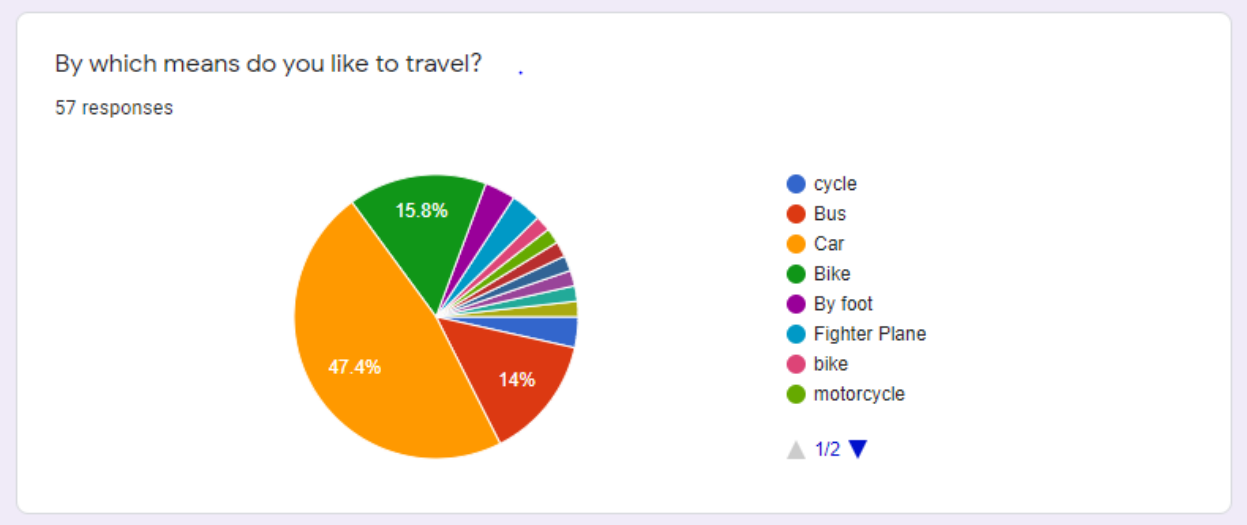


Figure 102: post survey 4

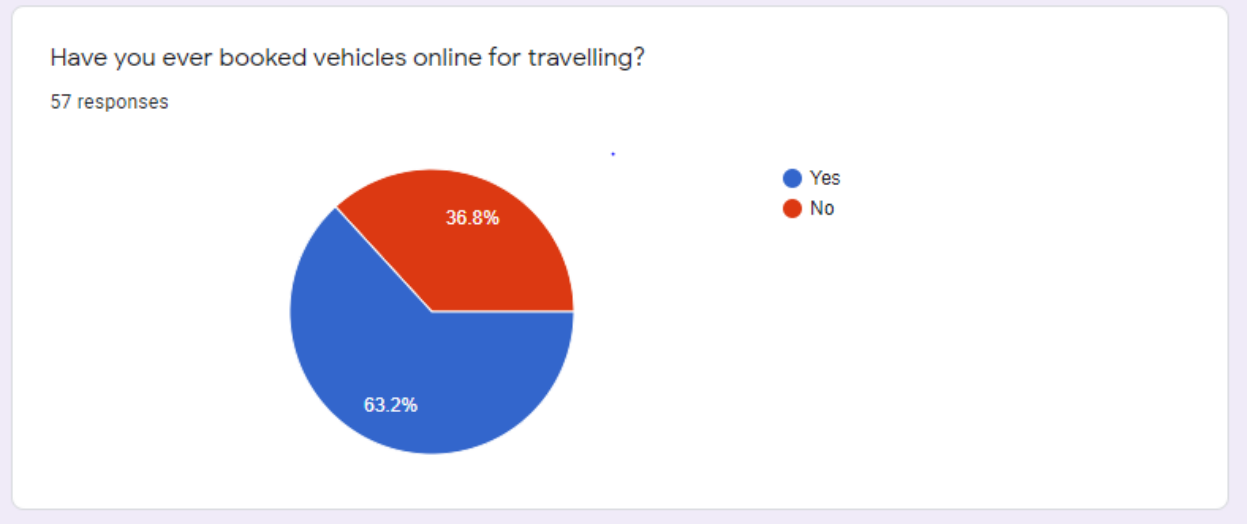


Figure 103: post survey 5

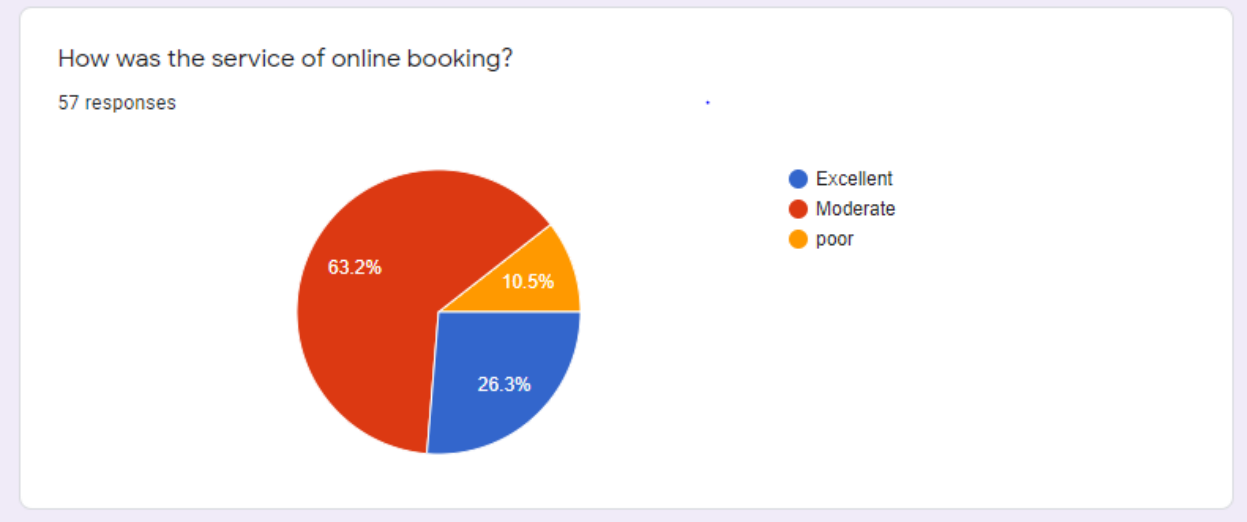


Figure 104: post survey 6

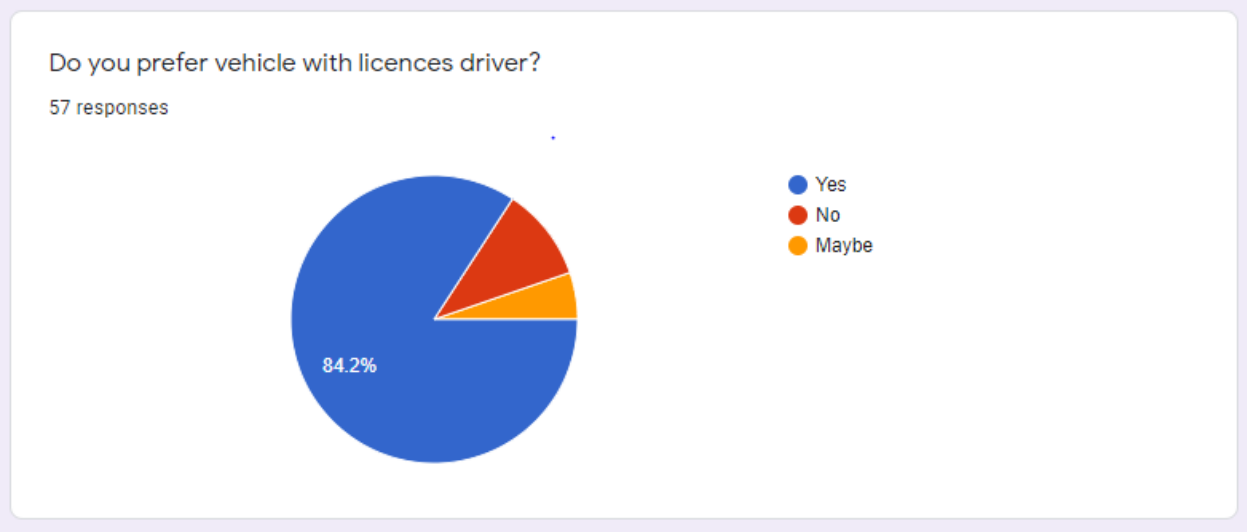


Figure 105: post survey 7

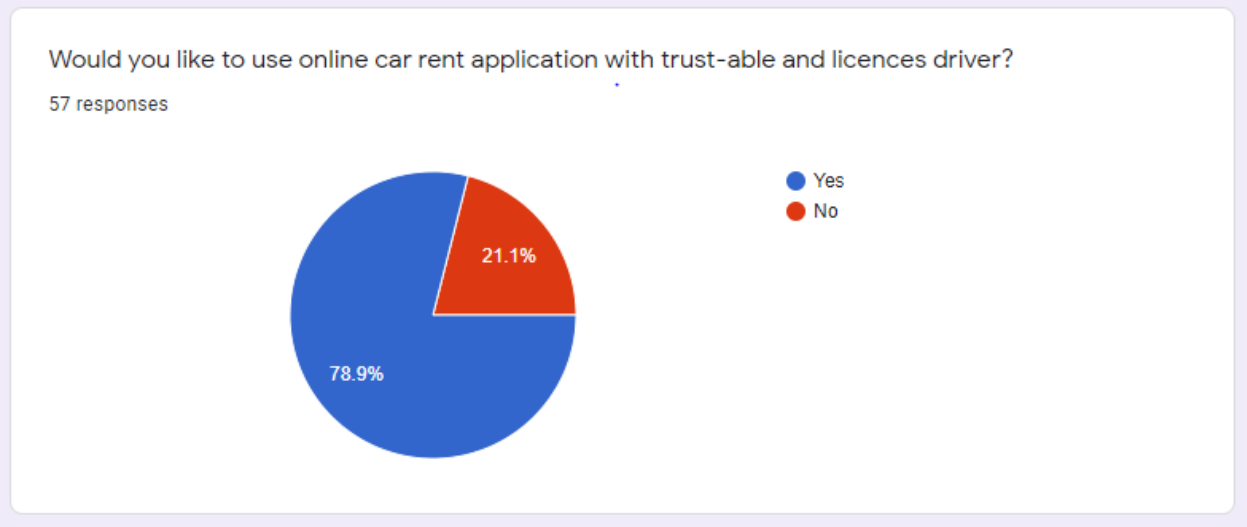


Figure 106: post survey 8

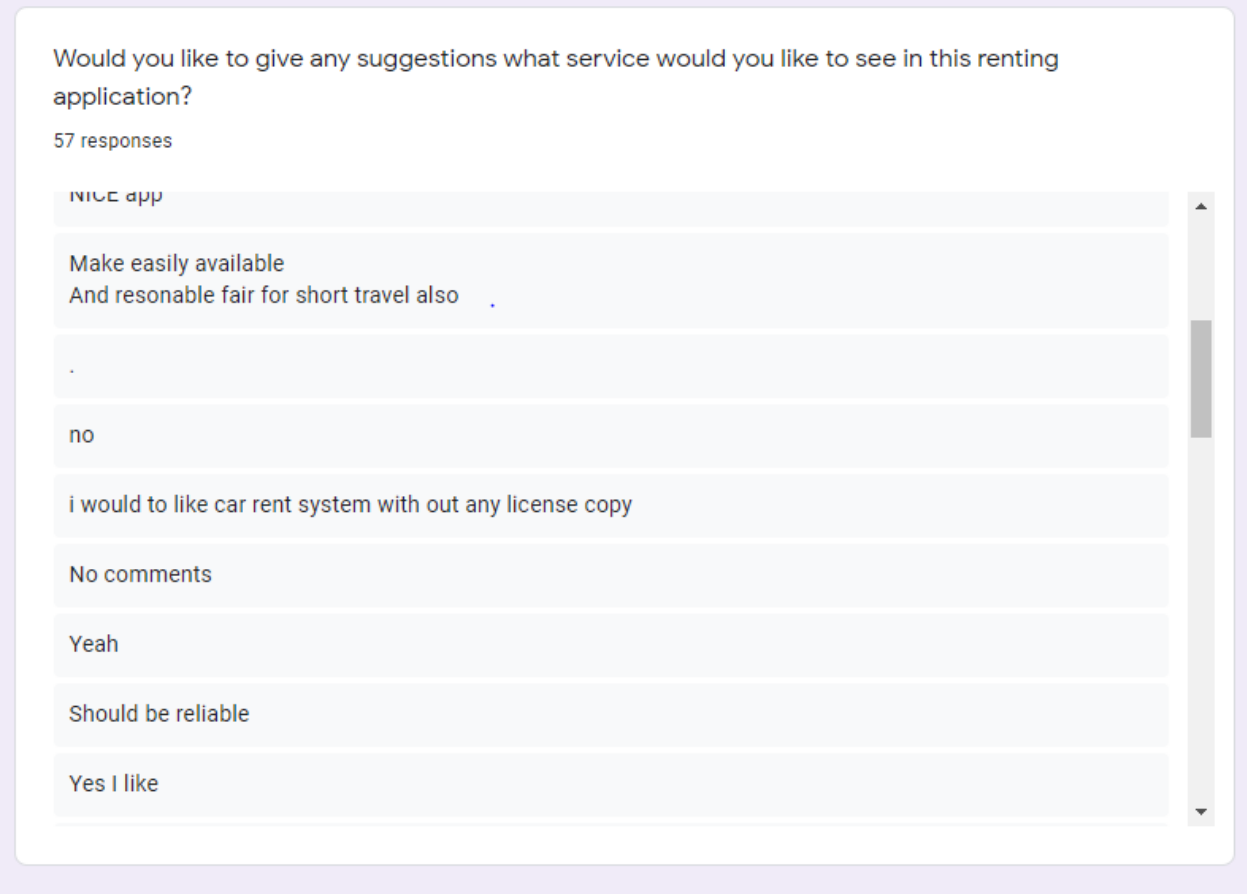


Figure 107: post survey 9

7.2.3 POST-SURVEY RESULT

a. 96.5% people are fond to travel other 3.5% don't like to travel.

b. 54.4% people travel once a month, 14% people travel once a week and 31.6% people travel once a year.

c. 82.5% people travel with friends, 10.5% with family and 7%wants to travel alone.

d. 47.4% people travel with cars, 15.8% people travel with bike and others in different transport.

e. 63.2% people books vehicle for travelling and other 36.8% does not book while travelling.

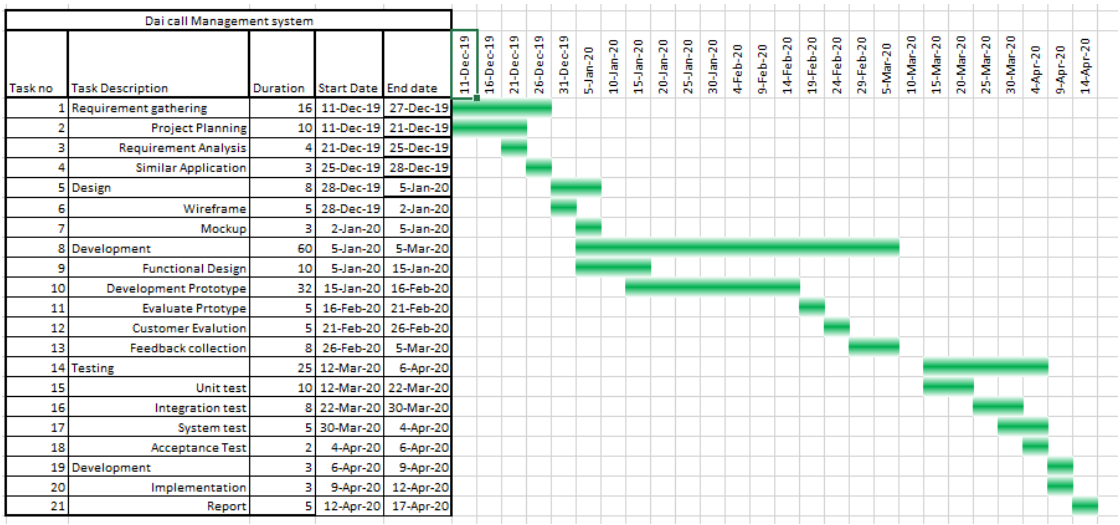
f. 63.2% people find online booking moderate, 26.3% people find online booking excellent and other 10.5% find online booking poor.

g. 84.2% people prefers driver with license, 5.3% people maybe prefers driver with license and 10.5% people does not want driver with license.

h. 78.9% people prefers trustable driver and 21.1% people does not want trustable driver.

7.3. APPENDIX C: DESIGNS

7.3.1 GANTT CHART



Dai call Management system				
Task no	Task Description	Duration	Start Date	End date
1	Requirement gathering	16	11-Dec-19	27-Dec-19
2	Project Planning	10	11-Dec-19	21-Dec-19
3	Requirement Analysis	4	21-Dec-19	25-Dec-19
4	Similar Application	3	25-Dec-19	28-Dec-19
5	Design	8	28-Dec-19	5-Jan-20
6	Wireframe	5	28-Dec-19	2-Jan-20
7	Mockup	3	2-Jan-20	5-Jan-20
8	Development	60	5-Jan-20	5-Mar-20
9	Functional Design	10	5-Jan-20	15-Jan-20
10	Development Prototype	32	15-Jan-20	16-Feb-20
11	Evaluate Prtotype	5	16-Feb-20	21-Feb-20
12	Customer Evalution	5	21-Feb-20	26-Feb-20
13	Feedback collection	8	26-Feb-20	5-Mar-20
14	Testing	25	12-Mar-20	6-Apr-20
15	Unit test	10	12-Mar-20	22-Mar-20
16	Integration test	8	22-Mar-20	30-Mar-20
17	System test	5	30-Mar-20	4-Apr-20
18	Acceptance Test	2	4-Apr-20	6-Apr-20
19	Development	3	6-Apr-20	9-Apr-20
20	Implementation	3	9-Apr-20	12-Apr-20
21	Report	5	12-Apr-20	17-Apr-20

Figure 108: Gantt Chart

7.3.2 WORK BREAKDOWN STRUCTURE

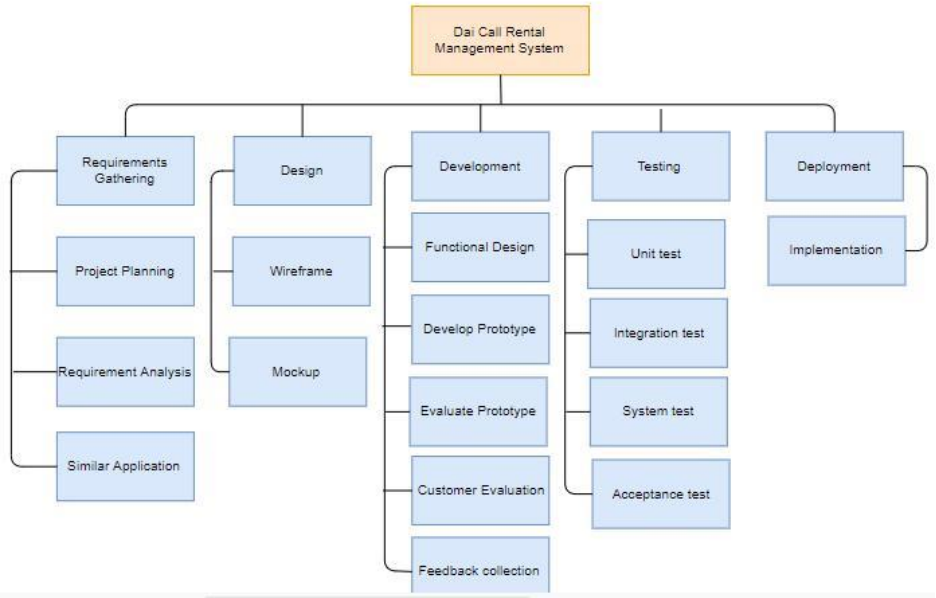


Figure 109: Initial WBS

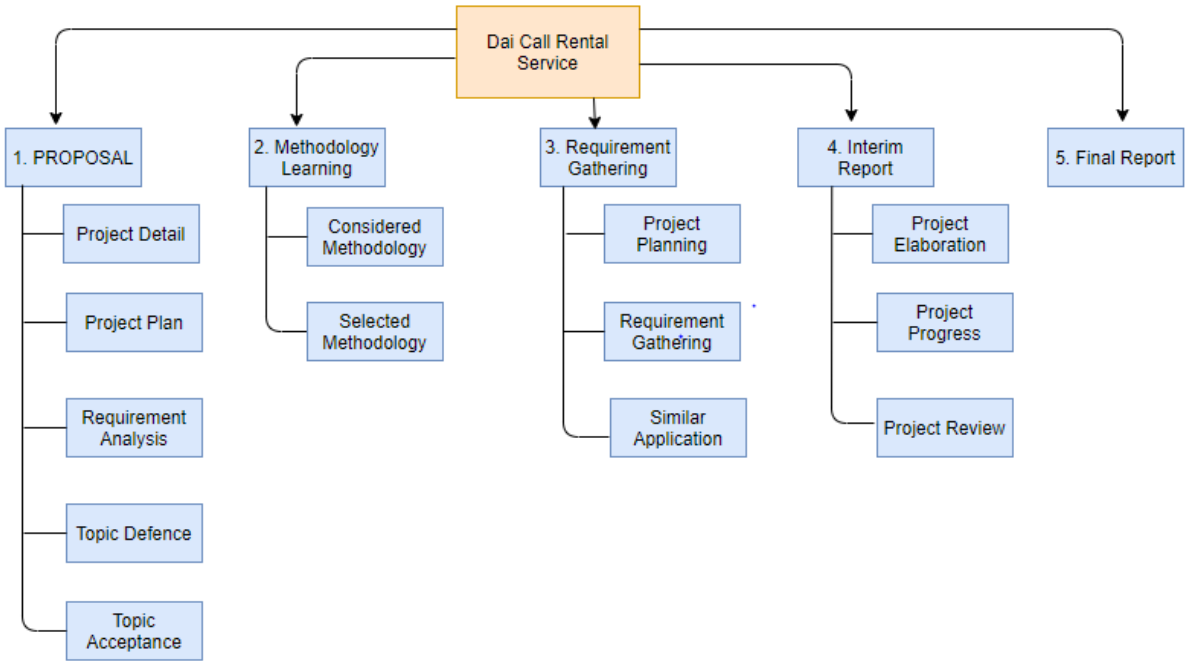


Figure 110: Final WBS

7.3.4. ALGORITHMS & FLOWCHARTS

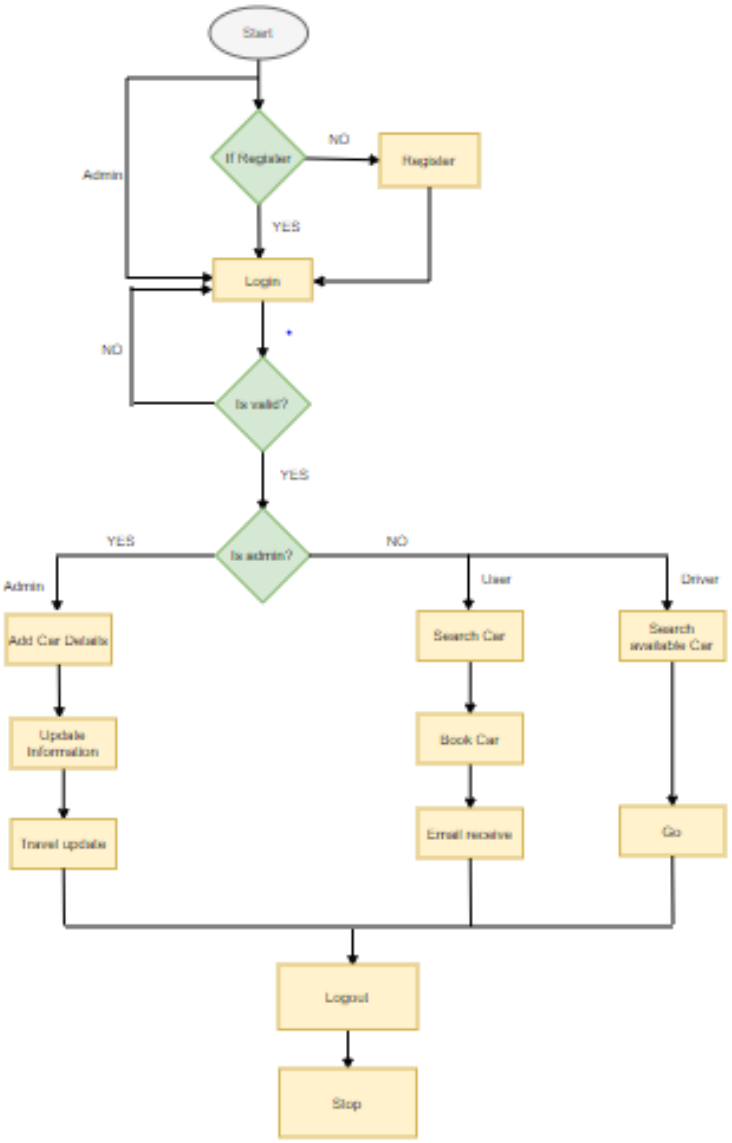


Figure 111: Flowchart

STEP 1: START

STEP 2: User should register, if register go to login if not register. If user is admin they can go directly to login step.

STEP 3: User should login, if login is valid it goes to next step otherwise login error message is delivered.

STEP 4: If User is admin, then go to see car detail information, if user is customer then go to the booking option.

STEP 5: User logout their id.

STEP 6: STOP.

7.3.5. HARDWARE ARCHITECTURE

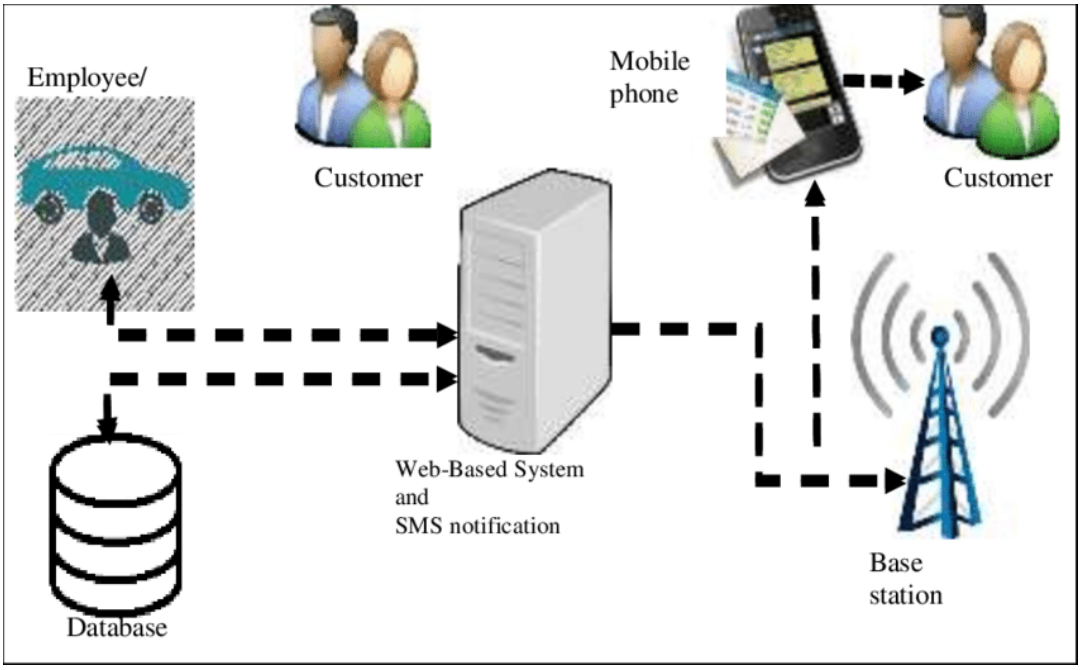


Figure 112: Hardware Architecture

7.3.6. DATA FLOW DIAGRAMS

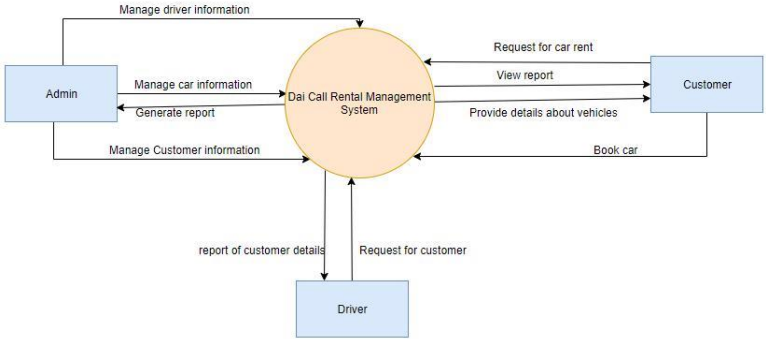


Figure 113: DFD level 0

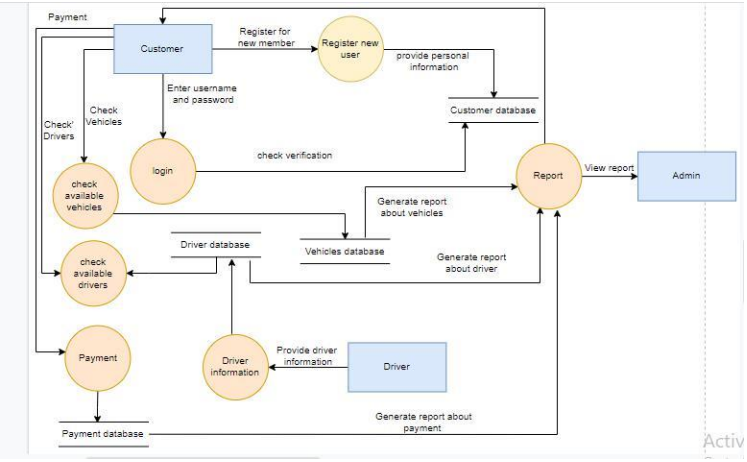


Figure 114: DFD level 1

7.3.7 USE CASE

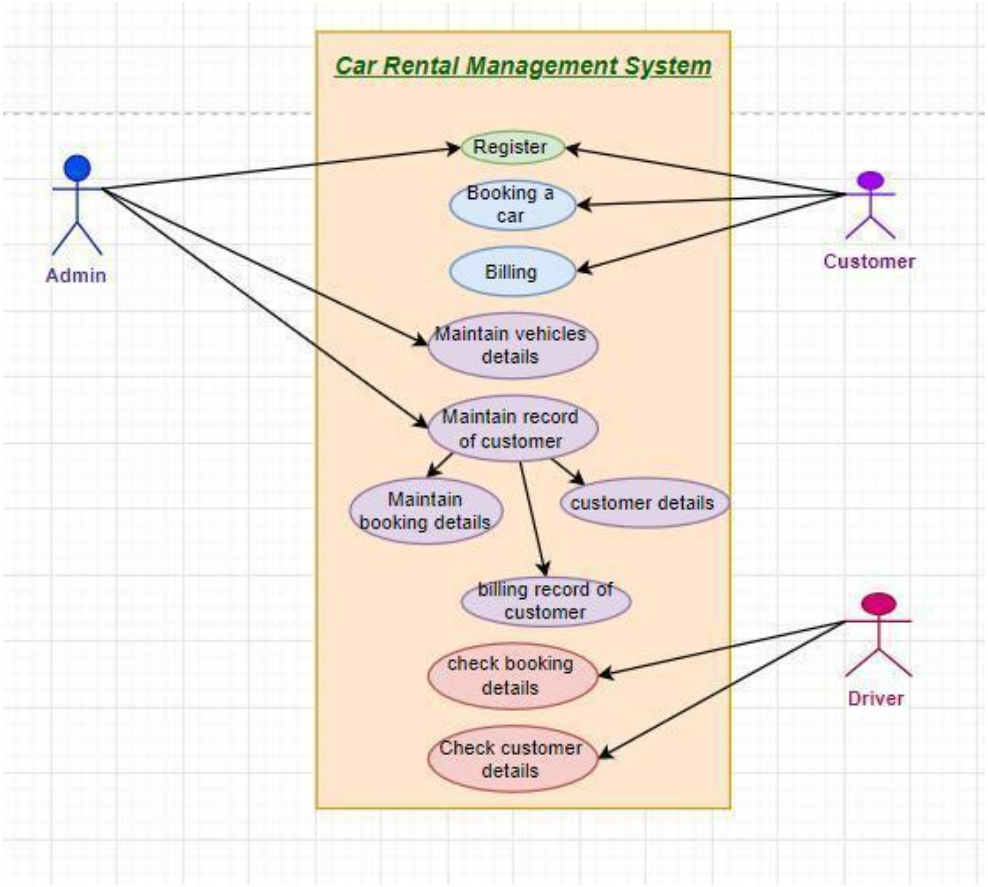


Figure 115: Use Case Diagram

7.3.8. WIREFRAME

Log In

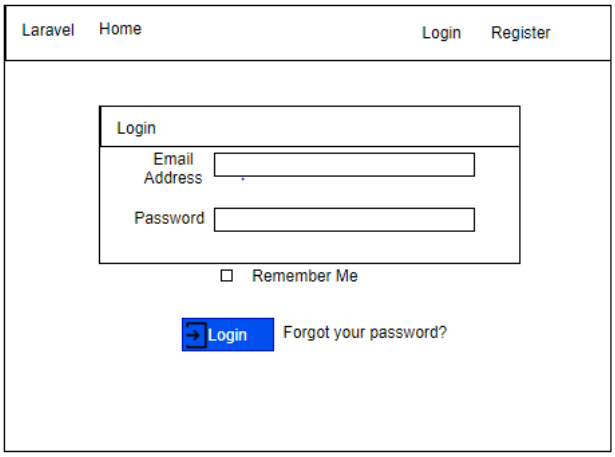


Figure 116: Wireframe of login page

This picture shows the wireframe of the login page.

Register

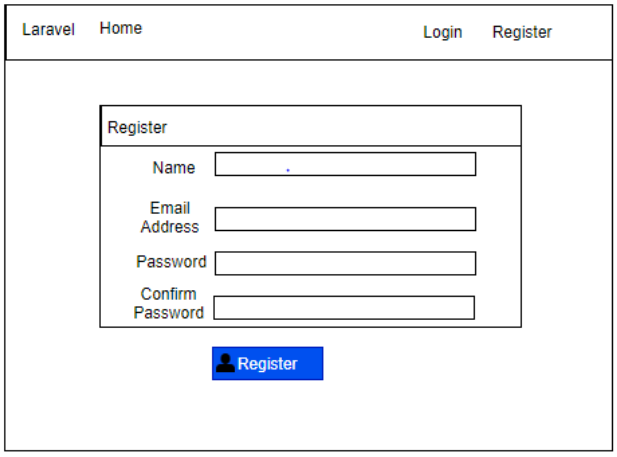


Figure 117: Wireframe of register page

This picture shows the wireframe of the register page.

About Us

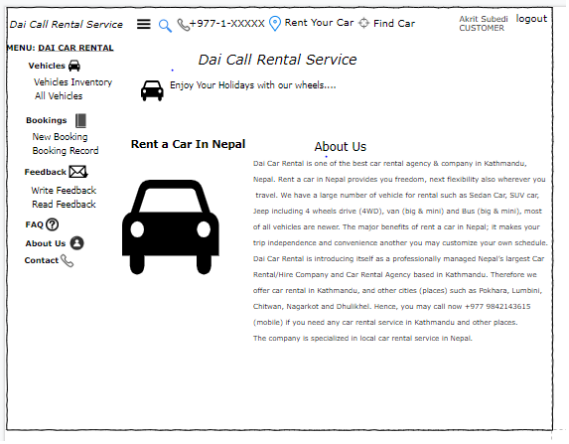


Figure 118: Wireframe of about us page

This picture shows the wireframe of the about us page.

Write Feedback

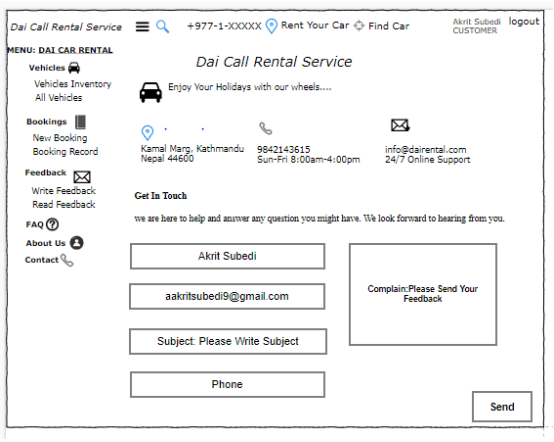


Figure 119: Wireframe of feedback page

This picture shows the wireframe of the feedback page.

FAQ

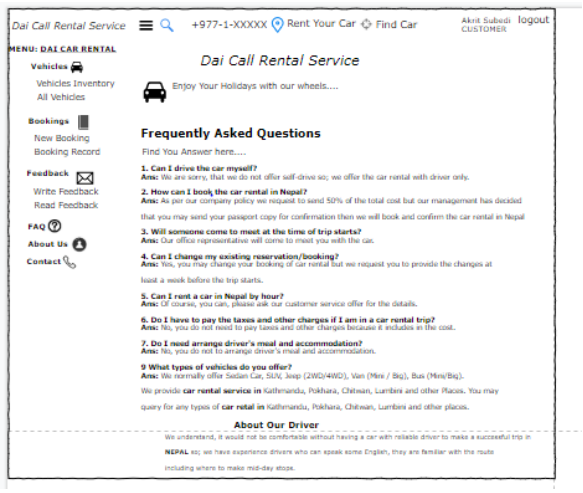


Figure 120: wireframe of FAQ page

This picture shows the wireframe of the faq page.

Read Feedback

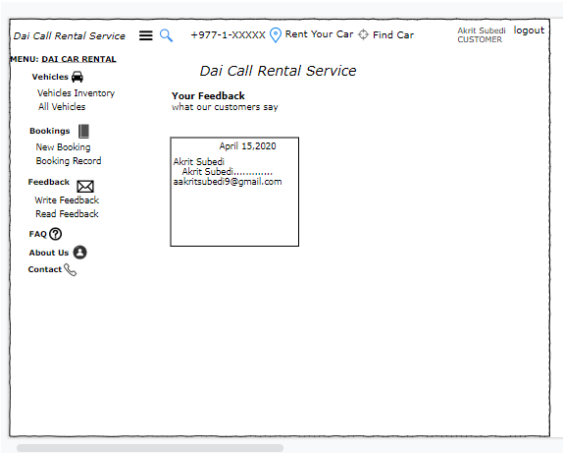


Figure 121: wireframe of read feedback page

This picture shows the wireframe of listed feedback page.

Write Feedback

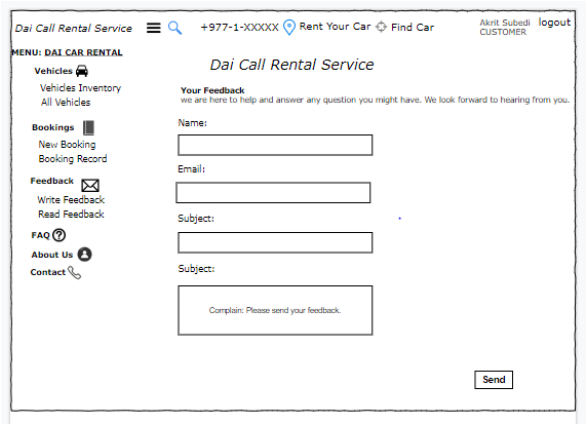


Figure 122: wireframe of write feedback page

This wireframe shows the page where user can write feedback.

Inventory

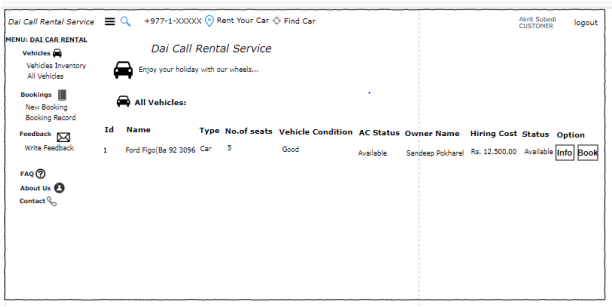


Figure 123: wireframe of vehicle inventory page

This picture is the wireframe of the inventory of the website where vehicle information is listed.

Home Page

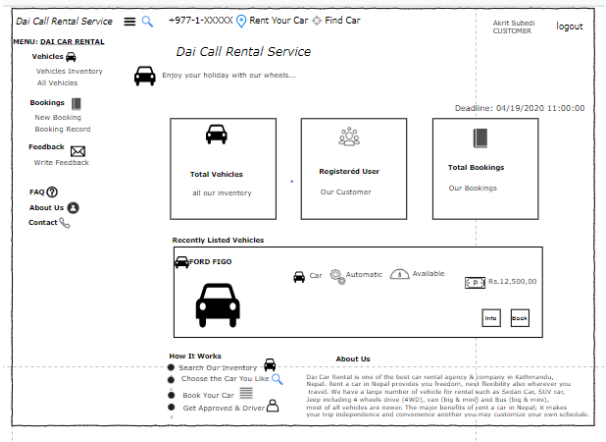


Figure 124: wireframe of home page

This wireframe shows the home page of the website.

Booking Record

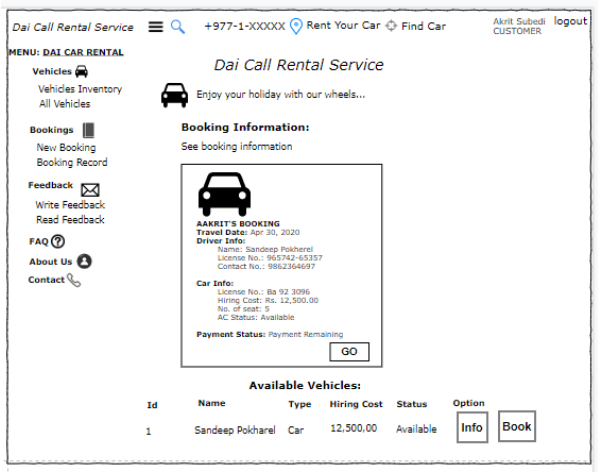


Figure 125: wireframe of booking record page

This wireframe shows the booking record page of the system.

Book

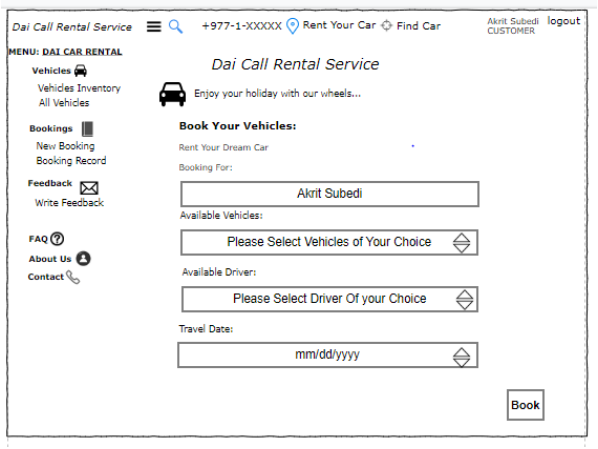


Figure 126: wireframe of new booking page

This picture is the wireframe of the new booking page where user can book vehicles by filling up the boxes.

Information

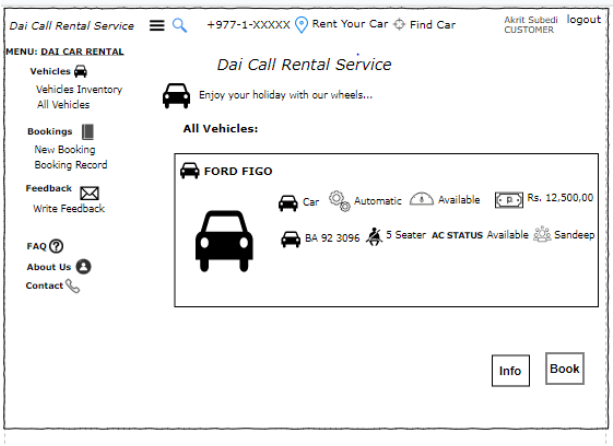


Figure 127: wireframe of all vehicles page

This picture is the wireframe of the vehicles page where vehicles of your choice is listed.

Contact Us

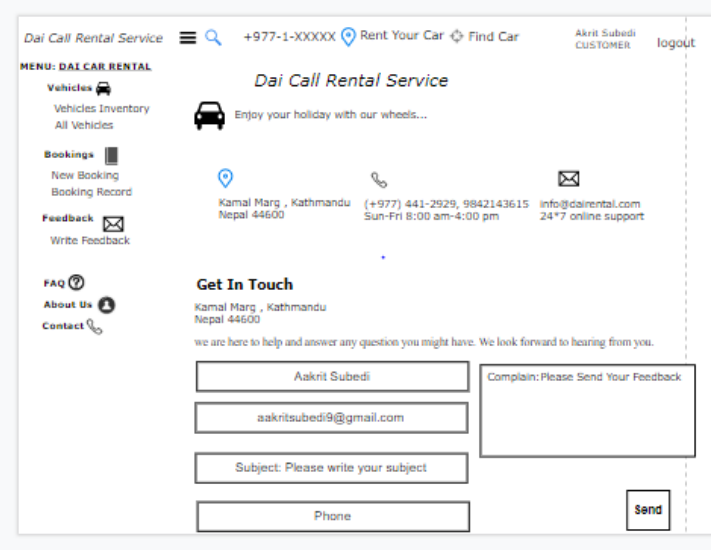


Figure 128: Wireframe of contact page

This is the wireframe of the contact page by which user can contact owner for any queries.

7.4 APPENDIX D: SCREENSHOTS OF THE SYSTEM

Home page

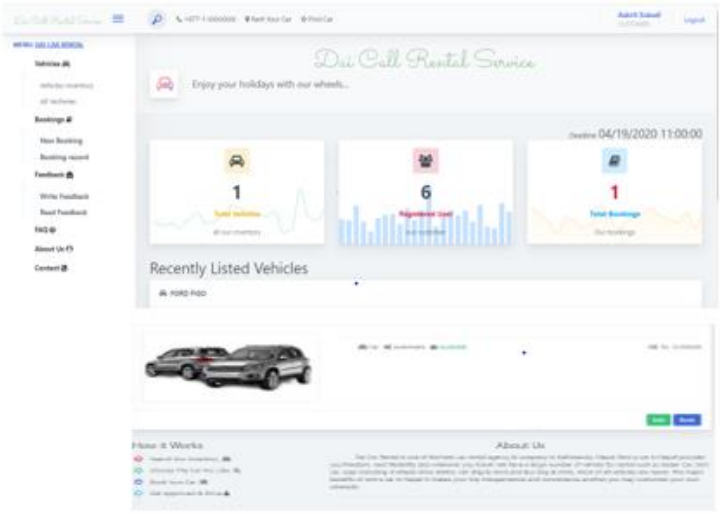


Figure 129: Screenshot of home page

This picture is the home page of the system where all the menus and icons can be seen.

Inventory Page

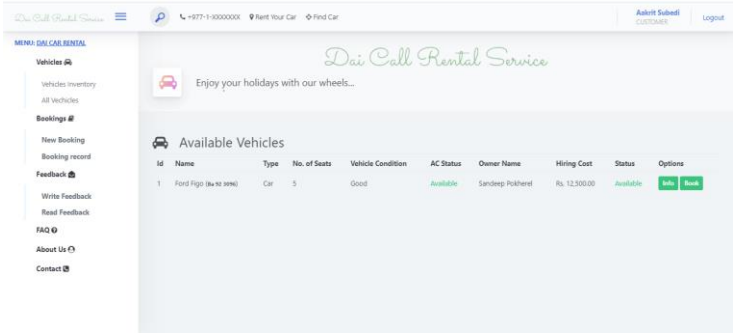


Figure 130: Screenshot of vehicle inventory page

This picture shows the inventory page of the cars.

Vehicle Information

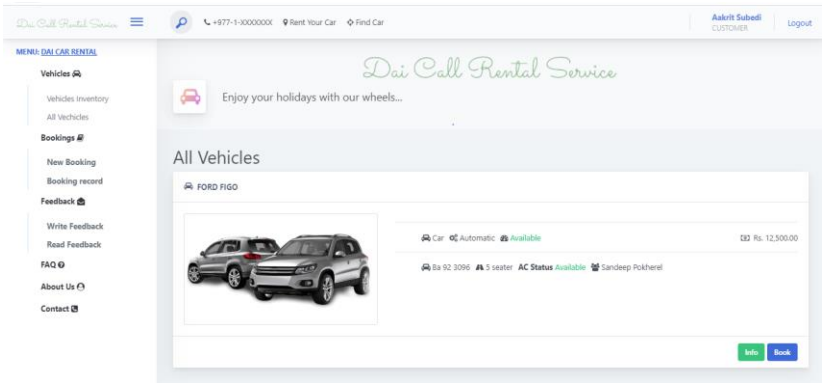


Figure 131: Screenshot of all vehicle page

This picture shows the information about the vehicles.

Booking page

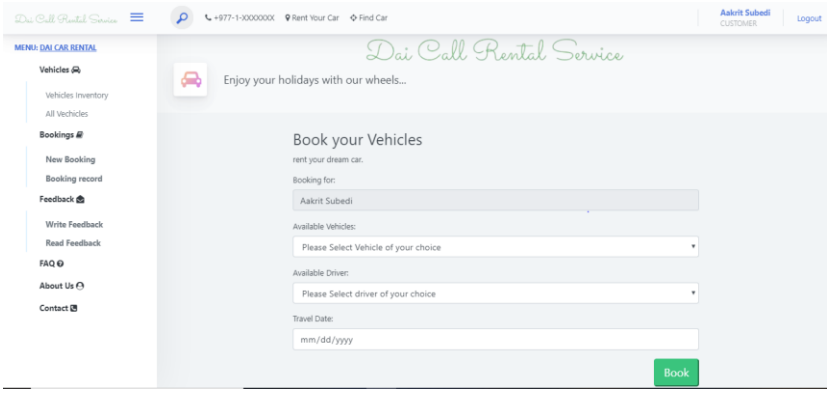


Figure 132: Screenshot of new booking page

This picture shows the booking page where user can book any car by help of the boxes provided.

Booking Record

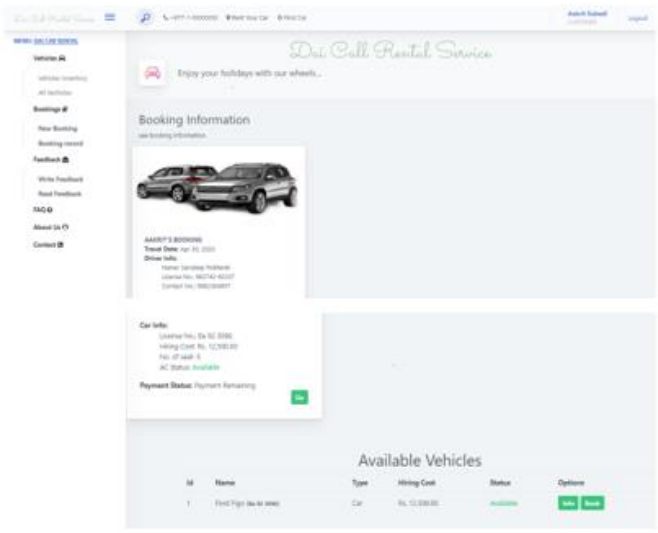


Figure 133: Screenshot of booking record page

This picture shows the booking done by the individual user.

Write Feedback

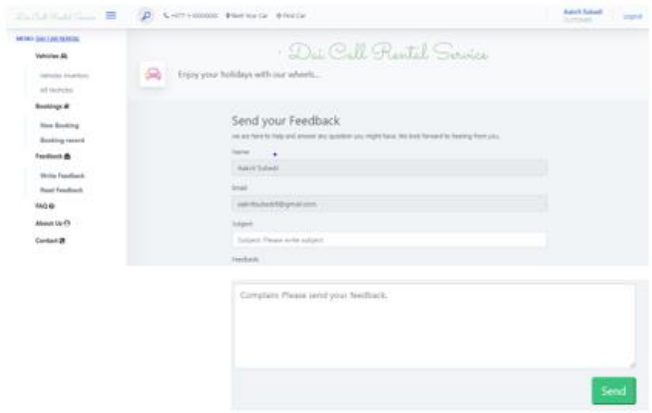


Figure 134: Screenshot of write feedback page

This picture is the feedback writing page where user can write whatever feedback they want to give to the owner.

Read Feedback

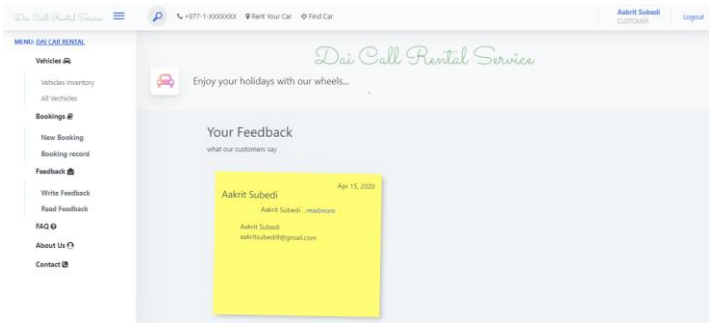


Figure 135: Screenshot of read feedback page

This picture shows the feedback provided by the user of the website.

About Us

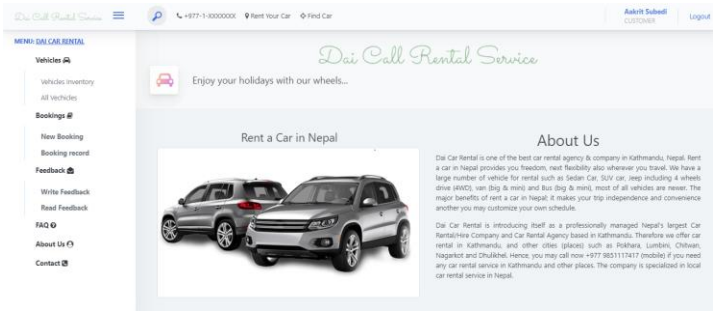


Figure 136: Screenshot of About us page

This picture is the about page of the system where information about the system is provide in detailed manner.

Contact Us

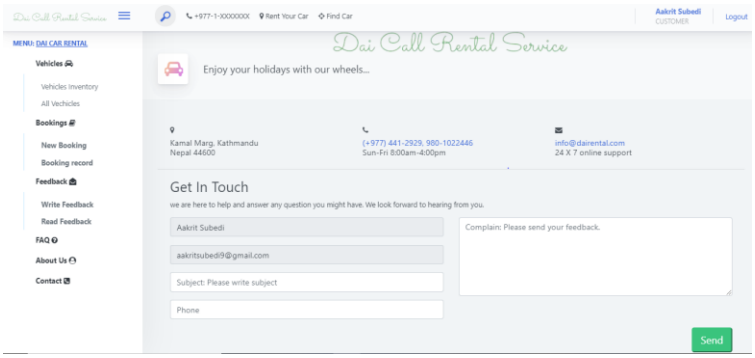


Figure 137: Screenshot of contact us page

This is the contact page of the system where user can contact to the owner for any queries.

Log In

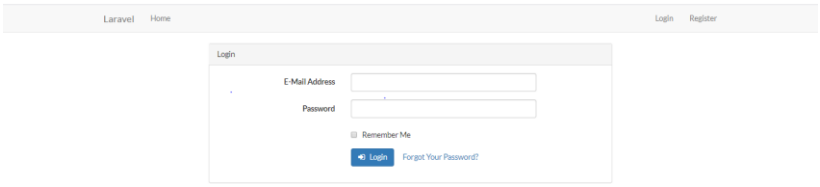


Figure 138: Screenshot of login page

This picture is the login page of the system where membered user can login into their account and book vehicle any time.

Register

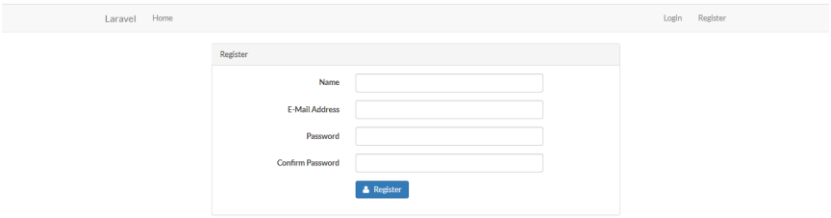


Figure 139: Screenshot of register page

This picture is the register page of the system where new member can register by filling up the table and they can take the advantage of the system.

FAQ

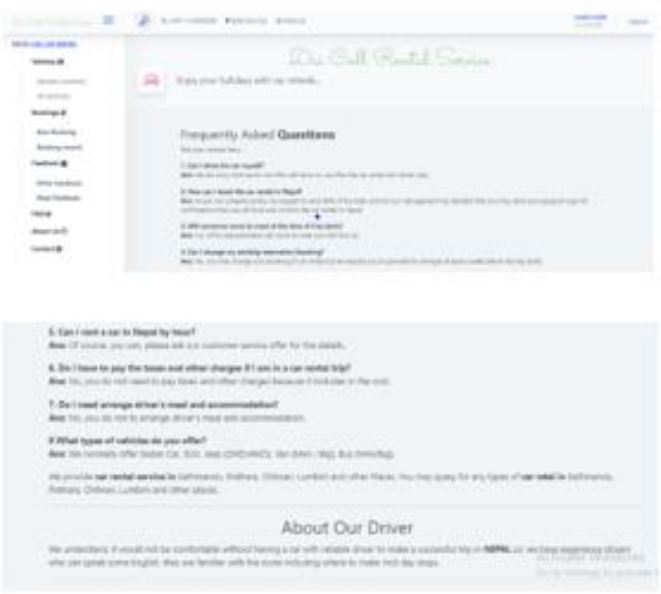


Figure 140: Screenshot of faq page

This picture is the faq page of the system where all the queries of the user are answered.

7.5: APPENDIX E: USER FEEDBACK

7.5.1. USER FEEDBACK FORM

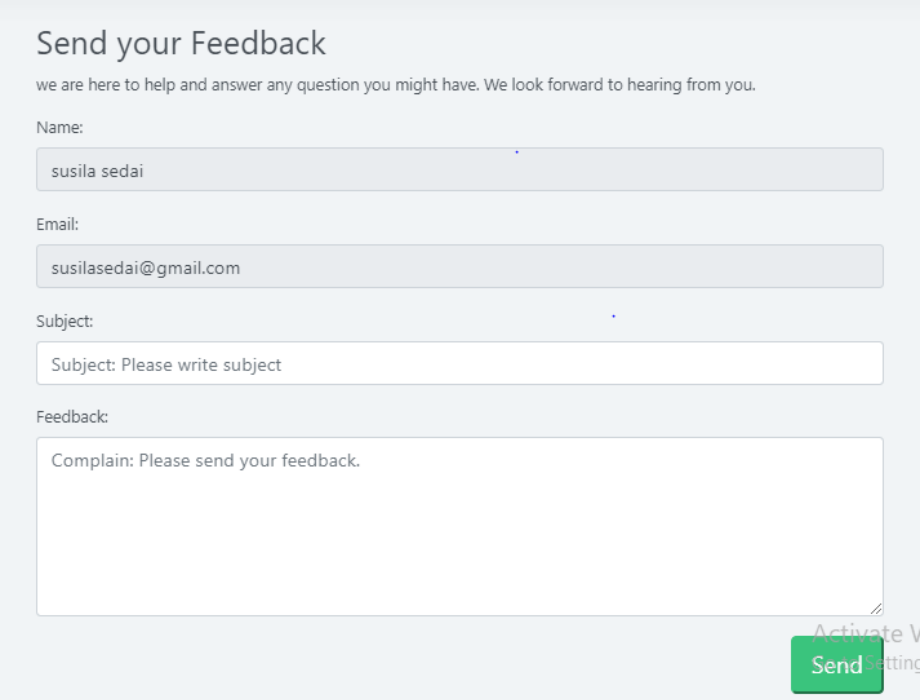


Figure 141: feedback form

This is the picture which shows user feedback of a website. Here user can provide feedback to the company or the website which is able to read by the owner and your feedback will be taken strictly.

7.5.2. SAMPLE OF FILLED USER FEEDBACK FORMS

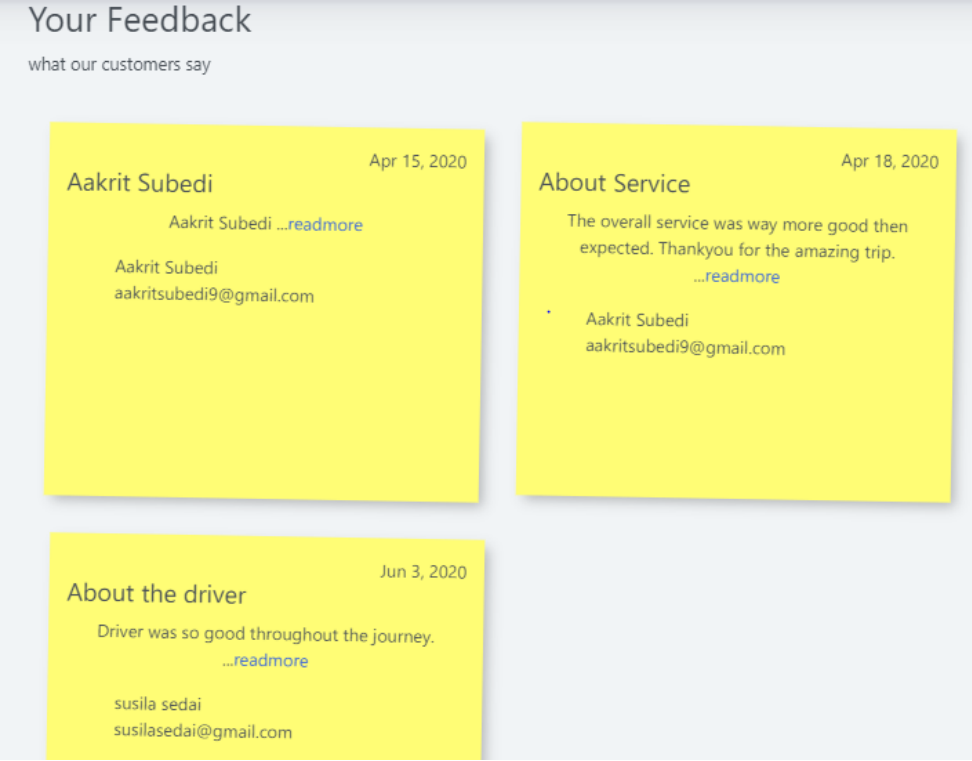


Figure 142: filled user feedback form

These are the feedback which are provided by the user of the websites.

7.6. APPENDIX F: FUTURE WORK

7.6.1. READINGS FOR FUTURE WORK

This project is web based product. It helps user to book vehicle at any time of the day in emergency or any occasion. This system is great for people who does not have any sort of vehicle. This system helps people by providing them vehicles at certain amount.

Maybe more advanced car rental service will be developed. This system will help many people in the need. More menus will be adding up in future, more accommodations are provided to the customers, there will be more cars and drivers. For mobile use their will be mobile application too.