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

ACKNOWLEDGEMENT

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 want to thank all lecturers and professor staff of UVPCE for support us directly or indirectly to build this project. They are always helping and guide us in way that how to analyse, implement, develop and also testing such systems.

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.

Regards,
Hemant Mohapatra
(16012021012)

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. The Quote Generation System (QGS-VL) is made with the consideration of all the required and also the best in industry standards functionalities with respect to Quote Generation System of any vehicle leasing company.

2. PROJECT SCOPE

Project scope is the part of project planning that involves determining and documenting a list of specific project goals, deliverables, tasks, costs and deadlines. The documentation of a project's scope, which is called a scope statement or terms of reference, explains the boundaries of the project, establishes responsibilities for each team member and sets up procedures for how completed work will be verified and approved.

Goals of the project solely revolves around quote generation strategy for the vehicle leasing company while considering every possible parameters required and is applicable to the field of vehicle leasing company. 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.

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, CO^2 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, e.g. 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

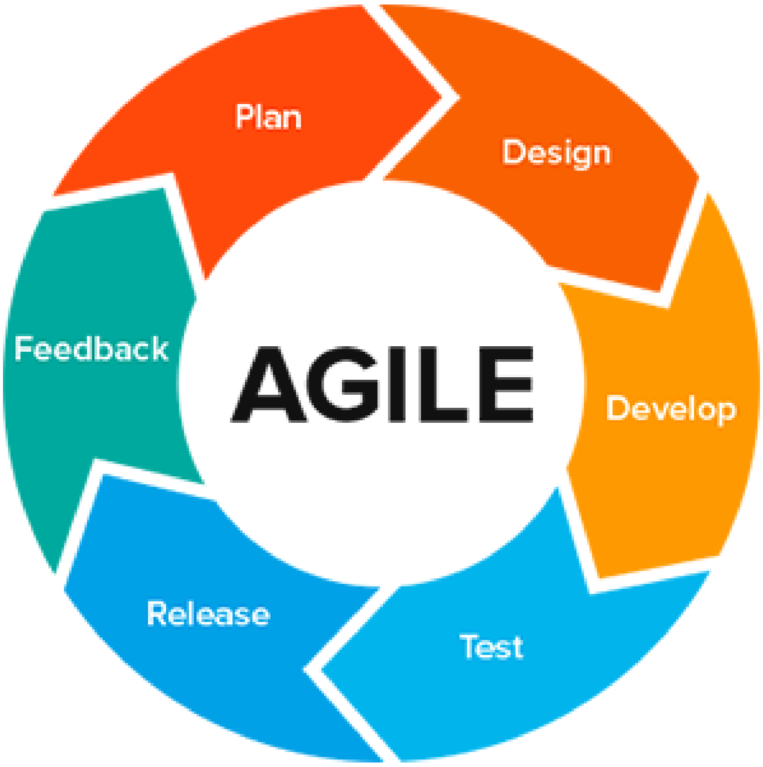


Fig 5.1 Agile Methodology

The Roles in Agile Methodology

An agile software development process always starts by defining the users and documenting a vision statement on a scope of problems, opportunities, and values to be addressed. The product owner captures this vision and works with a multidisciplinary team (or teams) to deliver on this vision.

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

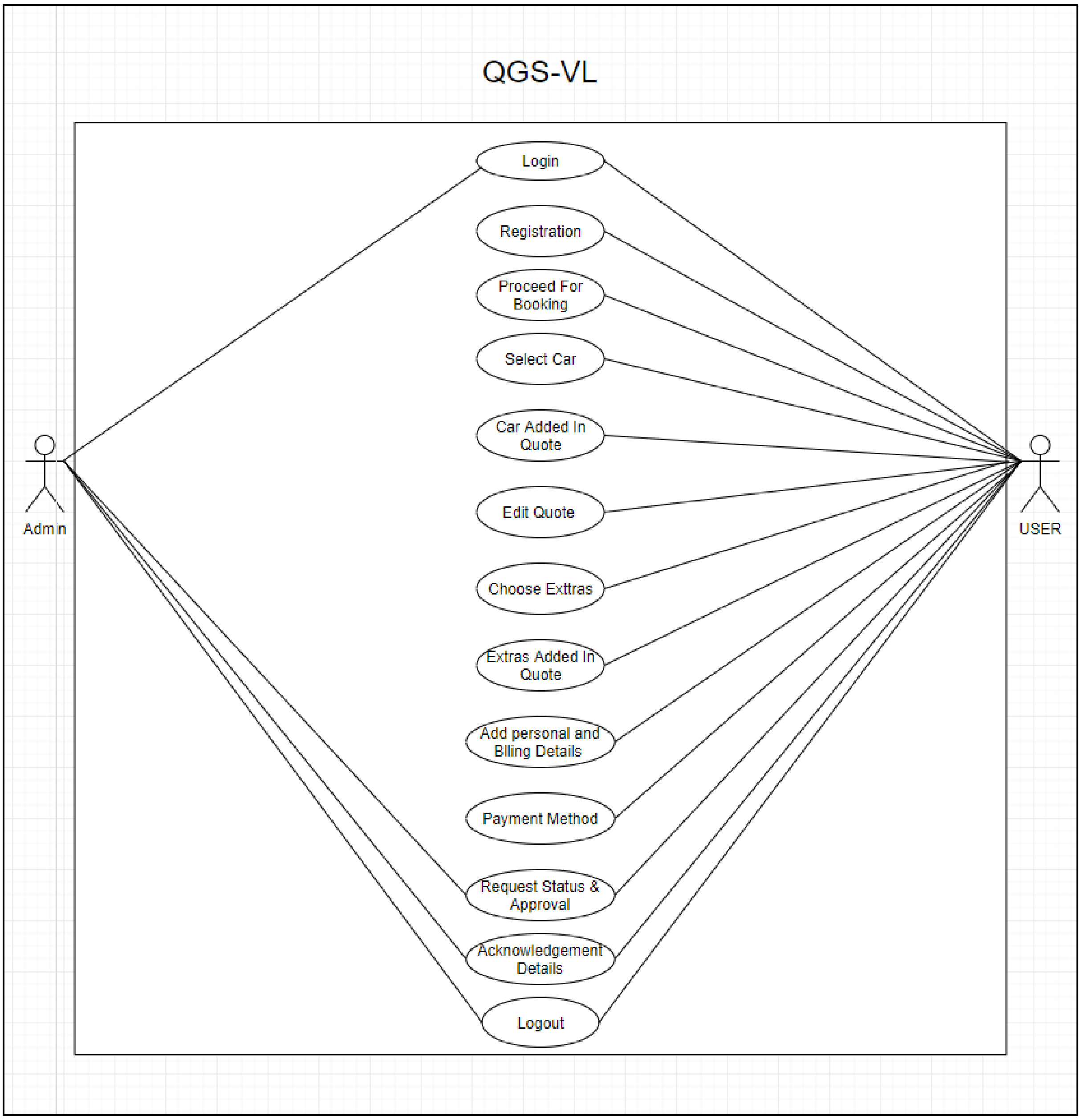


Fig 7.1 Use Case Diagram

7.2 Class Diagram

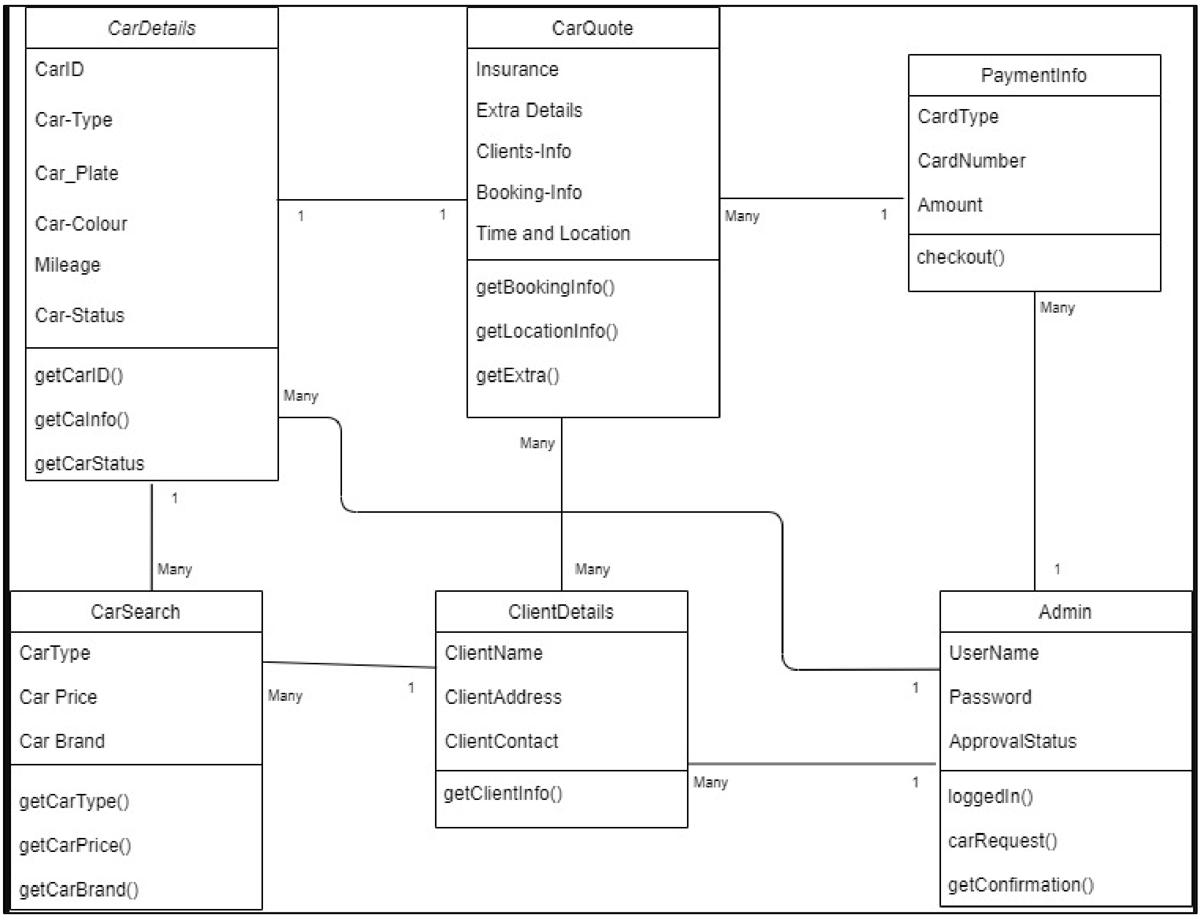


Fig 7.2 Class Diagram

7.3 Sequence Diagram

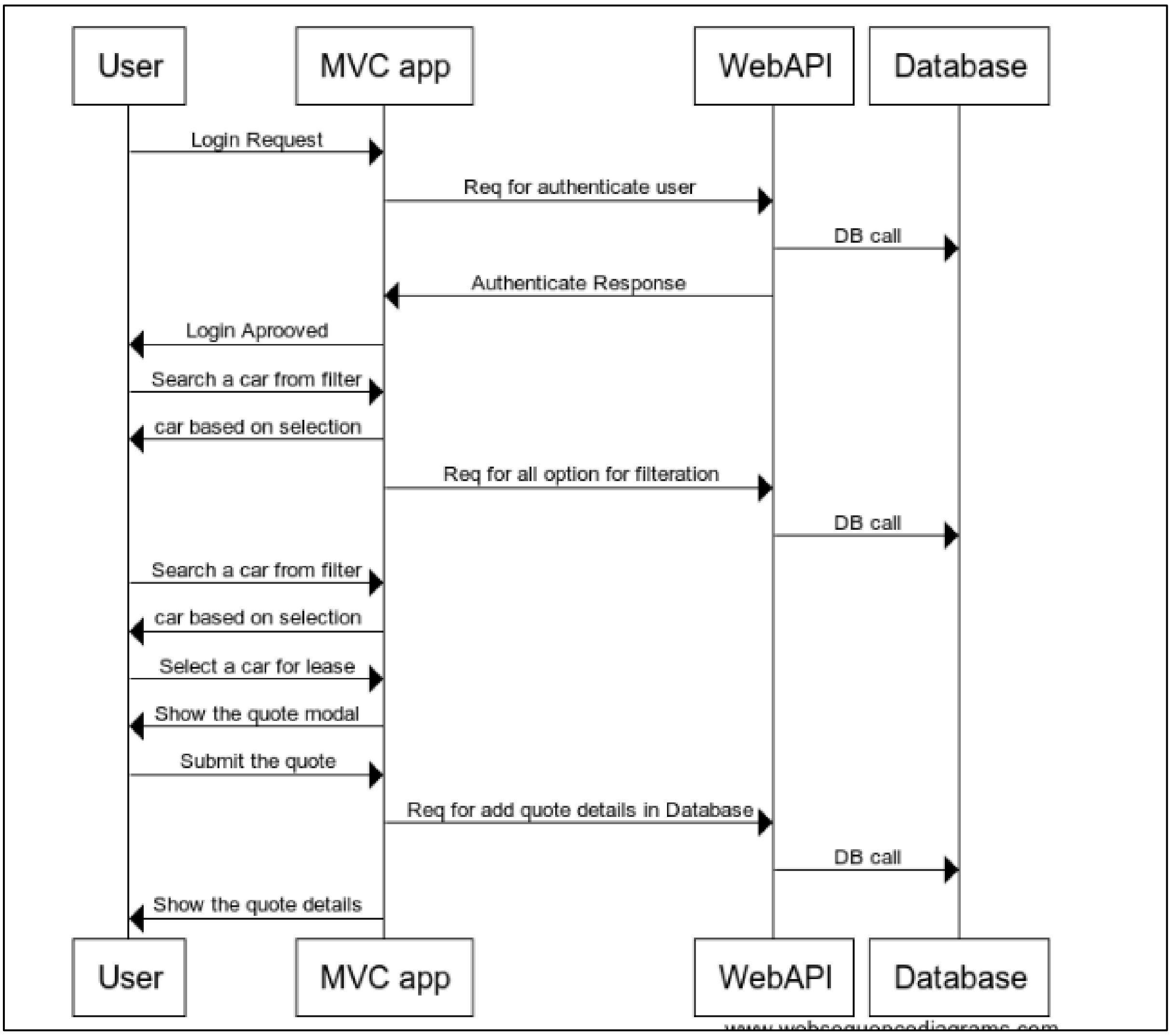


Fig 7.3 Sequence Diagram

7.4 Activity Diagram

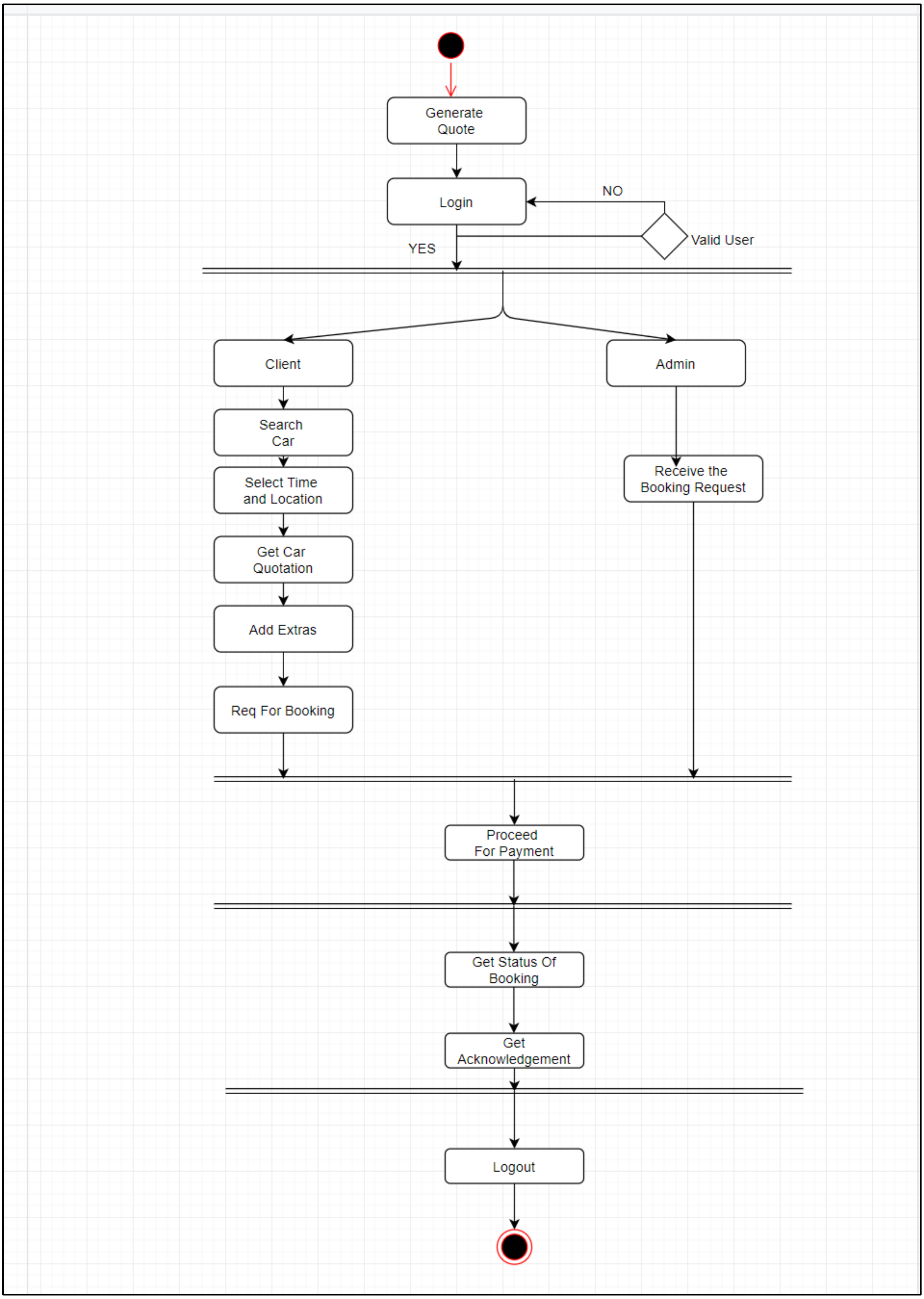


Fig 7.4 Activity Diagram

7.5 List of Tables

SR.NO	TABLE NAME
1	tblEquipment
2	tblIncludedServices
3	tblInsurance
4	tblMileage
5	tblPaybackTime
6	tblPaymentDetail
7	tblPaymentMethod
8	tblQuote
9	tblRoleManagement
10	tblStatus
11	tblUser
12	tblVehicleDetail

Table 7.5 List of Tables

7.6 Table Design

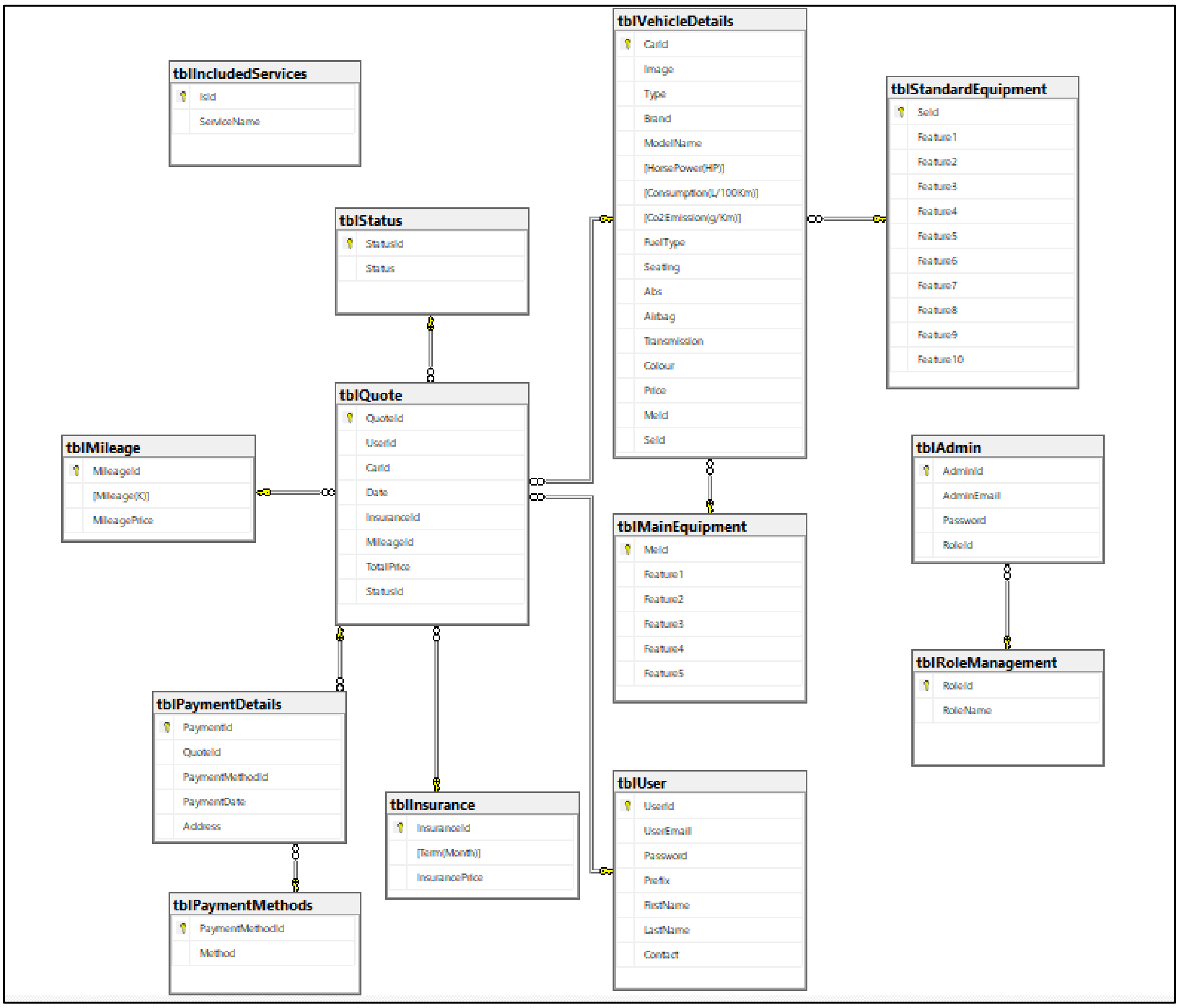


Fig 7.6 Table Design

7.7 Data Dictionary

7.7.1 tblVehicleDetails - Data Dictionary

Table 1: tblVehicleDetails		
Field Name	**Data Type**	**Constraints**
CarId	Int	Not Null, Primary Key
Image	Nvarchar(MAX)	Not Null
Type	Nvarchar(50)	Not Null
Brand	Nvarchar(50)	Not Null
ModelName	Nvarchar(50)	Not Null
HorsePower	varchar(50)	Not Null
Consumption	varchar(50)	Not Null
Co2Emission	varchar(50)	Not Null
FuelType	varchar(50)	Not Null
Seating	Int	Not Null
Abs	Bit	Not Null
Airbag	Int	Not Null
Transmission	varchar(50)	Not Null
Colour	varchar(50)	Not Null
Price	Int	Not Null

Table 7.7.1 tblVehicleDetails - Data Dictionary

7.7.2tblUser – Data Dictionary

Table 2: tblUser		
Field Name	**Data Type**	**Constraints**
UserId	Int	Not Null, Primary KEY
UserEmail	Nvarchar(100)	Not Null
Password	Nvarchar(50)	Not Null
Prefix	Nvarchar(50)	Not Null
LastName	Nvarchar(50)	Not Null
FirstName	Nvarchar(50)	Not Null
Contact	Nvarchar(50)	Not Null
RoleId	Int	Not Null, ForeignKey

Table 7.7.2 tblUser – Data Dictionary

7.7.3 tblStatus – Data Dictionary

Table 3: tblStatus		
Field Name	**Data Type**	**Constraints**
StatusId	Int	Not Null, Primary
Status	Int	Not Null

Table 7.7.3 tblStatus - Data Dictionary

7.7.4 tblRoleManagement – Data Dictionary

Table 4: tblRoleManager		
Field Name	**Data Type**	**Constraints**
RoleId	Int	Not Null, Primary
RoleName	Varchar(100)	Not Null

Table 7.7.4 tblRoleManager - Data Dictionary

7.7.5 tblQuote – Data Dictionary

Table 5: tblQuote		
Field Name	**Data Type**	**Constraints**
QuoteId	Int	Not Null, Primary
UserId	Int	Not Null , Foreign Key
CarId	Int	Not Null , Foreign Key
Date	Date	Not Null
InsuranceId	Int	Not Null , Foreign Key
MileageId	Int	Not Null , Foreign Key
TotalPrice	Int	Not Null
StatusId	Int	Not Null , Foreign Key
PaybackTimeId	Int	Not Null , Foreign Key

Table 7.7.5 tblQuote - Data Dictionary

7.7.6 tblPaymentMethods – Data Dictionary

Table 6: tblPaymentMethods		
Field Name	**Data Type**	**Constraints**
PaymentMethodId	Int	Not Null, Primary
Method	Varchar(25)	Not Null

Table 7.7.6 tblPaymentMethods - Data Dictionary

7.7.7 tblPaymentDetails – Data Dictionary

Table 7: tblPaymentDetails		
Field Name	**Data Type**	**Constraints**
PaymentId	Int	Not Null, Primary
QuoteId	Int	Not Null, Foreign Key
PaymentMethodId	Int	Not Null, Foreign Key
PaymentDate	Date	Not Null
Address	nvarchar	Not Null

Table 7.7.7 tblPaymentDetails - Data Dictionary

7.7.8 tblPaybackTime – Data Dictionary

Table 8: tblPaybackTime		
Field Name	**Data Type**	**Constraints**
PaybackTimeId	Int	Not Null, Primary
PaybackTime	Int	Not Null

Table 7.7.8 tblPaybackTime - Data Dictionary

7.7.9 tblMileage – Data Dictionary

Table 9: tblMileage		
Field Name	**Data Type**	**Constraints**
MilleageId	Int	Not Null, Primary
Mileage	Int	Not Null
MileagePrice	Int	Not Null

Table 7.7.9 tblMileage - Data Dictionary

7.7.10 tblInsurance – Data Dictionary

Table 10: tblInsurance		
Field Name	**Data Type**	**Constraints**
InsuranceId	Int	Not Null, Primary
Term	Int	Not Null
InsurancePrice	Int	Not Null

Table 7.7.10 tblInsurance - Data Dictionary

7.7.11 tblEquipment – Data Dictionary

Table 11: tblEquipment		
Field Name	**Data Type**	**Constraints**
EquipmentId	Int	Not Null, Primary
CarId	Int	Not Null
EquipmentType	Varchar(20)	Not Null
Features	nVarchar(MAX)	Not Null

Table 7.7.11 tblEquipment - Data Dictionary

7.7.12 tblIncludedServices – Data Dictionary

Table 12: tblIncludedServices		
Field Name	**Data Type**	**Constraints**
InsuranceId	Int	Not Null, Primary
ServiceName	Varchar(100)	Not Null

Table 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:

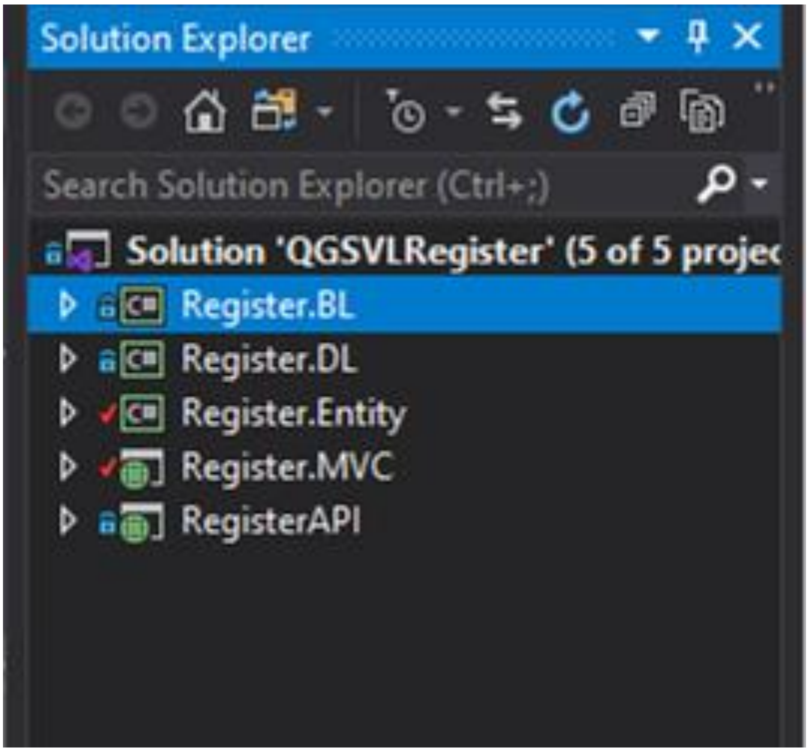
1. Presentation Layer (ASP .Net MVC)

2. Application Program Interface Layer (WEB API)

3. Business Logic Layer (C# Class Library)

4. Data Access Layer (C# Class Library)

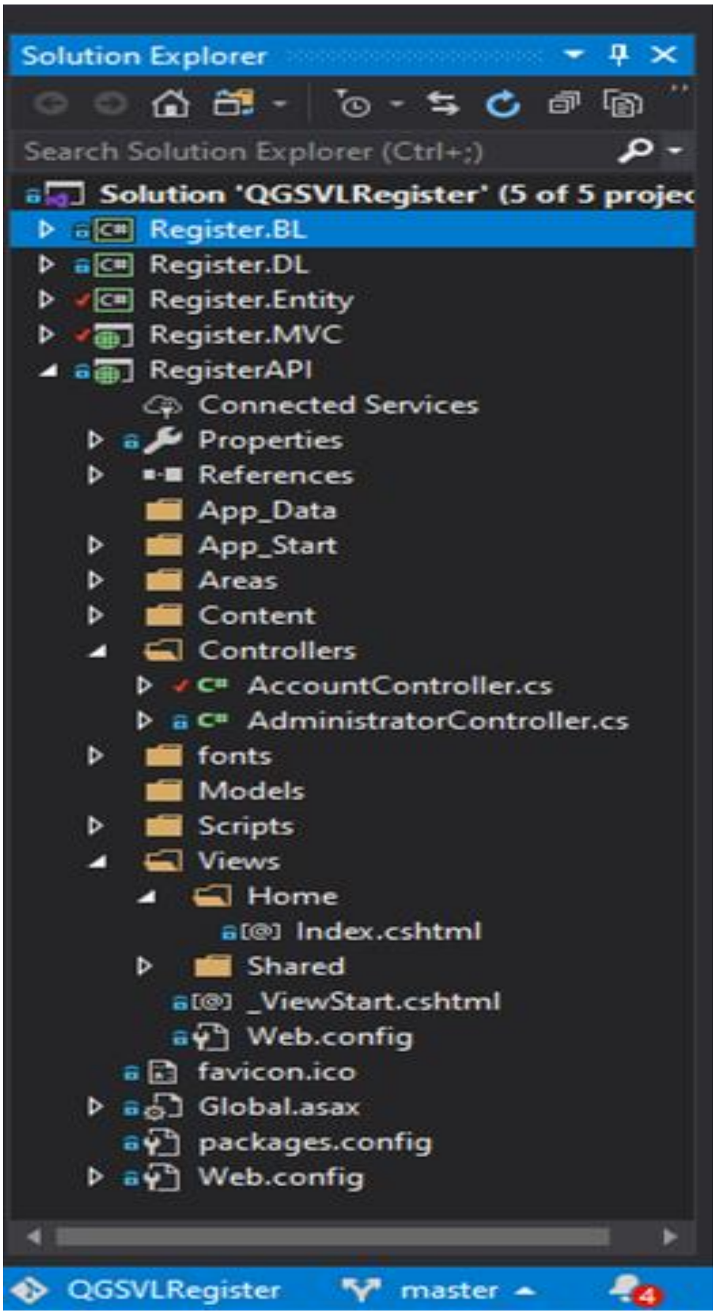
5. Entity Layer (C# Class Library)



Solution 'QGSVLRegister' (5 of 5 projec

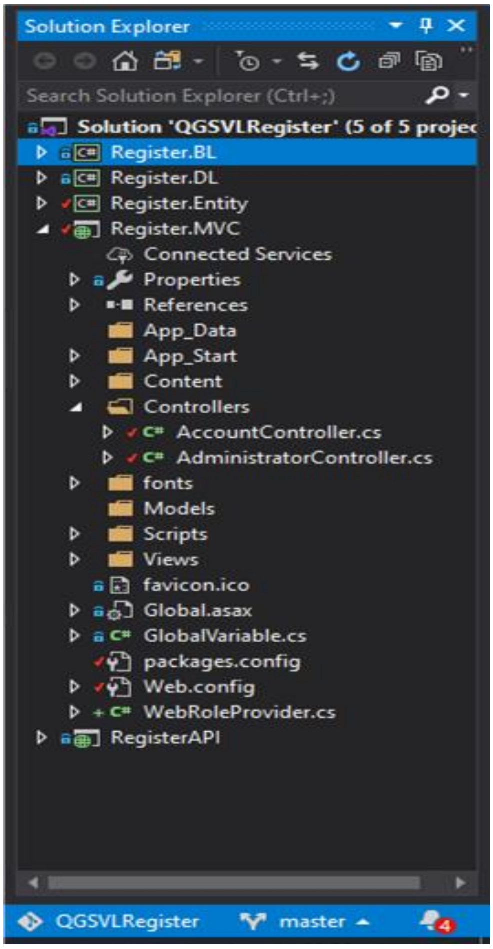
- Register.BL
- Register.DL
- Register.Entity
- Register.MVC
- RegisterAPI

Fig 7.8.1 Complete System Architecture



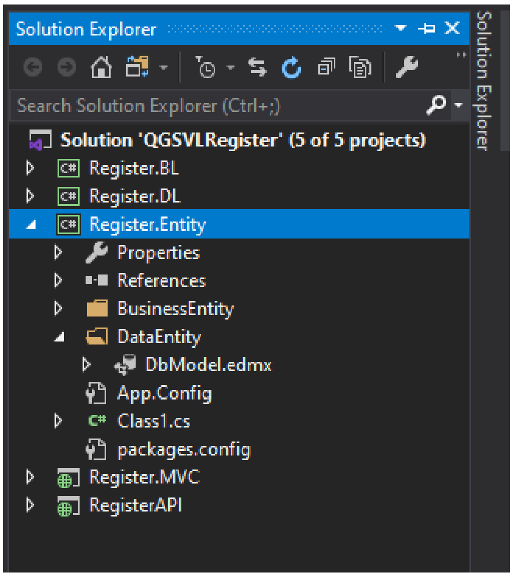
```
Solution Explorer
Search Solution Explorer (Ctrl+;)
Solution 'QGSVLRegister' (5 of 5 projec
  Register.BL
  Register.DL
  Register.Entity
  Register.MVC
  RegisterAPI
      Connected Services
      Properties
      References
      App_Data
      App_Start
      Areas
      Content
      Controllers
          AccountController.cs
          AdministratorController.cs
      fonts
      Models
      Scripts
      Views
          Home
              Index.cshtml
          Shared
          _ViewStart.cshtml
          Web.config
      favicon.ico
      Global.asax
      packages.config
      Web.config
QGSVLRegister    master    4
```

Fig 7.8.2 Web API Layer



```
Solution 'QGSVLRegister' (5 of 5 projec
  Register.BL
  Register.DL
  Register.Entity
  Register.MVC
      Connected Services
      Properties
      References
      App_Data
      App_Start
      Content
      Controllers
          AccountController.cs
          AdministratorController.cs
      fonts
      Models
      Scripts
      Views
      favicon.ico
      Global.asax
      GlobalVariable.cs
      packages.config
      Web.config
      WebRoleProvider.cs
  RegisterAPI
```

Fig 7.8.3 Presentaion Layer



```
Solution 'QGSVLRegister' (5 of 5 projects)
  Register.BL
  Register.DL
  Register.Entity
      Properties
      References
      BusinessEntity
      DataEntity
          DbModel.edmx
      App.Config
      Class1.cs
      packages.config
  Register.MVC
  RegisterAPI
```

Fig 7.8.4Entity Layer

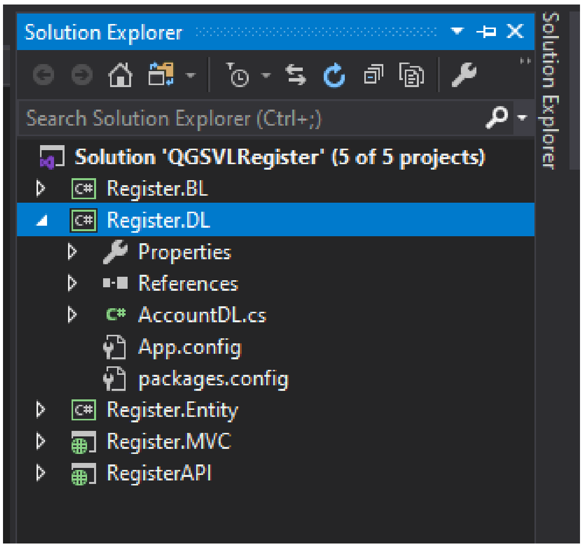


Fig 7.8.5Data Access Layer

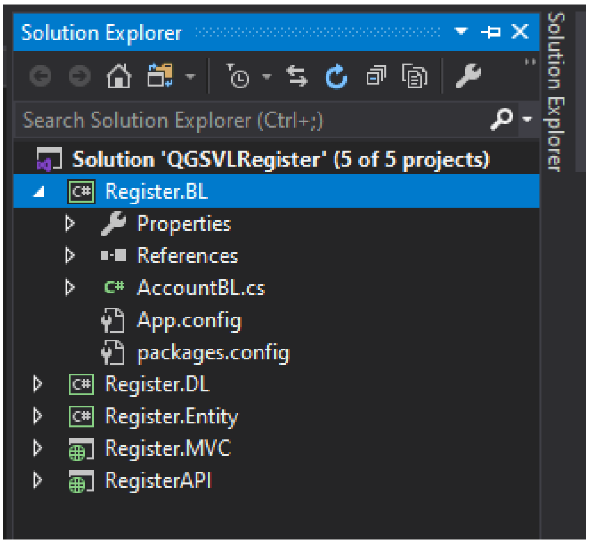


Fig 7.8.6 Business Logic Layer

7.9 DATA FLOW DIAGRAM

7.9.1 DFD Level - 0

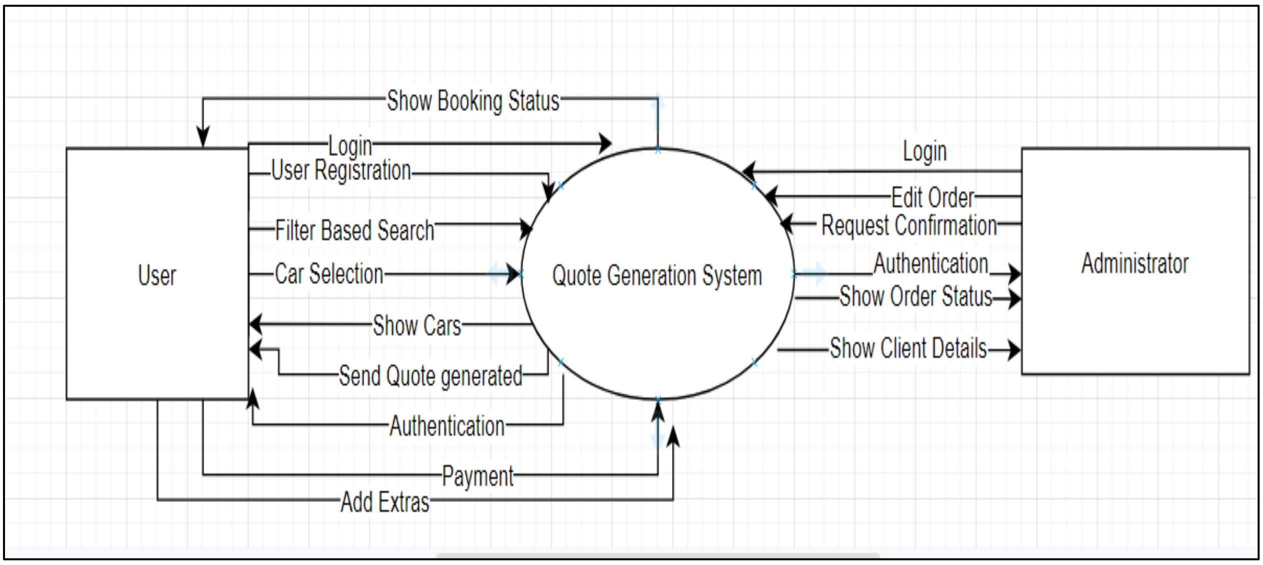


Fig 7.9.1 DFD - Level 0

7.9.2 DFD Level - 1

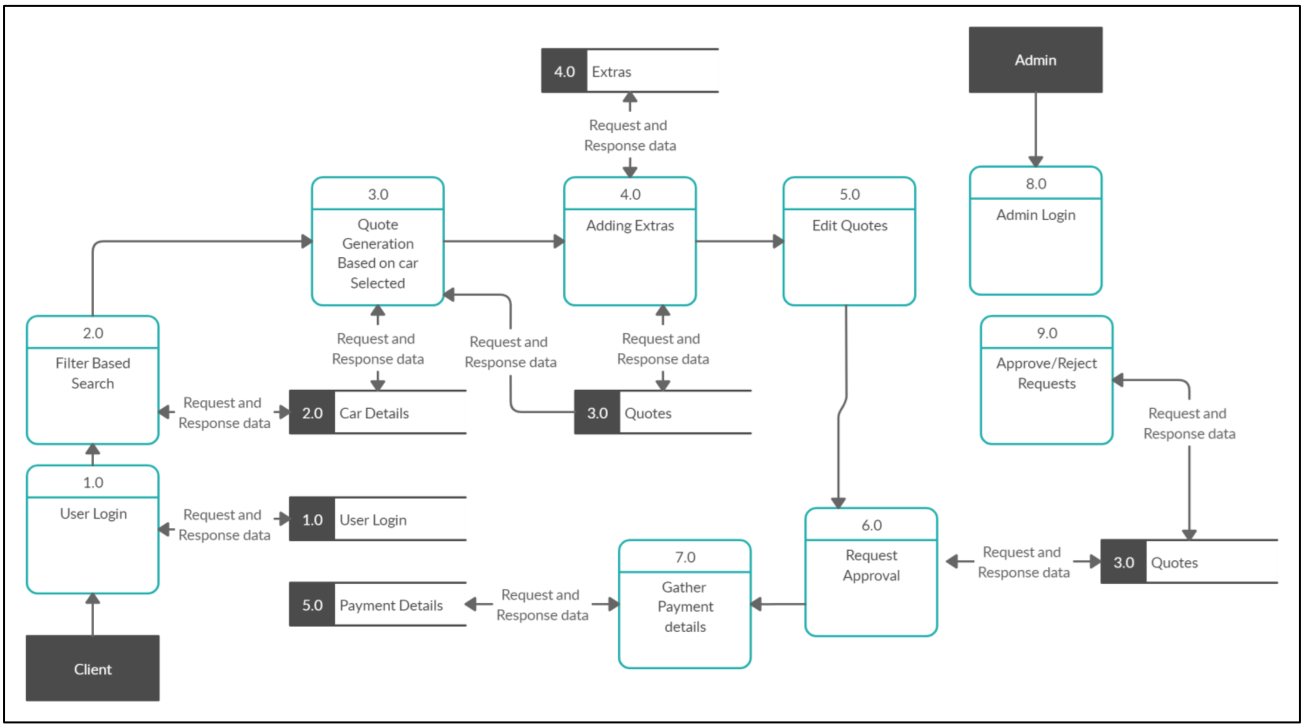

4.0 Extras
Admin
Request and Response data
3.0 Quote Generation Based on car Selected
4.0 Adding Extras
5.0 Edit Quotes
8.0 Admin Login
2.0 Filter Based Search
Request and Response data
Request and Response data
Request and Response data
9.0 Approve/Reject Requests
Request and Response data
2.0 Car Details
3.0 Quotes
Request and Response data
1.0 User Login
Request and Response data
1.0 User Login
6.0 Request Approval
7.0 Gather Payment details
Request and Response data
3.0 Quotes
5.0 Payment Details
Request and Response data
Client

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

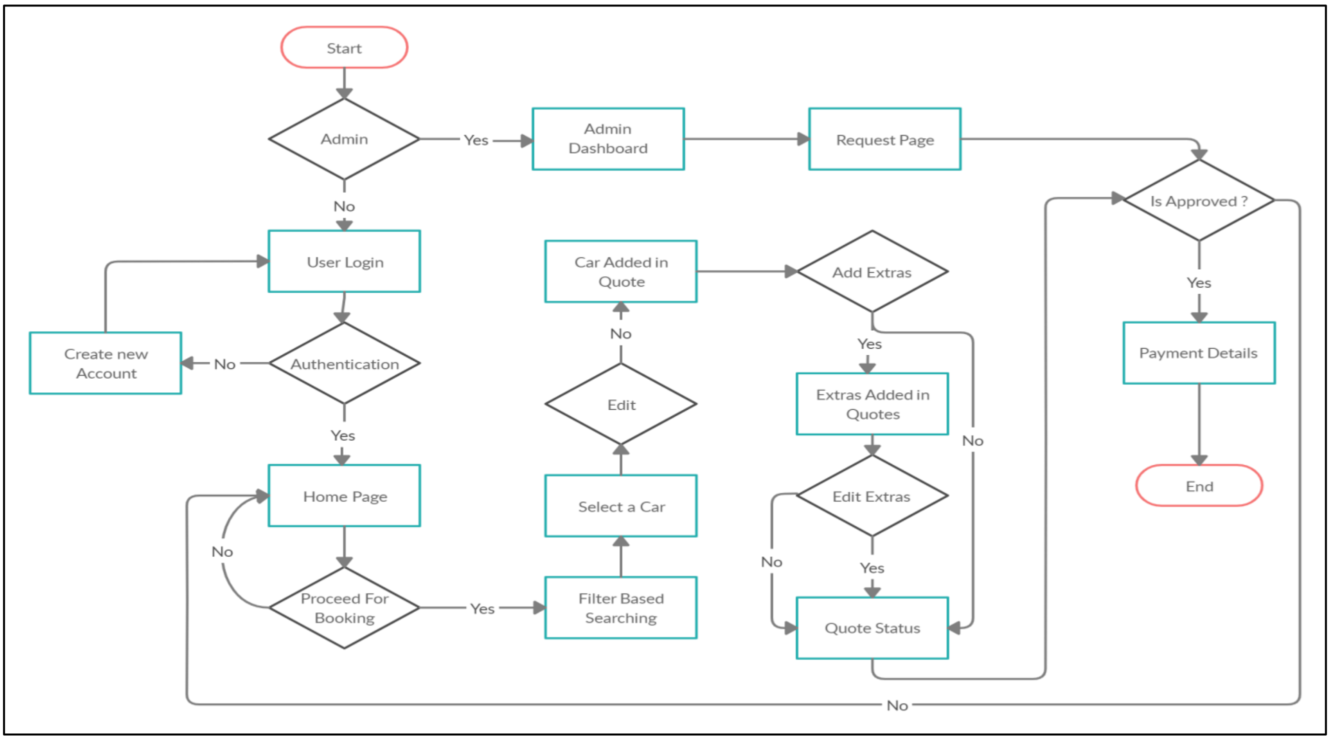


Fig 8.1 Flow chart of Application

8.2 Implementation Environment

Environment on which this web site in 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 Unite 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.

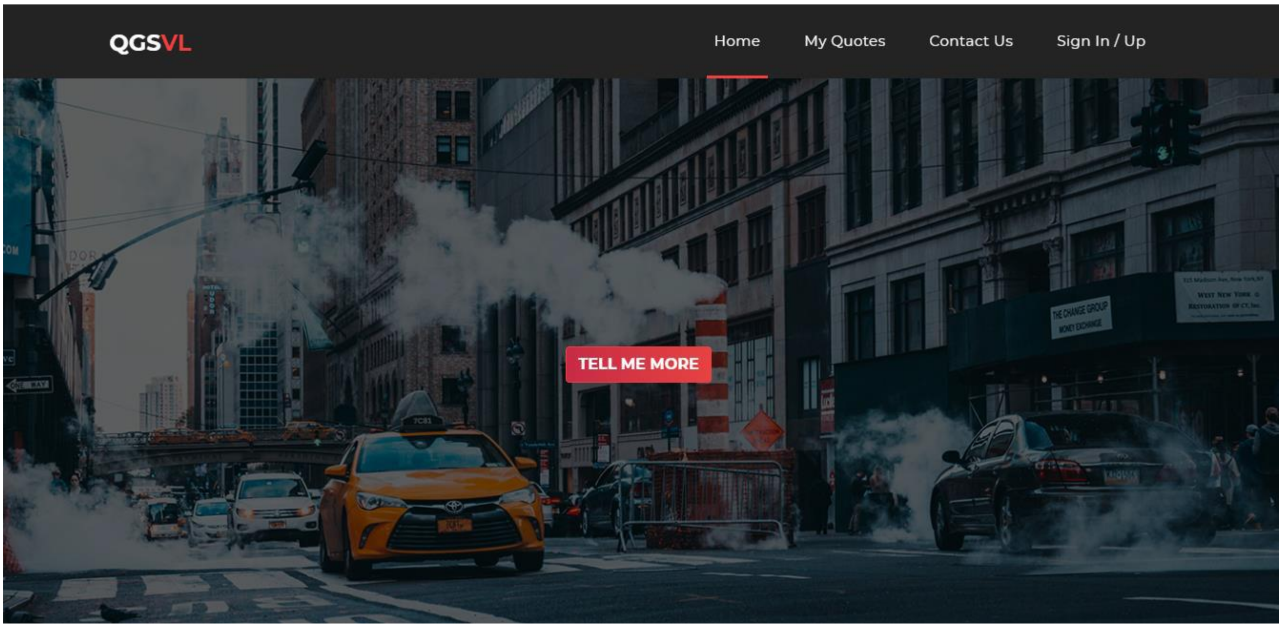
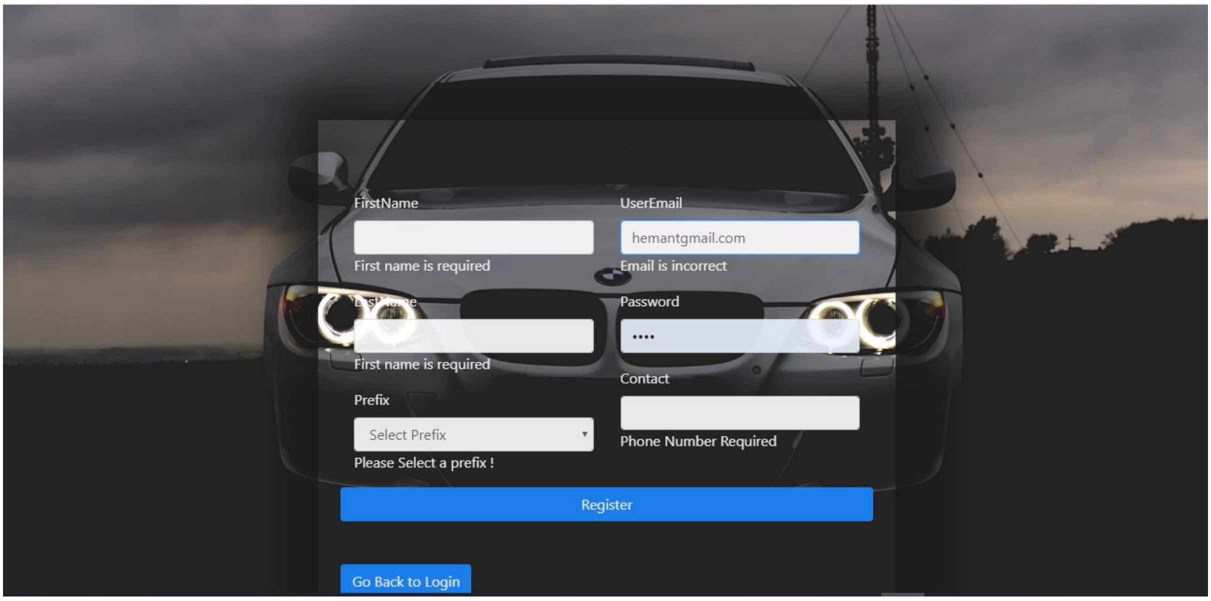


Fig 10.1 Home Page

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



FirstName

First name is required

LastName

First name is required

Prefix

Select Prefix

Please Select a prefix !

UserEmail

hemantgmail.com

Email is incorrect

Password

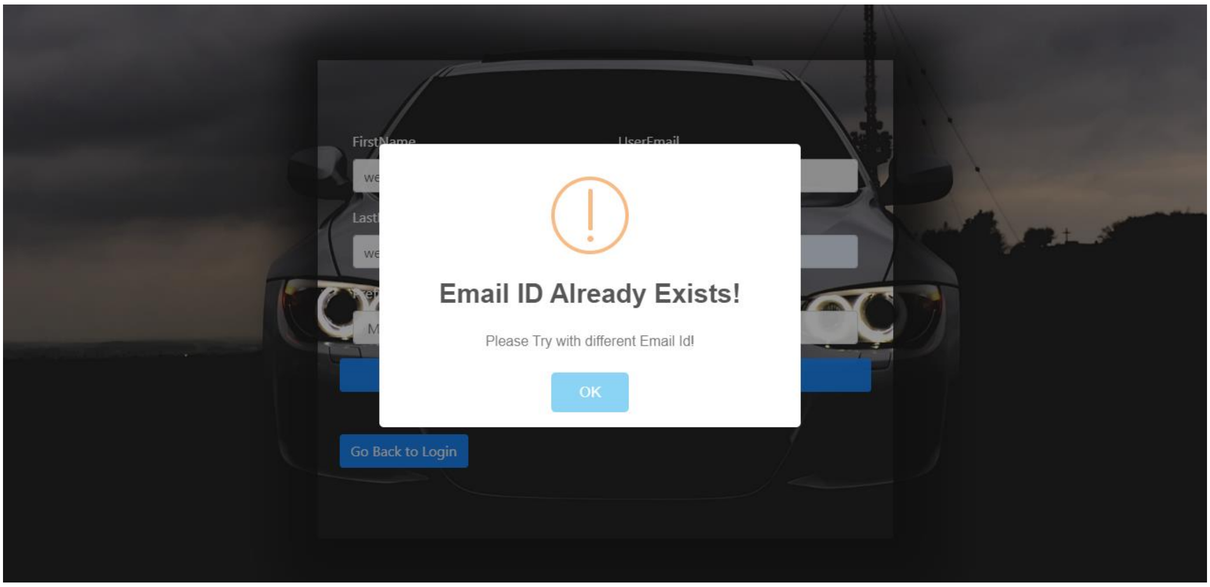
····

Contact

Phone Number Required

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.

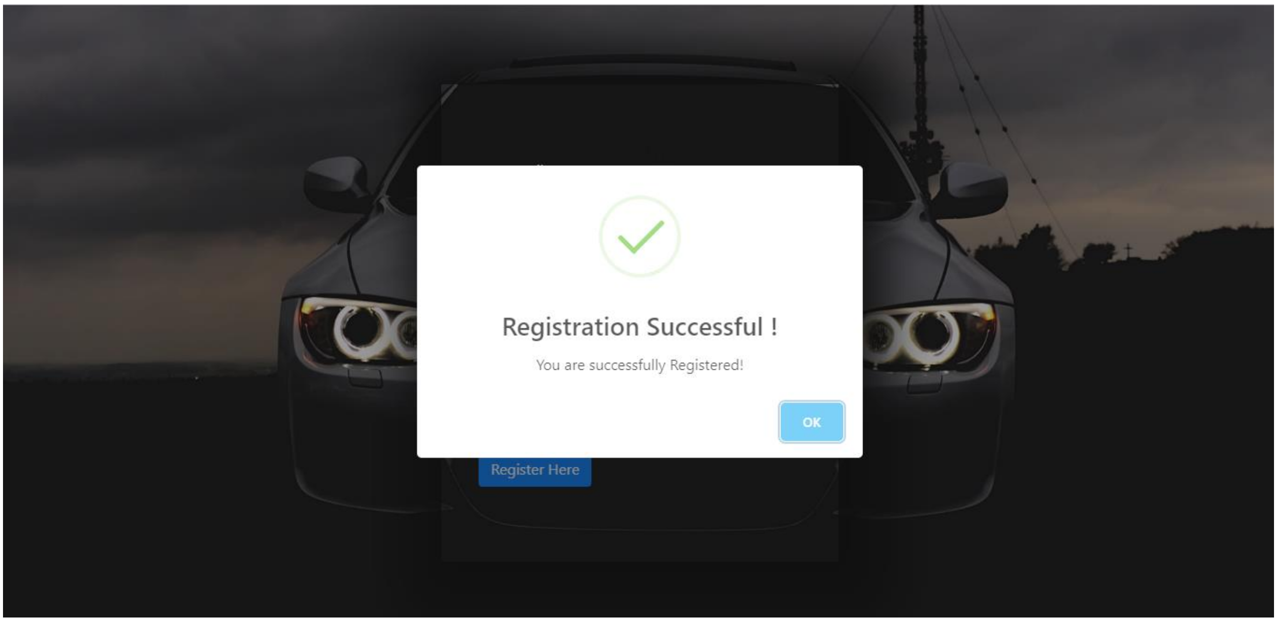


Email ID Already Exists!

Please Try with different Email Id!

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.”

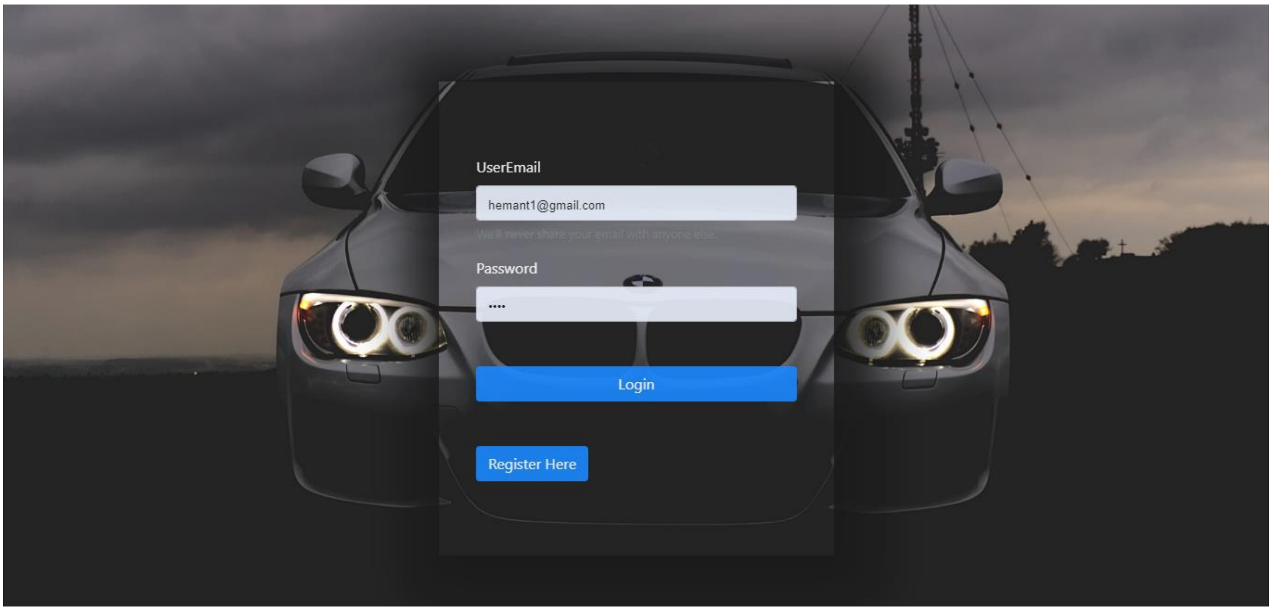


Registration Successful !

You are successfully Registered!

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.



UserEmail

hemant1@gmail.com

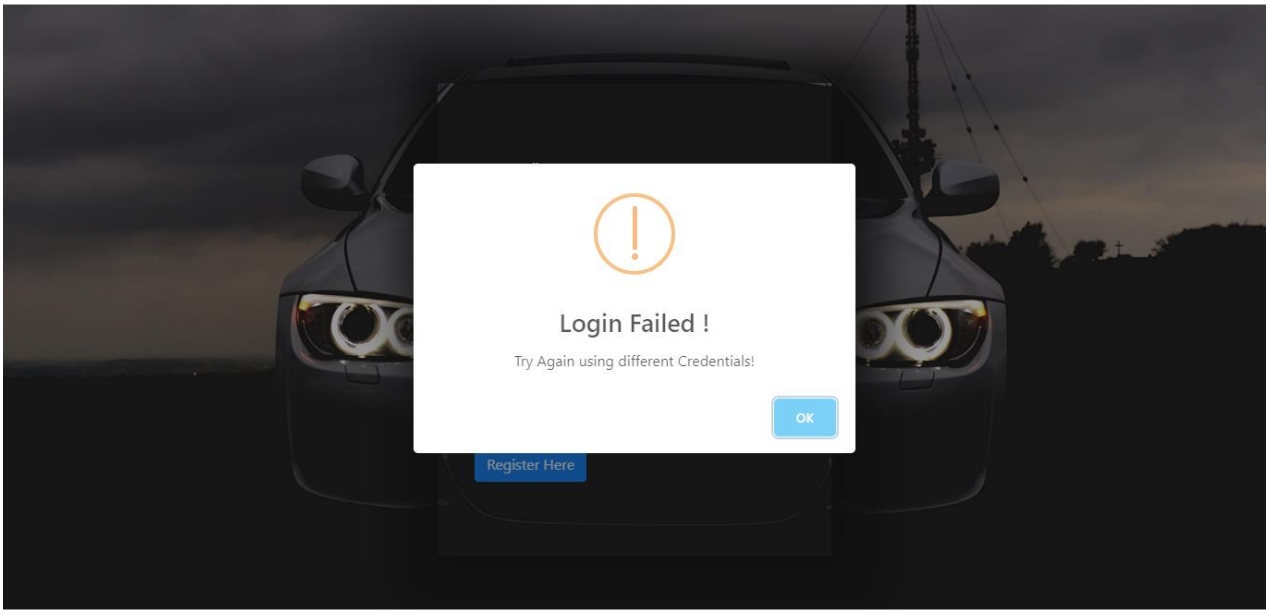
We'll never share your email with anyone else.

Password

••••

Fig 10.5 Login Page

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

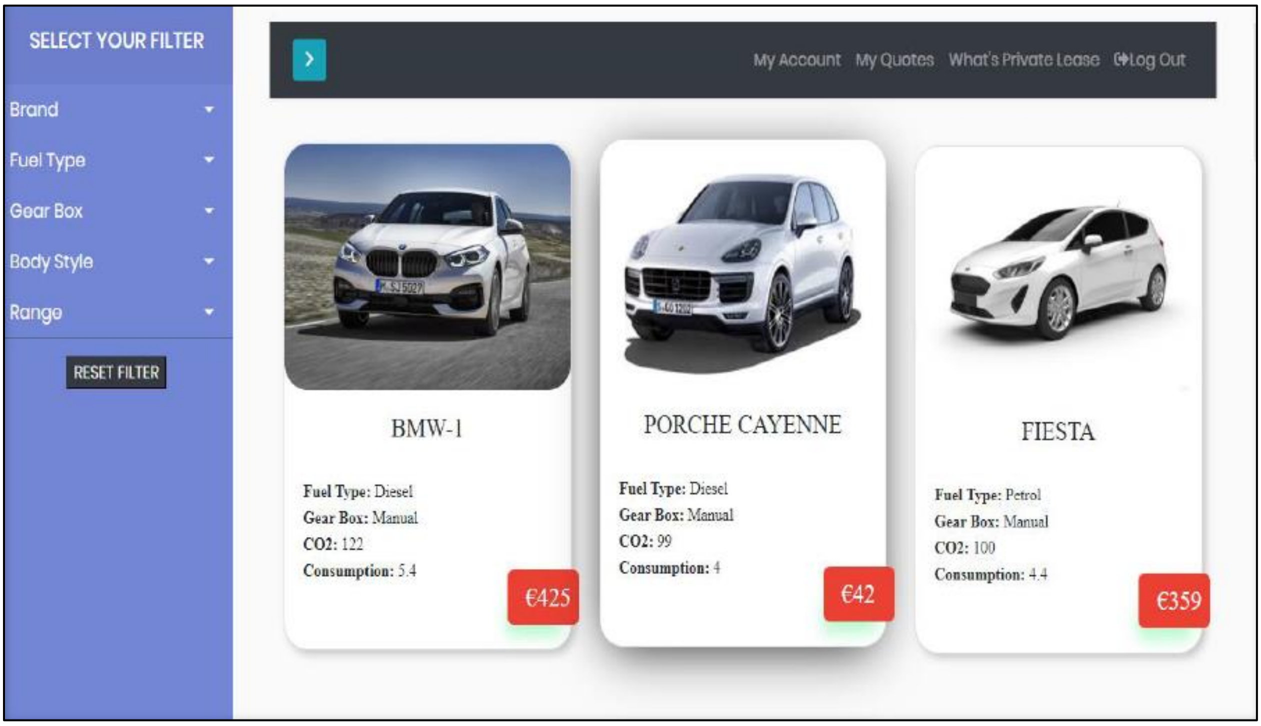


Login Failed !

Try Again using different Credentials!

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.



BMW-1

Fuel Type: Diesel
Gear Box: Manual
CO2: 122
Consumption: 5.4
€425

PORCHE CAYENNE

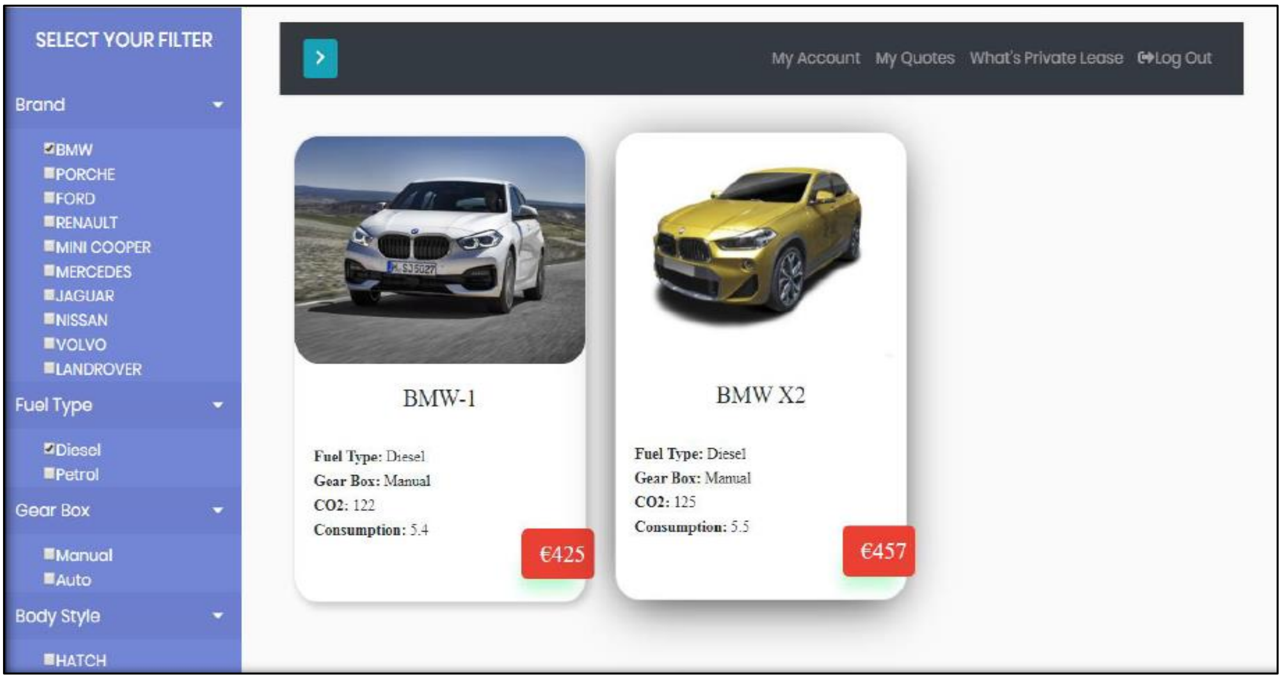
Fuel Type: Diesel
Gear Box: Manual
CO2: 99
Consumption: 4
€42

FIESTA

Fuel Type: Petrol
Gear Box: Manual
CO2: 100
Consumption: 4.4
€359

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.



SELECT YOUR FILTER

Brand

☑BMW
□PORCHE
□FORD
□RENAULT
□MINI COOPER
□MERCEDES
□JAGUAR
□NISSAN
□VOLVO
□LANDROVER

Fuel Type

☑Diesel
□Petrol

Gear Box

□Manual
□Auto

Body Style

□HATCH

BMW-1

Fuel Type: Diesel
Gear Box: Manual
CO2: 122
Consumption: 5.4

€425

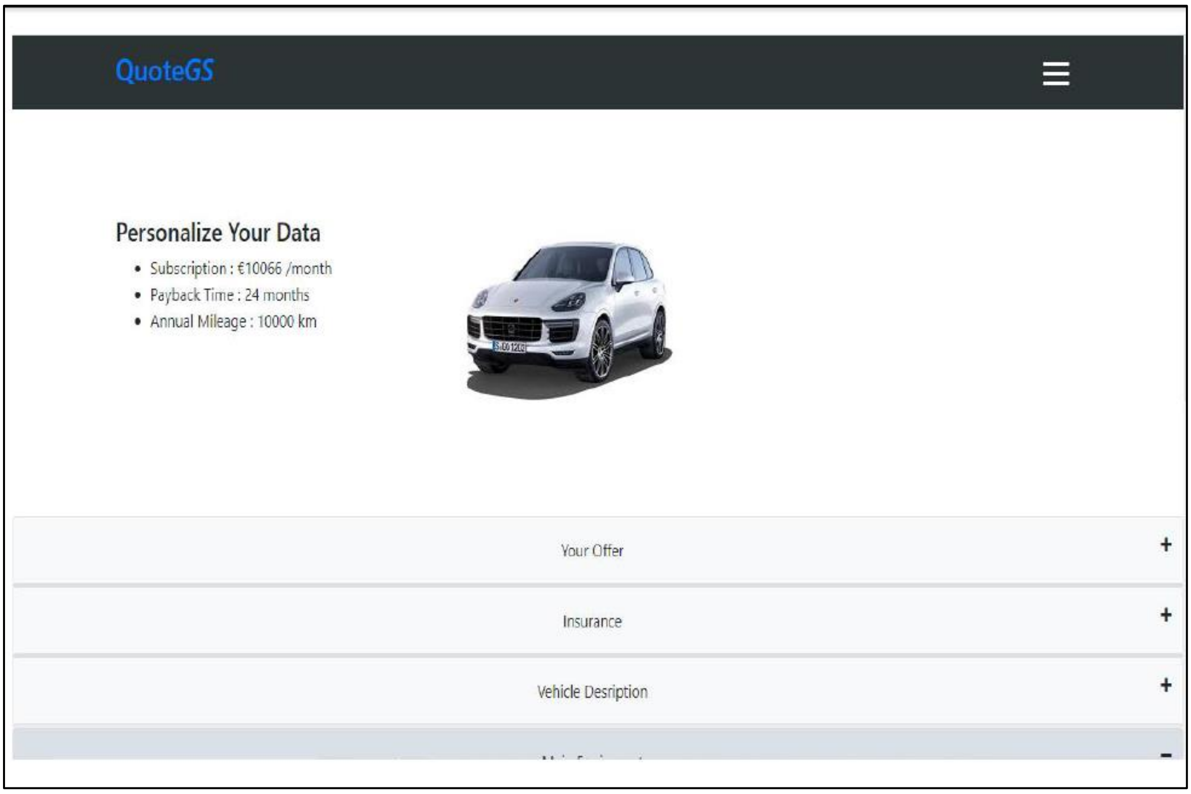
BMW X2

Fuel Type: Diesel
Gear Box: Manual
CO2: 125
Consumption: 5.5

€457

Fig 10.8 Filter Based Result

9. 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.

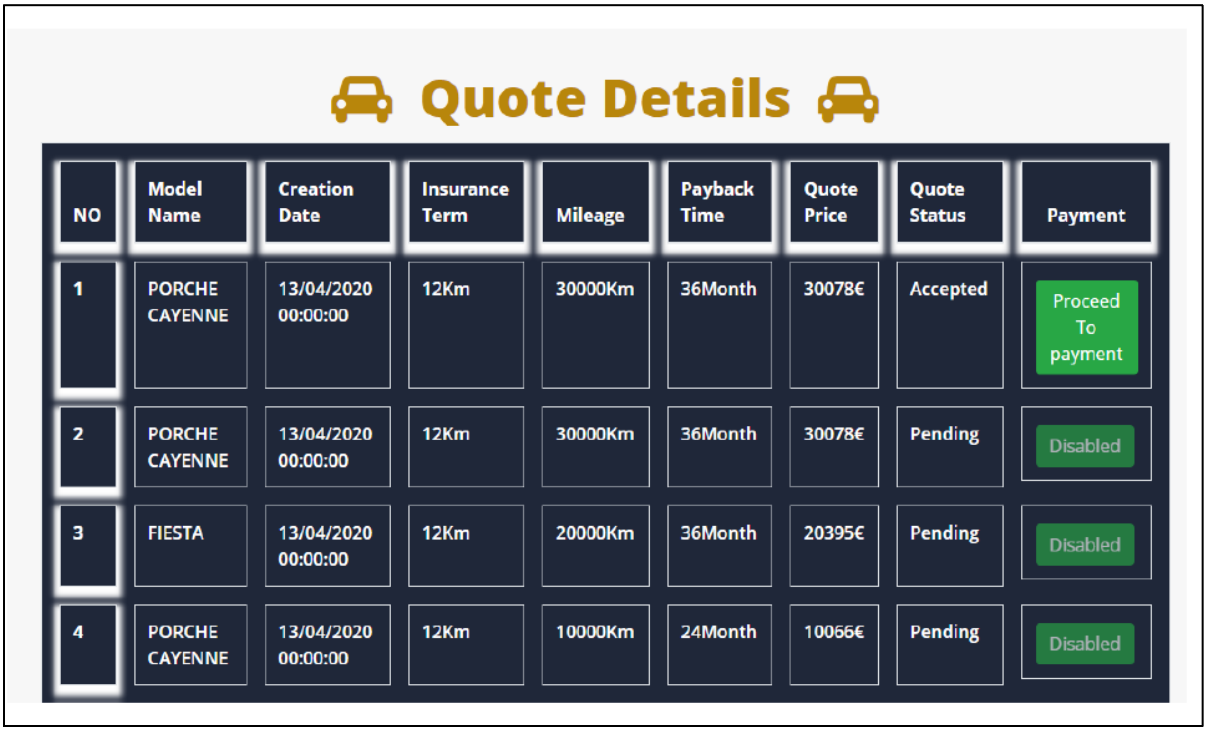


Personalize Your Data

- Subscription : €10066 /month
- Payback Time : 24 months
- Annual Mileage : 10000 km

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.

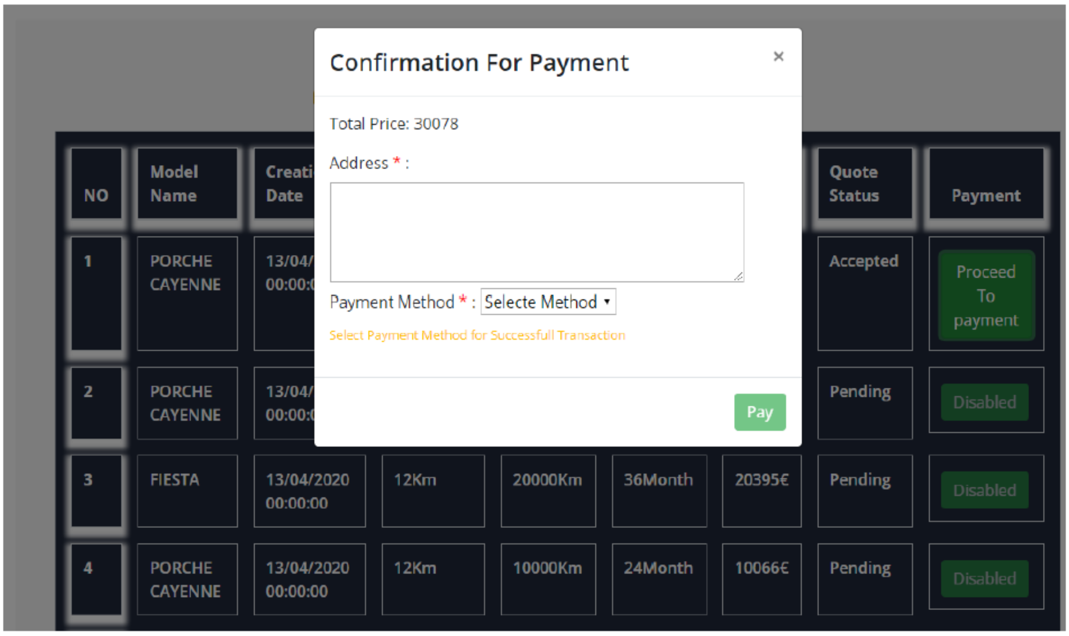


Quote Details

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

11. 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 ×

Total Price: 30078

Address * :

Payment Method * : Selecte Method ▾

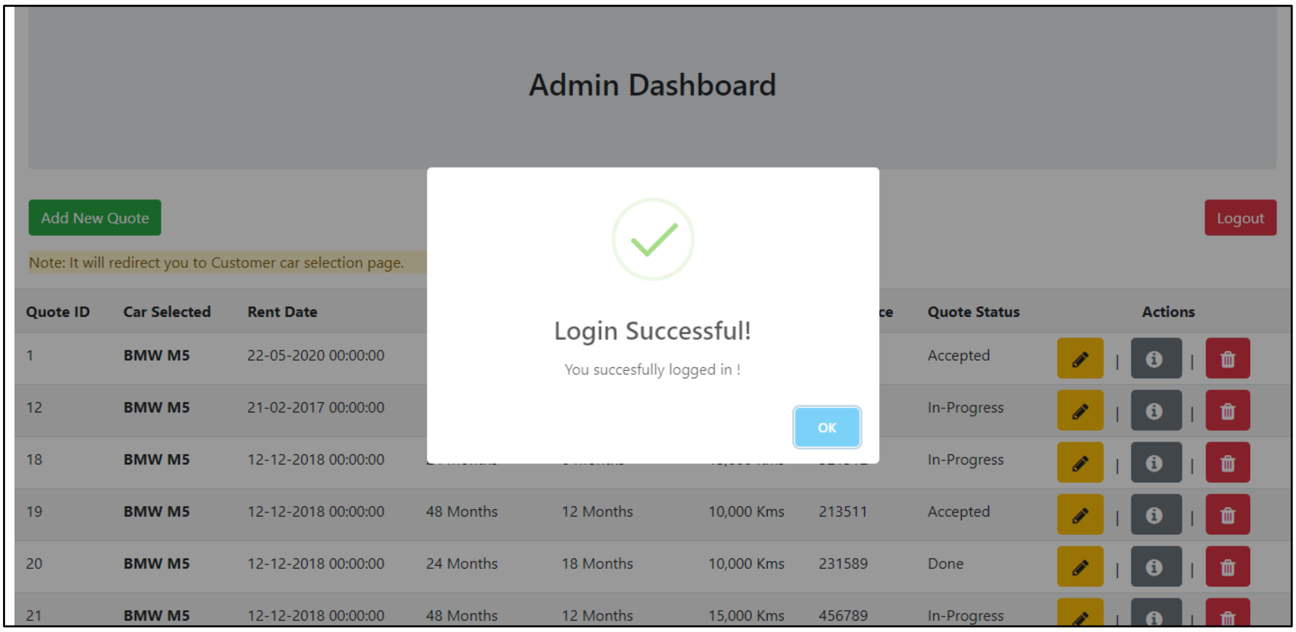
Select Payment Method for Successfull Transaction

NO	Model Name	Creati Date					Quote Status	Payment
1	PORCHE CAYENNE	13/04/ 00:00:(					Accepted	Proceed To payment
2	PORCHE CAYENNE	13/04/ 00:00:(					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 10.11 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.



Admin Dashboard

Note: It will redirect you to Customer car selection page.

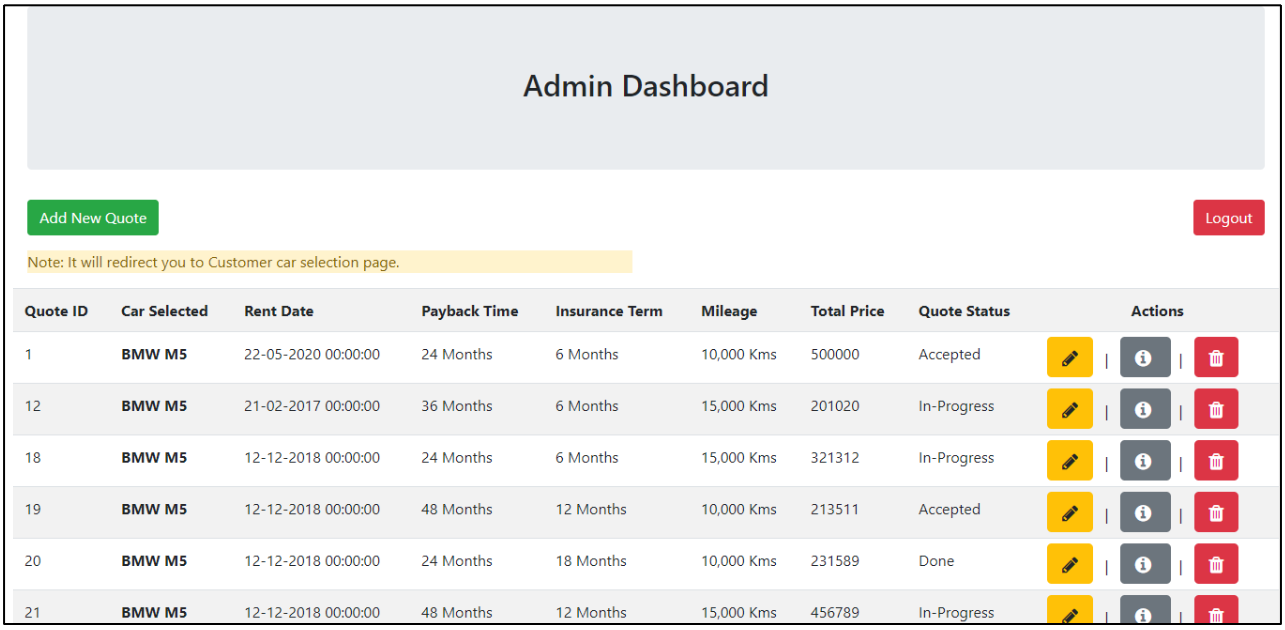
Login Successful!

You succesfully logged in !

Quote ID	Car Selected	Rent Date				ce	Quote Status	Actions
1	**BMW M5**	22-05-2020 00:00:00					Accepted	✎ | ℹ | 🗑
12	**BMW M5**	21-02-2017 00:00:00					In-Progress	✎ | ℹ | 🗑
18	**BMW M5**	12-12-2018 00:00:00					In-Progress	✎ | ℹ | 🗑
19	**BMW M5**	12-12-2018 00:00:00	48 Months	12 Months	10,000 Kms	213511	Accepted	✎ | ℹ | 🗑
20	**BMW M5**	12-12-2018 00:00:00	24 Months	18 Months	10,000 Kms	231589	Done	✎ | ℹ | 🗑
21	**BMW M5**	12-12-2018 00:00:00	48 Months	12 Months	15,000 Kms	456789	In-Progress	✎ | ℹ | 🗑

Fig 10.12 Role Based Login

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



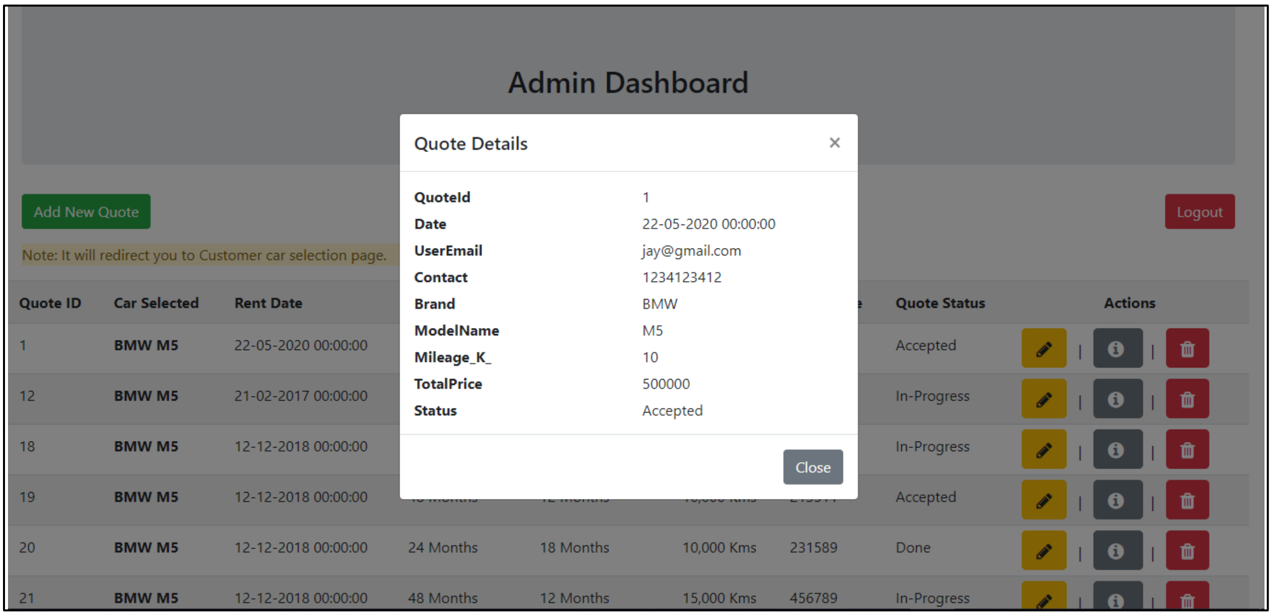
Admin Dashboard

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	✎ | ℹ | 🗑
12	**BMW M5**	21-02-2017 00:00:00	36 Months	6 Months	15,000 Kms	201020	In-Progress	✎ | ℹ | 🗑
18	**BMW M5**	12-12-2018 00:00:00	24 Months	6 Months	15,000 Kms	321312	In-Progress	✎ | ℹ | 🗑
19	**BMW M5**	12-12-2018 00:00:00	48 Months	12 Months	10,000 Kms	213511	Accepted	✎ | ℹ | 🗑
20	**BMW M5**	12-12-2018 00:00:00	24 Months	18 Months	10,000 Kms	231589	Done	✎ | ℹ | 🗑
21	**BMW M5**	12-12-2018 00:00:00	48 Months	12 Months	15,000 Kms	456789	In-Progress	✎ | ℹ | 🗑

Fig 10.13 Administrator Dashboard

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



Admin Dashboard

Add New Quote

Note: It will redirect you to Customer car selection page.

Logout

Quote ID	Car Selected	Rent Date					Quote Status	Actions
1	BMW M5	22-05-2020 00:00:00					Accepted	✎ | ℹ | 🗑
12	BMW M5	21-02-2017 00:00:00					In-Progress	✎ | ℹ | 🗑
18	BMW M5	12-12-2018 00:00:00					In-Progress	✎ | ℹ | 🗑
19	BMW M5	12-12-2018 00:00:00					Accepted	✎ | ℹ | 🗑
20	BMW M5	12-12-2018 00:00:00	24 Months	18 Months	10,000 Kms	231589	Done	✎ | ℹ | 🗑
21	BMW M5	12-12-2018 00:00:00	48 Months	12 Months	15,000 Kms	456789	In-Progress	✎ | ℹ | 🗑

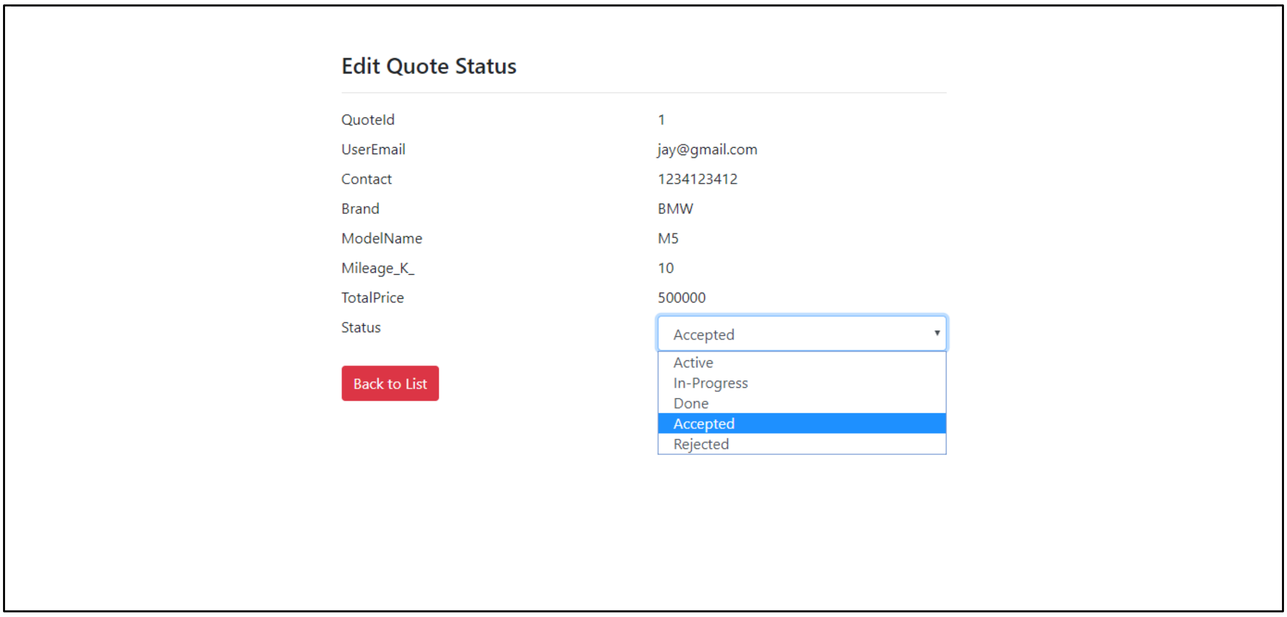
Quote Details ×

QuoteId	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

Close

Fig 10.14 Quote Details

4. 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.

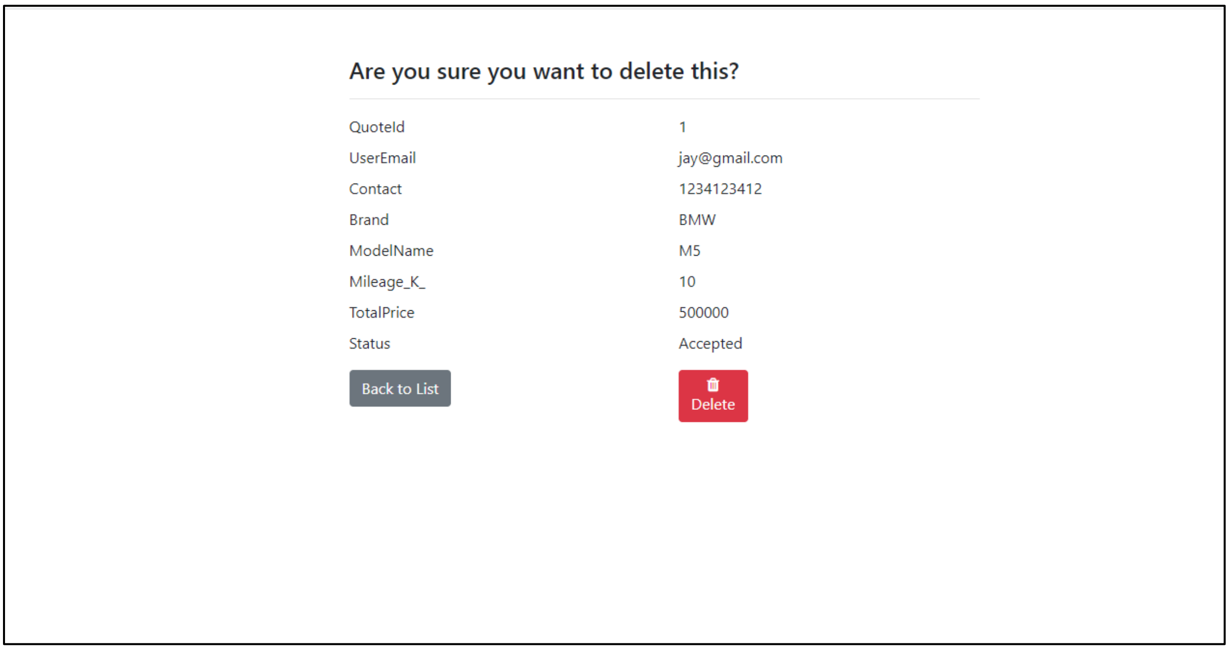


Edit Quote Status

QuoteId	1
UserEmail	jay@gmail.com
Contact	1234123412
Brand	BMW
ModelName	M5
Mileage_K_	10
TotalPrice	500000
Status	Accepted

Fig 10.15 Edit Quote

5. We can also solft 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.

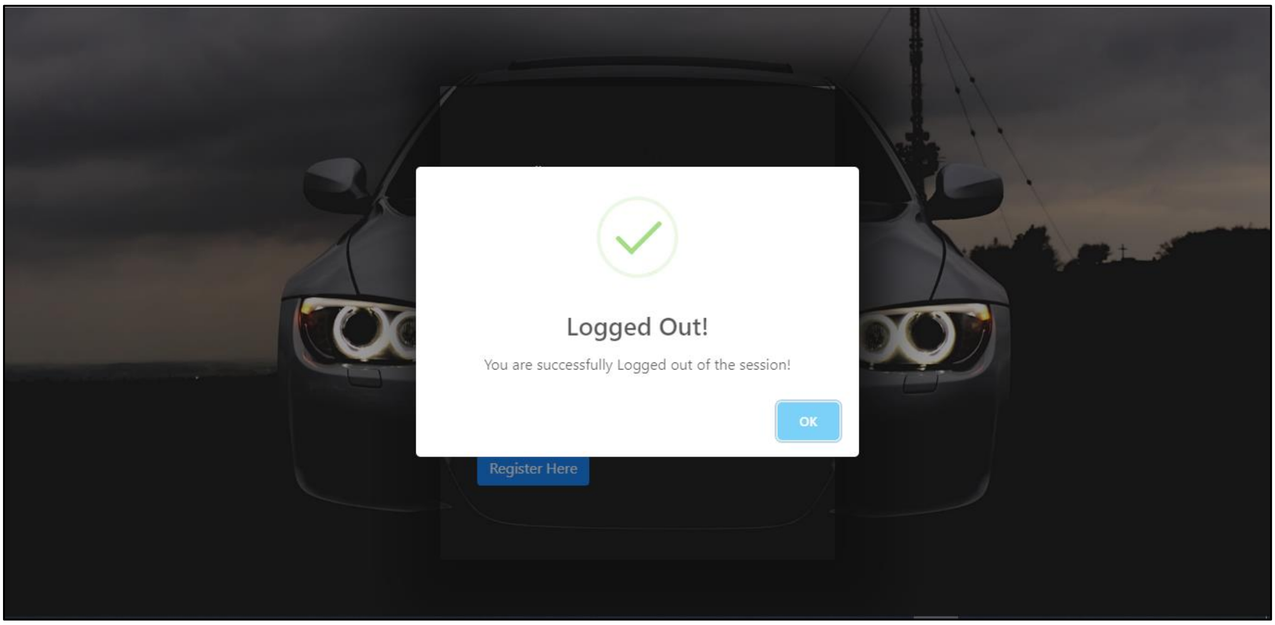


Are you sure you want to delete this?

QuoteId	1
UserEmail	jay@gmail.com
Contact	1234123412
Brand	BMW
ModelName	M5
Mileage_K_	10
TotalPrice	500000
Status	Accepted

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.



Logged Out!

You are successfully Logged out of the session!

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**

  SQL Server Management Studio (SSMS) is a software application first launched with Microsoft SQL Server 2005 that is used for configuring, managing, and administering all components within Microsoft SQL Server. It's the successor to the Enterprise Manager in SQL 2000 or before. The tool includes both script editors and graphical tools which work with objects and features of the server.

  A central feature of SSMS is the Object Explorer, which allows the user to browse, select, and act upon any of the objects within the server. It also shipped a separate Express edition that could be freely downloaded, however recent versions of SSMS are fully capable of connecting to and manage any SQL Server Express instance. Microsoft also incorporated backwards compatibility for older versions of SQL Server thus allowing a newer version of SSMS to connect to older versions of SQL Server instances. It also comes with Microsoft SQL Server Express 2012, or users can download it separately.

- **Visual Studio 2017**

  Microsoft Visual Studio is an integrated development environment (IDE) from Microsoft. It is used to develop computer programs, as well as websites, web apps, web services and mobile apps. Visual Studio uses Microsoft software development platforms such as Windows API, Windows Forms, Windows Presentation Foundation, Windows Store and Microsoft Silver light. It can produce both native code and managed code.

  Visual Studio includes a code editor supporting IntelliSense (the code completion component) as well as code refactoring. The integrated debugger works both as a source-level debugger and a machine-level debugger. Other built-in tools include a code profiler, designer for building GUI applications, web designer, class designer, and database schema designer. It accepts plug-ins that enhance the functionality at almost every level—including adding support for source control systems (like Subversion and Git) and adding new toolsets like editors and visual designers for domain-specific languages or toolsets for other aspects of the software development lifecycle (like the Azure DevOps client: Team Explorer).

- **Db Designer**

  FREE fully-featured visual database schema designer. Design database model online & generate SQL script instantly.

- **Postman**

  Postman is a powerful HTTP client for testing web services. Created by Abhinav Asthana, a programmer and designer based in Bangalore, India, Postman makes it easy to test, develop and document APIs by allowing users to quickly put together both simple and complex HTTP requests.

- **Internet Information Services**

  Internet Information Services (IIS, formerly Internet Information Server) is an extensible web server software created by Microsoft for use with the Windows NT family. IIS supports HTTP, HTTP/2, HTTPS, FTP, FTPS, SMTP and NNTP. It has been an integral part of the Windows NT family since Windows NT 4.0, though it may be absent from some editions (e.g. Windows XP Home edition), and is not active by default.

- **Visual Studio Code**

  Visual Studio Code is a source-code editor developed by Microsoft for Windows, Linux and mac OS. It includes embedded Git and support for debugging, syntax highlighting, intelligent code completion, snippets, and code refactoring. It is highly customizable, allowing users to change the theme, keyboard shortcuts, preferences, and install extensions that add additional functionality. The source code is free and open-source, released under the permissive MIT License. The compiled binaries are freeware for any use.

  In the Stack Overflow 2019 Developer Survey, Visual Studio Code was ranked the most popular developer environment tool, with 50.7% of 87,317 respondents claiming to use it.

12.2.2 Technologies:

- **ASP .Net**

  ASP.NET is an open-source server-side web-application framework designed for web development to produce dynamic web pages developed by Microsoft to allow programmers to build dynamic web sites, applications and services.

  It was first released in January 2002 with version 1.0 of the .NET Framework, and is the successor to Microsoft's Active Server Pages technology. ASP.NET is built on the Common Language Runtime (CLR), allowing programmers to write ASP.NET code using any supported .NET language. The ASP.NET SOAP extension framework allows ASP.NET components to process SOAP messages.

  ASP.NET's successor is ASP.NET Core. It is a re-implementation of ASP.NET as a modular web framework, together with other frameworks like Entity Framework. The new framework uses the new open-source .NET Compiler Platform (codename "Roslyn") and is cross platform. ASP.NET MVC, ASP.NET Web API, and ASP.NET Web Pages (a platform using only Razor pages) have merged into a unified MVC 6.

- **MVC**

  Model–view–controller (usually known as MVC) is a software design pattern commonly used for developing user interfaces which divides the related program logic into three interconnected elements. This is done to separate internal representations of information from the ways information is presented to and accepted from the user. This kind of pattern is used for designing the layout of the page.

- **Web API**

  A Web API is an application programming interface for either a web server or a web browser. It is a web development concept, usually limited to a web application's client-side (including any web frameworks being used), and thus usually does not include web server or browser implementation details such as SAPIs or APIs unless publicly accessible by a remote web application.

- **MS SQL**

  Microsoft SQL Server is a relational database management system developed by Microsoft. As a database server, it is a software product with the primary function of storing and retrieving data as requested by other software applications—which may run either on the same computer or on another computer across a network.

- **C Sharp**

  C# is a general-purpose, multi-paradigm programming language encompassing strong typing, lexically scoped, imperative, declarative, functional, generic, object-oriented (class-based), and component-oriented programming disciplines. It was developed around 2000 by Microsoft as part of its .NET initiative, and later approved as an international standard by Ecma (ECMA-334) and ISO (ISO/IEC 23270:2018). Mono is the name of the free and open-source project to develop a compiler and runtime for the language. C# is one of the programming languages designed for the Common Language Infrastructure (CLI).

  C# was designed by Anders Hejlsberg, and its development team is currently led by Mads Torgersen. The most recent version is 8.0, which was released in 2019 alongside Visual Studio 2019 version 16.3.

- **LINQ**

  Language Integrated Query is a Microsoft .NET Framework component that adds native data querying capabilities to .NET languages, originally released as a major part of .NET Framework 3.5 in 2007.

- **HTML**

  Hypertext Markup Language (HTML) is the standard markup language for documents designed to be displayed in a web browser. It can be assisted by technologies such as Cascading Style Sheets (CSS) and scripting languages such as JavaScript.

  Web browsers receive HTML documents from a web server or from local storage and render the documents into multimedia web pages. HTML describes the structure of a web page semantically and originally included cues for the appearance of the document.

  HTML elements are the building blocks of HTML pages. With HTML constructs, images and other objects such as interactive forms may be embedded into the rendered page. HTML provides a means to create structured documents by denoting structural semantics for text such as headings, paragraphs, lists, links, quotes and other items.

HTML elements are delineated by tags, written using angle brackets. Tags such as <img /> and <input /> directly introduce content into the page. Other tags such as <p> surround and provide information about document text and may include other tags as sub-elements. Browsers do not display the HTML tags, but use them to interpret the content of the page.

- **CSS**

  Cascading Style Sheets (CSS) is a style sheet language used for describing the presentation of a document written in a markup language like HTML. CSS is a cornerstone technology of the World Wide Web, alongside HTML and JavaScript.

  CSS is designed to enable the separation of presentation and content, including layout, colors, and fonts. This separation can improve content accessibility, provide more flexibility and control in the specification of presentation characteristics, enable multiple web pages to share formatting by specifying the relevant CSS in a separate .css file, and reduce complexity and repetition in the structural content.

- **JavaScript**

  JavaScript often abbreviated as JS, is a programming language that conforms to the ECMAScript specification. JavaScript is high-level, often just-in-time compiled, and multi-paradigm. It has curly-bracket syntax, dynamic typing, prototype-based object-orientation, and first-class functions.

  Alongside HTML and CSS, JavaScript is one of the core technologies of the World Wide Web. JavaScript enables interactive web pages and is an essential part of web applications. The vast majority of websites use it for client-side page behaviour, and all major web browsers have a dedicated JavaScript engine to execute it.

- **Bootstrap**

  Bootstrap is a free and open-source CSS framework directed at responsive, mobile-first front-end web development. It contains CSS- and (optionally) JavaScript-based design templates for typography, forms, buttons, navigation, and other interface components.

  Bootstrap is the sixth-most-starred project on GitHub, with more than 135,000 stars, behind free Code Camp and marginally behind Vue.js framework. According to Alexa Rank, Bootstrap is in the top-2000 in US while vuejs.org is in top-7000 in US.

- **Team Foundation Server (TFS)**

  Azure DevOps Server (formerly Team Foundation Server (TFS) and Visual Studio Team System) is a Microsoft product that provides version control (either with Team Foundation Version Control (TFVC) or Git), reporting, requirements management, project management (for both agile software development and waterfall teams), automated builds, lab management, testing and release management capabilities. It covers the entire application lifecycle, and enables DevOps capabilities. Azure DevOps can be used as a back-end to numerous integrated development environments (IDEs) but is tailored for Microsoft Visual Studio and Eclipse on all platforms.

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 Centres 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.