A Minor Project Report on

Automobile Registration System

Submitted in partial fulfillment of the requirements for the degree of

Bachelor of Engineering in Software Engineering at Pokhara University

By

Nischal Bhandari

Prabin Shrestha

Sagar Gurung

Department of Research and Development

GANDAKI COLLEGE OF ENGINEERING AND SCIENCE

Lamachaur, Kaski, Nepal

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BONAFIDE CERTIFICATE

This project entitled "Automobile Registration System" prepared and submitted by "Nischal Bhandari, Prabin Shrestha and Sagar Gurung" under the supervision of "Hari K.C." in partial fulfillment of the requirements for the Degree of Bachelor of Engineering in Software Engineering has been examined and is recommended for approval and acceptance.

Date of Evaluation: June 28th, 2018

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Acknowledgement

We would like to express our heart full thanks to our project supervisor **Mr. Hari K.C.**, who supported us to do this project by giving valuable suggestions and guidelines during the development phase. We are thankful to the principal **Mr. Ravi Prasad Baral** and the vice principal **Mr. Ashok Raj Parajuli** for supporting us during the entire project. We are also thankful to all our teachers and staffs for their assistance, support and encouragement to complete our project. A special gratitude to **Mr. Sujan Tamrakar**, HOD, Department of Research and Development for the guidance and investigation.

Finally, we would like to thank all our friends and library staffs who helped us by providing several suggestions and comments to make this project successful.

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Lamachaur, Pohara, Kaski

Abstract

The project titled “Automobile Registration System” is a Desktop Application built with the help of Core Java and its library Application Programming Interfaces (APIs). It is used to register automobiles (Motor Bike, Scooter, Car, etc.). The main purpose of this application is to establish a link between a vehicle and the owner or user of the vehicle. This application is also used to keep detailed information of owner with their respective vehicle which is shown whenever vehicle number is searched. The major outcome of this project is that the process of vehicle registration is fast, secure and there will no loss of data in future.

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Chapter 1

INTRODUCTION

1.1. BACKGROUND

The world is moving fast and getting faster every day, with this changing world one need to be dynamic and fast in every aspect of life. In this scenario vehicles are only thing which help people in very faithful manner, so this also need to be available easily and you should be allowed in your country to ride it freely and legally. So, we think about “Automobile Registration System” and we have taken idea to develop Automobile Registration system, a desktop application to register the new vehicle and to search the registered owner and vehicle details.

In a normal registration, a document is produced for each registration of automobile. The document is then incorporated into the bookkeeping system – generally a daybook register. “Automobile Registration System” is an application to provide staffs of register office to store the data and information in the database for further future use. Simply we use Java as a programming language.

1.2. PROBLEM STATEMENT

There are different challenges encountered for Automobile Registration system. This is modern approach so it is fairly new to people. The staffs along with the other members of registration office are used to the old approach such as writing in daybook register and keeping a big bulk of the

file regarding registered vehicle information which takes a lot of time if any information is required. So, we design this application which stores data in database management system.

Before this application, the following are the problems.

- Lack of proper security in the system that creates an avenue for fraud and manipulation of stored data in the system,
- Lack of proper, accurate and concise information about the vehicle owner,
- The poor performance of the system during information retrieval due to insufficient materials (e.g. Register book) in the storage of data,
- Lack of proper and accurate record keeping of stored information.

1.3. OBJECTIVES

In order to overcome the mentioned problem, we were inspired to develop **Automobile Registration System,** which has following objectives.

- To improve the system performance and efficiency,
- To enhance the database for proper information and record keeping,
- To provide a means of accessibility in case of accident and emergency.

1.4. IMPLICATION

This application focuses on showrooms for automobile registration system so that it helps to serve better than the existing system, enhance database and improve effectiveness, efficiency, and security of the system. It is also intended that implication of this application will assist in the development of the new and hopefully better computer-aided system.

Chapter 2

LITERATURE REVIEW

In many countries, there are many software designed to register an automobile. With the increase in a number of people, there are lots of need and demands of the vehicle. So, the problem has been increasing daily for staffs of automobile registration office to puts records of every vehicle and their respective owners.

Here we are going to discuss the existing systems and other drawbacks in the manual earlier system of registration of the vehicles. The system we are using i.e. manual system of the registration of the vehicles are very tiresome and time-consuming. It takes a lot of time and going there in offices, lining up in queues. The most common problem is knowing the proper information about the documents and procedure and pricing. Here comes the problem of agents in that where they make huge money, of no way of the hard-earned money of poor people.

Drawbacks of this system

- It’s a time-consuming process.
- Vulnerable storage of documents.
- There is a great possibility that agents incur a lot of money from poor people without their knowledge of actual expenditure as people have less information reach in the manual system.
- Sometimes it is the spelling error in the manual system that gets saved and after that, while we check it in final phase it gets rejected.

So, above this is the whole process of getting vehicle registration through our system. We can make it a little bit more simple and fast process of automated it.

We can automate this process by creating this application i.e. Automobile Registration System which will allow you to use these things in a fully functional way and the application will include the following entities (an entity is a real-world object).

Our application will eliminate a lot of problems mentioned above:

- The whole process takes less time than the traditional one.
- Spelling validation is available so no spelling error.
- The User does not need to stay for a long time in the queue.
- Users have access to current requirement information easily.
- Easy to store the information of vehicle details and owners.
- Details of vehicle owner can be access fast in case of accident (e.g. hit and run case).

Chapter 3

TOOLS AND METHODOLOGY

3.1. SYSTEM REQUIREMENTS

The system compatibility requirement for executing this software is considered on two requirement specifications.

3.1.1. Hardware Requirement Specification

The following are the hardware specification for the designed application:

- 1.66GHz or Higher Intel Premium Processor.
- 1Gb Memory (RAM) or Higher.
- VGA 800 x 600, 256 colors.
- Uninterrupted Power Supply
- Hard Disk Storage of 140GB Minimum.

3.1.2. Software Requirement Specification

- Windows Vista, 7, 8, 10.
- Java Development Kit (JDK).
- Eclipse IDE, for writing, compiling and executing the system.
- MySQL Database Server (Xampp or Wamp).
- MySQL ODBC Connector.

3.2. DESIGN METHODOLOGY

While executing the design process, there exist tools preferences there exist tools preferences for the system development with reasons to justify why these tools are selected. We concluded to use one of the Object-Oriented Programming Language called Java by installing its development kit JDK and WAMP database server for MYSQL database development of the system to store and easily retrieval of data. These two software tools are interconnected with an object to database connecting tools provided by every computer system known as the ODBC Data Source for connecting the applications interface to MYSQL Database by Installing MYQL Database by installing MYSQL ODBC Connector. The diagram below shows the interactive link and flow between these tools:

3.2.1. SOFTWARE DESIGN TOOL

Java is an object-based programming language used to design both system and application software. It is an advanced development programming that succeeds C and C++. The major reason behind the choice of the java over all the programing language is that it is capable of executing on any system platform and it filters out memory that is not being used after building and compilation is being done.

3.2.2. DATABASE TOOL

The database is needed for easy storage, retrieval and update of data-Items generally refer to as a repository for data. There are several choices of the

database but the one being chosen as a database is MYSQL due to the luxurious acquisition of the data, its flexibility in querying of the database, and its nonselective connection to all computer object-oriented language (it is compatible with any object-oriented programming language).

3.2.3. JDBC DATA SOURCE

The JDBC simply means Java Database Connectivity.it Is a tool supported by all computer system developed passing the normal standards to support all database relation with object-oriented programming language while there exists the subjected database connector (after installation). It is the system register that keeps track of all available database in the system.

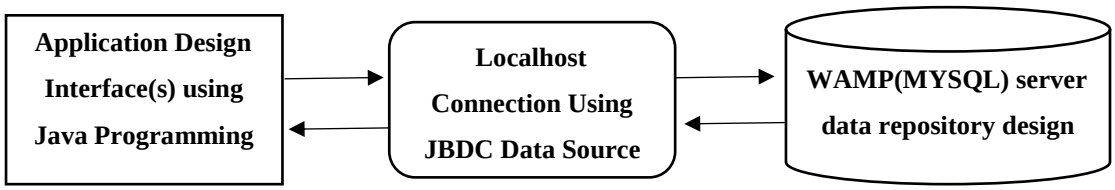


Figure 1: System Tools Data Connection Model

3.3. DATA DESIGN ARCHITECTURE

The system architecture only uses and recognize a single database, this database is named as “Vehicle Registration” which consist of two databases for storing vehicle registration associated record which is the majority the driver's information and automobile, although user management information is stored for access restriction. Each of the table communicates the system interface for example: if you register new vehicle

update detail or renew registered bluebook, the system will communicate with the system database. The database comprises of the two tables to store records which are the vehicle owner and the vehicle bluebook.

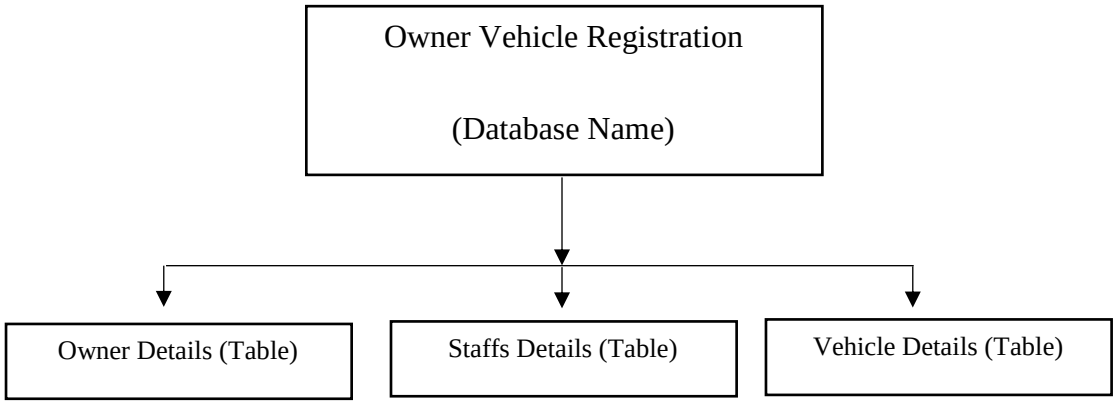


Figure 2: Database Hierarchy

3.3.1. Vehicle Details:

For the Storage of Automobile registration and update during renewal. It contains nine row which entails the id, company name, vehicle number, vehicle type, vehicle color, engine number, fuel type, model number, displacement, number of seats, maximum power, maximum torque, number of gears and tank capacity.

3.3.2. Owner Details:

This table is made to store records of all the details of vehicle owner. It consists of the attributes like the owner name, registration date, gender, date of birth, occupation, education, citizenship number, citizenship issue district, passport number, passport issue district, zone, district, address, house number, contact number, email id, owner image.

3.3.2. Staffs Details:

This table is made to store records of all the staff or users that can access the system. It consists of the attributes like the id, password, id category, worker name, gender, address, contact number, email id, id registered date and shift.

3.4. DESIGN

We can observe various use cases involved in our project.

3.4.1. USE CASE DIAGRAM

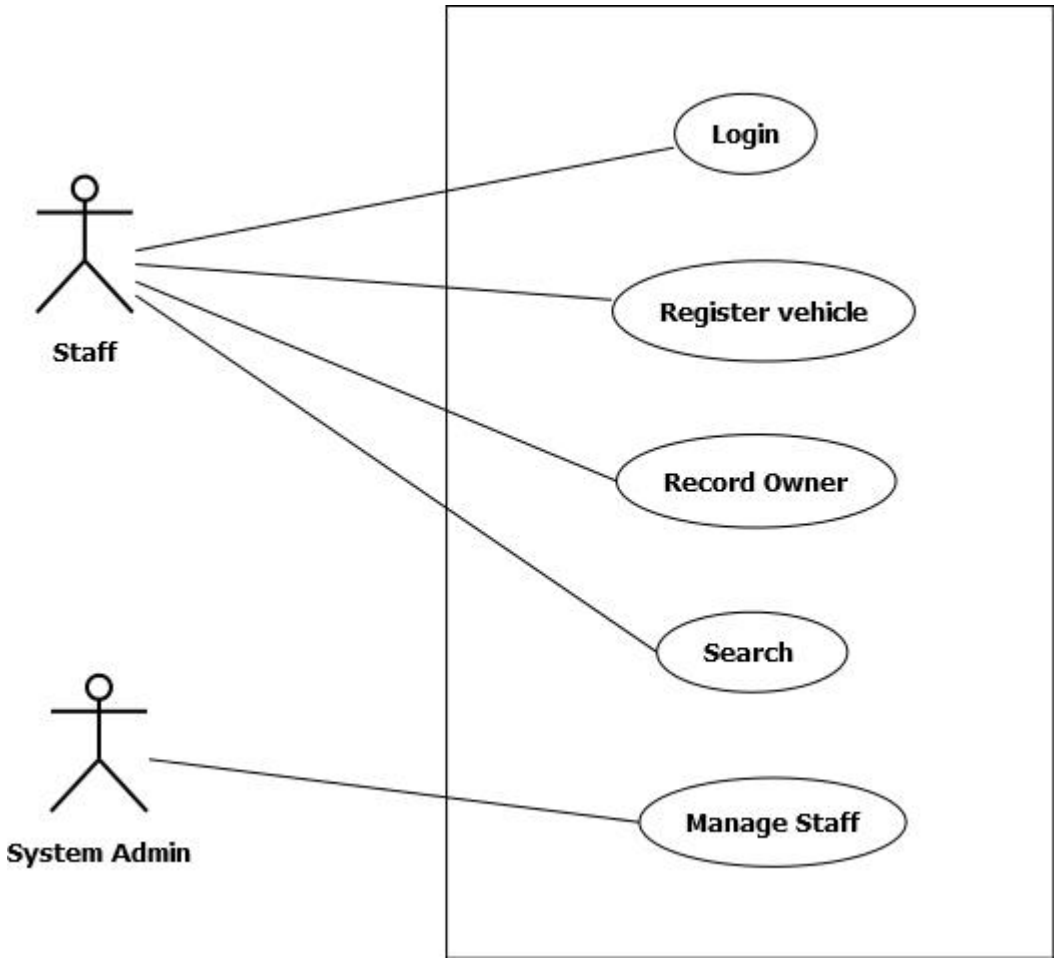


Figure 3: Use Case Diagram for Automobile Registration System

USECASE UC1: LOGIN

Primary Actors: Staff

Stakeholder:

- Staff: Wants to login to access the system
- System administrator: Wants to login to manage staff and security.

Precondition: Staff member or System administrator is identified and registered.

Postcondition: Staff member or system administrator is provided access to the system.

Basic Flow:

- Software is run.

USE CASE UC2: REGISTER VEHICLE

Primary Actors: Staff

Stakeholders:

- Staff: wants to register accurate details of the vehicle.
- Vehicle owner: wants to register his/her vehicles.

Precondition: Staff is identified and authenticated. Vehicle details are entered into the system.

Postcondition: New vehicle is registered.

Basic Flow:

- Staff logs in the system.

USE CASE UC3: RECORD OWNER

Primary Actors: Staff

Stakeholders:

- Staff: wants to register the accurate details of the owner.
- Vehicle owner: wants to give his/her details.

Precondition: Staff is identified and authenticated. Owner details are recorded into the system.

Postcondition: Owner is registered.

Basic Flow:

- Staff logs in the system.

USE CASE UC4: SEARCH VEHICLE DETAILS

Primary Actors: Staff

Stakeholder:

- Staff: Wants to search the right vehicle
- Vehicle owner: Wants to search his/her vehicle details.

Precondition: Staff details are identified and vehicle are identified.

Postcondition: Proper vehicle details are shown.

Basic Flow:

- Staffs logs in the system.

USECASE UC5: MANAGE STAFFS

Primary Actors: System Administrator

Stakeholder:

- Staff: Wants to be properly managed.
- System administrator: wants to manage staffs.

Precondition: System administrator is identified and authenticated.

Postcondition: Staff members are properly managed.

Basic Flow:

- System administrator logs in the system.

3.4.2. ENTITY-RELATIONSHIP DIAGRAM

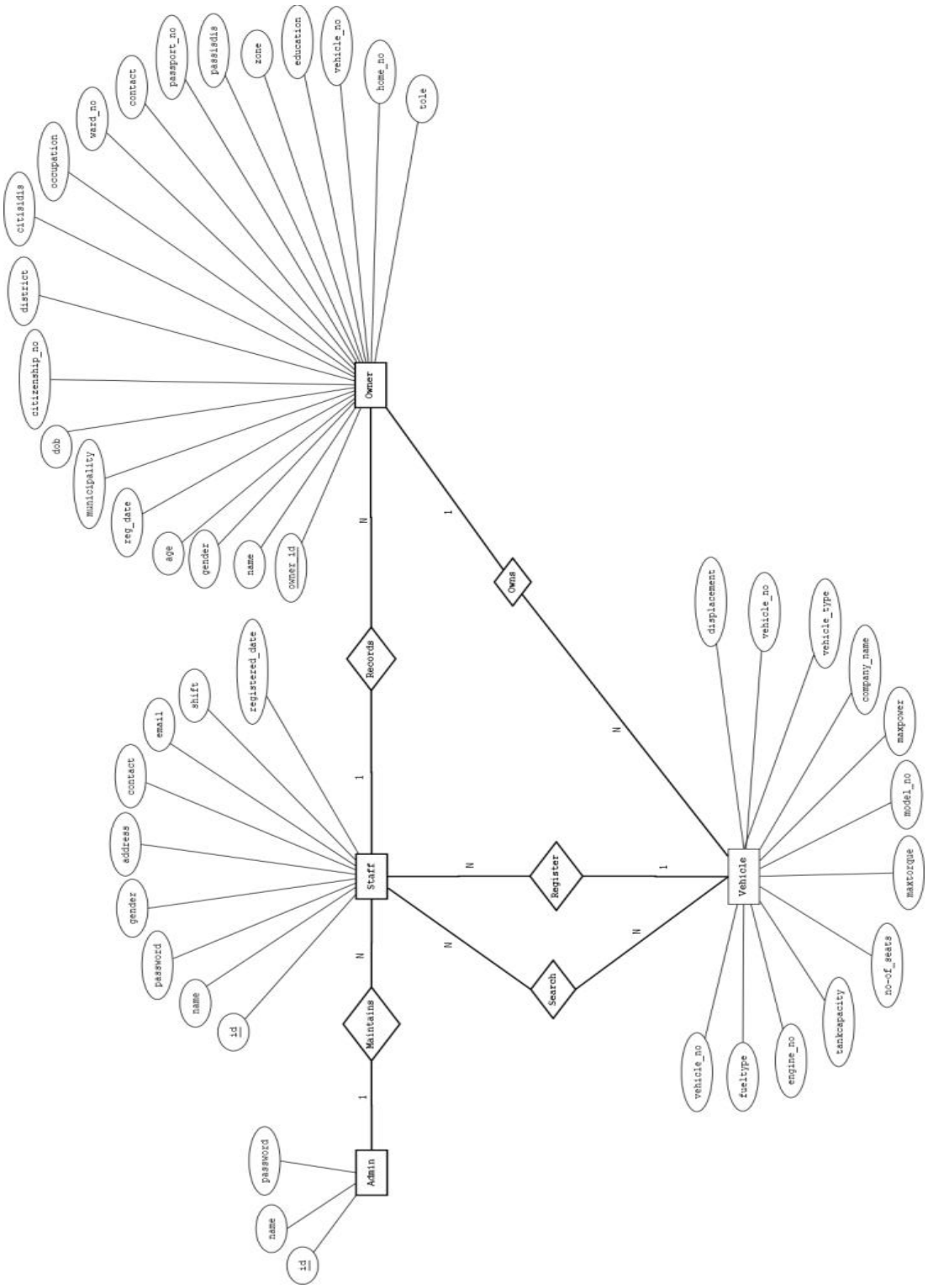


Figure 4: E-R Diagram

3.4.3. SYSTEM SEQUENCE DIAGRAMS

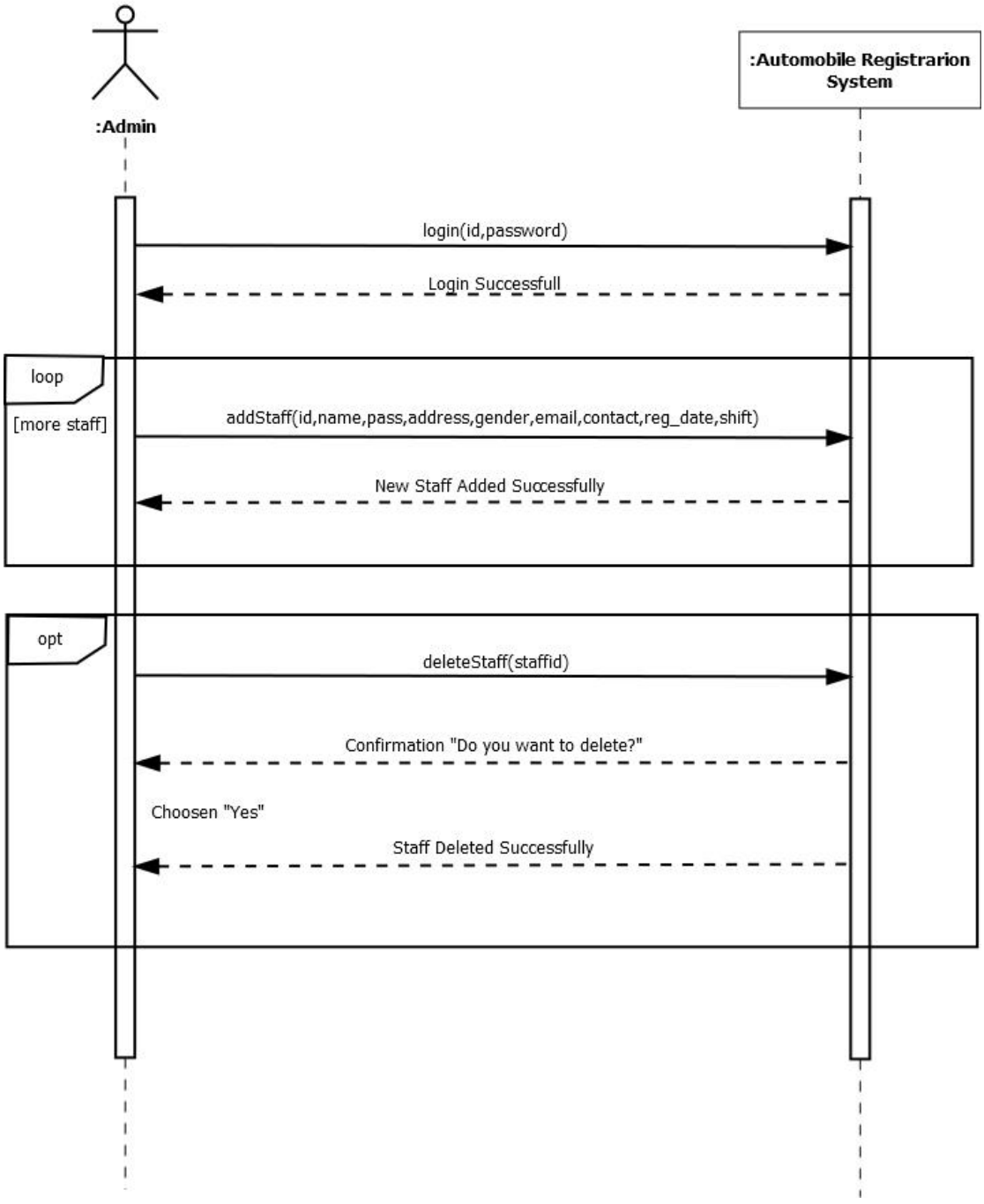


Figure 5: Create new registration of staff Scenario SSD

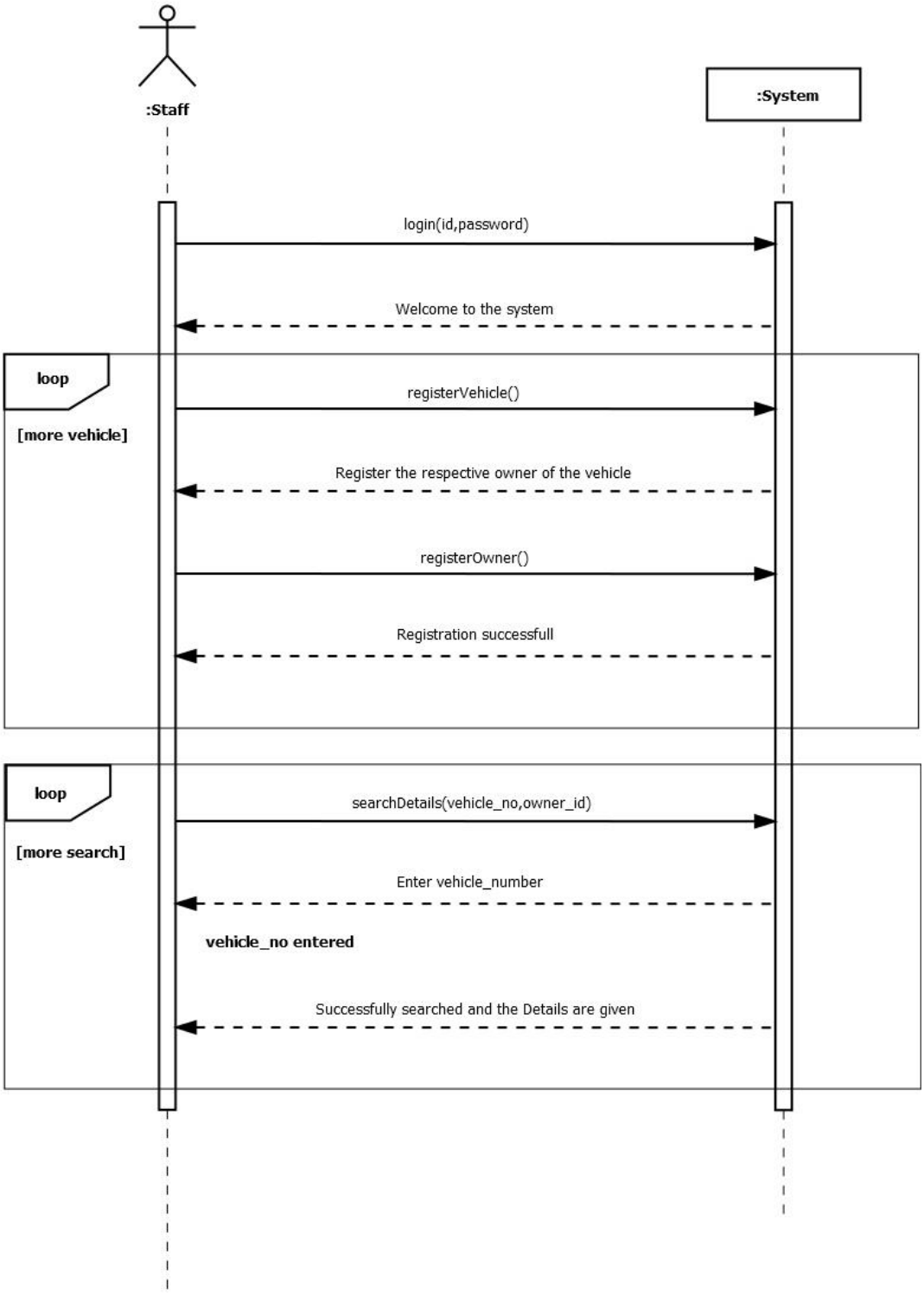


Figure 5: Create new registration of vehicle Scenario SSD

3.4.4. SEQUENCE DIAGRAMS

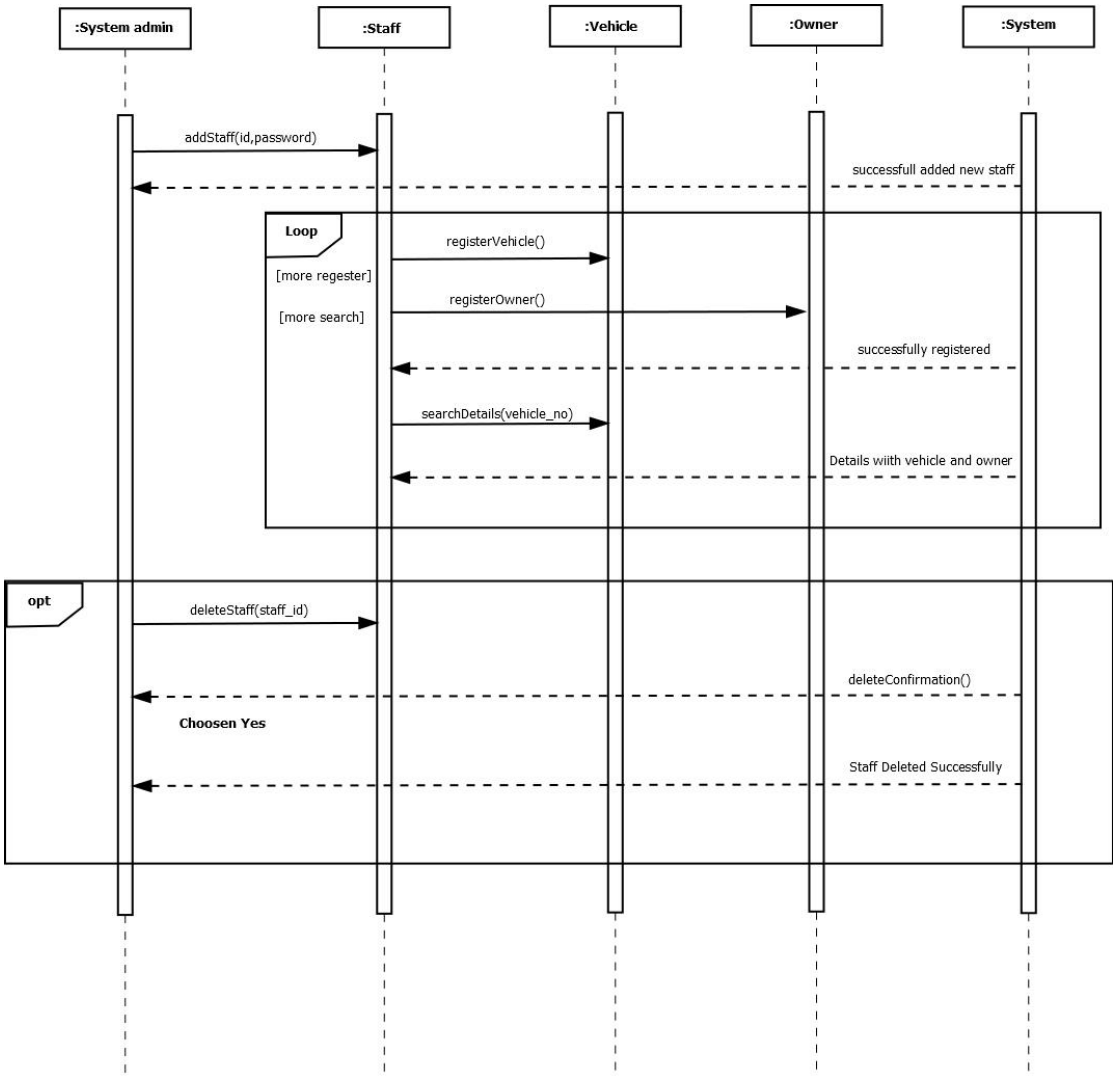


Figure 5: Sequence Diagram for Automobile Registration System

3.4.5. DOMAIN CLASS MODEL

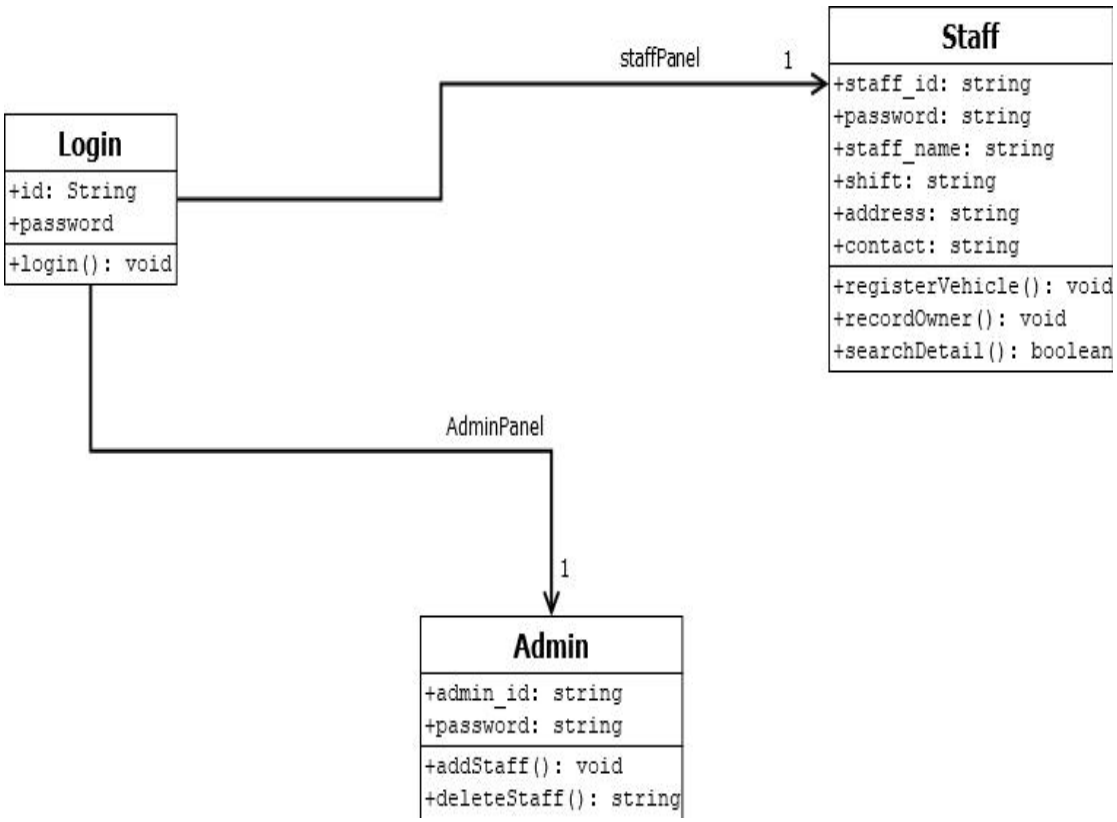


Figure 4: Domain Class Model for Automobile Registration System

3.4.6. DOMAIN MODEL

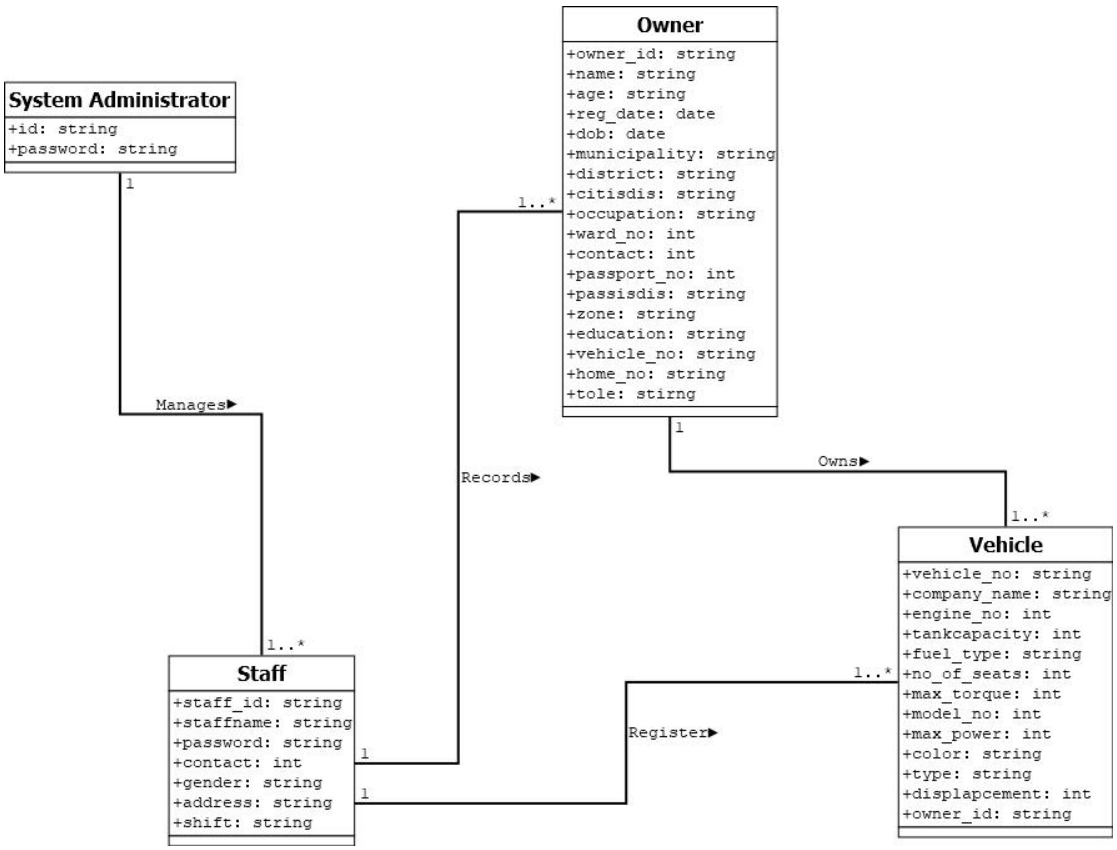
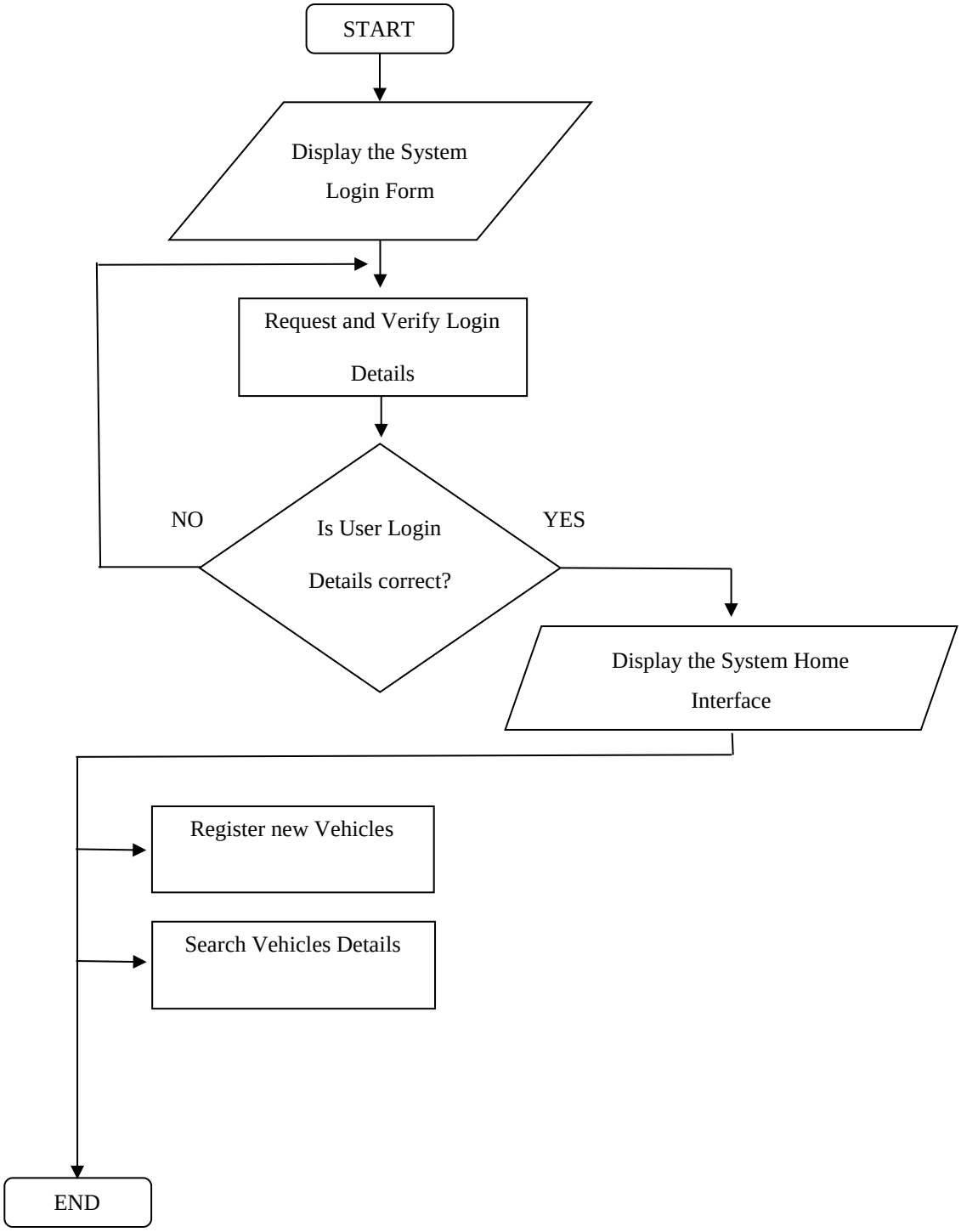


Figure 4: Domain Model for Automobile Registration System

3.4.7. SYSTEM FLOWCHART



Chapter 4

TESTING

Software testing is a critical element of software quality assurance and represents the ultimate review of specification, design and code generation.

4.1. OBJECTIVE OF TESTING

- Testing is a process of executing a program with the intent of finding an error.
- Verify that software requirements are complete and accurate.
- Perform detailed test planning.
- Identify testing standards and procedures that will be used on the project.
- Prepare and document test scenarios and test cases.
- Regression testing to validate that unchanged functionality has not been affected by changes.
- Manage defect tracking process.
- Provide test metrics/testing summary reports.

4.2. TEST CASES:

TEST CASE ID	PURPOSE	TEST CASES	RESULT
TC1	Authentication	AdminID/StaffID empty	Id cannot be left Empty

TC2	Authentication	Password field left Empty	Password Cannot be left Empty
TC3	Authentication	Incorrect Id or password	Invalid Id or password
TC4	Validation	StaffID/AdminID format	Use for 4 alphabet first and 4 digits at last

Fig: Test Cases for Admin and staff Login.

TEST CASE ID	PURPOSE	TEST CASES	RESULT
TC1	To add Staff	Empty Information Field	Filed cannot be left Empty
TC2	Validation	Staff ID Field	Staff ID should contain 4 alphabet and 4 number at last
TC3	Validation	Email Field	Enter correct Email format
TC4	Validation	Contact no field	Use 10 digits number only or Invalid

Fig: Test cases for the Add Staff.

TEST CASE ID	PURPOSE	TEST CASES	RESULT
TC1	Registration of owner	Empty Information Field	Field with Red * cannot be left Blank
TC2	Validation	Owner name field	Number are invalid in name field
TC3	Validation	Date field	Choose date below 2000 AD
TC4	Validation	Age field	Age should be over 18
TC5	Validation	Citizenship no Field	Invalid alphabet and use correct format
TC6	Validation	Contact no field	Invalid alphabet and use only 10 digits
TC7	Validation	Email field	Invalid Email format

Fig: Test cases for the Owner Registration

TEST CASE ID	PURPOSE	TEST CASES	RESULT
TC1	Registration of Vehicle	Empty Information Field	Field with Red * cannot be left blank

TC2	Validation	Vehicle no field	Vehicle number must match format
TC3	Validation	Model no field	Use Only Number
TC4	Validation	Displacement/cc field	Use only Number
TC5	Validation	Maximum power field	Use Only Number
TC6	Validation	Maximum Torque field	Use Only Number
TC7	Validation	No of Seats Field	Should be selected as per the vehicle.
TC8	Validation	Tank Capacity Field	Fill Valid tank capacity

Fig: Test cases for the Vehicle Registration.

3.5.3. TESTING GOALS

The goal of testing this application includes validating the quality, usability, reliability and performance of the application. Testing will be performed from a black-box approach, not based on any knowledge of internal design or code. Tests will be designed around requirements and functionality. Similarly, the next goal is to make the tests repeatable for use

in regression testing during the project lifecycle, and for future application upgrades.

Chapter 5

RESULTS AND DISCUSSION

Future Research and Recommendation:

We have planned to overcome the limitation and also include some additional features for the better access. To further enhance the capability of this application, we recommend the following features to be incorporated into the system.

- Transfer of Ownership.
- Registration of all types of the vehicle (such as bus, heavy vehicles, government-owned vehicles etc.) so that the system will be use in different platform.
- Provide better user interface for the staff.
- Issuing the vehicle registration card.

APPENDIX I

USER INTERFACE

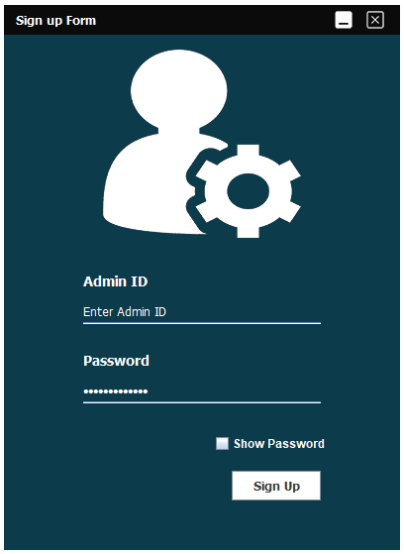


Figure: Admin Signup panel

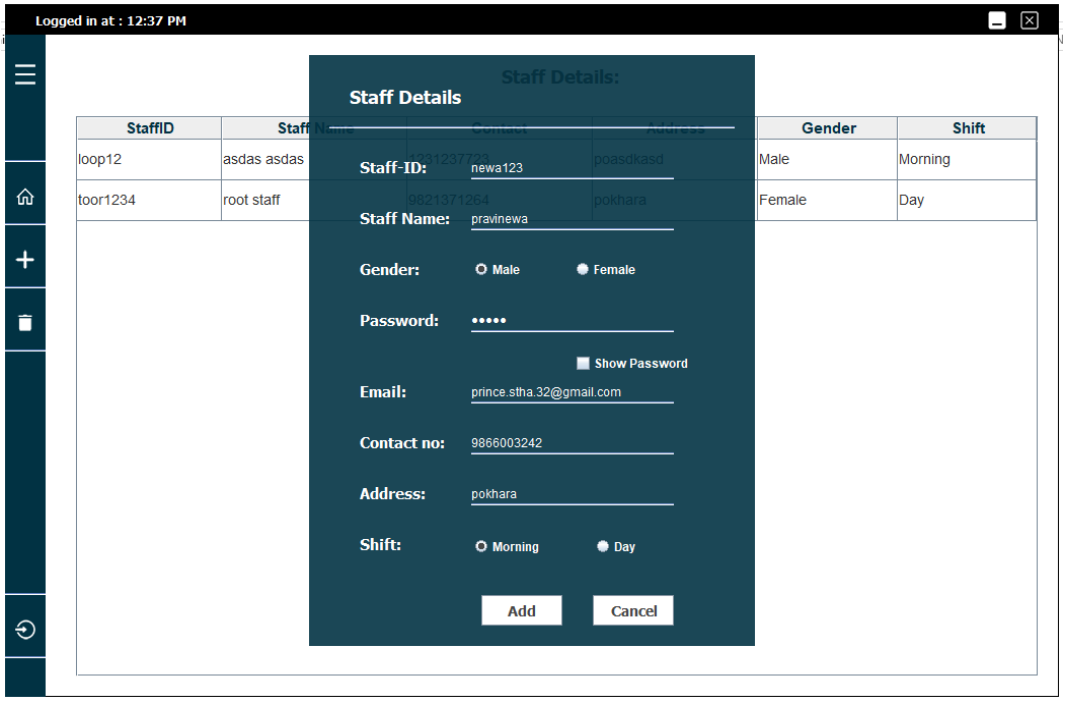


Figure: Staff Signup Form by Admin

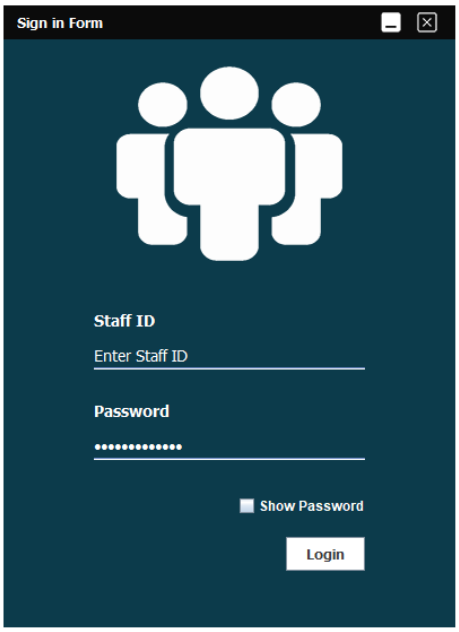


Figure: Staff Sign in panel

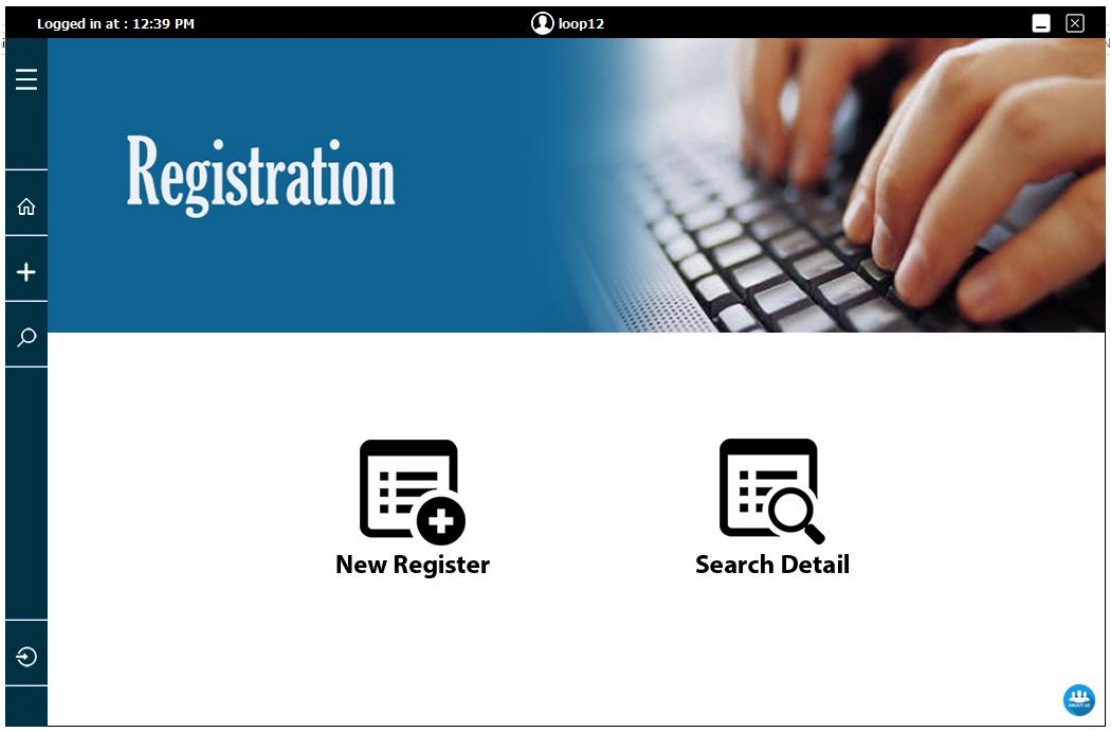


Figure: Staff welcome panel

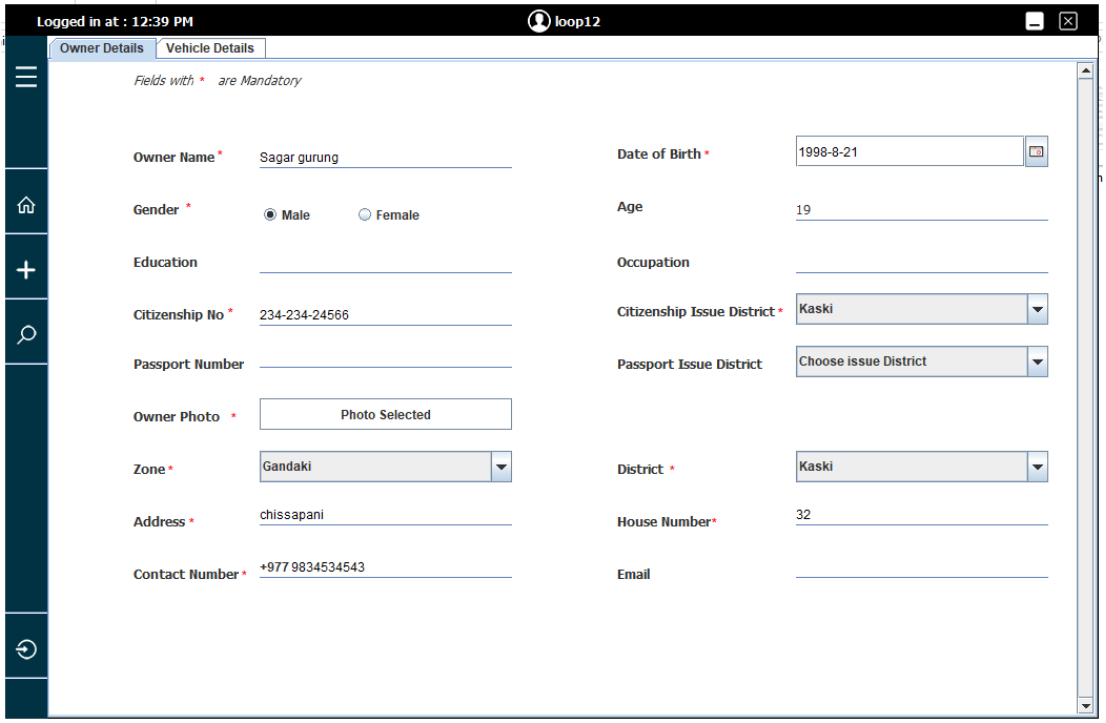


Figure: Owner details registration panel

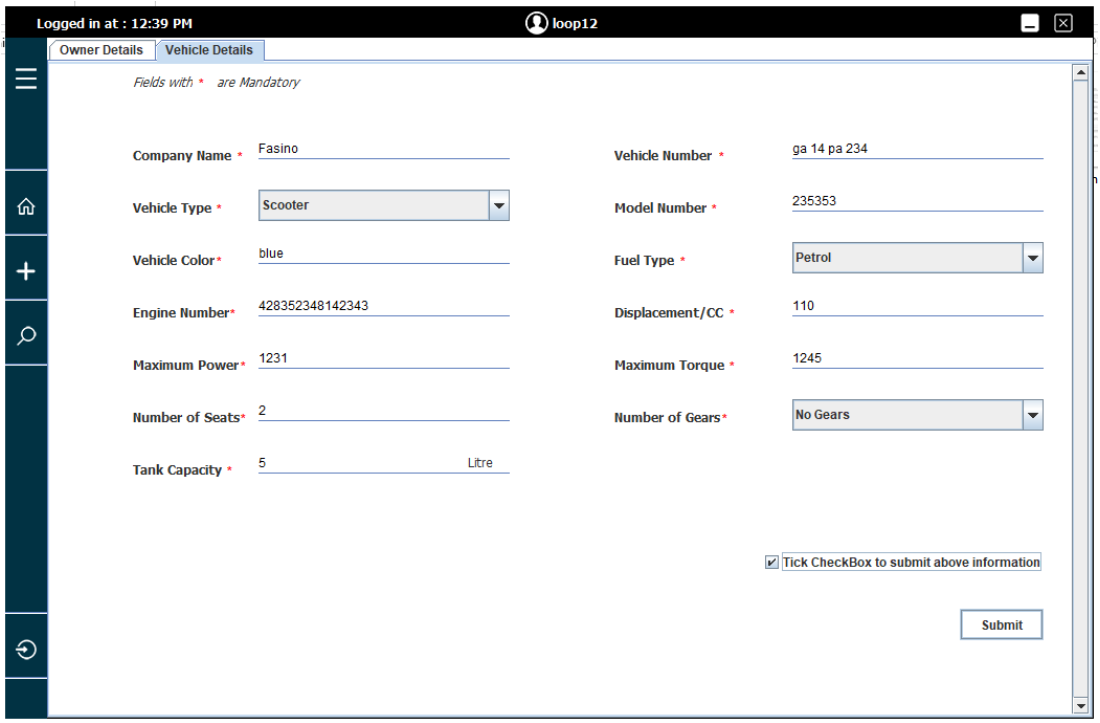


Figure: Vehicle details registration panel

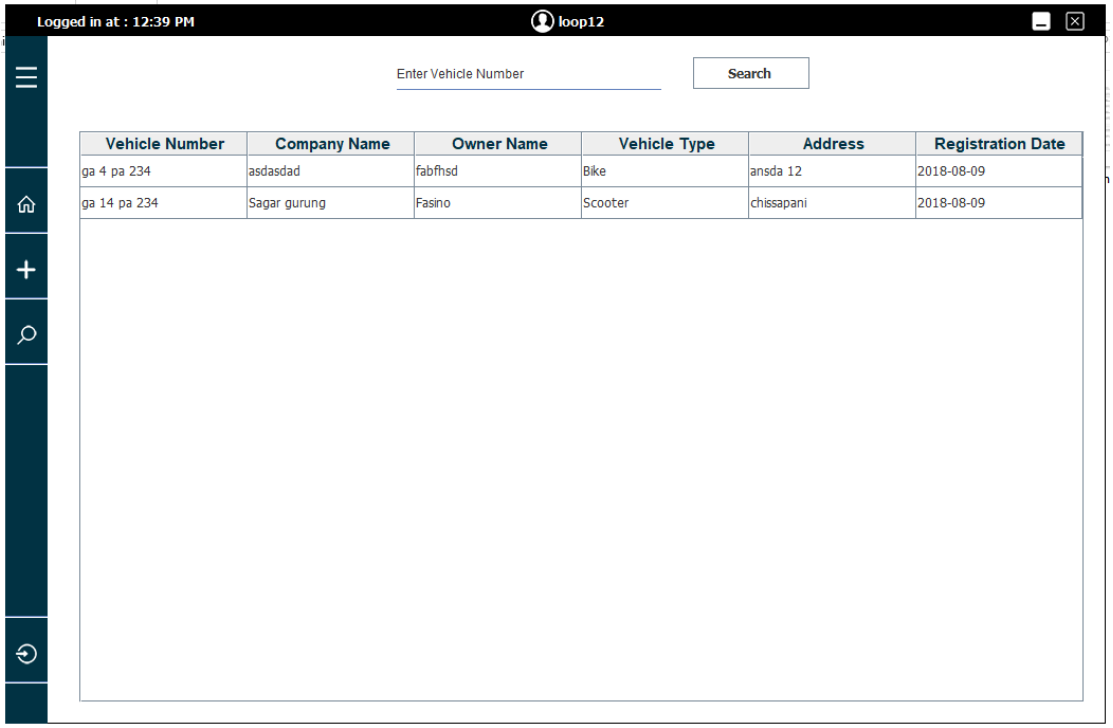


Figure: Searching details panel

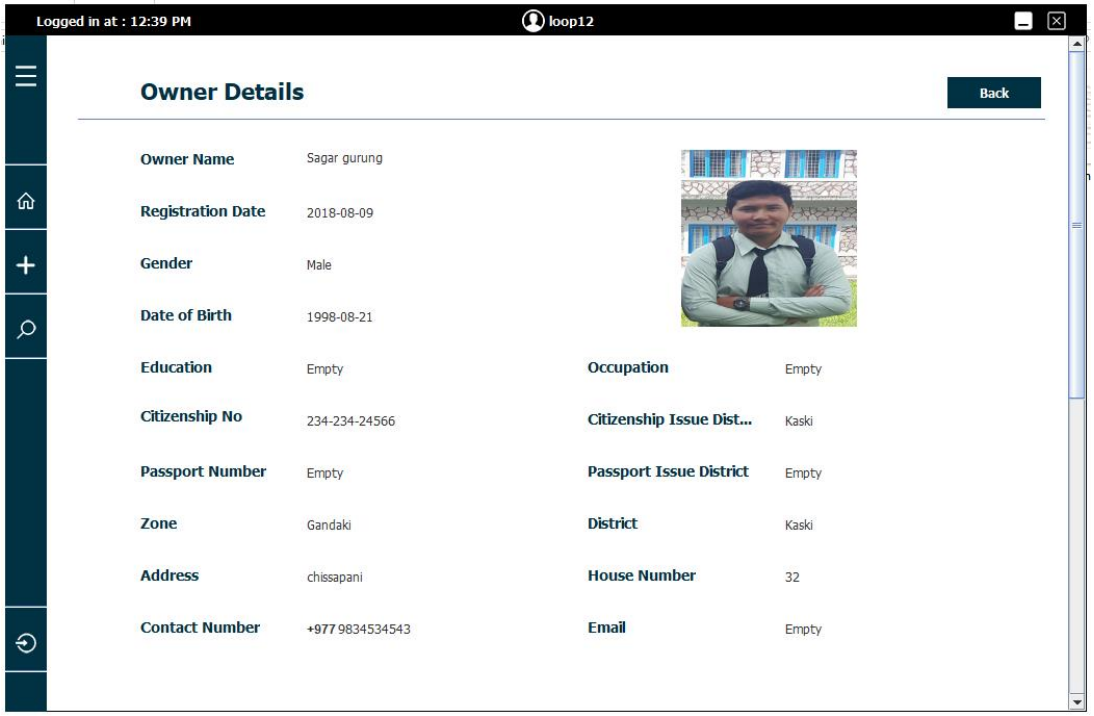


Figure: Owner details panel

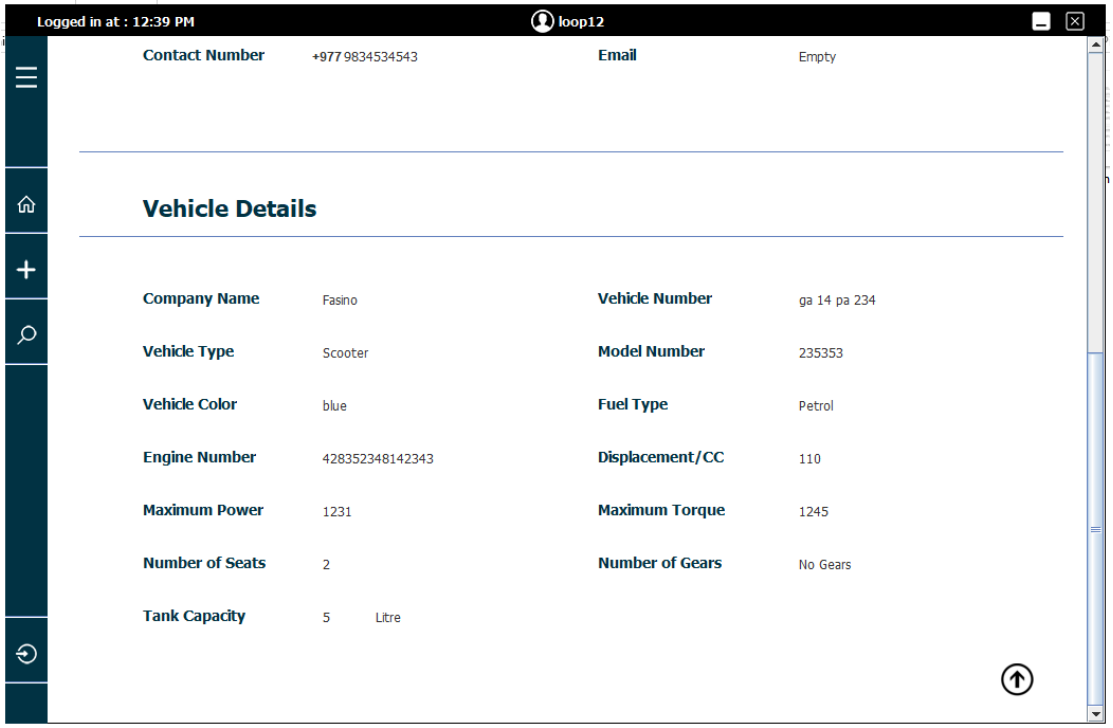


Figure: Vehicle details panel