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Quick Business App

Mobile Application Development

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Abstract

In the present era and coming era, Mobile Application Development (MAD) is the most prevailing field. We can do anything from our mobile through applications just in a moment. Mobile application development provides ease to user with much easier interface and the services which an application provides to the users. I made an application named as Quick Business. The purpose of this app was to go deeply into the learning process of mobile application development. And secondly, to provide the ease in quick business to shopkeepers and buyers as well. Buyers can easily order items which they want to buy.

Contents

Introduction

Quick Business is an app for the business in which both seller and buyer can do their work with much ease. This app have different features and interfaces for all services which app provides. Firstly, this app have admin and user panel. Admin and user have to log in first to interact within activities. After log in, admin can create the shop and also add the products to shop. When admin create the shop and product, he have to give all the details of shop and product. Admin has the control of deleting shop and products. Users can log in into the app and buy the products of their interest. User can pay the bill but it was not the implemented in this semester but I will do it in future.

Overview

This reports discusses the result of work done in implementation and development for Quick Business in Android Operating System. This Quick Business is used as an android app which present to the user all different features of interest in one single App. This project runs under the android platform which is the most popular operating system in the world.

Why Android?

The main reason is to use android as operating system is that it is an open source platform. On other hand it has an open marketplace for distributing them instantly. Let's look at the Graph to make the things more clear.
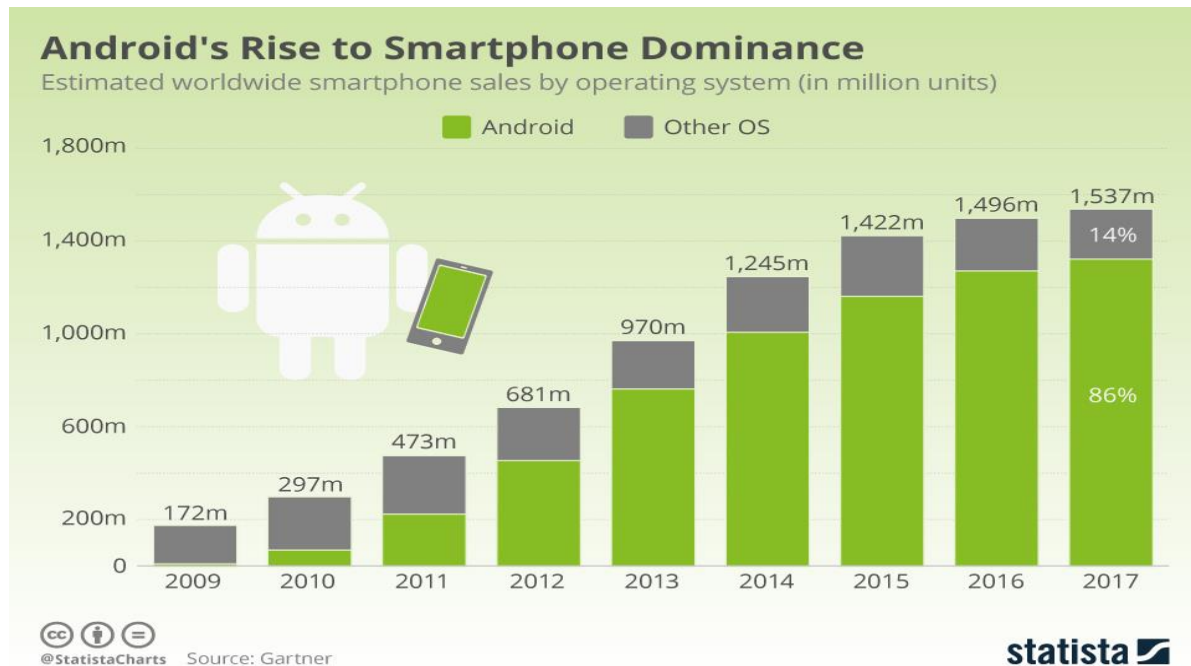
Android's Rise to Smartphone Dominance
Estimated worldwide smartphone sales by operating system (in million units)

Legend: Android, Other OS

Year	Total
2009	172m
2010	297m
2011	473m
2012	681m
2013	970m
2014	1,245m
2015	1,422m
2016	1,496m
2017	1,537m (Android 86%, Other OS 14%)

@StatistaCharts   Source: Gartner

statista

Figure 1: Why Android

Motivation

First of all it was my semester project of development. My motivation was that it was a local problem and during Covid-19, there were lockdown in whole country. Therefore, I made this app to make business online.

Methodology

SDLC (Software Development Life Cycle) I chose adaptive waterfall model. The following illustration is a representation of the different phases of the adaptive Waterfall Model. There were many other models like spiral model, agile model and waterfall model.
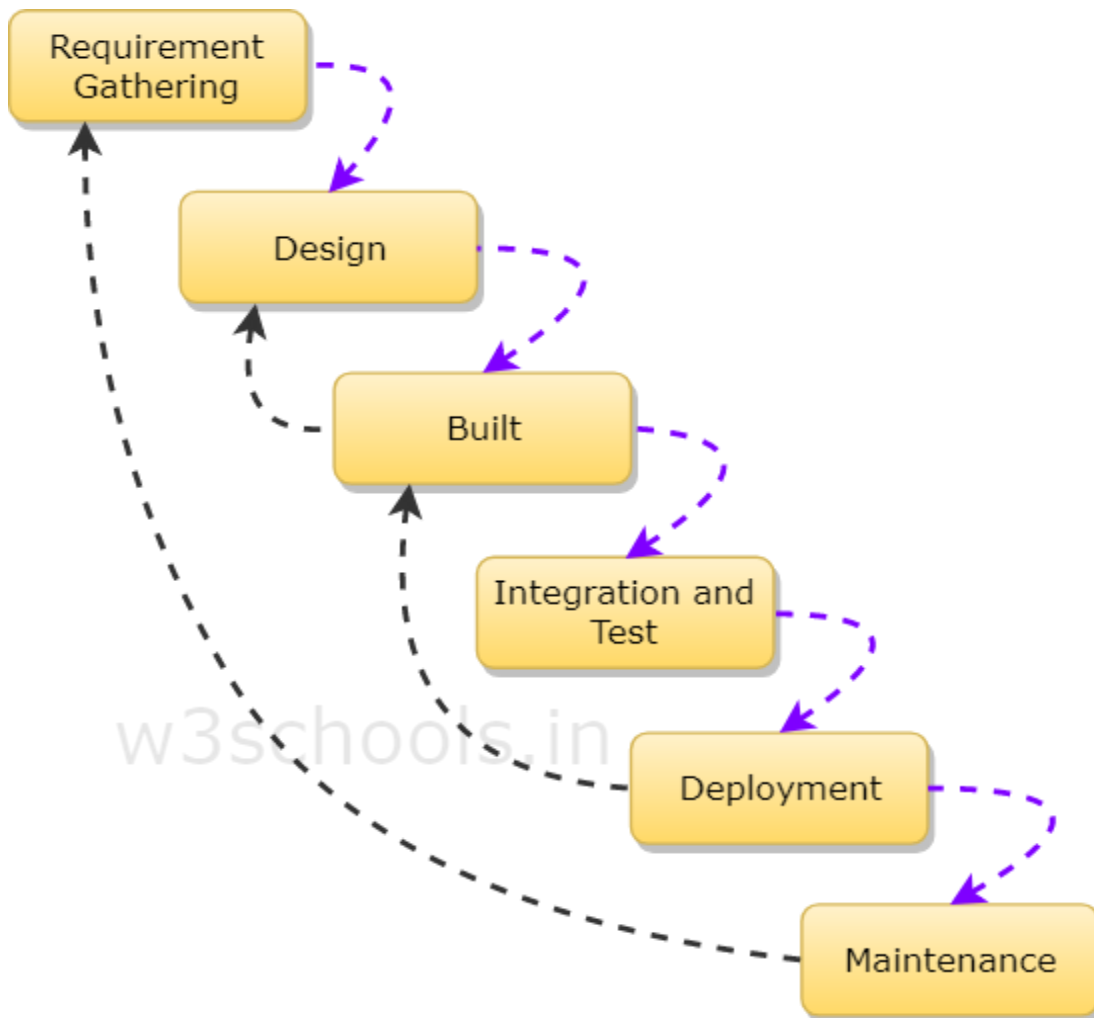
Figure 2: Adaptive Water fall model

Adaptive Waterfall Method

Adaptive waterfall approach is a popular process model in the industry. I choose this method because, in this process, the whole process of development is divided into separate stages. It provides availability of top level in case of any violation.

Requirements

Functional Requirements

Here are the functional requirements of Quick Business app.

➢ Admin and users can sign in and sign up into the app.
➢ Admin can create the shops.
➢ Admin can add products into the shop.
➢ Admin have the control of deleting products and shop.
➢ Each shop is a generic shop.

> ➢ User can view and buy the products.

Non-functional Requirements

> ➢ Admin can easily manage his product list.
> ➢ Application will be able to handle errors.
> ➢ Quick Business is easy to use for any new user.
> ➢ Application has friendly user interface for each activity.

Design of Application

Flow Diagram
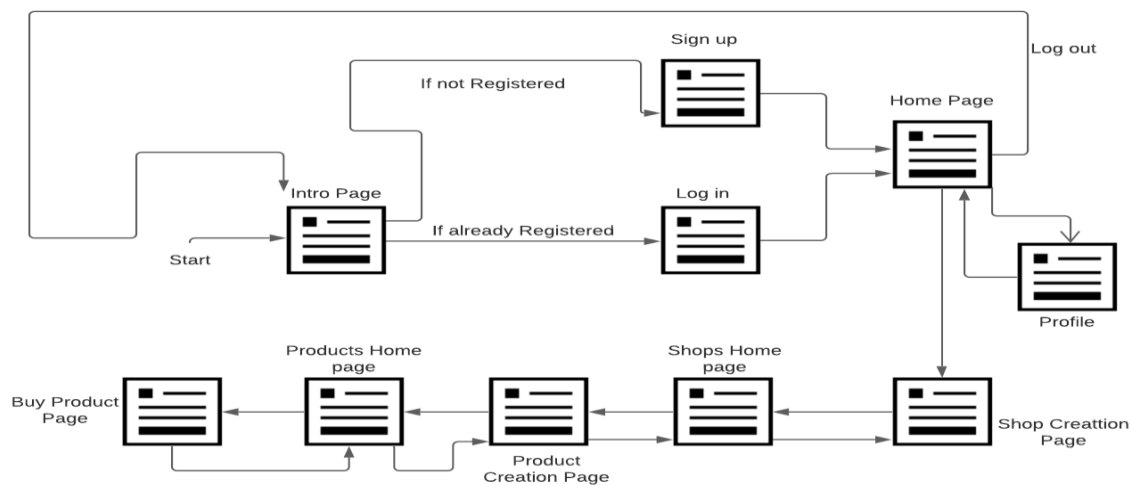
Flow diagram for my Quick Business app is given below:

Figure 3: Flow Diagram of App

Use cases

Use cases for admin:

Use Case 1:

> ➢ Log in to the app

Primary Actor:

> ➢ admin

Goal:

> ➢ To log in

Pre-Conditions:

➢ Must have an email

Scenario:

➢ User will be on log in screen.
➢ User will enter email and password.
➢ Press the log in button.

Exceptions:

➢ Internet is not connected.

Priority:

➢ Essential.

Use Case 2:

➢ Sign up to the app

Primary Actor:

➢ admin

Goal:

➢ To sign up in the app

Pre-Conditions:

➢ User must have an email and password.

Scenario:

➢ User will be on log in screen.
➢ User will enter email, password and confirm password.
➢ Press the Sign up button.

Exceptions:

➢ Internet is not connected.

Priority:

➢ Essential

Use Case 3:

➢ To create a new shop

Primary Actor:

- admin

Goal:

- Create a new shop

Pre-Conditions:

- User must be on home page, and click on the add button.

Scenario:

- User will create the shop.
- User will enter shop name, shop owner name, shop location.
- User will press submit button.

Exceptions:

- Internet is not connected.

Priority:

- Essential

Use Case 4:

- To create new products.

Primary Actor:

- Admin

Goal:

- To create the new products in shop.

Pre-Conditions:

- User must be on products main page.
- Clicked on the add products button.

Scenario:

- User will create the product.
- User will enter the product name, description, price, expiry date, image of the product.

Exceptions:

- New products can't be loaded due to weak internet.

Priority:

➢ Essential.

Use Case 5:

➢ Delete the shop.

Primary Actor:

➢ Admin

Goal:

➢ To delete the shop.

Pre-Conditions:

➢ User must be on main home page of the app.
➢ There must be at least one shop created.

Scenario:

➢ User will click on the delete icon under shop name.

Exceptions:

➢ Internet is not connected.

Priority:

➢ Essential

Use Case 6:

➢ Delete the product.

Primary Actor:

➢ Admin

Goal:

➢ To delete the product.

Pre-Conditions:

➢ User must be on products page of the app.
➢ There must be at least one product created.

Scenario:

➢ User will click on the delete icon under product name.

Exceptions:

➢ Internet is not connected.

Priority:

➢ Essential

Use Case 7:

➢ See profile.

Primary Actor:

➢ Admin

Goal:

➢ To see profile.

Pre-Conditions:

➢ User must open the drawer layout of app.
➢ Click on the profile item in drawer.

Scenario:

➢ User will click on the profile item.

Exceptions:

➢ Internet is not connected.

Priority:

➢ Essential

Use Case 8:

➢ Log out.

Primary Actor:

➢ Admin

Goal:

➢ To log out.

Pre-Conditions:

➢ User must open the drawer layout of app..

Scenario:

➢ User will click on the log out item.

Exceptions:

➢ Internet is not connected.

Priority:

➢ Essential

Use cases for user:

Use Case 1:

➢ Sign in to the app.

Primary Actor:

➢ User

Goal:

➢ To sign in to the app.

Pre-Conditions:

➢ Must have an email

Scenario:

➢ User will be on log in screen.
➢ User will enter email and password.
➢ Press the log in button.

Exceptions:

➢ Internet is not connected.

Priority:

➢ Essential.

Use Case 2:

➢ Sign up to the app.

Primary Actor:

➤ User

Goal:

➤ To sign up to the app.

Pre-Conditions:

➤ Must have an email, password ad confirm password.

Scenario:

➤ User will be on sign up screen.
➤ User will enter email, password and confirm password.
➤ Press the sign up button.

Exceptions:

➤ Internet is not connected.

Priority:

➤ Essential

Use Case 3:

➤ View the shops

Primary Actor:

➤ User

Goal:

➤ To view the shops

Pre-Conditions:

➤ User must be on shops page.

Scenario:

➤ User will be on the shops page.

Exceptions:

➤ Shops can't be loaded, if internet is not connected.

Priority:

➤ Essential

Use Case 4:

➢ To view the Products

Primary Actor:

➢ User

Goal:

➢ To view the products.

Pre-Conditions:

➢ User must be on products page.

Scenario:

➢ User will be on the products page.

Exceptions:

➢ Products can't be loaded, if internet is not connected.

Priority:

➢ Essential

Use Case 5:

➢ Log out.

Primary Actor:

➢ User

Goal:

➢ To log out.

Pre-Conditions:

➢ User must open the drawer layout of app..

Scenario:

➢ User will click on the log out item.
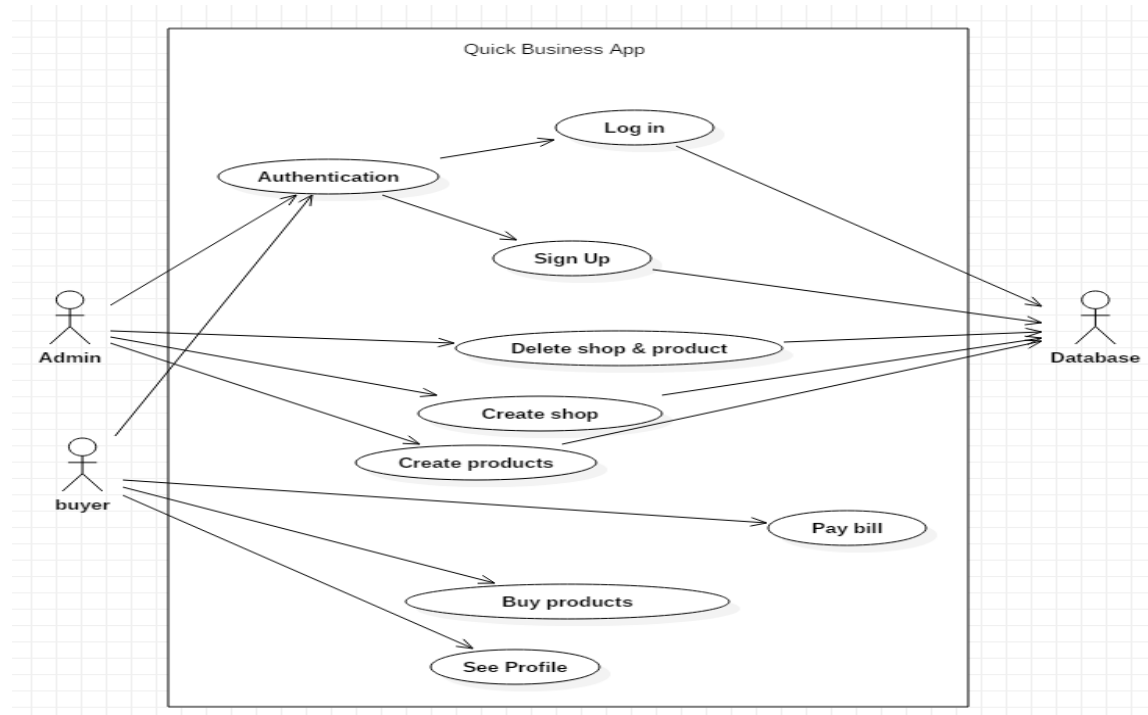
Exceptions:

➢ Internet is not connected.

Priority:

 ➢ Essential

Figure 4: Use Cases Diagram

Project Profile

Tools
 ➢ Android Studio
 ➢ Android SDK

Technology
 ➢ Java
 ➢ Xml
 ➢ Firebase
 ➢ Scrappy

Project Hardware Requirement
 ➢ Android Device (Mobile)
 ➢ Laptop / Computer

Front End
 ➢ Firebase

Back End

➢ Internet connection

Limitation of Application

➢ Must require Android 5 and above version.

Database

In my app, a database was needed to store the data of users, shops and products I used Firebase Real-time Database. The Structure, I followed in real time database is given below:
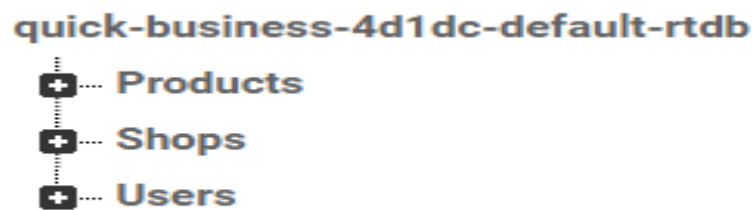
```
quick-business-4d1dc-default-rtdb
    ⊞··· Products
    ⊞··· Shops
    ⊞··· Users
```

Figure 5: Overall Database

```
⊟··· Shops
    ⊟··· Shop 1_2021-08-12 13:17:15
        ···· location: "Mianwali"
        ···· name: "Shop 1"
        ···· ownerName: "Sajid"
        ···· timeStamp: "2021-08-12 13:17:15"  ×
    ⊟··· Shop 2_2021-08-12 13:17:52
        ···· location: "Mianwali"
        ···· name: "Shop 2"
        ···· ownerName: "Manan"
        ···· timeStamp: "2021-08-12 13:17:52"
```

Figure 6: Shops Database

```
Products
    Product 1_2021-08-12 13:19:17
        productDescription: "it's product 1 description"
        productExpiryDate: "12/12/2021"
        productName: "Product 1"
        productPrice: "450"
        timeStamp: "2021-08-12 13:19:17"
        url: "https://firebasestorage.googleapis.com/v0/b/qui..."
    Product 2_2021-08-12 13:20:26
        productDescription: "It's product 2 description"
        productExpiryDate: "04/06/2023"
        productName: "Product 2"
        productPrice: "700"
        timeStamp: "2021-08-12 13:20:26"
        url: "https://firebasestorage.googleapis.com/v0/b/qui..."
```

Figure 7: Products Database

```
Users
    123456_2021-08-11 11:17:17
        Email: "abnormalboy004@gmail.com"
        Password: "123456"
        UID: "123456_2021-08-11 11:17:17"
    faizi74_2021-08-12 12:11:10
        Email: "faizanikram668@gmail.com"
        Password: "faizi74"
        UID: "faizi74_2021-08-12 12:11:10"
```

Figure 8: Users Database

User Interface Design

Intro Activity

Intro activity in Quick Business is for the introduction of my app. User can go to next by clicking on "Get Started" button. User Interface for this activity is shown below:
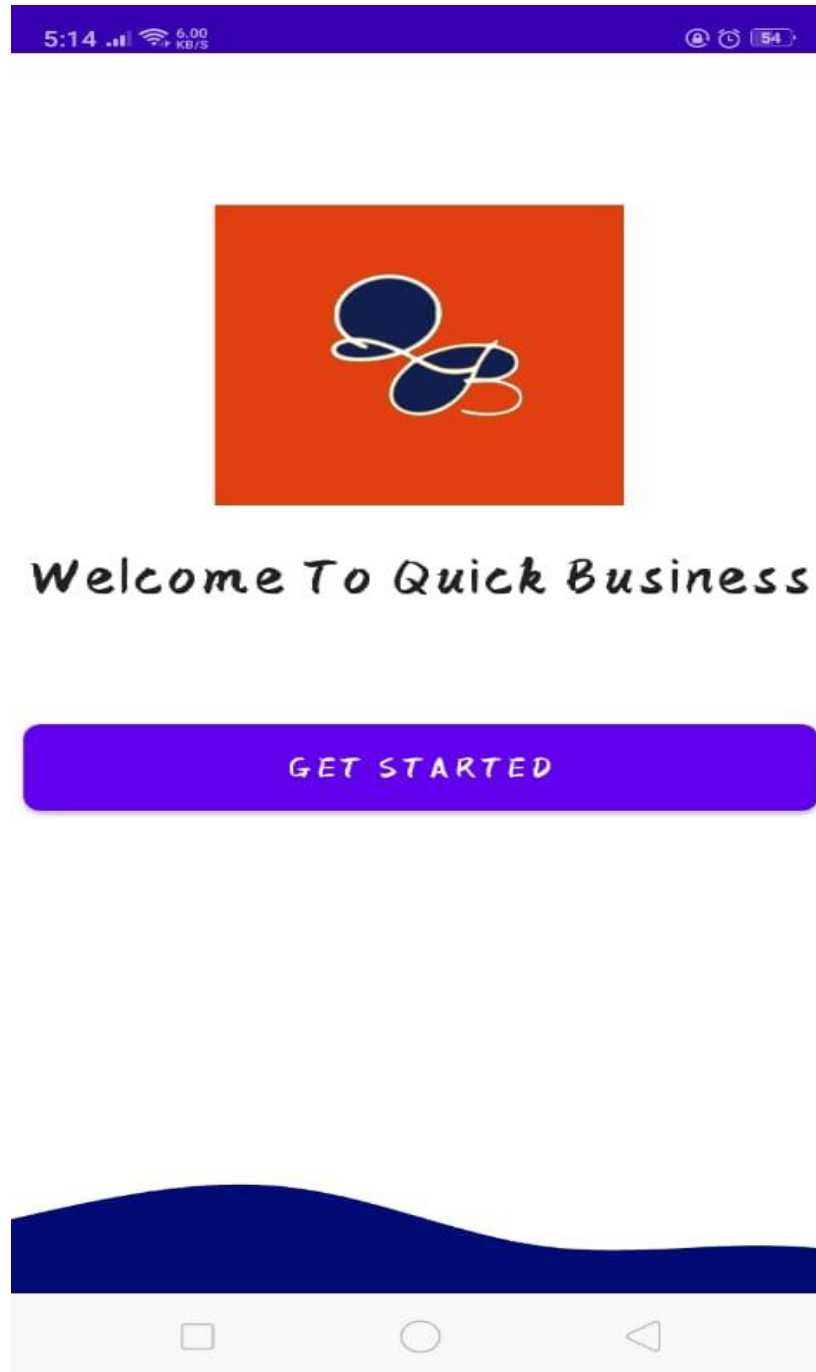
Figure 9: Intro Page

Sign Up Activity

In this activity, user and admin can register themselves if they are using the app for the first time. They can give here, their email, password and confirm password. There is constraint on the input fields. Input fields can't be empty. And password should be of length six digit or letter or both. Password and confirm password should be equal otherwise it will through an on the sign up activity.

Figure 10: Sign Up

Log In Activity

In this activity, user and admin can log in to the app if they have already a registered account. They can give here, their email, password.
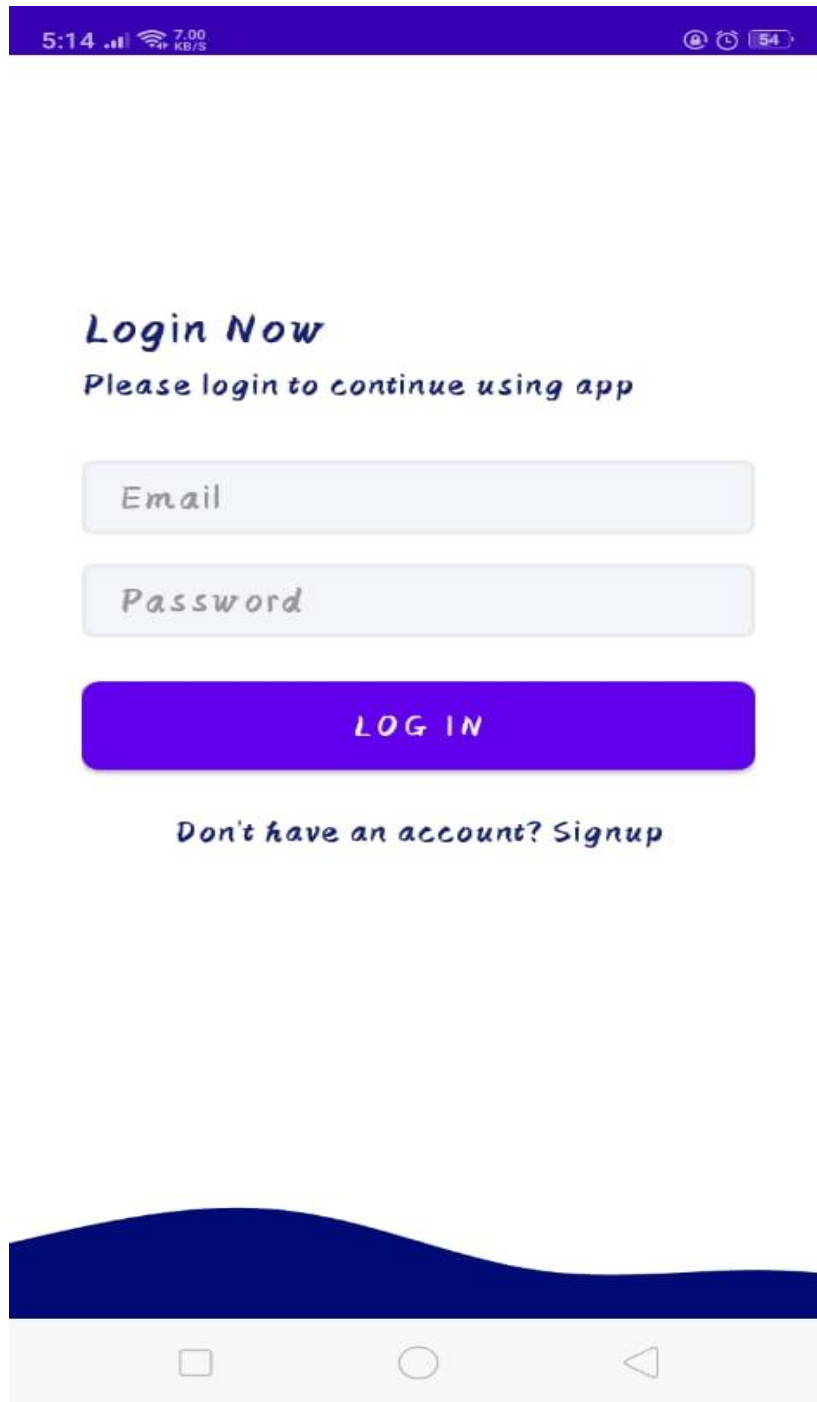
Figure 11: Log in

Main Activity (Home Page)

In this activity, all shops are shown in the recycler view. We can also delete the shop here in this activity.
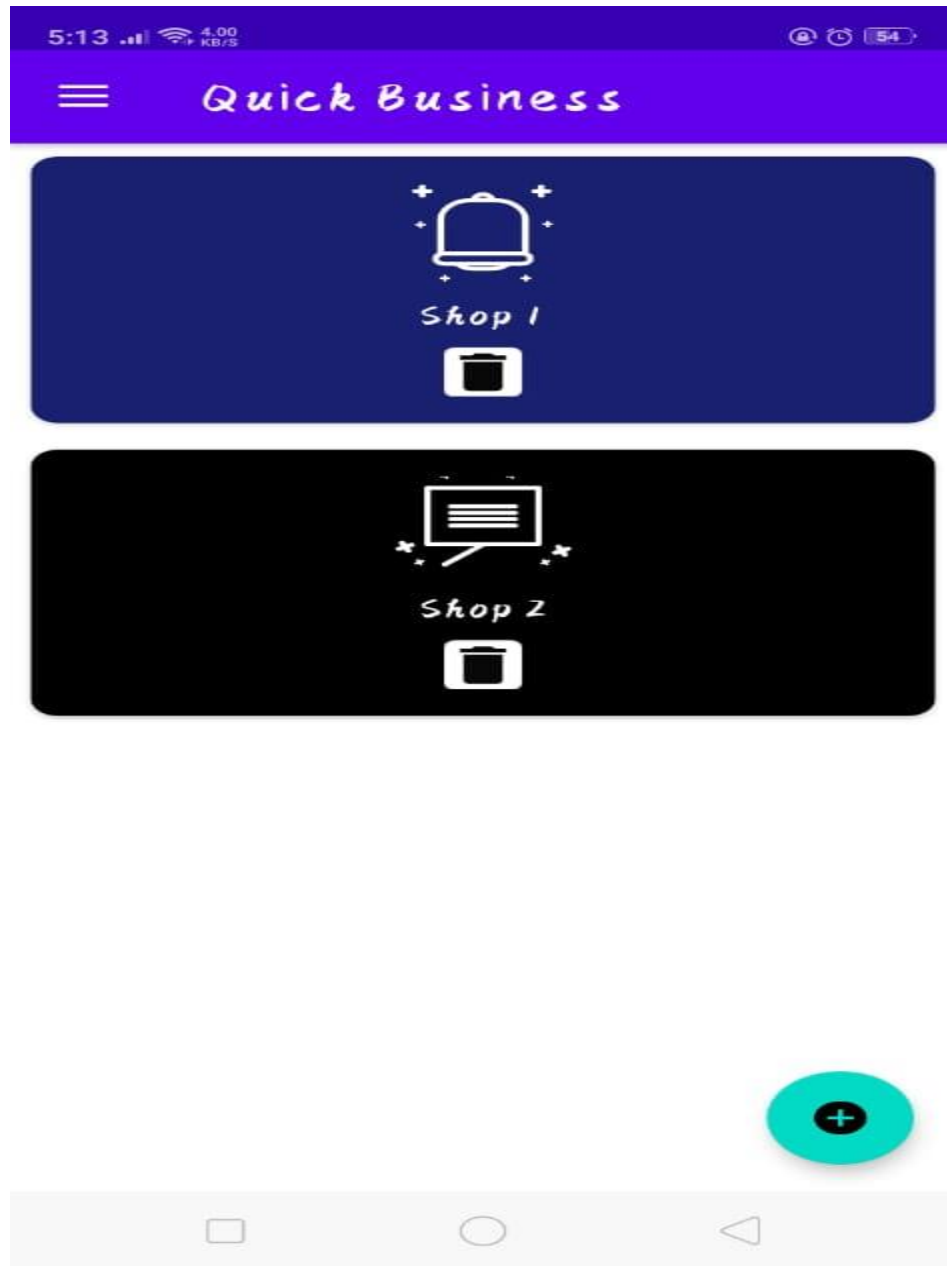
Figure 12: Main Activity

Shop Creation Activity

In this activity, we can create the new shop. We have to enter the shop name, shop owner name and shop location. When we click the "submit" button, shop is created.

Figure 13: Shop Creation Activity

Product Main Page Activity

In this activity, all products of shop are shown in recycler view. Each product can be deleted by clicking on the delete icon.
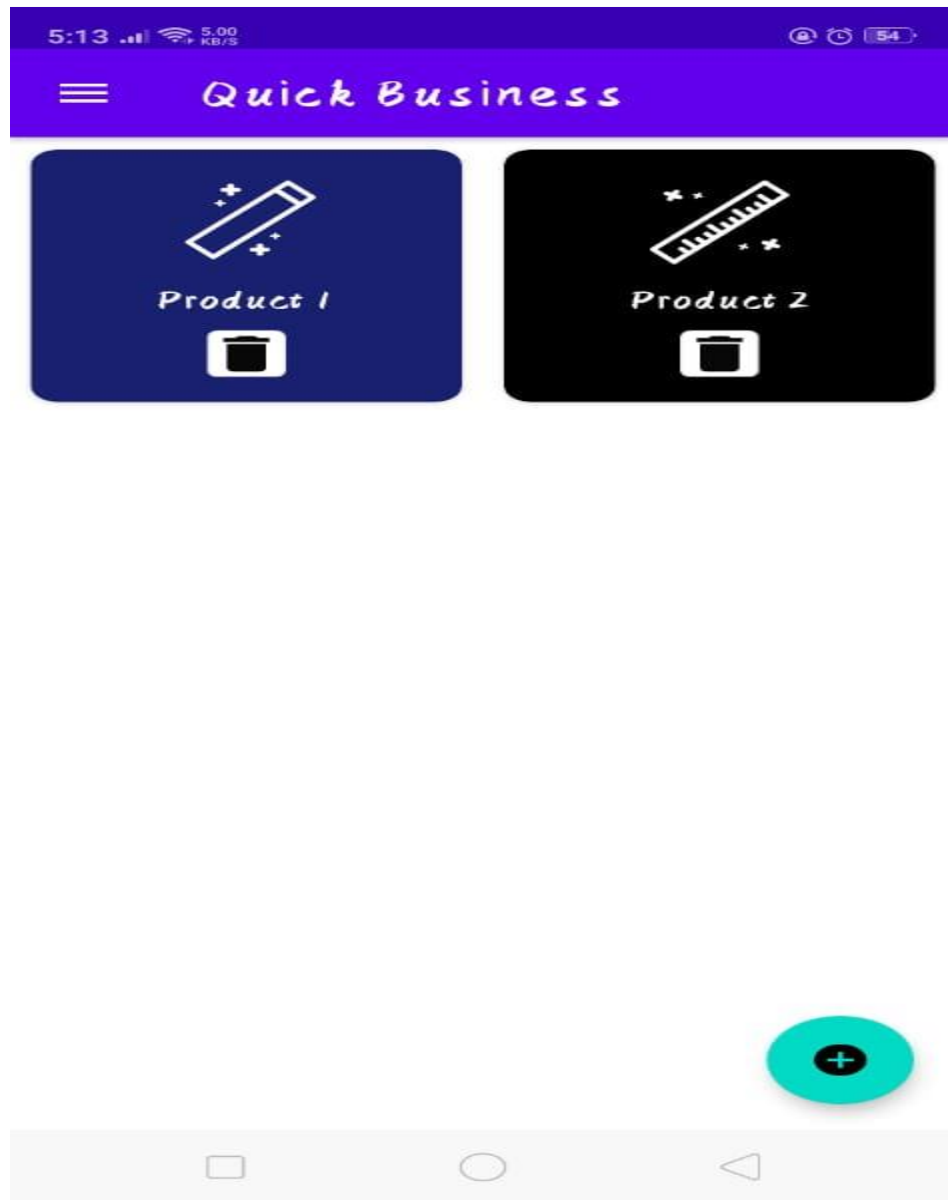
Figure 14: Main Product Activity

Product Creation Activity

In this activity, we can add new products to the shop. We have to enter the product name, product price, product description, product's expiry date and picture of the product. Then product can be added by clicking on the "Add Product" button.
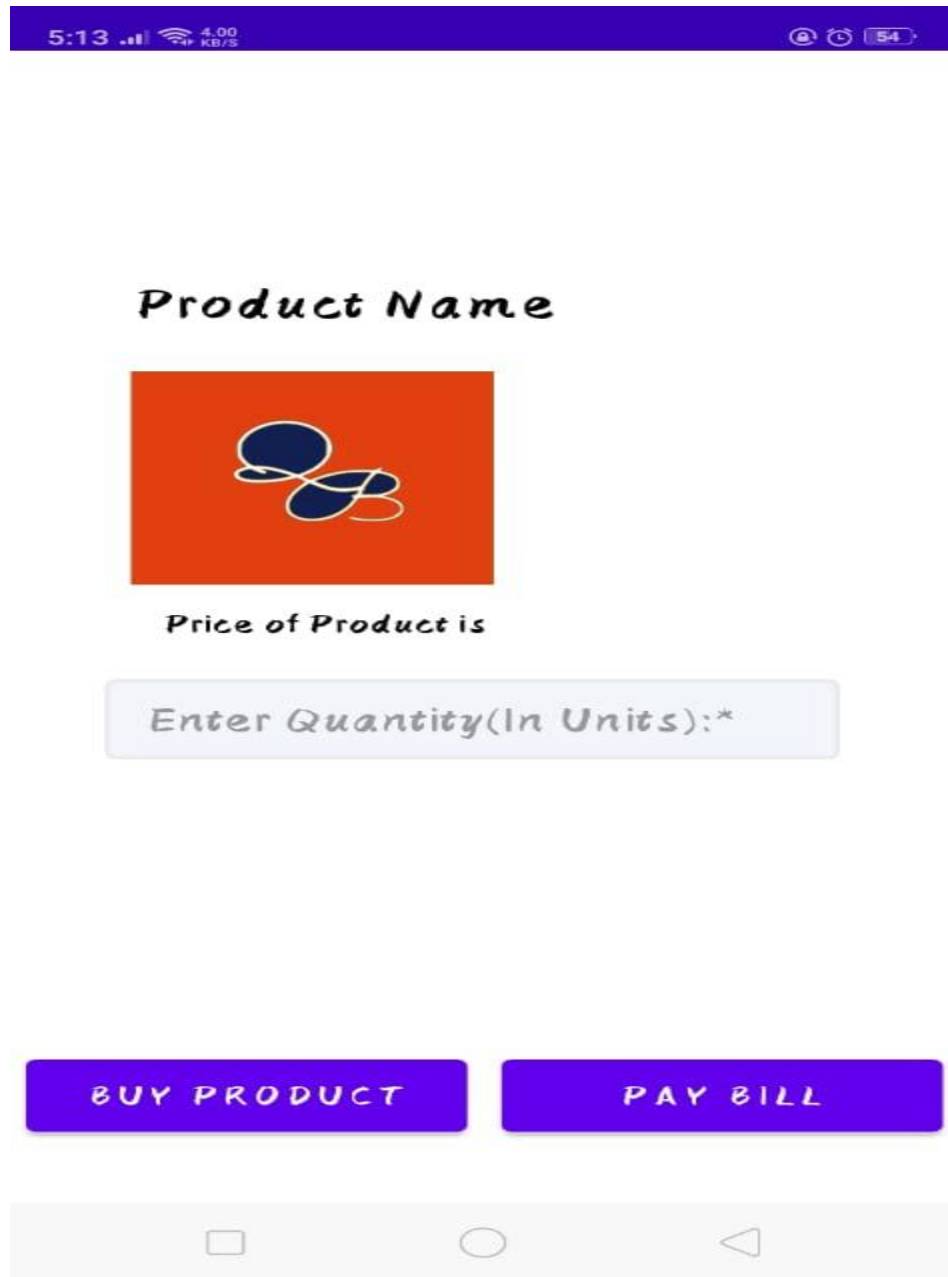
Figure 15: Product Creation Activity

Product Buy Activity:

In this activity, users can buy the product. User have to enter the quantity in kilograms and click on the "Buy Product" button.

Figure 16: Buy Product Activity

Navigate Drawer (Side Menu)

In navigate drawer, there were option of profile, follow us, rate us, about us and log out. We can log out from the app by simply clicking on the log out option, as same for other option. In drawer layout, logo of the app is shown on top.
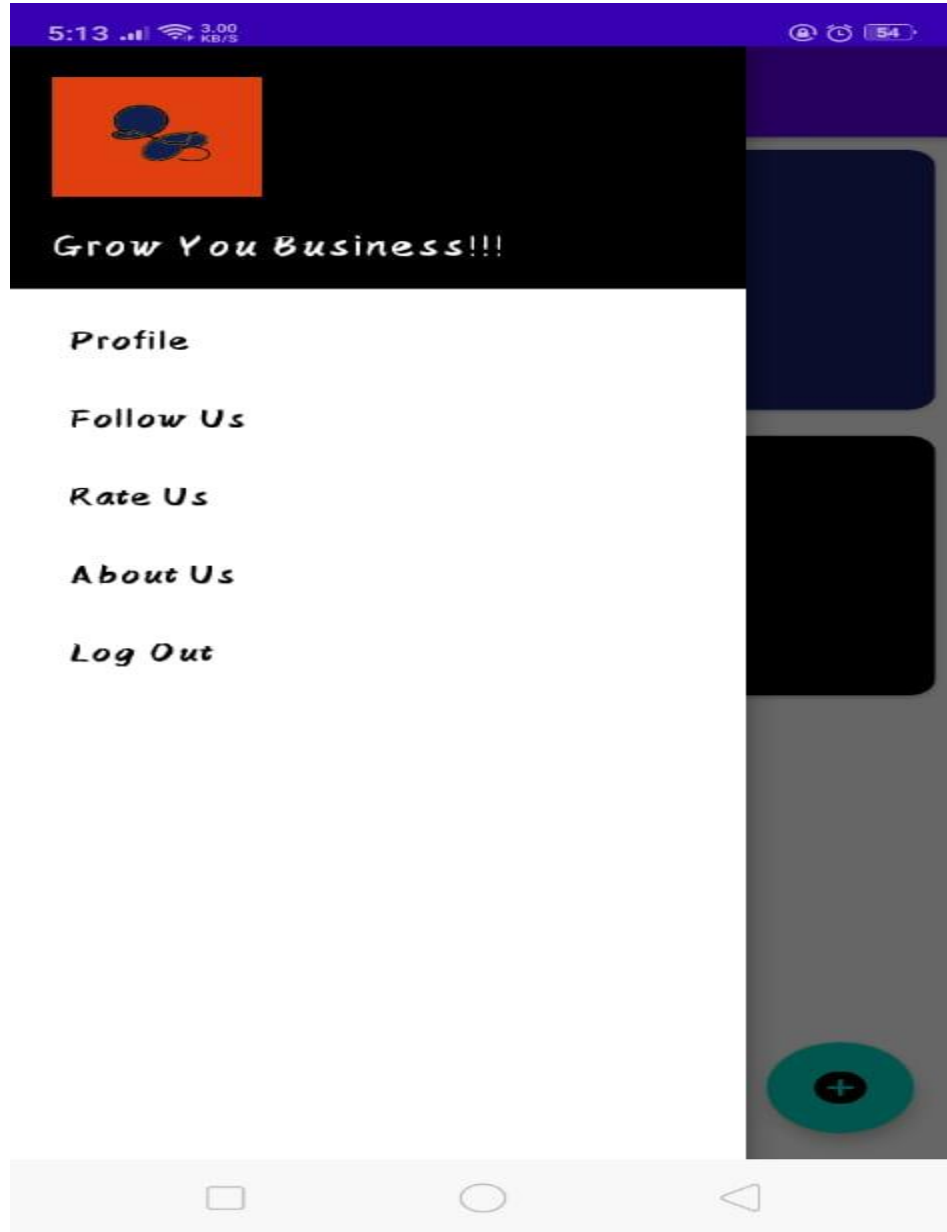

Figure 17: Navigate Drawer

Profile Activity

In this activity, profile of the admin and user is shown. Data of profile is coming from the firebase real-time database.

Figure 18: Profile Activity

Other Activities

Other activities include the follow us activity, rate us activity and rate us activity. These activity are just showing a simple interface.

Problems during Implementation:

During the development of Quick Business app, I faced many issues. Some of these issues took my whole day to resolve the issues. Here are some major issues:

➢ First issue was about the Gradle of Android Studio. There were dependency issue during the implementation of Quick Business.
➢ Secondly, I was first time working with the Java programming language, so at some stage of developing the app, I was stuck at some places but fortunately, it played a major role in my learning of Mobile Application Development.
➢ There were some issues, when I was dealing the firebase real-time database to implement the backend logic. Data insertion and retrieval from the real-time database was a bit difficult, but it was a great learning experience for me.

Conclusion

I learned how to develop an android application. I came to know that what should be a proper UI design for the competitive application. I made some functional version of app.

Reference

➢ GitHub, *bumptech/glide*. [online] Available at https://github.com/bumptech/glide [Accessed 08 Aug, 2021]
➢ Android Developers, *Documentation | Android Developers*. [online] Available at: https://developer.android.com/docs/ [Accessed 15 July. 2021].