INTERNSHIP IN

ANDROID DEVELOPMENT

A PROJECT REPORT

Submitted By

MARGAV RANA

[190050131551]

In partial fulfilment for the award of the degree of

BACHELOR OF ENGINEERING

In

[Computer Science & Engineering]

Babaria Institute of Technology, Vadodara

Gujarat Technological University, Ahmedabad

[December, 2022-23]

BABARIA INSTITUTE OF TECHNOLOGY

CERTIFICATE

This is to certify that the project report submitted along with the project entitled Internship in **Android Development** has been carried out by **Margav Rana (190050131551)** under my guidance in partial fulfilment for the degree of Bachelor of Engineering in Computer Science & Engineering, **7th** Semester of Gujarat Technological University, Ahmedabad during the academic year **2022-23.**

Mr. Mukesh Singh — Internal Guide

Prof(Dr).Nitesh Sureja — Head of the Department

COMPLETION CERTIFICATE

GUJARAT TECHNOLOGICAL UNIVERSITY

CERTIFICATE FOR COMPLETION OF ALL ACTIVITIES AT ONLINE PROJECT PORTAL

B.E. SEMESTER VII, ACADEMIC YEAR 2021-2022

Date of certificate generation : 06 August 2022 (23:55:06)

This is to certify that, ***Rana Margav Bharatkumar*** (Enrolment Number - 190050131551) working on project entitled with ***Building an e-commerce Application*** from ***Computer Science & Engineering*** department of ***BABARIA INSTITUTE OF TECHNOLOGY, VARNAMA*** had submitted following details at online project portal.

Internship Project Report	**Completed**

Name of Student : Rana Margav Bharatkumar

Name of Guide : Mr. Mukesh Singh

Signature of Student : _____

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This is a computer generated copy and does not indicate that your data has been evaluated. This is the receipt that GTU has received a copy of the data that you have uploaded and submitted as your project work.

*Guide has to sign the certificate, Only if all above activities has been Completed.

JOINING LETTER

Re : Margav Bhartkumar Rana

Babaria Institute Of Technology

We are very pleased to confirm your acceptance of an internship into Android with BrainyBeam Technology Pvt. Ltd. Your duties and assignments for this position are as follows: Working with different Modules of respective technology.

Your first day of work will be 15-06-2022. You will work for 6 days of a week. You will be reporting to your respective Developer.

BrainyBeam
Technologies Pvt Ltd
Ahmedabad

With Best Regards,
Mr. Sagar Jasani
CEO.
BrainyBeam Technologies Pvt. Ltd
Ahmedabad (Gujarat-INDIA)

Head Office : Block No, 118, Sukan Mall,
Science City Road, Ahmedabad.
Call: +91 9033237336

sagar@brainybeam.com
www.brainybeam.com

COMPANY CERTIFICATE

BrainyBeam
Technologies Pvt. Ltd.

Certificate

Proudly Presented To

This is certify that Mr./Mrs. Margav Rana
has actively participated in Internship Program of Android
from 15/06/2022 to 30/06/2022 Organised by Brainybeam Technologies Pvt.

30/06/2022
Issue Date

Mr. Sagar Jasani
CEO, Brainybeam Technologies

www.brainybeam.com

BABARIA INSTITUTE OF TECHNOLOGY

DECLARATION

We hereby declare that the Internship report submitted along with the Internship entitled **Android Development** submitted in partial fulfilment for the degree of Bachelor of Engineering in **Computer Science and Engineering** to Gujarat Technological University, Ahmedabad, is a bonafide record of original project workcarried out by me at **Internship at BrainyBeam Technologies Pvt Ltd.** under the supervision of **Mr. Sagar Jasani** and that no part of this report has been directly copied from any students' reports or taken from any other source, without providing due reference.

Margav Rana

190050131551

ACKNOWLEDGEMENT

The internship opportunity I had with the **BrainyBeam Technologies Pvt. Ltd.** was a great chance for learning and professional development. Therefore, I consider myself as a lucky individual as I was provided with an opportunity to be a part of it. I am also thankful to my internal guide **Mr. Mukesh Singh** who helped me and coordinated well during the course of this internship.

Bearing in mind previous I am using this opportunity to express my deepest gratitude and special thanks to Domain Expert **Mr. Sagar Jasani, CEO** of BrainyBeam Technologies Pvt. Ltd. who in spite of being busy with their schedules , took time to hear me ,support and keep correct path and also helped me very well throughout this internship by giving proper replies to my mail. And solve my queries there only.

I perceive as this opportunity as a big milestone in my career development. I will strive to use gained skills and knowledge in the best possible way, and I will continue to work on their improvement, in order to attain desires career objectives. Hope to continue cooperation with all of you in the future.

Sincerely,

Margav Rana

ABSTRACT

The objective of this Android Development internship was to understand the business needs of the organization and to develop an understandable application. Android Development is an Android software development is the process by which applications are created for devices running the Android operating system.

This project is a Android based shopping system for an existing shop. The project objective is to deliver the online shopping application into android platform.

This project is an attempt to provide the advantages of online shopping to customers of a retail grocery shop. It helps buying the products in the shop anywhere through internet by using an android device.

This system can be implemented to any shop in the locality or to multinational branded shops having retail outlet chains. If shops are providing an online portal where their customers can enjoy easy shopping from anywhere, the shops won't be losing any morecustomers to the trending online shops such as flipcart or ebay. Since the application is available in the Smartphone it is easily accessible and always available.

Keywords

Mobile Development, e-commerce development, Online shopping, JAVA, Android Studio, Firebase database.

LIST OF FIGURES

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CHAPTER 1: INTRODUCTION

1.1 Introduction to Company

Company Name: BrainyBeam Technologies Pvt Ltd.

Address: 118, Sukan Mall, Science city road, Ahmedabad, India.

Contact No.: +91 9033237336

Email Id: Sagar@brainybeam.com

Website: www.brainybeam.com

At BrainyBeam, we see Innovation as a clear differentiator. Innovation, along with focus on deep, long-lasting client relationships and strong domain expertise, drives every facet of our day-to-day operations.

BrainyBeam Technologies was founded with a vision to address growing businesses' needs of reducing the time to market and cost effectiveness required to develop and maintain unique and customized web and mobile solutions. We are uniquely and strategically positioned to partner with startups and leading brands to help them expand their business and offer the most effective and cost-efficient solutions that provide revenues and value to their business needs.

Vision

To become the most trusted and preferred offshore IT solutions partner for Startups, SMBs and Enterprises through innovation and technology leadership. Understanding your ambitious vision, honing in on its essence, creating a design strategy, and knowing how to technically execute it is what we do best. Our promise? The integrity of your vision will be maintained and we'll enhance it to best reach your target customers. With our primary focus on creating amazing user experiences, we'll help you understand the tradeoffs, prioritize features, and distill valuable functionality. It's an art form we care about getting right.

CHAPTER 2: INTRODUCTION TO ANDROID STUDIO AND JAVA

2.1 INTRODUCTION TO ANDROID:

Android is an open-source Linux-based operating system intended for mobile computing platforms. It is a software stack for mobile operating system. Android is under development by Google and Open Handset Alliance. Java language is mainly used to write the android code even though other languages can be used. It was founded by Andy Rubin in year 2003. Android Beta SDK released in 2007.

Features of Android:

The important features of android are given below:

- It is open-source.
- Anyone can customize the Android Platform.
- There are a lot of mobile applications that can be chosen by the consumer.
- It provides many interesting features like weather details, opening screen, live RSS (Really Simple Syndication) feeds etc.

Android Architecture:

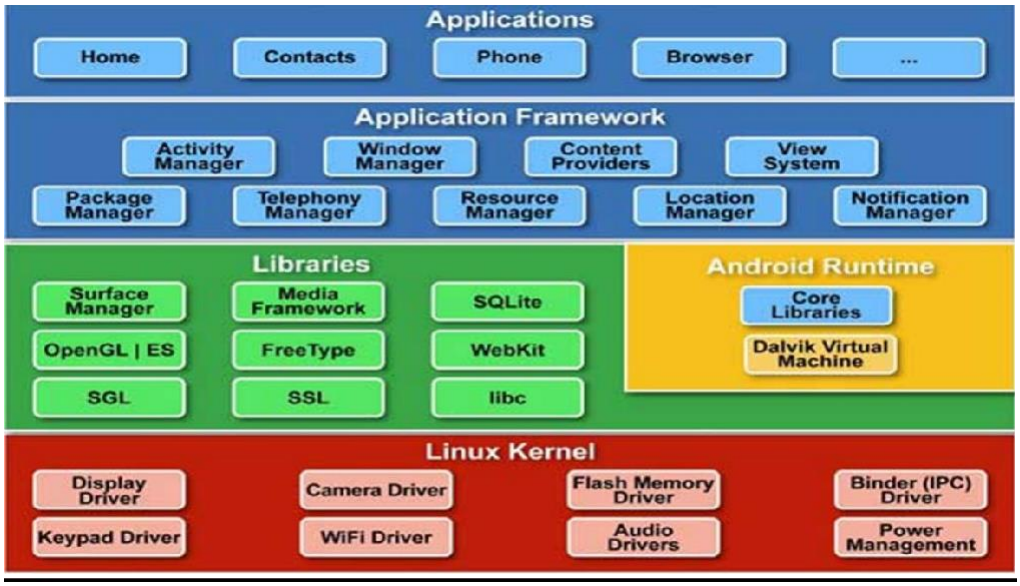


Fig 2.1 Android Architecture

Applications –

Applications is the top layer of android architecture. The pre-installed applications like home, contacts, camera, gallery etc. and third-party applications downloaded from the play store like chat applications, games etc. will be installed on this layer only.

It runs within the Android run time with the help of the classes and services provided by the application framework.

Application Framework –

Application Framework provides several important classes which are used to create an Android application. It provides a generic abstraction for hardware access and also helps in managing the user interface with application resources. Generally, it provides the services with the help of which we can create a particular class and make that class helpful for the Applications creation. It includes different types of services activity manager, notification manager, view system, package manager etc. which are helpful for the development of our application according to the prerequisite.

Application runtime –

Android Runtime environment is one of the most important part of Android. It contains components like core libraries and the Dalvik virtual machine (DVM). Mainly, it provides the base for the application framework and powers our application with the help of the core libraries.

Like Java Virtual Machine (JVM), Dalvik Virtual Machine (DVM) is a register-based virtual machine and specially designed and optimized for android to ensure that a device can run multiple instances efficiently. It depends on the layer Linux kernel for threading and low-level memory management. The core libraries enable us to implement android applications using the standard JAVA or Kotlin programming languages.

Platform libraries –

The Platform Libraries includes various C/C++ core libraries and Java based libraries such as Media, Graphics, Surface Manager, OpenGL etc. to provide a support for android development. Media library provides support to play and record an audio and video formats.

Surface manager responsible for managing access to the display subsystem. SGL and OpenGL both cross-language, cross-platform application program interface (API) are used for 2D and 3D computer graphics. SQLite provides database support and Free Type provides font support. Web-Kit This open source web browser engine provides all the functionality to display web content and to simplify page loading.

SSL (Secure Sockets Layer) is security technology to establish an encrypted link between a web server and a web browser.

Linux Kernel -

Linux Kernel is heart of the android architecture. It manages all the available drivers such as display drivers, camera drivers, Bluetooth drivers, audio drivers, memory drivers, etc. which are required during the runtime. The Linux Kernel will provide an abstraction layer between the device hardware and the other components of android architecture. It is responsible for management of memory, power, devices etc.

The features of Linux kernel are:

- **Security**: The Linux kernel handles the security between the application and the system.
- **Memory Management**: It efficiently handles the memory management thereby providing the freedom to develop our apps.
- **Process Management**: It manages the process well, allocates resources to processes whenever they need them.
- **Network Stack**: It effectively handles the network communication.
- **Driver Model**: It ensures that the application works properly on the device and hardware manufacturers responsible for building their drivers into the Linux build.

2.2 INTRODUCTION TO JAVA:

Java is an object-oriented programming language developed by Sun Microsystems, and it was released in 1995. James Gosling initially developed Java in Sun Microsystems (which was later merged with Oracle Corporation). Java is a set of features of C and C++. It has obtained its format from C, and OOP features from C++. Object-Oriented

- Java supports the features of object-oriented programming. Its object model is simple and easy to expand.

Object means a real-world entity such as a pen, chair, table, computer, watch, etc. Object-Oriented Programming is a methodology or paradigm to design a program using classes and objects. It simplifies software development and maintenance by providing some concepts:

Object: An Object can be defined as an instance of a class.

Class: Collection of objects is called class.

Inheritance: When one object acquires all the properties and behaviours of a parent object, it is known as inheritance. It provides code reusability. It is used to achieve runtime polymorphism.

Polymorphism: If one task is performed in different ways, it is known as polymorphism.

Abstraction: Hiding internal details and showing functionality is known as abstraction.

Encapsulation: Binding code and data together into a single unit are known as encapsulation.

CHAPTER 3: ABOUT INTERNSHIP

3.1 INTERNSHIP SUMMERY

During the internship at BrainyBeam Software, I applied my android development skills for working on project. It includes designing and building the android development and also includes the back-end programming. This internship helped me a lot as I learn new skills such as Problem-solving and Logical Reasoning. It also taught me how to use industry-first approach for solving problems of businesses from their point of view.

The internship consisted of work on various fields as per the requirements of the company. The duration of the internship was of 18 days, dated from 20 Jun, 2022 to 08 Jul, 2022.

In the due course of my internship, I was introduced to design the application fragments and activity of the app. I learnt how to debug my code and optimize it so that it uses the least number of resources. I also learnt a few soft skills such as presentation and negotiation.

3.2 PURPOSE

The purpose of this internship from my point of view was to learn new skills in the process of my work and apply them in a meaningful way to solve a problem. From the company's perspective, it was to give me space to learn and adapt to industry standards of working and to let me use those new skills to contribute to the company's betterment. And explore myself into the coding world.

3.3 ROLES AND RESPONSIBILITIES

- Work on a designated project independently and with minimum supervision.
- Get self-trained to analyse a website design such that it matches with the needs and goals of the company.
- Research about the different aspects of app design such as design issues, suitable back-end resources, company profile, industry study, etc.
- Testing the application after each iteration.

3.4 SKILLED LEARNT

- Android
- Mobile development
- Mobile development UI design
- Firebase database
- Real world application architecture

CHAPTER 4: IMPLEMENTATION

4.1 CREATE A NEW PROJECT

Steps to create Android project:

1. Install Latest versionof Android Studio from (https://developer.android.com/android-studio/download).
2. In the Welcome to Android Studio window, click Create New project

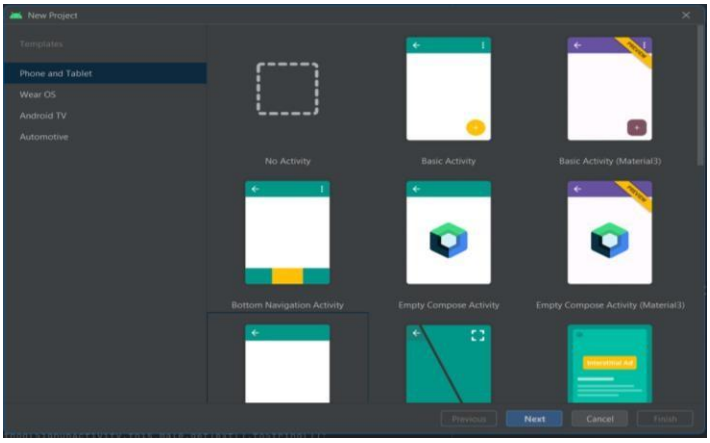


Fig: 4.1 Welcome to android studio window
(This screen will appear on click of Create new project)

3. Select No Activity (Empty activity) from this screen.
4. Press Next, In configure your project window, Enter your project details.
5. Click Finish.

Create an Empty Activity:

1. Right click on **res** folder, **new >Activity > Empty Activity**.
2. Click finish
3. After some processing time, the Android Studio main window appears.

app > java > internship.app > MainActivity

This is the main activity. It's the entry point for your app. When you build and run your app, the system launches an instance of this activity and loads its layout.

app > res > layout > activity_main.xml
This XML file defines the layout for the activity's user interface (UI).

app > manifests > AndroidManifest.xml

The manifests files describes the fundamental characteristics of the app and defines each of its components.

Gradle Scripts > build.gradle

There are two files with this name: one for the project, "Project: Internship_App," and one for the app module, "Module: Internship_App.app." Each module has its own build.gradle file, but this project currently has just one module.

4.2 CHANGE ICON IN APP ICON:

An app icon is an important way to distinguish your app. It also appears in a number of places including the Home screen, All Apps screen, and the Settings app. They could display all the app icons in a square shape, rounded square, or squircle (between a square and circle) for example. Screen pixel density refers to how many pixels per inch (or dpi, dots per inch) are on the screen. For a medium-density device (mdpi), there are 160 dots per inch on the screen while an extra-extra-extra-high-density device (xxxhdpi) has 640 dots per inch on the screen.

Steps to change app icon:

1. First delete the old drawable resources that have the Android icon and green grid background. In the Project view, right click on the file and choose Delete.
2. Create a new Image Asset. You could right click on the res directory and choose New > Image Asset. Or you can click on the Resource Manager tab, click the + icon, and select Image Asset.
3. Android Studio's Image Asset Studio tool opens.
4. Leave the default setting
5. With the Foreground Layer tab already selected, go down to the Source Asset subsection. On the Path field, click the folder icon.

6. A prompt pops up to browse your computer and select a file. Find the location of the new ic_launcher_foreground.xml file you just downloaded on your computer. It may be in the downloads folder of your computer. Once you've found it, click Open.
7. The Path is now updated with the location of the new foreground vector drawable. Leave Layer Name as ic_launcher_foreground and Asset Type as Image.
8. Next switch to the Background Layer tab of the interface. Leave defaults as- is. Click the folder icon of the Path.
9. Find the location of the ic_launcher_background.xml file you just downloaded. Click Open.
10. The preview should be updating as you select the new resource files. This is what it should look like with the new foreground and background layers.
11. Make sure the main contents of the foreground layer (the service bell icon in this case) are contained within the safe zone and not clipped by the different mask shapes. If important content is clipped or appearing too small, then you can use the Resize slider bar under the Scaling section of each layer. In this case, no resizing is needed, so you can leave it at 100%.
12. Click Next.
13. This step is to Confirm Icon Path. You can click the individual files to see the preview. There's also a warning at the bottom that some existing files will be overwritten (shown in red). That is okay because those old files were for the previous app icon.
14. The defaults are fine, so click Finish.
15. Verify all the generated assets look correct in the mipmap folders.

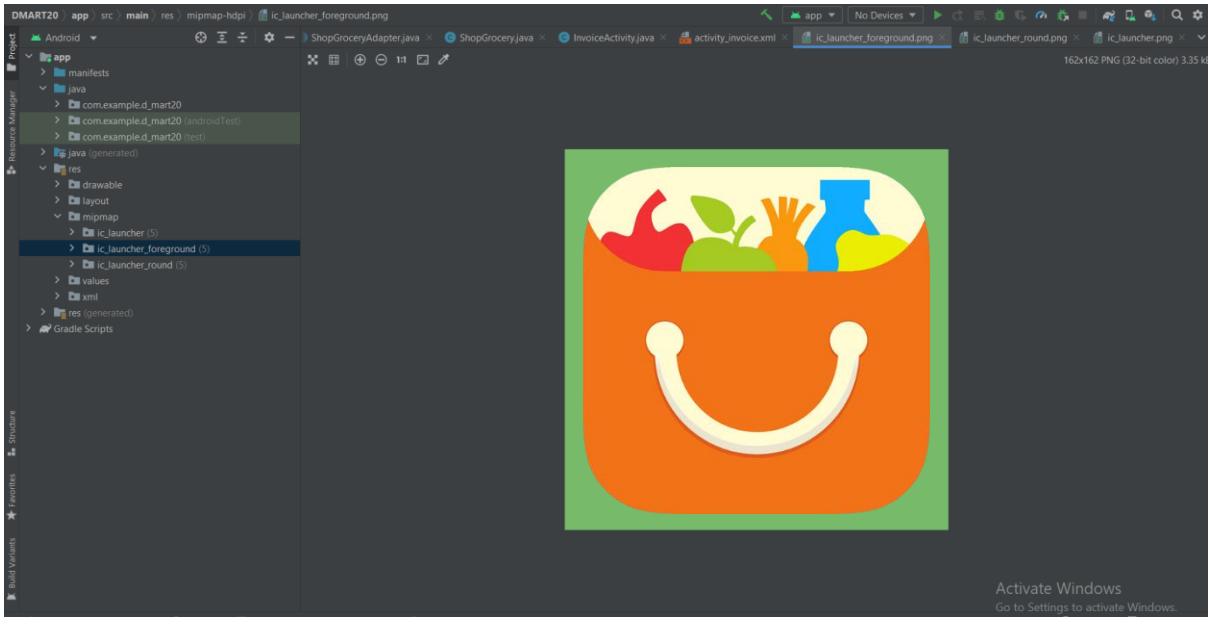


Fig:4.2 Launcher icon

4.3 Login Page:

Types Of Layouts:

Linear Layout : LinearLayout is a view group that aligns all children in a single direction, vertically or horizontally.

Relative Layout : RelativeLayout is a view group that displays child views in relative positions.

Table Layout : TableLayout is a view that groups views into rows and columns.

Absolute Layout : AbsoluteLayout enables you to specify the exact location of its children.

Frame Layout : The FrameLayout is a placeholder on screen that you can use to display a single view.

List View : ListView is a view group that displays a list of scrollable items.

Grid View : GridView is a ViewGroup that displays items in a two-dimensional, scrollable grid.

Login Page:

Fig: 4.3 Login page

Widgets Used:

TextView: A TextView displays text to the user and optionally allows them to edit it. A TextView is a complete text editor, however the basic class is configured to not allow editing.

ScrollView: A ScrollView is a view group that is used to make vertically scrollable views. A scroll view contains a single direct child only.

Button: A user interface element the user can tap or click to perform an action.

TextInputLayout: Layout which wraps a TextInputEditText, EditText, or descendant to show a floating label when the hint is hidden while the user inputs text.

Also, changes were made in themes.xml fill:

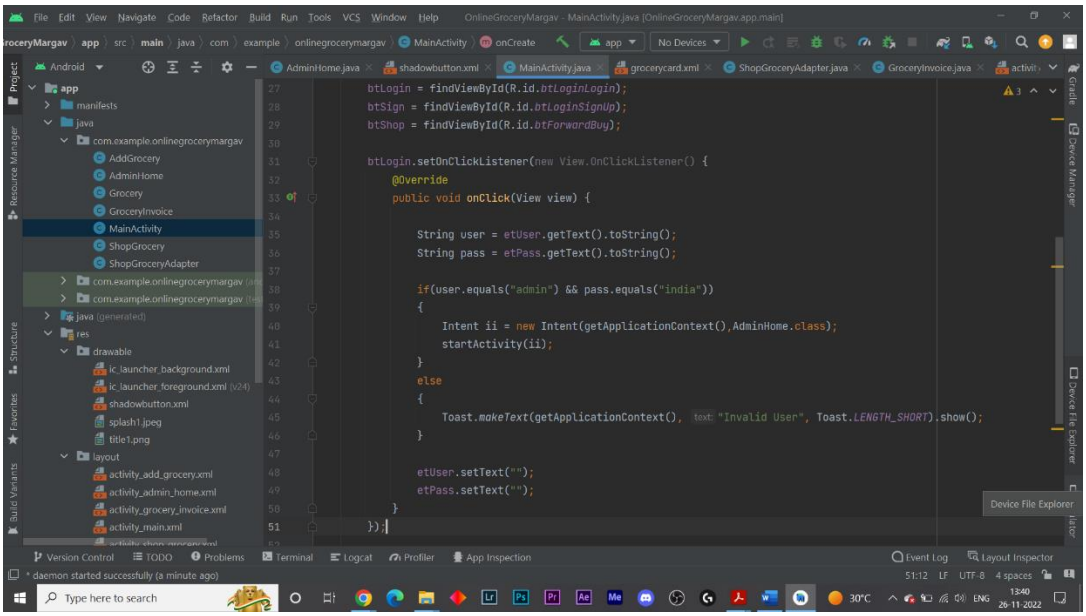
In style we give parent as Widget.AppCompact.TextView .

This plays a very important role in the UI experience and depends on how the information is displayed to the user.

This TextView widget in android can be dynamized in various contexts. We add items like fontFamily, textSize, etc inside the style.

4.4 Login page Validation:

Code for login page validation:



```
btLogin = findViewById(R.id.btLoginLogin);
btSign = findViewById(R.id.btLoginSignUp);
btShop = findViewById(R.id.btForwardBuy);

btLogin.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View view) {

        String user = etUser.getText().toString();
        String pass = etPass.getText().toString();

        if(user.equals("admin") && pass.equals("india"))
        {
            Intent ii = new Intent(getApplicationContext(),AdminHome.class);
            startActivity(ii);
        }
        else
        {
            Toast.makeText(getApplicationContext(), text: "Invalid User", Toast.LENGTH_SHORT).show();
        }

        etUser.setText("");
        etPass.setText("");
    }
});
```

Fig : 4.4 Login Page Validation Code

Output:

Fig : 4.5 Login Page Validation Output

4.5 Splash Activity

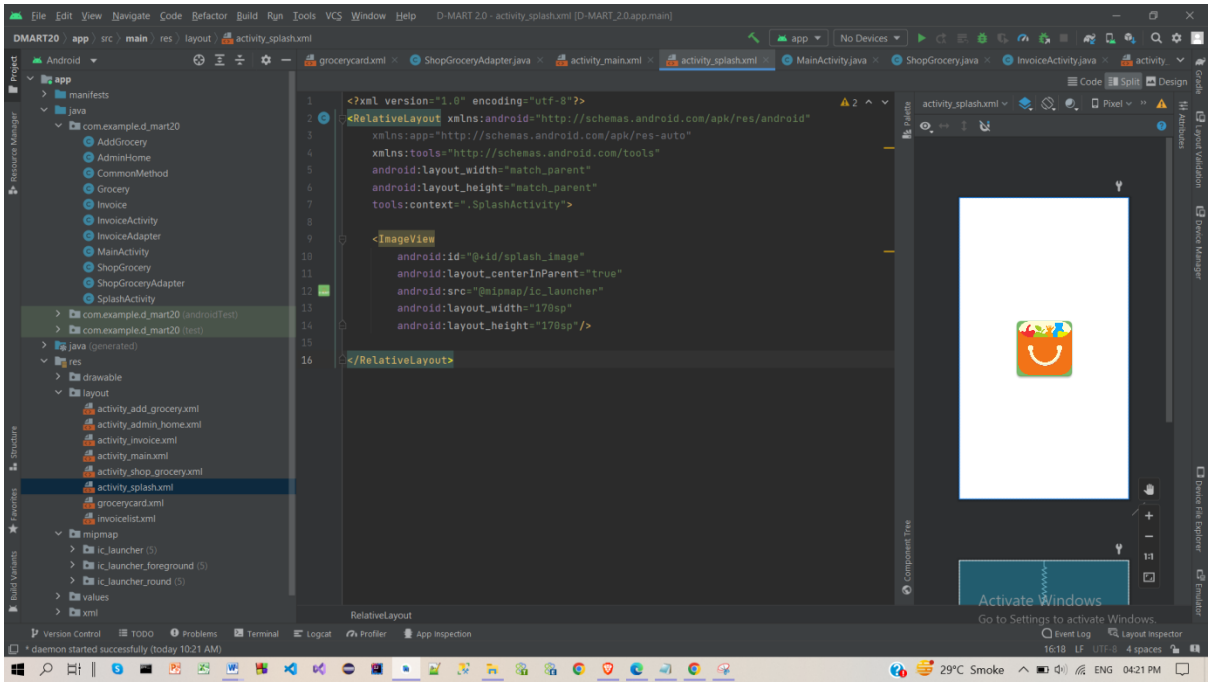
A splash screen is mostly the first screen of the app when it is opened. It is a constant screen which appears for a specific amount of time, generally shows for the first time when the app is launched. The Splash screen is used to display some basic introductory information such as the company logo, content, etc just before the app loads completely.

we created two activities SplashActivity showing the Splash Screen and MainActivity in order to switch from SplashActivity to MainActivity. The main program is written in MainActivity, you can change activities as per your need.

To remove the ActionBar, you need to make following changes in your styles.xml file.

style name="AppTheme" parent="Theme.AppCompat.Light.NoActionBar" No need to make any changes in your manifest file.

Activity_splash.xml



4.6 Fig: Splash Activity xml

SplashActivity.java

Using the ‘postDelayed()’ function:

public final boolean postDelayed(Runnable Object token, long delayMillisec)

This function delays the process for a specified time. This is used with a handler which allows you to send and process Message and Runnable objects associated with a Thread’s MessageQueue. Each handler instance is a single thread.

Output:

Fig 4.7 Splash Activity Output

4.6 Product Page:

Step 1: Create List View to show GroceryCard and Adapter for that:

CardView:

CardView is a new widget in Android that can be used to display any sort of data by providing a rounded corner layout along with a specific elevation. CardView is the view that can display views on top of each other. The main usage of CardView is that it helps to give a rich feel and look to the UI design. This widget can be easily seen in many different Android Apps. CardView can be used for creating items in listview or inside Recycler View. The best part about CardView is that it extends Framelayout and it can be displayed on all platforms of Android. Now we will see the simple example of CardView implementation.

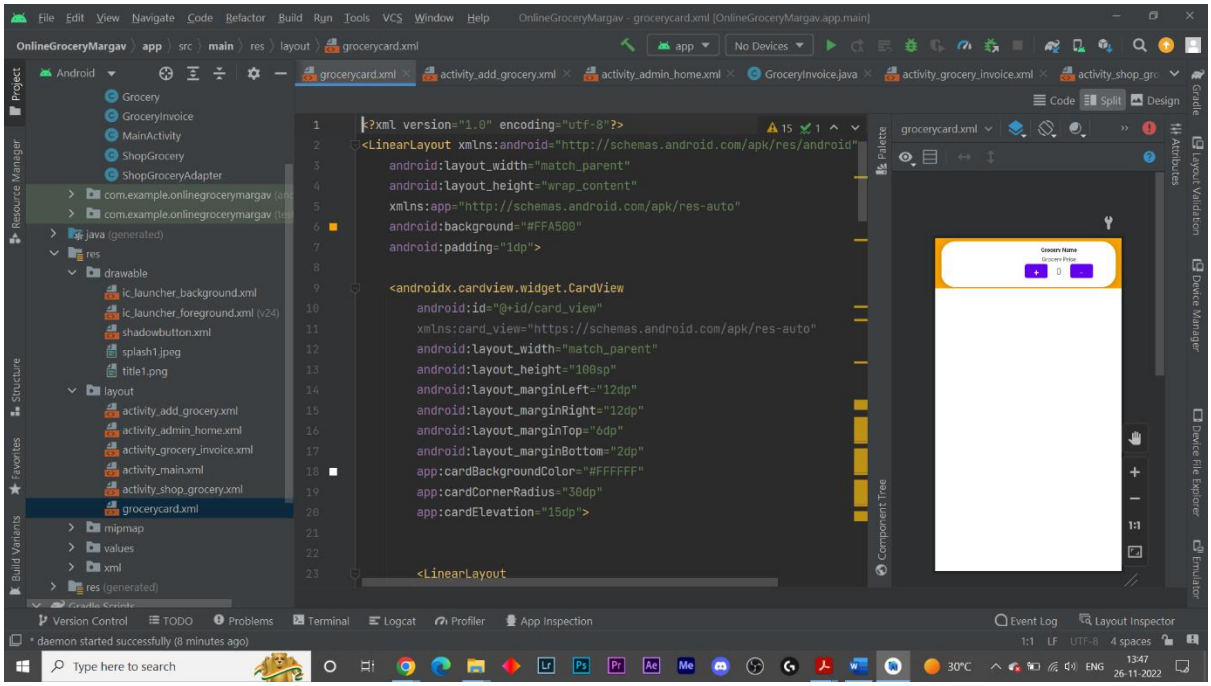


Fig 4.8 Card View

ShopGroceryAdapter.java

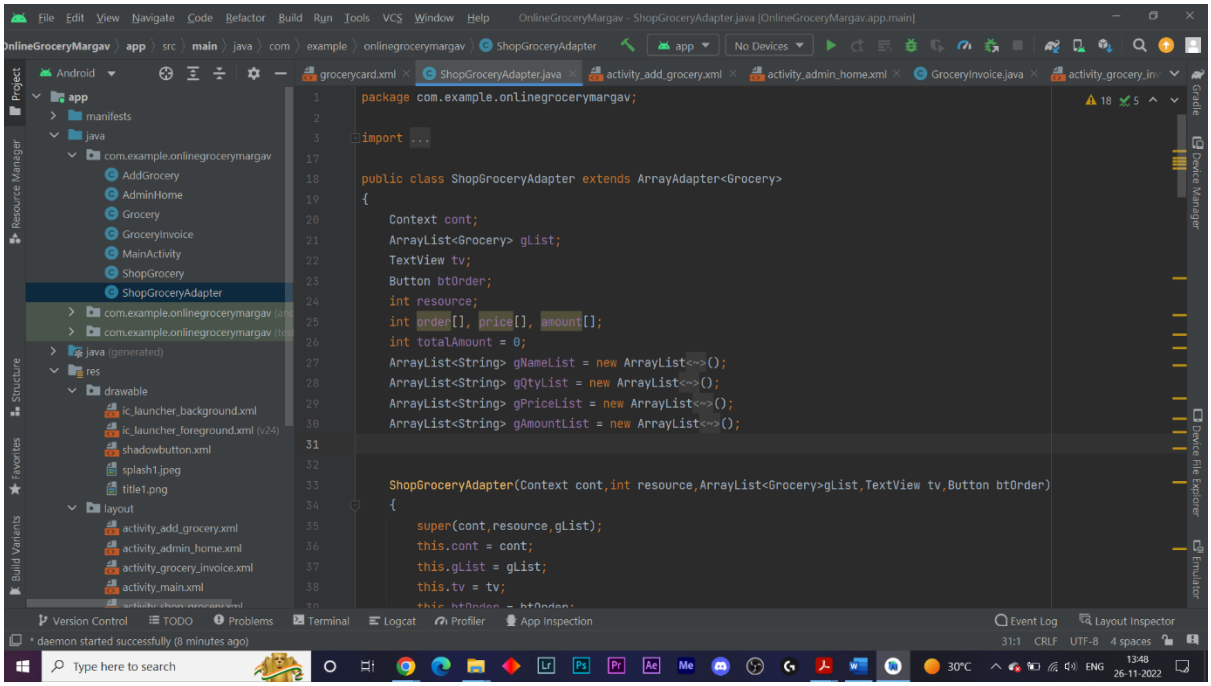


Fig 4.9 ShopGrocery Adapter

Shop_Grocery_xml.xml

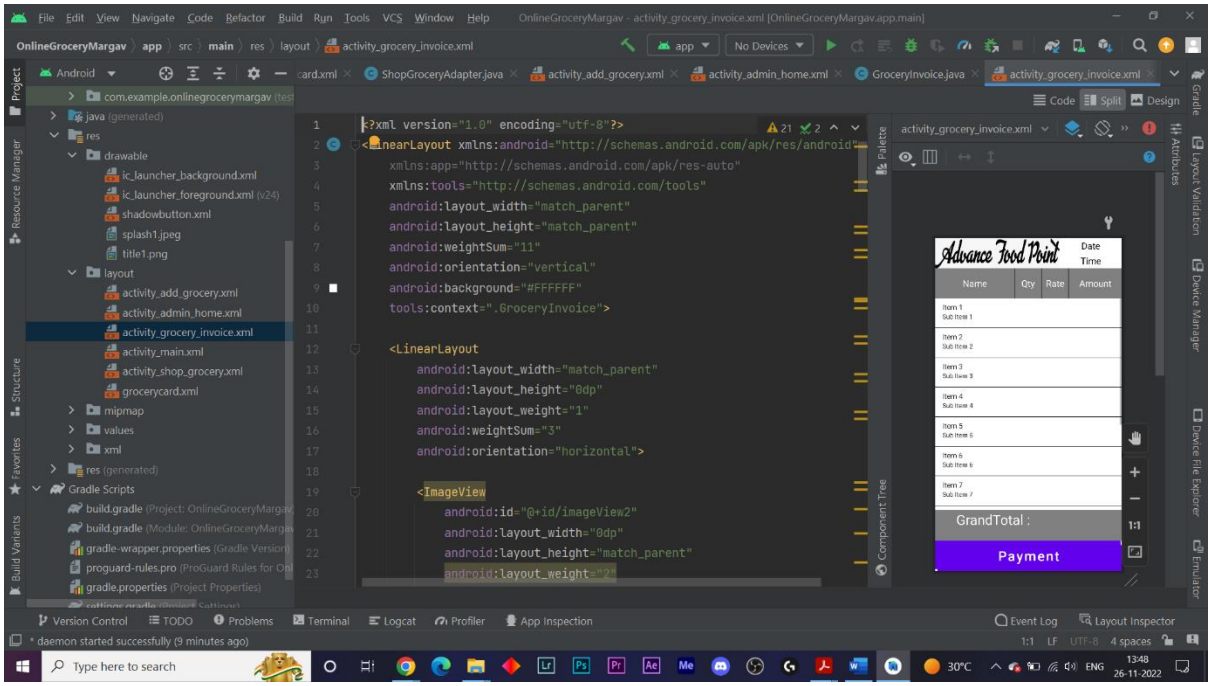


Fig:4.10 ShopGrocery xml

ShopGrocer.java

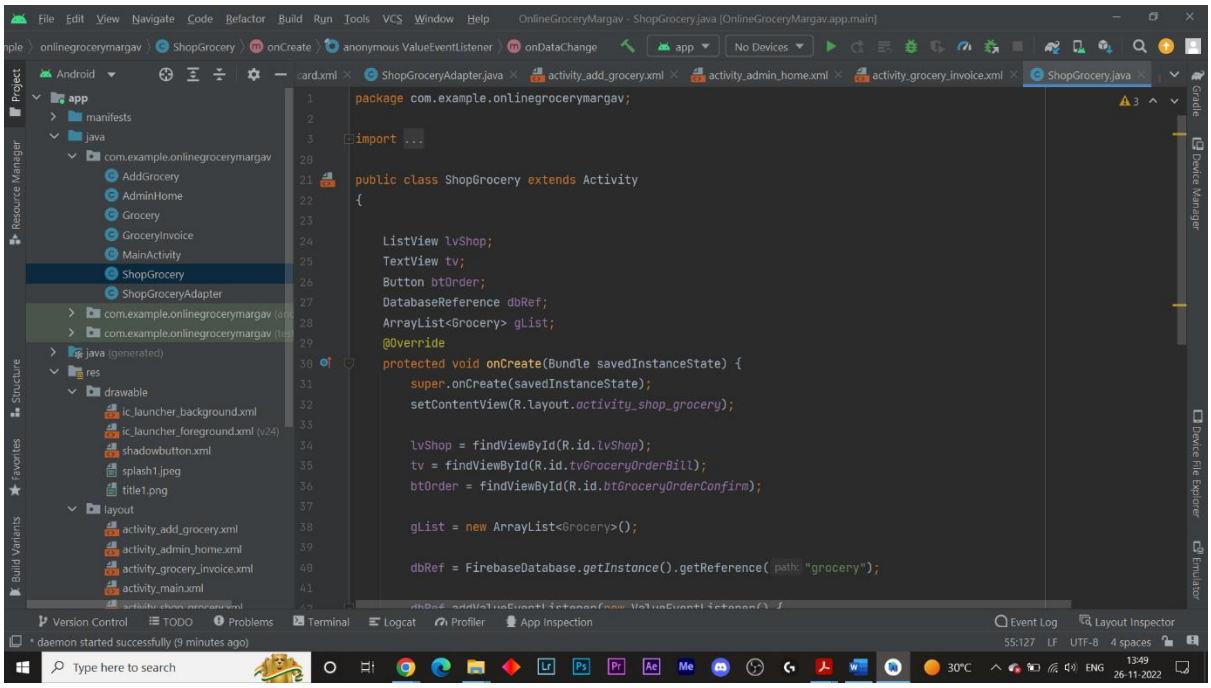


Fig: 4.11 ShopGrocery java

Output:

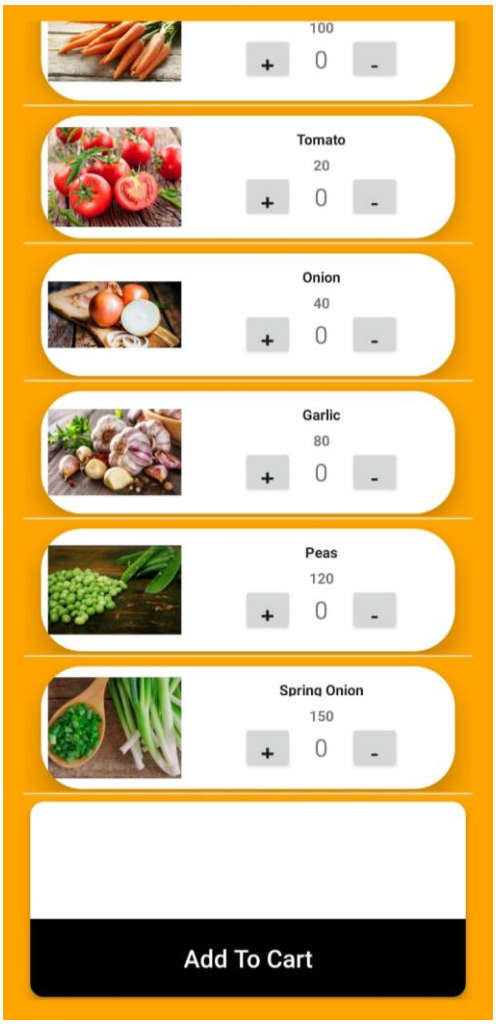


Fig: 4.12 Grocery Layout

4.7 Creating Invoice

InvoiceActivity:

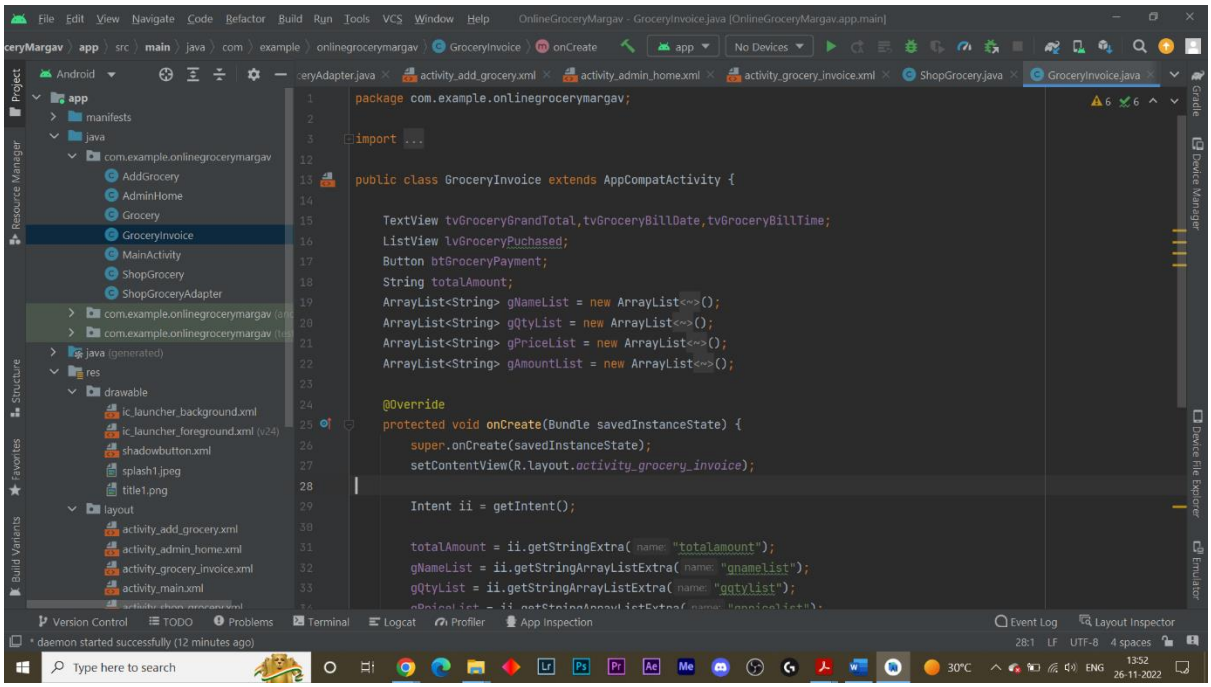


Fig 4.13 Invoice Activity

output:

Name	Qty	Rate	Amount
			Rs.
onion	1	100	Rs. 100
ladyfinger	1	50	Rs. 50
lemon	1	80	Rs. 80
pepsi	1	15	Rs. 15
wheat	1	30	Rs. 30

Fig 4.14 Invoice output

CHAPTER 5: CONCLUSION AND FUTURE WORK

5.1 CONCLUSION

After completion of my internship training, I could understand more about the company environment and helped to prepare myself to become skilled and more professional to fit into the professional field. At first Coding for a real application seem complicated but with the guidance of the company. One can also gain knowledge of server-side world.

At the beginning days of my internship, I was assigned to learn or gain advanced knowledge about Android Development, and to study about company's atmosphere.

To conclude with I learnt a lot about real world android Development and various Frameworks And implemented according to Project requirements.

5.2 FUTURE WORK

I want to improve web design of pages and want to store data on a cloud like (AWS) instead of a database and also connect a payment gateway. Also, if possible, I will enhance my skills in making the given project more creative with more designing and graphics. Learning has no limits, same way I will keep on learning new things and ways to make my webpages more emphatic and precise to use for the users.

Now a day, security is main concern. Many websites leak user data without the permission of user or if you want to use particular website so you have to accept their terms and condition. So in Future I want to make a strong website, so that no one can hack my website and user feels more protected while using my website.

CHAPTER 6: REFERENCE

- **W3schools**

  https://www.w3schools.com

- **GeeksForGeeks**

  https://www.geeksforgeeks.org/phpintroduction/?ref=lbp

- **Developer.android.com**

  https://developer.android.com/docs

- **CodeWithHarry**

https://youtube.com/playlist?list=PLu0W_9lII9aiL0kysYlfSOUgY5rNlOhUd