VEHICLE MANAGEMENT SYSTEM

Project report submitted in fulfillment of the requirement for the Degree of Bachelor of Technology

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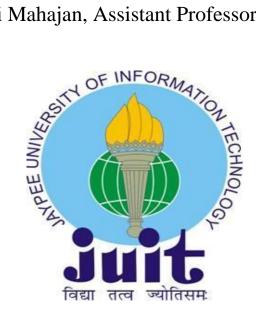
Computer Science and Engineering

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Vehicle Management System 2015-16

Candidate's Declaration

We hereby declare that the work presented in this report entitled "Vehicle Management

System" in partial fulfillment of the requirements for the award of the degree of Bachelor of

Technology in Computer Science and Engineering submitted in the department of

Computer Science & Engineering and Information Technology, Jaypee University of

Information Technology, Waknaghat is an authentic record of my own work carried out over

a period from August 2015 to May 2016 under the supervision of Miss Ruhi Mahajan,

Assistant Professor CSE Dept.

The matter embodied in the report has not been submitted for the award of any other degree

or diploma.

Aman Deepak Moudgil (121224)

This is to certify that the above statement made by the candidates is true to the best of my

knowledge.

Miss Ruhi Mahajan,

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Dated: 28-05-2016

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Vehicle Management System 2015-16

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completing the project.

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Aman Deepak Moudgil (121224)

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List of Abbreviations

- 1. W.r.t with respect to
- 2. URS User Requirements Specifications
- 3. VMS Vehicle Management System
- 4. Fig. Figure
- 5. empID Keyword for Employee ID
- 6. userID Keyword for User ID
- 7. Vehicle No Vehicle Number
- 8. NVD Nearest Vehicle Dispatch
- 9. IS Insertion heuristic
- 10. HAS Hybrid Simulated Annealing
- 11. Et al. et alia (Latin Phrase means and others)
- 12. Admin Keyword for Administrator
- 13. GHz Giga Hertz
- 14. GB Gigabytes
- 15. MB Megabytes
- 16. RAM –Random Access Memory
- 17. JDK Java Development Kit
- 18. Int- Integer

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Abstract

Vehicle Management System has four types of users Admin, Employees, Drivers and Users. There is only one Admin in this software. Admin can add new users to software.

The software is intended to do two major tasks i.e. Booking Management and Fleet Management. Booking Management keeps track of all the vehicle bookings related transactions. It includes New Vehicle Registration, Listing Vehicles, Checking Availability, Booking Vehicles, Booking Cancellation, Fare Calculation, Booking History.

While Fleet Management keeps track of vehicles. It includes Repair and Maintenance Logs, Fuel Logs, Lubricant Logs, Distance Logs, Parts Changed Records and Vehicle Ratings.

It also keep track of expenses and bills of the company. Daily Reports can be generated on the basis of these input data collected by Bookings and Fleet Management Modules. User may also print these details if he wants to. It has a Feedback Module where customers of the company can give their feedbacks. A customer can also Rate a vehicle if he had booked it in past. Different types of users have different privileges to the software. Admin has the maximum access to the software.

1. INTRODUCTION

1.1 **Introduction**

Vehicle Management System is a windows application which aims to minimize the effort put in company to maintain their transactions. It manages all the transactions related to Vehicle profiling, Vehicle Bookings, Fleet management, Booking Details, Daily Expenses, Daily Reports and Customer Feedbacks of the company.

In this software, There is an Admin. Admin can add new users to the system. Guest can use the software only after they are registered to the system. Users can retrieve their Password if they have forgot using their email id.

While Register, A Guest User can register as

- Employee
- Driver
- User

There are basically 8 modules in this software

- Login/Registration
- Profiles
- Vehicles
- Fleet Management
- Booking Charts
- Expenses
- Reports
- Feedback

Registration for new user will be available on login page and registration for employees can be done by Admin only. And driver registration can be done by both admin & employee.

In Login Page, enter username and password which will be further authenticated and recognize their username as admin, Employee, Driver or User accordingly functional window will open.

In Profile module a admin can add a new users to the database. He can set the details of the staff and the users also, while users and employees will only be able to see their details and update the information in this module. Only admin can add or drop the users.

In Vehicles modules, all the vehicles are listed there. Every user has the privilege to add vehicles and all of them can view the available vehicle. They can also book the available vehicles from there but only admin can delete vehicles from the list.

In Fleet Management module, Only staff and admin has the privilege to access it. It contains all the information related to the vehicles their distance monitoring, Fuel consumptions, Present Location, Repair and Maintenance records and upcoming schedules and history of parts changed. It also includes the vehicle tracking privileged only to the admin.

Booking charts will provide you with the list of booked seats with customer ID, customer name & contact number in case he/she is late.

In Expenses, employees and drivers will enter expenses like petrol expenses, electricity bills, etc.

Reports will organize data logs based on uploaded bills and expenses entered by Admin and employees. Admin can view all logs as expenses, fuel, distance and can also print & save the logs. These are generated on daily basis.

Admin will be able to see/check all the submitted/uploaded bills by the employees & drivers w.r.t dates. and employees & drivers have to upload bills for any reported expenses by them. And also they can see all bills submitted by themselves.

All these details can be seen in Reports module of the software.

Feedback module is used to get feedbacks from the users and admin is able to view the feedbacks submitted by different user.

FEATURES

ADMIN

- ➤ View/Edit/Delete Vehicle Details
- ➤ View/Edit/Delete User Details
- ➤ Add New User/Employee/Driver
- ➤ Book Vehicle
- Booking History
- ➤ Booking Status Detail
- ➤ View Booking Charts
- ➤ Add or Change Fuel Expenses Details
- ➤ Add or Change Lubricant Expenses Details
- View and Add Distance Logs
- ➤ View and Add Vehicle Repair History
- ➤ View and Add Vehicle Maintenance History
- ➤ View and add Expenses
- View Feedbacks
- View and Print Daily Reports

EMPLOYEE MODULE

- ➤ Login/Registration of User
- ➤ View and Update Employee Profile
- ➢ Book Vehicle
- Booking History
- ➤ View Booking Charts
- ➤ Add Fuel Expenses Details
- ➤ Add Lubricant Expenses Details
- ➤ Add Distance Logs
- ➤ Add Vehicle Repair History

- > Add Vehicle Maintenance History
- ➤ Add Expenses
- ➤ Give Feedbacks
- ➤ View and Print Daily Reports

DRIVER MODULE

- ➤ Login/Registration of User
- ➤ View and Update Employee Profile
- Booking History
- ➤ View Booking Charts
- ➤ Add Distance Logs
- ➤ Add Vehicle Repair History
- ➤ Add Vehicle Maintenance History
- ➤ Add Expenses

USER MODULE

- ➤ Login/Registration of User
- > View and Update User Profile
- ➤ View Vehicle Details
- ➤ Book Vehicle
- Booking History
- ➤ Give Feedback

1.2 Problem Statement

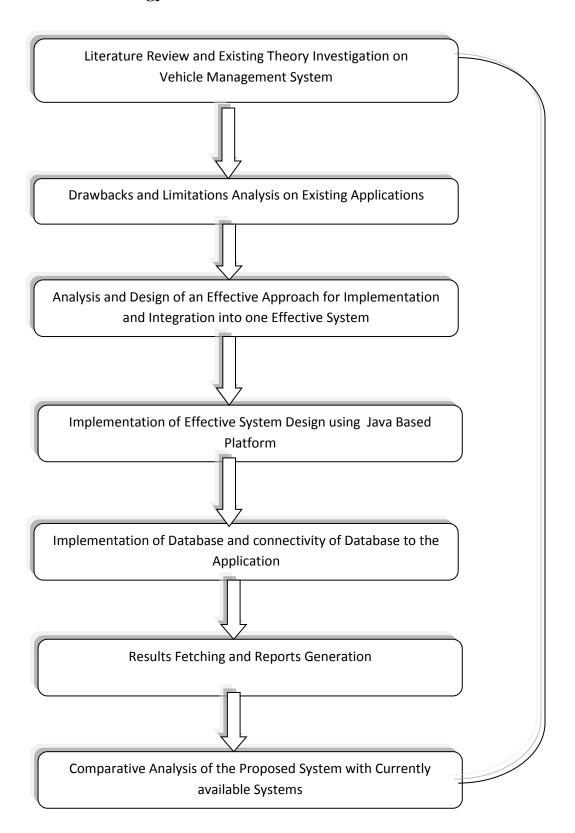
Vehicle Management System is an software application which fulfills the requirement of a typical management of details of vehicles, staff, expenses and the fleet and reports in a company along with Booking option. It provides the interface to users in a graphical way to manage the daily transactions. Also provides the Management Reports like Vehicle Request details, Vehicle Request Status, Vehicle fuel Consumptions, Vehicle Distance Records, Vehicle Repair and Maintenance Records and User Feedbacks.

The systems that are available now a days are manual ones in which users are maintaining ledgers, books etc to store the information like vehicles details, Booking details, Vehicle requests and approvals, Reports Management etc.

1.3 Objectives

- 1. The aim of this application is to reduce the manual effort needed to manage transactions in a company.
- Application provides an interface to users to view the details like the Trans
 Vehicle details, Vehicle Booking, Profile Management, Repair and
 Maintenance schedules, Expenses Details, Daily Reports and Feedbacks.
- 3. Increases the profitability of the company by reducing the cost to purchase different software for different tasks to be performed.

1.4 Methodology



1.5 Organization

Chapter 1: Highlights and Underlines of the Vehicle management system. In this chapter, the introduction Vehicle Management System is covered. The key focus defining the problem statement and specifying the objectives of the project.

Chapter 2: The detailed literature review from the research paper, books, journals and conferences are done. In this chapter, the extracts from assorted research papers vehicle management, Taxi sharing automation and Fleet management.

Chapter 3: Covers the system development which is the key aspect of this work. In this chapter, the proposed model, algorithm and related parameters are emphasized.

Chapter 4: The simulation of implementation results with the relative performance analysis is shown in this chapter. The simulation results and screenshots are revealed to depict and defend the proposed work.

Chapter 5: Detailed conclusion and scope of the future work which guides the upcoming students and research scholars to enhance the current work with higher efficiency and effectiveness on Vehicle Management System.

2 LITERATURE SURVEY

For completion, justification and solving the problem definition, a number of research papers, magazines, journals and online links are investigated in details.

In this chapter, the details of research papers and journals are specified from where we have analyzed the content and formulated the problem.

A number of research scholars and scientists has written a number of research papers and found excellent results. This section underlines all those research papers and their extracts.

Jung, Jayakrishnan, and Park et al. [1] proposed *Design and Modeling of Real-time Shared-Taxi Dispatch Algorithms*. In this paper, an optimization scheme is developed for the real-time vehicle routing in fully flexible shared-taxi systems and a simulation study is conducted to investigate how such a shared-taxi system can improve passenger travel compared to conventional taxi services by utilizing vehicle resources more efficiently. Real-time shared-taxi operation with associated algorithms is studied with realistic scenarios, to evaluate the system performance and the efficiency of solving the vehicle routing problem.

Three different algorithms for shared-taxi are introduced and compared.

- (a) a Nearest Vehicle Dispatch (NVD) algorithm that is most commonly used in real Applications.
- (b) an Insertion heuristic (IS) that handles real-time passenger requests in a fast and simple manner.
- (c) a Hybrid Simulated Annealing (HSA) that assign passengers efficiently and dynamically to available vehicles.

Anurag Mandle, Akshay Jaiswal, Bhushan Dod, Roshan Lokhande et al. [2] focused on *Taxi Automation Using Real Time Adaptive Scheduling*. In TAS (Taxi Automation System), online dispatch of available taxis to current customer bookings is done with the aid of a satellite-based taxi automation system; the system utilizes a Global Positioning System (GPS) to automatically locate taxis in real-time. In handling current taxi online bookings, the major focus of taxi automation systems has been primarily on reaching individual customers in the shortest time possible to enhance customer satisfaction.

Proposed solution has an automated adaptive scheduling subsystem and shortest path algorithm which has the ability to match drivers and orders and to change their statuses automatically. While selecting the taxi during the allotment the different microeconomic data that is considered includes the following

- ✓ The current status of the taxi.
- ✓ The remaining distance of the journey of the already allocated taxi.
- ✓ Distance from the destination to the source i.e. from where the new request is generated.

A. Michael Berman, Sue M. Lewis and Anthony Conto et al. [3] focused on *Location-Aware Computing*. Proposed System that can sense the current location of a user or device and change behavior based on this location, such as GPS. Since a GPS device knows its current location, it can give directions to the GPS user for how to get to a new location and it can update these directions continuously as the device moves.

Practical concerns related to location-based services are accuracy of location information, visualization, timeliness of the information, and transparency of location information. Privacy concerns must be a part of the design for location-based services. Users must be aware of when they can be uniquely identified, who has access to their location data, and how long this data may persist.

Suhas Holla and Mahima M Katti et al. [4] focused on *ANDROID BASED MOBILE APPLICATION DEVELOPMENT and its SECURITY*. Android Mobile Application Development can be used to create innovative and dynamic third party applications. Mobile Development India has worked extensively on projects ranging from gaming software, organizers, media players, picture editors to go-cart devices and more. SQLite is embedded into android which supports relational database.

Detection algorithms can be deployed in the cloud, providing a fast and distributed detection of suspicious software in a mobile software store skin to Google's Android Market. The ultimate goal is to protect the mobile applications from the malicious attributes and safeguard the interests of Android mobile users.

3 **SYSTEM DEVELOPMENT**

3.1 Requirement Analysis

3.1.1 USER REQUIREMENT SPECIFICATIONS

The User Requirements Specification describes the needs for what users require from the system. User Requirements Specifications are written early in the validation process, typically before the system is created. They are written by the system owner and end-users, with input from Quality Assurance. Requirements outlined in the URS are usually tested in the Performance Qualification or User Acceptance Testing. User Requirements Specifications are not intended to be a technical document; readers with only a general knowledge of the system should be able to understand the requirements outlined in the URS.

The URS includes:

- Introduction Includes the scope of the system, key objectives for the project, and the application's regulatory concerns
- 2. **Program Requirements** The functions and workflow that the system must be able to perform
- 3. **Data Requirements** The type of information that a system must be able to process
- 4. **Life Cycle Requirements** Includes how the system will be maintain users requirement

3.1.2 FUNCTIONAL REQUIREMENTS

The major functionality of this product is divided into four categories.

- 1. Administrative User Functions.
- 2. Booking Functions.
- 3. User Functions.
- 4. Fleet Management Functions.
- 6. Report Management Functions.
- 7. Feedback Management Functions.

In this application each and every user must having their own User ID and Password, using these User ID and Password only they can directly enter into their corresponding Login forms.

1. Administrative User Functions

In this functionality the administrator will do his own responsibilities. Whenever he needs to change the Password, then he can directly change it. If any reason he needs to add a new user he can directly add.

The admin user can view the details of all the users and he can add or remove any particular users. He can view the details of all the employees of the company and any time he can add or remove any particular employee or employees.

This application mainly concentrated about the transport. The admin user can view the details of all the categories of the transport. This categories viewing list has shows the ID Number of the category, category code, how much amount per month, and how much distance allotted for the particular category, all these information will be provided.

The admin user can add and remove any particular category. The admin user can view the details of all the vehicles details which are presently using in the particular company. In this list also each and every vehicle has its own identification number, registration number of the particular vehicle, and the type of the vehicle either it is own or hire.

The administrator can add the vehicle depends upon the situation of the company. The admin user can view the details of all the routes. In this routes module the admin user can view the pickup points of the particular route. He can add or remove the pickup points of the route. He can view the details of all the vehicle requests which are posted from the employees. If he needs the transport facility, then he can also apply the vehicle request. He can add or remove the vehicles. He can view the details of all the vehicle requests of the employees.

2. **Booking Functions**

In this function, the Transport user can enter into his functionality using his own User ID and Password. After entering into his functionality, whenever he needs to change his password then he can directly change it. The Admin can view the details of all the users and the employees of the company.

The user can view the details of all the vehicles. He can view the details of all the routes. The transport user can view the details of all the vehicle requests which are posted from the employees of the company. After his careful verification only he can provide the transport facility to the requested employee. He can add or remove the request of the employee.

3. User Functions

In this Function, User could register to the software. He can see the listed vehicles available on the application with full description. He can book vehicle if he wishes to and also post his vehicle on rent by registering it on the application. After clicking on the vehicle name he gets the full information about the vehicle which he could use to make his decision according to his choice of vehicle and location of the vehicle.

Admin has full access to the fleet management, bill management, daily reports, expenses, cancellations and refunds functionalities while other users could only access the transport functionality. Employees could additionally access expenses and daily reports sections while drivers could access fleet management and expenses functionalities of the application.

4. Fleet Management Functions

This Function acts as the back bone of the Vehicle management system. It mainly has

- Fuel Logs
- Lubricant Logs
- Distance Logs
- Repair and Maintenance
- Parts changed records
- Vehicle Rating

In Fuel Logs, Admin and Employee can View and Add the Fuel consumption details along with bill details to the system.

In Lubricant Logs, Admin and Employee can View and Add the Lubricant consumption details along with bill details to the system.

In Distance Logs, Admin and Employee can View and Add the Distance travelled by the vehicle and its fuel efficiency. It helps in determining the vehicle rating.

Repair and Maintenance Logs keeps the track of Repair and Maintenance History and coming Schedules for all the vehicles and Parts Change Records keeps the track of changed parts of vehicles.

Vehicle Rating are generated for all the listed vehicles on the basis of fuel efficiency, Aging and User Reviews.

5. Bill Management Functions

This function is accessible only to admin and employees. It keeps the soft copy of all the expenses made by the company. Admin, Employees and Drivers can add soft copies of the bills while entering the expenses for proof while only admin has the privilege to see the soft copies at any time if he needs to.

It offers

- View Bills
- Search Bill
- Print Bill

6. Reports Management Functions

Reports Module keeps the tracks of different transactions made by the company. It enables user to save and print the required information generated by the software after analysis.

Admin and Employee has the privilege to view Reports. It has Menu Options

- View Expenses
- View Fuel Logs
- View Repair & Maintenance Logs

Reports are generated on daily basis hence View Reports by Date option is available in this module.

7. Feedback Management Functions

Feedback Function has three main parts

- Give Feedback
- Check Feedback
- Rate a Vehicle

In Give Feedback, Only a User can submit its feedback to the system.

In Check Feedbacks, Admin and Employee both can check feedbacks submitted by the user along with user id, Date and Time of submission.

In Rate a Vehicle, Admin and User both can rate a vehicle. This rating affects the overall Rating of the vehicle.

3.1.3 NON FUNCTIONAL REQUIREMENTS

Nonfunctional requirements are the properties that your product must have. Think of these properties as the characteristics or qualities that make the product attractive, or usable, or fast, or reliable.

These properties are not required because they are fundamental activities of the product -- activities such as computations, manipulating data, and so on -- but are there because the client wants the fundamental activities to perform in a certain manner. They are not part of the fundamental reason for the product's existence, but are needed to make the product perform in the desired manner.

3.1.4 HARDWARE REQUIREMENTS

The minimum requirements needed to perform operations are

- Intel Pentium Processor at 2 GHz or Higher
- RAM 256MB or more
- Hard disk capacity 10GB or more

3.1.5 SOFTWARE REQUIREMENTS

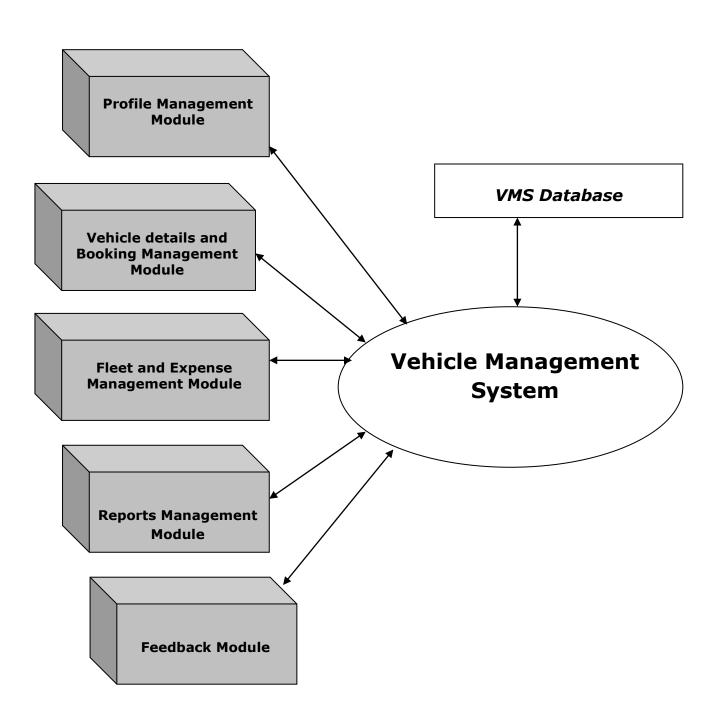
The software required to perform the implementation are

- Windows or Linux Operating System (Ubuntu, Fedora)
- JDK 8
- Eclipse / NetBeans IDE
- Dia The Diagram Editor
- Notepad++

3.2 SYSTEM DESIGN

3.2.1 Data Flow Diagram

Fig 3.1



3.2.2 Use Case Diagram

Fig 3.2

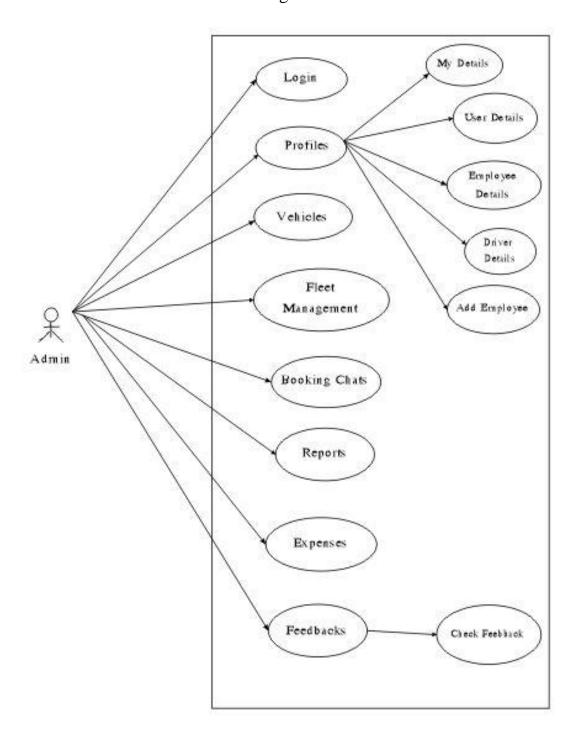


Fig 3.3

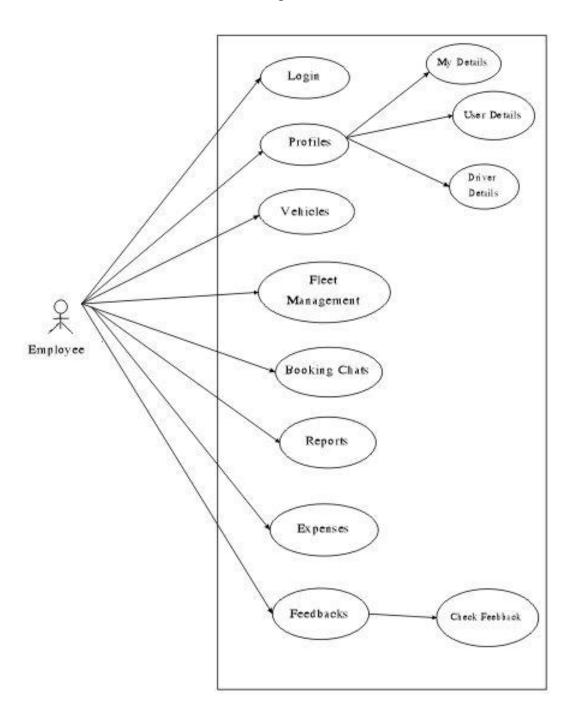


Fig 3.4

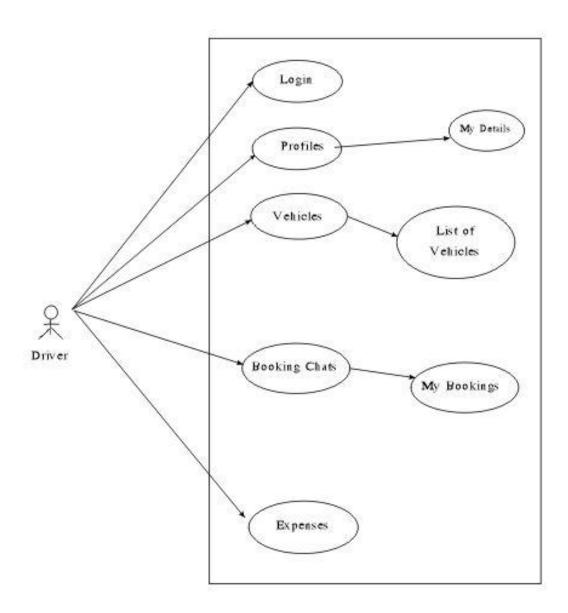
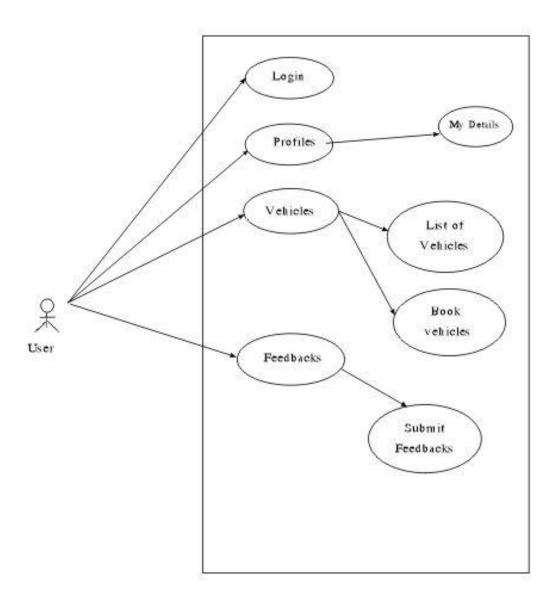
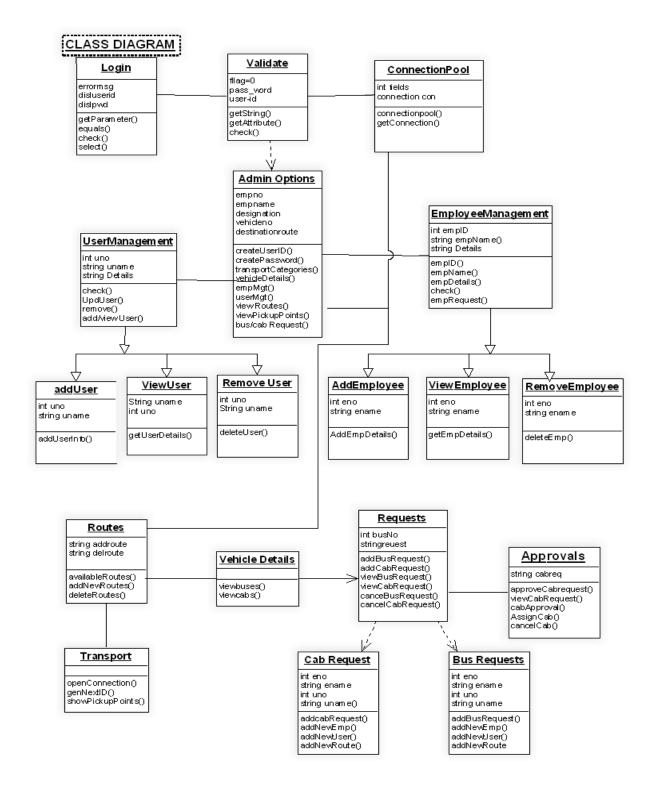


Fig 3.5



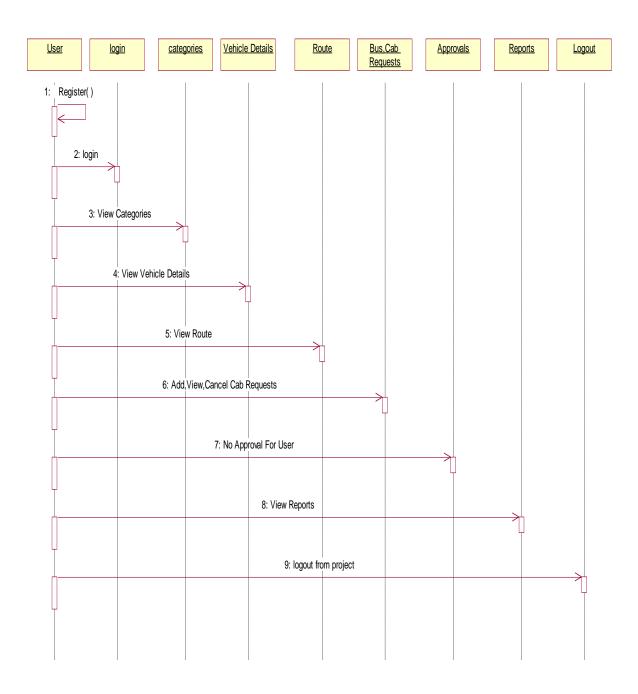
3.2.3 Class Diagram

Fig 3.6



3.2.4 Sequence Diagram

Fig 3.7



3.3 Database Tables

Table 3.1 userdetails

Primary key: UserID

Field	Туре	Collation	Attributes	Null	Default	Extra
<u>UserID</u>	int(5)			No	None	AUTO_INCREMENT
Name	text	latin1_swedish_ci		No	None	
UserName	varchar(15)	latin1_swedish_ci		No	None	
Password	varchar(20)	latin1_swedish_ci		No	None	
EmailID	varchar(30)	latin1_swedish_ci		No	None	
Address	varchar(100)	latin1_swedish_ci		No	None	
Mob_No	bigint(12)			No	None	
UserType	text	latin1_swedish_ci		No	None	

Table 3.2 vehicles

Primary key: VehicleNo

Field	Туре
DriverID	int(11)
VehicleName	varchar(40)
VehicleNo	varchar(40)
Location	varchar(40)
VehicleType	varchar(40)
PurchasedOn	text
Capacity	varchar(40)
VehicleImage	blob

Table 3.3 book vehicle

Primary key: BookingID (Auto Incremental)

Field	Туре
BookingID	int(10)
Name	text
EmailID	varchar(30)
Mob_No	bigint(12)
Address	varchar(100)
Location	text
DateOfBooking	date
BookedTill	date
VehicleNo	varchar(14)
VehicleName	varchar(20)
UserID	int(5)

Table 3.4 feedbacks

Field	Туре
UserID	int(5)
Name	text
EmailID	varchar(30)
Feedback	varchar(100)
Date	text

Table 3.5 expenses

Primary key: ExpenseID (Auto Incremental)

Field	Туре
<u>ExpenseID</u>	int(10)
UserID	int(5)
Date	text
TypeOfExpense	varchar(50)
Description	varchar(50)
Location	varchar(20)
Amount	float
BillImage	blob

Table 3.6 partschanged

Primary key: VehicleNo

Field	Туре
UserID	int(5)
VehicleNo	varchar(14)
Date	date
PartNo	varchar(10)
PartDescription	varchar(50)
PartPrice PartPrice	int(10)

Table 3.7 fuel

Primary key: VehicleNo

Field	Туре
UserID	int(10)
VehicleNo	varchar(14)
FuelType	text
FuelRate	float
BillAmount	float
FuelQuantity	float
BillNo	int(10)
Date	date
VenorName	varchar(30)

Table 3.8 lubricant

Primary key: VehicleNo

Field	Туре
UserID	int(5)
Description	varchar(100)
VehicleNo	varchar(30)
BillNo	int(10)
BillAmount	float
Date	date
Remarks	varchar(100)

Table 3.9 repair

Primary key: VehicleNo

Field	Type
UserID	int(5)
Category	text
VehicleNo	varchar(30)
Description	varchar(100)
BillNo	int(10)
BillAmount	float
Vendor Name	varchar(30)
Date	text
BillImage	blob

4 PERFORMANCE ANALYSIS

Screenshot 4.1 Login Form



All Users will Login Through this page. User Authentication is required here.

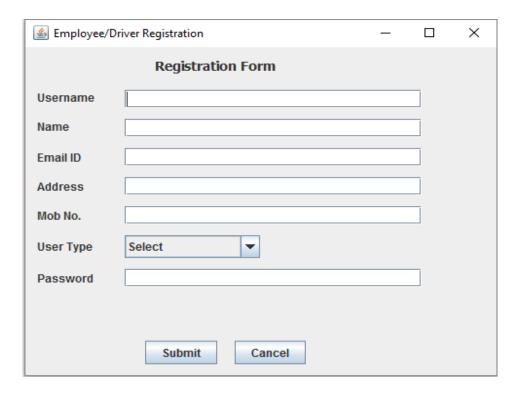
If a user is authenticated, then on the basis of User type different Main windows will open for different users.

If Username or Password is incorrect, it will show error message.

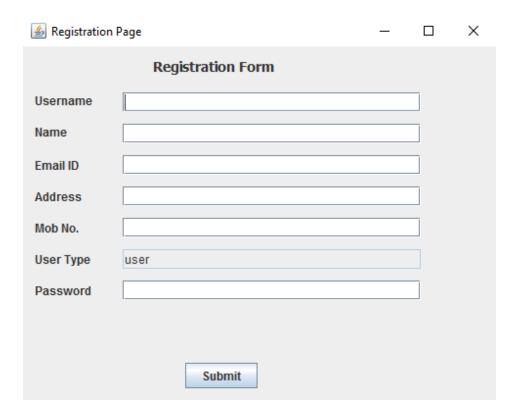
New Users can Register from the 'Not a User yet? REGISTER' Button.

If User forgot his password, he can use 'Retrieve Password' Button to retrieve password to registered email ID.

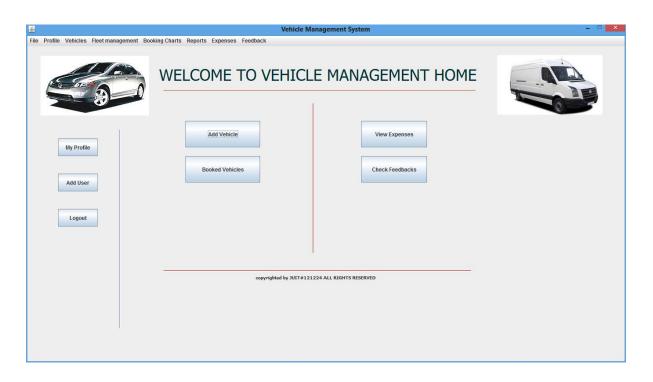
Screenshot 4.2 Employee/Driver Registration Form

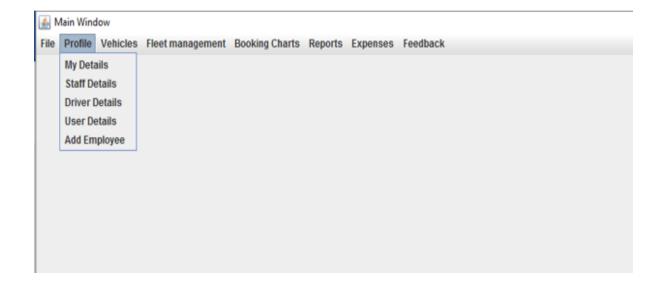


Screenshot 4.3 User Registration Form

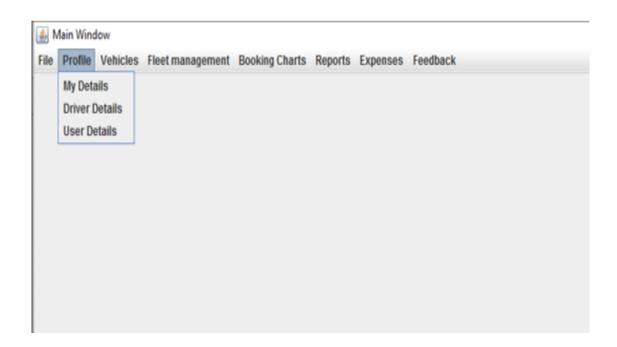


Screenshot 4.4 Admin Main Menu

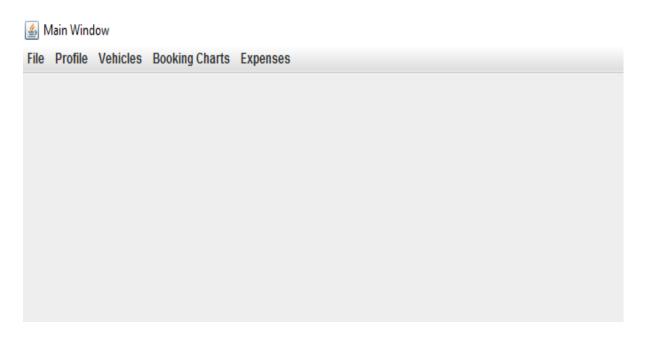




Screenshot 4.5 Employee Main Menu



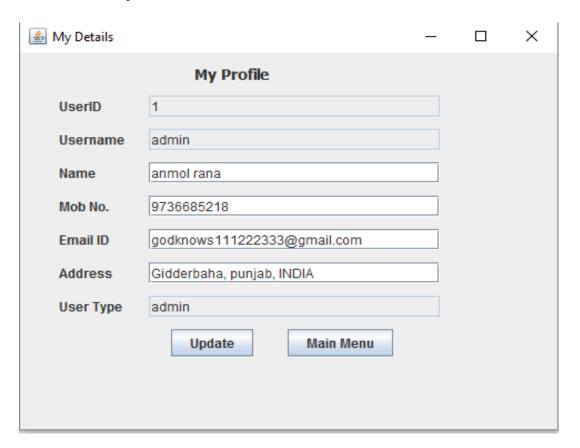
Screenshot 4.6 Driver Main Menu



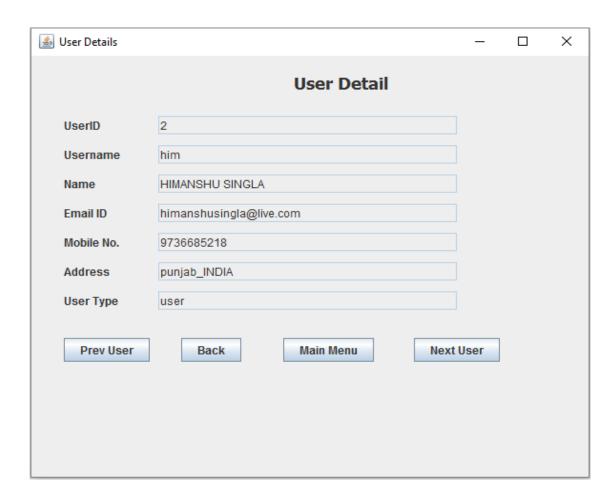
Screenshot 4.7 User Main Menu



Screenshot 4.8 Show/Update Profile



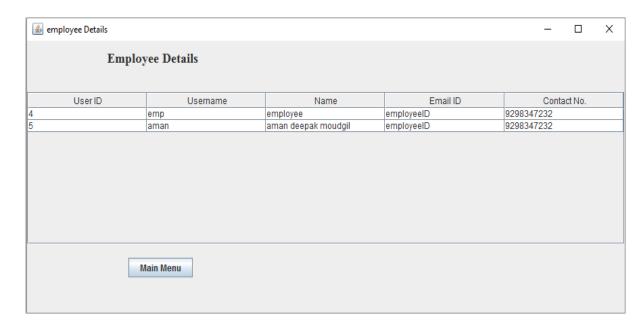
Screenshot 4.9 Show User Details to Admin



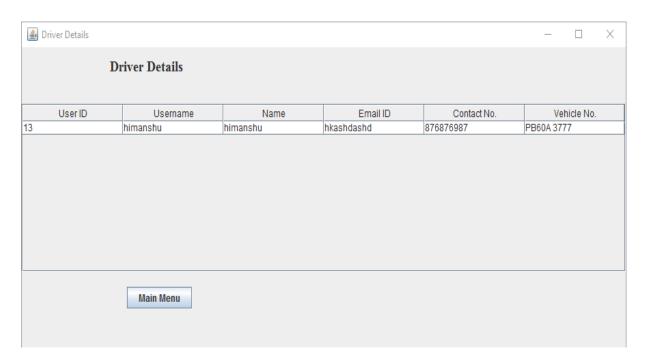
Admin can see the user details if he wish to see by entering userID.

'Next User' and 'Prev User' Buttons allows Admin to parse through userIDs.

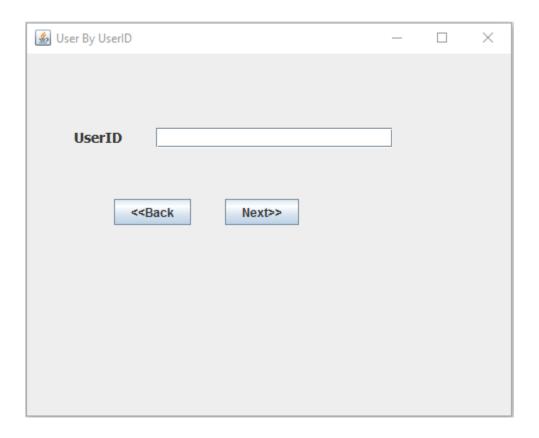
Screenshot 4.10 Show Staff Details to Admin



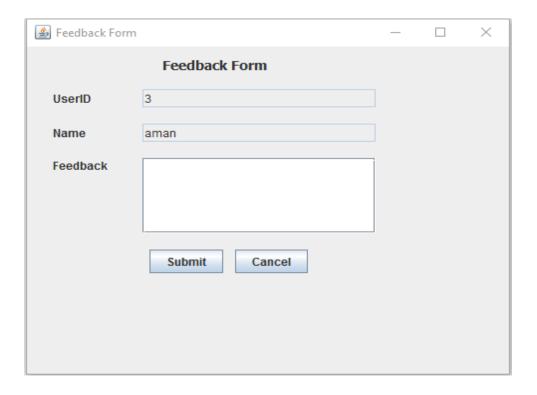
Screenshot 4.11 Show Drivers Details to Admin



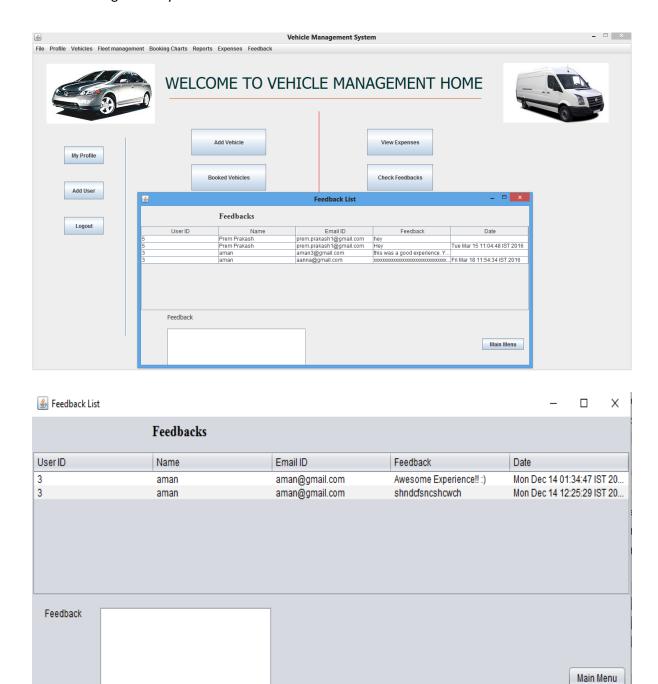
Screenshot 4.12 Show User By UserID



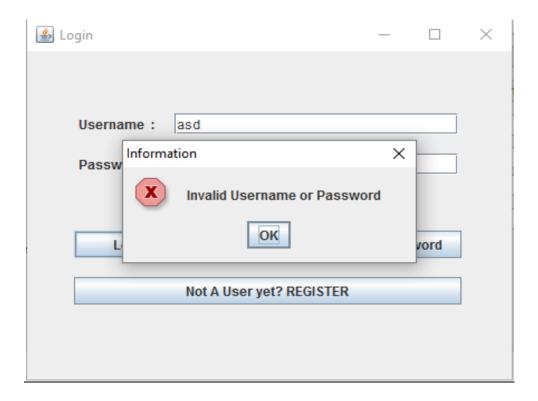
Screenshot 4.13 Submit Feedback Form



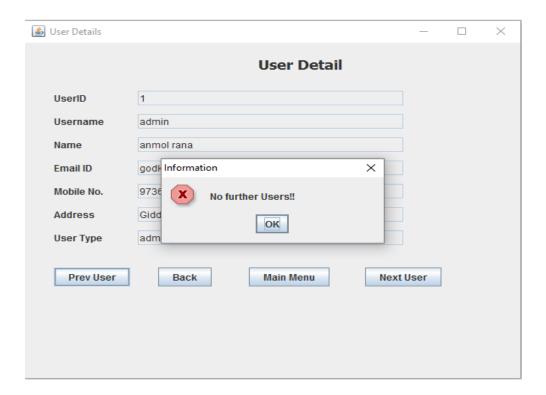
Screenshot 4.14 Check Feedbacks by Admin



Screenshot 4.15 Login Authentication Error



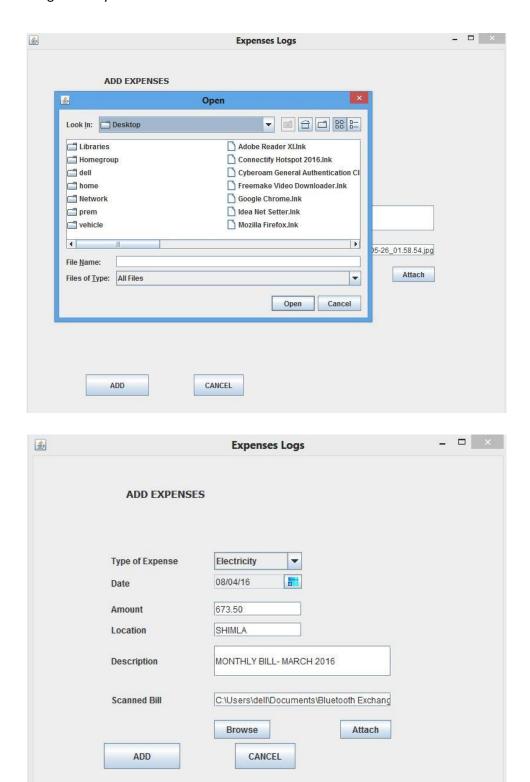
Screenshot 4.16 No Further User Error in User Details



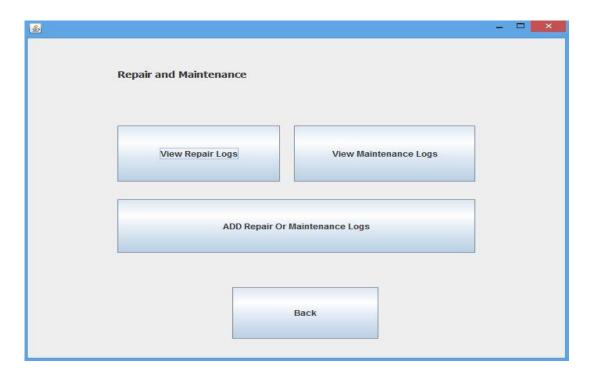
Screenshot 4.17 New Vehicle Registration

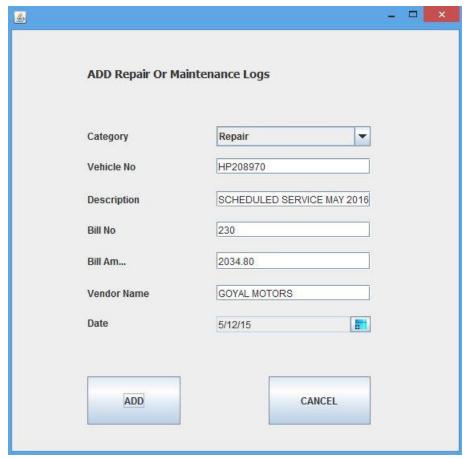
<u>\$</u>	Registration Page - 🗆 💌
	Vehicle Registration
Vehicle Name	MARUTI SWIFT
Vehicle Type	4 Wheeler
Driver ID	15 List of Drivers
Registration No.	HP208970
Capacity	4
Purchased on	30/08/14
Location	SHIMLA
Image	C:\Users\dell\Desktop\vehicle\cars\swift.jpg
	Attach Browse
	Register Cancel

Screenshot 4.18 Expenses Logs

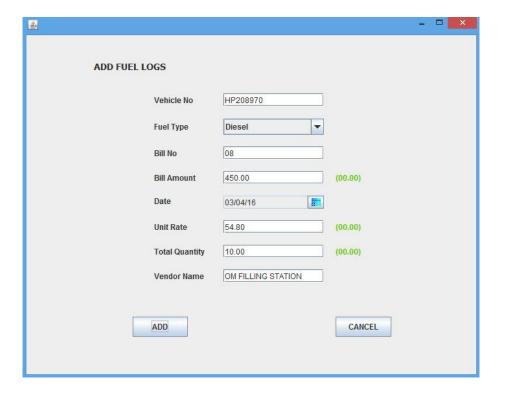


Screenshot 4.19 Repair and Maintenance Logs

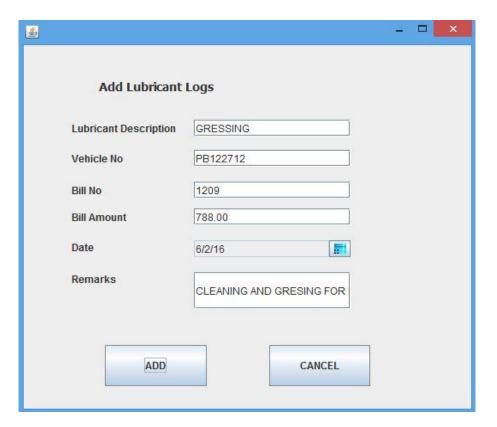




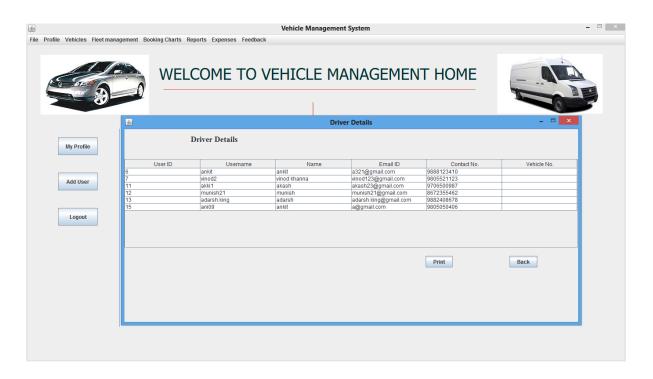
Screenshot 4.20 Fuel Logs

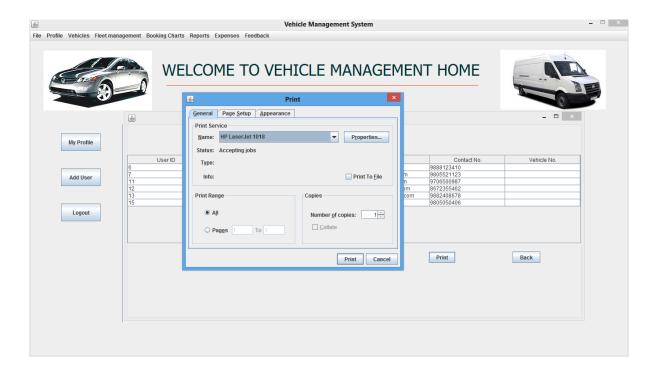


Screenshot 4.20 Lubricant Logs



Screenshot 4.21 Printing Reports





5 **Conclusions**

5.1 Conclusion

Vehicle Management application has rich user interface so that users can access the application easily. This application provides the management reports like Booking status, Occupancy report, Booking charts, Vehicle Rating, Fleet Management, Bill Management and Expenses Management.

Our project is only a humble venture to satisfy the needs in a library. Several user friendly coding have also adopted. This package shall prove to be a powerful package in satisfying all the requirements of the organization.

The objective of software planning is to provide a frame work that enables the manger to make reasonable estimates made within a limited time frame and integration of different applications into one software to reduce the cost implied to purchase software by the company at the beginning of the software project and should be updated regularly as the project progresses. Last but not least it is no the work that played the ways to success but ALMIGHTY.

5.2 Future Scope

- 1. Bookings in this application could be extended to Freight and Transportation bookings.
- 2. Mobile Application could be developed for the system to reach out to more users.
- Google Map Integration will add vehicle security while reducing illegal use of company vehicles.

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