



National Institute of Business Management

School of Computing

Higher National Diploma in Software Engineering

Mobile Application Development

Pizza Mania Application

Submitted By

COHNDSE251F-058	W W Thilini Piyumika
COHNDSE251F-059	P A R Sahas Suraweera
COHNDSE251F-085	M Hansima Lakvindi

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Abstract

Our project is a mobile application solution named "Pizza Mania" that we created to make it easier to purchase pizza online. In this mobile application, we have included features like a searchable menu, safe online payments, and real-time delivery tracking. In our solution, we created two mobile applications ,one for customers and one for admin staff members. The mobile application that we created is designed to provide efficient customer service through better order management. This application was created using Android Studio, and we utilized Java as the programming language used. The application is built with a user-friendly interface and safe transactions.

Table of Contents

1. Introduction.....	4
2. Development.....	4
3. Result.....	6
4. Discussion.....	16
5. References.....	16
6. Acknowledgement.....	17
7. Appendices.....	17

1. Introduction

Today's fast growing lifestyle , we all like to order foods via online , it is easy and efficient for all users hence we have created a two application mobile solution for ordering pizza online and managing orders . As per the research data , pizza is one of the most famous fast foods in the world right now , so this mobile solution will help users to order foods seamlessly and efficiently. Also, the administrative parties can handle their orders seamlessly without causing any delays. In these mobile solutions there are two mobile applications. The first one is a customer app, created for customers, and it enables users to browse menus , place orders, make online payments via PayHere and check delivery status. The second application is for administrative purposes; it allows management staff to handle menu items, process orders and manage multiple branches . Our system focuses on improving customer experience , reducing manual order management and supports real time updates between mobile applications.

2.Development

When we are developing a pizza mania mobile application development we have used an agile methodology. The tasks are divided among team members, and all the team members worked on both mobile applications and also worked on UI screens and building functionalities . We have used Android studio as an IDE , as for the programming language we have used java. For the database we have used firebase realtime for dynamic data storage ,user authentication and real time updates . We have used SQLite for offline access to the menu. We have added features like GPS integration that can automatically locate the nearest branch , this helpful for fastest deliveries. We have used github for collaboration with team members when developing and code changes integration and version control. We have designed user friendly UI and responsive layouts through ConstraintLayout and LinearLayout.

2.1 Data Management Methodology

Pizza mania mobile solution implemented using a structured approach to manage data , in the backend Firebase Realtime Database is used for synchronization and store data .Every type of data is saved on a different Firebase node, with relationships connecting each to orders, payments to orders, and branches for assigned orders .To enhance dependability SQLite was included as a local backup database, allowing seamless access to menu data via fallback mechanism.

In the frontend,Recyclerview is used to represent dynamic data such as menus,orders and branches in an organized structure.Data models like the order model specifically show how data is represented also adapters such as Order adapter bind data to the recycleview . Recycleview helps users to smooth scrolling, memory efficiency through using the same structure and realtime updates according to the database changes. Efficient data management and fast data representation helps users to experience smooth usage for both customers and administrative staff.

2.2 UI Components

Customer App -

- **Login and Register** - User authentication and user registration.
- **Menu List Screen** - Display menu dynamically.
- **Cart & Payment Screen** - Allow users to select items they want , calculate the total bill and process payments.
- **Order Screen** - Show users the status of their order.
- **Profile UI** - Allows users to update their personal information.

Admin App -

- **Login page** - Administrative users authentication.
- **Menu management UI**- manage CRUD operations of menu items.
- **Order Management UI** - View and update order status.
- **Branch manage UI** - CRUD operations on branches.

3. Result

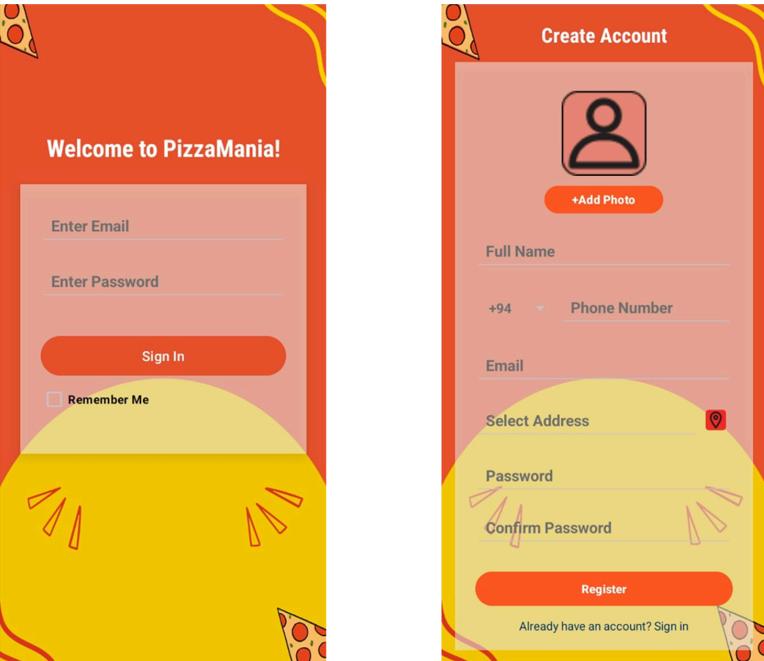
Our pizza mania system includes all core functionalities. Place orders , make secure payments and track orders also in the admin app , admins can manage items in the menu, orders and branch information in real time. PayHere integration ensures secure online payment, Firebase ensures real time updates across the app. In the menu ,orders have CRUD operations.

3.1 Screenshots and Demonstrations

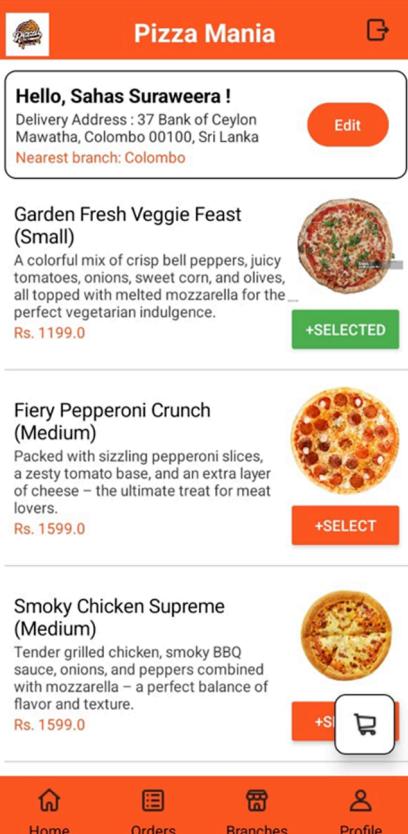
Our pizza mania application include these key screens:

- Login and registration screen
- Menu brows display
- Cart screen
- Payment screen
- Order tracking
- Admin operations

Customer App-



Login and registration screen



Pizza Mania

Hello, Sahas Suraweera !
Delivery Address : 37 Bank of Ceylon Mawatha, Colombo 00100, Sri Lanka
Nearest branch: Colombo

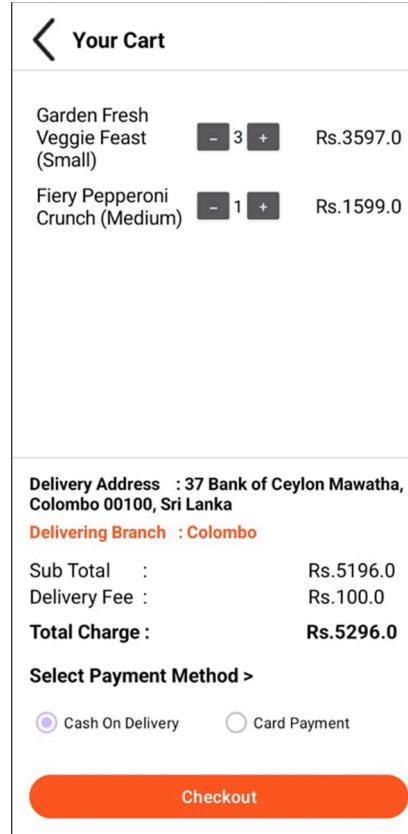
Garden Fresh Veggie Feast (Small)
A colorful mix of crisp bell peppers, juicy tomatoes, onions, sweet corn, and olives, all topped with melted mozzarella for the perfect vegetarian indulgence.
Rs. 1199.0

Fiery Pepperoni Crunch (Medium)
Packed with sizzling pepperoni slices, a zesty tomato base, and an extra layer of cheese – the ultimate treat for meat lovers.
Rs. 1599.0

Smoky Chicken Supreme (Medium)
Tender grilled chicken, smoky BBQ sauce, onions, and peppers combined with mozzarella – a perfect balance of flavor and texture.
Rs. 1599.0

Home **Orders** **Branches** **Profile**

Menu brows display



Your Cart

Garden Fresh Veggie Feast (Small)	-	3	+	Rs.3597.0
Fiery Pepperoni Crunch (Medium)	-	1	+	Rs.1599.0

Delivery Address : 37 Bank of Ceylon Mawatha, Colombo 00100, Sri Lanka
Delivering Branch : Colombo

Sub Total : Rs.5196.0
Delivery Fee : Rs.100.0
Total Charge : **Rs.5296.0**

Select Payment Method >

Cash On Delivery Card Payment

Checkout

Cart screen

Payment screen

ORD-20250916193929
Payble Amount: 5296.0
Confirmation send to >>>
sahassuraweerat@gmail.com

Bank Card

Name on Card
Credit Card Number
CVV
Expiry MM/YY

Pay

Your Orders

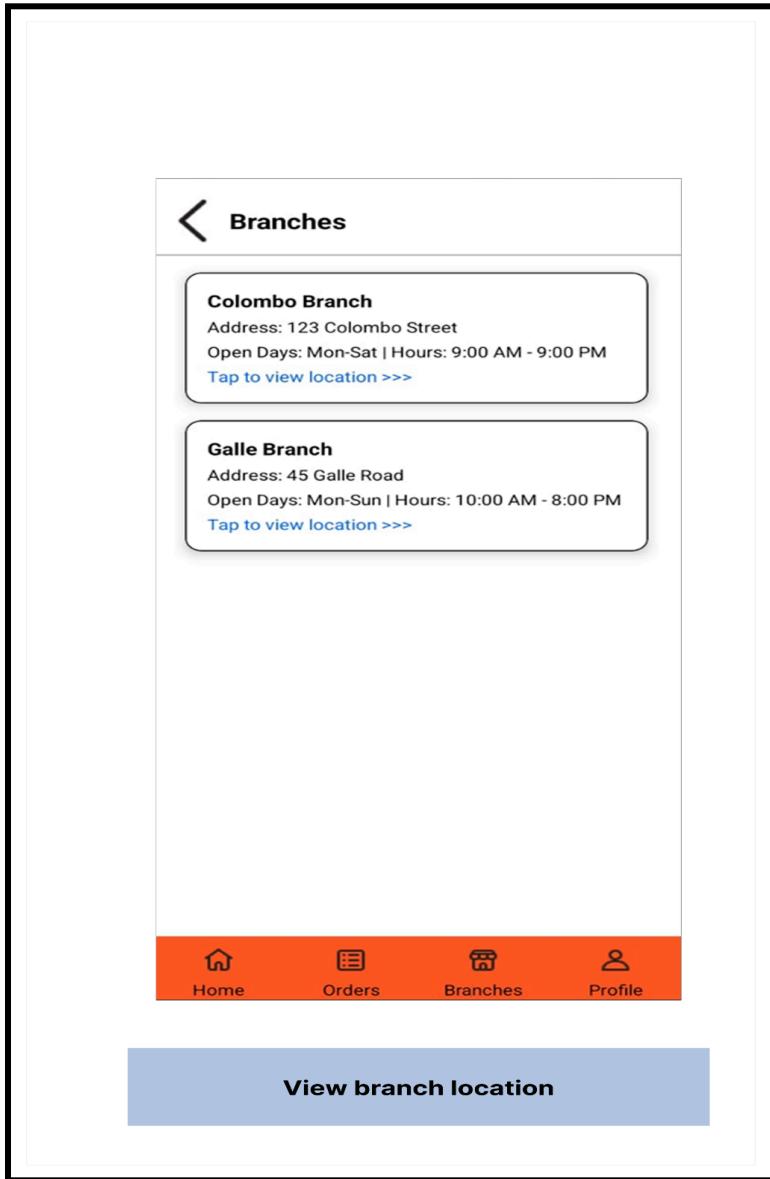
Order ID	Status	Total	Date
ORD-20250915160803	Pending	Rs. 599.0	2025-09-15 16:08:05
ORD-20250915162041	Delivered	Rs. 599.0	2025-09-15 16:20:44
ORD-20250915175602	Delivered	Rs. 649.0	2025-09-15 17:56:05
ORD-20250916001626	Canceled	Rs. 4591.0	2025-09-16 00:16:30
ORD-20250916122627	Delivered	Rs. 599.0	2025-09-16 12:26:37
ORD-20250916173402	Canceled	Rs. 998.0	2025-09-16 17:37:18

Home Orders Branches Profile

ORD-20250916193929
Payble Amount: 5296.0
Confirmation send to >>>
sahassuraweerat@gmail.com

Order tracking

Home Orders Branches Profile



Admin App-

The image shows a composite view of a mobile application interface for a pizza shop. On the left, there is a large placeholder area for a sign-in screen, indicated by a blue box containing the text "Admin Sign in". To the right of this placeholder is the actual sign-in screen for the "PizzaMania Admin Portal". The sign-in screen has a green header with the title "PizzaMania Admin Portal!". It features fields for "Enter Email" and "Enter Password", a "Sign In" button, and a "Remember Me" checkbox. The background of the sign-in screen is a stylized pizza slice graphic.

On the right side of the image, there is another blue placeholder box labeled "Manage menu items". To its right is the actual menu item management screen. This screen has a green header bar with the text "Add Pizza". Below this are three menu items listed vertically:

- Garden Fresh Veggie Feast (Small)**
Rs. 1199.0 - A colorful mix of crisp bell peppers, juicy tomatoes, onions, sweet corn, and olives, all topped with melted mozzarella for the perfect vegetarian indulgence.

Update **Delete**
- Fiery Pepperoni Crunch (Medium)**
Rs. 1599.0 - Packed with sizzling pepperoni slices, a zesty tomato base, and an extra layer of cheese – the ultimate treat for meat lovers.

Update **Delete**
- Smoky Chicken Supreme (Medium)**
Rs. 1599.0 - Tender grilled chicken, smoky BBQ sauce, onions, and peppers combined with mozzarella – a perfect balance of flavor and texture.

Update **Delete**



Pizza Name

Size (Small/Medium/Large)

Price

Description

Save Pizza

Colombo Pending Filter

ORD-20250915160803 Pending

Customer: Sahas Suraweera
Phone: +94704406169
Branch: Colombo
Delivery: 37 Bank of Ceylon Mawatha, Colombo 00100, Sri Lanka
Date: 2025-09-15 Time: 16:08:05
Total: LKR 599.0

ORD-20250915162041 Delivered

Customer: Sahas Suraweera
Phone: +94704406169
Branch: Colombo
Delivery: 37 Bank of Ceylon Mawatha, Colombo 00100, Sri Lanka
Date: 2025-09-15 Time: 16:20:44
Total: LKR 599.0

ORD-20250915175602 Delivered

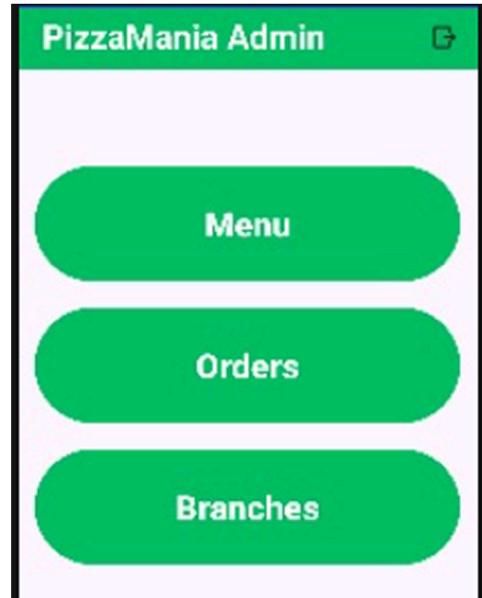
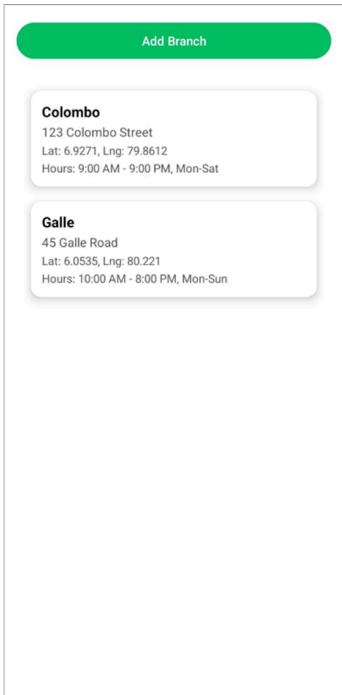
Customer: Sahas Suraweera
Phone: +94704406169
Branch: Galle
Delivery: Sri Lanka
Date: 2025-09-15 Time: 17:56:05
Total: LKR 649.0

ORD-20250916001626 Cancelled

Customer: Sahas Suraweera

Update pizza items

View order data



Add Branches

Admin screen

3.2 Benefits of Pizza Mania Mobile Solution

Customer app-

- Customers can login using account credentials or if they don't have an account can register and log in , all the customers who have an address within 5 m can order from the nearest outlet.
- Once the customer places the order , the order will be assigned to the nearest outlet .
- Customers can track orders .
- Customers can do online payments .

Admin App-

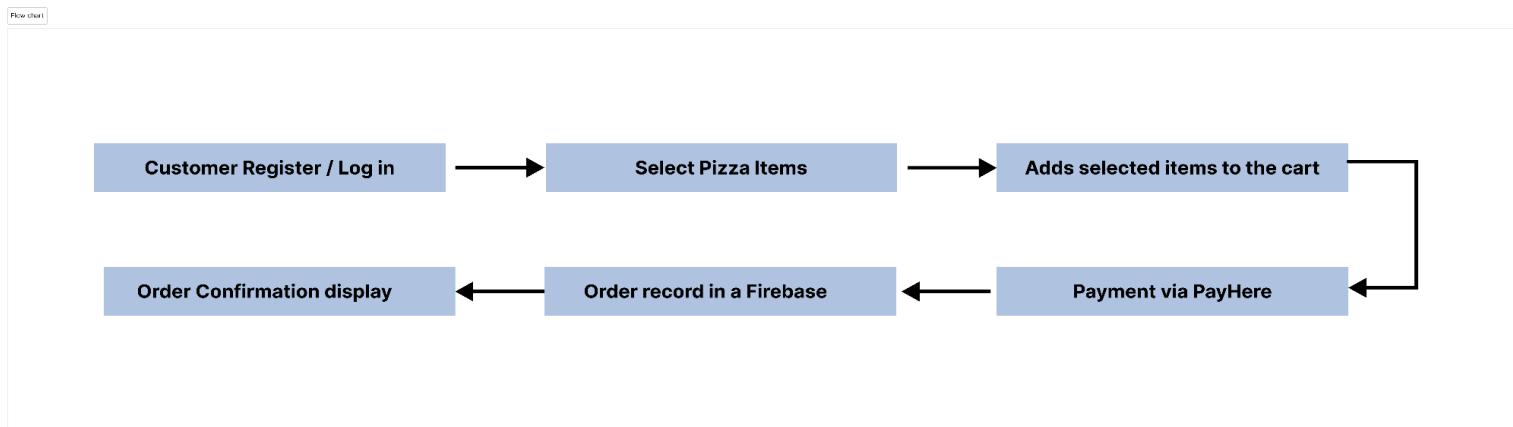
- Admin staff can manage menu items and update items as per the stock amounts .
- Admin staff can track orders and it helps to reduce delays.

3.3 Limitations

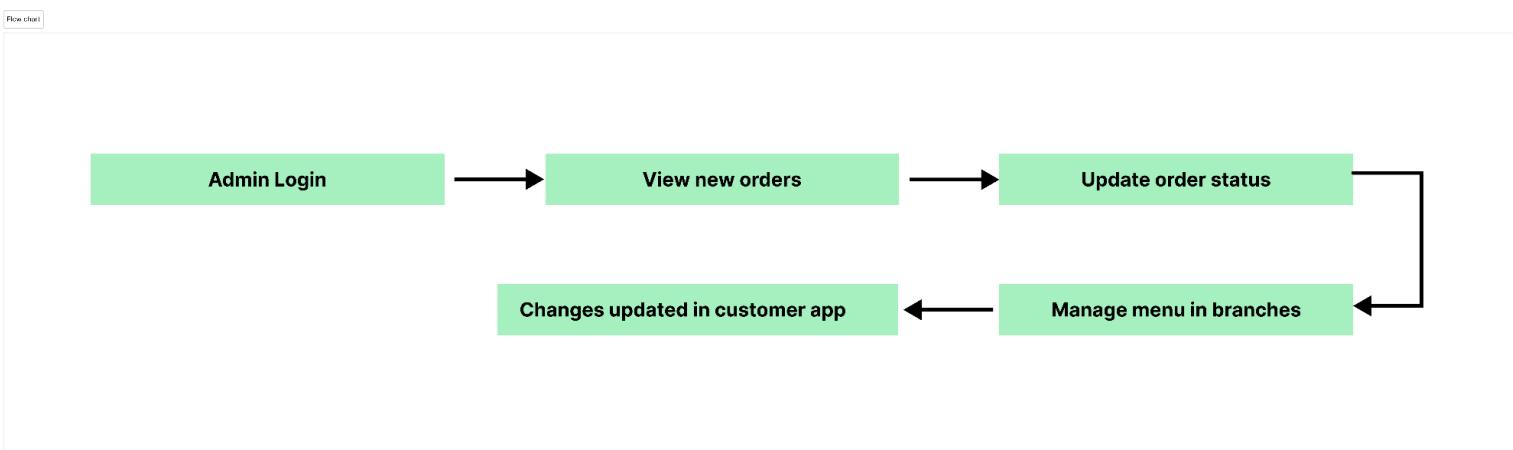
Our pizzamania application support for main features that we have implemented up to now however our mobile solution has some limitations due to several reasons. As we have identified after the implementation these are some of points, push notifications for order updates, AI - powered food recommendations , alternative payment options like PayPal. Also we have faced some challenges while implementing such as, ensuring real-time synchronization between customer app and admin app, handling dynamic Recyclerview updates for menu items and orders and integrating PayHere SDK while managing edge cases like failed payments , and managing branches with real time updated data. We have planned to improve these points in future.

3.4 System Architecture Diagram

Customer App



Admin App



4.Discussion

When we implementing our pizza mania application we have faced several challenges such as, GPS allocation for branch selection , real time synchronization with customer app and admin app and implementing a dynamic Recycler view updates , We have resolved those database integration issue using Firebase , for an example In customer app it tries to fetch menu item details from Firebase real time database , if firebase fails to respond for the request fallback is triggered ,this fallback load automatically menu data from the local SQLite database which is static. We have used Google API for location services. Testing on real devices helped us to identify UI and UX issues. Github was used for team collaboration .

5.References

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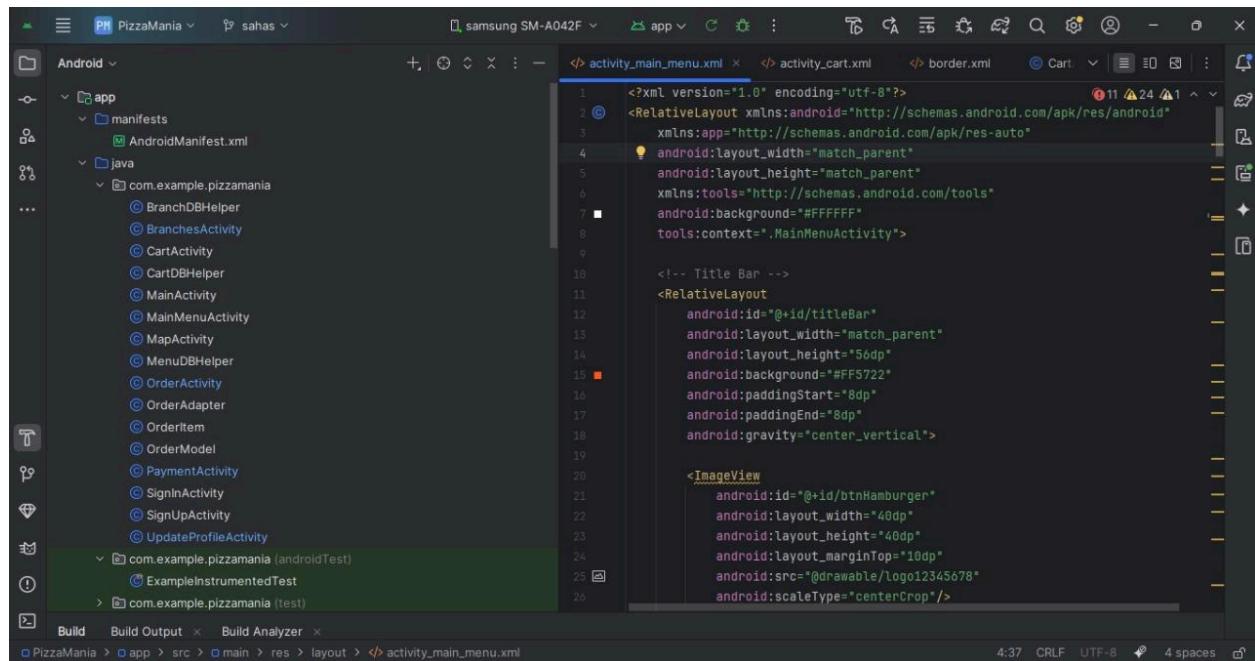
6.Acknowledgement

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7.Appendices

GitHub Link - <https://github.com/SahasSuraweera/PizzaManiaAdmin.git>

Code Snippet - Customer App



The screenshot shows the Android Studio interface with the code editor open for the file `activity_main_menu.xml`. The code is an XML layout definition for a main menu screen. It includes a root `RelativeLayout` with various child views like `ImageView` and `EditText`, and nested `LinearLayout`s. The code uses standard Android XML syntax with attributes like `layout_width`, `layout_height`, and `background`.

```
<?xml version="1.0" encoding="utf-8"?>
<RelativeLayout xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:app="http://schemas.android.com/apk/res-auto"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:background="#FFFFFF"
    tools:context=".MainActivity">

    <!-- Title Bar -->
    <RelativeLayout
        android:id="@+id/titleBar"
        android:layout_width="match_parent"
        android:layout_height="56dp"
        android:background="#FF5722"
        android:paddingStart="8dp"
        android:paddingEnd="8dp"
        android:gravity="center_vertical">

        <ImageView
            android:id="@+id/btnHamburger"
            android:layout_width="40dp"
            android:layout_height="40dp"
            android:layout_marginTop="10dp"
            android:src="@drawable/logo12345678"
            android:scaleType="centerCrop"/>

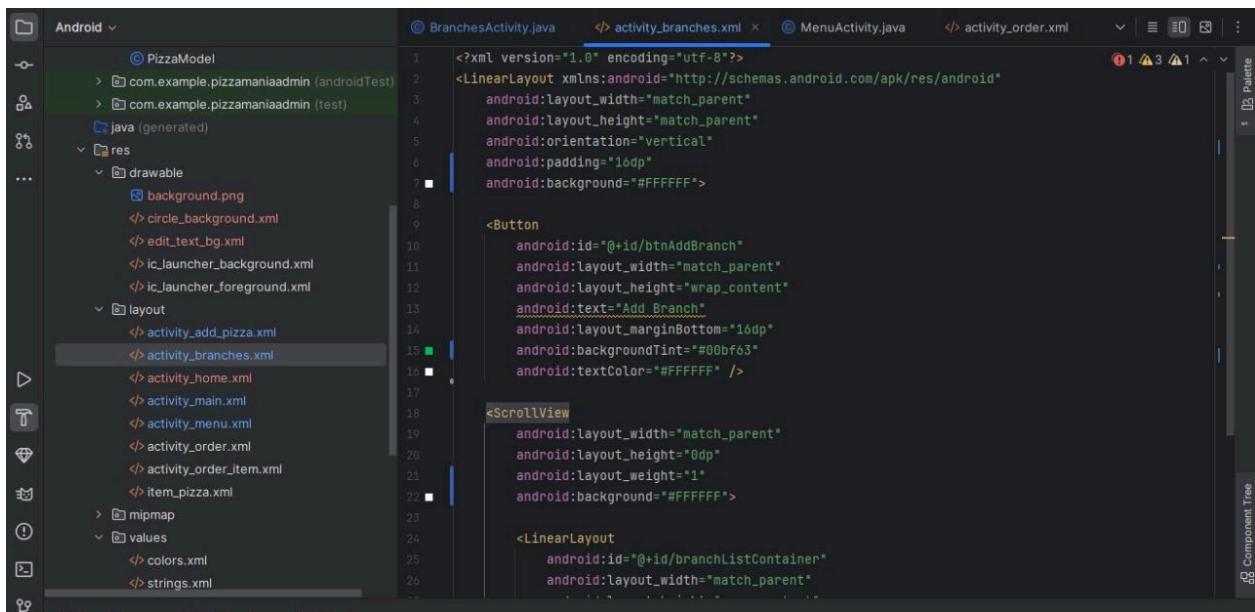
        <EditText
            android:id="@+id/etSearch"
            android:layout_width="250dp"
            android:layout_height="30dp"
            android:layout_centerHorizontal="true"
            android:layout_marginTop="10dp"
            android:background="@drawable/bg_search_bar"
            android:gravity="center"
            android:imeOptions="actionSearch"
            android:padding="5dp"
            android:singleLine="true"
            android:text="Search..."/>

        <View
            android:layout_width="1dp"
            android:layout_height="20dp"
            android:layout_centerHorizontal="true"
            android:layout_marginTop="10dp"
            android:background="#EAEAEA"/>

        <EditText
            android:id="@+id/etAddress"
            android:layout_width="250dp"
            android:layout_height="30dp"
            android:layout_centerHorizontal="true"
            android:layout_marginTop="10dp"
            android:background="@drawable/bg_search_bar"
            android:gravity="center"
            android:imeOptions="actionSearch"
            android:padding="5dp"
            android:singleLine="true"
            android:text="Address..."/>

    
```

Code snippet - Admin app-



The screenshot shows the Android Studio interface with the following details:

- Project Structure:** The left sidebar displays the project structure under "Android". It includes:
 - PizzaModel
 - com.example.pizzamaniaadmin (androidTest)
 - com.example.pizzamaniaadmin (test)
 - java (generated)
 - res
 - drawable
 - background.png
 - circle_background.xml
 - edit_text_bg.xml
 - ic_launcher_background.xml
 - ic_launcher_foreground.xml
 - layout
 - activity_add_pizza.xml
 - activity_branches.xml
 - activity_home.xml
 - activity_main.xml
 - activity_menu.xml
 - activity_order.xml
 - activity_order_item.xml
 - item_pizza.xml
 - mipmap
 - values
 - colors.xml
 - strings.xml
- Code Editor:** The right pane shows the XML code for "activity_branches.xml".

```
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:orientation="vertical"
    android:padding="16dp"
    android:background="#FFFFFF">

    <Button
        android:id="@+id/btnAddBranch"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:text="Add Branch"
        android:layout_marginBottom="16dp"
        android:backgroundTint="#00bf63"
        android:textColor="#FFFFFF" />

    <ScrollView
        android:layout_width="match_parent"
        android:layout_height="0dp"
        android:layout_weight="1"
        android:background="#FFFFFF">

        <LinearLayout
            android:id="@+id/branchListContainer"
            android:layout_width="match_parent"
            android:layout_height="wrap_content">
```

Database - Firebase Realtime Database

The screenshot shows the Firebase Realtime Database interface for the 'PizzaMania' project. The left sidebar lists various database components: Project Overview, Authentication, Firestore Database, **Realtime Database** (selected), Storage, App Check, and Analytics Dashboard. Below this is a 'Related development tools' section with a link to 'Firebase Studio'. The main area is titled 'Realtime Database' and displays the database structure at <https://pizzamania-d2775-default-rtbd.firebaseio.com>. The structure includes branches for Pizzas, branches, order_items, orders, and users. A note at the bottom indicates the database is located in the United States (us-central1). The top right features a user profile icon, a bell notification icon, a star icon, and a help icon.

