# ANDROID APPLICATION DEVELOPMEMT

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# AZURE SKYNET SOLUTIONS PVT. LTD.

## Overview of the company

1. ISO 9001:2015 certified service provider.

2. The company's diverse and talented employees are committed to help businesses, governments and educational institutions to plan and run successful security programs through the right combination of products , services and solutions related to security program strategy, enterprise risk and consulting in multiple technologies.

3. Founded in 2014,the company has served more than 120 clients of various sizes across multiple industries.

4. The company's national awareness program includes BrainTech Championship and Cyber Security program.

# Services

- **VULNERABILITY ASSESSMENT-**The process defines, identifies, and classifies the security holes (vulnerabilities) in a computer, network or communications infrastructure.

- **NETWORKING PENETRATION TESTING-**The primary objective for a network penetration test is to identify exploitable vulnerabilities in networks, systems, hosts and network devices (ie: routers, switches) before hackers are able to discover and exploit them.

- **WEB APPLICATION PENETRATION TESTING-**Comprehensively assess web applications for vulnerabilities that can lead to unauthorized access or data exposure
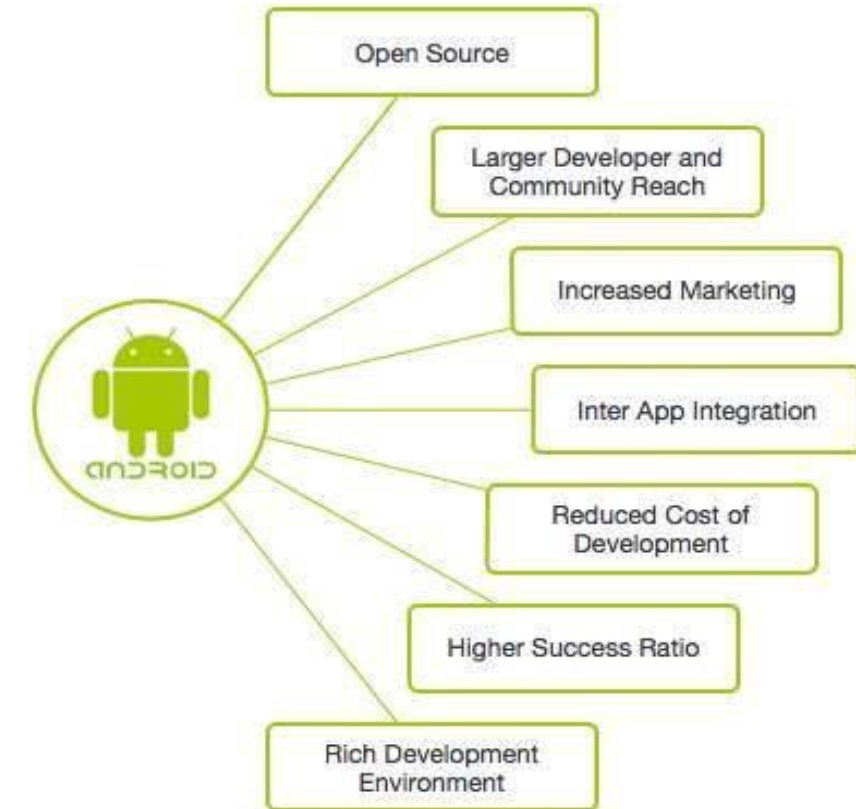
# ABOUT THE DEPARTMENT

Some of the disciplines for which Azure Skynet provides internship are –

• Ethical Hacking

• Android Application Development

• Machine Learning

• Digital Marketing

• Networking

The internship was done in the field of Android Application Development.

# Overview of Android

- Open Source Linux based OS for Smartphones and Tablets.

- Android offers a unified approach to application development for mobile devices which means developers need only develop for Android, and their applications should be able to run on different devices powered by Android.

- Android 1.0 was Released in 2008 and the current version of Android, Android 9.0 Pie, was released in 2018.

- Android's source code is available under free and open source licences.

Open Source

Larger Developer and Community Reach

Increased Marketing

Inter App Integration

Reduced Cost of Development

Higher Success Ratio

Rich Development Environment

Some of the salient features of Android are:

- **Beautiful UI-** Android OS basic screen provides a beautiful and intuitive user interface.

- **Connectivity-** Supports GSM/EDGE,CDMA, EV-DO, UMTS, Bluetooth, Wi-Fi, LTE, NFC and Wi-Max.

- **Storage-** SQLite, a lightweight relational database is used for data storage purposes.

- **Media Support-** H.263,MPEG-4 SP,WAV,JPEG,PNG,MP3,GIF,MIDI,BMP and many more.

- **Messaging Service Support-** Supports SMS and MMS services.

- **Multi-touch-** Android has native support for multi-touch which was initially made available in HTC hero.

- **Multi-tasking-** Allows users to jump from one task to another and same time various applications can be run simultaneously.

# Developing applications for Android

1. Developed using Java or Kotlin language using Android Studio, the current default IDE for Android Application Development.

2. Apps developed can be packaged easily and sold out through a store. Ex: Google Play Store.

3. Android Package Kit (APK) - Package file format used by the Android OS for distribution and installation software of mobile apps, just like Windows' .exe file.

4. APK files are generated using Android Studio.

5. There is a diverse group of Android developers in India, who have developed various education and enterprise applications.

# TASK PERFORMED

**1. Basics of Android Application Development** –

- Layout can be designed in a drag and drop manner in the design tab of android studio.

- Layout contains elements like radiobuttons, checkboxes, buttons etc..

- Creation of Java files to listen to events generated by the elements in layouts.

- Send emails and make calls directly from app by taking user permissions.

- Working with SQLite for creating and managing databases to store user data.

- Load contents from a remote database using Firebase services.

- Using Firebase services for user authentication ,user data storage and downloading multimedia content.

## 2. The application developed during the internship are –

- Detection of sensors present in our respective phones-

  - Involves reading various sensor values which is embedded in smartphones such as light sensor , proximity sensor, accelerometer, gyroscope etc..

- A simple shopping application-

  - Admin and customer portal is provided in this shopping application.

  - Customer has signup and login options. When he registers, an OTP is sent to the registered phone number and a verification email is sent to his email Id using FireBase Phone Auth service.

  - Only upon verification of phone number and email Id, he is allowed to login to the application.

  - User authentication and session management is done using Firebase Authentication.

  - Displaying the products list with price and description.

  - All product details are stored in FireStore database provided by Firebase and is fetched upon demand from the external server to populate the product listings in the shopping application.

# Sensor Detection

## Home Page

SensorsDemo

List of sensors of Samsung Galaxy A7(2015). Select any one of them for a demo

BMC150 Acceleration Sensor

BMC150 Magnetic Sensor

BOSCH Uncalibrated Magnetic Sensor

TAOS TMD3782 Prox Sensor

TAOS TMD3782 Light Sensor

Screen Orientation Sensor

Samsung Geomagnetic Rotation Vector Sensor

Orientation Sensor

**Home Page**

## Accelerometer Demo

SensorsDemo

The acceleration in all 3 axes are:
X: 0.30645782
Y: 0.47884035
Z: 9.911995

The Vendor of BMC150 Acceleration Sensor is Bosch Sensortec and its version is 1

**Accelerometer Demo**

# Sensor Detection



Calibrated Magnetic Sensor Demo



Proximity Sensor
Demo - 1

# Shopping Application:



Admin page : Insert products into FireBase database



Admin Page : Update product details in FireBase database

# Shopping Application:



Admin page : Retrieve products from FireBase database
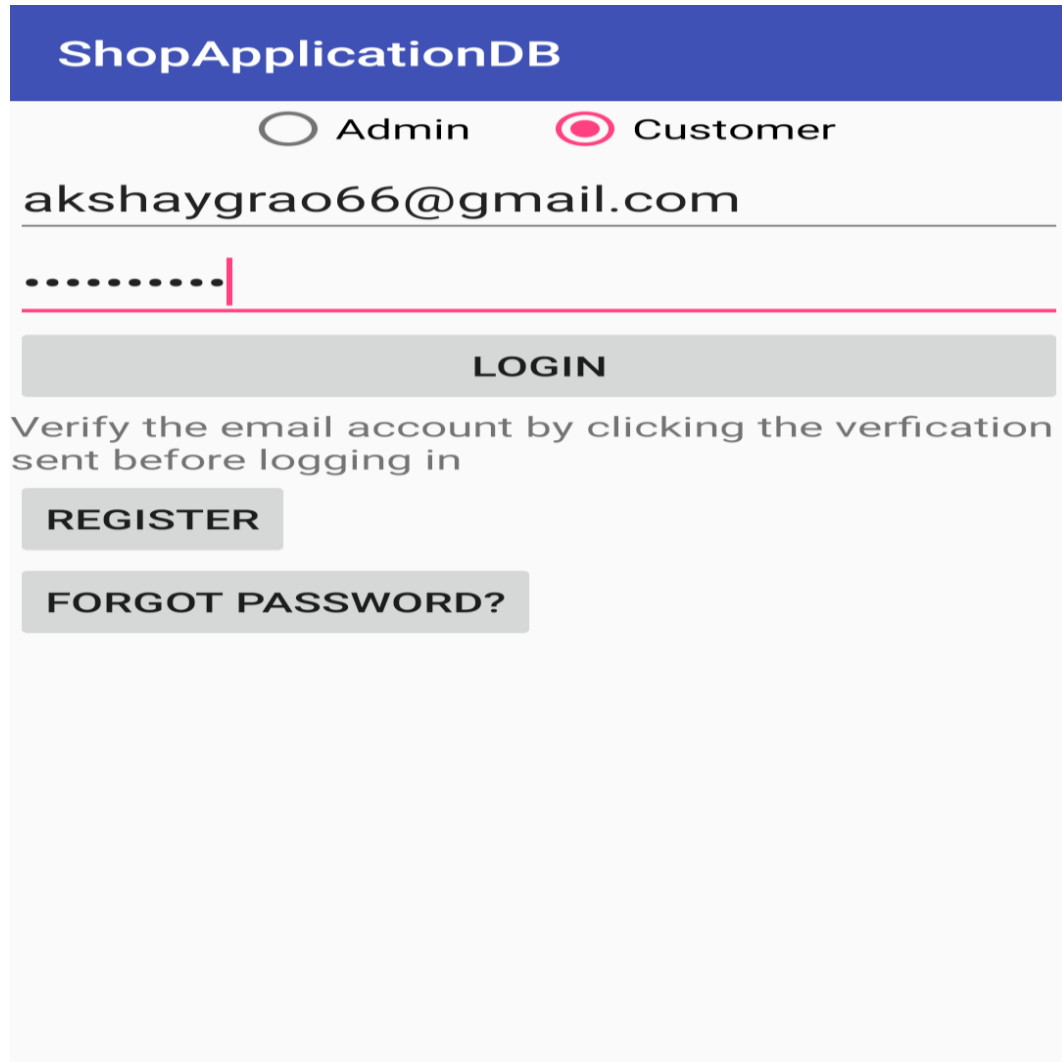


Admin Page : Delete products from FireBase database

# Shopping Application:
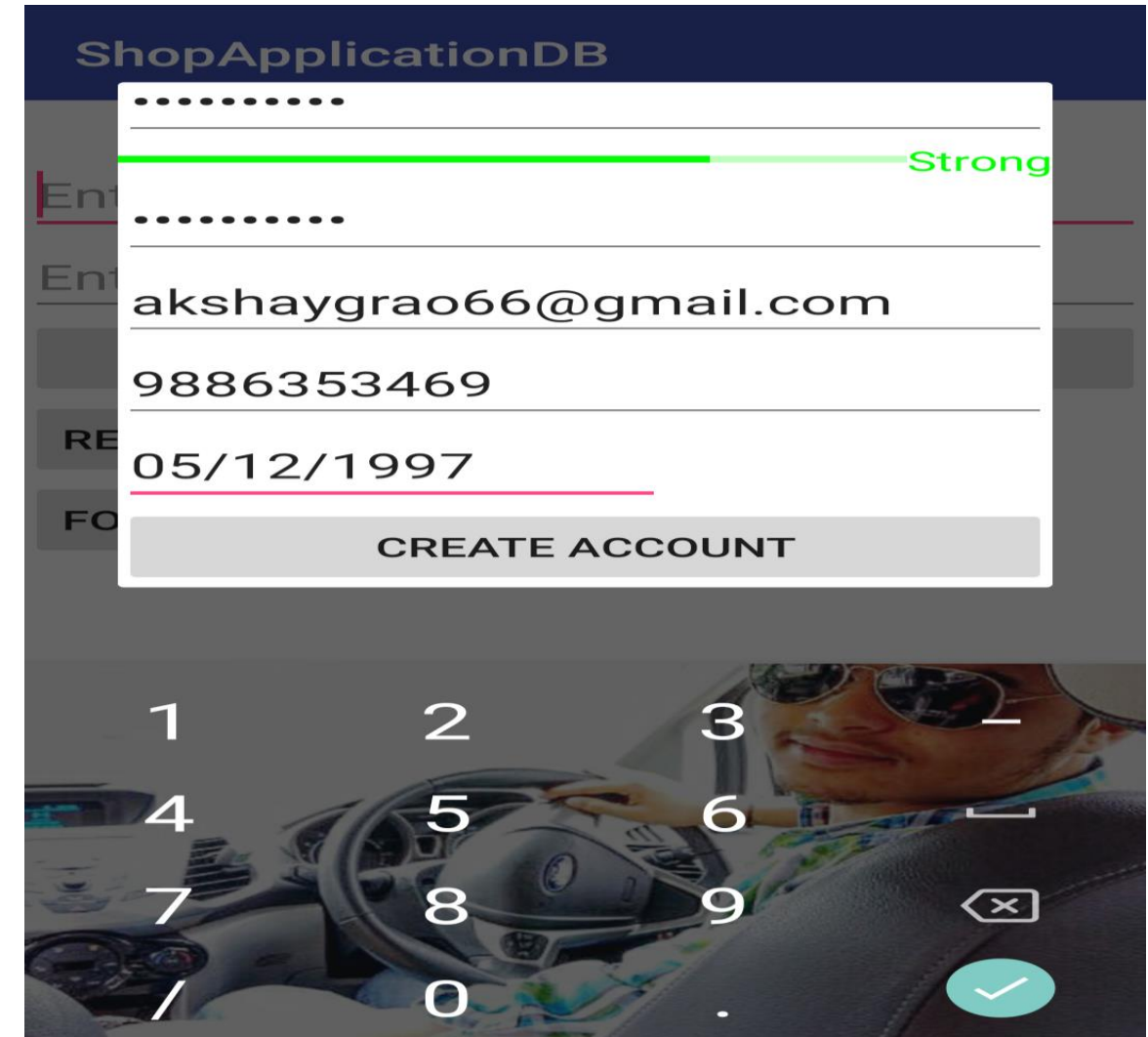


Application home page allows login only for verified users
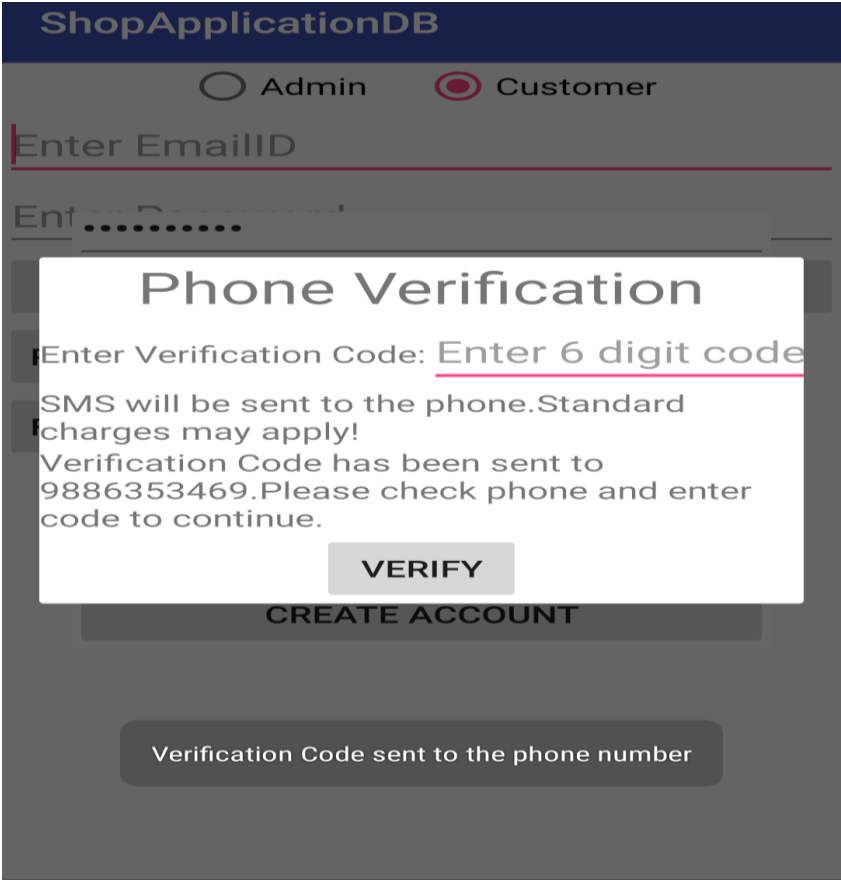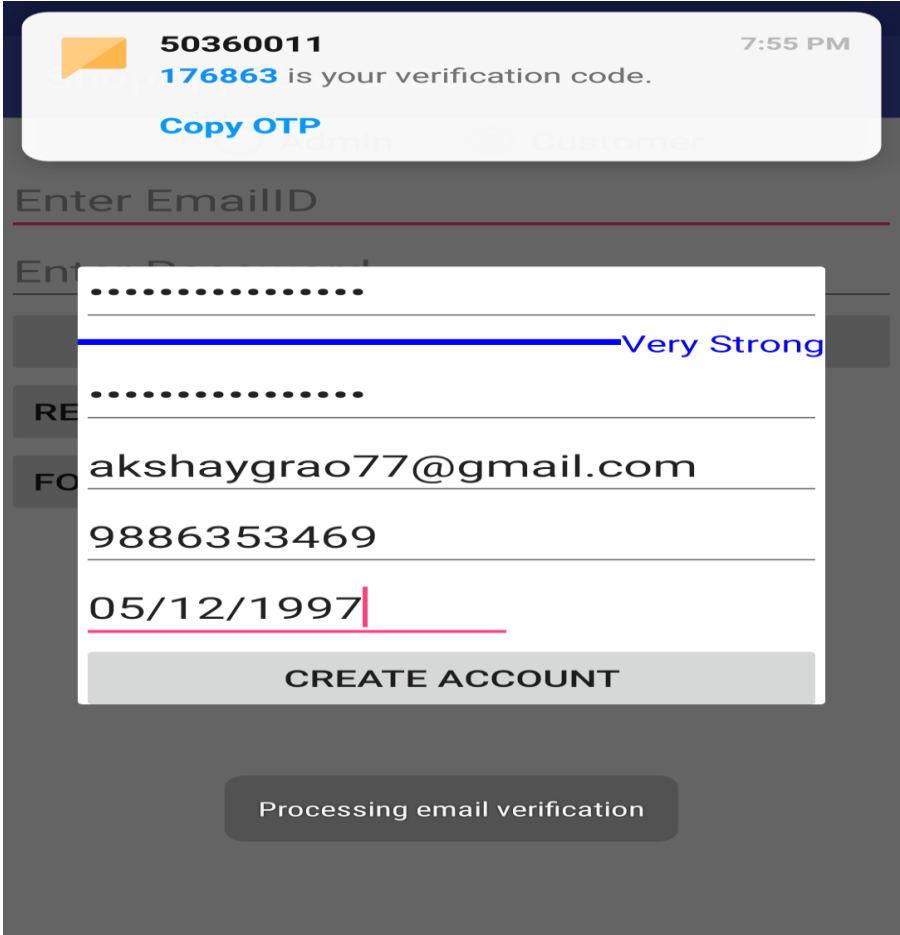
Registration Popup with password strength indication
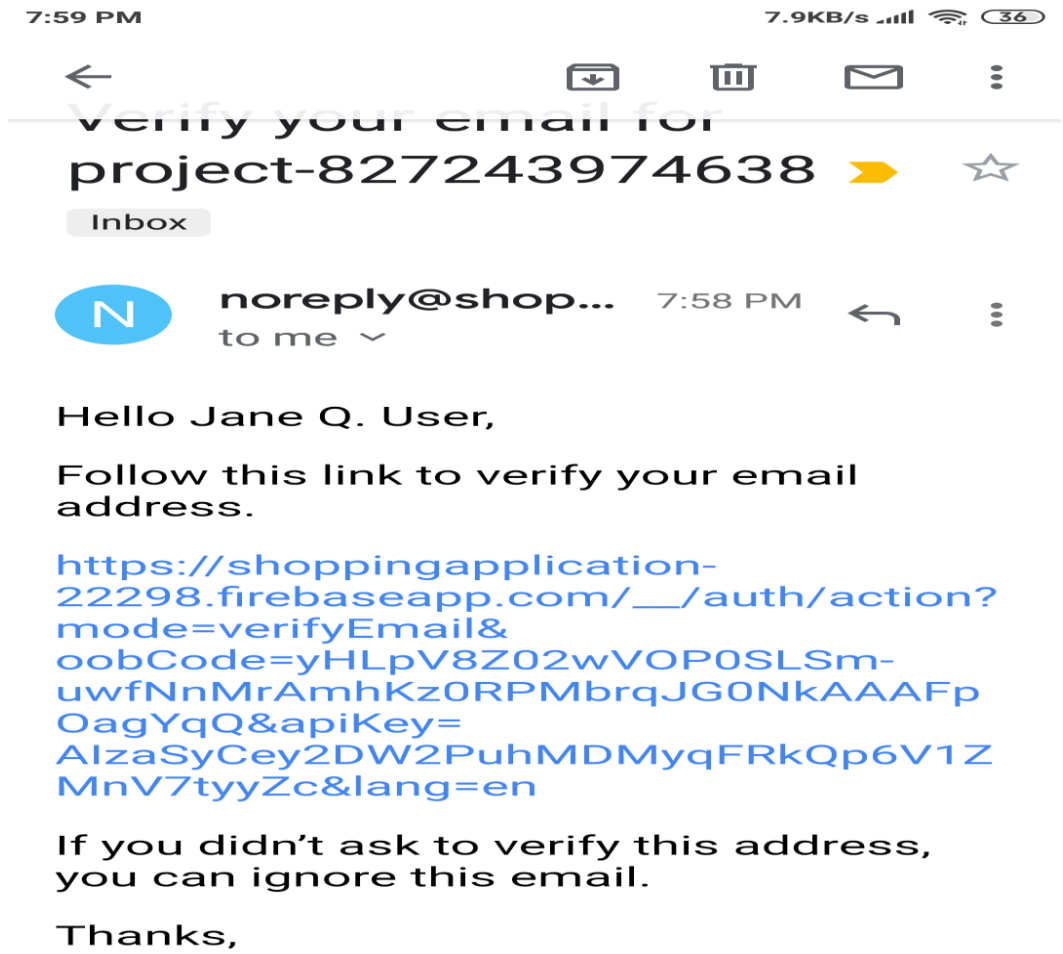
# Shopping Application:
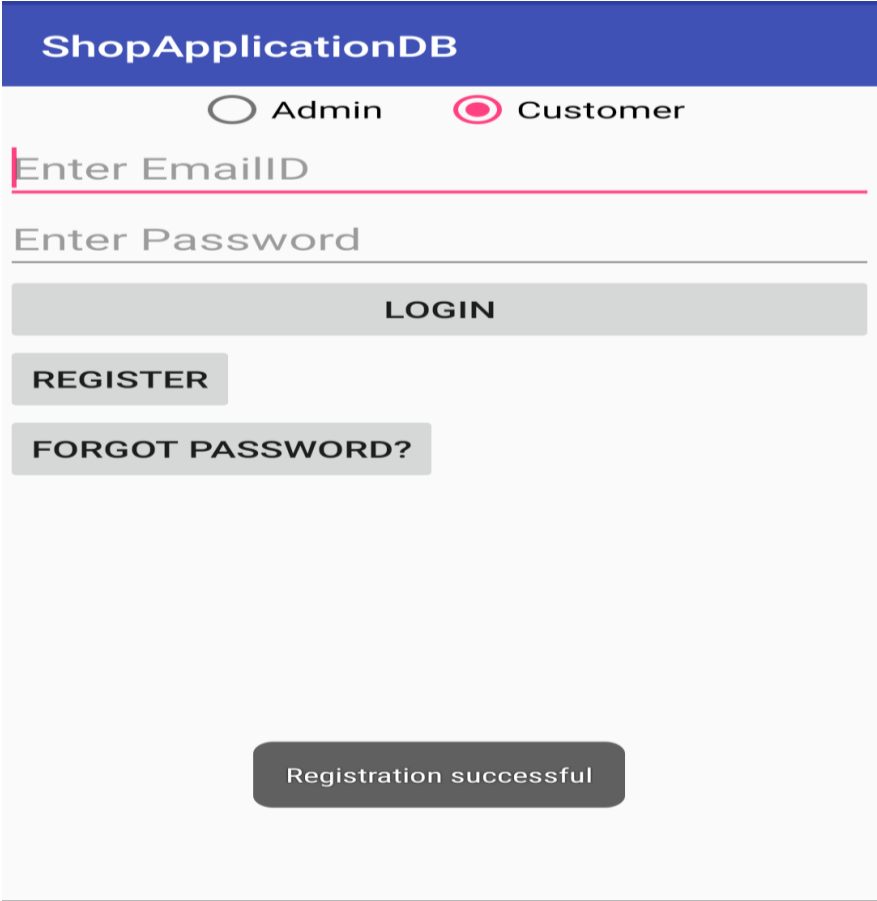


OTP based phone number verification

OTP received ,verified automatically and sending email verification

# Shopping Application:



Verification link sent to the registered email ID



Registration Successful upon phone authentication

# Shopping Application:



## Mock Shopping Cart

Plain Dosa ₹40    BUY

Masala Dosa ₹50    BUY

Set Dosa ₹45    BUY

Idli ₹20    BUY

Paratha ₹35    BUY

Roti ₹50    BUY

Pav Bhaji ₹60    BUY

PAY

Home Page of Online Shopping

## Thank you for purchasing product

Product Name:Plain Dosa
Price :₹40
Description : A unique dosa with an amazing taste and comes with chutney & sambar
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Product Name:Set Dosa
Price :₹45
Description : A circular thick dosa that comes with chutney and saagu
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Product Name:Idli
Price :₹20
Description : Idli comes with sambar and chutney
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Product Name:Paratha
Price :₹35
Description : Amazing dish from Northern part of India made of wheat
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Product Name:Pav Bhaji
Price :₹60
Description : Amazing Chat!!
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Your Total Purchase Cost: ₹200

List of products purchased

# Reflection Notes

- Smartphones industry has seen a huge growth in recent years. This has increased the usage of android OS because of its attractive features. Android applications are being developed to meet all requirements of users.

- Internship was helpful to get an exposure of android development with external database services like Firebase.

- Learnt how to build good user interface using android studio.

- Got good experience in handling databases, calling APIs and developing application functionalities in an industry standard manner.