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An Android Application for Automobile

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COMSATS UNIVERSITY ISLAMABAD,

ATTOCK CAMPUS – PAKISTAN

SESSION 2017-2021

An Android Application for Automobile

Undertaken By:

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Supervised By:

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A DISSERTATION SUBMITTED AS A PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE OF BECHELOR OF COMPUTER SCIENCE

DEPARTMENT OF COMPUTER SCIENCES

COMSATS UNIVERSITY ISLAMABAD,

ATTOCK CAMPUS – PAKISTAN

SESSION 2017-2021

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Nabeel Hassan

CERTIFICATE OF APPROVAL

It is to certify that the final year project of BS (CS) **"An Android Application for Automobile"** was developed by **Nabeel Hassan (CIIT/FA17-BCS-054/ATK)** under the supervision of **"Dr. Yasir Ali Shah"** and that in his opinion; it is fully adequate, in scope and quality for the degree of Bachelor of Science in Computer Sciences.

Supervisor

External Examiner

Head of Department (Department of Computer Science)

Acknowledgment

All praise is to Almighty Allah who bestowed upon us a minute portion of His boundless knowledge by virtue of which we were able to accomplish this challenging task.

We are greatly indebted to our project supervisor **"Dr. Yasir Ali Shah"**. Without his supervision, advice, and valuable guidance, completion of this project would have been doubtful. We are deeply indebted to them for their encouragement and continual help during this work.

And we are also thankful to our parents and family who have been a constant source of encouragement for us and brought us the values of honesty & hard work.

Nabeel Hassan

PROJECT BRIEF

PROJECT NAME	AN ANDROID APPLICATION FOR AUTOMOBILE
ORGANIZATION NAME	COMSATS UNIVERSITY ISLAMABAD, ATTOCK CAMPUS
OBJECTIVE	PROVIDE AUTOMOBILE SERVICES TO USERS
UNDERTAKEN BY	NABEEL HASSAN CUI/FA17-BCS-054/ATK
SUPERVISED BY	DR. YASIR ALI SHAH LECTURER COMPUTER SCIENCE CUI, ATTOCK CAMPUS
STARTED ON	OCTOBER 2020
COMPLETED ON	EXPECTED JUNE 2021

COMPUTER USED	LENOVO IDEAPAD 110, 3 COMPUTE CORES 2.0 GHZ PROCESSOR 4GB RAM
SOURCE LANGUAGE	ANDROID, JAVA
OPERATING SYSTEM	Windows 10
TOOLS USED	ANDROID STUDIO, MS WORD

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Chapter 1

Introduction

1.1 *Application Introduction:*

An Android application for Automobile is a smart android application that is used to provide basic services in automobile field. This application is a service provider application that provides services including Towing, Fuelling, Repairing, Lock smith and Battery Services. Similarly, user can contact whenever he needs a towing service to take the vehicle from one place to another in my case of emergency. This app saves the time of user by quickly providing them the selected service. Just like Towing service, all other services facilitate the user to overcome the daily issues by using our platform. This application provides services to the user at low and reasonable price as well as user can easily reach the destination. Our application has three modes: 1) Emergency service (Features: Taxi Towing, Repairing, Locksmith, Fuelling and Battery relevant Service.) 2) Normal service (Features: car washing, car tuning, car repairing) 3) Online shop (Features: Batteries change, Tyres change and Accessories) 4 An Android application for Automobile is a complete android-based platform and it will be accessible for everyone. There is no additional information required apart from mentioned ones and even in those required fields you must be precise. This platform is open for everybody, anyone can view the information on it but only the registered users can request the desired service. The administrator is controlling all operations using admin panel like approving the requests, adding the admin to take care of the system etc. If any request has any inappropriate information or any social norm is being broken than the administrator can delete the request.

Problem Statement:

Driver face tandem of emergency problems of automobile while driving i.e., mechanical or electrical fault or run out of Fuel or may be other problems i.e., battery problem, car cleaning etc. So, there is a dire need of system which can help drivers to overcome these problems and the system (app) developed by me will help the users to get rid of their problems.

1.2 *Scope of the Project*

There are different modules used by the android application in order to get some certifiable result like all the service providers get registered by the admin itself and the each and every task is assigned from the admin office. By using the Users and Service provider details get saved in the Firebase database which meets the requirements of authentication of service providers.

1) Email and Password authentication.

2) Facebook and Instagram Login Authentication.

3) Resetting of the password in case of forgot the password.

4) Saving the user detail in the server.

5) Saving the Service provider details to the Server

6) Allows admin to Make a call to the service provider

Chapter 2

Literature review

In the current time frame, there are two famous web platforms which we found, that deal with this issue of our community. First platform is most famous one and it is an international organization called AAA (American Automobile Association). A second web platform is Canadian Automobile Association (CAA). In our country, there is no specific platform available which provide the reliable service related to Automobile Association.

2 Motivation and Scope

We are proposing to develop an android-based solution that will help the peoples to get an automobile service but now, they can save their time through this application. They will be able to get access to the platform on a single click. The aim of this project is to facilitate the community by modern ways.

2.1 Canadian Automobile Association

The Canadian Automobile Association commonly known as (CAA) is a non-profit federation, founded in 1913, of eight motor clubs across Canada, providing roadside assistance service, insurance services, and member discount.

2.2 Automobile Association App

To design this portal, we have studied different websites of different countries that handled the different type of services. We have studied the mechanism of how they serve and work. We also asked a few people that how they would want the portal to be if they were using it. After analysing the mechanism and the layouts of different websites and keeping in mind the different suggestions given by the people, we got many ideas that how we can create our portal “An Android application for Automobile ".

Each day the app sends you a list of calls made and texts exchanged from the phone. Access your text messages from your computer anytime, see a clean log of text messages, calls with the time they were sent / received with the names from the phone contact list too. Configure the app to get all your text messages in your mail daily or weekly. Access to all your text and SMS messages at all time via your email. Access to your call logs so you know who you called at what time.

Chapter 3

Requirement's specification

3.1 Sign up for new user!

The costumers get registered with the database with their name, email and the password. All this work is done in the Firebase database using Internet Service. If the internet service is not available then the user cannot save his/ her with the application database.

3.2 Login an Existing User

The registered user can login and when a user get login it matches with the existing user. If the user is already registered the user will be able to login. If the user is not already registered then it shows that register with the application first.

3.3 User Login Afterward

After User Login, it shows the Interface where the User can select the required car Maintenance service and make a phone call to the admin and then the admin assigns the task to the mechanic.

3.4 Forgot Password

If a user forgets his password a page is available in the application, the user put its email address then the reset password will be sent to his email address provided by the user.

3.5 Admin

1) Administrator can add mechanics.
2) Administrator can add services.
3) Administrator can update services.
4) Administrator can delete mechanics/Service.

3.6 Admins login

Admins can login after he\she registered his\her name, email address, email password and phone number. The Admin Can Register new users/mechanics and their service also. All the work is done using the Firebase Database.

3.7 Use case diagram.

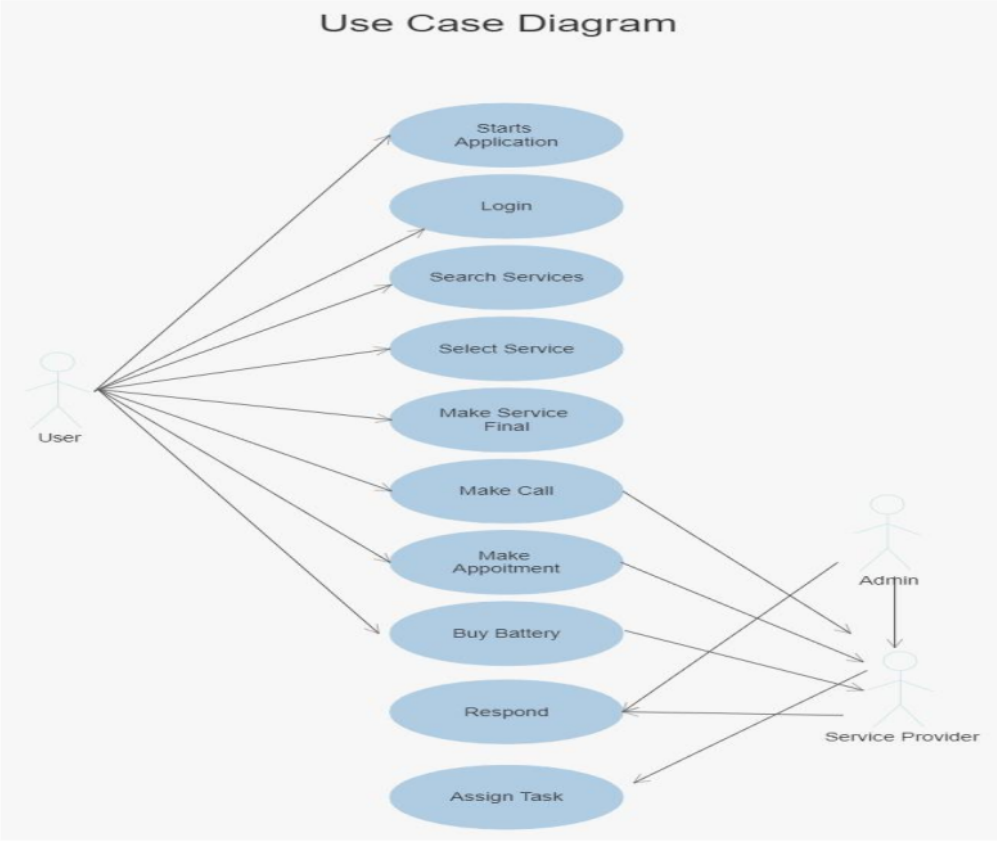


Fig 3.1: User Use Case Diagram

Description

In figure 3.1 the user get login and select login and search for the service. When the user selects the required service and make a call to admin. The admin picks up the call and give the task to the service provider. Then the Service provider entertain the User with the service.

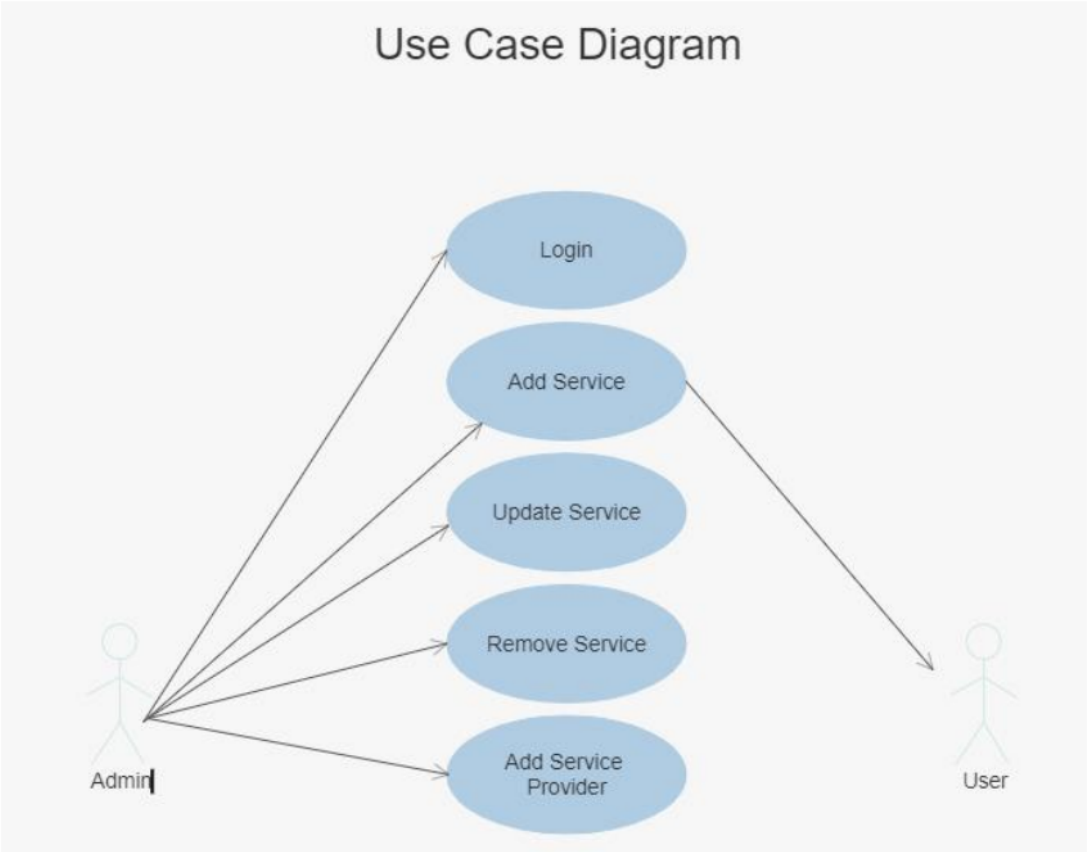


Fig 3.2: Admin Use Case Diagram

3.7.1 Start application

UC id:	1
Use case name:	Start application
Actor name:	User

Pre-condition:	User have android phone and he must install application
Post-condition:	The App get Started

3.7.2 User Login

UC id:	2
Use case name:	Login
Actor name:	User
Pre-condition:	User can login into system with id and password
Post-condition:	User will login into system

3.7.3 Search Service

UC id:	4
Use case name:	Search Service Provider
Actor name:	User
Pre-condition:	User get Login

Post-condition:	User Search for Service

3.7.4 Select Service

UC id:	5
Use case name:	Select Service
Actor name:	User
Pre-condition:	User Searched Service
Post-condition:	Select Service and make Call to Admin

3.8 Admin use Case

3.8.1 Admin Select Service

UC id:	6
Use case name:	Admin Login
Actor name:	Admin
Pre-condition:	Admin Have Installed application
Post-condition:	Admin get login into app.

3.8.2 Dialled numbers

UC id:	7
Use case name:	Register Service Providers
Actor name:	Admin
Pre-condition:	Admin already login
Post-condition:	Admin Register the Service Providers

3.8.3 Received numbers

UC id:	8
Use case name:	Assign task
Actor name:	Admin
Pre-condition:	Admin Already Login
Post-condition:	Assign task to the Service provider

Chapter 4

Project design

4 Project design

4.1 *Methodology*

We have chosen Mobile Application Development Lifecycle (MADLC) as we are developing mobile application and Mobile Application Development Lifecycle provides us phases for development. We used android studio for developing this application. It is a dedicated framework lifecycle for mobile. The proposed lifecycle includes the following phases: Identification, Design, Development, Prototyping, Testing and Maintenance. This lifecycle has been used for over a year in developing Android mobile applications. This lifecycle addresses some of the distinguishing characteristics of mobile applications like life span, complex functionalities, fewer physical interfaces, a greater number of screens for interaction, battery and memory usage, cross platform development and maintenance.

Mobile Application Development Lifecycle Model (MADLC)

As the mobile applications have complex functionality and are different from the desktop applications, the following Mobile Application Development Lifecycle model (MADLC) is proposed to enable a systematic approach in development.

4.2 *Design description*

Following are the modules constituting the product to be developed.

Following are some diagrams of our module including.

- Sequence diagram
- Activity diagram
- Data flow diagram

4.3 *Sequence diagrams*

4.3.1 Register user

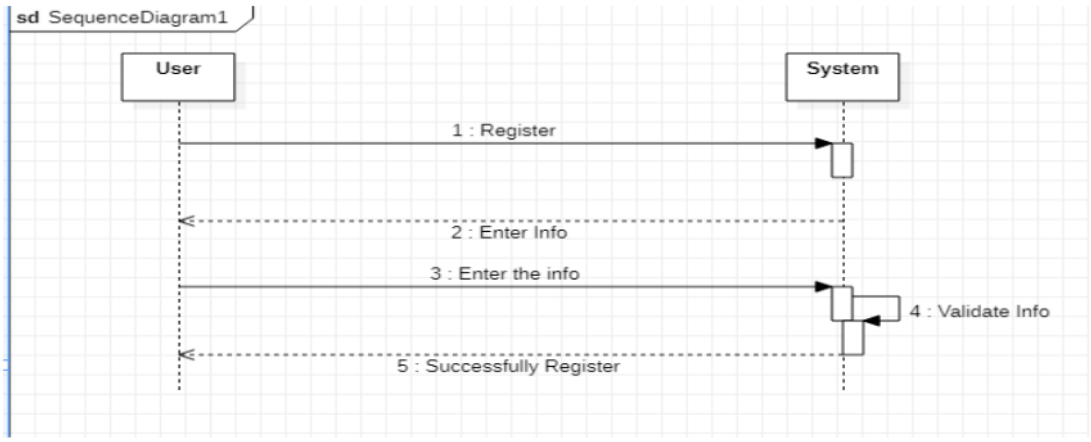


Fig 4.2: Sequence diagram of Registration

Description

A sequence diagram is an interaction diagram that show how object operate with one another and in what order. In figure 4.2 sequence diagram of register user. In this user register with their name email, phone no and password.

4.3.2 Login

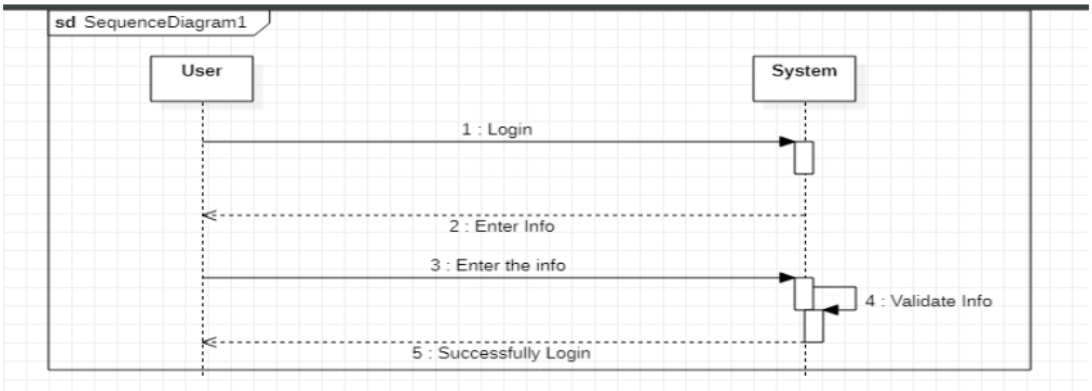


Fig 4.3: Sequence diagram of login

Description

In figure 3 there are 3 lifelines including user login. User enter email and password, then successfully get login Int System.

4.3.3 Admin Login

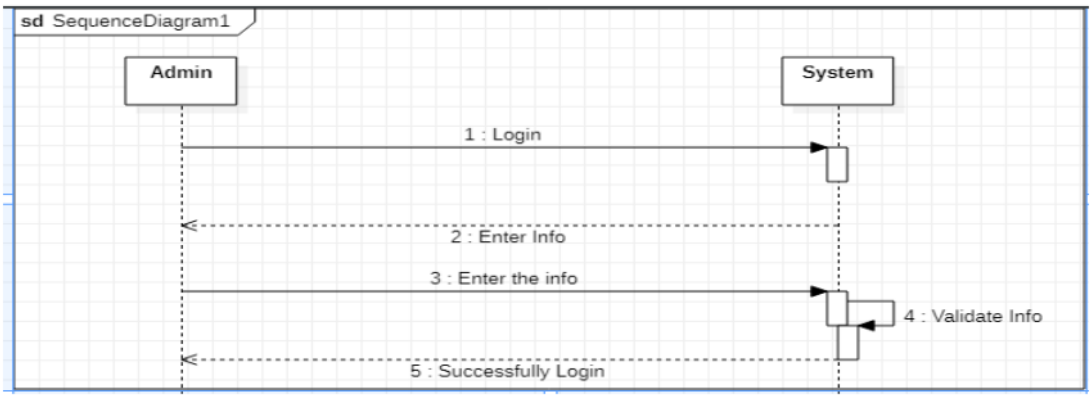


Figure 4.4: Sequence diagram of Admin Login

Description

In figure 3 there are 3 lifelines including user login. User enter email and password, then successfully get login Into System.

4.3.4 Enter Service Provider Details

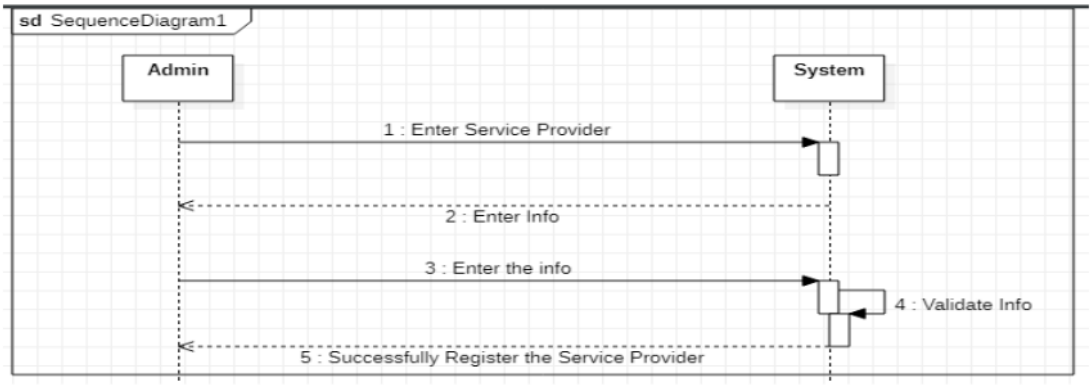


Fig 4.5: Sequence diagram of Service Provider Registration

Description

In figure 4.5 there are 3 lifelines including Admin, devise and database. When Admin logging into system the service providers details will be saved by the admin into system.

4.4 *Activity diagrams*

4.4.1 User Registration

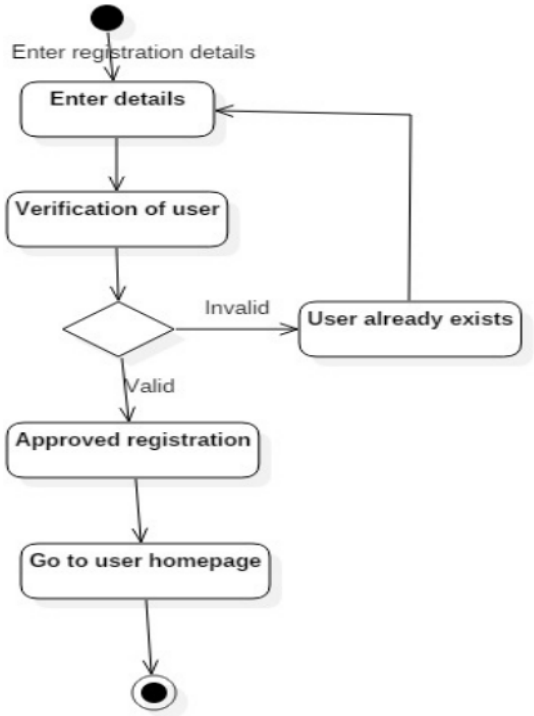


Fig 4.6: Activity diagram of register user

Description

In figure 4.6 users register with the system. User enter their name and password than system verifies user account if user already exists than go back to enter details. If user not already exists than its registration is approved and homepage is open.

4.4.2 Login user

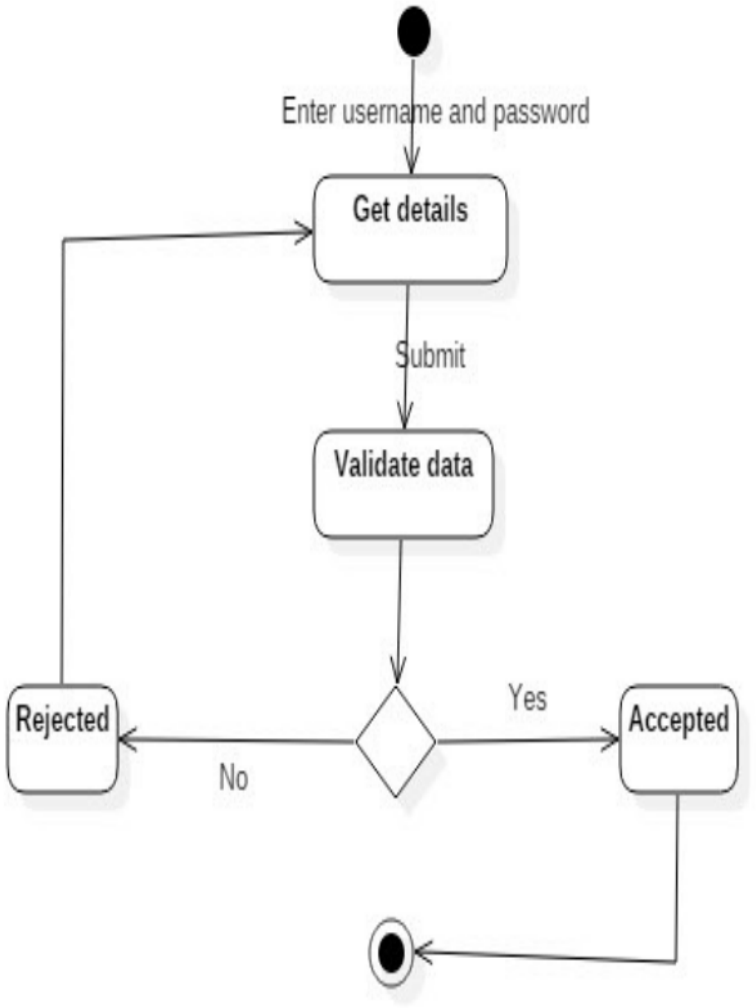


Fig 4.7: Activity diagram of login use

Description

In figure 7 user enter their name and password, if the password is correct than user logging into system, if name or password is incorrect than user again enter name or password.

4.4.3 Admin Login

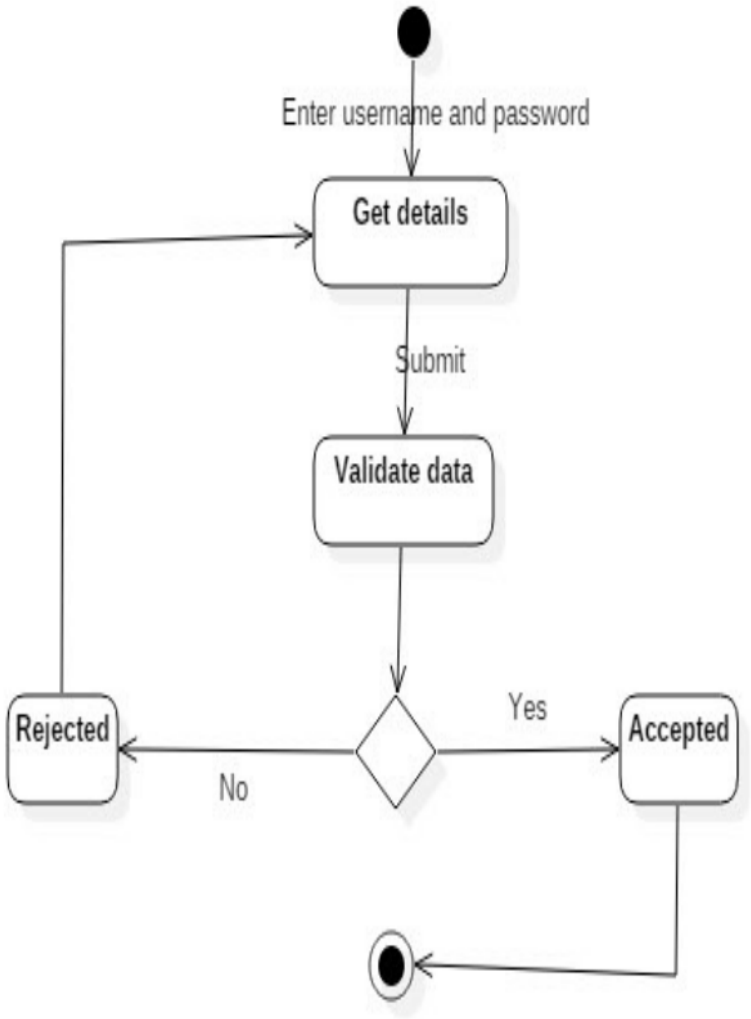


Fig 4.8 Activity diagram of Admin Login

Description

In figure 4.5 user enter their name and password, if the password is correct than user logging into system, if name or password is incorrect than user again enter name or password.

4.5 Data flow diagram

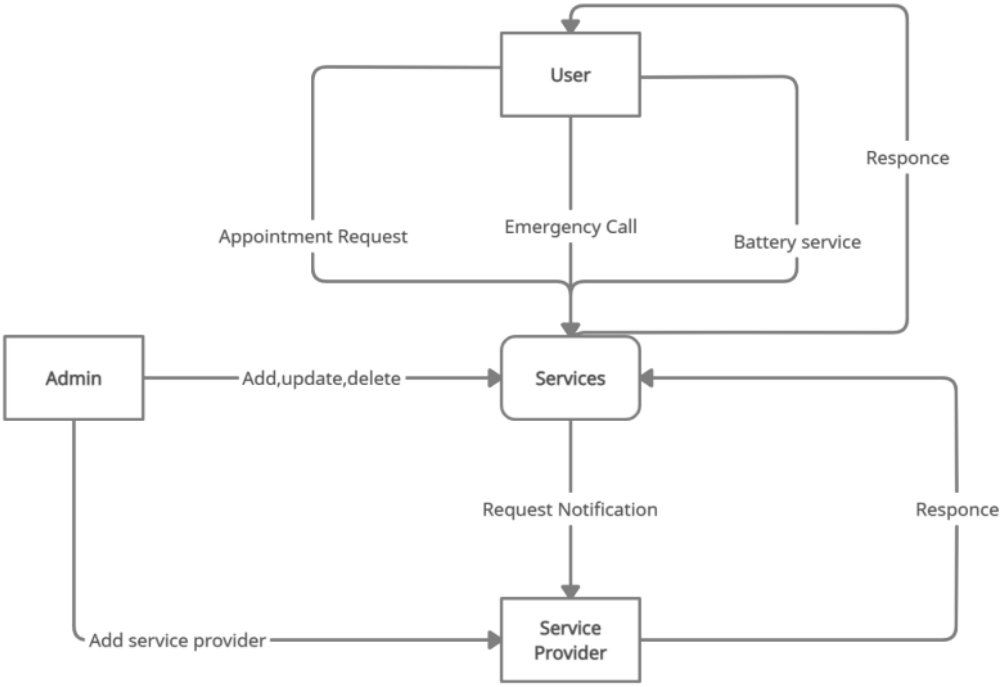


Fig 4.9 Data Flow diagram

Chapter 5

Implementation

5 Implementation

This chapter is the overview of the different tools used in the development of application and the important stages through the development process. For the development of the project "**Android Application for Automobile**" some of the important implemented stages mention in this chapter and the different tool that are used and that are listed below. 5.1

5.1 *Tools*

- Android Studio
- Firebase

5.1.1 Android Studio

Android Studio is the official integrated development environment for Google's Android operating system, built on JetBrains' IntelliJ IDEA software and designed specifically for Android development.

Android Studio is also the fastest developer tools for building market-leading apps and accelerating performance. With an intelligent code editor, flexible build system, real-time profilers and emulators. Building without limits. Creating the best code. Build rich experiences.

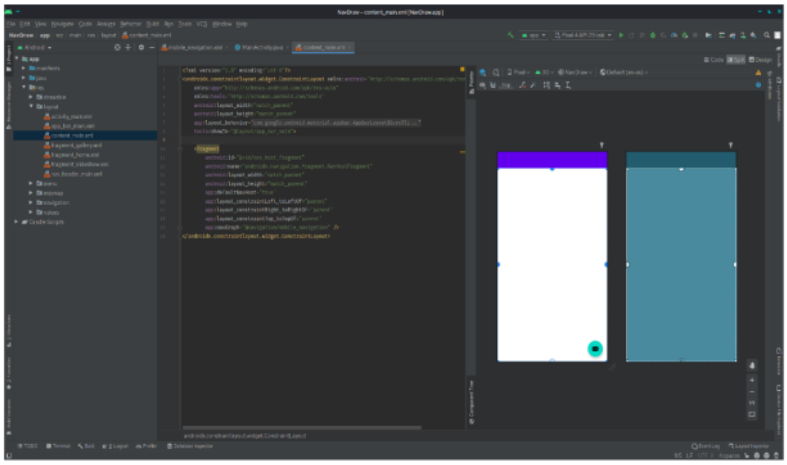


Figure 5.1- Android Studio Interface

5.2 *Android SDK*

The Android programming advancement unit consolidates a total plan of change gadgets. These join a debugger, libraries, a handset emulator considering QEMU, documentation, test code, and instructional activities. Starting at now supported change stages consolidate PCs running Linux (any front-line work zone Linux allocation), Mac OS X 10.5.8 or later, Windows XP or later; for the event, one can make Android programming on Android itself by using [AIDE - Android IDE - Java, C++] application and [Android java editor] application.

5.2.1 Firebase

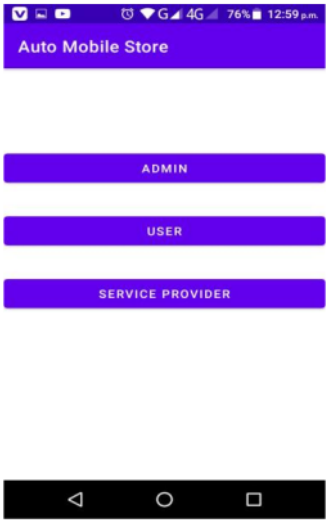
Firebase is a Backend-as-a-Service (Baas). It provides developers with a variety of tools and services to help them develop quality apps, grow their user base, and earn profit. It is built on Google's infrastructure. Firebase is categorized as a NoSQL database program, which stores data in JSON-like documents. Firebase already exists. Firebase is a global server, and we can access worldwide.

5.3 *Development stages*

- Our project is developed in below stages which are given below stage.
- First screen show
- User or client signup
- User or Client Login
- User Service Selection
- Admin Signup
- Admin Service Addition
- Service provider
- User

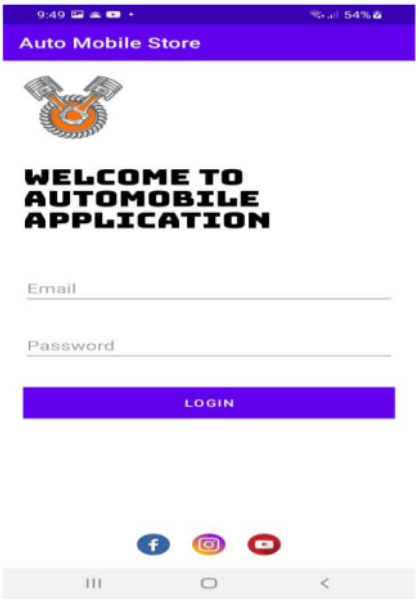
1. **First screen**

When we start app first screen look like this.



2. **User or client signup**

If the client or user is not already registered, then User or Client is also able to be registered with system Database via Email.

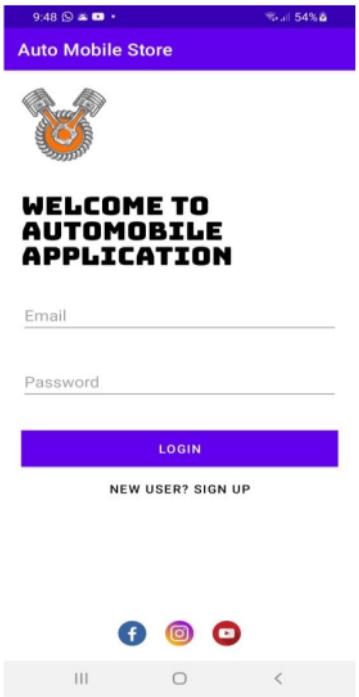


As If User is not able to fill up the required the Edit Text Field, then a proper UI Toast tell the User to fill up the Fields properly.

This will able to help user to get a proper signup in a correct manner. After adding all of the above the Fields properly the Data got saved in Database properly like this. This Might Help the Admin to Work properly with the clients.

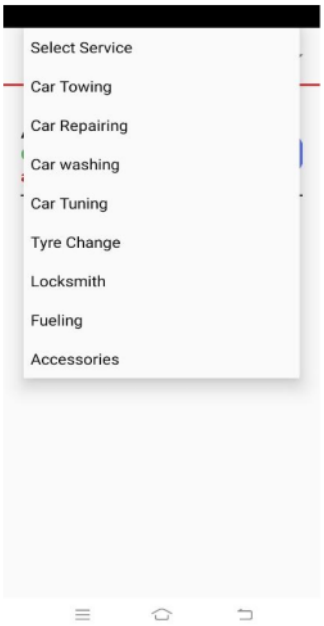
3. User or client Login

After Successful user signup the user is allowed to go through the app via User login. As of Enter proper details the user got redirected to the Main UI of the app where the user can get select the required service that the user wants, and Admin is providing its user with that.



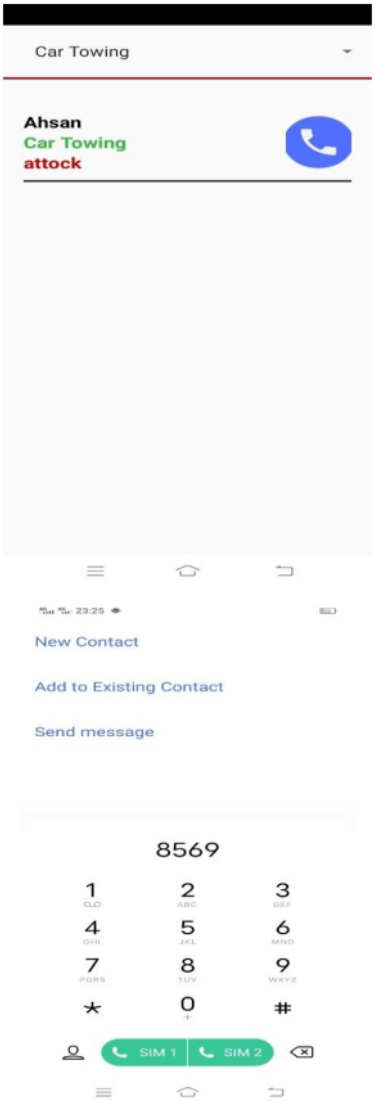
4. **Main Dashboard**

After successful login User May See Dashboard and able to select the Required Service provided by admin. The all of the below services can be edited by the admin side anytime If the service is not available.



5. **Service Selection**

After service selection user may able to contact with service provider via phone. After the contact the admin able to help the user to initiate a response in response for the user.



6. Admin Login

Admin have entire hold over the app and is been able to add or remove service that the company have available and admin is only able to add or remove that services just after successful login.

The admin just login just like client but the main difference is it only deal with admin table in database.

The UI of admin Login as same as the Client login but the difference is providing the services.

7. Admin Main Dashboard

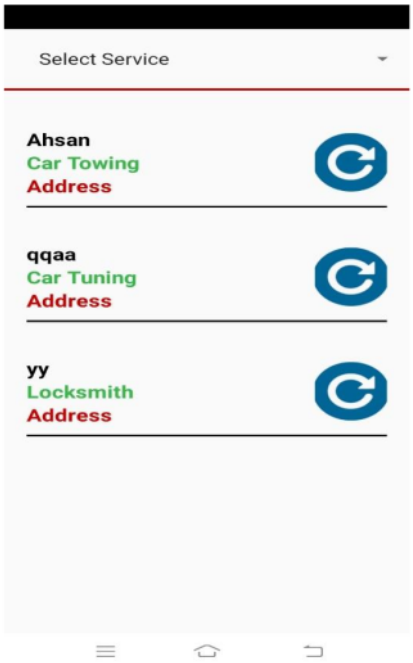
After successful login Admin got redirected to Admin Dashboard that contains the add service, update or remove a particular service. Admin is been able to select the option whatever he wants.

8. Add Service

Admin in here can add a service and have a choice to put in category what necessary.

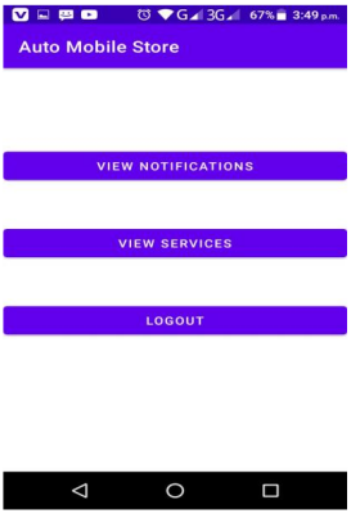
9. Update Service

Admi is able to update the service if is necessary. In order to update user is required to get this more efficiently if the Admin find out necessary and same thing goes to client side and also able to delete a particular service.



10. Service provider

11. User


67% 3:49 p.m.
Auto Mobile Store
VIEW NOTIFICATIONS
VIEW SERVICES
LOGOUT

CHAPTER 6

SYSTEM TESTING

6 System Testing

In system testing a complete and integrated system is tested. Our focal point throughout the designing and implementation was to test each unit. User activities regarding with user's registration properly tested and stored in database. Validation and verification are very important process where we will validate each module in case if user enter any wrong entry in desired field.

6.1 *Unit Testing*

IT'S a level where we test each individual component while being developed for the conformance to desired requirement. This testing was applied to both feedback and registration portions in case if our user enters some incorrect value then a message will be shown to put correct entry. We applied validation process on our input field. we also check the conformance of correct value to be entered in database.

6.2 *System Testing*

We have focused on thorough testing through-out the design and implementation phase while testing the user and admin all the other activity that they perform should be stored in database. Evaluation contains the testing of each and every module of the system and checking the errors which occur into the database while putting some entries into it or the interface problem.

Steps	Actions	Expected System Response	Pass/Fail
1	Users enter Invalid email	Show error message "Please enter valid email.	Fail
2	User enter invalid password.	Show error message "Please enter valid password	Fail
3	Enter valid password		
4.	Users click on login button	System displays the home page of App	Pass

Steps	Actions	Expected System Response	Pass/Fail
1	Users enter Invalid email type	Show error message “Please enter valid email.	Fail
2	User enter invalid password.	Show error message “Please enter valid password	Fail
3	Enter valid email		
4.	Miss the fields button	System displays the home page of App	Pass
5	Users click on Signup	System displays the home page of App	

Steps	Actions	Expected System Response	Pass/Fail
1	Make internet disconnect	Show error message “Please enter valid email or check internet.	Fail
2	User enter valid password.	Show error message “Please enter valid password	Fail
3	Enter valid email and no internet		
4.	Miss the fields button	System displays the home page of App	Pass
5	Users click on Signup and connect internet	System displays the home page of App	Pass

Steps	Actions	Expected System Response	Pass/Fail
1	Make internet disconnect admin side	Show error message “Please enter valid email or check internet.	Fail
2	Admin enter valid password.	Show error message “Please enter valid password	Fail
3	Enter valid email and no internet	No Response and internet error	Fail
4.	Miss the fields button	System displays the home page of App	Pass
5	Users click on Signup and connect internet	System displays the home page of App	Pass

Steps	Actions	Expected System Response	Pass/Fail
1	Make internet disconnect Add Service	Show error message “Not able to add data”.	Fail
2	Admin not filled the fields.	Show error message “Please enter parameters”	Fail
3	Enter all fields and no internet	No Response and internet error	Fail
4.	Add service parameters and have internet		
5	Add service parameters and have internet	Show response “service added successfully”	Pass

Steps	Actions	Expected System Response	Pass/Fail
1	Make internet disconnect remove Service	Show error message “Not able to add data”.	Fail
2	Admin not filled the fields.	Show error message “Please enter parameters”	Fail
3	Enter all fields and no internet	No Response and internet error	Fail
4.	Remove service parameters and have internet		
5	Remove service parameters and have internet	Show response “service removed successfully”	Pass

Steps	Actions	Expected System Response	Pass/Fail
1	Make internet disconnect update Service	Show error message “Not able to add data”.	Fail
2	Admin not filled the fields.	Show error message “Please enter parameters”	Fail
3	Enter all fields and no internet	No Response and internet error	Fail
4.	update service parameters and have internet		
5	update service parameters and have internet	Show response “service updated successfully”	Pass

Steps	Actions	Expected System Response	Pass/Fail
1	User internet disconnect and goes to Main dashboard	No data showed	Fail
2	Select parameter that contains no data	No data showed	Pass
3	No internet and no data	No data showed	Fail
4.	Connect to internet and have data		
5	Having internet and data	Data Showed	Pass

Chapter 7

Conclusion and Future Work

7 Conclusion and Future Work

Drivers get various problems while driving their automobile, so in order to get them out of this havoc, we had undertaken this very project. In this project, we developed an Android application based on Automobile services, which will surely help the driver to avail the basic services in automobile field. This application is a service provider application which help driver to get different services including Towing, Fuelling, Repairing, Lock smith and Battery Services. Similarly, user can contact whenever he needs a towing service to take the vehicle from one place to another in my case of emergency. This app saves the time of user by quickly providing them the selected service. Just like Towing service, all other services facilitate the user to overcome the daily issues by using our platform. This application provides services to the user at low and reasonable price as well as user can easily reach the destination. So by keeping this in mind, we designed the Android application for automobile with firebase. There are three type of users of this system: Admins, Service provider and User.

7.2 Future Work

- We have Next plan to work with GPS and Mobile Location service for both parties and show them over map so that the Service provider and user can coordinate even better.
- We can add automobile salespersons feature. User can easily buy and sell a car in one platform.
- We are hiring a mechanics, locksmith persons and tire related persons who must specialized in this said fields.

7.2.3 Recommendations

We can used different algorithms for the recommendations using the different parameters like we Conclusion and Future Work 117 use user buying products parameter to predict the products with different technique.

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