INTERNSHIP ON
ANDROID APP DEVELOPMENT

By

Md. Rafiul Islam

211-15-3952

FINAL YEAR DESIGN INTERNSHIP REPORT

This Report Presented in Partial Fulfillment of the Requirements for the **Degree of Bachelor of Science in Computer Science and Engineering**

Supervised by

Dr. S. M. Aminul Haque

Professor & Associate Head

Department of Computer Science and Engineering

Daffodil International University

DAFFODIL INTERNATIONAL UNIVERSITY

Dhaka, Bangladesh

January 13, 2025

APPROVAL

This Internship titled "**Android App Development**", submitted by "**Md. Rafiul Islam**", ID No: 211-15-3952 to the Department of Computer Science and Engineering, Daffodil International University has been accepted as satisfactory for the partial fulfillment of the requirements for the degree of B.Sc. in Computer Science and Engineering and approved as to its style and contents. The presentation has been held on 13 January, 2025.

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DECLARATION

I hereby declare that this internship on Android App Development has been done under the supervision of **Dr. S. M. Aminul Haque, Professor & Associate Head,** Department of Computer Science and Engineering at Daffodil International University. I also declare that neither this project nor any part of this project has been submitted elsewhere for the award of any degree or diploma.

Supervised by:

Dr. S. M. Aminul Haque
Professor & Associate Head
Department of Computer Science and Engineering
Daffodil International University

Submitted by:

Md. Rafiul Islam
Student ID: 211-15-3952
Department of Computer Science and Engineering
Daffodil International University

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I also want to thank **Parallaxlogic Infotech**. They have recruited me as an intern and given me the opportunity to work with them. They have given me a proper opportunity to learn and taught me a lot of things.

I also want to thank **Md. Ashikur Rahman**, **Mobile Application Developer**, Parallaxlogic Infotech. He gives me a proper opportunity to learn and teach me a lot of things. He has also guided me and given me an opportunity to work with them.

I would like to express my heartfelt gratitude to **Dr. S. M. Aminul Haque**, **Professor & Associate Head**, Department of Computer Science and Engineering, Daffodil International University, for his kind support, guidance and inspiration which has immensely strengthened my self-confidence during my internship program.

I would like to express my heartiest gratitude to the Almighty Allah and the **Dr. Sheak Rashed Haider Noori**, **Professor and Head**, Department of Computer Science and Engineering, Daffodil International University, for his kind help to finish my internship and also to other faculty members and the staff of the CSE department of Daffodil International University.

ABSTRACT

The essence of this report is to show what I have done and learned from my internship. I participated mainly in internship as an android app developer. Here, my focus or objective was basically learning android, learning and understanding software development lifecycle, refining coding style and learning about keeping abreast with the new technology. Nowadays, cyberspace is flooding with number of software engineers working on different innovative technologies and coming out with a number of Android applications. Android applications make our day-to-day life easy. In the future, the prospect of software engineering as a career will have some great opportunities. To become a good software programmer, I have to learn about practical projects. I need to learn how actually projects are managed. App development is something I want to start my career with. Grand internship "Android App Development" is chosen for that. Working in Parallaxlogic Infotech gave me a great experience for my future assumptions regarding upcoming careers. One more key point was working with a real problem of the client. This report takes us in all aspects of an actual project and experience gathered during this internship during 3 months.

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Chapter 1

Introduction

1.1 Introduction of Internship

An Internship refers to that process of on-job training which suits well for students pursuing practical courses.

DIU has always been stressing on industrial training as part of the academic studies. Such programs involve inviting several different people from industry to DIU to talk about their workplaces and experiences. Sometimes they even organize really technical courses. Three-month-internship program is yet another probably the most effective method of doing the industrial training.

Internships allow students to relate the learned theoretical concepts with actual industrial practices. I tried to combine both together. For internship, I was sent to Parallaxlogic Infotech. It is one of the major Software Development Company in Bangladesh.

1.2 Motivation

Working at Parallaxlogic Infotech, I learned how an actual project would be built, and how the system structure can be controlled. I have also learned some knowledge about coding styles. I am quite inspired to create my career as a software engineer and know more about new technology. I had a wonderful time working with them. It was a pretty useful experience, as it opened me out to quite a large number of perspectives into software development and lots of coding-style practice.

1.3 Objectives of Internship

As part of the internship program for the course BSc, this report has been penned. It is meant to assess my achievements, project participation and career development throughout the intern period.

1.4 Scope of Internship

This write up basically gives a picture of the occasion I experienced in my organization-Parallaxlogic Infotech. It also serves as a very brief account about Parallaxlogic Infotech to those passionate students intending to secure an internship in this firm for their professional development.

1.5 Organization of the Report

This is a report writing based on my primary idea on a project that I got to know and worked day in and day out during the last three months' time.

"Chapter 1" describes an overall introduction to the internship, aim of the internship, extent of internship, and internship motivation.

"Chapter 2" describes the company wherein I have done my internship.

"Chapter 3" describes the project I participated in during the internship. I have written about the work done at this place, showing examples of such work.

"Chapter 4" describes the tools and technologies learned during the internship, as well as the professional growth and experience.

"Chapter 5" is a summary of my overall experience during the internship in terms of knowledge gained, challenges faced, and improvements to my abilities and skills at work

Chapter 2

COMPANY'S PROFILE

2.1 About Parallaxlogic Infotech

Parallaxlogic Infotech is a highly reputed IT consulting and custom software development company, founded in 2008 and headquartered in Dhaka, Bangladesh, with a global office in Los Angeles, USA [1]. With more than 100 skilled IT professionals, Parallaxlogic Infotech has emerged as a trusted and creative partner for companies across different industries, such as Healthcare, Banking, Retail, Telecom, and many others. During its more than 15 years of operation, the company has successfully executed over 700 projects for clients from Europe, the USA, Canada, and other regions. Its list of current and past clientele includes global giants like Coca-Cola, USAID, the United Nations Development Programme (UNDP), Sony, and Bangladesh's Prime Minister's Office; these rely on the company's state-of-the-art solutions to further streamline their operations and meet emerging market demands. The company specializes in scalable, robust, and platform-based custom software solutions.

It does CRM tools, data analysis, collaboration systems, process automation, cloud-based technologies, and information security. This agility of Parallaxlogic Infotech toward innovation is supported by a set of strategic partnerships with major technology organizations such as Microsoft, IBM, Oracle, Salesforce, Magento, ServiceNow, and Episerver. These collaborations allow the company to incorporate advanced technologies into its solutions to ensure that clients achieve operational excellence and competitive advantages. This quest for excellence has been celebrated in very esteemed forums, including the APICTA Awards 2019. Famed as the "Oscar of ICT," APICTA accorded Parallaxlogic Infotech a Champion Award in Retail Solutions and a Merit Award in Public Service and E-Governance for its novel contributions to the industry. With a deeply ingrained sense of performance,

reliability, and innovation, Parallaxlogic Infotech empowers organizations around the world. Its solutions have been built to solve complex challenges, enhance efficiency, and ensure growth, making it a trusted partner in this ever-changing landscape of technology and business.

Chapter 3

OVERALL CONTRIBUTION

3.1 Necter Groceries App

The App is a modern grocery shopping application [2] that aims to simplify the shopping experience for consumers. With a focus on user-friendliness, seamless navigation, and an attractive design, the app caters to busy individuals and families who value convenience and time-saving solutions. Developed using Jetpack Compose for Android, the app leverages advanced technologies to deliver an efficient and scalable experience.

3.2 Overview

The Nectar Groceries App is a feature-rich application designed for seamless grocery shopping experiences. It has been implemented using **Kotlin**, **Jetpack Compose**, and follows the **Model-View-ViewModel (MVVM)** [3] architecture. The app includes intuitive UI screens and smooth navigation, as designed in the corresponding **Figma prototype**.

3.3 System Design

Figma Prototype : The Figma prototype served as the foundation for designing the Nectar Groceries App. It provided a visual blueprint for the app's interface and navigation flow, ensuring all design elements aligned with user requirements. This step was crucial for maintaining clarity and consistency throughout the development process.

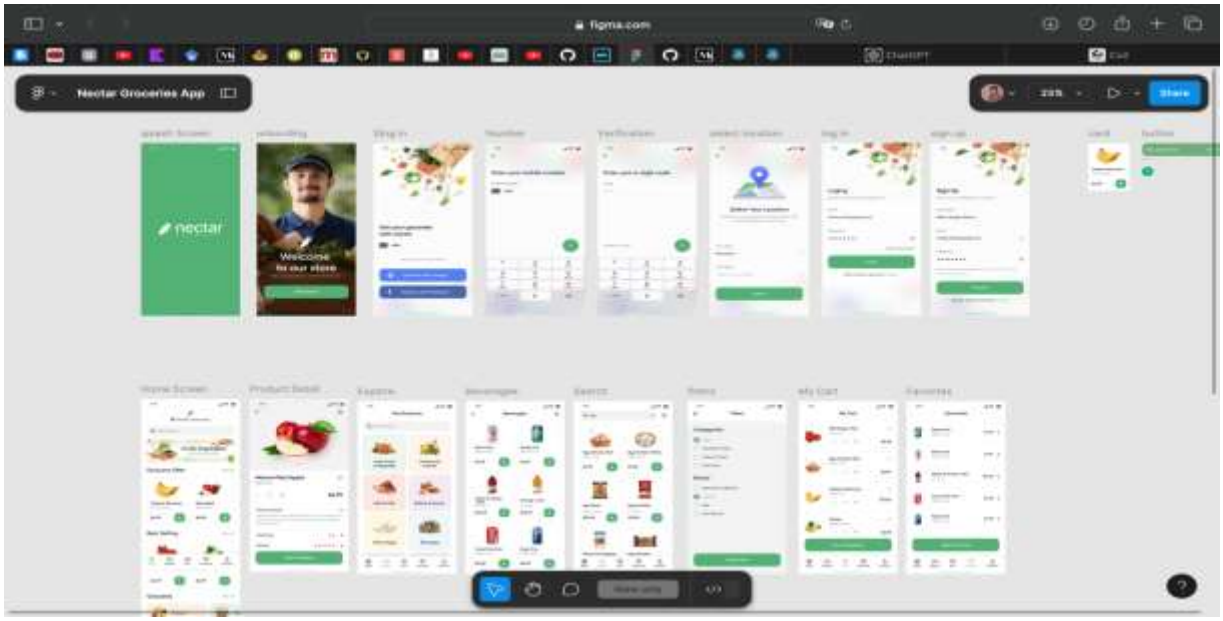

Figure 3.3.1: Figma Prototype

Splash Screen : This is the design for a splash screen that welcomes the user to the app in a friendly and visual manner. It sets the tone of the experience as well as makes sure that the app loads well. It helps in capturing users' attention and creates a positive first impression.

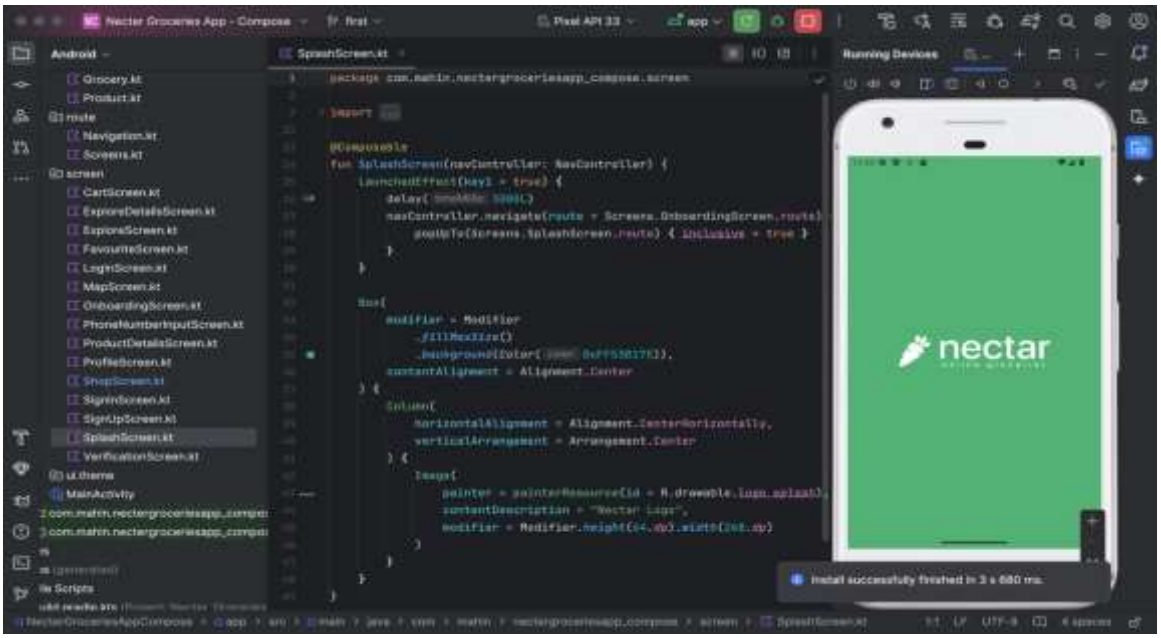

Figure 3.3.2: Splash Screen

Onboarding Screen : The onboarding screens were created to help the new user go through the app's features and functionalities. These screens played an important role in enhancing the user understanding and improving the app's accessibility, especially for the first-time users.

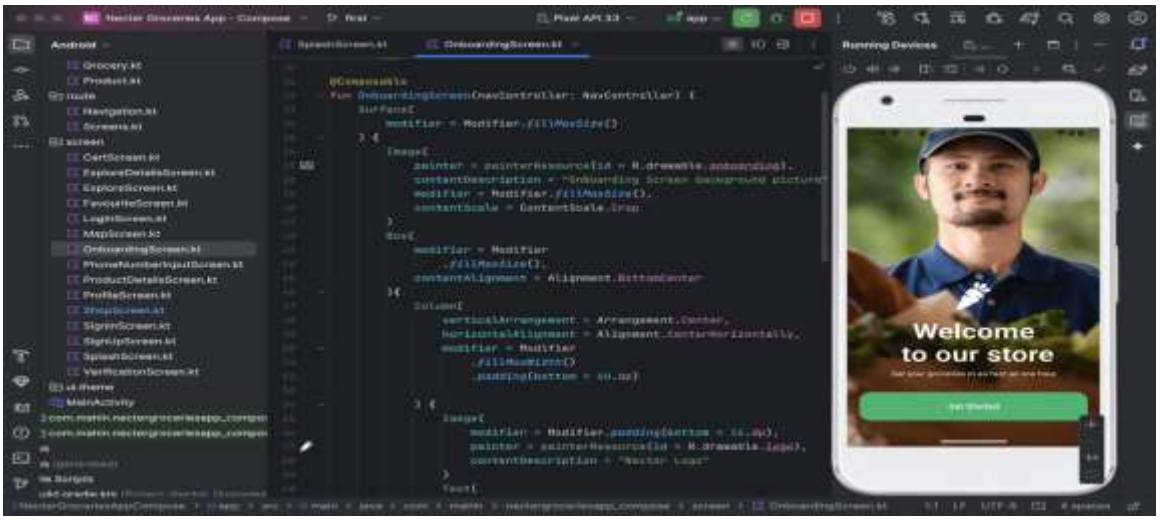

Figure 3.3.3: Onboarding Screen

Sign-in Screen : The sign-in screen was implemented for allowing existing users to access their accounts securely. This feature ensures the integrity of user data and makes the authentication process smooth, which is very important for personalizing the shopping experience.

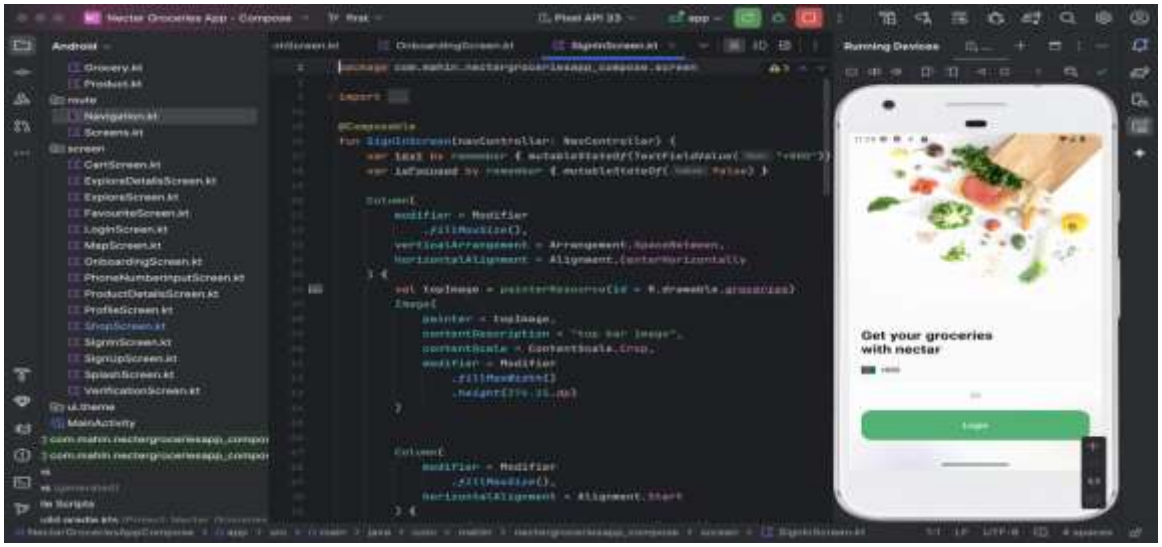

Figure 3.3.4: Sign-in Screen

Login Screen : The login screen allowed users to securely authenticate and be able to access their profiles. It was developed with simplicity and security in mind to ensure seamless and trustworthy user experiences.

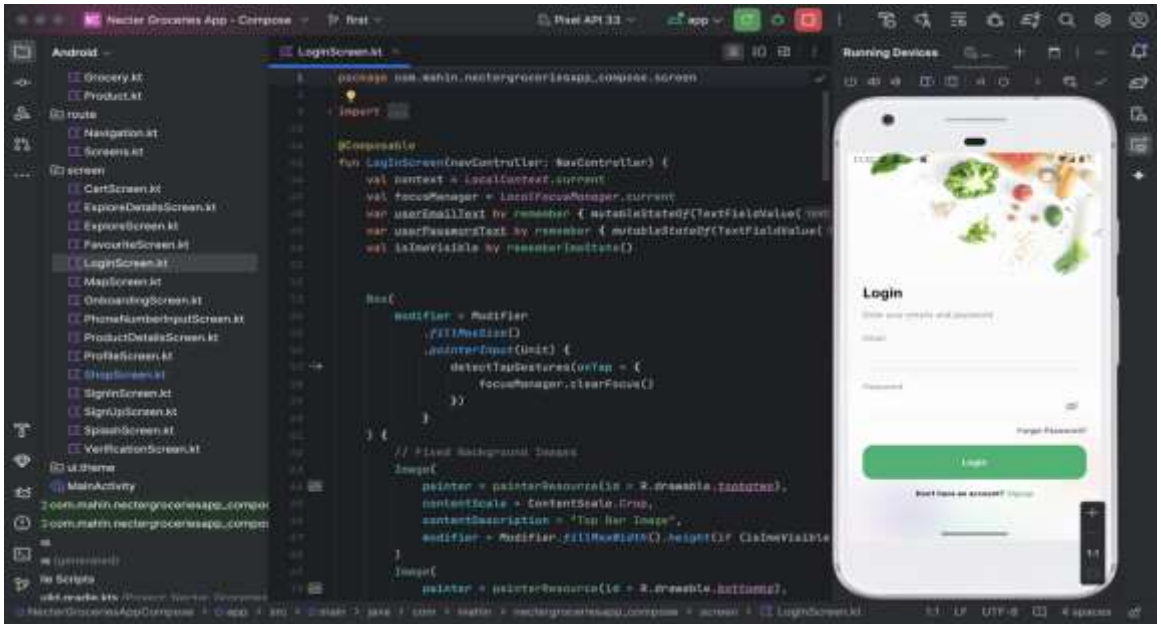

Figure 3.3.5: Login Screen

Sign-up Screen : The sign-up screen provided the facility for new users to register and create accounts. This feature was essential for expanding the app's user base while ensuring proper data management and personalized services for each user.

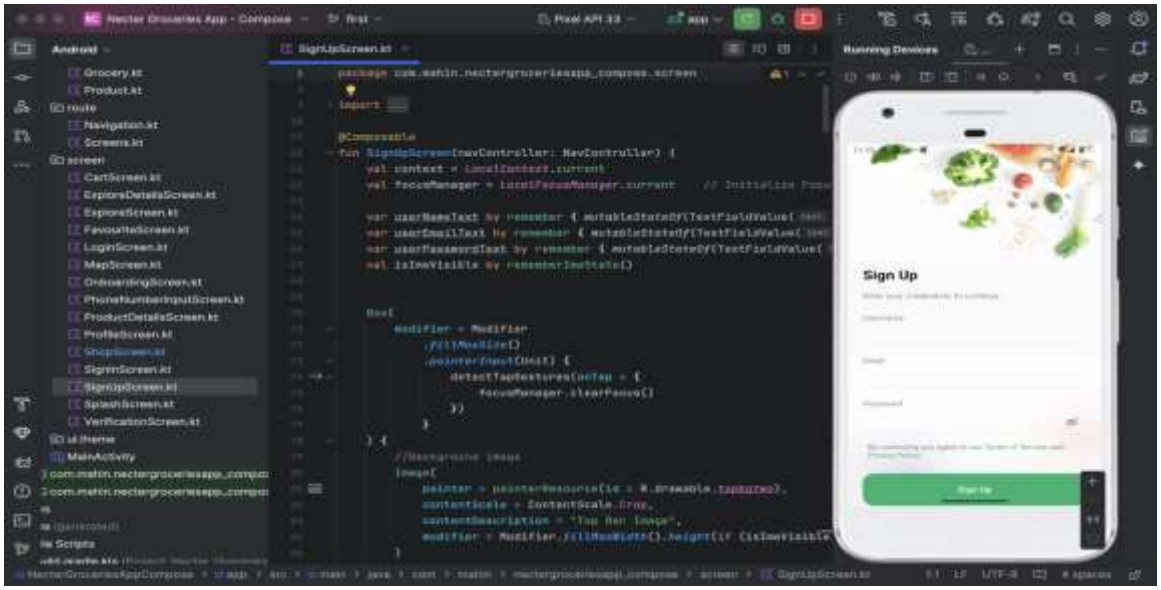

Figure 3.3.6: Sign-up Screen

Location Screen : The location screen was designed to let users input or detect their delivery addresses with ease. This feature was crucial for the proper execution of delivery services and to add convenience for the users.

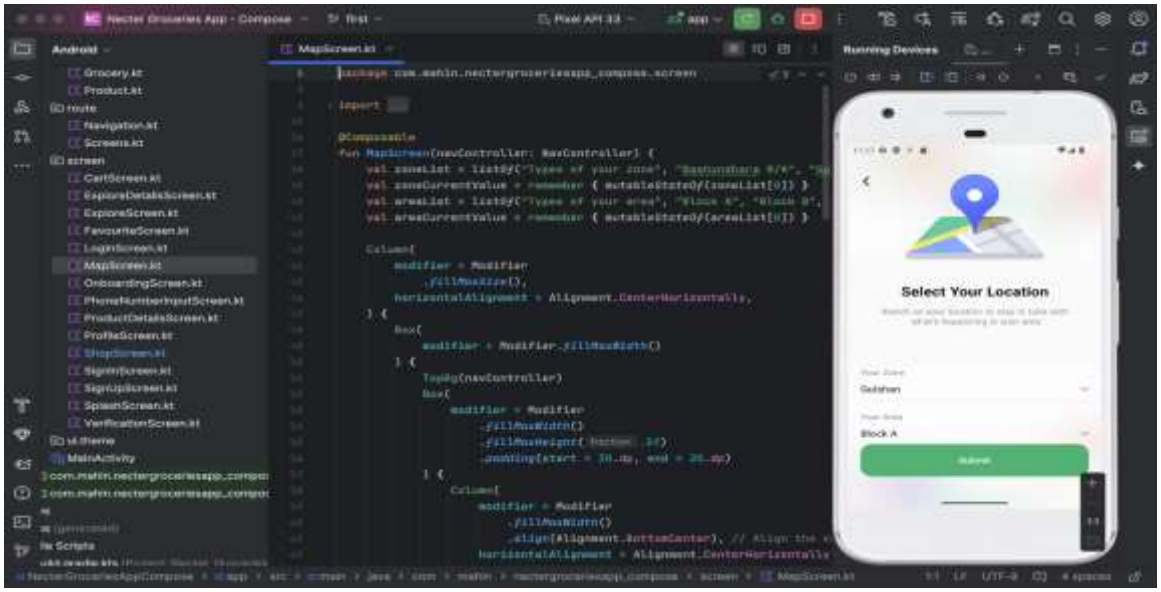

Figure 3.3.7: Location Screen

Shop Screen : The shop screen showed categorized products, exclusive offers, and best-selling items. It was designed to make the shopping process easier for the user by making it simple to view and choose products.

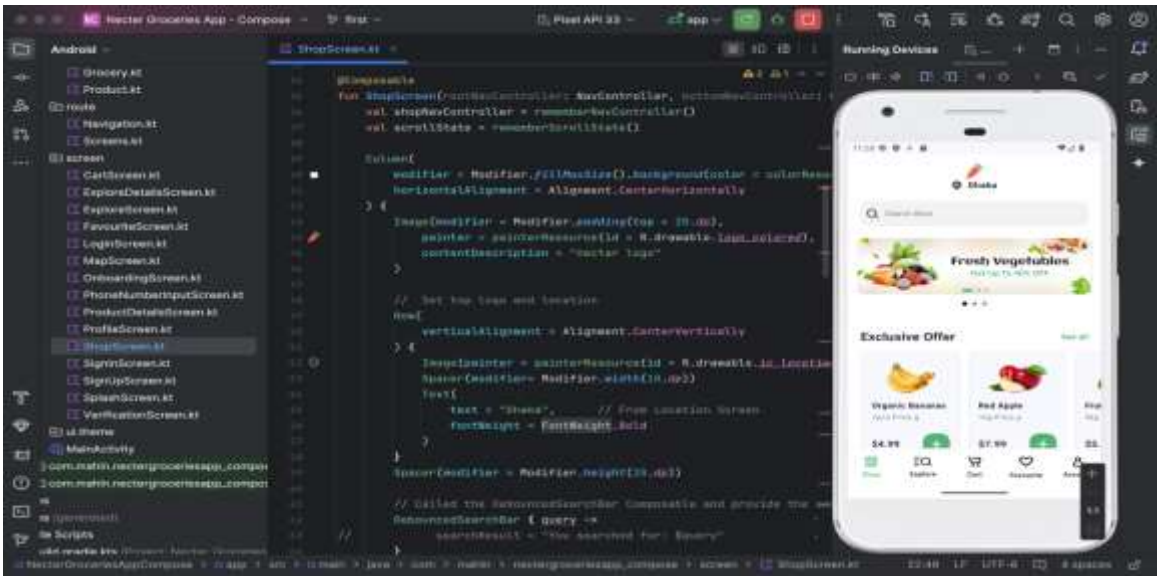

Figure 3.3.8: Shop Screen

Explore Screen : The explore screen allowed users to browse through different product categories, such as fresh produce and snacks. This screen was enhanced with a search function to make the user experience seamless and intuitive, allowing users to navigate through it quickly.

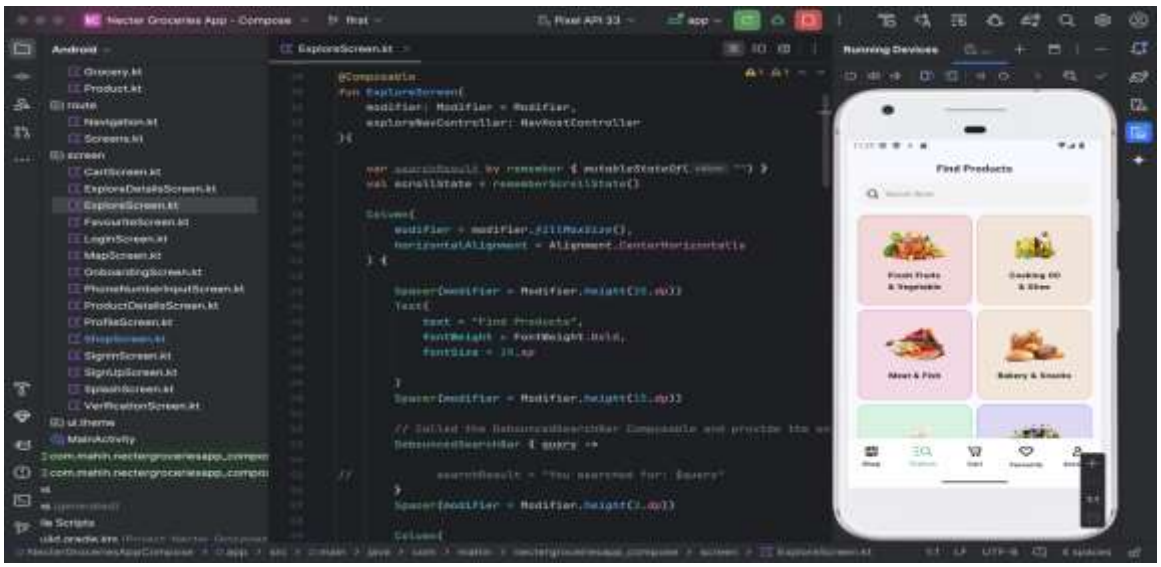

Figure 3.3.9: Explore Screen

Product Details Screen : The product detail screen displayed the price of the product, nutritional facts, and an "Add to Cart" button. This feature was important for informed decision-making, ensuring that users had all the necessary information before making a purchase.

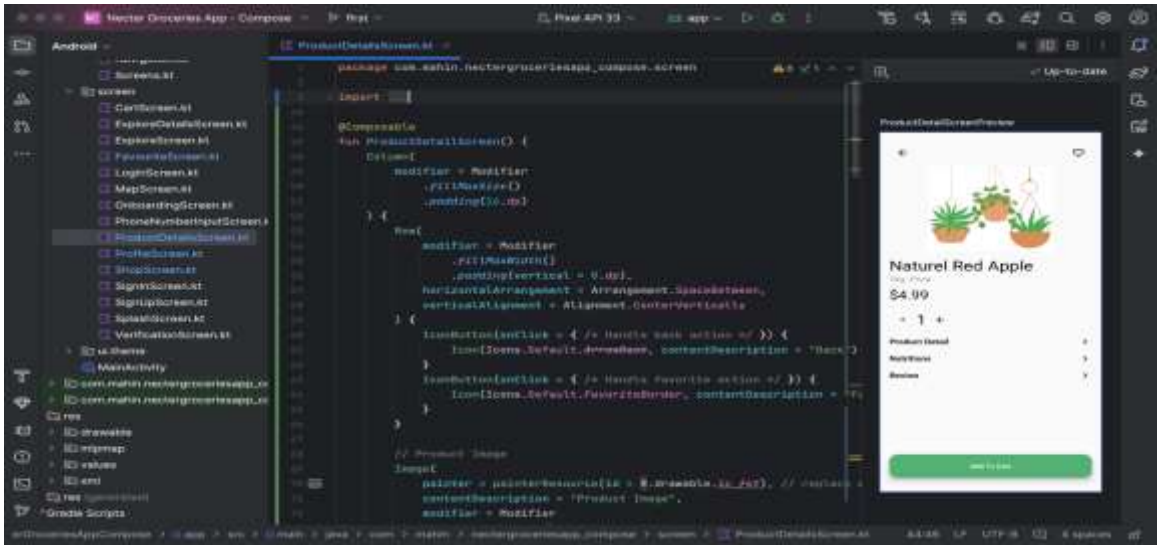

Figure 3.3.10: Product Detail Screen

Cart Screen : Cart screen provided the user with selected item management, such as selecting quantities or removing selected products. The clear total price summary made the process easier and faster for checkout while maintaining a better shopping experience.

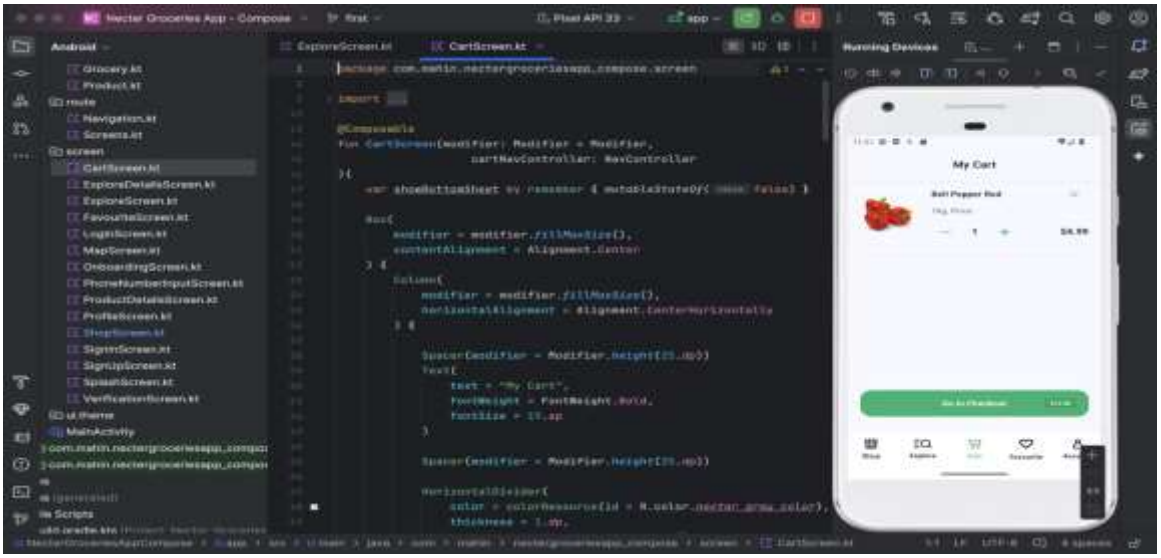

Figure 3.3.11: Cart Screen

Favorite Screen : The favorite screen allowed the user to save preferred products for future purchases. This added to user convenience and encouraged repetitive use of the app as it provided easy access to their most loved items.

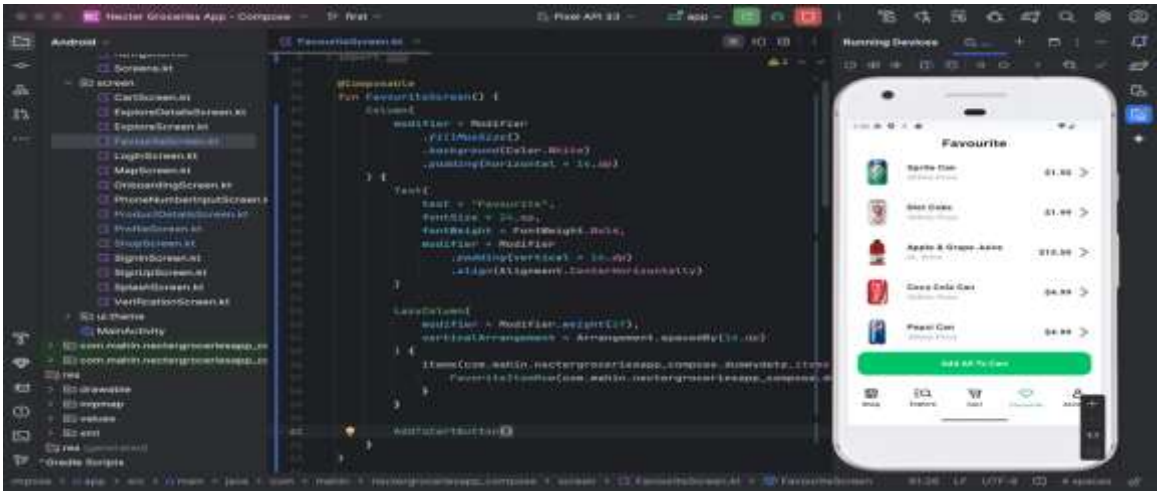

Figure 3.3.12: Favorite Screen

Account Screen : The account screen is where a user can maintain their profile information and settings. This was important in sustaining a personalized user experience with secure access to account related information.

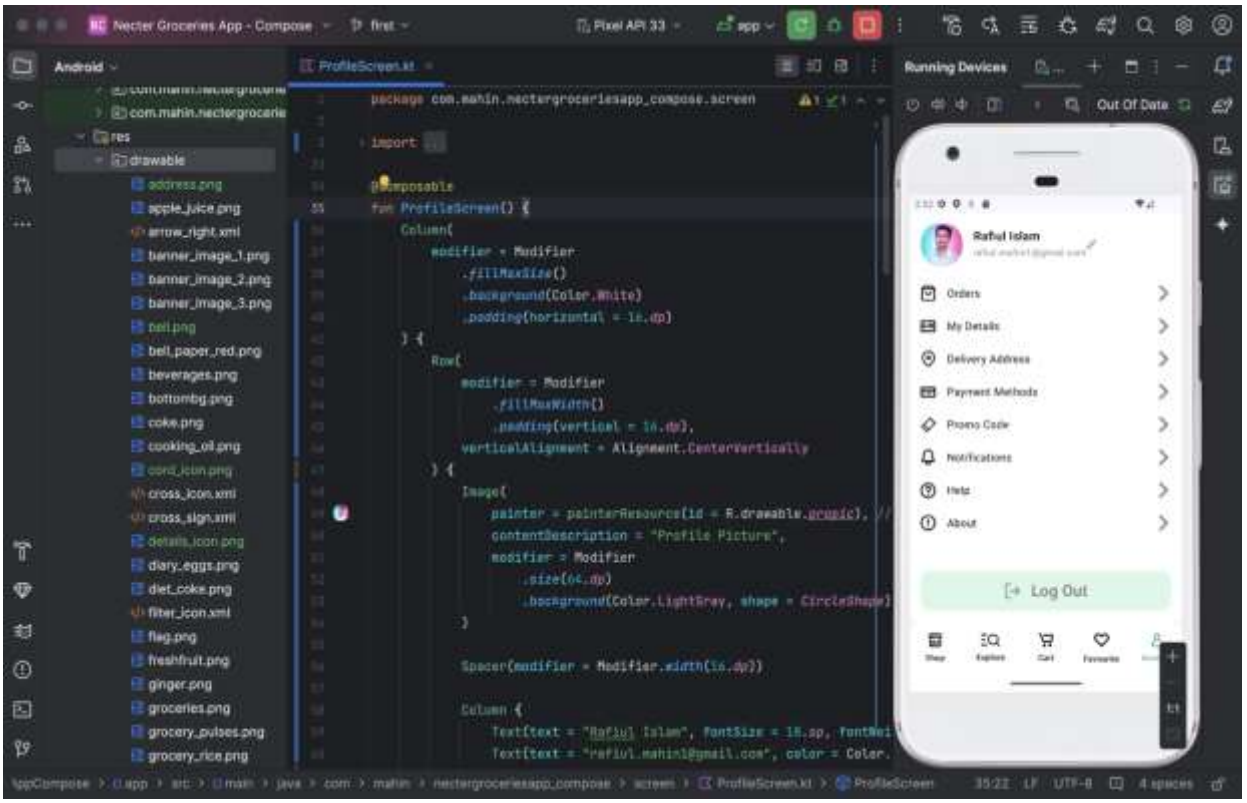

Figure 3.3.13: Account Screen

3.4 Technical Implementation

The technical implementation of the Nectar Groceries App focuses on modern Android development practices to drive the development of a robust, scalable, and user-friendly experience. The key aspects of the implementation are enumerated below.

- Jetpack Compose for UI Development

The user interface of the application is designed using Jetpack Compose-a modern toolkit for declaratively building user interface components in a dynamic way. For this project, custom composables are created to structure all screens to ensure reusability, maintainability, and design consistency. Jetpack Compose [5] increases productivity by reducing boilerplate code and streamlining UI development.

- MVVM Architecture

The MVVM architecture is followed in the design of the app, separating the user interface, data handling, and business logic. This separation ensures better maintainability and testability of the codebase.

ViewModels are used to manage UI-related data, ensuring seamless reactivity and proper lifecycle management.

This minimizes the dependencies between components, making the app easier to scale and maintain over time.

- State Management

For managing the state, Jetpack Compose's mechanisms like remember and mutableStateOf have been used. These enable efficient state handling and ensure that the app responds dynamically to the interaction with a user and any changes in data.

- Dynamic and Responsive Design

It will be responsive, providing the best views on various screen sizes and devices. For that, Jetpack Compose helps to manage dynamic layouts that assure a smooth user experience for any device, from smartphones and tablets to others.

- User-Friendly Design

The Figma prototype has been carried out in detail, paying attention to an impressive visual look and intuitive interaction. The focus on user experience means the app will be easy to use and meet all the needs of its target audience.

- Scalability

By utilizing the latest development tools like Jetpack Compose and MVVM architecture, the application will be easier to extend with more features without significant reworks, hence making it relevant to changing user needs.

- Performance Optimization

Jetpack Compose reduces UI overhead; thus, the UI rendering is faster and more fluent. This will make the app run smoothly even on less powerful hardware devices.

3.5 Summary

Nectar Groceries is a modern, extendable, and powerful application for grocery shopping, which is thoughtfully designed, considering the needs of modern users. With the usage of advanced technologies like Jetpack Compose and MVVM architecture, the app grants an entertaining and smooth user experience, while keeping performance at a very high level. The dynamic responsive design allows the application to work smoothly on a variety of devices for an enormous amount of end-users. Also, the judicious use of state management and various performance optimizations will keep the app efficient and easy to use.

This robust design and development approach align with industry standards, making the Nectar Groceries App not only a practical solution for today's grocery shopping needs but also well-prepared for future enhancements and innovations.

Chapter 4

PROFESSIONAL GROWTH

4.1 Technologies and Tools I Learned

I was assigned a project team in android platform development. Thus, android technology is all I've learned so far.

Free android applications have gained much popularity in Bangladesh. Most people use them in their daily life. [4].

4.1.1 Tool

Even worse are the programming tools that have made developing such tasks intriguing. I have in my hands the following equipment during my internship at Parallaxlogic Infotech, and I use them in day-to-day operations.

- Android Studio
- Web Service
- Android Phone / Emulator
- Postman
- JSON Viewer
- Git & Github

4.1.2 Technology

I have learned these technologies in my internship period.

- Kotlin
- Android
- XML
- Jetpack Compose
- SQL
- UI & UX
- JSON
- Web Service
- REST API
- Git & Github

4.2 Professional Learning

After completion of this internship program has made me more aware of android development and how to solve problems through coding speedily.

- Kotlin
- Android
- Web Service
- REST API
- Postman
- XML
- Jetpack Compose
- RDBMS
- JSON
- UI & UX
- Git & Github
- Understanding of API

4.3 No bullying and blaming

Android application development has always required a good team. In teamwork, it's prone to misunderstandings. Even so, this holds true for Parallaxlogic Infotech, but I've seen the harmony of everybody with the project managers and team leaders.

Actually, for me personally in the last three months, I have made a lot of mistakes. But, my project manager never treated me in a bad manner.

This way of working is much better. Criticizing people for their mistakes will not improve the situation; it will only make it worse.

Chapter 5

Conclusion

This internship has really taught me a lot about software organizations, how they work, what the environment is like there, and even the process of software development.

A team meeting attended with the team members discussing on ways to tackle project problems, bug fixing, and project security has really brought understanding of the real threats in a software. At the same time, this has got him to understand the software lifecycle of a software organization.

With all this, doing this internship and working in a team has strengthened my team work capabilities, enabling me to appreciate the proposed plan and ideas of my colleague. Brainstorming talks with team members helped me understand and find solutions for several issues; otherwise, I would have encountered lots of difficulties in solving these issues.

In general, the internship program has broadened my horizon on programming and instilled confidence in me that I could work in IT software fields.

References

[1] Parallaxlogic Infotech. (2024). Software development company: Parallaxlogic. https://parallaxlogic.com/

[2] Stecuła, K., Wolniak, R., & Aydın, B. (2024). Technology Development in Online Grocery Shopping—From Shopping Services to Virtual Reality, Metaverse, and Smart Devices: A Review. *Foods*, *13*(23), 3959.

[3] Gaudioso, V. (2010). Mvvm: Model-view-viewmodel. In *Foundation Expression Blend 4 with Silverlight* (pp. 341-367). Berkeley, CA: Apress.

[4] Islam, R., Islam, R., & Mazumder, T. (2010). Mobile application and its global impact. *International Journal of Engineering & Technology*, *10*(6), 72-78.

[5] Künneth, T. (2023). *Android UI Development with Jetpack Compose: Bring declarative and native UI to life quickly and easily on Android using Jetpack Compose and Kotlin*. Packt Publishing Ltd.

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