



# **CAR RENTAL MANAGEMENT SYSTEM**

## **PROJECT REPORT**

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## **DECLARATION**

I certify that this assignment does not incorporate without any acknowledgement any material previously submitted for a degree or diploma in any university, and to the best of my knowledge and behalf it does not contain any material previously published or written by another person or myself except where due reference is made in the text.

.....

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.....

Date

## **ACKNOWLEDGEMENT**

Many people made this assignment possible and I owe them a debt of gratitude. I would however like to acknowledge the enormous support I have been given to make this assignment more meaningful and enriching

I would like to extend my heartfelt gratitude to the course facilitator Dr. R.A.H.M Rupasingha and my project supervisor Mr. R.M.N.B Ratnayake for providing me with necessary guidance and readily advise in order me to complete this assessment successfully.

Furthermore, I would like to express my gratitude towards my parents and family members who have walked along the journey right beside me and continually inspired and encouraged me to move forward.

## **ABSTRACT**

The idea of renting cars is something that is being embraced by many people in the 21st century. Some people cannot afford a car, and some need a car in sudden occasions like their own car is in garage. Whether travelling on business, journeying with the family or simply on holiday wanting to explore, car rental services are extremely helpful.

Advances in technological innovations have simplified both business and personal tasks, nowadays fancy doing most activities on click of buttons using their electronic devices. Similarly, this system facilitates by automating & digitizing the tasks of the Prasanna Car Renting Company.

The main objectives of implementing this system in this office environment is to minimize the workload of the office employees and to digitize the documentation and other processes regarding to rental management. Finally, we believe the implementation of this system in the office premises will improve the service quality, and will lead to further success of this business.

# CONTENT

ACKNOWLEDGEMENT .....	ii
ABSTRACT.....	iii
CONTENT .....	<b>Error! Bookmark not defined.</b>
1. LIST OF FIGURES .....	v
1. INTRODUCTION .....	1
2. LITRITURE SEARCH .....	2
3. BACKGROUND AND MOTIVATION .....	3
4. PROBLEM STATEMENT .....	4
5. PROJECT OBJECTIVE .....	5
5.1 General Objective .....	5
5.2 Specific Objective .....	5
6. PROPOSED SOLUTION/METHODOLOGY .....	6
6.1 Nature of the Solution (Inputs, Outputs, Processes, Users) .....	6
6.2 Feasibility of Implementation .....	8
6.3 Resource Requirements.....	8
7. RESULTS AND DISCUSSION .....	9
7.1 Login Interface.....	9
7.2 Forgot Password Interface .....	10
7.3 New User Register Interface .....	11
7.4 Password Reset Interface .....	12
7.4 Edit & Delete User Interface.....	13
7.5 Add New Customer Interface .....	14
7.6 Edit Customer Interface .....	15
7.7 Vehicle Add Interface .....	16
7.8 Vehicle Edit & Delete Interface.....	17
7.9 New Order Interface .....	18
7.10 Edit & Delete Order Interface.....	19
7.11 Sales Report Interface .....	20
7.12 Due Vehicle Report Interface .....	20
7.13 Insurance Claims Report Interface.....	21
7.14 Available Vehicle Report Interface.....	21
7.15 Home Interface.....	21
8. CONCLUSION.....	23
9. REFERENCES .....	24

## **LIST OF FIGURES**

FIGURE 1.0 Class Diagram (Full System)

FIGURE 2.0 Login Interface

FIGURE 3.0 Forgot Password Interface

FIGURE 4.0 New User Register Interface

FIGURE 5.0 Password Reset Interface

FIGURE 6.0 Edit & Delete User Interface

FIGURE 7.0 Add New Customer Interface

FIGURE 8.0 Edit Customer Interface

FIGURE 9.0 Vehicle Add Interface

FIGURE 10.0 Vehicle Edit & Delete Interface

FIGURE 11.0 Add New Order Interface

FIGURE 12.0 Edit & Delete Order Interface

FIGURE 13.0 Sales Report Interface

FIGURE 14.0 Due Vehicle Report Interface

FIGURE 15.0 Insurance Claims Report

FIGURE 16.0 Available Vehicle Report

FIGURE 17.0 Admin Home Interface

FIGURE 18.0 User Home Interface

## **1. INTRODUCTION**

Renting cars is an important part of many traveling plans and is used worldwide. Whether you are on a business trip, traveling with a family or just wanting to explore it, car rental services are very helpful.

Also, the computer has become a way of life, because everything is easy with just a click away from the solution to the problem. For, small car renting companies such as Prasanna car rental company, daily transactions are done manually. And today a car rental system has become a necessity to compete in the market.

In the business sector, many established companies use computer programs to process complex transactions and calculations into simple ones. The purpose of this study is to propose a vehicle rental management system to simplify business processes and procedures.

Prasanna car rental company is a small but growing company, in car rental industry. The company was founded in 2002 and is based in Kelaniya. The main characters of the car rental company are Prasanna, owner Mr. Prasanna (admin) and Miss. Thakshila (Sales officer) who works in the office.

## **2. LITRITURE SEARCH**

Most of the small car rental companies here in Sri Lanka use computerized systems for their transactions. It really helps them to grow their businesses. However, log-books, written reports and written schedules contribute to a plethora of paperwork that makes the workplace and data collection complicated. To address this problem as developers we can convert the brochure to some form of electronic media and digitize the whole system.

Nowadays, computers play a major role in many industries and in the way people live. Its general purpose is to perform any local operation by performing limited set of commands. Computers are now in demand and make many benefits for users. Having them in the workplace enables the business to perform its duties and to earn more revenue.

The computers by alone could perform numerous tasks. What will happen more, if systems or applications are added? It helps the users to, develop products, make decisions, and have fluid organization structures faster. By this proposed system, CRMS (Car Rental Management System), Prasanna Car Rental Company can offer the client an improvement in their quality of service and operational efficiency. Converting their manuals systems into computerized systems will allow them to focus more on the most important and vital things inside their business.

Therefore, with the Literature search, Studies and Systems, the proposed system called CRMS will give the business and the user a significantly big impact on their performance and efficiency in their industry. Unlike any other similar software, this Car Rental Management System provides specific program and functions specifically relevant to this organization. Focusing on the required target client, Prasanna Car Renting Company will allow the proponents to develop a compatible system for their orders and other records.



### **3. BACKGROUND AND MOTIVATION**

The mission of the company is to help people meet to their hiring needs. Car rental company Prasanna sees itself as a low-cost rental retailer for the next decade. The company aspires to have a good computer system in their workplace. In terms of the core values of a good system, the car renting company owners wants them to be, easy to use, accurate, and productive.

The Prasanna car rental company is one reliable option for those who need a car for a short time. They have around 25 vehicles to provide this service. According to Mr. Prasanna (owner), he has been a successful businessman for 8 years but still has some problems with his plans and activities. They currently use a process such as a log-book, a printed agreement form, a white program board, and CCTV. During the interview, the owner identified problems with the vehicle rental system, pick-up and retrieval dates, damage claims, customer record keeping and vehicle information. He also pointed out other common violations of their customers such as overdue return dates and scattered item rental schedules.

According to the facilitator, origin of these problems is the manual system that they use. Computerized Car Rental Management System (CRMS) can be a good solution for this. CRMS has the ability to monitor the selection and retrieval schedules for each item it offers. This program also has the ability to store item details to easily find its features and price. This also keeps the details related to the customer to get more safety and certainty in the return of their car. However, this system does not have the ability to detect damage and real-time monitoring.

Considering all these issues the idea to build and implement this system was motivated., because CRMS is good when it comes to paper loss and performance and eliminates double booking events. It can easily check the overdues, returned, and unreturned vehicles.

#### **4. PROBLEM STATEMENT**

The existence system has number of problems in the working procedure for the organization and customers. Those problems are,

1. Customer invoices are issued manually (written in hand) and calculations are also done manually.
  - There is a probability of getting calculation errors when doing calculations in the invoice.
  - There are some problems in maintaining copies of issued invoices.
2. During renting a vehicle, the customer information and contract made between them are filled in a form.
  - It is not easy to keep printed paper records of large number of customers because it needs lot of space to keep these documents & they get damaged with the time due to insects.
  - The customer records may be difficult to find in case of misplacing or disappearing due to massive collection of data.
3. During generating monthly reports.
  - When generating report, it takes time and it may not be easy to manage and analysis the monthly work due to massive collection of data and the generated report may not be accurate.

## **5. PROJECT OBJECTIVE**

### **5.1 General Objective**

The general objective of this project is to develop interactive system for the Prasanna car renting company to overcome all the above identified problems and improve the efficiency of office staff.

### **5.2 Specific Objectives**

Here are some specific objectives that would together help to achieve the overall objective of the project.

- To create a computer-based system with a interactive and user friendly graphical interface.
- To provide new functionalities with new types of reports that will help them to get their future decisions.
- To computerize all the manually driven processes.
- To minimize paper works and hard copies through integrating a MySQL database to store all data generated and processed by the new system.

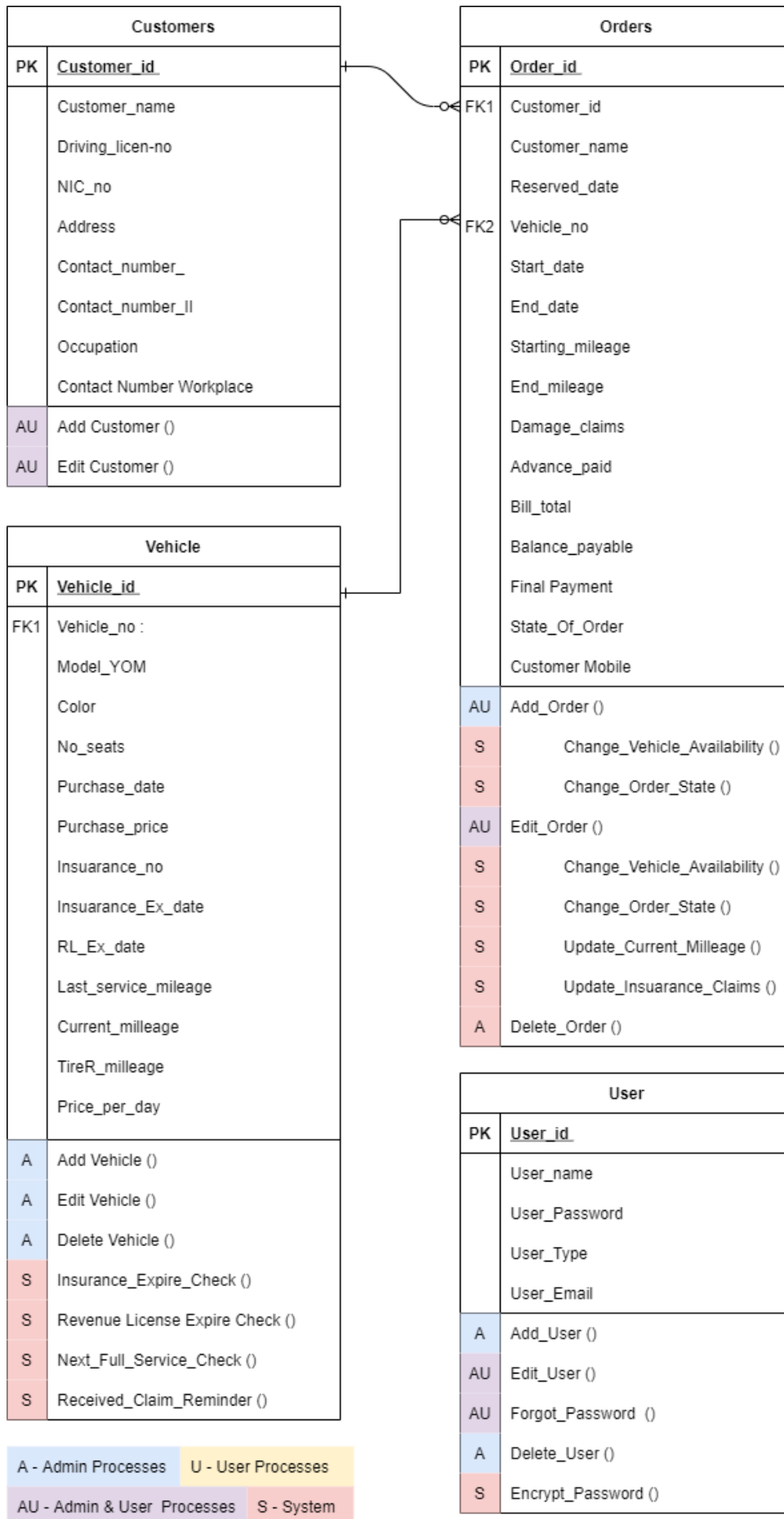
## **6. PROPOSED SOLUTION/METHODOLOGY**

To achieve the objectives of this project, we propose a computer-based car rental management system for Prasanna Car Renting Company. All the methods used wisely on stage are discussed explicitly under this chapter.

### **6.1 Nature of the Solution (Inputs, Outputs, Processes, Users)**

In this proposed system, there are two types of users; they are admin and user. All the users should be able to login to the system using their own unique user credentials. New users can be registered only under administrative concern. A table is there in the database to store the user details and their login credentials. Any user can change their own password. In a case where a user cannot remember his password, he or she can use the forgot password option in the login form. But to use this option the user must remember his username.

As same as the user details there are 3 separate tables in the database to store customer data, vehicle data and order data. This information can be retrieved by the users as per their privilege. Anyone can search the system using given specifications & the availability of the vehicles. We have listed below the facilities that the system will provide to its different types of users and the types of data that will be stored on the MySQL database.



Apart from storing the above inputted data in the MySQL database as an output the system may have ability to generate few reports as follows.

- Sales Report (Contains details about all orders occurred in current month)
- Due Vehicles Report (Contains details about all the vehicles that are with customers)
- Available Vehicles Report (Contains details about the available vehicles to issue for the customers)
- Insurance Claims Report (Contains records about the insurance claims)

## **6.2 Feasibility of Implementation**

We have done a complete feasibility study on this project, based on the facts gathered company admin have approved our conclusion that proves this proposed system is economically & technically feasible for this company. (Detailed feasibility report is attached with the system proposal document).

## **6.3 Resource Requirements**

### **6.3.1 Hardware Requirements**

The proposed system uses a computer unit and a printer. Therefore, the same single computer will be used by both admin and the sales officer. The printer is mainly used for printing customer invoices. The devices that are essential to implement this system in the company premises are listed below.

- Desktop computer
- Keyboard & Mouse
- UPS Unit (For power failures)
- Inject /Laser Printer

### **6.3.2 Software Requirements**

The software that are essential to run this system in a computer can be listed as follows.

- WAMPP Server
- MySQL Database & Java connector for MySQL
- Eclipse IDE 2020-3 or Above
- Jasper Studio 6.1.7 or above

## 7. RESULTS AND DISCUSSION

All the form interfaces and report interfaces have been described briefly under this chapter.

### 7.1 Login Interface

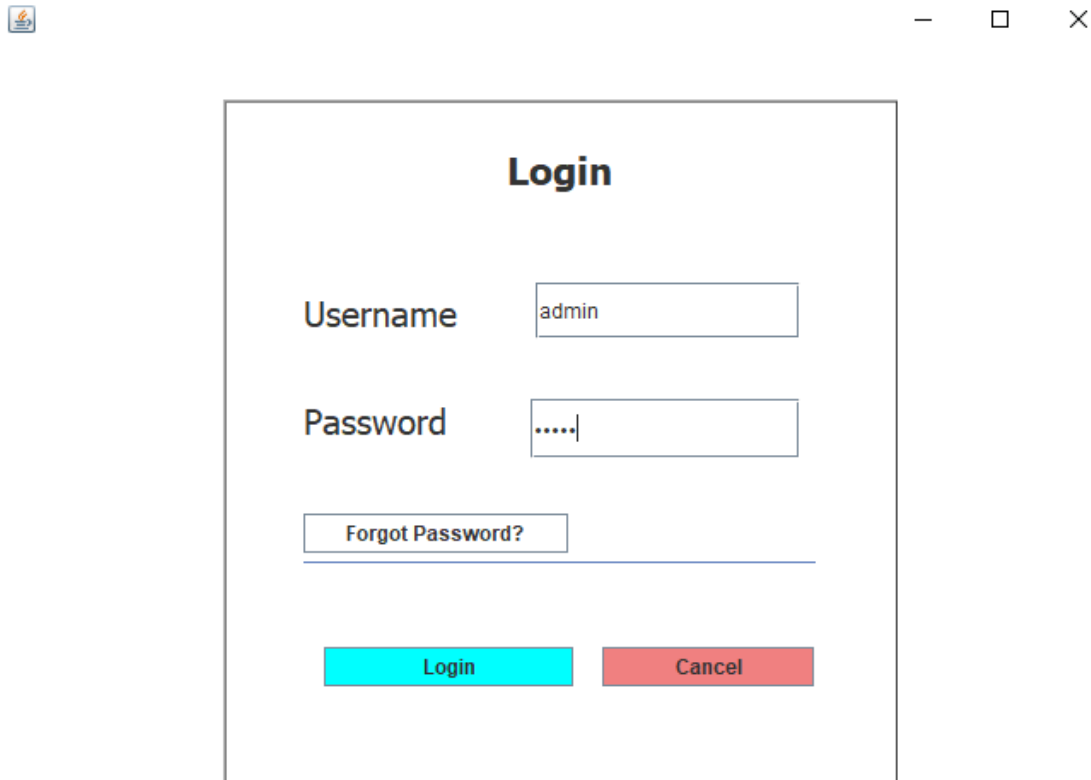
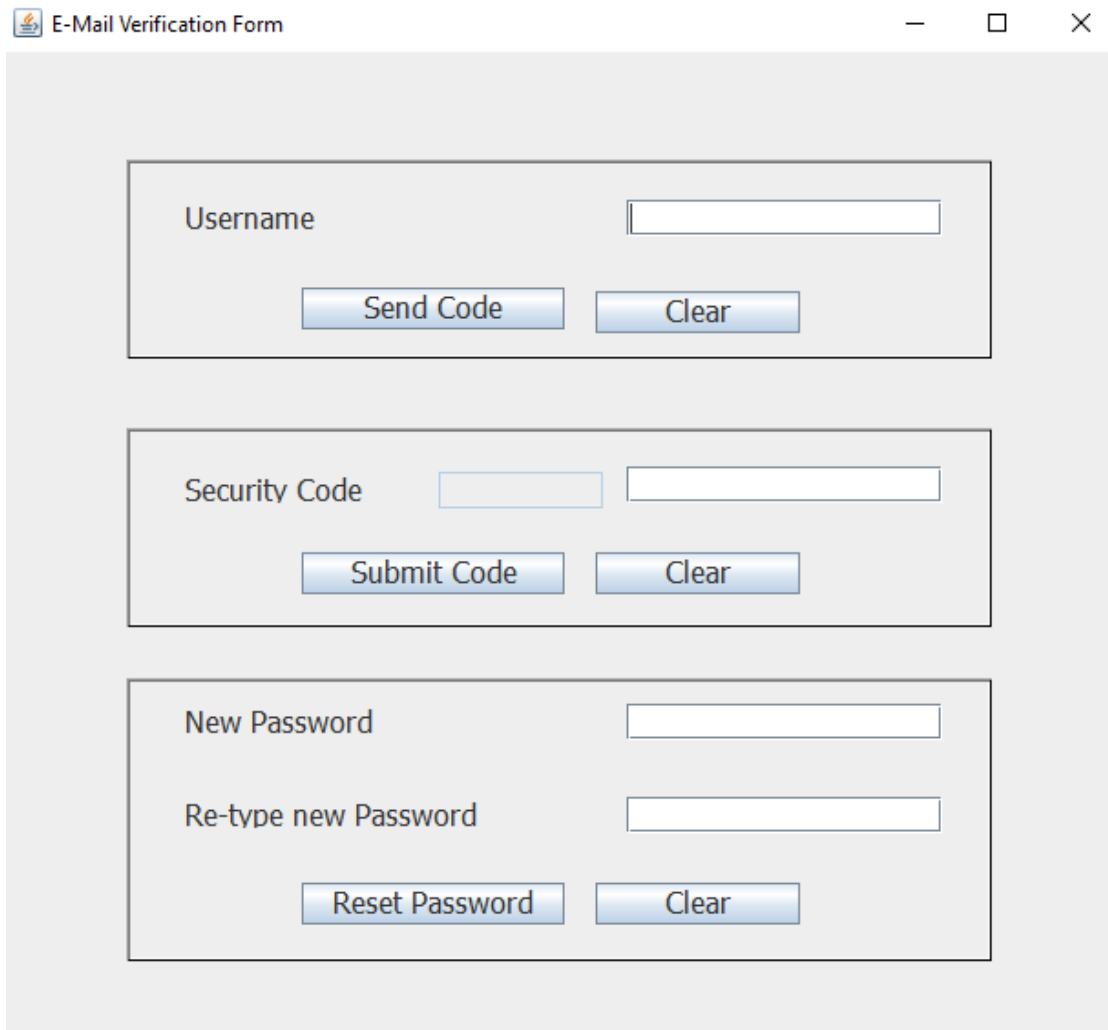
The image shows a screenshot of a web browser window displaying a login interface. The window has a standard title bar with a small icon on the left and minimize, maximize, and close buttons on the right. The login form is centered and has a title "Login" in bold black text. Below the title, there are two input fields: "Username" with the text "admin" and "Password" with masked characters ".....". Below the password field is a link labeled "Forgot Password?". At the bottom of the form are two buttons: a blue "Login" button and a red "Cancel" button.

FIGURE 2.0 Login Interface

- This is the first interface that all the users see at first when they open the new system. The main objective of having this interface is to control access and user privileges.
- Any staff member who has a user account of this system can enter their username and password in the given fields and login to the system.
- In any case where a user cannot remember his password can click the forgot password button shown above and it will redirect them to the forgotten password reset interface.
- By clicking the cancel button in here users can exit from the system.

## 7.2 Forgot Password Interface



The screenshot shows a web application window titled "E-Mail Verification Form". It contains three distinct input sections, each with a label, text fields, and action buttons. The first section is for "Username" with a single text field and "Send Code" and "Clear" buttons. The second section is for "Security Code" with two text fields and "Submit Code" and "Clear" buttons. The third section is for "New Password" with two text fields labeled "New Password" and "Re-type new Password", and "Reset Password" and "Clear" buttons.

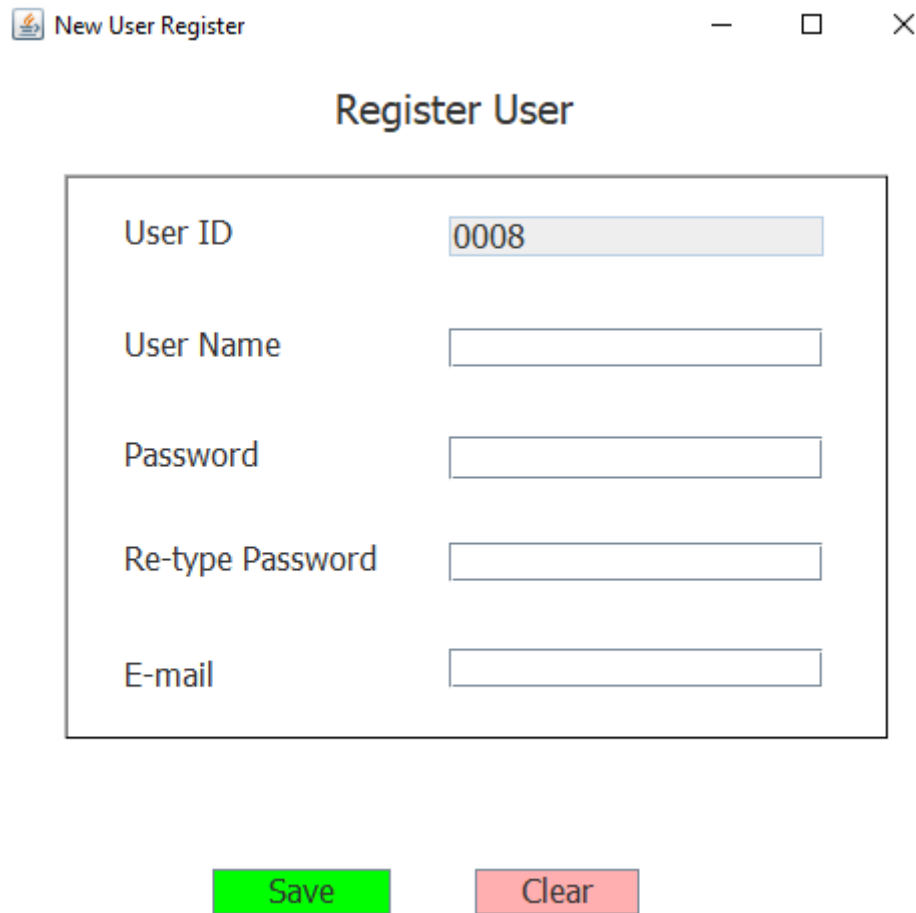
Section	Label	Input Fields	Action Buttons
1	Username	1	Send Code, Clear
2	Security Code	2	Submit Code, Clear
3	New Password	2 (New Password, Re-type new Password)	Reset Password, Clear

FIGURE 3.0 Forgot Password Interface

- User must remember the username to use this method to recover their account. Therefore, user should type the username of his or her user account in the username field at the top and then click send code button. If the entered user name is invalid the system will pop up an error message.
- If the username entered is valid system will send a verification code to the email address of user that has been entered to the system. So, user is supposed to enter that verification security code in the relevant text field and click submit button. If the entered verification code is incorrect the system will pop up an error message.
- If the entered verification code is correct the user can create a new password for his account and then click reset password button. So user can use his new login credentials to log into the system.



### 7.3 New User Register Interface



New User Register

Register User

User ID 0008

User Name

Password

Re-type Password

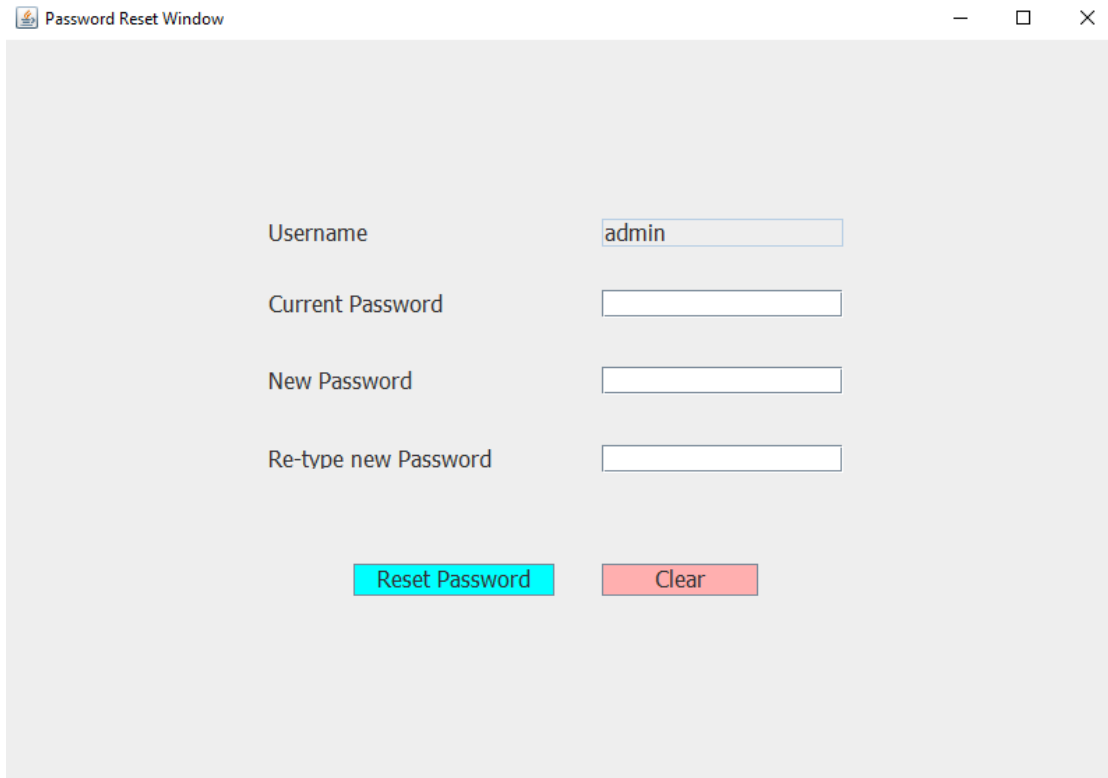
E-mail

Save Clear

FIGURE 4.0 New User Register Interface

- Admin user of the system can only use this interface to create a new user account for a new employee.
- User id is automatically generated by the system but admin have to fill all the other fields and click save button to create a new user account.
- All these new accounts that are created here are normal user accounts without admin privileges.
- Admin can use this clear button to clear all the enabled text fields.
- The entered email address in the email text field will get subjected to filter using data validation methods for email addresses. So, if the email address entered is invalid the system will pop up an error message.
- It's a must to fill all the text fields with relevant data, if not the system will pop up an error message when you try to save the data.

## 7.4 Password Reset Interface

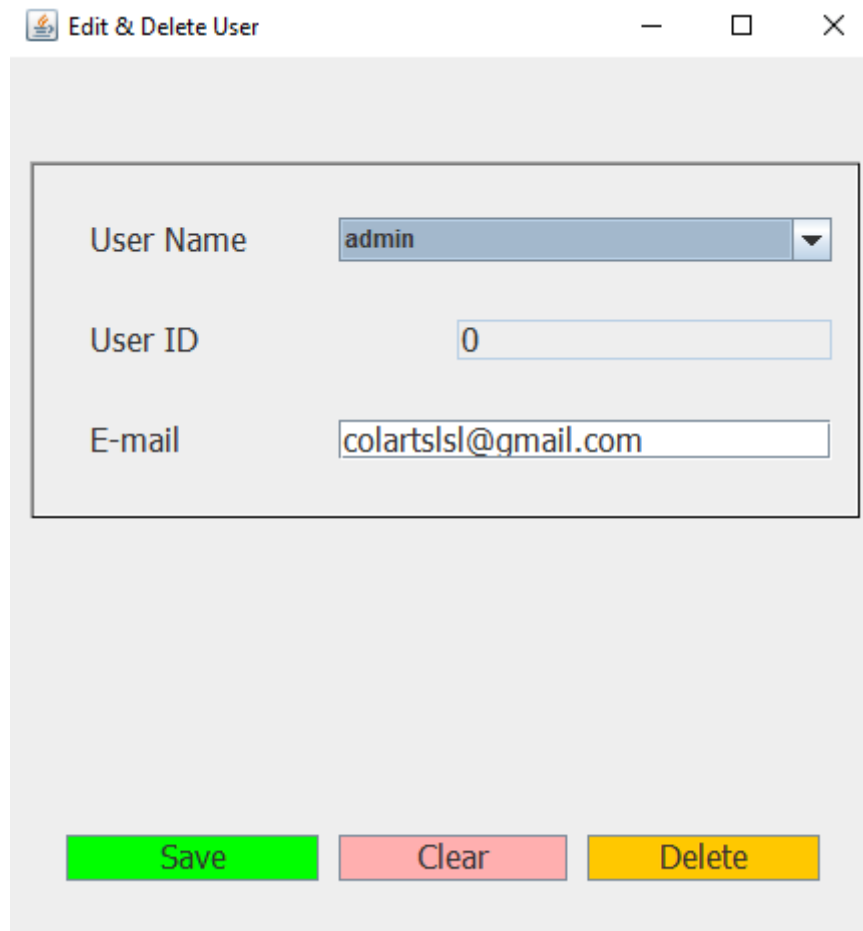


The screenshot shows a window titled "Password Reset Window" with standard window controls (minimize, maximize, close) in the top right corner. The interface contains four text input fields arranged vertically, each with a label to its left: "Username" (containing the text "admin"), "Current Password", "New Password", and "Re-type new Password". Below these fields are two buttons: a cyan "Reset Password" button and a red "Clear" button.

FIGURE 5.0 Password Reset Interface

- A user can reset his or her password using this menu after a successful login.
- The username filed at the top is not editable, it is automatically filled with the username of the account that he or she has used to login.
- All the new users are supposed to reset their passwords which were created by admin at the user registration process.
- Users can use clear button to clear all the text fields.
- After filling all the text fields with necessary details users must click reset password button to reset their user account password.
- If the user has left any text fields empty the system will pop up an error message when he or she click reset password button.
- If the password reset is successful, he or she will get a pop-up message as password reset is successful.

## 7.4 Edit & Delete User Interface



The screenshot shows a window titled "Edit & Delete User". Inside the window, there is a form with three input fields:

- User Name:** A dropdown menu with "admin" selected.
- User ID:** A text box containing the value "0".
- E-mail:** A text box containing the value "colartslsl@gmail.com".

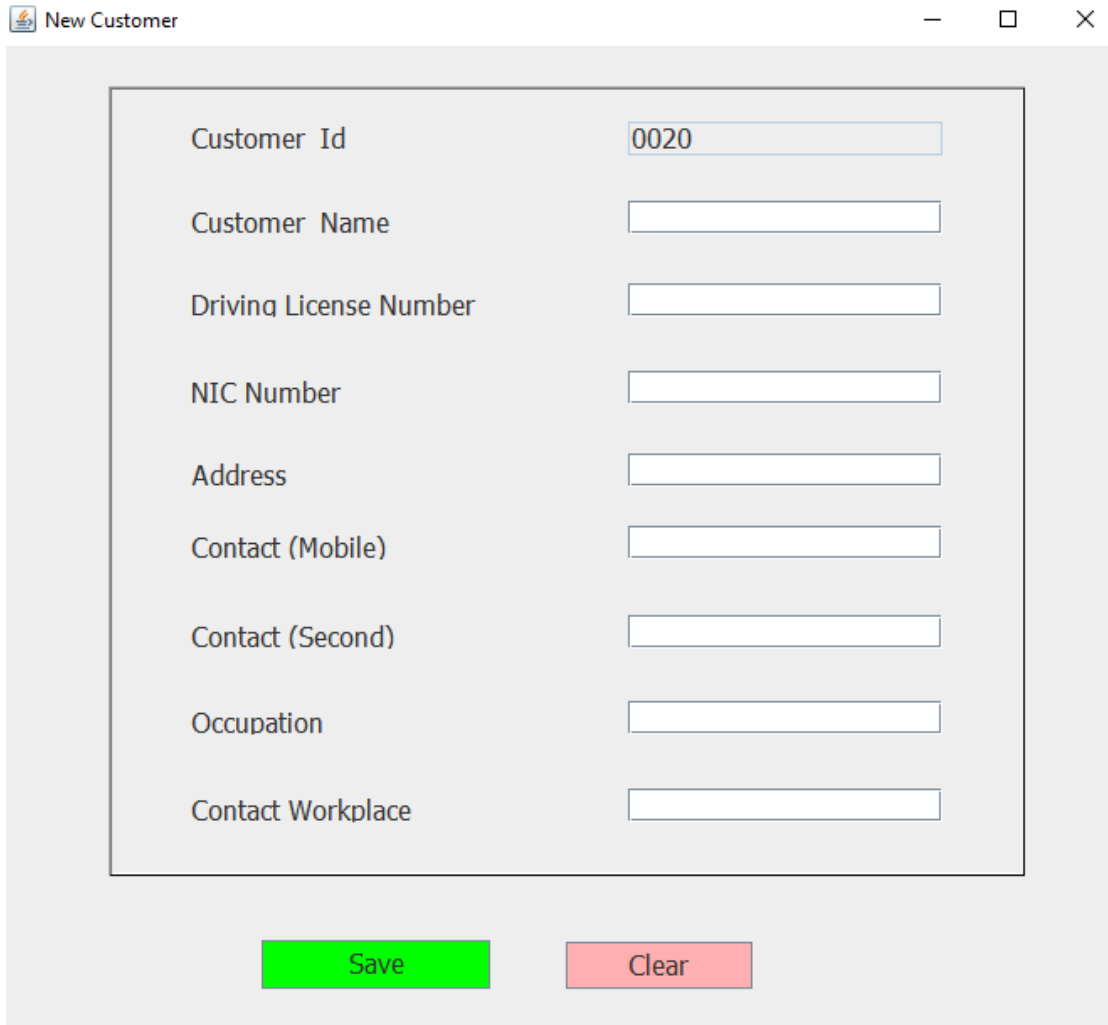
At the bottom of the form, there are three buttons:

- Save:** A green button.
- Clear:** A pink button.
- Delete:** A yellow button.

FIGURE 6.0 Edit & Delete User Interface

- Using this interface any user can change their own user email address associated with their user account.
- The delete button in this interface is only visible to admin. Using this delete button admin can delete unwanted user accounts from the system.
- As well admin can change any other users email address in an emergency situation.
- By clicking the clear button, the users can clear the text fields.

## 7.5 Add New Customer Interface



The screenshot displays a web application window titled "New Customer". Inside the window is a form with the following fields and labels:

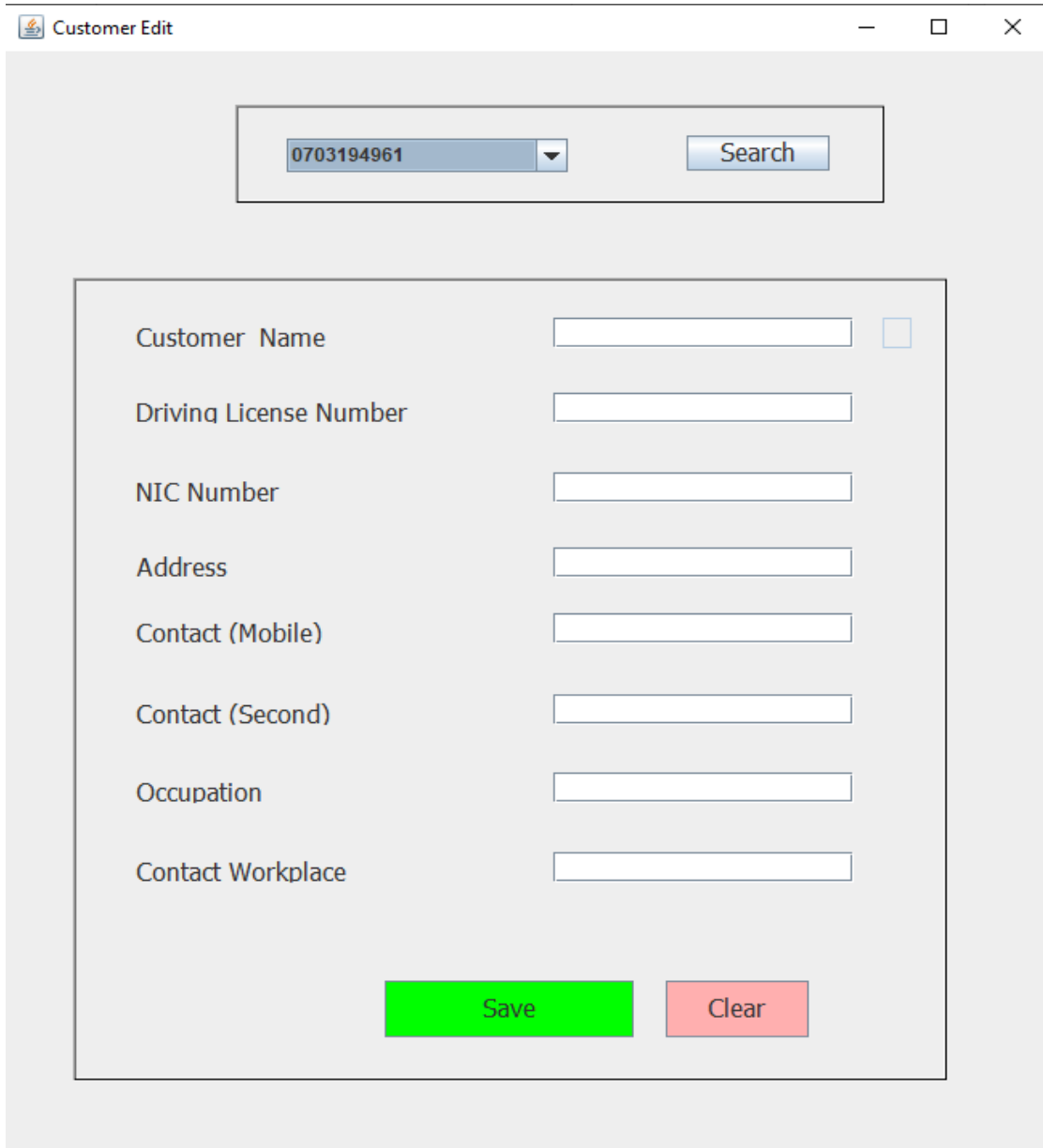
- Customer Id: 0020
- Customer Name: [Empty text box]
- Driving License Number: [Empty text box]
- NIC Number: [Empty text box]
- Address: [Empty text box]
- Contact (Mobile): [Empty text box]
- Contact (Second): [Empty text box]
- Occupation: [Empty text box]
- Contact Workplace: [Empty text box]

At the bottom of the form are two buttons: a green "Save" button and a red "Clear" button.

FIGURE 7.0 Add New Customer Interface

- Both admin and user have access to this interface.
- This interface can be used to add a new customer to the system.
- Only the customers in the system can order vehicles.
- All the data entered in above shown text fields are being filtered by data validation methods. If the data entered are not valid according to the validation methods it will pop up a error message when the users try to save the data.
- Users can use clear button to clear all the text fields.
- The field customer id is automatically filled by the system.

## 7.6 Edit Customer Interface



The screenshot displays a web application window titled "Customer Edit". At the top, there is a search bar containing the number "0703194961" and a "Search" button. Below this is a form with the following fields:

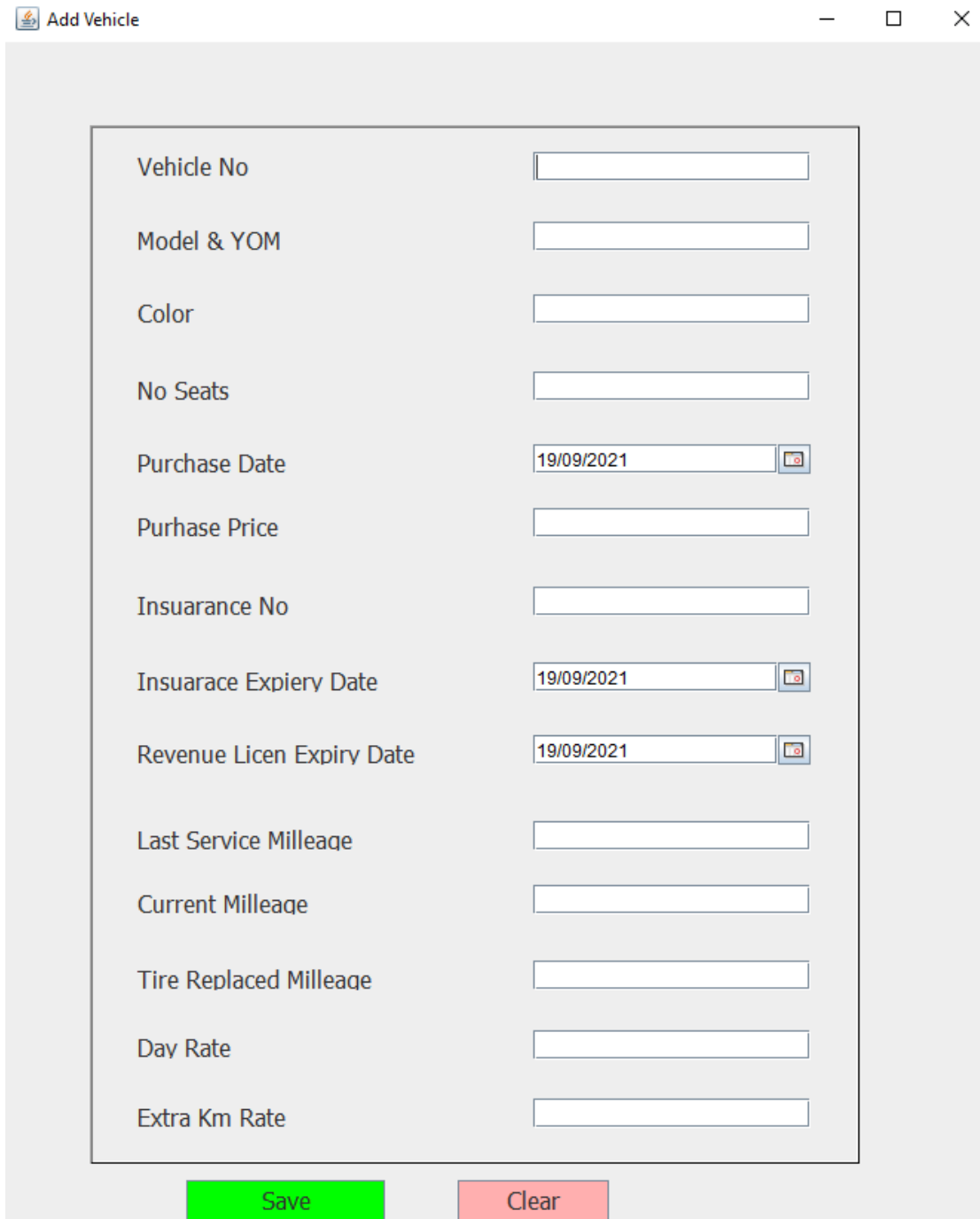
- Customer Name
- Driving License Number
- NIC Number
- Address
- Contact (Mobile)
- Contact (Second)
- Occupation
- Contact Workplace

At the bottom of the form, there are two buttons: "Save" (green) and "Clear" (red).

FIGURE 8.0 Customer Edit Interface

- Both admin and user have access to this interface.
- Customer details that are already in the system can be changed using this interface.
- System users can search for customer records by selecting the customers mobile number from the Combo-Box at the top. Once the user click search button after selecting customer contact number from the combo box, the customer details that are in the system will get filled to the relevant text fields.

## 7.7 Vehicle Add Interface



The screenshot displays a web-based form titled "Add Vehicle". The form contains the following fields:

- Vehicle No
- Model & YOM
- Color
- No Seats
- Purchase Date (pre-filled with 19/09/2021)
- Purchase Price
- Insurance No
- Insurance Expiry Date (pre-filled with 19/09/2021)
- Revenue Licen Expiry Date (pre-filled with 19/09/2021)
- Last Service Milleage
- Current Milleage
- Tire Replaced Milleage
- Day Rate
- Extra Km Rate

At the bottom of the form, there are two buttons: a green "Save" button and a red "Clear" button.

FIGURE 9.0 Add Vehicle Interface

- Only admin has access to use this interface and add vehicles into the system.
- Users have to fill all the text fields in order to save the new vehicle.
- Clear button can be used to clear all the text fields.

## 7.8 Vehicle Edit & Delete Interface

The screenshot displays a web application window titled "Vehicle Edit". At the top, there is a dropdown menu showing "ZAA4662" and a "Search" button. Below this, the interface is divided into two main sections. The left section contains input fields for "Vehicle No" (pre-filled with "ZAA4662"), "Model & YOM", "Color", "No Seats", "Purchase Date" (with a calendar icon), and "Purchase Price". The right section contains input fields for "Insurance No", "Insurance Expiry Date" (with a calendar icon), "Revenue Licen Expiry Date" (with a calendar icon), "Last Service Mileage", "Current Mileage", "Tire Replaced Mileage", "Day Rate (LKR)", and "Extra Km Rate (LKR)". At the bottom of the window, there are two buttons: a blue "Save" button and a red "Delete" button.

FIGURE 10.0 Vehicle Edit Interface

- Only admin have access to use this interface.
- Customer can select the vehicle from the system using the combo box shown at the top. When they click search button all the text fields will get filled with data in the system.
- Admin can change data in any field and click save button so that data will be updated in the database.
- If this interface has any empty text fields admin will get an error message when he is going to save the data.
- As well admin can delete vehicles using this interface.

## 7.9 New Order Interface

The screenshot displays a web application window titled "New Order". It contains two main columns of input fields. The left column includes: Order ID (0004), Customer Address, Customer Name, Vehicle Model, Reserved Date (2021/09/21), Trip Start Date (2021/09/21), Trip End Date (2021/09/21), Starting Mileage, Trip End Mileage, and Damage Claim. The right column includes: Vehicle Number (dropdown), Customer Mobile (0702104961), Vehicle Day Rate, Extra Km Rate, No Of Days Rented, Day Rent Total, Extra KM Total, Trip Mileage, Total, Advance Paid, and Balance Amount. At the bottom left are three buttons: "Clear" (red), "Load" (cyan), and "Save" (green). At the bottom right is a "Create Invoice" button (cyan).

FIGURE 11.0 New Order Interface

- Both admin and normal user have access to this interface.
- The vehicle number combo box will show the available vehicles to the users.
- User have to select the relevant customer by selecting his or her mobile number from the given customer mobile combo-box.
- Then user must click load button, so the relevant fields will get filled automatically.
- Then user must recheck the starting mileage and type estimated trip end mileage and advance amount in the relevant text fields.
- After that user should again click load button, by doing that other remaining text fields also get filled.
- Then user must click save button to save order data in the system.
- By clicking create invoice button user can generate an invoice.



## 7.10 Edit & Delete Order Interface

FIGURE 12.0 Edit & Delete Order Interface

- Both admin and user have access to this interface.
- First the user should select the customer using the mobile number.
- The you will see all the vehicles related to that customer in the vehicle number combo box. So, from there you can select the vehicle related to the order.
- Finally, trip starts dates of that certain customer for that vehicle will be loaded to trip start date combo box.
- When the user selects the trip start date from the given dates. Remaining text fields will get loaded with the existing data in the system.
- System user can edit the trip end date, trip end mileage, damage claims & final payment fields.
- If the balance amount is zero the order will be considered as a completed order and the vehicle will be available for new orders.
- Only admin can delete orders using this interface.

## 7.11 Sales Report Interface

Prasanna Car Rentals							Sales Report
							Tuesday 21 September
Order_Id	Customer_Id	Customer_Tel	Vehicle_No	Start_date	End_date	Total	Order_State
2	0019	0703194961	CAA-4562	2021-09-18	2021-09-20	18000	false
3	0019	0703194961	KY-2066	2021-09-19	2021-09-21	17000	false

FIGURE 13.0 Edit &amp; Delete Order Interface

- This report will get the user a list of orders occurred in the current month.

## 7.12 Due Vehicle Report Interface

# Prasanna Car Rentals

## Due Vehicle Report

Tuesday 21 September

Ord_id	Vehicle_No	Customer_id	Mobile	Start_Date	End_Date
2	CAA-4562	0019	0703194961	2021-09-18	2021-09-20
3	KY-2066	0019	0703194961	2021-09-19	2021-09-21

FIGURE 14.0 Edit &amp; Delete Order Interface

- This report will get the user a list of vehicles that have been issued as orders but not yet returned back.

### 7.13 Insurance Claims Report Interface

Prasanna Car Rentals					
Insurance Claims Report					
Tuesday 21 September					
vehicle_no	ord_id	cus_id	Contact_One	end_date	dmg_claim
CAA-4562	2	0019	0703194961	2021-09-20	5000
KY-2066	3	0019	0703194961	2021-09-21	8000

FIGURE 15.0 Edit & Delete Order Interface

- This report will get the user a list of vehicles & orders which have an insurance claim.

### 7.14 Available Vehicle Report Interface

Prasanna Car Rentals						
Available Vehicle Report						
Tuesday 21 September						
Vehicle_Number	Model	Color	Insurance_No	Insurance_Expire	Revenue_L	Last_Service
CAA-4562	Prius 2013	White	45646	17-09-2021	17-09-2021	98000
KY-2066	Aqua	Blue	5689	30-09-2021	30-09-2021	105000

FIGURE 16.0 Edit & Delete Order Interface

- This report will get the user a list of vehicles that are available for orders at the current day.

### 7.15 Home Interface

- There are separate home interfaces to each admin and normal user. Some buttons have been hidden from the normal user in order to control access.

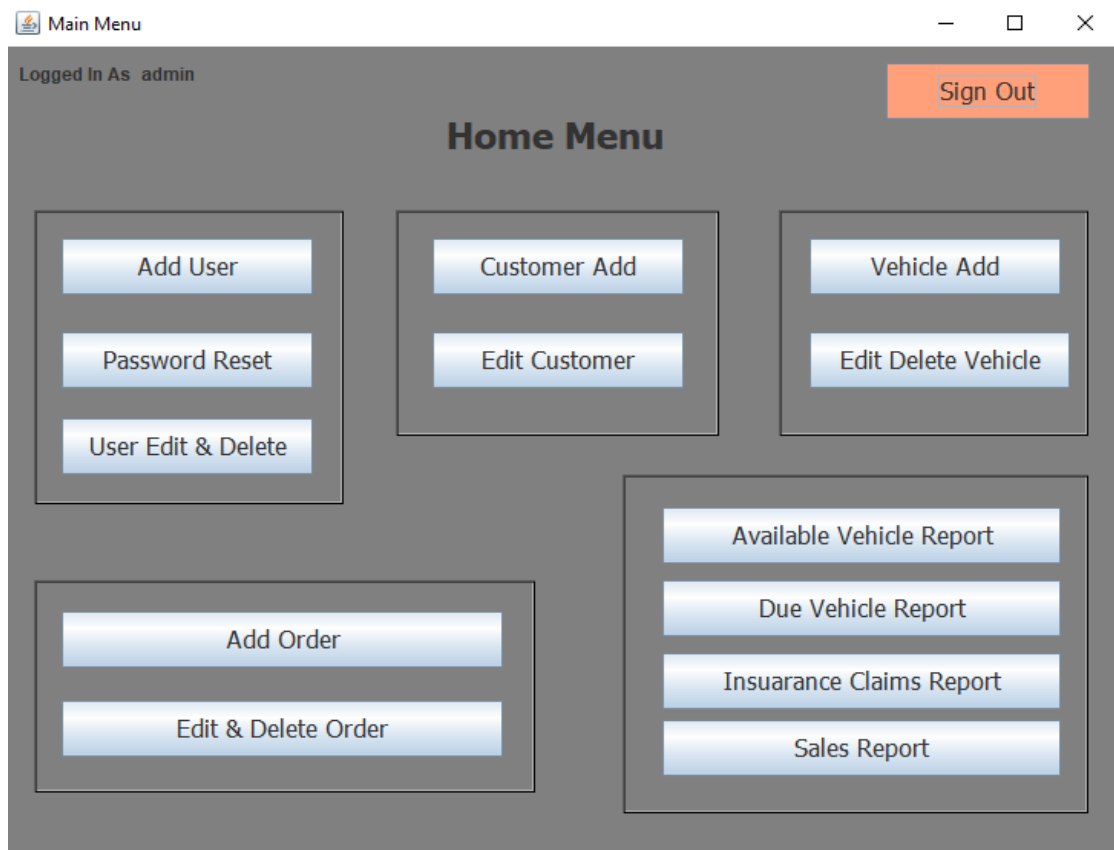


FIGURE 17.0 Admin Home Interface

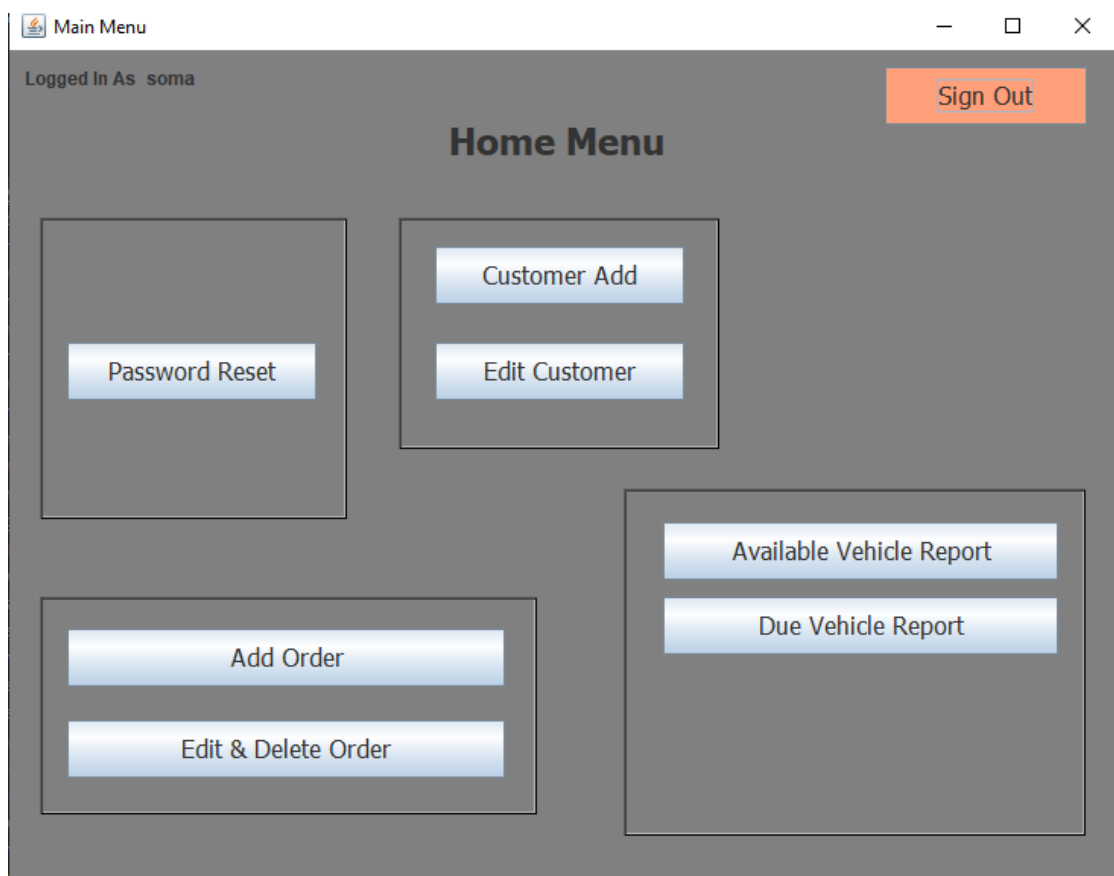


FIGURE 18.0 User Home Interface

## **8. CONCLUSION**

By looking at this new system and its performance towards objectives and problems existed in the manual handwritten system, the following conclusions are made.

- The new system issues invoices through the system itself. Therefore, the calculation errors and omissions have been minimized. As well these new printed invoices are neat and customer attractive. It will increase the customer satisfaction.
- The new system manages all its data through a MySQL database. It has led to decrease the stationary costs and also the data are much secure now. As well system users can find past data records very easily using this new system.
- The new system generates reports automatically, so there is no need to waste time to create reports manually and accuracy of these reports are much higher because there will be no human interreference in creating these.

## 9. REFERENCES

Webservice, H., & Polamalu, B. (2021). Handling a null pointer exception in a webservice. Retrieved 19 September 2021, from <https://stackoverflow.com/questions/7041863/handling-a-null-pointer-exception-in-a-webservice>.

Fn, S. (2021). How to set default value in combo Box java?. Retrieved 19 September 2021, from <https://stackoverflow.com/questions/34949422/how-to-set-default-value-in-combobox-javafx>.

sub Report, J. (2021). Jasper Reports: How to pass parameter to sub Report. Retrieved 19 September 2021, from <https://stackoverflow.com/questions/2310188/jasperreports-how-to-pass-parameter-to-subreport>.

Passing Parameters from Java to jasper report. (2021). Retrieved 19 September 2021, from <https://www.youtube.com/watch?v=fZtnoQpPzaws>