ZipFeast: Beyond Shopping

Project Report Submitted in Partial Fulfilment of the Requirements for the Degree of

Bachelor of Technology

in

Computer Science and Engineering

Submitted by:

Yasir Ahmad: (CSE-20-13)
Aasim Ashraf Bhat: (CSE-20-LE-63)

Under the Supervision of

Dr. Riaz Khan
Assistant Professor, Department of CSE, IUST

Department of Computer Science and Engineering
Islamic University of Science and Technology, Kashmir - 192122

Spring, 2024

Department of Computer Science and Engineering
Islamic University of Science & Technology, Kashmir – 192122

CERTIFICATE

This is to certify that the work contained in this report entitled "**ZipFeast: Beyond Shopping"** is submitted by the group members Mr. Yasir Ahmad (CSE-20-13), Mr. Aasim Ashraf (CSE-20-LE-63) to the **Department of Computer Science & Engineering,** Islamic University of Science & Technology, Kashmir for the partial fulfilment of the requirements for the degree of **Bachelor of Technology** in **Computer Science and Engineering.** They have carried out their work under my supervision.

Supervisor	**I/C Head**
Department of CSE	Department of CSE

ACKNOWLEGEMENT

We want to offer our sincere thanks of gratitude to our project supervisor, teacher, mentor and friend, Dr. Riaz Khan for allowing us to work on this project under his supervision and providing support and suggestions when needed. We also want to thank our parents who leave no stone unturned to make sure we get the best of everything. Moreover, we want to thank all the great computer scientists and engineers who came before us and made present day computing possible. Without computers and the current booming era of ML/AI, life would have been a drag.

Yasir Ahmad (CSE-20-13)

Aasim Ashraf Bhat (CSE-20-LE-63)

TABLE OF CONTENTS

LIST OF FIGURES (WEB APP)

LIST OF FIGURES (ANDROID APP)

ABSTRACT

Our project focuses on developing an innovative e-commerce application for grocery shopping, inspired by the successful models of platforms such as Zomato, Swiggy, Zepto and Blinkit. This application aims to revolutionize the grocery shopping experience by integrating features that prioritize convenience, efficiency, and user engagement, drawing from the best practices of leading industry players. Additionally, our app offers home services such as carpentry, plumbing, and more, providing a comprehensive solution for users' everyday needs. Utilizing modern technologies such as Jetpack Compose UI for Android development and React with Node.js and Prisma for web application development, our project delivers a cutting-edge solution tailored to the evolving demands of merchants and customers. The resulting platform is designed to be user-friendly, secure, and efficient, transforming interactions with grocery stores and home service providers, facilitating seamless transactions, and enhancing overall customer satisfaction. Our main conclusions highlight the app's potential to set new standards in the e-commerce grocery and home services sectors by offering a superior user experience and robust security features.

CHAPTER 1

INTRODUCTION

In recent years, the landscape of commerce has undergone a dramatic transformation, driven by the rise of online shopping and the advent of innovative delivery services. The grocery sector, in particular, stands as a pivotal frontier, rich with opportunities for disruption and innovation. Inspired by the successes of industry giants like Zomato, Swiggy, Zepto and Blinkit, our project endeavours to revolutionize the grocery shopping experience through the development of a dynamic e-commerce application.

Recognizing the shifting preferences and expectations of modern consumers, our project aims to harness the proven strategies and best practices observed in leading platforms while tailoring them to the unique demands of the grocery market. By embracing cutting-edge technologies such as Jetpack Compose [1] UI for Android [2] development and React [3] with Node.js [4] and Prisma [5] for web application development, we seek to create a platform that not only meets but exceeds user expectations.

Beyond grocery shopping, our application will also offer a range of home services, including carpentry, plumbing, and more. This comprehensive approach ensures that users can conveniently access essential services from a single platform, enhancing their overall experience and satisfaction.

Our vision is to empower both merchants and customers with a robust, user-friendly, and secure e-commerce solution. Through seamless integration, personalized experiences, and streamlined functionalities, we aspire to redefine the grocery shopping and home services journey, delivering unparalleled convenience, accessibility, and satisfaction. This introduction sets the stage for our exploration into the development of a transformative e-commerce platform that is poised to shape the future of grocery shopping and home service delivery.

CHAPTER 2

LITERATURE SURVEY

E-commerce research has extensively explored consumer behaviour, market trends, and technological advancements, offering invaluable insights for the development of innovative platforms. Foundational models and frameworks elucidate the factors influencing user acceptance of technology, emphasizing critical aspects such as perceived usefulness, ease of use, and trust in driving consumer adoption of e-commerce technologies.

User interface design remains a cornerstone in creating user-friendly and intuitive platforms, with various evaluation frameworks guiding this process. The applications of artificial intelligence (AI) and machine learning (ML) in e-commerce are particularly noteworthy, as they significantly enhance personalized recommendations and predictive analytics. These technological advancements have the potential to transform user engagement and satisfaction through tailored shopping experiences.

These studies collectively underscore the importance of user interface design and technological innovation in enhancing the online shopping experience. By integrating insights from these studies, our project aims to leverage the latest advancements in technology and design principles to develop a cutting-edge e-commerce platform tailored for the grocery sector.

Moreover, the inclusion of home services such as carpentry, plumbing, and other essential services necessitates a broader understanding of multi-service platforms. Research on integrated service delivery systems provides a theoretical foundation for combining diverse services within a single platform, emphasizing the need for seamless integration and user-friendly interfaces to ensure a cohesive and efficient user experience.

Our literature survey highlights the multidimensional nature of e-commerce research, encompassing aspects from consumer behaviour and technological adoption to interface design and service integration. By synthesizing theoretical frameworks and empirical findings, we seek to create an innovative platform that meets the evolving needs and expectations of both merchants and customers in the dynamic e-commerce landscape.

Our project not only aims to revolutionize grocery shopping but also to provide a comprehensive solution for home services, thereby delivering unparalleled convenience and satisfaction.

CHAPTER 3

OBJECTIVES

This project achieved the following objectives:

3.1. Developed a Comprehensive E-commerce Platform for the Grocery Sector

- Created a robust e-commerce application specifically tailored for the grocery market, integrating features inspired by successful models such as Zomato, Swiggy, and Blinkit. This enhanced convenience, accessibility, and user satisfaction by incorporating proven strategies and best practices.

3.2. Utilized Advanced Technologies for Development

- Employed modern technologies including Jetpack Compose UI for Android development and React with Node.js (TypeScript) and Prisma for web application development. This ensured the platform is scalable, efficient, and provides a seamless user experience across multiple platforms.

3.3. Incorporated Advanced Functionalities

- Implemented personalized recommendations and predictive analytics using AI and ML to optimize user engagement and satisfaction. Integrated secure payment gateways to build trust and ensure safe transactions.

3.4. Offered Comprehensive Home Services

- Extended the platform’s functionality to include home services such as carpentry, plumbing, and other essential services. This holistic approach aimed to meet a wide range of user needs, making the platform a one-stop solution for groceries and home services.

3.5. Facilitated Seamless Interaction Between Stakeholders

- Fostered efficient communication and interaction between administrators, merchants, and customers through intuitive navigation, interactive interfaces, and real-time communication channels. This facilitated efficient management of stores, products, orders, and feedback.

3.6. Ensured Reliability, Security, and Performance

- Conducted thorough testing and validation processes to ensure the platform's reliability, security, and performance. Adhered to industry standards and best practices in software development and quality assurance to deliver a high-quality product.

3.7. Focused on Continuous Improvement and Innovation

- Continuously iterated and improved the platform based on user feedback, market trends, and emerging technologies. Strived for innovation and excellence in delivering a superior online shopping and home services experience for all stakeholders involved.

By achieving these objectives, the project successfully created an innovative, user-friendly, and secure e-commerce platform that transforms grocery shopping and home service delivery, meeting the evolving needs and expectations of modern consumers and merchants.

CHAPTER 4

METHODOLOGY

To successfully complete the ZipFeast project, we adopted a comprehensive approach that combined advanced concepts of React with Node.js and Prisma for the web application, and Jetpack Compose UI for the mobile application. The project was divided into distinct phases, each focusing on specific aspects of development and integration. Below is a detailed outline of the methodologies we followed:

4 .1 Mobile App (Jetpack Compose UI)

4.1.1 User Interface Design:

- *Design Principles:* Designed visually appealing and intuitive user interfaces using Jetpack Compose UI.
- *Responsive Design:* Implemented responsive design principles to ensure a seamless experience across various device sizes and resolutions.

4.1.2 API Integration:

- *Networking Libraries:* Integrated with backend APIs using Kotlin Retrofit [6] networking library.
- *Real time Data Handling:* Ensured seamless data retrieval and updates to provide real-time information to users.

4.1.3 Jetpack Compose UI for Layout and Views:

- *Declarative Layouts:* Utilized Jetpack Compose UI for defining layouts and views in a declarative manner.
- *UI Component Structure:* Structured the UI components to create a well-organized and maintainable hierarchy.

4.1.4 User Experience (UX) Optimization:

- *Smooth Transitions:* Optimized the user experience by implementing smooth transitions and animations.
- *Efficient Navigation:* Ensured efficient navigation through the app, providing users with a seamless journey.

4.1.5 Databases Storage:

- *Remote Database:* we have used the single MySQL database [7] for both web app and Android App.
- *Local Storage:* for storing the data locally we have used ROOM [8] (is an abstract layer over the SQLite database) database.

4.1.6 Integration of Home Services:

- *Service Listings*: Incorporated listings for various home services such as carpentry, plumbing, etc.
- *Booking and Scheduling:* Enabled users to book and schedule home services directly from the mobile app.
- *Real-time Updates:* Provided real-time updates on service requests and statuses.

4.2 Web App (React with Node.js and Prisma)

4.2.1 Full-Stack Development using React with Node.js:

- *Backend*: Leveraged Express.js (Typescript) (Node.js) capabilities for backend development.
- *Frontend Integration:* Utilized React.js (Typescript) for Frontend development.

4.2.2 Architecture Design:

- *Scalable Architecture*: Designed a scalable and modular architecture for the web app using the React with Node.js framework.
- *MVC Pattern*: Implemented the Model-View-Controller [9] (MVC) pattern to ensure the separation of concerns.

4.2.3 Routing and Views:

- *Responsive Interface*: Defined responsive and user-friendly web interface using React.js with Shadcn-UI [10] library.
- *Component Separation*: Structured views effectively to maintain a clean separation of concerns between components.

4.2.4 Database Management:

- *Prisma ORM:* Utilized Prisma ORM for seamless interaction with the database.
- *Model Definitions:* Defined models to represent database entities and established relationships between them.

4.2.5 RESTful API Development:

- *API Communication*: Implemented RESTful APIs to enable communication between the web app and the mobile app.
- *Best Practices*: Adhered to best practices for API design and versioning to ensure scalability and compatibility.

4.2.6 Middleware and Security:

- *HTTP Request Handling*: Implemented middleware for handling HTTP requests, enabling tasks such as authentication and authorization.
- *Security Measures*: Prioritized security measures, including input validation, protection against SQL injection, XSS, and CSRF protection.

4.2.7 Integration of Home Services:

- *Service Listings and Management:* Created web interfaces for listing and managing various home services.
- *Booking System:* Developed a booking system for users to schedule home services. Service Provider Management: Enabled service providers to manage their services, schedules, and customer interactions.

4.2.8 Testing and Quality Assurance:

- *Unit Testing*: Implemented unit tests to ensure individual components function correctly.
- *Integration Testing*: Conducted integration tests to verify that different parts of the application work together as expected.

CHAPTER 5

WEB APP SHOWCASE

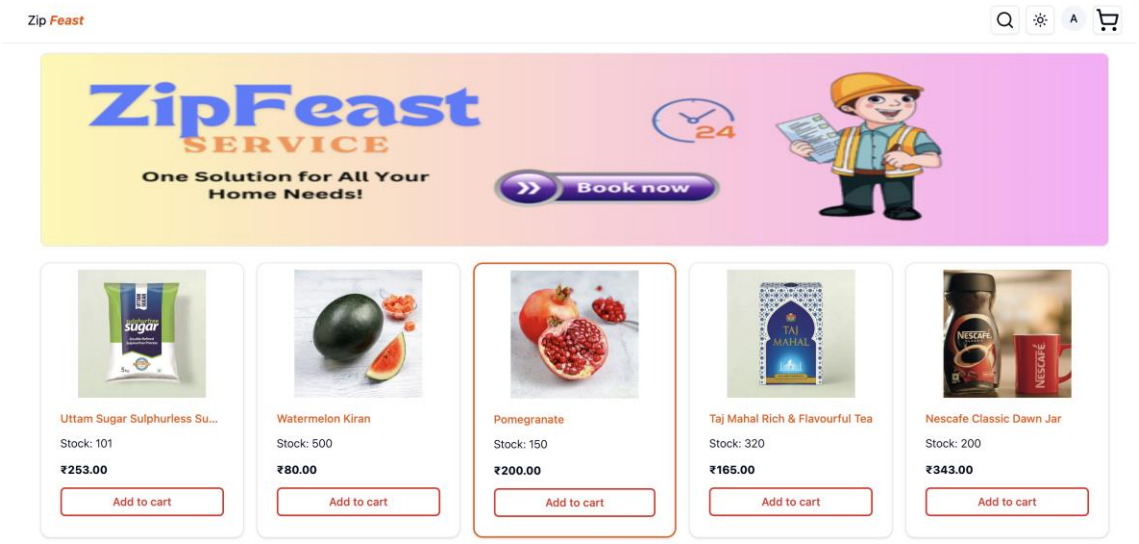

Figure 5.1 (Home page)

This Page Contains list of all the products.

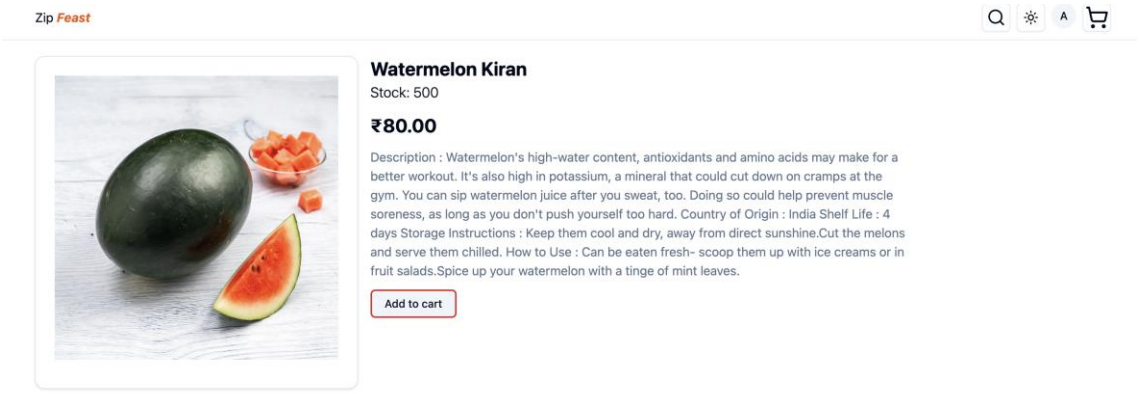

Figure 5.2 (Single Product)

This page shows the details of single product containing Price stock and some description.

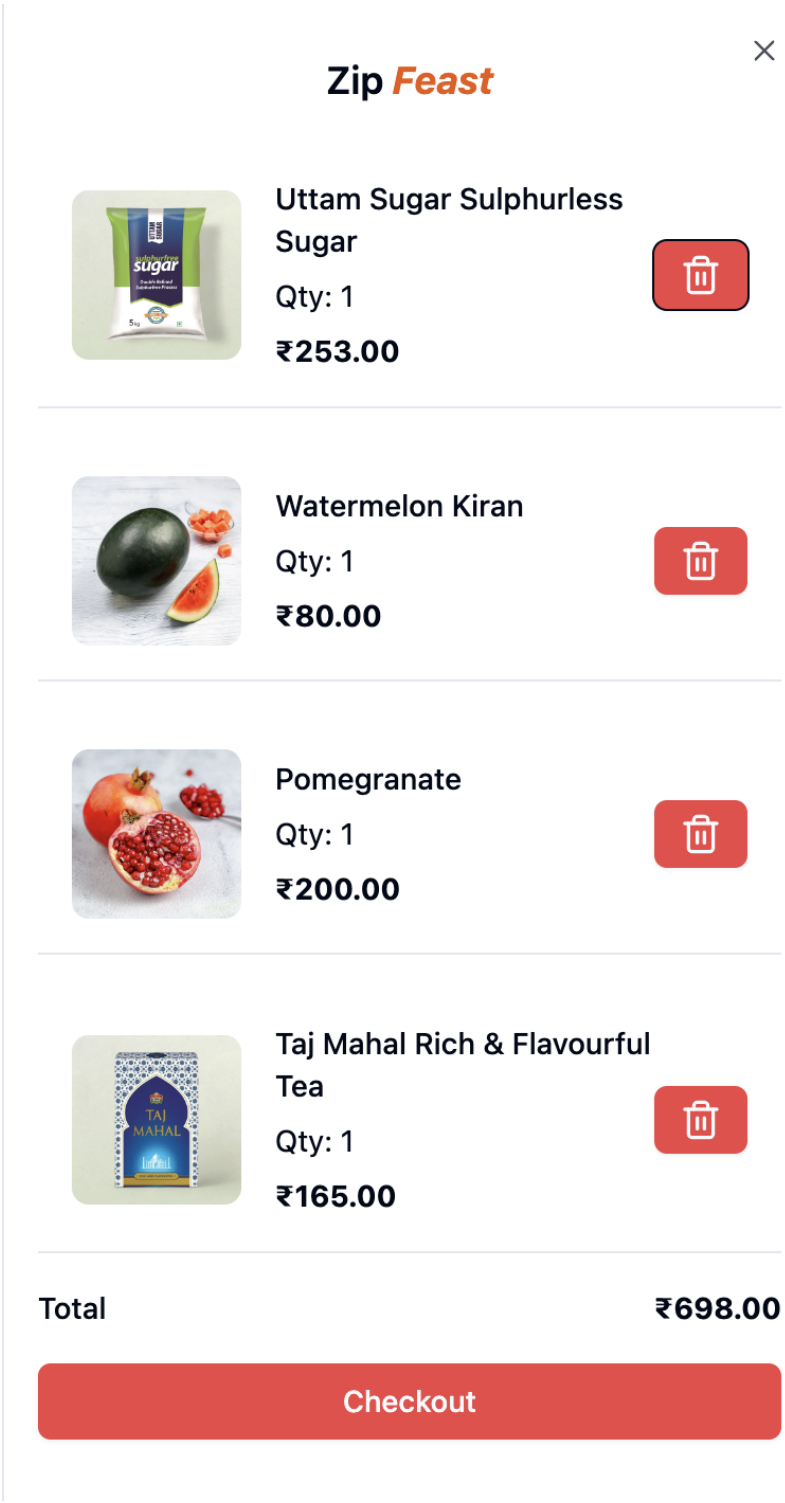

Figure 5.3 (Shopping Cart)

Shopping Cart which contains User added products.

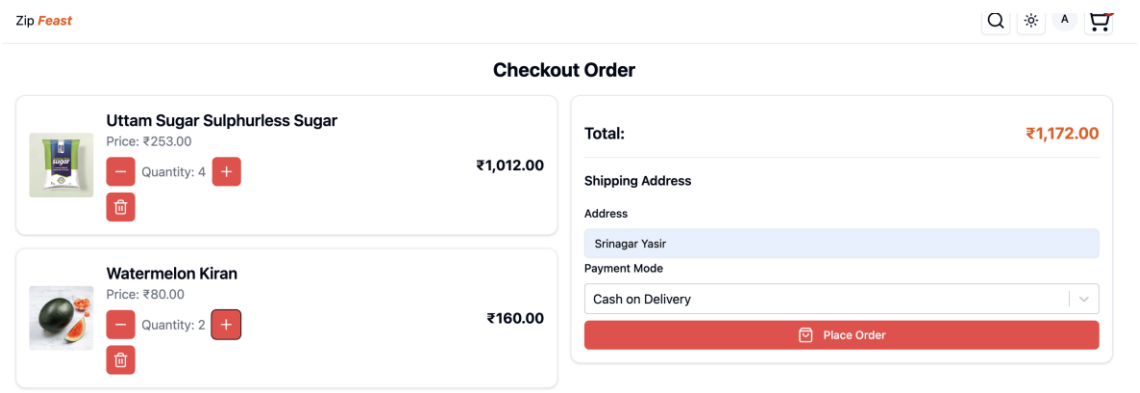

Figure 5.4 (Checkout Page)

Checkout Page – Displays the summary of items in the cart and payment options.

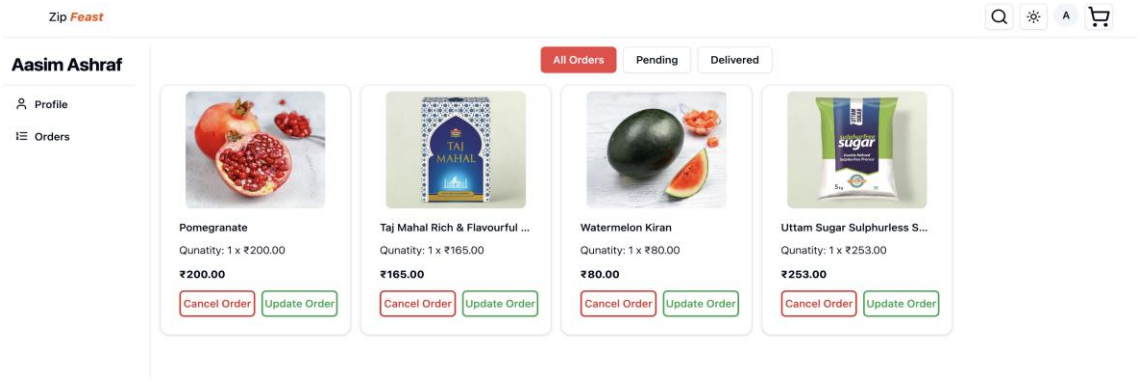

Figure 5.5 (User Order Page)

User Order Page – Shows the details of user orders, including order history and status.

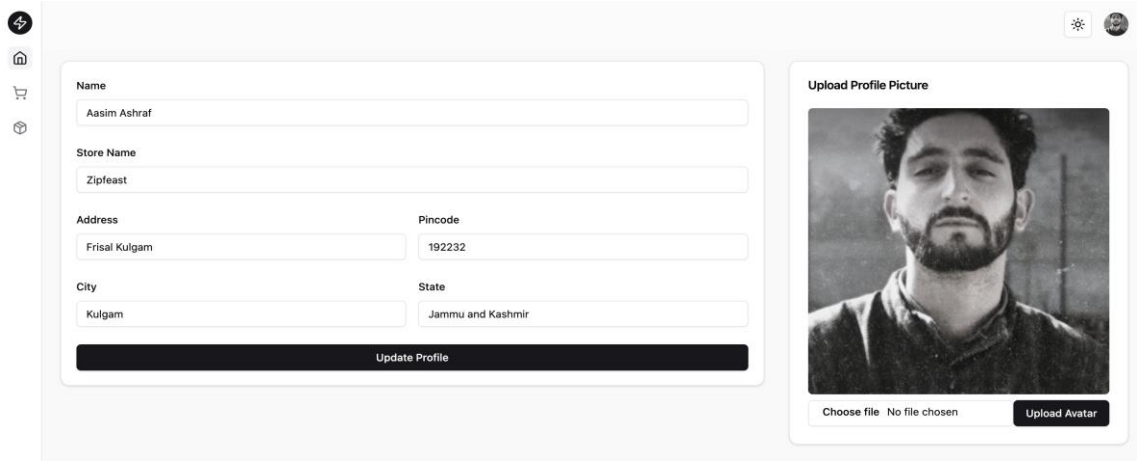

Figure 5.6 (Merchant Profile Page)

Merchant Profile Page – Displays merchant information, including profile details.

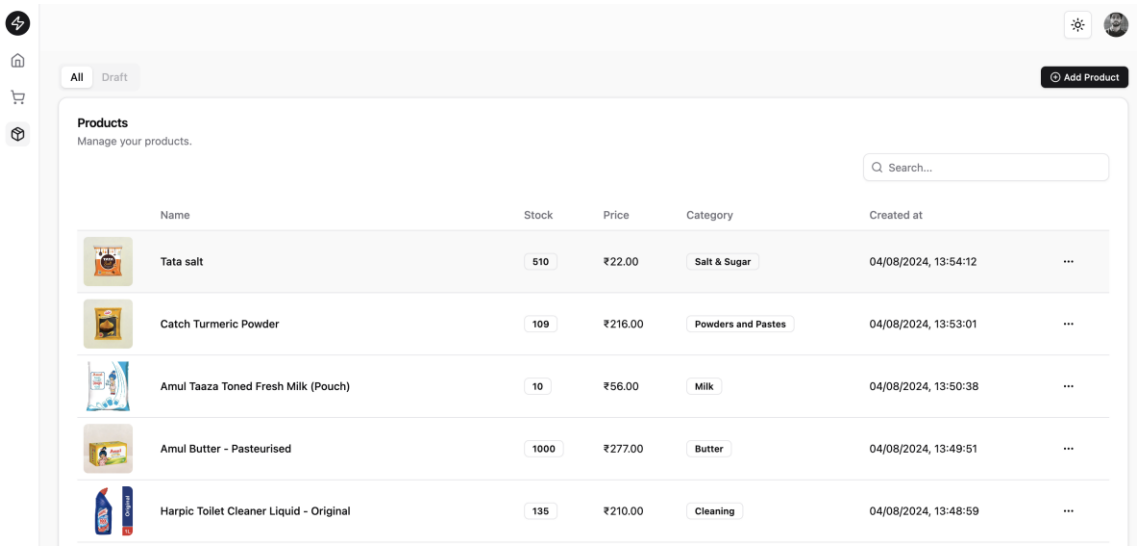

Figure 5.7 (Merchant Products Page)

Lists products managed by the merchant, including details and inventory.

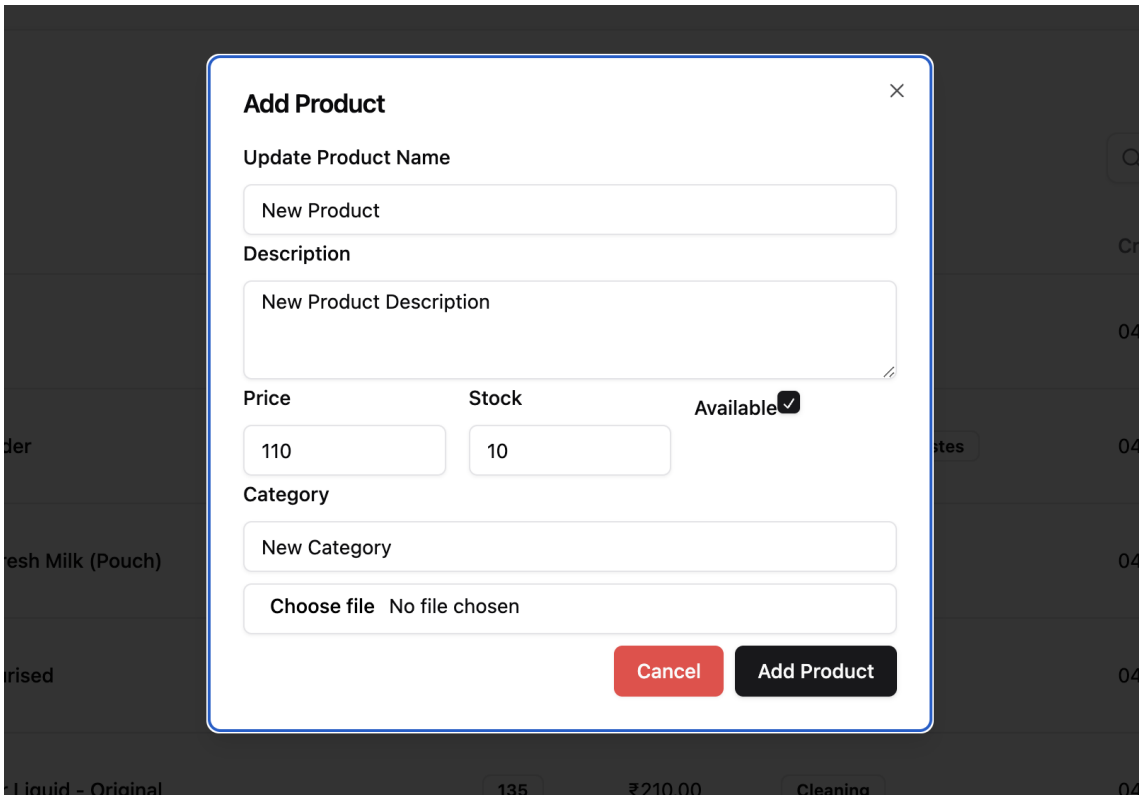

Figure 5.8 (Merchant Product Add Page)

Allows merchants to add new products to their inventory.

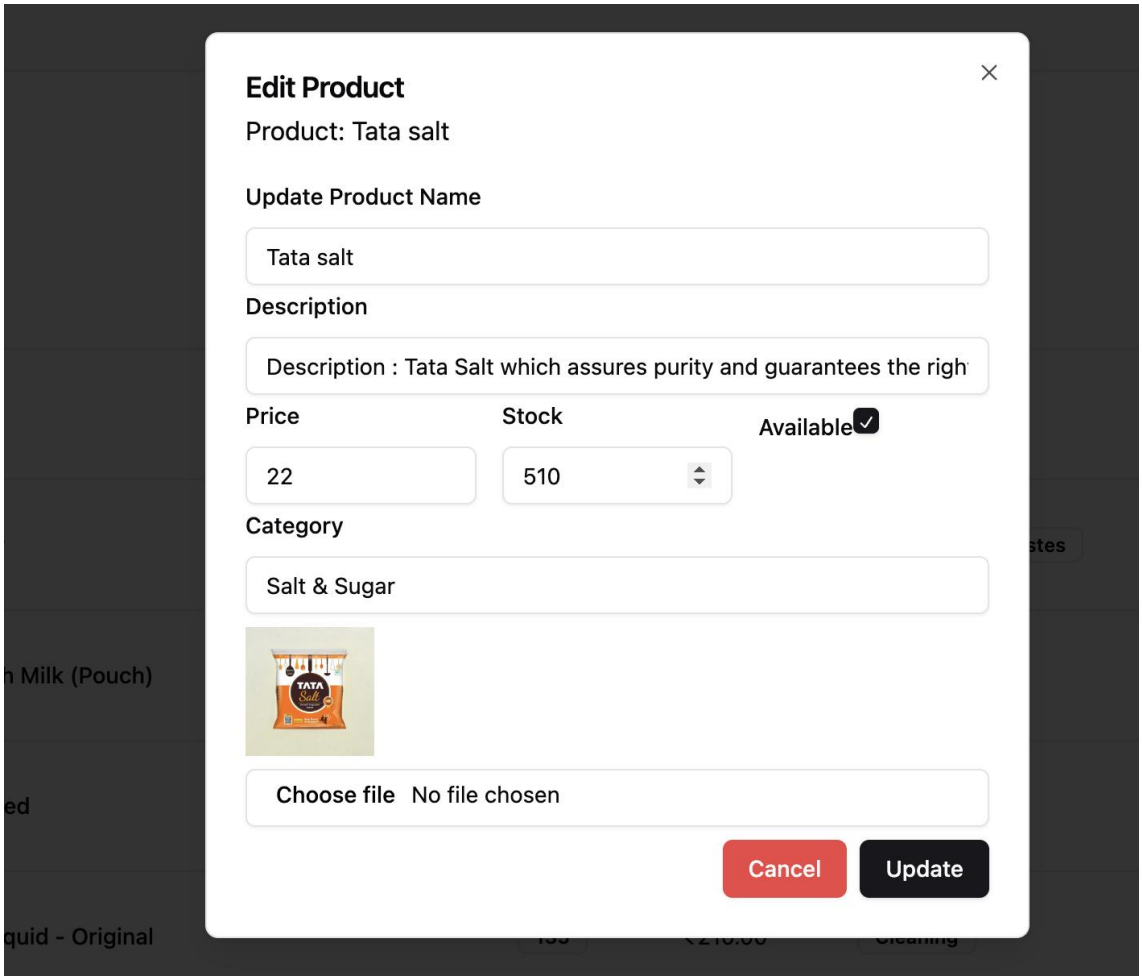

Figure 5.9 (Merchant product Edit page)

Enables merchants to update or modify existing product details.

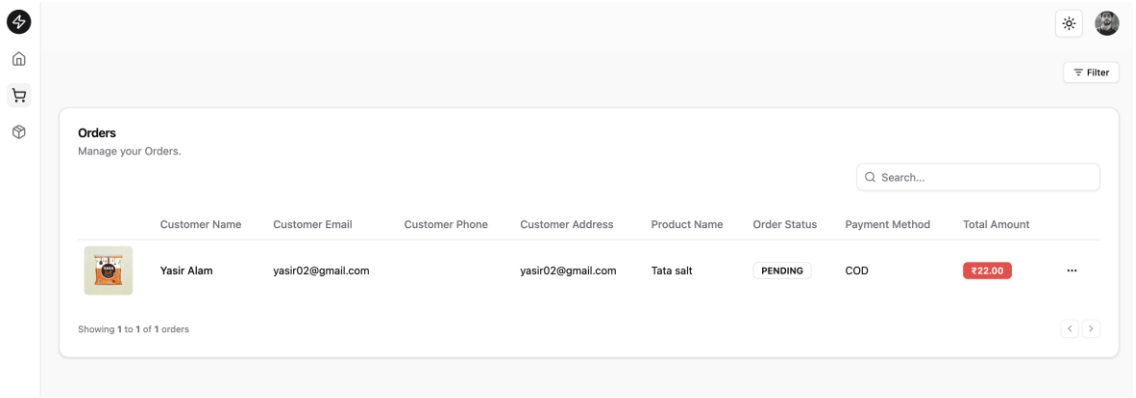

Figure 5.10 (Merchant Orders Page)

Displays the list of orders received by the merchant, including order details and statuses.

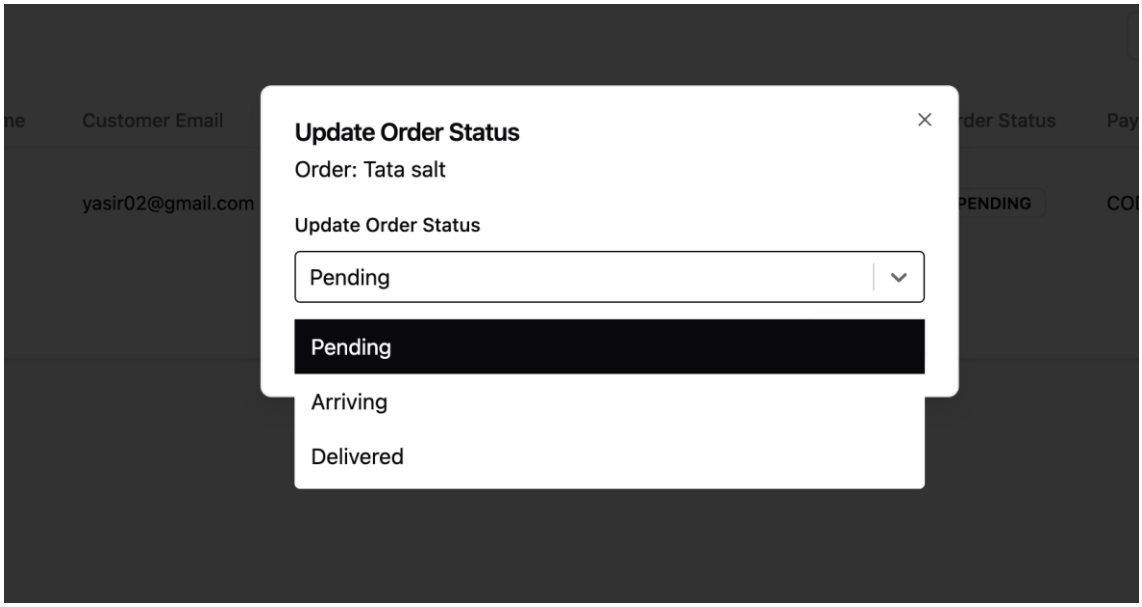

Figure 5.11 (Merchant Update Order Status Page)

Allows merchants to update the status of individual orders.

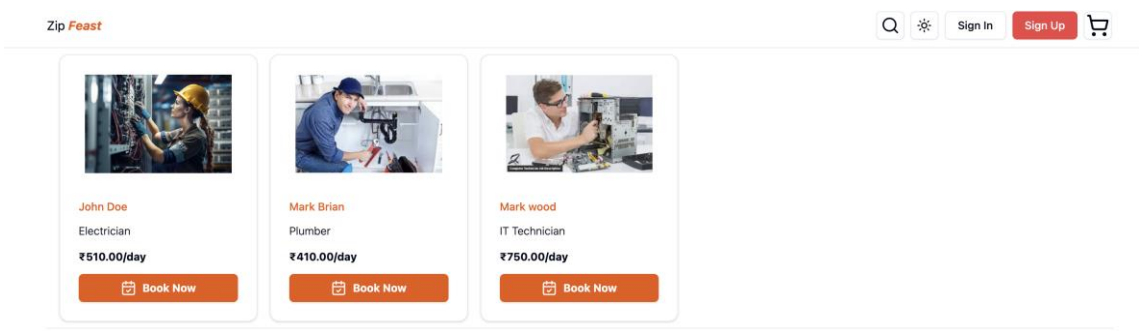

Figure 5.12 (Home Services Page)

Showcases the available home services and their details for users to browse and select.

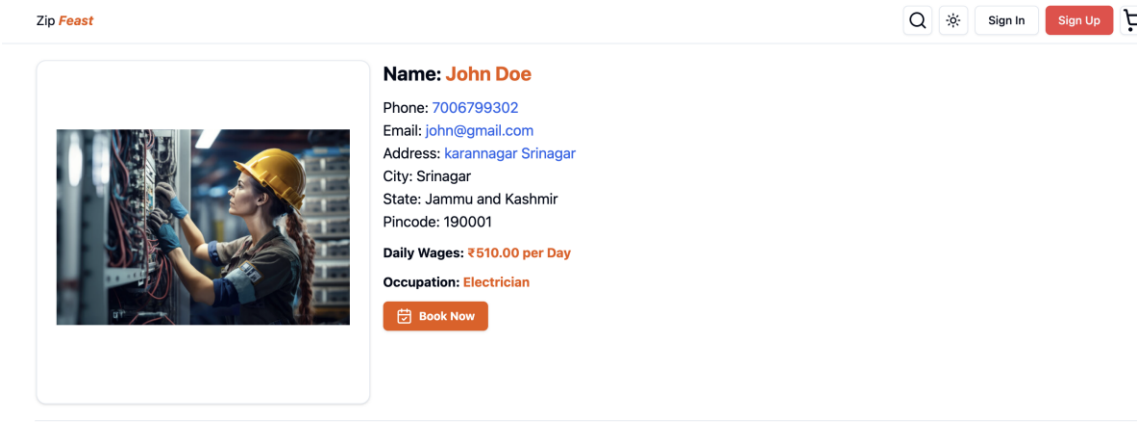

Figure 5.13 (Service Provider Profile)

Displays information about the service provider, including profile details and service offerings.

CHAPTER 6

ANDROID APP SHOWCASE

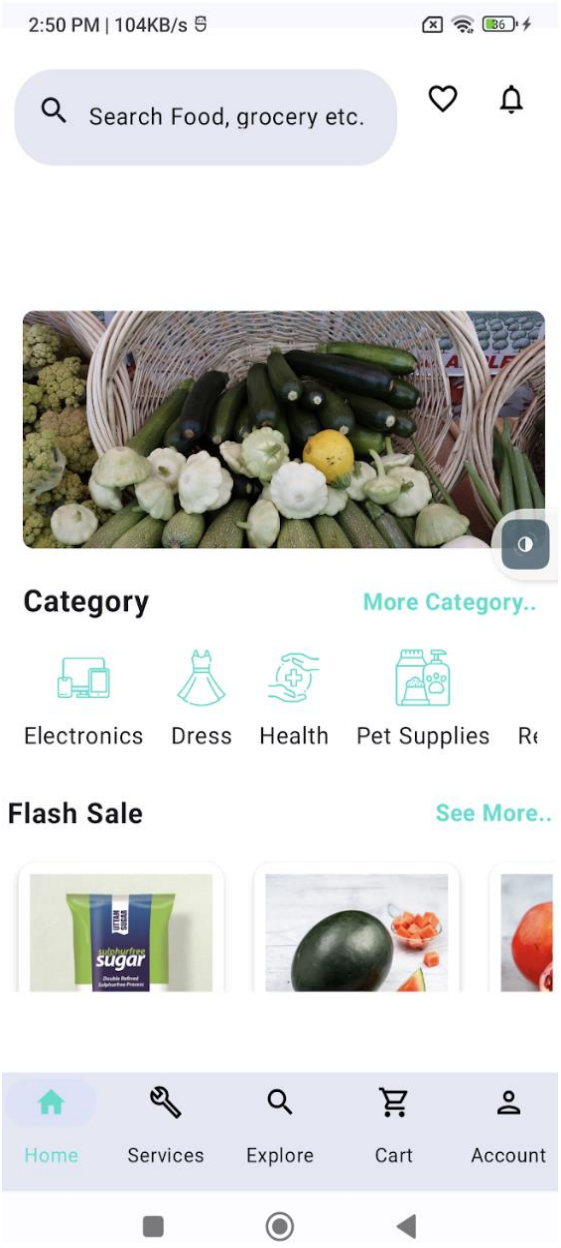

Figure 6.1 (Home Screen)

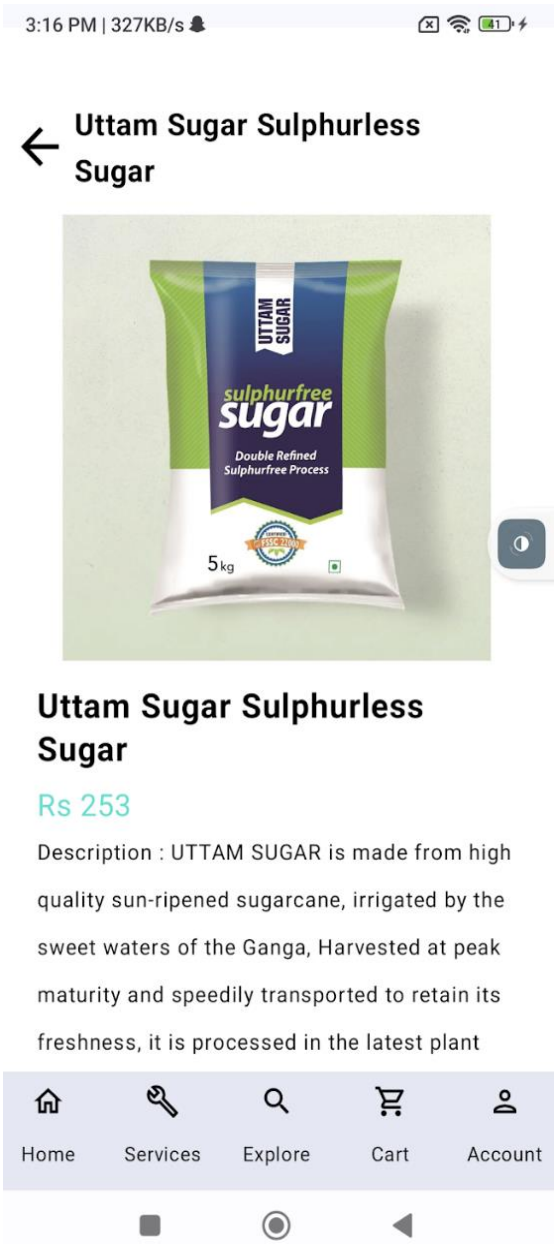

Figure 6.2 (Single Product Screen)

Home Screen - Shows the main interface with navigation and featured content.

Single Product Screen – Displays detailed information about a selected product, including images and specifications.

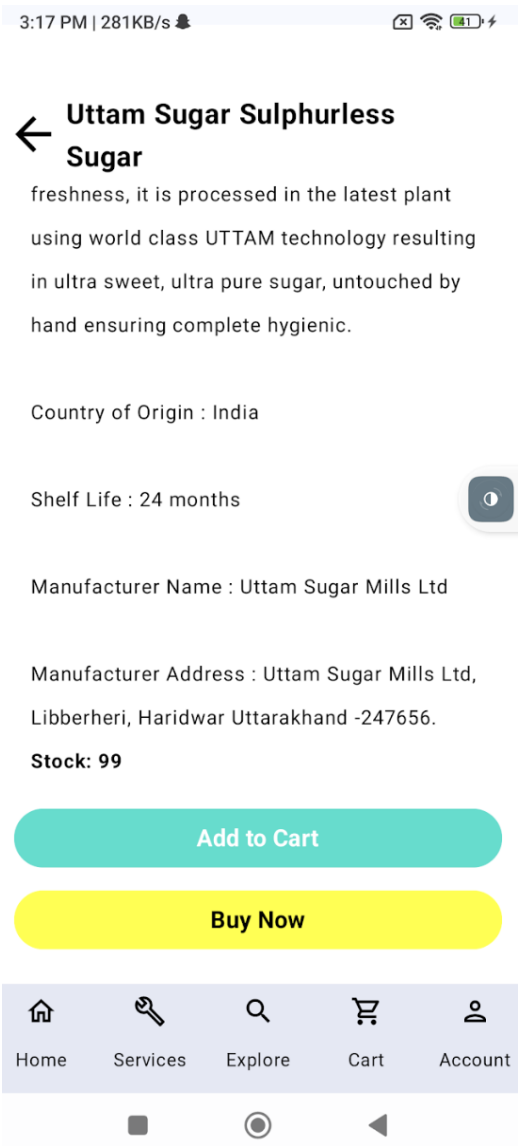

Figure 6.3 (Single Product Screen)

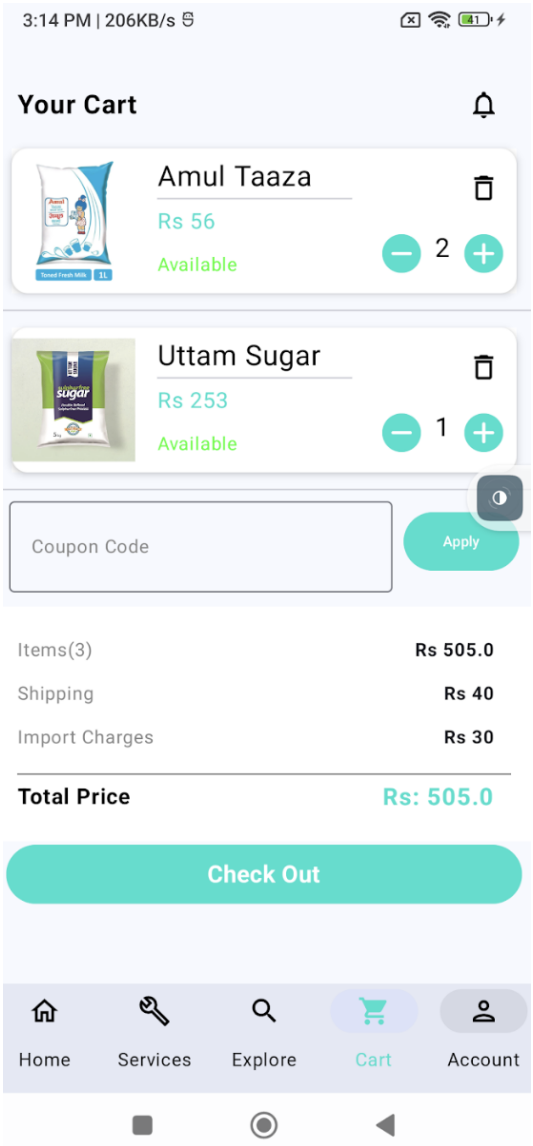

Figure 6.4 (Cart Screen)

Cart Screen – Presents the items added to the cart, along with options for checkout and item management.

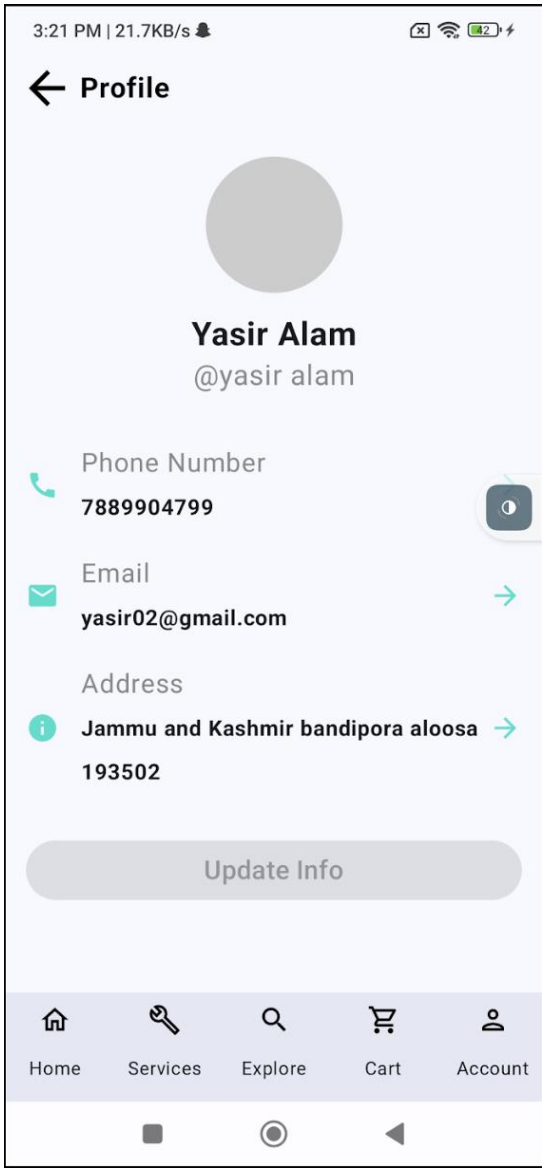

Figure 6.5 (Profile Screen)

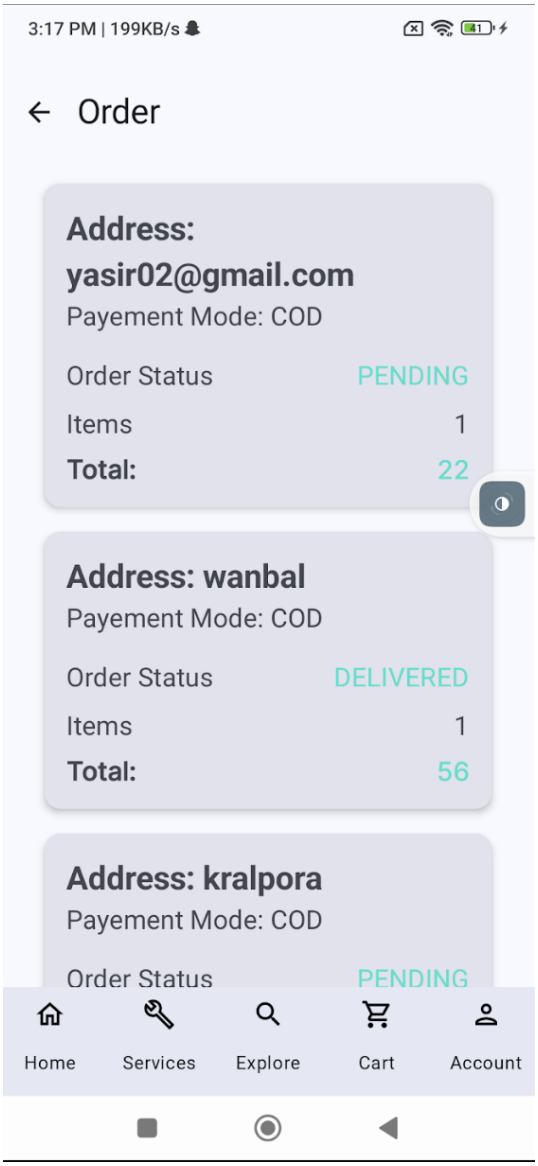

Figure 6.6 (Orders Screen)

Profile Screen – Shows user profile details and account settings.

Orders Screen – Displays a list of user orders with status and detail options.

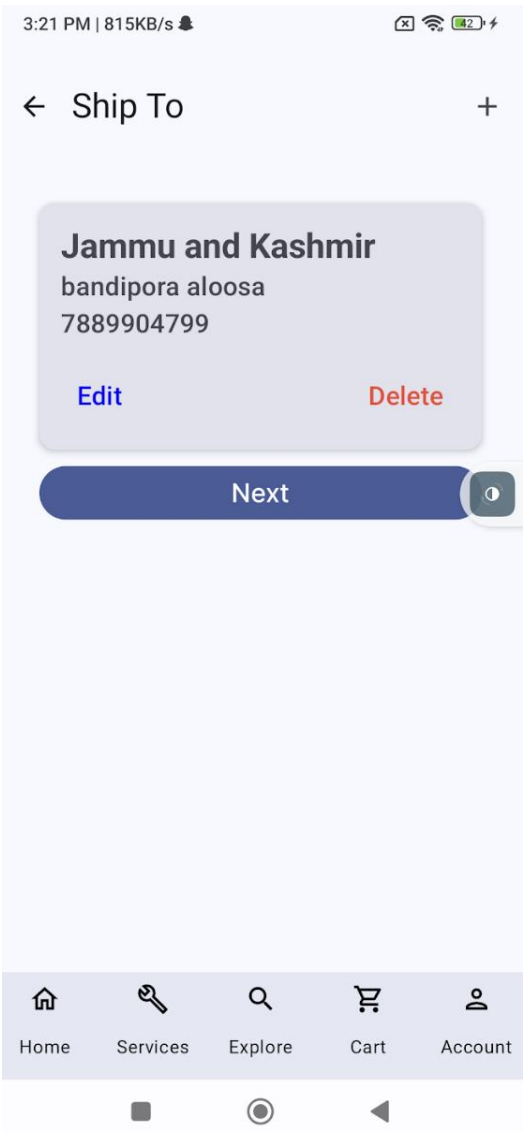

Figure 6.7 (Shipping Address Screen)

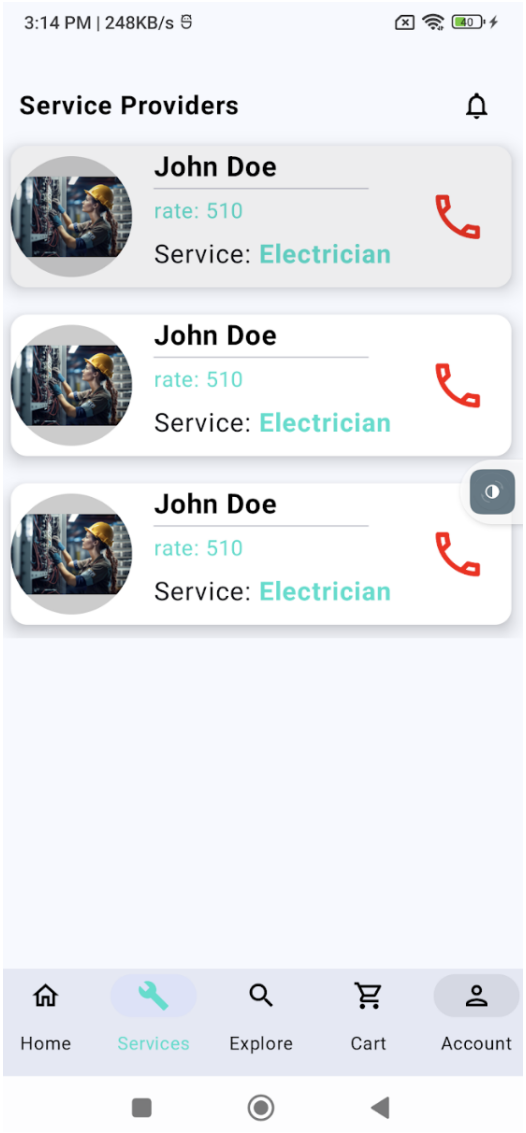

Figure 6.8 (Home Services Screen)

Shipping Address Screen – Allows users to enter and manage their shipping addresses.

Home Services Screen – Lists available home services for users to browse and request.

CHAPTER 7

SUMMARY AND CONCLUSIONS

Our project aimed to develop a comprehensive e-commerce platform specifically tailored for the grocery sector, leveraging successful models like Zomato, Swiggy, and Blinkit as sources of inspiration. The result is a robust and innovative solution that integrates modern technologies and methodologies to deliver an exceptional user experience for both merchants and customers.

We utilized Jetpack Compose UI for the mobile application to design visually appealing and intuitive user interfaces. This technology allowed us to implement responsive design principles, ensuring a seamless experience across a variety of device sizes and resolutions. The mobile app features real-time data integration, providing users with up-to-date information and smooth interactions. We optimized the user experience by incorporating smooth transitions, animations, and efficient navigation, enhancing overall satisfaction and usability.

For the web application, we employed React with Node.js and Prisma, which facilitated full-stack development. This approach enabled us to build a scalable and modular architecture using the Model-View-Controller (MVC) pattern, ensuring a clear separation of concerns and maintainability. React's capabilities allowed for streamlined server-side logic and routing, while Node.js provided a powerful backend environment. Prisma ORM was used for efficient database management, including model definitions and relationship management, ensuring seamless interaction between the application and database.

We also developed RESTful APIs to enable communication between the web and mobile applications. These APIs adhered to best practices in design and versioning, ensuring scalability and compatibility. Additionally, we implemented middleware to handle HTTP requests, focusing on authentication, authorization, and comprehensive security measures to protect against SQL injection, XSS, and CSRF attacks.

One of the notable features of our platform is the integration of home services such as carpentry, plumbing, and other essential services. This addition transforms the platform into a holistic solution that addresses a wide range of user needs beyond grocery shopping. Users can now access service listings, book appointments, and manage their service requests directly through the app. This integration was designed to be intuitive, with real-time updates and efficient management interfaces for both service providers and users.

In terms of security and reliability, we conducted thorough testing and validation processes to ensure the platform meets high standards. Our approach included unit testing, integration testing to verify the functionality, performance, and security of the platform. We implemented rigorous security measures to protect user data and ensure a safe shopping experience.

The project's success is attributed to our iterative development approach and commitment to continuous improvement. By incorporating user feedback and staying attuned to market trends, we were able to refine and enhance the platform throughout the development process. This adaptability ensures that the platform remains relevant and effective in meeting the evolving needs of modern consumers and merchants.

In conclusion, our project has achieved its goal of revolutionizing the grocery shopping and home service experience. By leveraging advanced technologies, integrating diverse services, and prioritizing user experience and security, we have created a comprehensive and user-friendly platform. We are dedicated to ongoing improvements and innovations to further enhance the platform and ensure it continues to meet the dynamic needs of its users.

CHAPTER 8

FUTURE WORK

As we look towards the future, several areas of development and enhancement are envisioned for the ZipFeast platform to ensure its continued growth and relevance:

6.1. Advanced Personalization and AI Integration

- *Enhanced Recommendations*: Implement more sophisticated AI and machine learning algorithms to provide even more personalized product and service recommendations based on user behaviour and preferences.
- *Predictive Analytics*: Develop predictive analytics capabilities to anticipate user needs and trends, improving inventory management and marketing strategies.

6.2. Expansion of Home Services

- *Additional Services*: Broaden the range of home services offered by including more categories and specialized services, catering to a wider audience.
- *Service Provider Network*: Strengthen partnerships with a diverse network of service providers to ensure high-quality and reliable service delivery.

6.3. User Experience Enhancements

- *Augmented Reality (AR)*: Explore the integration of AR to enhance the shopping experience, allowing users to visualize products in their own space or interact with home service offerings more effectively.
- *Voice and Chat Integration*: Incorporate voice and chat-based interfaces to facilitate easier navigation and support, providing users with more interactive and accessible ways to engage with the platform.

6.4. Global Expansion

- *Localization*: Adapt the platform for different regions by incorporating local languages, currencies, and regional preferences to support international growth.
- *Market Research*: Conduct detailed market research to identify opportunities and tailor the platform to meet the needs of users in various geographic locations.

6.5. Improved Security Measures

- *Advanced Threat Detection*: Implement advanced security features, such as machine learning-based threat detection and response systems, to safeguard against emerging security threats.
- *Data Privacy Enhancements* Enhance data privacy features to ensure compliance with international data protection regulations and build user trust.

6.6. Sustainability Initiatives

- *Eco-friendly Practices*: Integrate sustainability features, such as eco-friendly product options and carbon footprint tracking, to appeal to environmentally conscious consumers.
- *Partnerships for Sustainability*: Collaborate with partners who prioritize sustainable practices and offer products and services that align with green initiatives.

6.7. Mobile and Web App Optimization

- *Performance Tuning*: Continuously optimize the performance of both the mobile and web applications to improve speed, responsiveness, and overall user experience.
- *Cross-platform Features*: Enhance cross-platform functionalities to ensure a seamless experience between the mobile app and web app.

6.8. Community and Social Features

- *User Reviews and Ratings*: Implement enhanced review and rating systems to foster a community of feedback and trust among users and service providers.
- *Social Integration*: Explore social media integrations and community features to increase user engagement and platform visibility.

REFERENCES

[1] Jetpack Compose UI App Development Toolkit - Android Developers, *Android Developers*, 2024. https://developer.android.com/compose (accessed Aug. 04, 2024).

[2] *Android Developers*, 2024. https://developer.android.com/develop (accessed Aug. 04, 2024).

[3] React, *React.dev*, 2015. https://react.dev/ (accessed Aug. 04, 2024).

[4] Node.js — Run JavaScript Everywhere, *Nodejs.org*, 2024. https://nodejs.org/en (accessed Aug. 04, 2024).

[5] Prisma Documentation, *Prisma.io*, 2024. https://www.prisma.io/docs (accessed Aug. 04, 2024).

[6] Retrofit," *Github.io*, 2024. https://square.github.io/retrofit/ (accessed Aug. 04, 2024).

[7] MySQL :: MySQL Documentation, *Mysql.com*, 2024. https://dev.mysql.com/doc/ (accessed Aug. 04, 2024).

[8] ROOM, *Android Developers*, 2024. https://developer.android.com/training/data-storage/room (accessed Aug. 04, 2024).

[9] MVC - MDN Web Docs Glossary: Definitions of Web-related terms | MDN, *MDN Web Docs*, Dec. 20, 2023. https://developer.mozilla.org/en-US/docs/Glossary/MVC (accessed Aug. 04, 2024).

[10] *Shadcn-UI*, 2023. https://ui.shadcn.com/ (accessed Aug. 04, 2024).