

Project Report on

QUOTE GENERATION SYSTEM FOR VEHICLE LEASING COMPANY

at
Gateway TechnoLabs



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U.V. PATEL COLLEGE OF ENGINEERING



DD/MM/YY

CERTIFICATE

TO WHOM SO EVER IT MAY CONCERN

This is to certify that Mr./Ms. Hemant Kumar Mohapatra student of **B.Tech. Semester VIII (Information Technology)** has completed his/her full semester on site project work titled “**Quote Generation System for Vehicle Leasing Company**” satisfactorily in partial fulfillment of the requirement of Bachelor of Technology degree of Information Technology of Ganpat University, Kherva, Mehsana in the year 2019-2020.

College Project Guide

Sign

**Dr. Rakesh Vanzara,
Professor & Head, Information Technology**

Prof. Chirag Gami

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With immense pleasure, I would like to present this Internship report on “Quote Generation System for a Vehicle Leasing Company”. It has been an enriching experience for me to undergo my Software Project Major which would not have been possible without the goodwill and support of the people around me.

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I also want to thank the other staff of UVPCE for providing us atmosphere and necessary tools which we required during creations of the system. I want to especially thank to my classmates for suggestions and good support

ABSTRACT

What is a Private lease? A private lease is a contract with Services that lends cars to individuals based on requirements like leasing period, driving distance, customizations.

Why would I prefer leasing a car over a purchase? For the buyer, lease payments will usually be lower than payments on a car loan would be. Now a days car lovers prefer leasing as it allows them to simply return a car and select a new model when the lease expires, allowing them to drive a new car every few years without the responsibility of selling the old vehicle, or possible repair costs after expiry of the manufacturer's warranty.

As a buyer, I want to lease a car. Where do I go? What do I do? Welcome to Quote Generation System (QGS-VL). Our moto is to provide customers a platform where they can search through the car of their choice, customize the car, select lease period and then customers can make a payment for generated quote online without any hazards. Also, when the lease is over as a service, we take care of insurance, maintenance and reselling the cars.

Our Web Application is user friendly. We have secure authentication for login/signup. User can view cars and apply filters based on brand name, model name, price, type of transmission etc. Once the user has made a selection of a car with his/her choice of customization, they can go ahead with their choice of Insurance plan and lease period and final Quote will be generated in the system. Users have an option to make payment via secure channel for generated Quote.

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1.Introduction

A Business to Customer company required an application to the end-user where they leased out a selected vehicle from a list of the vehicles. The end-user generates a quote based on the requirement of the vehicle and gets approval on a quote by the business company before leasing. The Quote Generation System (QGS-VL) is a web-based application that includes designing and automating the client quotation for a selected vehicle. The system is being used for vehicle leasing company. Which means client can take vehicle from a vehicle leasing company for a fixed period of time at an agreed amount of money for the lease. At the end Fully detailed quote will be displayed as per choice and Further processes will be carried out once the admin approves the quote.

2.Project Scope

This project traverses a lot of area ranging from business concept to computing field and required to perform several researches to be able to achieve the project objectives.

The scope covers include:

Web-platform means that the system will be available for access 24/7 except when there is a temporary server issues which is expected to be minimal.

General Customer as well as the company's staff will be able to use the system effectively.

3. Feasibility Analysis

Depending on the results of the initial investigation the survey is now expanded to A more detailed feasibility study. "**FEASIBILITY STUDY**" is a test of system Proposal according to its workability, impact of the organization, ability to meet needs And effective use of the resources. It focuses on these major questions:

- What are the Client's demonstrable needs and how does a system meet them?
- What resources are available for given Client's Requirement?
- What are the likely impacts of this system on the organization and Leasing Process ?
- Whether it is worth to solve the problem?

During feasibility analysis for this project, following primary areas of interest are to be considered. Investigation and generating ideas about a new system does this.

Steps in feasibility analysis:

Eight steps involved in the feasibility analysis are:

- ✓ Form a project team and appoint a project leader.
- ✓ Prepare system flowcharts.
- ✓ Enumerate potential proposed system.
- ✓ Define and identify characteristics of proposed system.
- ✓ Determine and evaluate performance and cost effective of each proposed system.
- ✓ Weight system performance and cost data.
- ✓ Select the best-proposed system.
- ✓ Prepare and report final project directive to management.

3.1 Technical feasibility

A study of resource availability that may affect the ability to achieve an acceptable system. This evaluation determines whether the technology needed for the proposed system is available or not.

- Can the work for the project be done with current equipment existing software technology & available personal?
- Can the system be upgraded if developed?
- If new technology is needed then what can be developed?

3.2 Time schedule feasibility

Time evaluation is the most important consideration in the development of project.

- The time schedule required for the developed of this project is very important since more development time effect machine time, cost and cause delay in the development of other systems.
- A reliable **Quotes Generation System Application** can be developed in the considerable amount of time.

3.3 Operational feasibility

It is mainly related to human organizations, transportation and political aspects. The points to Be considered are:

- What changes will be brought with the system?
- What organization structures are disturbed?

The system is operationally feasible as it very easy for the End users to operate it. It only needs basic information about Internet. Along with this it needs extra information about minimal vehicle parameters like fuel type, engine power, CO² emission etc.

3.4 Implementation feasibility

Implementation feasibility is the framework of facilitating and accelerating the successful implementation of a regional energy plan by evaluating whether the plan at hand is fiscally, technologically, legally, politically, administratively, culturally, and ethically feasible.

The implementation this project is possible and this web application and the concept is practical and ongoing with respect to all these parameters that are technologically, legally, politically, administratively, culturally, and ethically feasible.

3.5 Economic feasibility

Economic justification is generally the “Bottom Line” consideration for most systems. Economic justification includes a broad range of concerns that includes cost benefit analysis.

In this we weight the cost and the benefits associated with the client system and if it suits the basic purpose of the organization i.e. profit making, the project is making to the analysis and design phase.

- The financial and the economic questions during the preliminary investigation are
- verified to estimate the following:
- The cost to conduct a full system investigation.

- The cost of hardware and software for the class of application being

- considered.
- The benefits in the form of reduced cost.

- The proposed system will give the minute information, as a result the performance is improved which in turn may be expected to provide increased profits. This feasibility checks whether the system can be developed with the available funds.

The Quote Generation System does not require enormous amount of money to be developed. It only needs the third party to be convinced to involve in the project. The Project development can be done economically if planned judicially, so it is economically feasible. The cost of project depends upon the number of man-hours required.

4. Software and Hardware requirement

4.1 Software Requirements

- SQL Server Management Studio
- Visual Studio 2017
- VISUAL STUDIO CODE
- Postman
- IIS
- DbDesigner
- Any Web Browser (Google Chrome preferably)

4.2 Hardware Requirements

Server Side:

The web application will be hosted on connecting to Database server. The web server is listening on the web standard port, eg.port 8080

Client Side:

The system is a web-based application; clients are requiring using a modern web browser such as Mozilla Firefox 1.6, Internet Explorer 8. Internet Explorer 9, opera and google chrome. The computer must have an Internet connection in order to be able to access the system.

- ✓ Processor: Intel Pentium processor or higher processor
- ✓ RAM: 128 MB or Higher
- ✓ Hard disk space: up to 130 GB

5.Process Model

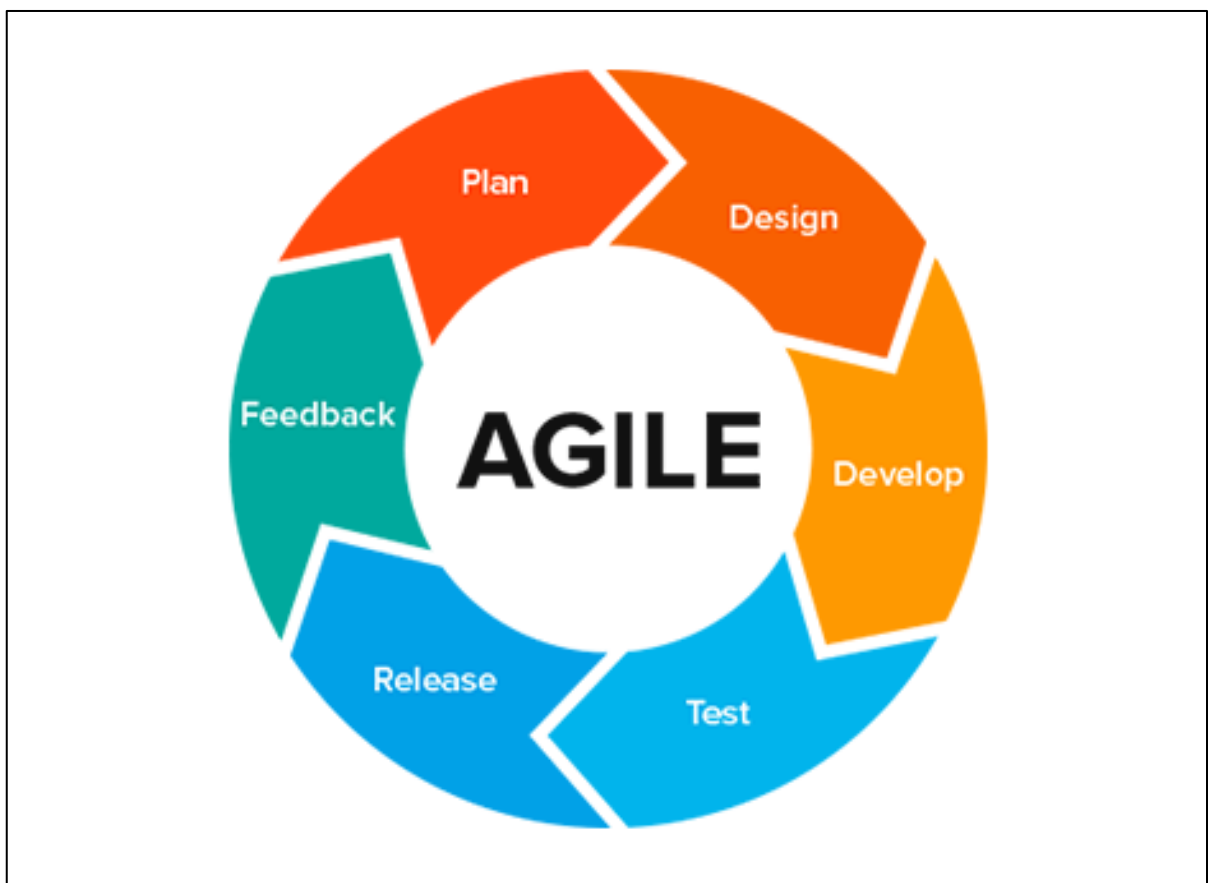
The project development approach of this project is **agile model**. In Agile model every project needs to be handled differently and the existing methods need to be tailored to best suit the project requirements. In Agile, the tasks are divided to time boxes (small time frames) to deliver specific features for a release.

Agile software development refers to a group of software development methodologies based on iterative development, where requirements and solutions evolve through collaboration between self-

organizing cross-functional teams. Agile methods or Agile processes generally promote a disciplined project management process that encourages frequent inspection and adaptation, a leadership philosophy that encourages teamwork, self-organization and accountability, a set of engineering best practices intended to allow for rapid delivery of high-quality software, and a business approach that aligns development with customer needs and company goals. Agile development refers to any development process that is aligned with the concepts of the Agile Manifesto. The Manifesto was developed by a group fourteen leading figures in the software industry, and reflects their experience of what approaches do and do not work for software development.

The agile software development emphasizes on four core values.

1. Individual and team interactions over processes and tools
2. Working software over comprehensive documentation
3. Customer collaboration over contract negotiation
4. Responding to change over following a plan



6.Project Plan

Below are mentioned List of major activities and estimated time duration in weeks:

Serial Number	Major Activities	Estimated Duration
1	Planning	1 Week
2	Flow Diagrams	1 Week
3	Database Diagrams	1 Week
4	Database Design	1.5 Weeks
5	Register and Login API Modules	2 Weeks
6	Car Details API	1 Weeks
7	Admin Side API Modules	1 Week
8	Home Page Design	0.5 Week
9	Register and Login Page Design	0.5 Week
10	Car Details Page Design	1 Week
11	Admin Side Page Design	0.5 Week
12	Payment Module	0.5 Week
13	Integration of Modules	0.5 Week
14	Testing	1 Week

Table 6.1 Project plan

7.System Design

7.1 Use Case Diagram

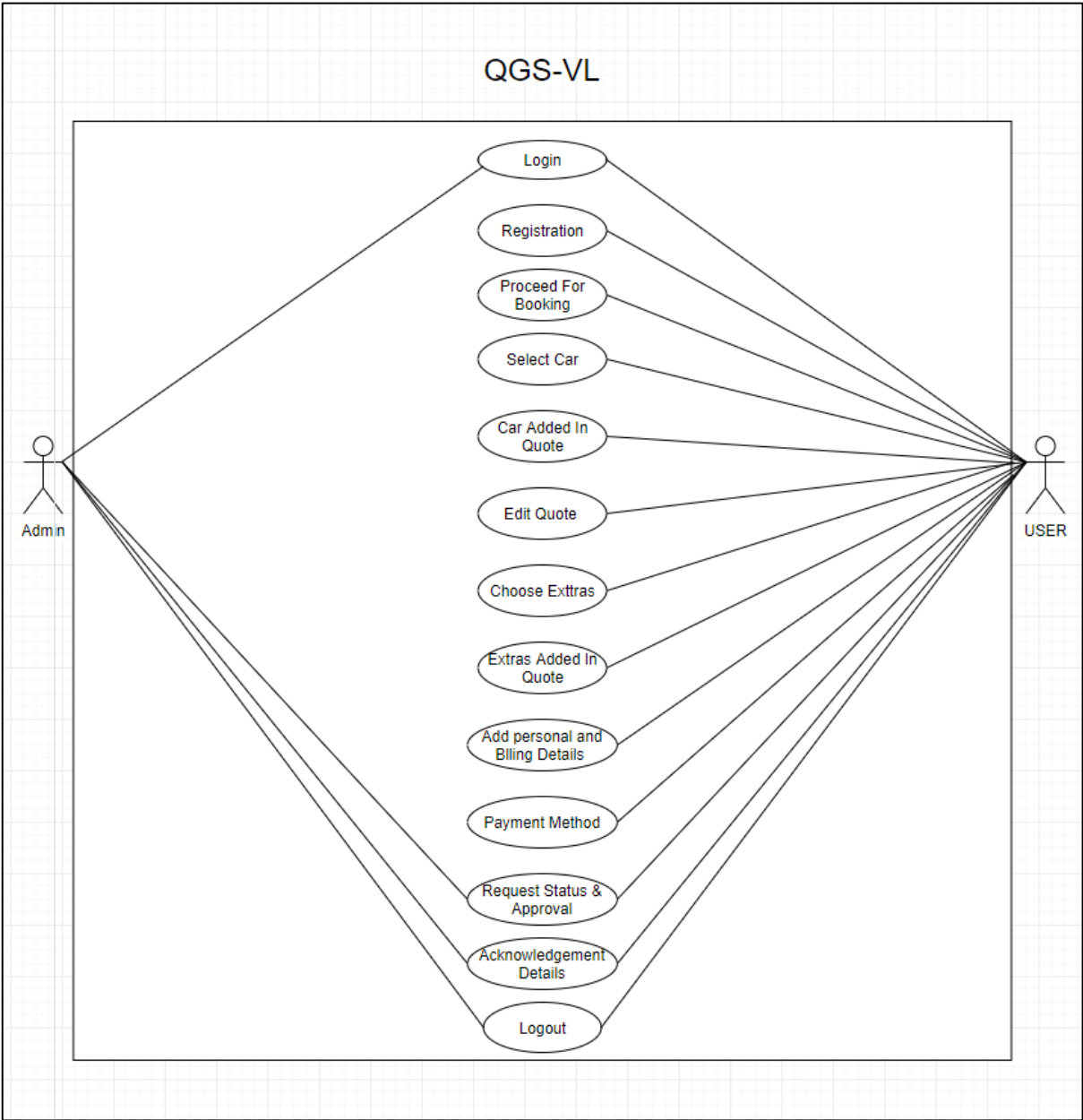


Fig 7.1 Use Case Diagram

```
classDiagram
    class CarDetails {
        CarID
        Car-Type
        Car_Plate
        Car-Colour
        Mileage
        Car-Status
        +getCarID()
        +getCarInfo()
        +getCarStatus()
    }
    class CarQuote {
        Insurance
        Extra Details
        Clients-Info
        Booking-Info
        Time and Location
        +getBookingInfo()
        +getLocationInfo()
        +getExtra()
    }
    class PaymentInfo {
        CardType
        CardNumber
        Amount
        +checkout()
    }
    class CarSearch {
        CarType
        Car Price
        Car Brand
        +getCarType()
        +getCarPrice()
        +getCarBrand()
    }
    class ClientDetails {
        ClientName
        ClientAddress
        ClientContact
        +getClientInfo()
    }
    class Admin {
        UserName
        Password
        ApprovalStatus
        +loggedIn()
        +carRequest()
        +getConfirmation()
    }
    CarDetails "1" -- "1" CarQuote
    CarDetails "Many" -- "1" PaymentInfo
    CarDetails "Many" -- "1" ClientDetails
    CarDetails "Many" -- "1" Admin
    CarSearch "Many" -- "1" ClientDetails
    ClientDetails "Many" -- "1" Admin
```

The UML class diagram illustrates the structure of a car rental system. It features six classes: CarDetails, CarQuote, PaymentInfo, CarSearch, ClientDetails, and Admin. CarDetails is a central class with attributes CarID, Car-Type, Car_Plate, Car-Colour, Mileage, and Car-Status, and methods getCarID(), getCarInfo(), and getCarStatus(). It has one-to-one relationships with CarQuote and ClientDetails, and many-to-one relationships with PaymentInfo, Admin, and CarSearch. CarQuote has attributes Insurance, Extra Details, Clients-Info, Booking-Info, and Time and Location, with methods getBookingInfo(), getLocationInfo(), and getExtra(). PaymentInfo has attributes CardType, CardNumber, and Amount, and a method checkout(). CarSearch has attributes CarType, Car Price, and Car Brand, with methods getCarType(), getCarPrice(), and getCarBrand(). ClientDetails has attributes ClientName, ClientAddress, and ClientContact, and a method getClientInfo(). Admin has attributes UserName, Password, and ApprovalStatus, and methods loggedIn(), carRequest(), and getConfirmation().

Fig 7.2 Class Diagram

7.3 Sequence Diagram

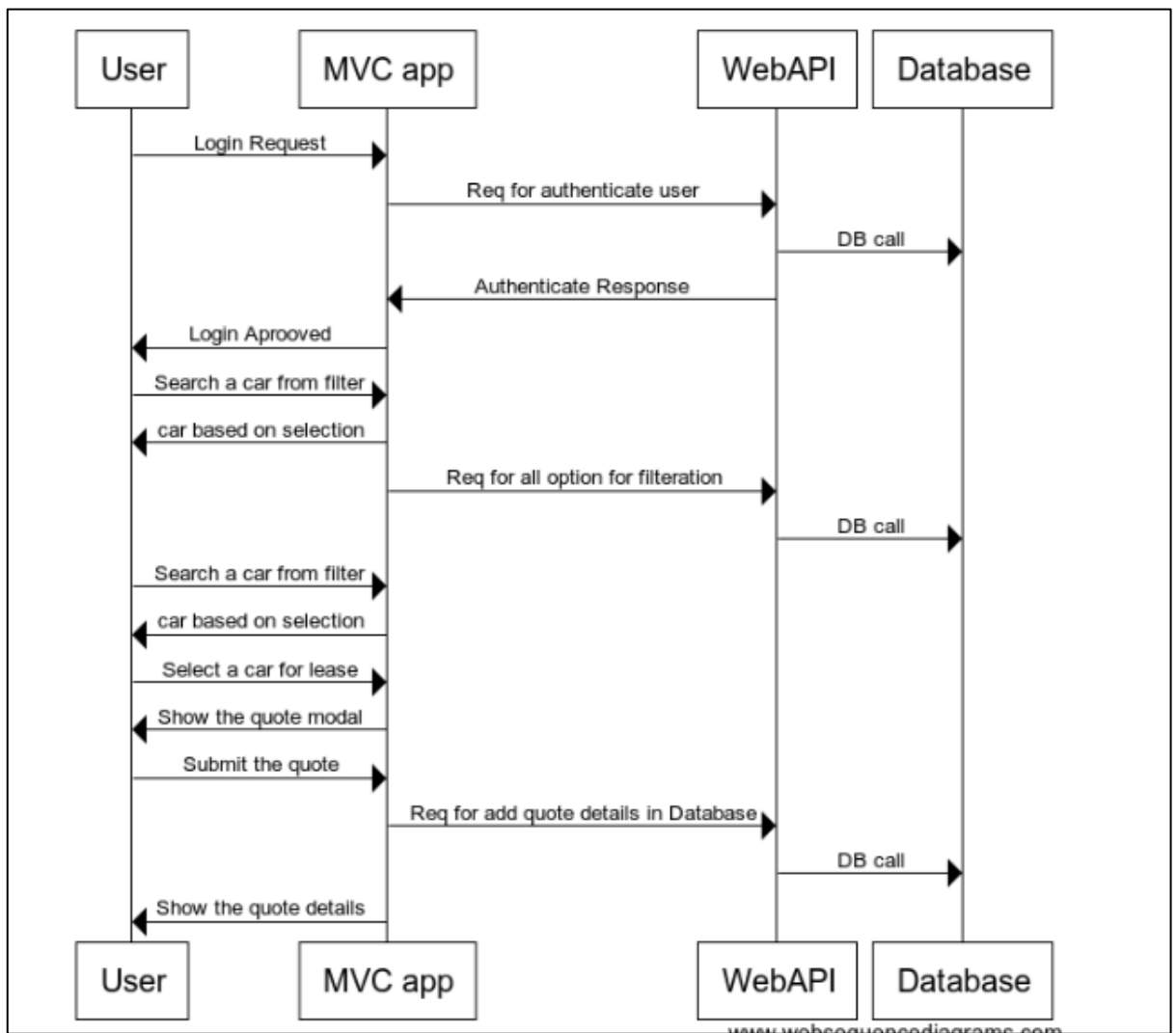


Fig 7.3 Sequence Diagram

7.4 Activity Diagram

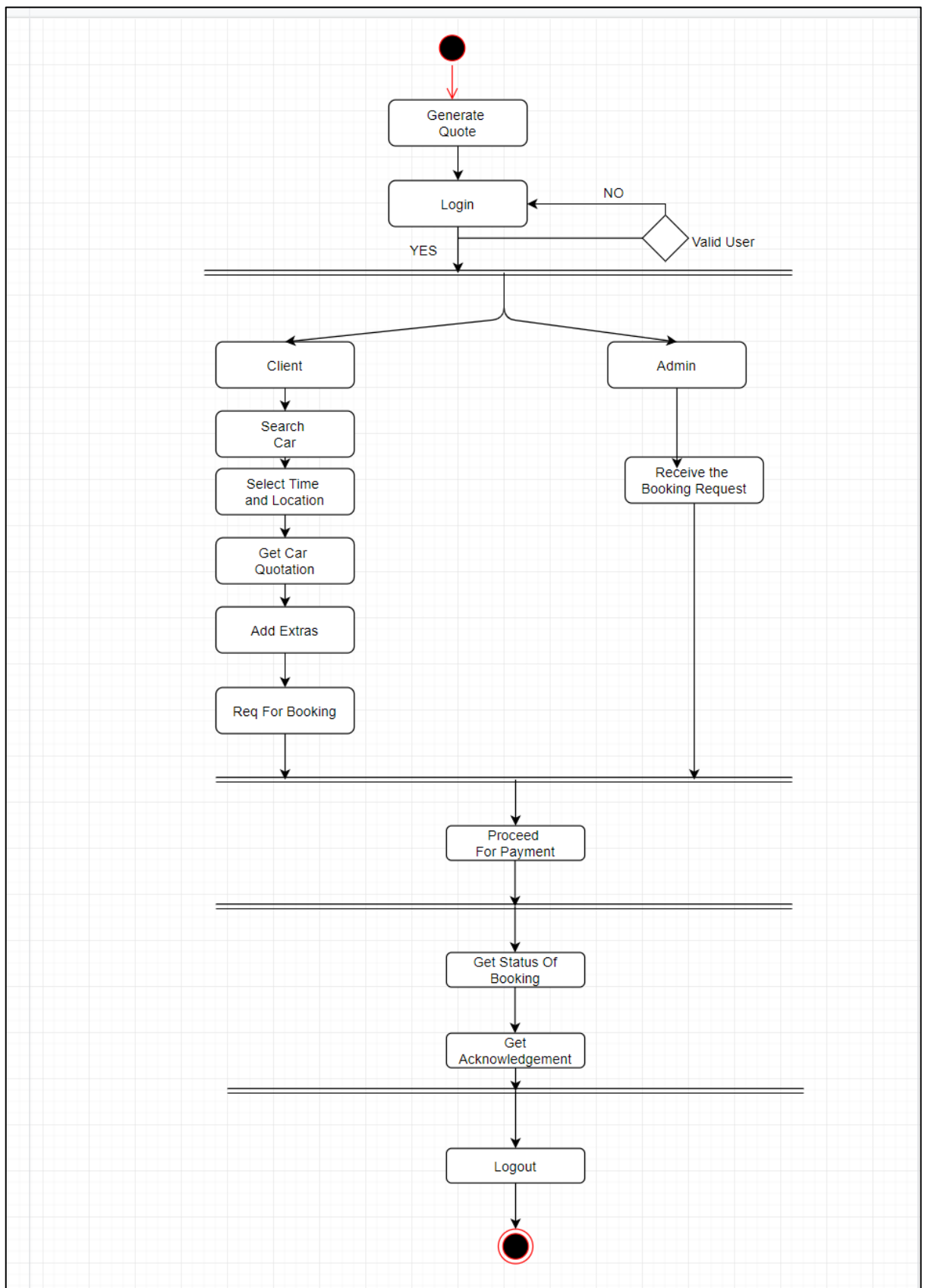


Fig 7.4 Activity Diagram

7.5 List of Tables

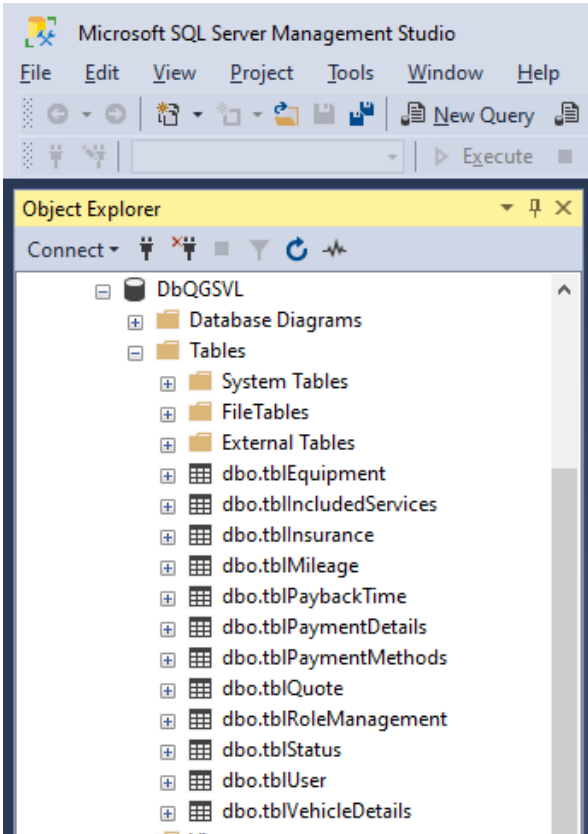


Fig 7.5 List of Tables

7.6 Table Design

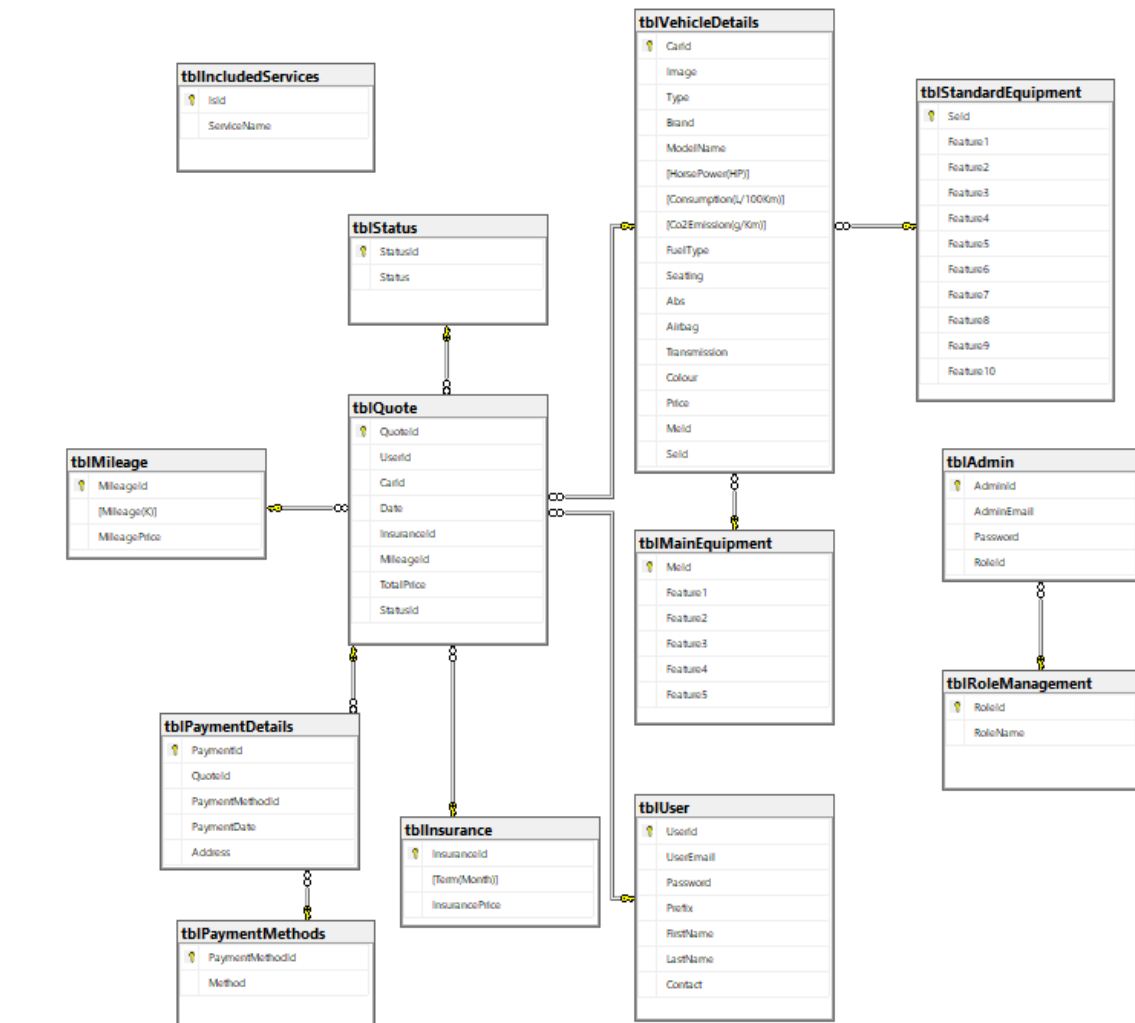


Fig 7.6 Table Design

7.7 Data Dictionary

7.7.1 tblVehicleDetails - Data Dictionary

INSPIRON\LOCALDB#....tblVehicleDetails				INSPIRON\LOCALDB#....tblVehicleDetails			
	Column Name	Data Type	Allow Nulls		Column Name	Data Type	Allow Nulls
🔑	CarId	int	<input type="checkbox"/>		CarId	int	<input type="checkbox"/>
	Image	nvarchar(MAX)	<input checked="" type="checkbox"/>		Image	nvarchar(MAX)	<input checked="" type="checkbox"/>
	Type	nvarchar(50)	<input type="checkbox"/>		Type	nvarchar(50)	<input type="checkbox"/>
	Brand	nvarchar(50)	<input type="checkbox"/>		Brand	nvarchar(50)	<input type="checkbox"/>
	ModelName	nvarchar(50)	<input type="checkbox"/>		ModelName	nvarchar(50)	<input type="checkbox"/>
	[HorsePower(HP)]	varchar(50)	<input checked="" type="checkbox"/>		[HorsePower(HP)]	varchar(50)	<input checked="" type="checkbox"/>
	[Consumption(L/100Km)]	varchar(50)	<input checked="" type="checkbox"/>		[Consumption(L/100Km)]	varchar(50)	<input checked="" type="checkbox"/>
	[Co2Emission(g/Km)]	varchar(50)	<input checked="" type="checkbox"/>		[Co2Emission(g/Km)]	varchar(50)	<input checked="" type="checkbox"/>
	FuelType	varchar(20)	<input checked="" type="checkbox"/>		FuelType	varchar(20)	<input checked="" type="checkbox"/>
	Seating	int	<input checked="" type="checkbox"/>		Seating	int	<input checked="" type="checkbox"/>
	Abs	bit	<input checked="" type="checkbox"/>		Abs	bit	<input checked="" type="checkbox"/>
	Airbag	int	<input checked="" type="checkbox"/>		Airbag	int	<input checked="" type="checkbox"/>
	Transmission	varchar(20)	<input checked="" type="checkbox"/>		Transmission	varchar(20)	<input checked="" type="checkbox"/>
	Colour	varchar(20)	<input checked="" type="checkbox"/>		Colour	varchar(20)	<input checked="" type="checkbox"/>
	Price	int	<input checked="" type="checkbox"/>		Price	int	<input checked="" type="checkbox"/>

Fig 7.7.1 tblVehicleDetails - Data Dictionary

7.7.2 tblUser – Data Dictionary


INSPIRON\LOCALDB#...SVL - dbo.tblUser			
	Column Name	Data Type	Allow Nulls
	UserId	int	<input type="checkbox"/>
	UserEmail	nvarchar(50)	<input type="checkbox"/>
	Password	nvarchar(100)	<input type="checkbox"/>
	Prefix	varchar(5)	<input checked="" type="checkbox"/>
	FirstName	varchar(100)	<input checked="" type="checkbox"/>
	LastName	varchar(100)	<input checked="" type="checkbox"/>
	Contact	nvarchar(15)	<input checked="" type="checkbox"/>
	RoleId	int	<input type="checkbox"/>

Fig 7.7.2 tblUser – Data Dictionary

7.7.3 tblStatus – Data Dictionary


INSPIRON\LOCALDB#...L - dbo.tblStatus			
	Column Name	Data Type	Allow Nulls
	StatusId	int	<input type="checkbox"/>
	Status	varchar(20)	<input checked="" type="checkbox"/>

Fig 7.7.3 tblStatus - Data Dictionary

7.7.4 tblRoleManagement – Data Dictionary


INSPIRON\LOCALD...RoleManagement			
INSPIRON\LOCALDB...VL			
	Column Name	Data Type	Allow Nulls
	RoleId	int	<input type="checkbox"/>
	RoleName	varchar(100)	<input checked="" type="checkbox"/>

Fig 7.7.4 tblRoleManager - Data Dictionary

7.7.5 tblQuote – Data Dictionary


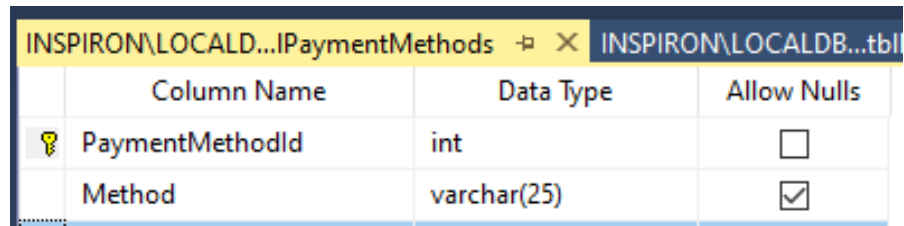
INSPIRON\LOCALDB...VL - dbo.tblQuote			
INSPIRON\LOCALD...IPa			
	Column Name	Data Type	Allow Nulls
	QuoteId	int	<input type="checkbox"/>
	UserId	int	<input type="checkbox"/>
	CarId	int	<input checked="" type="checkbox"/>
	Date	date	<input type="checkbox"/>
	InsuranceId	int	<input checked="" type="checkbox"/>
	MileageId	int	<input checked="" type="checkbox"/>
	TotalPrice	int	<input checked="" type="checkbox"/>
	StatusId	int	<input checked="" type="checkbox"/>
	PaybackTimeId	int	<input checked="" type="checkbox"/>

Fig 7.7.5 tblQuote - Data Dictionary

7.7.6 tblPaymentMethods – Data Dictionary




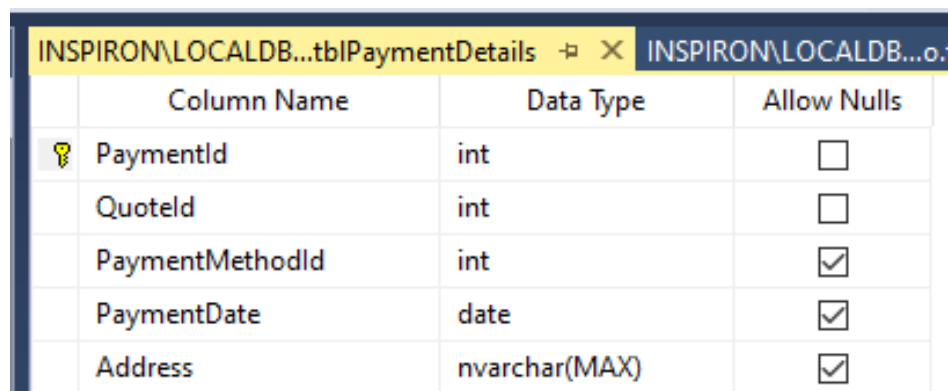
INSPIRON\LOCALD...tblPaymentMethods			
	Column Name	Data Type	Allow Nulls
	PaymentMethodId	int	<input type="checkbox"/>
	Method	varchar(25)	<input checked="" type="checkbox"/>

Fig 7.7.6 tblPaymentMethods - Data Dictionary

7.7.7 tblPaymentDetails – Data Dictionary




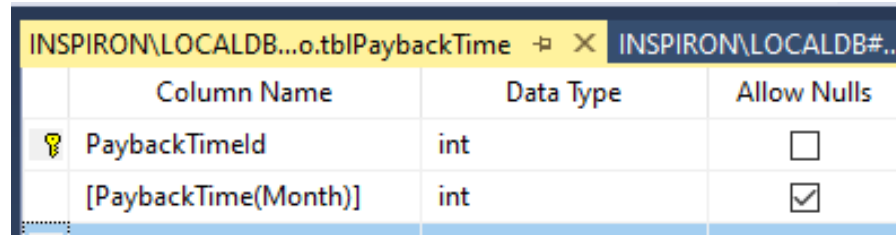
INSPIRON\LOCALDB...tblPaymentDetails			
	Column Name	Data Type	Allow Nulls
	PaymentId	int	<input type="checkbox"/>
	QuoteId	int	<input type="checkbox"/>
	PaymentMethodId	int	<input checked="" type="checkbox"/>
	PaymentDate	date	<input checked="" type="checkbox"/>
	Address	nvarchar(MAX)	<input checked="" type="checkbox"/>

Fig 7.7.7 tblPaymentDetails - Data Dictionary

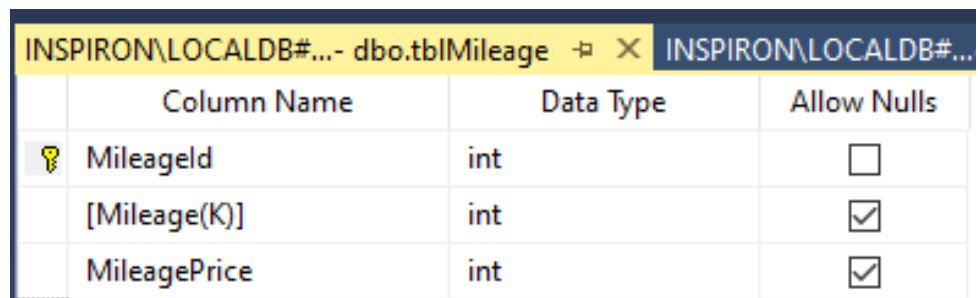
7.7.8 tblPaybackTime – Data Dictionary



INSPIRON\LOCALDB#...o.tblPaybackTime			
	Column Name	Data Type	Allow Nulls
🔑	PaybackTimeId	int	<input type="checkbox"/>
	[PaybackTime(Month)]	int	<input checked="" type="checkbox"/>

Fig 7.7.8 tblPaybackTime - Data Dictionary

7.7.9 tblMileage – Data Dictionary



INSPIRON\LOCALDB#...- dbo.tblMileage			
	Column Name	Data Type	Allow Nulls
🔑	MileageId	int	<input type="checkbox"/>
	[Mileage(K)]	int	<input checked="" type="checkbox"/>
	MileagePrice	int	<input checked="" type="checkbox"/>

Fig 7.7.9 tblMileage - Data Dictionary

7.7.10 tblInsurance – Data Dictionary


INSPIRON\LOCALDB#...dbo.tblInsurance				INSPIRON\LOCALDB...In			
	Column Name		Data Type		Allow Nulls		
	InsuranceId		int		<input type="checkbox"/>		
	[Term(Month)]		int		<input checked="" type="checkbox"/>		
	InsurancePrice		int		<input checked="" type="checkbox"/>		

Fig 7.7.10 tblInsurance - Data Dictionary

7.7.11 tblEquipment – Data Dictionary


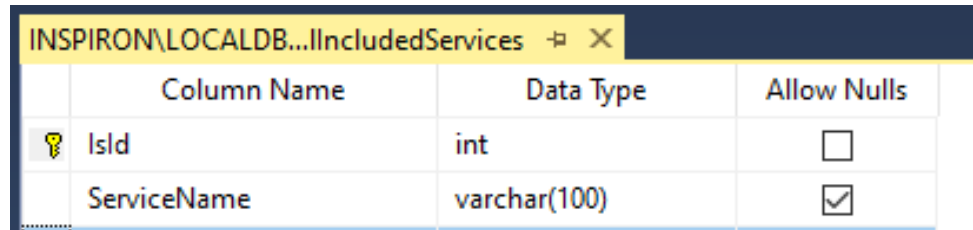
INSPIRON\LOCALDB...IncludedServices				INSPIRON\LOCALDB...dbo			
	Column Name		Data Type		Allow Nulls		
	EqId		int		<input type="checkbox"/>		
	CarId		int		<input checked="" type="checkbox"/>		
	EquipmentType		varchar(50)		<input checked="" type="checkbox"/>		
	Features		nvarchar(MAX)		<input checked="" type="checkbox"/>		

Fig 7.7.11 tblEquipment - Data Dictionary

7.7.12 tblIncludedServices – Data Dictionary




INSPIRON\LOCALDB...tblIncludedServices			
	Column Name	Data Type	Allow Nulls
	IsId	int	<input type="checkbox"/>
	ServiceName	varchar(100)	<input checked="" type="checkbox"/>

Fig 7.7.12 tblIncludedServices - Data Dictionary

7.8 Design Strategy

This Project has been implemented using N-Tier Architecture.

It is made with the consideration of the following points:

- ✓ It should give you the ability to update the technology stack of one tier, without impacting other areas of the application.
- ✓ It should also allow for different development teams to each work on their own areas of expertise. Today's developers are more likely to have deep competency in one area, like coding the front end of an application, instead of working on the full stack.
- ✓ We should be able to scale the application up and out. A separate back-end tier, for example, allows you to deploy to a variety of databases instead of being locked into one particular technology. It also allows you to scale up by adding multiple web servers.
- ✓ It adds reliability and more independence of the underlying servers or services.
- ✓ It provides an ease of maintenance of the code base, managing presentation code and business logic separately, so that a change to business logic, for example, does not impact the presentation layer.

- ✓ Only this standalone application should get you data from any device whether it is phone, computer, tablet or any other device.

With N-tier architecture, you have the ability to utilize new technologies as they become available. This ensures your product is ready to adapt; ready for the future. You have the opportunity to redesign your product or application and actually look not only to today's needs but into the future. Stay ahead of the game and maintain a competitive advantage.

We designed Quote Generation System around a 5-tier architecture with the future in mind.

It has the Following Layers in the Architecture:

- 1.Presentation Layer (ASP .Net MVC)
- 2.Application Program Interface Layer (WEB API)
- 3.Business Logic Layer (C# Class Library)
- 4.Data Access Layer (C# Class Library)
- 5.Entity Layer (C# Class Library)

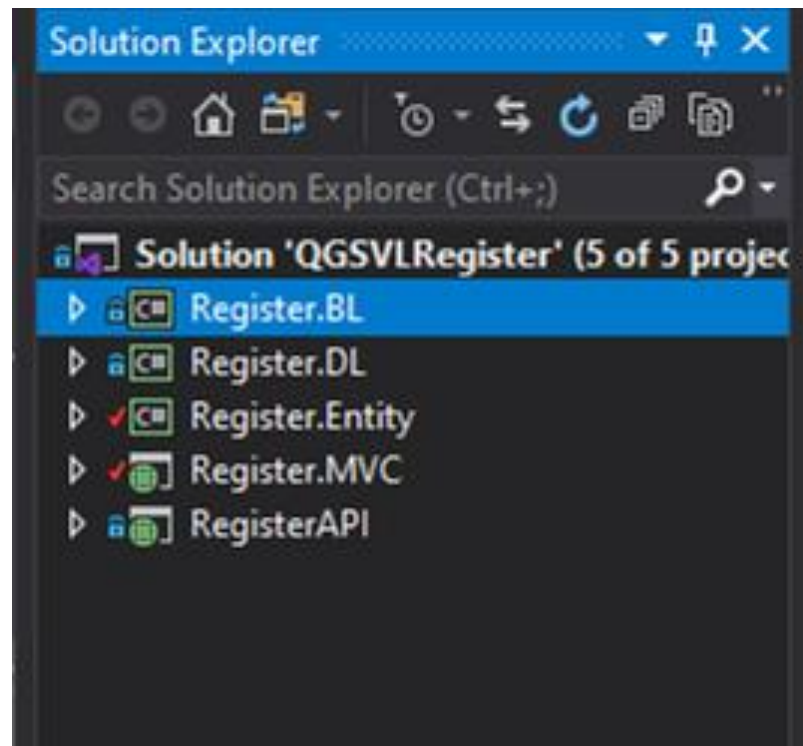


Fig 7.8.1 Complete System Architecture

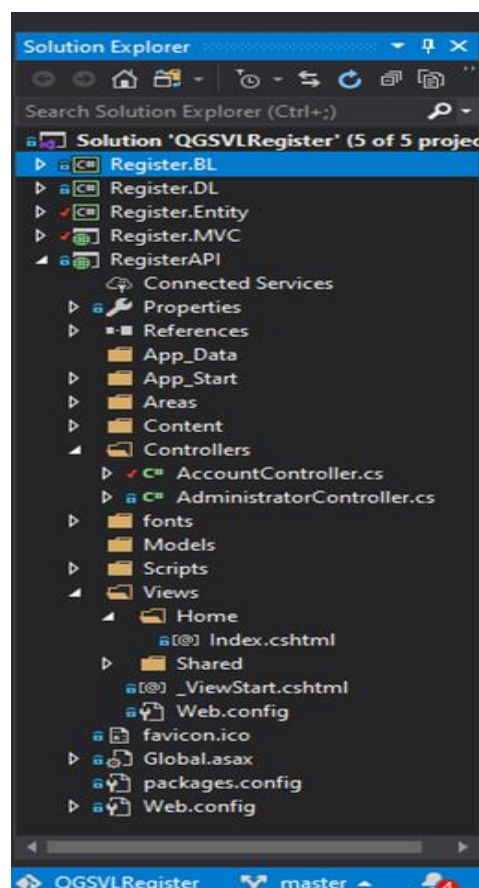


Fig 7.8.2 Web API Layer

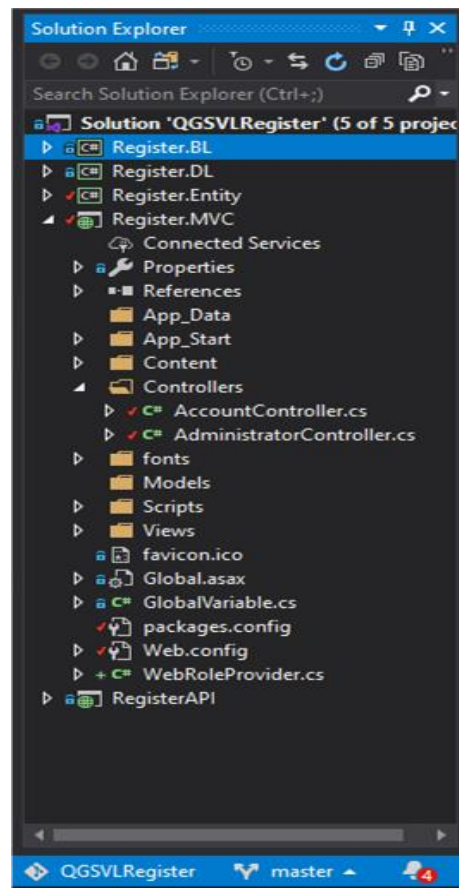


Fig 7.8.3 Presentaion Layer

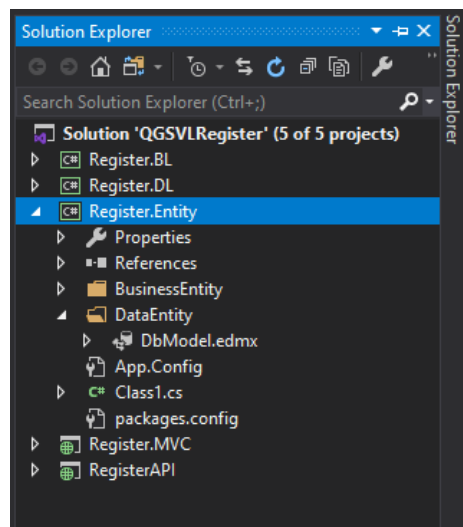


Fig 7.8.3 Entity Layer

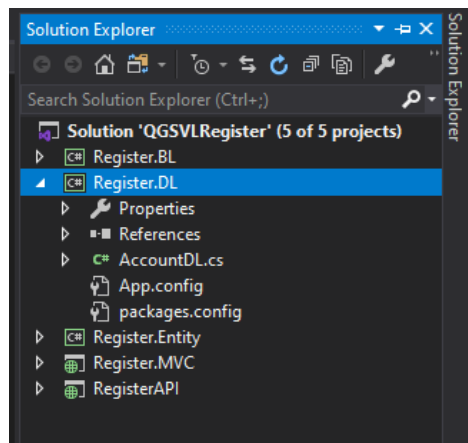


Fig 7.8.4 Data Access Layer

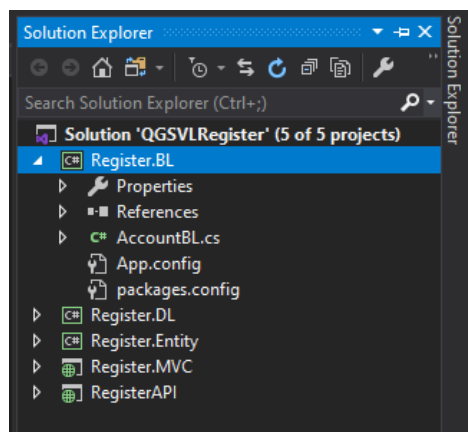


Fig 7.8.5 Business Logic Layer

7.9 Data Flow Diagram

7.9.1 DFD Level - 0

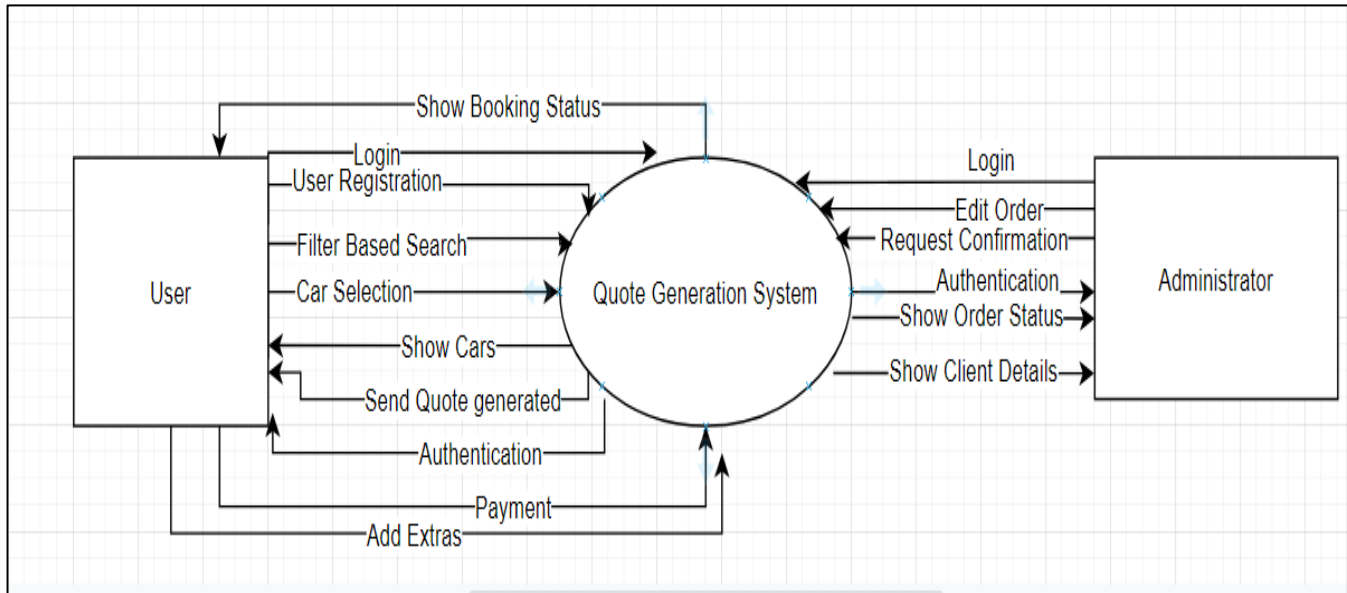


Fig 7.9.1 DFD - Level 0

7.9.2 DFD Level - 1

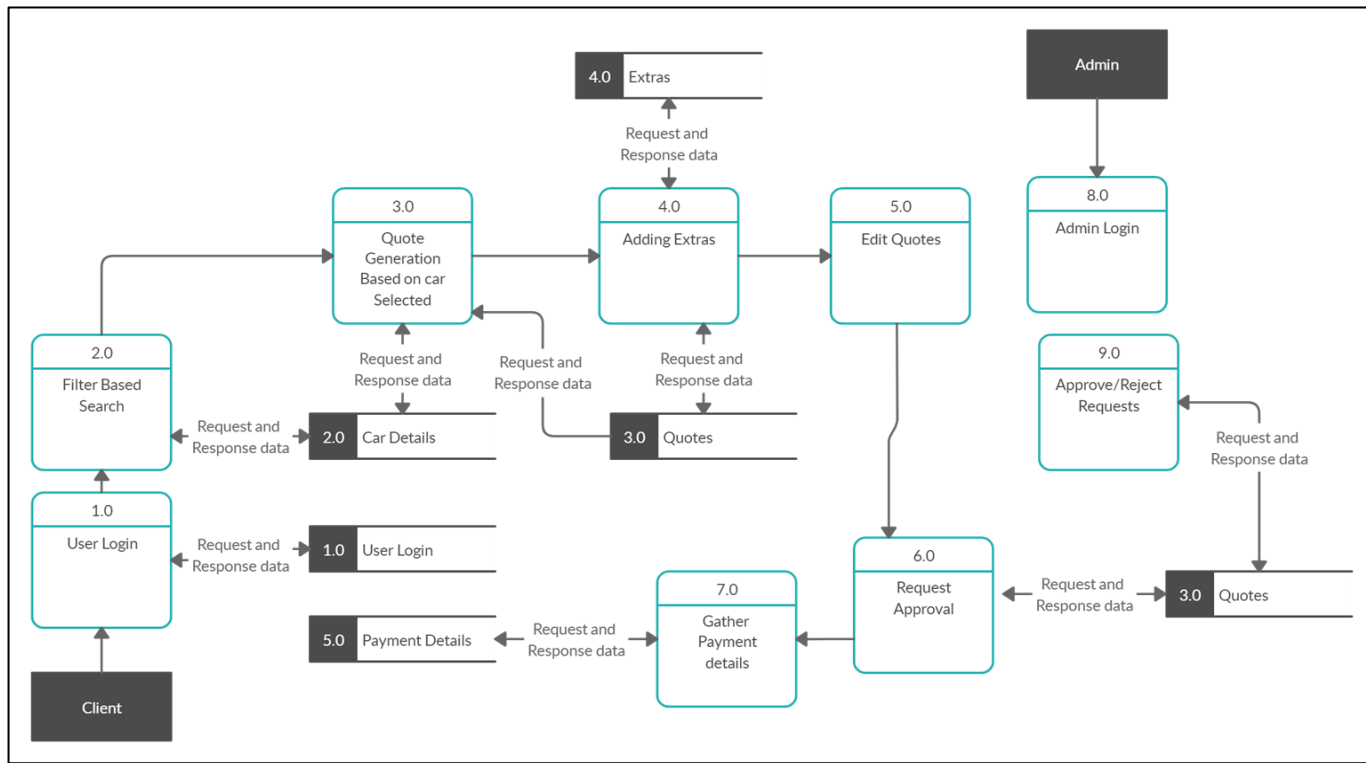


Fig 7.9.2 DFD Level – 1

8. Implementation Details

Note: Due to company confidentiality policy the pseudo code for this project was not added.

8.1 Flow Chart

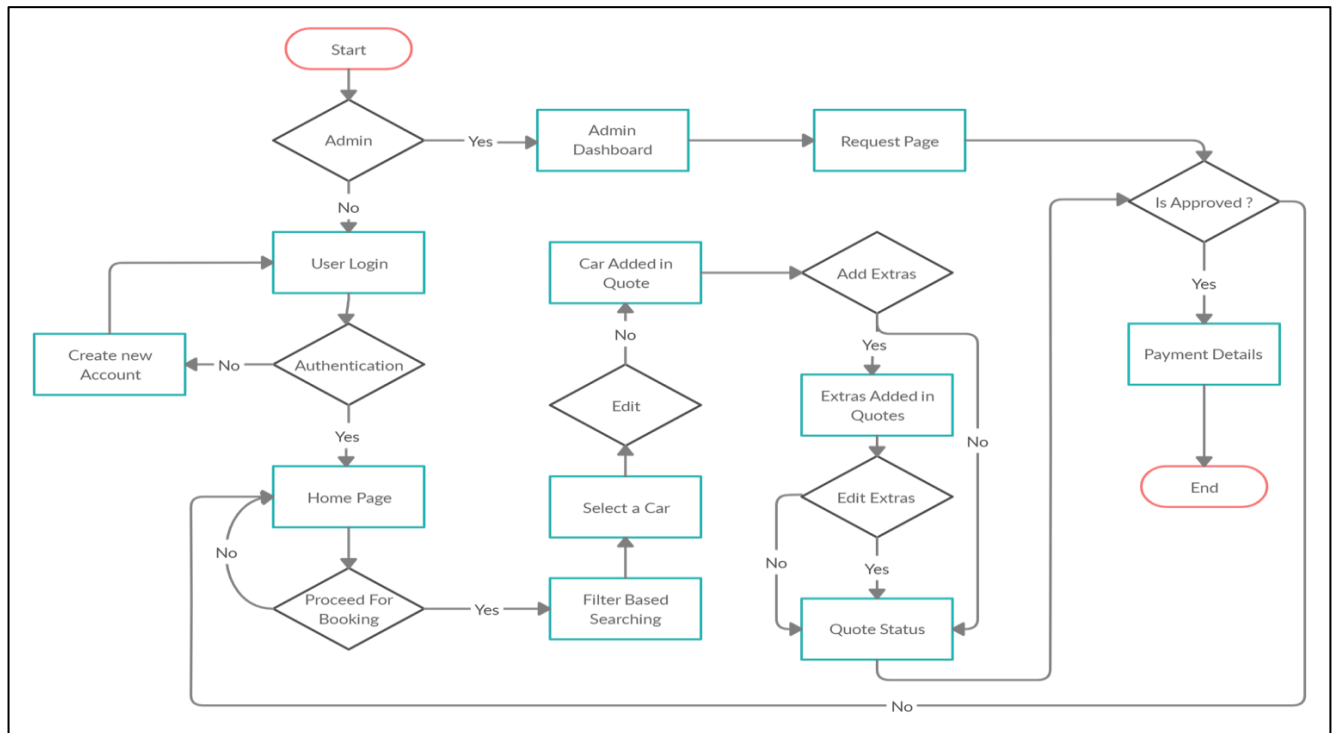


Fig 8.1 Flow chart of Application

8.2 Implementation Environment

Environment on which this web site is implemented is Visual Studio 2019. It is written in c# using ASP.NET MVC framework and WEB API developed by Microsoft. For management of database we have used Microsoft SQL Server Management Studio 18. This website is Single User System and GUI based system.

8.3 Modules Specification

User Module

- ✓ client can take vehicle from a vehicle leasing company for a fixed period of time at an agreed amount of money for the lease.
- ✓ In User Module the user can register and login after that for authentication purpose and for accessing the website features
- ✓ The client can choose a car based on their requirements and they can also add some more extra features for their further comfort
- ✓ Users can view their quotes during selection of car, they can edit that quote at any point
- ✓ At the end users can also able to make a payment if that quote is approved by admin side.

Admin Module

- ✓ Admin can see all the list of request for a car on lease that are come from user side.
- ✓ It can also see the all user details.
- ✓ Admin can manipulate the quotes generated by the user.
- ✓ It can perform read , edit , soft delete and create data like User details and Quote Details

8.4 Security Features

- ✓ By using Web API, we can send data to the particular application by enabling CORS for that application
- ✓ User's details like password will save in the database in the encryption format for security reasons
- ✓ Only admin has rights to see and edit some details of user side.
- ✓ Authorization and authentication for both module

8.5 Coding Standards

Coding Standards focuses more on techniques that highlight problems and make bugs stand-out and visible to everyone. A coding standard sets out standard ways of doing several things such as the way variables are to be named, the code is to be laid out, the comments are to be described, the work of function are to be carried out etc.

This section describes the coding standards, which we have used in the program. We have adopted the following coding standards.

- ✓ All the global variables are placed at the beginnings of the program.
- ✓ Block of declarations has aligned.
- ✓ For multiple declarations, new declarations on the next line is used.
- ✓ Comments have been added for each and every line of code that have been made.
- ✓ Per statement one line has been written only to keep the code more readable.
- ✓ Comments may also be used in the body of the scripts to explain individual sections or lines of code.

9. Testing

Testing is the process in which the system is run on manually created input so that we can check that whether the system is working correctly as desired or not. During system testing, the system is used experimentally to ensure that the software does not fail. In other words, we can say that it will run according to its specification and in the way users expect. Special test data are input for processing, and the results examined.

9.1 Testing Plan

Manual Testing Tasks and Steps

Step 1: Create a Test Plan

Step 2: Create Test Cases and Test Data

Step 4: Once the module is ready to perform the test cases

Step 5: Create a bug task if any and assign to the respective developer.

Step 6: Repeat the test cycle until the “module” is free of all bugs.

9.2 Testing Strategy

Our Application went through two types of testing processes:

9.2.1 Black-box testing

Black box testing is the Software testing method which is used to test the software without knowing the internal structure of code or program. The main purpose of the Black Box is to check whether the software is working as per expected in requirement document & whether it is meeting the user expectations or not. Types of Black Box Testing Techniques: Following black box testing techniques are used for testing the software application.

- Boundary Value Analysis (BVA)
- Equivalence Class Partitioning
- Decision Table based testing
- Cause-Effect Graphing Technique
- Error Guessing

9.2.2 White-box testing:

White Box Testing is the testing of a software solution's internal coding and infrastructure. It focuses primarily on strengthening security, the flow of inputs and outputs through the application, and improving design and usability. White box testing is also known as Clear Box testing, Open Box testing, Structural testing, Transparent Box testing, Code-Based testing, and Glass Box testing.

We did testing of this project by both Black-box. Testing of system is generally done in two phases – one is Unit Testing which is done for each module independently on its completion and the other one is System Testing which is done at the end of project.

10. User Manual

Here is the demonstration of the working flow of the project along with the explanations Given of the clear idea about how the flow goes and how the application works

10.1 Client Side

1. When the application is first opened, it shows the following screen.

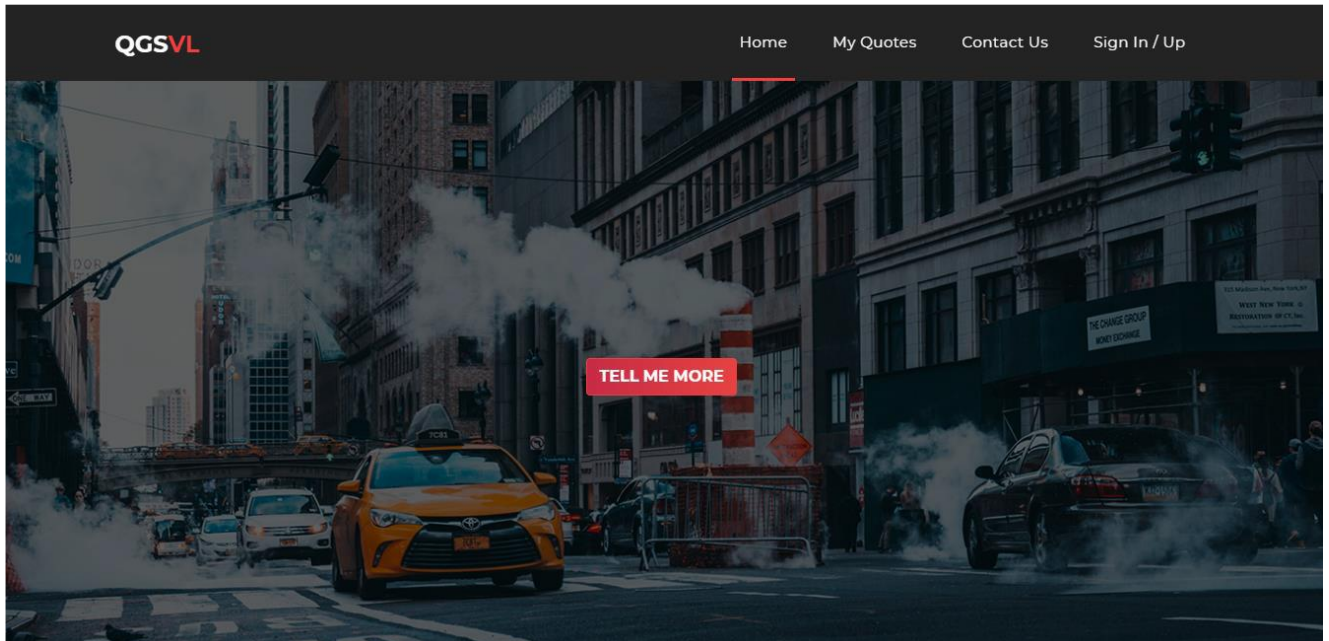


Fig 10.1 Home Page

2. You can navigate to Sign Up Page for Registering as a User . While Registering please be careful with the validations for the fields.

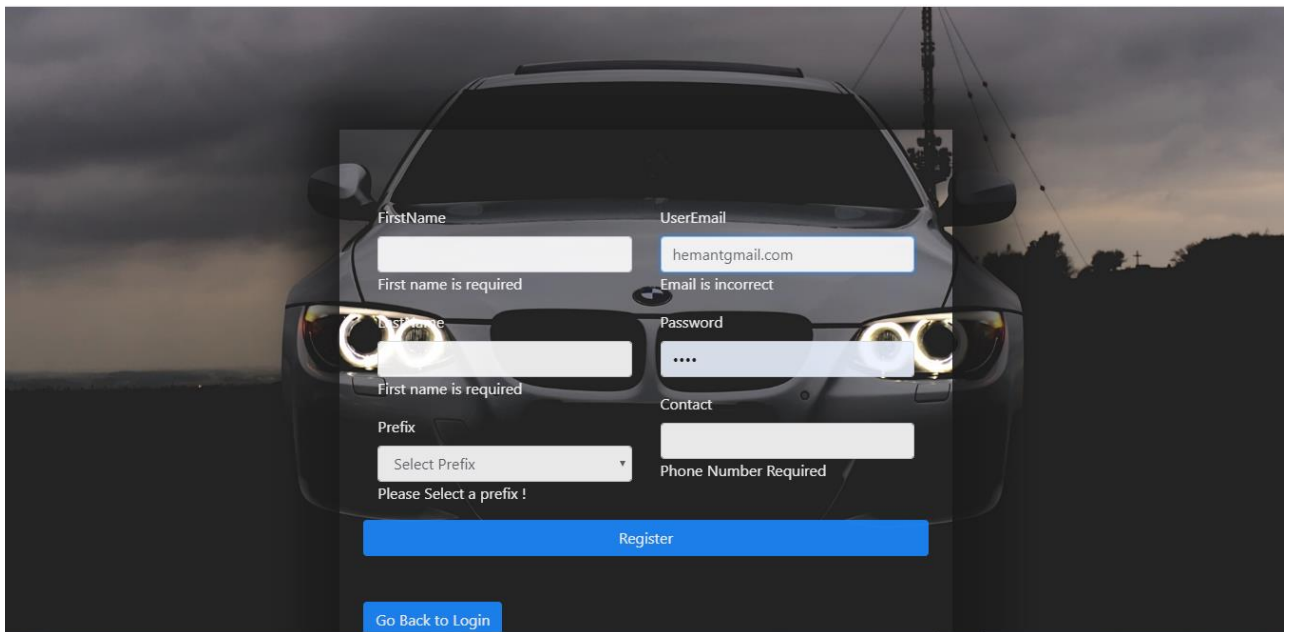


Fig 10.2 Registration Page

3. Even after going through correct validations you will have to ensure that whether the email address that you provided already registered before or not. If the email address that you mentioned already been registered before then you would not be able to register with the email address.

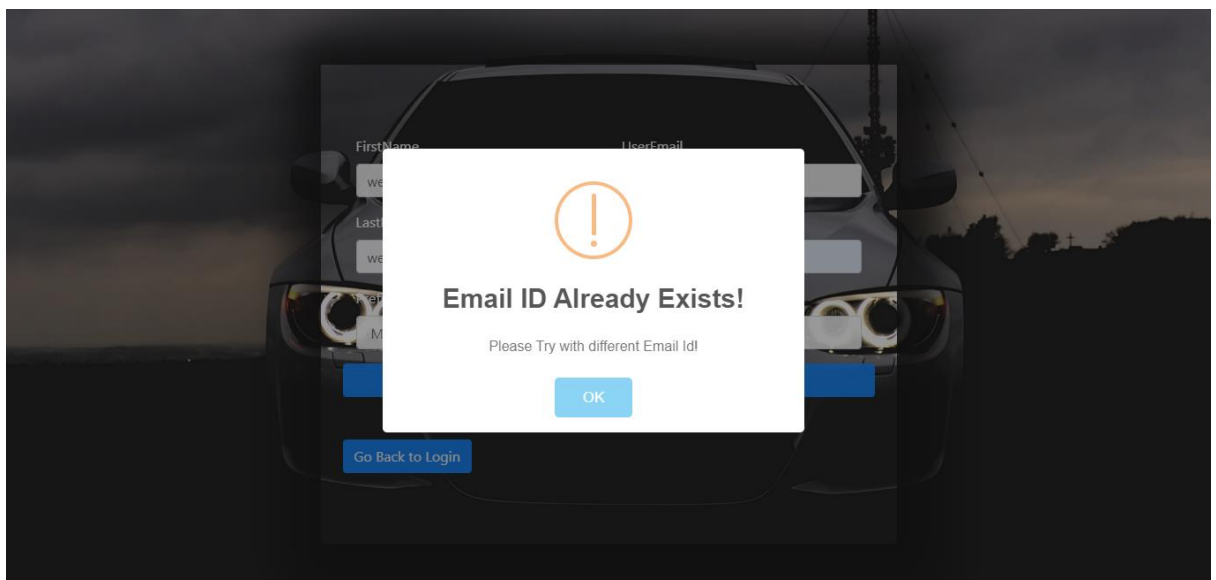


Fig 10.3 Registration Validation

4. After All requirements are fulfilled correctly, you will successful in registering as a user and a pop up message will be show that shows “Registration Successful.”

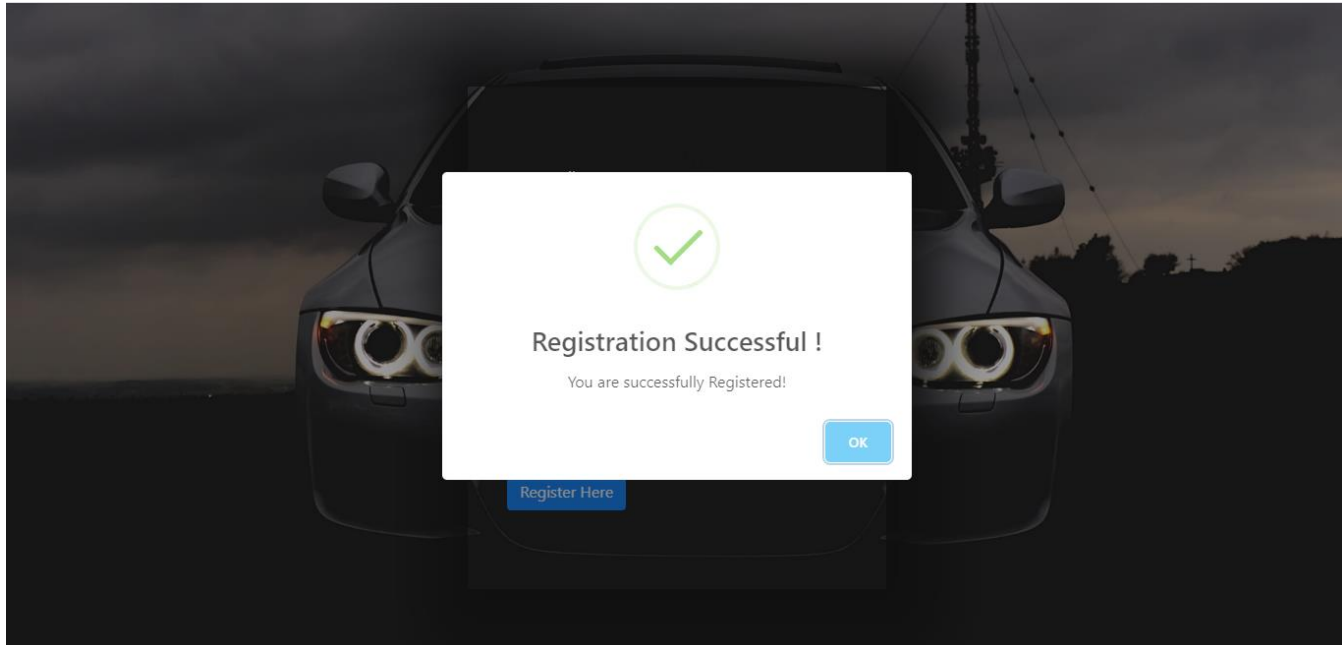


Fig 10.4 Registration Success message

5. After successful registration, it will Redirect you to Login Page where in you will have to insert correct Credentials to login.

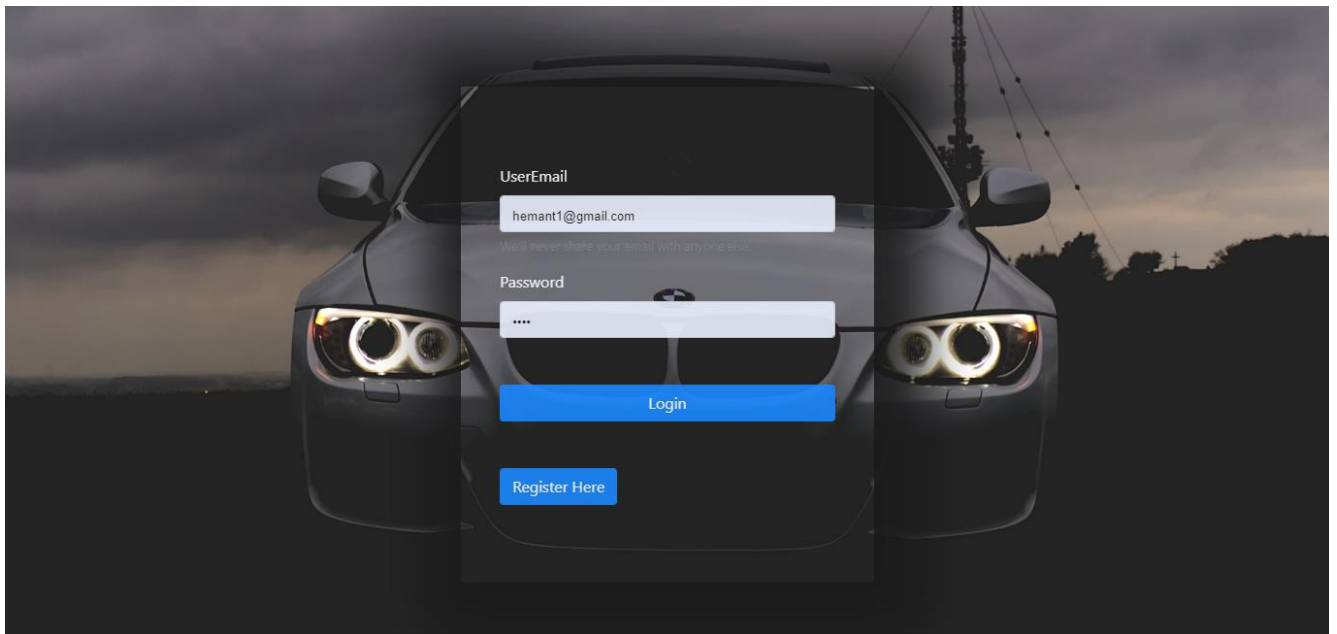


Fig 10.5 Login Page

6. If you insert incorrect credentials then will be show a pop up saying “login failed”.

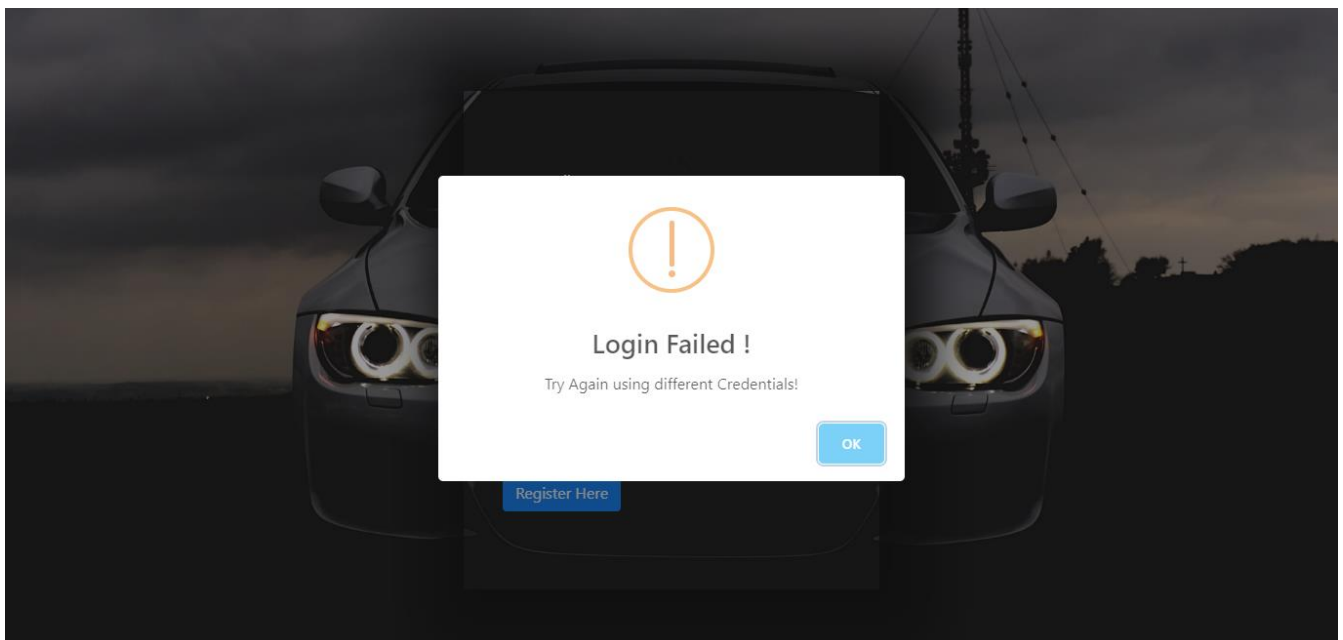


Fig 10.6 Login Authentication

7. Based upon the Role of the user that is logging in, the page redirection will be done. For Ex- If you login inserting credentials of admin, it will redirect you to admin dashboard. But since we are looking at client-side flow, we will login as registered user and not admin which will redirect us to User Home Page.

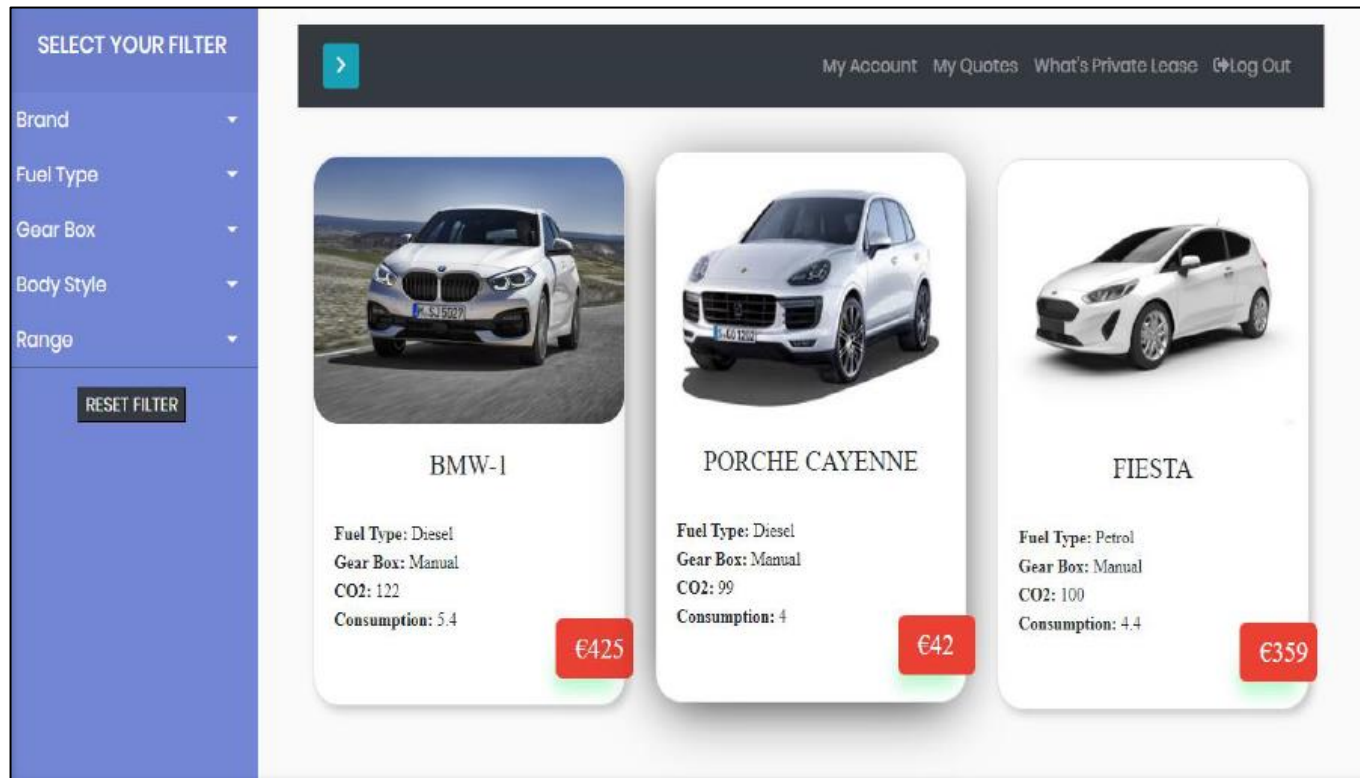


Fig 10.7 Client Home Page

8. As shown in the last picture, by default you will be show all the cars available until you select any filters. The left most panel is the filter pane where we can choose different filters as per the category and our requirement. Now as you can see in the next screenshot we have chosen two filters that is Brand as BMW and Fuel Type as Diesel . Based on the selection , we got the cars on the right panel as you can see.

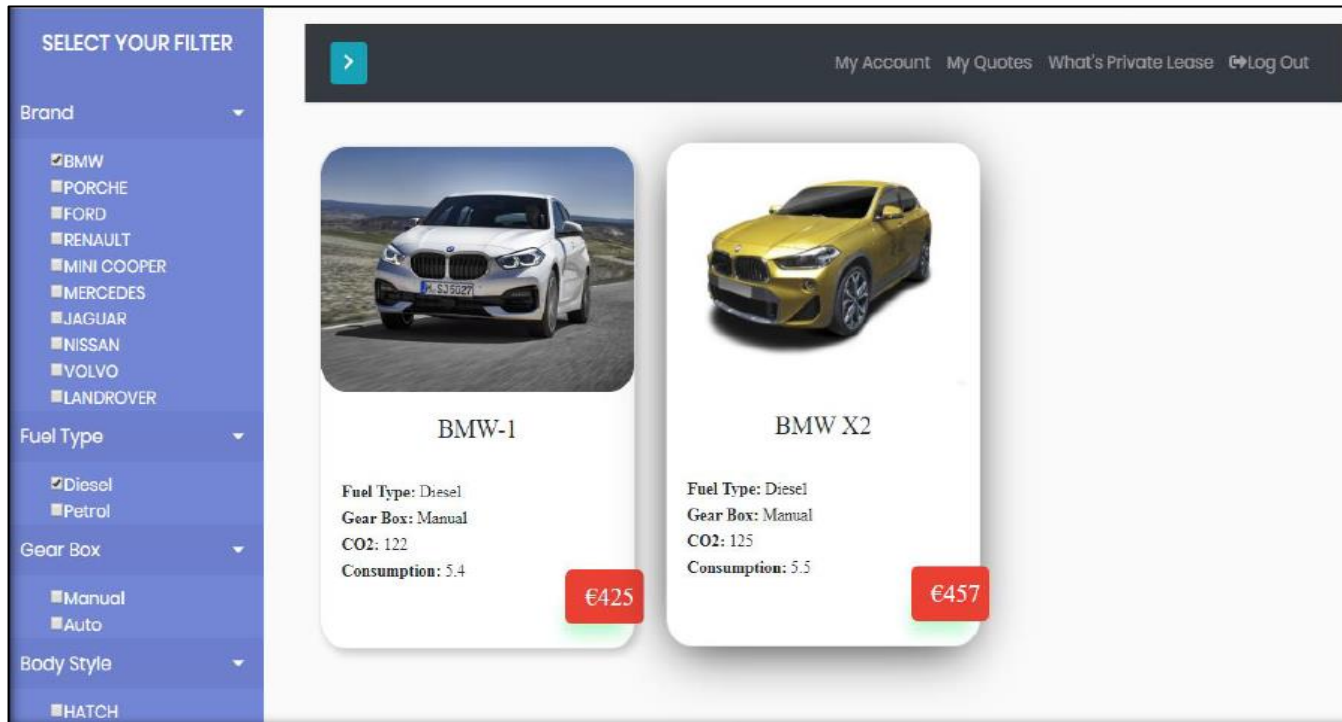


Fig 10.8 Filter Based Result

- Now out of all filtered cars , when we choose a single car by clicking on it , we will get the to the next page as shown in the screenshot. Here we choose other parameters for leasing like insurance , Mileage and price range.

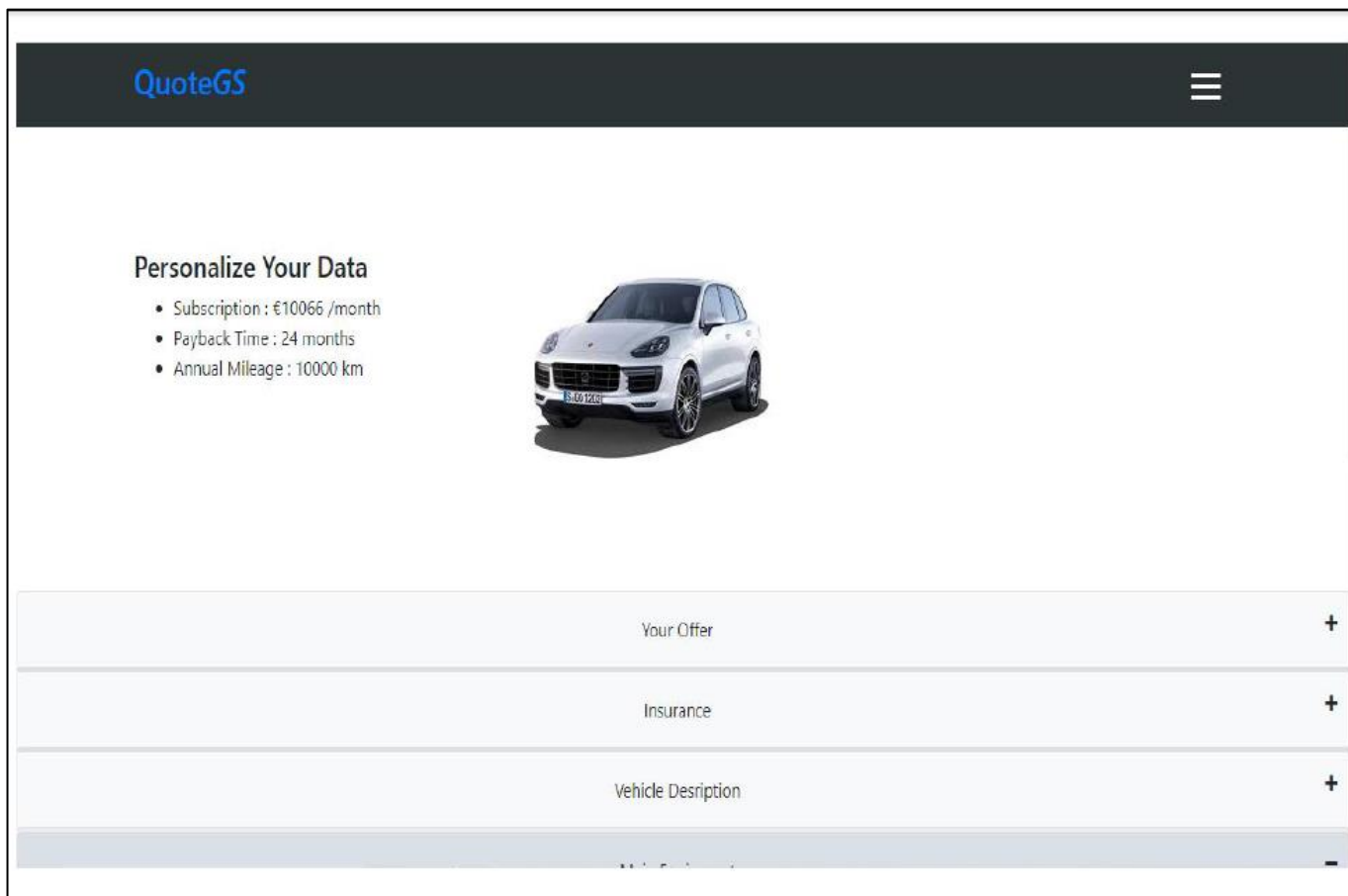


Fig 10.9 Peronalised Data selection page

10. After we are done with all car selection and other parameters selection you can confirm the order and it will redirect us to the quote details page as shown in the next screenshot.

🚗 Quote Details 🚗

NO	Model Name	Creation Date	Insurance Term	Mileage	Payback Time	Quote Price	Quote Status	Payment
1	PORCHE CAYENNE	13/04/2020 00:00:00	12Km	30000Km	36Month	30078€	Accepted	Proceed To payment
2	PORCHE CAYENNE	13/04/2020 00:00:00	12Km	30000Km	36Month	30078€	Pending	Disabled
3	FIESTA	13/04/2020 00:00:00	12Km	20000Km	36Month	20395€	Pending	Disabled
4	PORCHE CAYENNE	13/04/2020 00:00:00	12Km	10000Km	24Month	10066€	Pending	Disabled

Fig 10.10 Quote Page

- Then you need to give payment details which will only collect your Payment details and not actually do the payment because it is not our concern according to the defination of the project.

Confirmation For Payment [X]

Total Price: 30078

Address * :

Payment Method * : Select Method ▾

Select Payment Method for Successfull Transaction

Pay

NO	Model Name	Creation Date	Quote Status	Payment
1	PORCHE CAYENNE	13/04/2020 00:00:00	Accepted	Proceed To payment
2	PORCHE CAYENNE	13/04/2020 00:00:00	Pending	Disabled
3	FIESTA	13/04/2020 00:00:00	Pending	Disabled
4	PORCHE CAYENNE	13/04/2020 00:00:00	Pending	Disabled

Fig 10.11 Payment Details Page

10.2 Server Side

1. When you put your credentials as administrator , you will be automatically redirected to the administrator dashboard with the help of Role based Authorization.

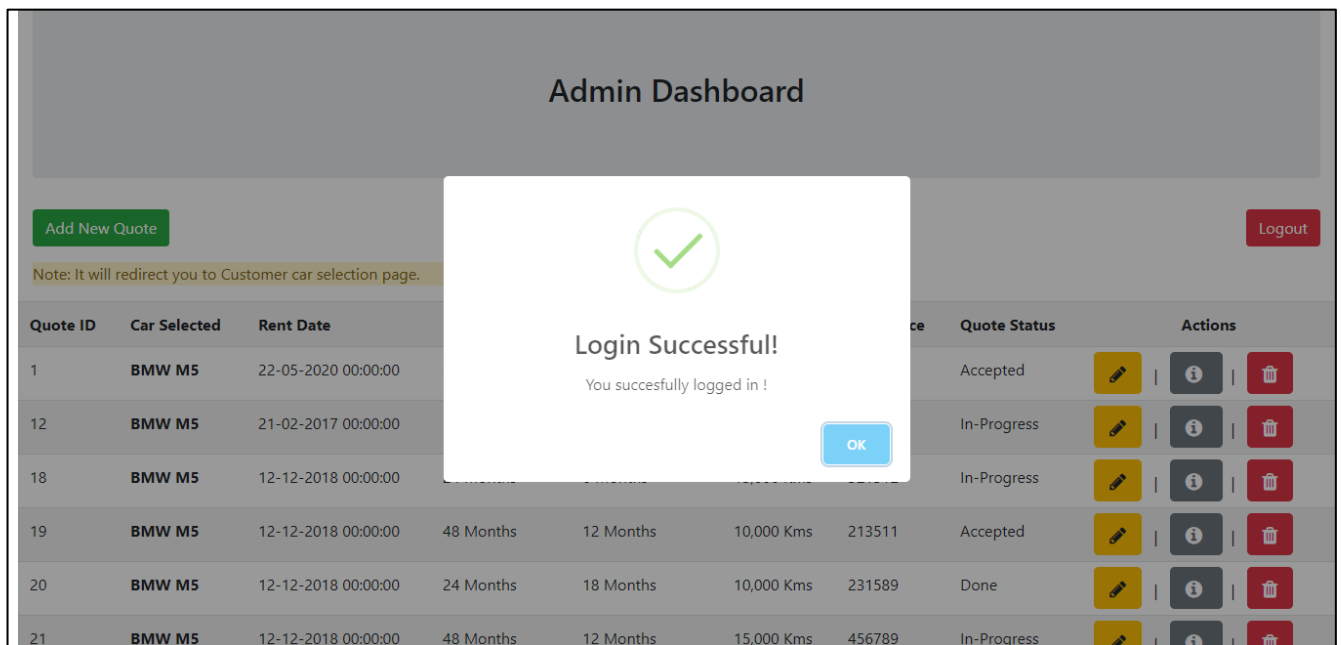


Fig 10.12 Role Based Login

- Here you can see the Administrator dashboard where in administrator can perform operations or edit the quote that is generated by the user.



















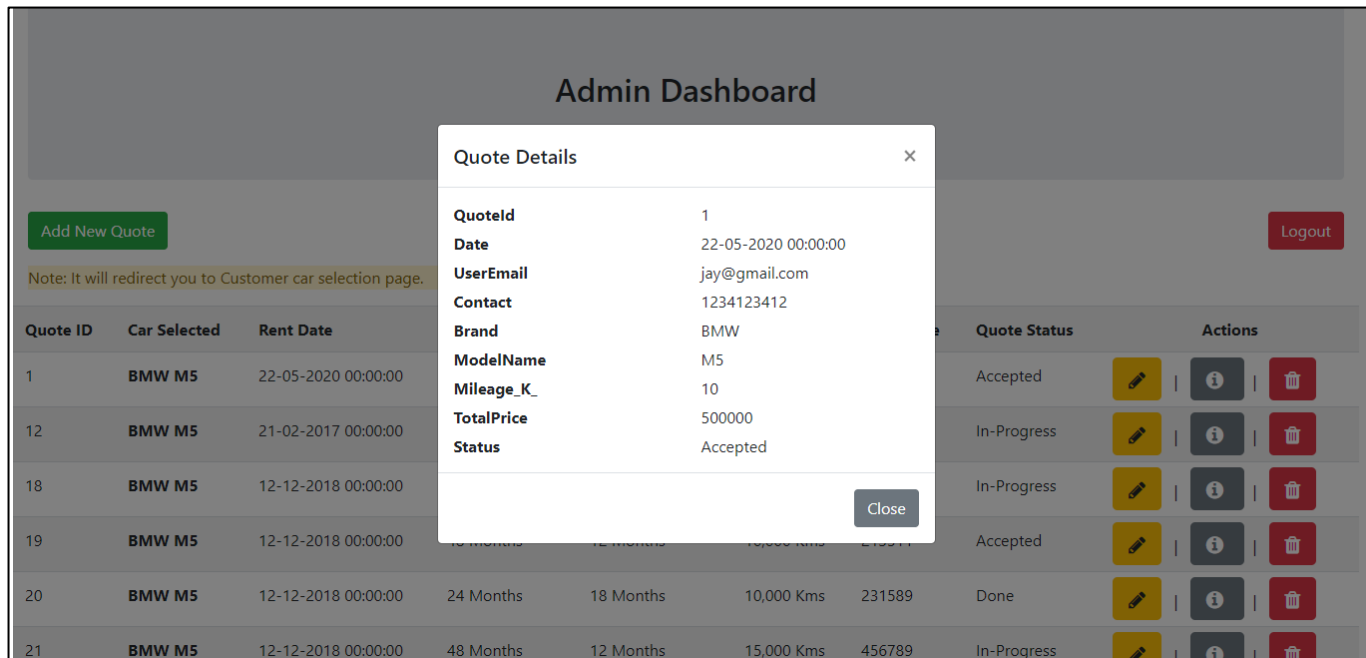
Admin Dashboard								
Add New Quote								
Note: It will redirect you to Customer car selection page.								
Quote ID	Car Selected	Rent Date	Payback Time	Insurance Term	Mileage	Total Price	Quote Status	Actions
1	BMW M5	22-05-2020 00:00:00	24 Months	6 Months	10,000 Kms	500000	Accepted	  
12	BMW M5	21-02-2017 00:00:00	36 Months	6 Months	15,000 Kms	201020	In-Progress	  
18	BMW M5	12-12-2018 00:00:00	24 Months	6 Months	15,000 Kms	321312	In-Progress	  
19	BMW M5	12-12-2018 00:00:00	48 Months	12 Months	10,000 Kms	213511	Accepted	  
20	BMW M5	12-12-2018 00:00:00	24 Months	18 Months	10,000 Kms	231589	Done	  
21	BMW M5	12-12-2018 00:00:00	48 Months	12 Months	15,000 Kms	456789	In-Progress	  

Fig 10.13 Administrator Dashboard

- When you click on details button , a detailed view of the leasing order will be shown along with the user details.



The image shows an Admin Dashboard with a modal window titled "Quote Details". The modal displays the following information:

Field	Value
Quoteld	1
Date	22-05-2020 00:00:00
UserEmail	jay@gmail.com
Contact	1234123412
Brand	BMW
ModelName	M5
Mileage_K	10
TotalPrice	500000
Status	Accepted

The background dashboard includes a table of quotes with columns: Quote ID, Car Selected, Rent Date, and Quote Status. The table lists several quotes, all for BMW M5. The status column shows "Accepted", "In-Progress", and "Done". Each row has an "Actions" column with icons for edit, info, and delete.

Fig 10.14 Quote Details

- When Edit button is clicked in the administrator dashboard, it will redirect us to the edit page where we can change the status of the quote.

Edit Quote Status

Quoteld

UserEmail

Contact

Brand

ModelName

Mileage_K_

TotalPrice

Status

1

jay@gmail.com

1234123412

BMW

M5

10

500000

Accepted

Back to List

Accepted

Active

In-Progress

Done

Accepted

Rejected

Fig 10.15 Edit Quote

5. We can also soft delete the Leasing order through the same administrator dashboard. When we click of delete button , a confirmation message will be shown and then we can delete the Leasing order.

Are you sure you want to delete this?

Quoteld

UserEmail

Contact

Brand

ModelName

Mileage_K_

TotalPrice

Status

1

jay@gmail.com

1234123412

BMW

M5

10

500000

Accepted

Back to List

Delete

Fig 10.16 Delete Quote

6. After we logout, the session will be closed and even on pressing back button from the browser won't allow us to go back to dashboard because of Authentication and Authorization.

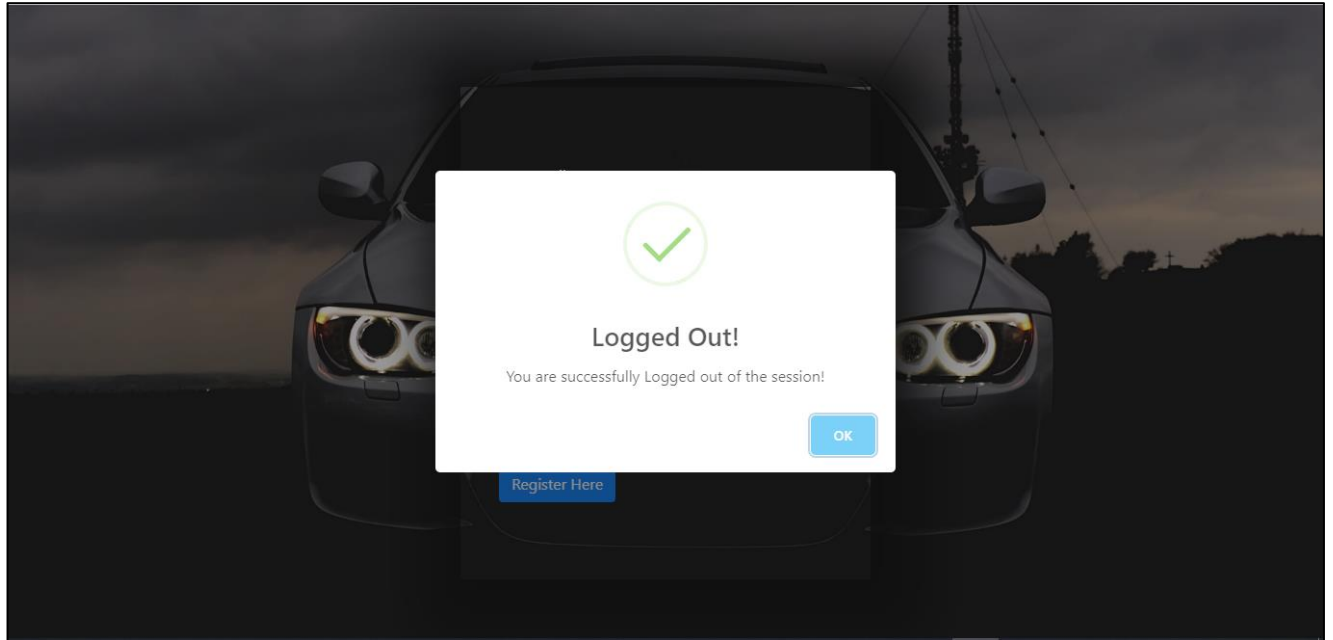


Fig 10.17 Logout

11.Conclusion and Future work

11.1 Self-Analysis of Project Viabilities

Project viabilities may change over the course of the project development. As per self -analysis, Web based QGS helps the company to maximize their performance of the system and quicker response to the all client request. It will also reduce the cost of failure.

Also It totally depends on the no of modules and functionality of the project.

11.2 Problem Encountered and Possible Solutions

11.2.1 Problem encountered

- We faced issues during making direct operations on model.
- At the initial state we were working on our project without making any different layer in our project so the complexity of project was increased.
- We faced some problem during implementation of Web API and that about Circular Reference error when serializing objects.

11.2.2 Possible solutions

- Best solution is that bind your model with view model and then make operations on view model.
- We implemented the concept of n layer architecture in our project.
- For that make key data annotation for all primary key of different view model.

12. Annexure

12.1 References

- <https://docs.microsoft.com/en-us/visualstudio/?view=vs-2019>
- <https://docs.microsoft.com/en-us/visualstudio/?view=vs-2019>
- <https://www.dotnetperls.com/linq>
- <https://www.tutorialsteacher.com/webapi/web-api-tutorials>

12.2 About tools and technology

12.2.1 Tools:

- SQL Server Management Studio
- Visual Studio 2017
- Db Designer
- Postman12
- IIS
- Visual Studio Code

12.2.2 Technologies:

- ASP .Net
- MVC
- Web API
- SQL
- C#
- LINQ
- HTML
- CSS
- JavaScript
- Bootstrap
- Team Foundation Server (TFS)

12.3 About the Organization (Company Information)

Gateway TechnoLabs, a Multinational IT service provider, is part of the Gateway Group, established in 1997 as global information technology services, solutions and product engineering company. The group today serves customers across 30+ countries in 5 Continents with a team of dedicated professionals across 16 countries.

Gateway TechnoLabs partners in transforming our customers' business continuously by providing the right assessment and deploying the most sought-after technology solutions. Its Centers of Excellence (Technology and Domain), are created by ICT experts who strive to make the most challenging technological and business constraints, the least impediment to the customers success.

From the most demanding to the most distant customers, Gateway help global leaders grow and transform their business and bring greater flexibility with faster time to market through technical excellence, all at lower costs, right at their doorsteps.

Gateway serves 8 most disruptive segments- Automotive, Healthcare, Publishing and Media, Entertainment and Gaming, Banking & Financial Services, Manufacturing and Engineering, Retail, Public Sector, Software Product Houses and Independent Software Vendors.

12.4 About College (UVPCE)

Ganpat University-U. V. Patel College of Engineering (GUNI-UVPCE) is situated in Ganpat Vidyanagar campus. It was established in September-1997 and It is one of the constituent colleges of Ganpat University with a view of educating and training young talented students of Gujarat in the field of Engineering and Technology to meet the needs of Industries in Gujarat and across globe.

The College is named after Shri Ugarchandbhai Varanasibhai Patel, a leading industrialist of Gujarat, for his generous support. It is a self-financed institute approved by All India Council for Technical Education (AICTE), New Delhi and the Commissionerate of Technical Education, Government of Gujarat.

The College is spread over 25 acres of land and is a part of Ganpat Vidyanagar Campus. It has six ultra-modern buildings of architectural splendour, class rooms, tutorial rooms, seminar halls, offices, drawing hall, workshop, library, well equipped departmental laboratories and several computer laboratories with internet connectivity through 10Gbps Fibre link, satellite link education centre with two-way audio and one-way video link.

The Institute offers various undergraduate programmes, postgraduate programmes and Ph.D. programme.

Placement plays key role in shaping the future of the students and keeping this in mind the institute has created healthy relations with the prominent industries also. This in turn is reciprocally advantageous. The industries get a chance to exploit the resources of the institute for their R & D work and in return extend every possible help to the institute. As part of this initiative, Incubation Centre/Start-up activities have been developed.