“Cravy”

A Minor Project Report Submitted to

Rajiv Gandhi Proudyogiki Vishwavidyalaya

Towards Partial Fulfillment for the Award of

Bachelor of Technology
In
Computer Science & Information Technology

Submitted by:

Kuldeep Parmar (0827CI221078)

Nishit Jadiya (0827CI221098)

Piyush Wadhwa (0827CI221099)

Radhika Karma (0827CI221111)

Guided by:

Prof. Ashwinee Gadwal

Professor

CSIT Department

Acropolis Institute of Technology & Research, Indore
Jan- June 2025

DEPARTMENT OF COMPUTER SCIENCE & INFORMATION TECHNOLOGY

2022-2026

DECLARATION

I hereby declare that the work presented in this project, entitled **" Cravy- A Canteen Management Application "**, in partial fulfillment of the requirements for the award of the degree of **Bachelor of Technology in Computer Science and Information Technology**, is an authentic record of the work carried out by us.

Place: CSIT, Indore

Date:

Group Members:

Student Name: Kuldeep Parmar
Enrollment Number: 0827CI221078
Signature:

Student Name: Nishit Jadiya
Enrollment Number: 0827CI221098
Signature:

Student Name: Piyush Wadhwa
Enrollment Number: 0827CI221099
Signature:

Student Name: Radhika Karma
Enrollment Number: 0827CI221111
Signature:

DEPARTMENT OF COMPUTER SCIENCE & INFORMATION TECHNOLOGY

2022-2026

RECOMMENDATION

This is to certify that the work embodied in this project, entitled **“Cravy- A Canteen Management Application”**, submitted by **Kuldeep Parmar (0827CI221078), Nishit Jadiya (0827CI221098), Piyush Wadhwa (0827CI221099)** and **Radhika Karma (0827CI221111)**, is a satisfactory account of the bonafide work carried out under the supervision of **Prof. Nidhi Nigam and Prof. Ashwinee Gadwal.** This project is recommended for partial fulfillment of the requirements for the award of the degree of Bachelor of Technology in Computer Science& Information Technology by Rajiv Gandhi Proudyogiki Vishwavidyalaya, Bhopal.

Project Guide:
Prof. Ashwinee gadwal
Assistant Professor
CSIT Department

Project Coordinator:
Prof. Nidhi Nigam
Prof. Ashwinee Gadwal
CSIT Department

DEPARTMENT OF COMPUTER SCIENCE & INFORMATION TECHNOLOGY

2022-2026

CERTIFICATE

The Project entitled **“Cravy- A Canteen Management Application”** submitted by **Kuldeep Parmar (0827CI221078), Nishit Jadiya (0827CI221098), Piyush Wadhwa (0827CI221099)** and **Radhika Karma (0827CI221111)**, has been examined and is hereby approved towards partial fulfillment for the award of **Bachelor of Technology** in **Computer Science & Information Technology,** for which it has been submitted. It is understood that by this approval the undersigned do not necessarily endorse or approve any statement made, opinion expressed or conclusion drawn therein, but approve the project only for the purpose for which it has been submitted.

Internal Examiner:

Prof. Nidhi Nigam
Prof. Ashwinee Gadwal

Date:

DEPARTMENT OF COMPUTER SCIENCE & INFORMATION TECHNOLOGY

2022-2026

STUDENT UNDERTAKING

This is to certify that the project entitled **“Cravy- A Canteen Management Application”** has been developed by us under the supervision of **Prof. Nidhi Nigam and Prof. Ashwinee Gadwal**. The entire responsibility for the work done in this project lies with us. The sole intention of this work is for practical learning and research purposes only.

We further declare that to the best of our knowledge, this report does not contain any part of any work that has been submitted for the award of any degree, either in this University or in any other University/Deemed University, without proper citation. If any such instance is found, we are liable to provide an explanation for the same.

Kuldeep Parmar	Nishit Jadiya	Piyush Wadhwa	Radhika Karma
(0827CI221078)	(0827CI221098)	(0827CI221099)	(0827CI221111)

Date:

DEPARTMENT OF COMPUTER SCIENCE & INFORMATION TECHNOLOGY

2022-2026
ACKNOWLEDGEMENT

We thank the almighty Lord for giving us the strength and courage to overcome challenges and successfully complete this project.

We owe a deep sense of gratitude, reverence, and respect to our mentor, **Prof. Nidhi Nigam and Prof. Ashwinee Gadwal** CSIT Department, AITR, Indore, for their motivation, sagacious guidance, constant encouragement, vigilant supervision, and valuable critical appreciation throughout this project. Their support has been instrumental in helping us complete the project on time.

We express our profound gratitude and heartfelt thanks to **Dr. Shilpa Bhalerao**, HOD CSIT, AITR Indore, for her unwavering support, insightful suggestions, and inspiration in carrying out this project. We would also like to acknowledge the guidance received from **Prof. (Dr.) S. C. Sharma**, Director, AITR, Indore, whose advice and assistance were invaluable whenever needed.

We take this opportunity to convey our sincere regards to the Management of **Acropolis Institute of Technology and Research**, Indore, for extending academic and administrative support and providing all necessary facilities to help us achieve our objectives.

Finally, we are deeply grateful to our parents and family members for their unconditional love, support, and encouragement throughout the course of this project.

Kuldeep Parmar	Nishit Jadiya	Piyush Wadhwa	Radhika Karma
(0827CI221078)	(0827CI221098)	(0827CI221099)	(0827CI221111)

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF ABBREVIATIONS

Abbreviations

Abbr1: CMS – Canteen Management System

Abbr2: UI – User Interface

Abbr3: API – Application Programming Interface

Abbr4: GPS – Global Positioning System

Abbr5: OTP – One Time Password

Abbr6: POS – Point of Sale

Abbr7: DB – Database

Abbr8: QR – Quick Response

Abbr9: NFC – Near Field Communication

Abbr10: SSL – Secure Sockets Layer

ABSTRACT

The Canteen Management App is an innovative solution designed to optimize the functioning of canteens in educational institutions, offices, and other similar environments.This app provides a seamless and user-friendly platform for both customers and staff, making the ordering process more efficient and reducing operational complexities.Users can browse the menu, customize their food orders, view prices, and complete transactions through various secure payment options, all from the convenience of their smartphones.The app ensures that customers are kept updated on the status of their orders, while also offering features like order history and real-time tracking.For canteen staff, the app offers an admin panel where they can manage the menu, add or update items, set prices, and monitor inventory levels. It also enables staff to process orders, track sales, and generate reports. Furthermore, the integration of secure payment gateways ensures that users can make cashless transactions, contributing to a smoother and safer payment experience.Push notifications are also employed to keep customers informed about the status of their orders, menu changes, or promotional offers. Overall, the Canteen Management App enhances the efficiency of food services, reduces wait times, and provides a convenient, reliable, and modern approach to managing canteen operations.

CHAPTER 1

Chapter 1: Introduction

1.1 Overview

The project titled "Smart Canteen Management System" aims to digitalize and streamline the functioning of college canteens by replacing traditional manual processes with a modern, tech- enabled platform. The system allows students and faculty to scan a QR code to access the digital menu, place orders, and track their food status in real-time, reducing wait times and staff dependency. It includes a preorder feature to help users schedule meals during peak hours, ensuring faster service. For canteen administrators, the system provides tools to monitor stock, track orders, and analyze sales data. Additionally, a food waste notification module connects with nearby NGOs to distribute leftover food, promoting sustainability. This system enhances operational efficiency, reduces food waste, and improves the overall user experience in institutional canteens.

1.2 Existing System

Most existing solutions in college canteens are either entirely manual or only partially digital, often focusing on isolated tasks such as billing or menu display. Basic POS systems used in some canteens may handle payments but lack integration with real-time order tracking or inventory updates. QR-based menus, where available, typically allow only digital viewing of food items without enabling direct ordering or providing data analytics. Advanced features like preorder scheduling, live kitchen status updates, or insights into peak hours and popular dishes are generally missing. Moreover, current systems do not address the issue of leftover food, which often goes to waste due to the absence of a redistribution mechanism. The proposed **Smart Canteen Management System** bridges these gaps by offering an all-in-one solution— QR-based self-ordering, live order tracking, preorder functionality, inventory monitoring, and a food waste alert system for notifying nearby NGOs. This makes it a cost-effective, scalable, and sustainable platform tailored to institutional canteen needs.

1.3 Problem Statement

Traditional canteen operations in educational institutions often suffer from delays, inaccuracies, and inefficiencies due to manual order processing, especially during rush hours. Canteen staff are frequently overwhelmed, leading to long queues, order mistakes, and dissatisfied students. Additionally, managers lack real-time visibility into sales, peak hours, and inventory levels, making it difficult to make informed decisions. The absence of a preorder option further limits flexibility for students or staff who wish to schedule their meals in advance between classes. Moreover, surplus food is often discarded due to the absence of a structured mechanism to notify NGOs, resulting in unnecessary food waste and missed opportunities to support community welfare. These issues highlight the need for an integrated digital system that streamlines canteen operations, enhances service efficiency, supports advance ordering, and promotes food redistribution.

1.4Proposed System

The proposed system is a **QR-based smart canteen management platform** designed to simplify operations and introduce modern conveniences. Users can scan a QR code at the counter or table to access a digital menu, customize meals, and place orders directly from their mobile devices—reducing dependence on canteen staff and minimizing errors. A management dashboard offers live tracking of orders, sales data, and customer activity, enabling better planning and inventory control. The system includes a food waste notification feature that alerts nearby NGOs about excess food, allowing for timely redistribution and reducing waste. Key features include:

- Role-based access for Admin, Staff, Users, and NGOs
- Secure authentication and encrypted user data
- Preorder capability with time-slot selection
- Real-time analytics for peak hours and food item trends

1.5 Need and Scope

Canteens require digital transformation to overcome the inefficiencies of manual processes. Today’s users expect fast, contactless, and convenient service, while canteen administrators seek real-time control and actionable insights. Legacy systems lead to delays, errors, and food wastage, all of which affect operational efficiency and sustainability.

Scope of the project includes:

- QR-based digital self-ordering
- Live dashboards for staff and admin management
- Scheduled preordering for dine-in or pickup
- Secure login and role-based functionality
- NGO alerts for food redistribution
- Analytics for smarter decision-making
- This system improves the user experience, reduces operational stress, supports eco- friendly practices, and encourages community service—all within a scalable and user- friendly framework suitable for institutional canteens.

1.6 Report Organization

This report is structured as follows:

- **Chapter 1 – Introduction**: Gives a complete overview of the problem, existing systems, proposed solution, and its scope.

- **Chapter 2 – Literature Survey**: Reviews current systems, technologies, and the rationale behind selected tools and methods.

- **Chapter 3 – System Analysis**: Explores technical, operational, and economic feasibility, as well as functional requirements.

- **Chapter 4 – System Design**: Includes system architecture, data flow diagrams, ER models, and UML diagrams.

- **Chapter 5 – Implementation**: Describes the coding structure, development technologies, and system integration.

- **Chapter 6 – Testing**: Details the test strategies, test cases, and validation processes.

- **Chapter 7 – Conclusion and Future Work**: Summarizes project achievements and outlines enhancements for future versions.

- **References**: Lists all the materials, websites, and academic sources referred to during development.

CHAPTER 2

Chapter 2: Literature Survey

2.1 Study

The growing complexity of modern canteen operations in educational institutions has created a significant demand for tailored software systems that simplify daily workflows, enhance user experience, and support informed administrative decisions. Manual operations like handwritten orders, verbal instructions between staff and kitchen, and basic inventory logs are no longer efficient to handle the fast-paced environment, especially during peak hours.

Addressing these problems requires a centralized, intelligent platform that automates key functions. Analysis of institutional canteen routines shows that such automation must focus not only on efficiency but also on improving service speed, accuracy, and minimizing food wastage. The proposed smart canteen system answers this need by allowing digital order placement through QR codes, real-time sales tracking, scheduled preorder options, and food waste reporting to NGOs for redistribution.

By transitioning from manual to digital operations, the system reduces human error, improves service delivery, and gives real-time insight to administrators. It also supports social impact by notifying NGOs of excess food and provides flexibility through advance order booking. This blend of operational optimization and social responsibility makes the system ideal for institutional canteens.

2.2 Problem Methodology

This project introduces a smart canteen management system that automates ordering and backend operations using web technologies. Users can scan QR codes from their mobile devices to view digital menus and place orders directly, which are then sent to the kitchen in real-time. The system also includes a menu management module and a live analytics dashboard for administrators to track sales, user behavior, and item popularity.

The preorder feature allows users to schedule meals for future times, avoiding queues and delays. A key functionality is food waste management through NGO integration. When surplus food is available, staff can trigger alerts, notifying partner NGOs for timely pickups and redistribution.

Security is ensured via encrypted data transfer, role-based access control, and secure login mechanisms. Overall, the system improves canteen efficiency, enhances customer satisfaction, and supports sustainability through waste reduction.

2.3 Software Engineering Paradigm

1. **Agile Development**: Enables flexibility and adaptation through short development cycles.
2. **Iterative Development**: Breaks the project into manageable sprints such as QR order placement, NGO integration, and preorder scheduling.
3. **Stakeholder Involvement**: Regular input from students, staff, and NGOs ensures relevant

feature inclusion.

4. **Continuous Testing**: Each module is tested incrementally to ensure quality and reliability.
5. **Dynamic Requirements Handling**: Agile facilitates adjustments based on feedback or changing needs.
6. **Timely Delivery**: Encourages collaborative efforts and continuous improvement for on-time project completion.

2.4 Software Development Life Cycle

- **Requirement Analysis**: Collected data from canteen staff, students, and NGOs to identify essential features like QR ordering, real-time tracking, and food donation support.

- **Design Phase**: Created modular and scalable architecture with dedicated interfaces for students, staff, and NGOs. Tools like ER diagrams and UML were used. Tech stack includes React.js, Node.js, and MySQL.

- **Implementation Phase**: Developed modules for QR scanning, order processing, analytics, and NGO alerts. Integrated APIs and secured access levels.

- **Testing Phase**: Conducted rigorous testing including unit, integration, and system-level validation. Addressed usability issues based on feedback.

- **Deployment Phase**: Deployed the system within the institution's network, trained users, and ensured cross-device compatibility.

- **Maintenance Phase**: Continuously monitored performance and implemented updates for improvements and bug fixes.

2.5 Technology Methodology

2.5.1 Hardware Requirements:

The used hardware for development of application system:

2.5.1.1 RAM: 16 GB

2.5.1.2 Processor: i5 8th generation

2.5.2 Software Requirements:

The required software for development environment:

- **Operating System**: Windows 11 Pro

- **Mobile Framework**: Flutter (version 3.16.0) for cross-platform mobile application development

- **Backend & Database**: Firebase
  - Firebase Authentication for secure login
  - Cloud Firestore for real-time NoSQL database
  - Firebase Cloud Messaging for notifications
  - Firebase Hosting and Firebase Functions for backend logic

- **IDE**: Android Studio (version 2023.1.1) or Visual Studio Code

- **Other Tools**: QR code generation libraries, Firebase CLI for deployment

Flutter is an open-source UI software development toolkit created by Google. It is used for building natively compiled applications for mobile, web, and desktop from a single codebase.

Flutter Features:

- Hot Reload for faster development
- Single codebase for Android and iOS
- Customizable widgets
- High performance through native compilation

Advantages of Flutter:

- Cross-platform compatibility
- Rich set of pre-built and customizable widgets
- Strong community and documentation
- Easy integration with Firebase

Firebase is a platform developed by Google for creating mobile and web applications.

Firebase Features:

- Real-time database (Cloud Firestore)
- User authentication
- Hosting and serverless backend via Cloud Functions
- Push notifications via Firebase Cloud Messaging

Advantages of Firebase:

- Real-time data sync across devices
- Secure and scalable cloud backend
- Simplified user authentication
- Integration with Flutter for seamless development

CHAPTER 3

Chapter 3: Analysis

3.1 Identification of System Requirements

System requirements are the specifications at the system level that describe the functions and constraints necessary to fulfill the user's needs. These include both functional and non-functional requirements and ensure that the system is safe, secure, reliable, and meets stakeholder expectations.

Key roles of system requirements:

- Serve as the foundation for architecture and design activities.
- Guide system integration and testing phases.
- Act as benchmarks for validation and user acceptance.
- Enable communication across developers, testers, and stakeholders.

System requirements evolve iteratively and achieve completeness only when validated through traceability with all other system components.

3.2 Functional Requirements

To implement the smart canteen system efficiently using Flutter and Firebase, the following functional requirements are identified:

1. **User Authentication & Roles**: Firebase Authentication for secure login with defined roles (student, staff, admin).
2. **QR Code Integration**: Each table or access point features a unique QR code linking to the digital menu.
3. **Digital Menu System**: Real-time, categorized menu managed via Firebase Firestore, including item descriptions and availability.
4. **Order Placement & Processing**: Orders placed through the Flutter app are instantly updated in the Firebase database and kitchen display module.
5. **Order Tracking**: Live order status updates using Firebase Cloud Messaging (FCM).
6. **Preorder Feature**: Users can schedule food orders in advance.
7. **Digital Payments**: Integration with payment gateways (e.g., Razorpay or UPI) and COD options.
8. **Sales Dashboard**: Real-time analytics for admins using Firebase Firestore data and visualization tools.
9. **Food Waste Management**: Staff can log surplus food and notify NGOs via push notifications or alerts in the system.

3.3 Non-Functional Requirement

1. **Scalability**: Easily extendable for multiple canteens or institutions.
2. **Security**: Firebase Authentication, Firestore rules, and encrypted communications.
3. **Performance**: Fast app response and real-time syncing using Firebase SDK.
4. **Usability**: Simple, intuitive Flutter UI for both customers and canteen staff.
5. **Reliability**: Cloud-hosted backend with minimal downtime.
6. **Availability**: 24/7 access with offline capabilities for menu viewing.

7. **Maintainability**: Modular codebase in Flutter and well-documented Firebase functions for future upgrades.

3.4 Feasibility Study

3.4.1 Technical Feasibility

The system is technically feasible with the following configuration:

- **Client Devices**: Smartphones with Android/iOS (min. 3GB RAM)
- **Development Tools**: Flutter (3.16.0), Firebase, Android Studio or VS Code
- **Backend**: Firebase Firestore, Firebase Authentication, Cloud Functions, Firebase Hosting
- **Additional Tools**: QR code scanners, kitchen display unit (tablet/PC)
- **Security**: SSL, RBAC, Firebase rules, FCM for notifications
- **Team Skills**: Proficiency in Flutter, Dart, Firebase integration, basic backend scripting

3.4.2 Financial Feasibility

Estimated initial budget:

- **Hardware Setup**: ₹60,000 to ₹75,000
- **App & Backend Development**: ₹90,000 to ₹120,000
- **Deployment & Cloud Services**: ₹30,000 to ₹50,000 annually

Benefits:

- Reduces manual workload
- Saves on printing and paper
- Reduces food waste through better forecasting
- Improves operational efficiency
- Offers quick ROI within 1.5 to 2 years through labor savings and increased satisfaction

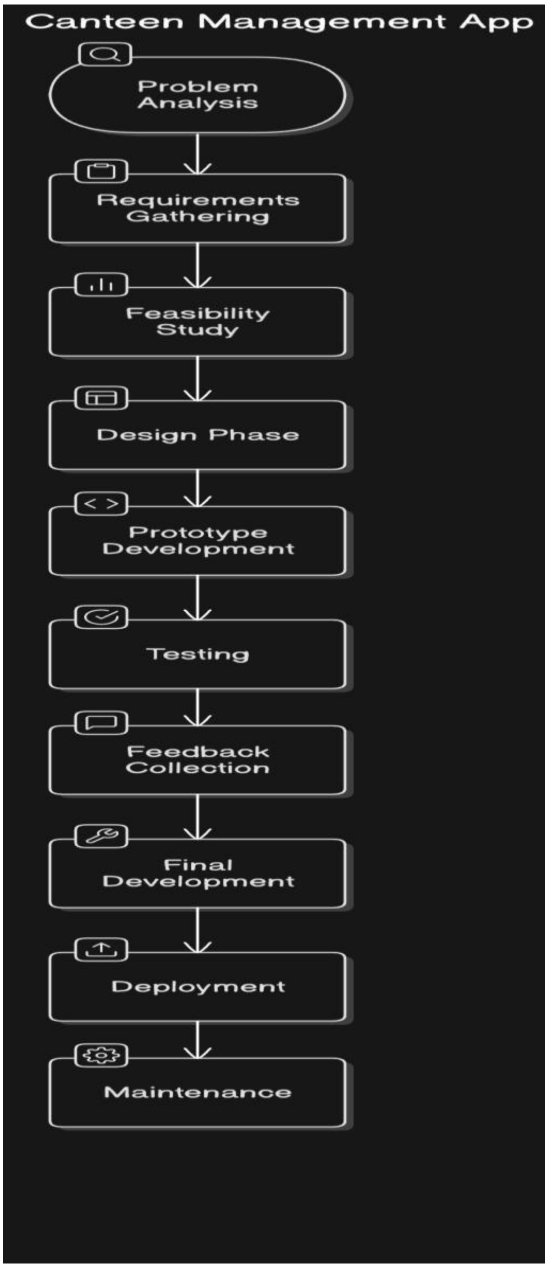
3.4.3 Operational Feasibility

The system is easy to operate with role-based access and minimal training. Staff and users interact through intuitive mobile interfaces. Orders, menu updates, and notifications happen in real time. Admins receive reports for data-driven decisions. NGO coordination is seamless, and data security is upheld through Firebase. The app adapts well to various screen sizes and offers scalability for future enhancements.

CHAPTER 4

Chapter 4: Project Planning

Project planning for the Smart Canteen Management System involves a structured, phased approach spread over 38 weeks, ensuring systematic development and delivery. The planning starts with gathering requirements, defining user roles, designing the database schema, and finalizing the technology stack, followed by wireframing and UI planning. Each subsequent module focuses on building and integrating specific features such as staff dashboards, QR code-based menu access, order management, user payment flows, NGO alerts for food waste, and customer feedback systems. Additional modules include advanced functionalities like preorder features, sales analytics, and role-based access control. The plan also allocates time for testing, bug fixing, and quality assurance across devices and browsers. By breaking the project into clearly defined weekly goals, this planning ensures timely progress, minimizes risks, and delivers a cohesive and fully functional canteen management platform.



CHAPTER 5

Chapter 5: Design

5.1 Introduction to UML

Unified modelling language (UML) is a general purpose modelling language. The main aim of UML is define a standard way to visualize the way a system has been designed. It is quite similar to blueprints used in other fields of engineering.

UML is not a programming language; it is rather a visual language. We use UML diagrams to portray the behaviour and structure of system. UML helps software engineers, businessmen and system architects with modelling, design and analysis.

5.2 UML Diagrams

Complex applications need collaboration and planning from multiple teams and hence require a clear and concise way to communicate amongst them.

Businessmen do not understand code, so UML becomes essential to communicate with non-programmers essential requirements, functionalities and processes of the system.

A lot of time is saved down the line when teams are able to visualize processes user interactions and static structure of the system.

UML is linked with object oriented design and analysis. UML makes the use of elements and from associations between them to form diagram. Diagram in UML can be broadly classified as:

Structural Diagrams: Capture static aspects or structure of a system. Structural Diagrams include: Component Diagrams, Objects Diagram, Class Diagrams and Deployment Diagrams.

Behaviour Diagram: Capture dynamic aspects or behaviour of the system. Behaviours diagram include: Use Case Diagram , State Diagram, Activity Diagram and Interaction Diagram.

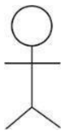
5.2.1 Use Case Diagram

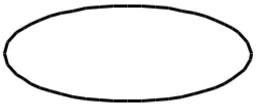
The purpose of a use case diagram in UML is to demonstrate the different ways that a user might interact with a system. Use case diagrams consist of 3 objects.

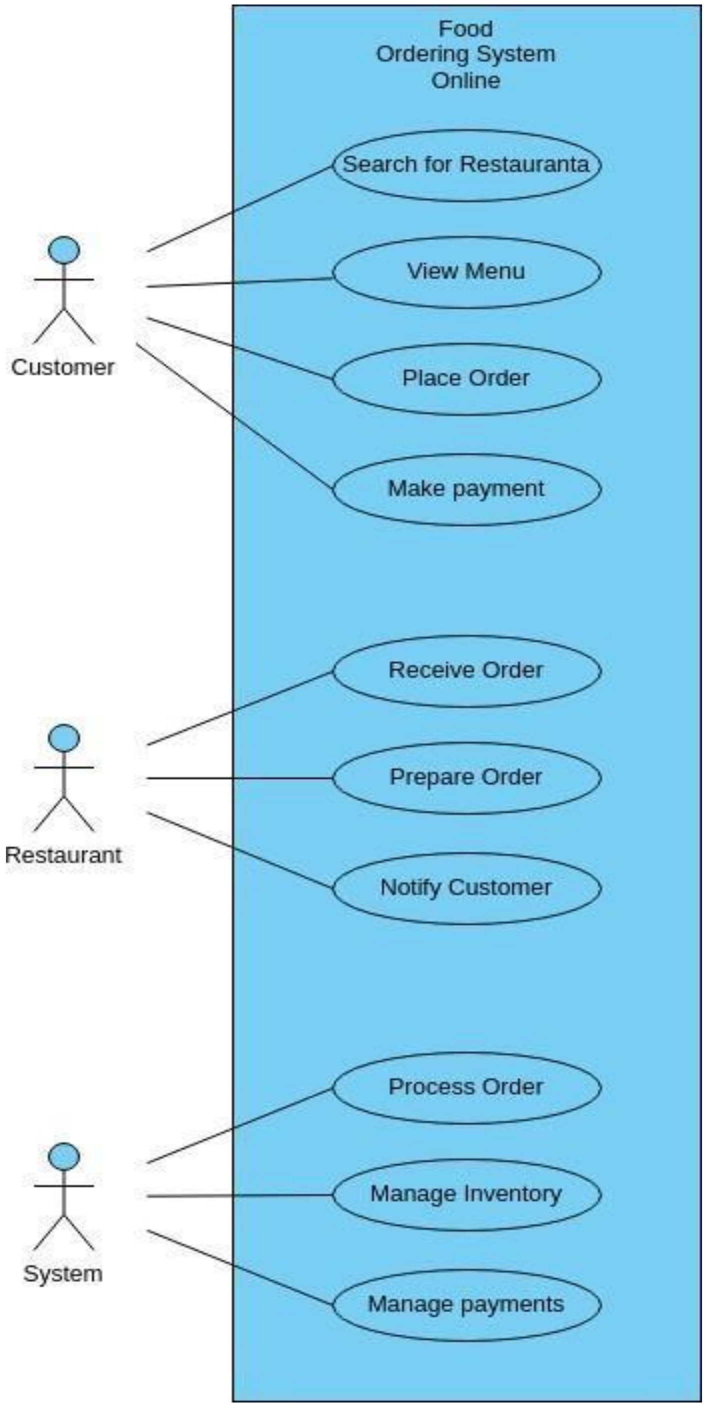
Actor: Actor in a use case diagram is any entity that performs a role in one given system. This could be a person, organization or an external system and usually drawn like skeleton.

Use Case: A use case represents a function or an action within the system. It’s drawn as an oval and name with the function.

System: The system is used to define the scope of the use case and drawn as a rectangle. This an optional element but useful when you’re visualizing large systems.







5.2.2 Class Diagram

The class diagram is the main building block of object-oriented modeling. It is used for general conceptual modeling of the structure of the application. A class diagram in the Unified Modeling Language (UML) is a type of static structure diagram that describes the structure of a system by showing the system's:

- classes,
- their attributes,
- operations (or methods),
- And the relationships among objects.

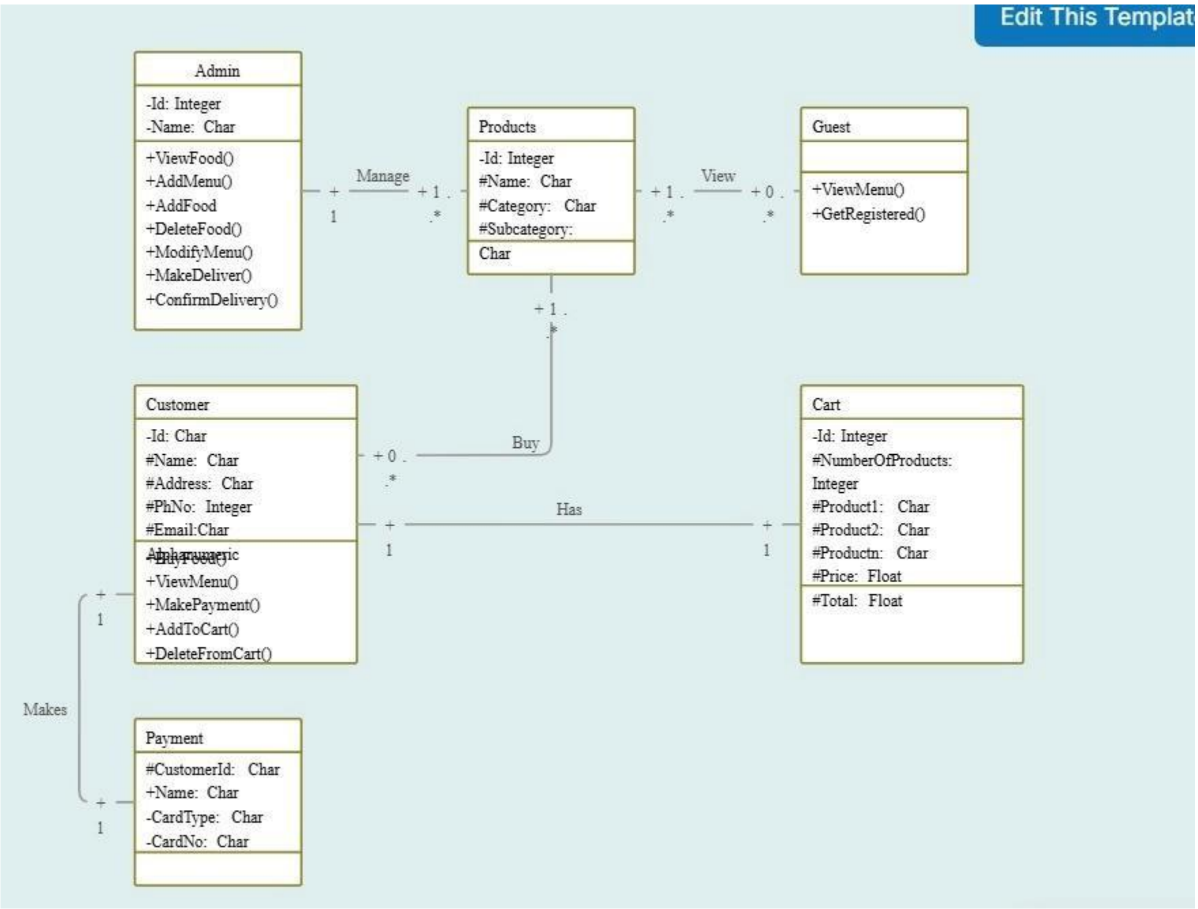


Figure 5.2: Class Diagram

5.2.3 Sequence Diagram

A sequence diagram is a type of interaction diagram because it describe how-and in what order- a group of objects works together.

Sequence diagram are sometimes known as an event diagrams or event scenarios.Sequence diagram are time focus.

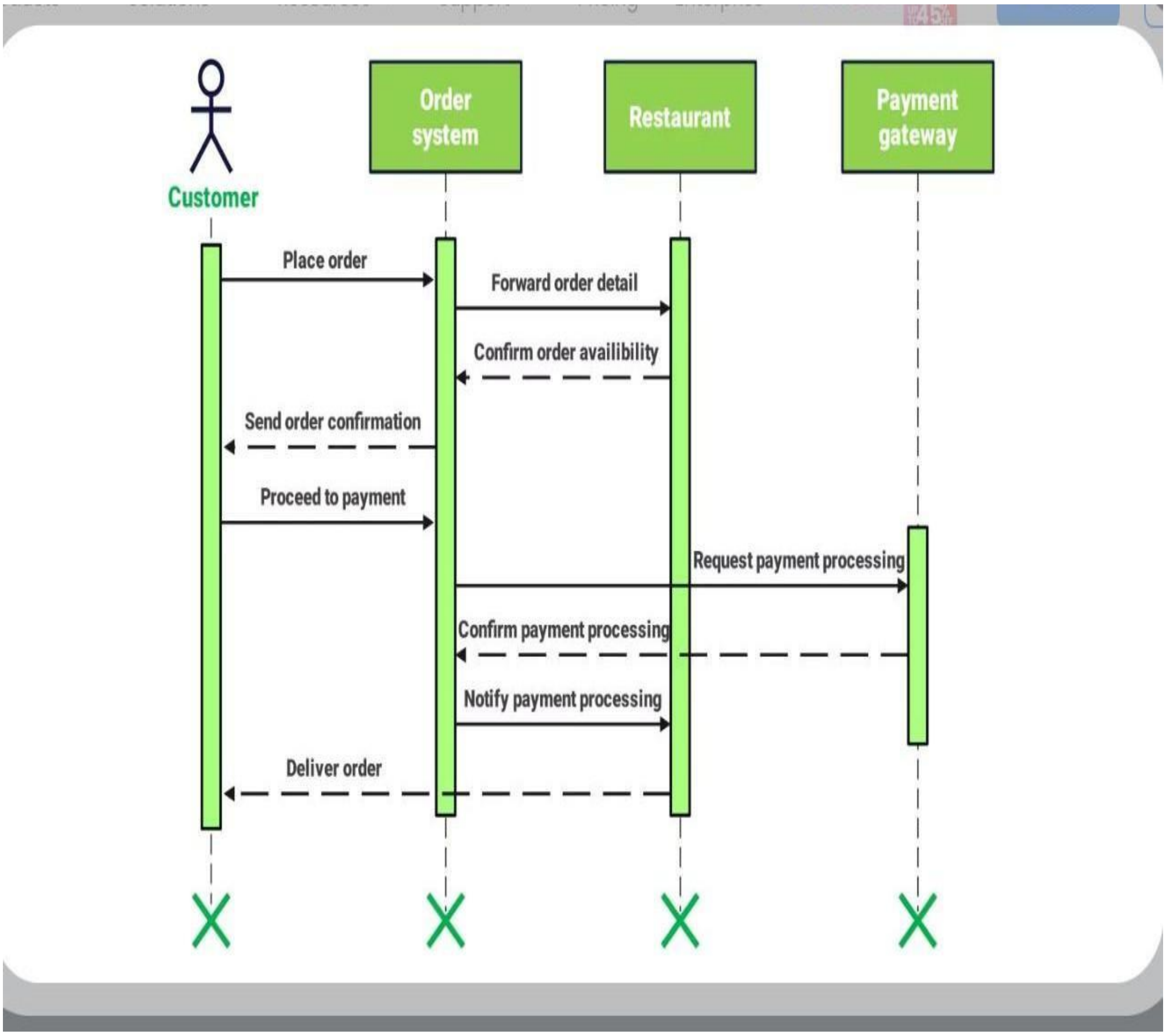


Figure 5.3: Sequence Diagram

5.2.4 ER Diagram

ER Diagram is a visual representation of data that describes how data is related to each other. In ER Model, we disintegrate data into entities, attributes and setup relationships between entities, all this can be represented visually using the ER diagram. ER Diagrams contain different symbols that use rectangles to represent entities, ovals to define attributes and diamond shapes to represent relationships.

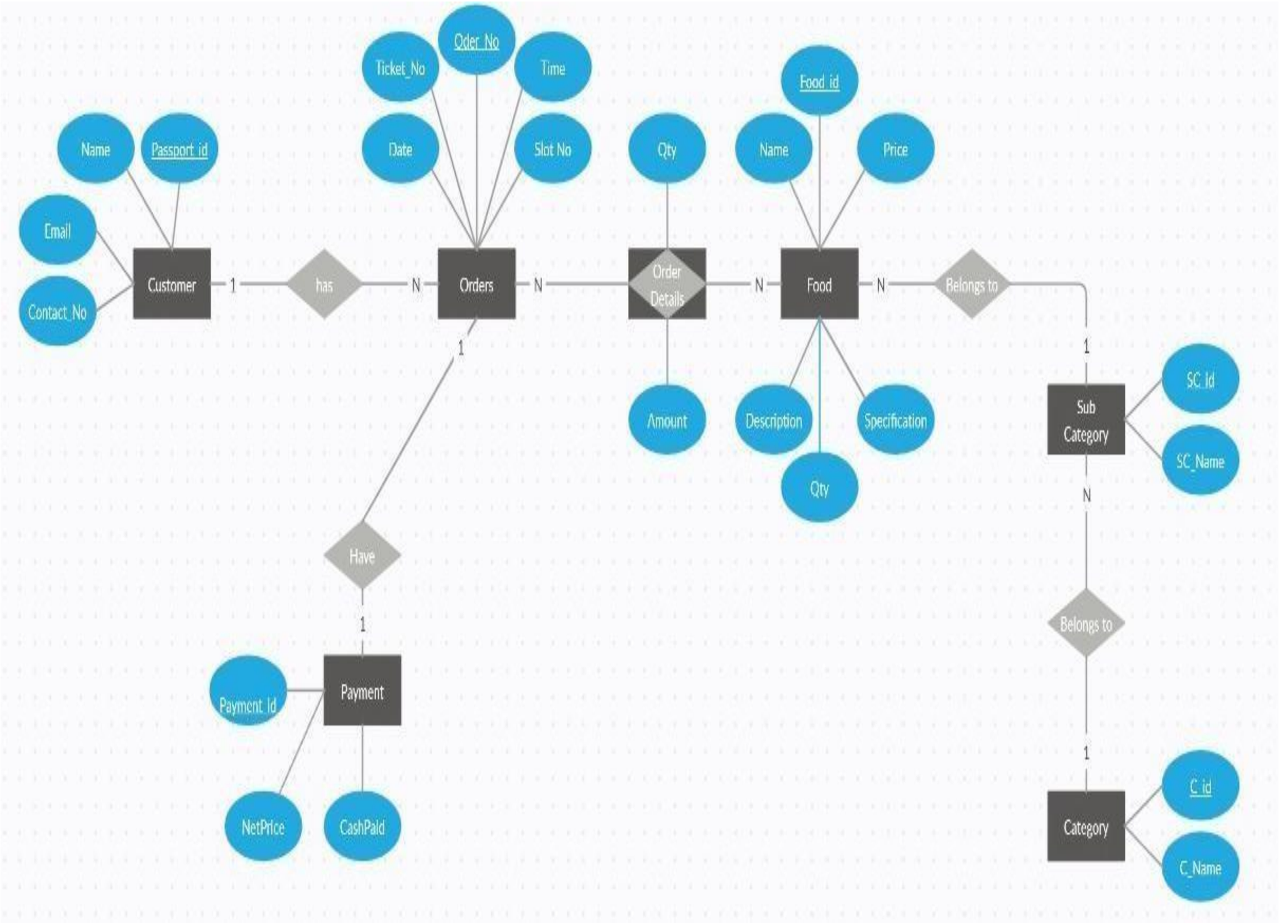


Figure 5.4: ER Diagram

5.2.5 Activity Diagram

An activity diagram portrays the control flow from a start point to finish point showing various decision paths that exist while the activity is being executed.

An activity diagram focuses on condition of flow and the sequence in which it happens. An activity diagram is a behavioral diagram i.e. it depicts the behavioral of a system.

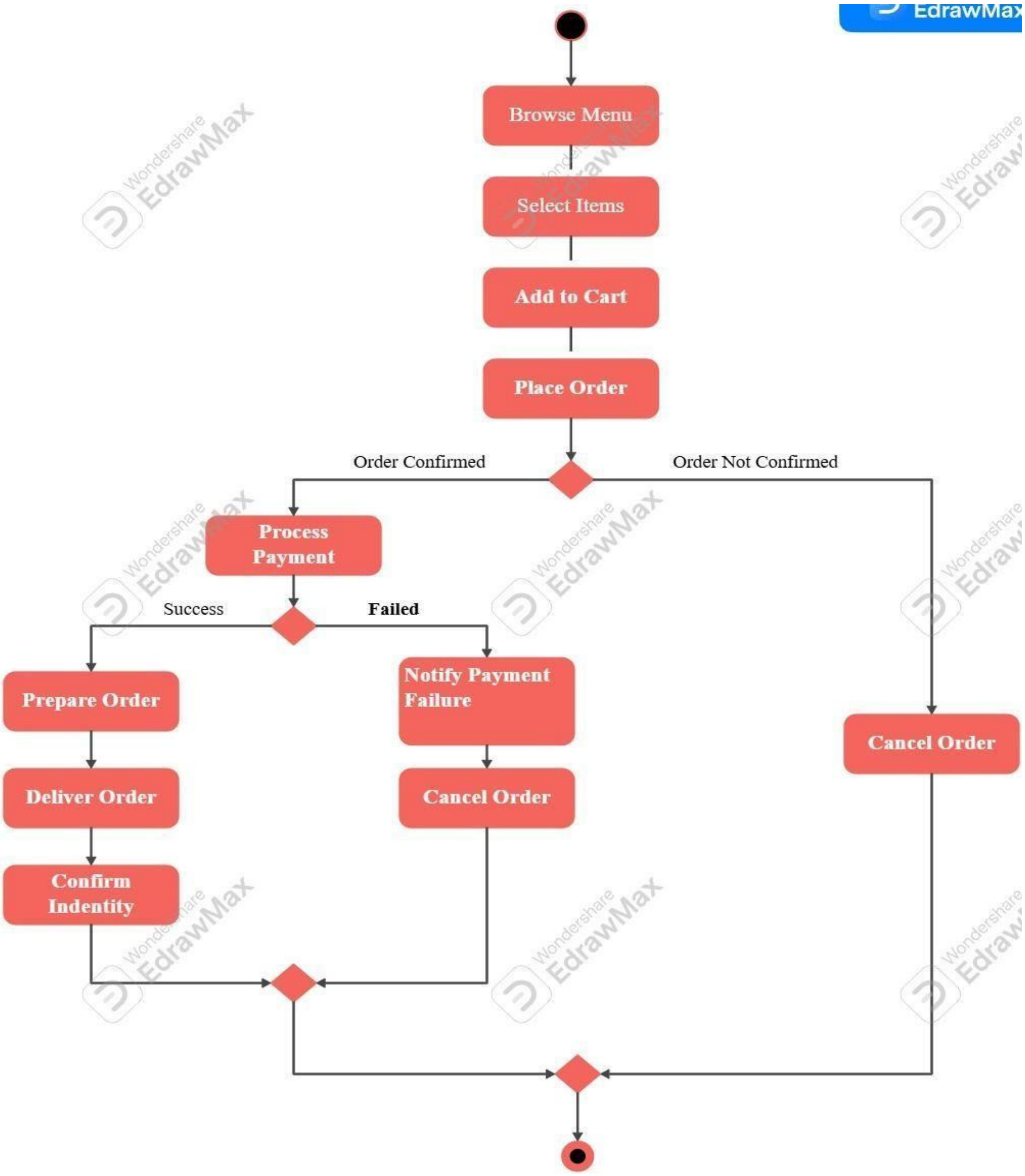


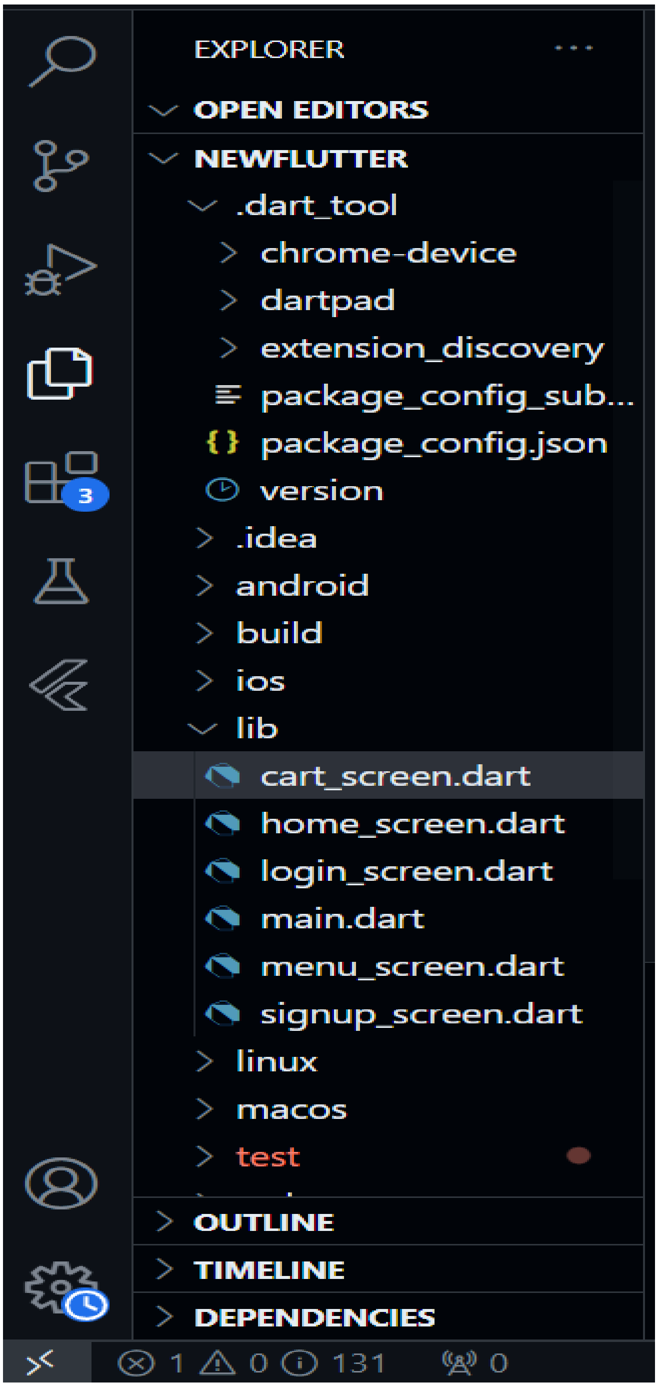
Figure 5.5: Activity Diagram

CHAPTER 6

Chapter 6: Implementation

6.1 Coding(Main Module)

The main module consist of basically two aspects backend and frontend. In the backend the controller is the end points of the rest application programming interface of various services in the java spring boot framework. The model, view and controller framework is used in development of Angular as defining the view.

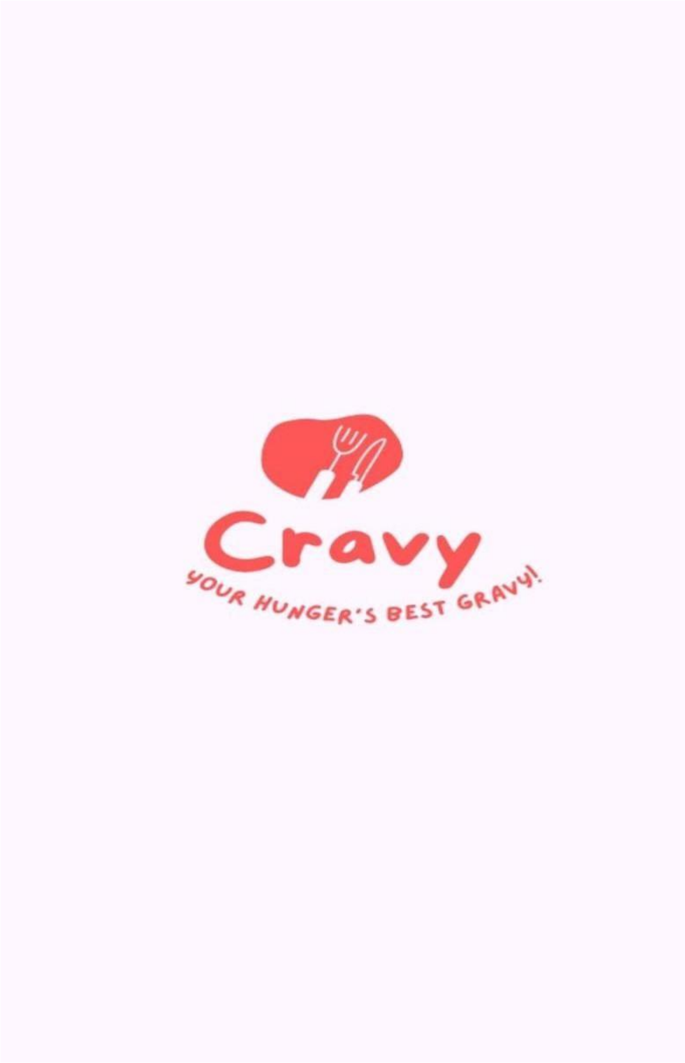


```
EXPLORER ...
v OPEN EDITORS
v NEWFLUTTER
  v .dart_tool
    > chrome-device
    > dartpad
    > extension_discovery
      package_config_sub...
      package_config.json
      version
  > .idea
  > android
  > build
  > ios
  v lib
      cart_screen.dart
      home_screen.dart
      login_screen.dart
      main.dart
      menu_screen.dart
      signup_screen.dart
  > linux
  > macos
  > test
> OUTLINE
> TIMELINE
> DEPENDENCIES
```

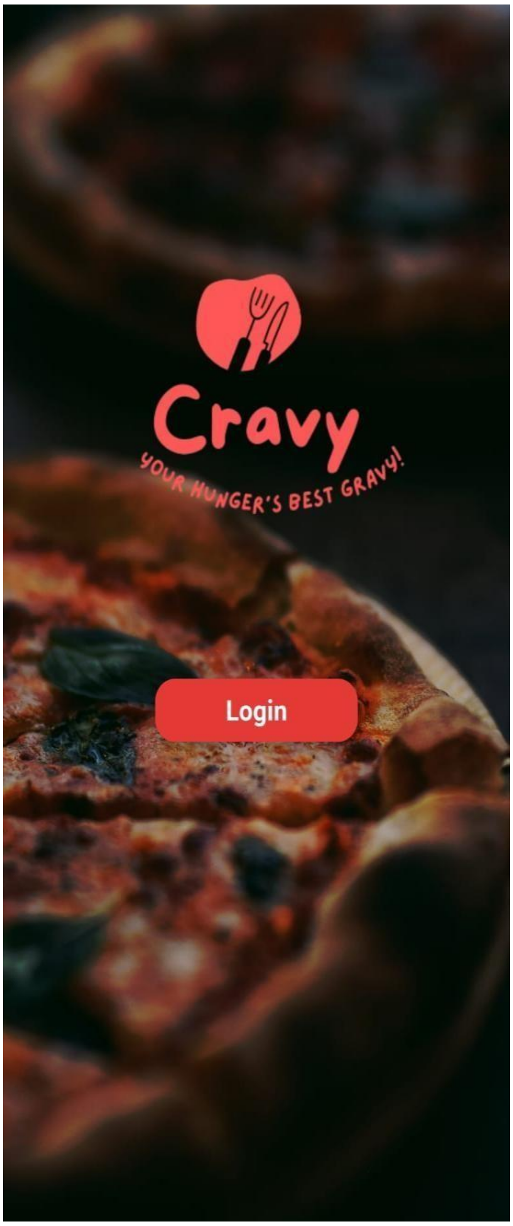
Figure 6.1 Folders and files

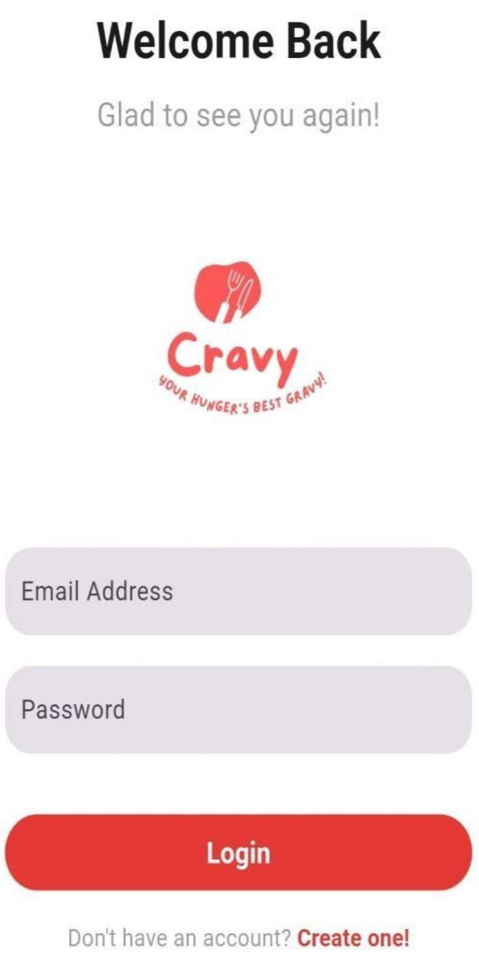
6.2 Results: Screen Shots

6.2.1 Splash Screen



6.2.2 Login Screen



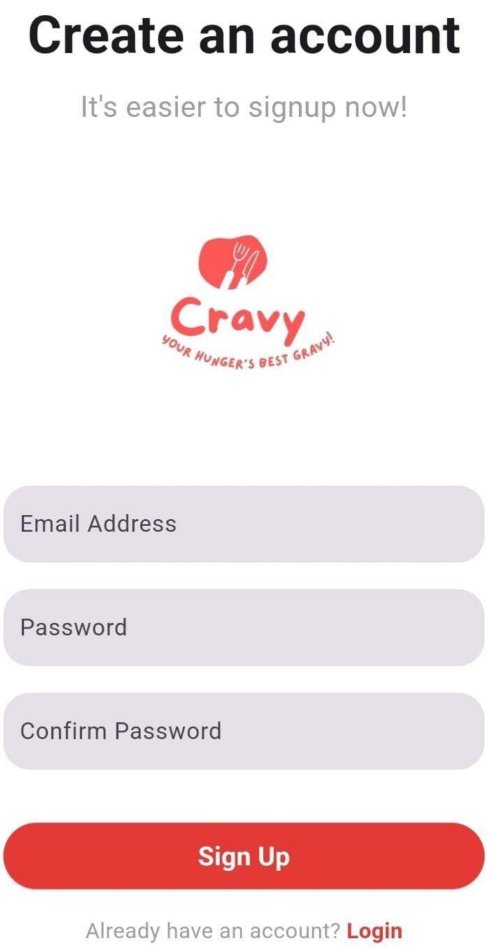


Welcome Back

Glad to see you again!

Don't have an account? **Create one!**

6.2.3 SignUp Screen

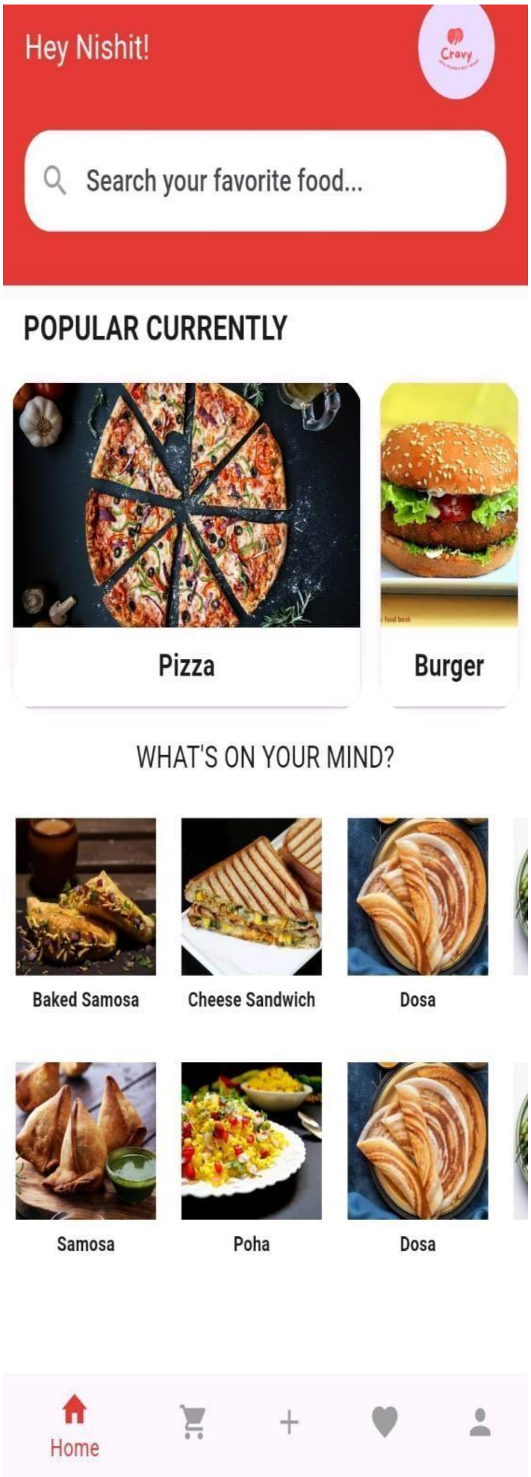


Create an account

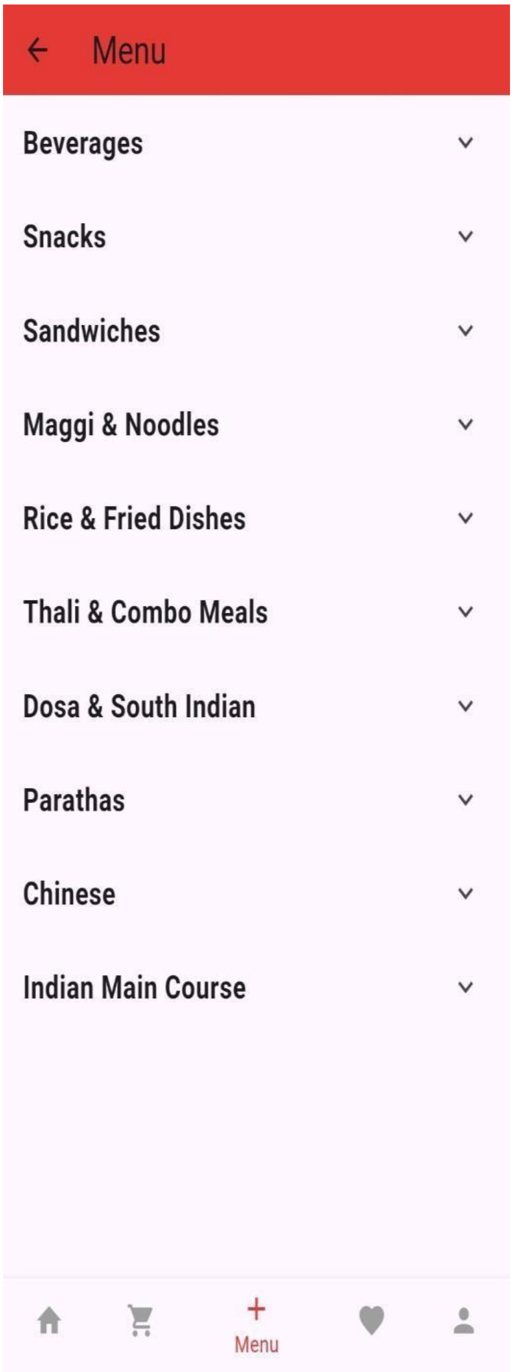
It's easier to signup now!

Already have an account? **Login**

6.2.4 Home Screen

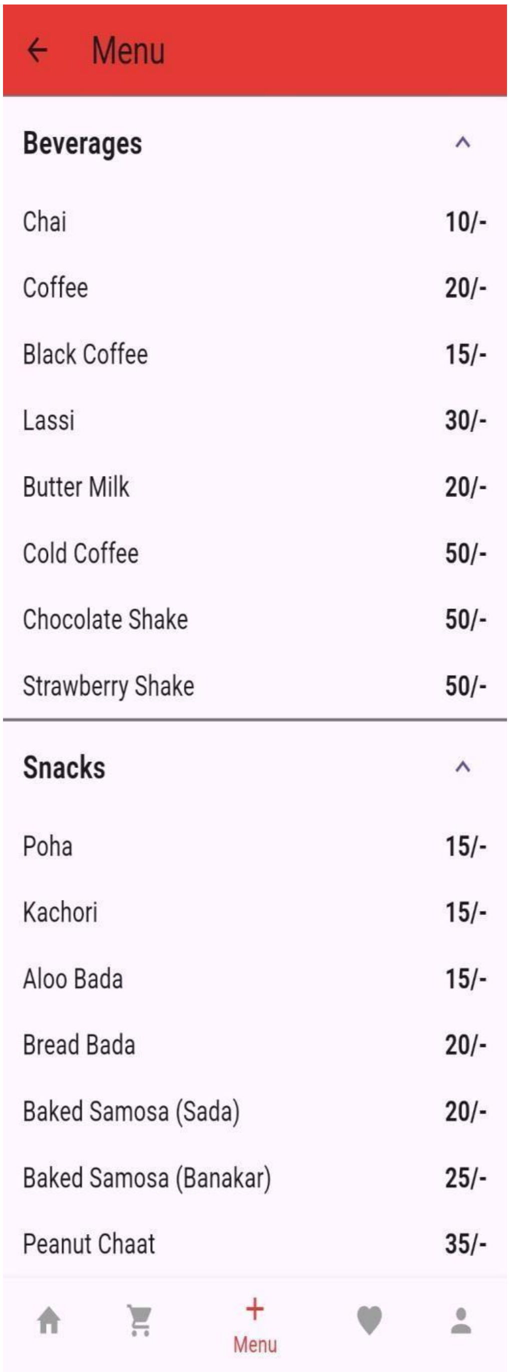


6.2.5 Menu screen



← Menu

- Beverages
- Snacks
- Sandwiches
- Maggi & Noodles
- Rice & Fried Dishes
- Thali & Combo Meals
- Dosa & South Indian
- Parathas
- Chinese
- Indian Main Course



← Menu

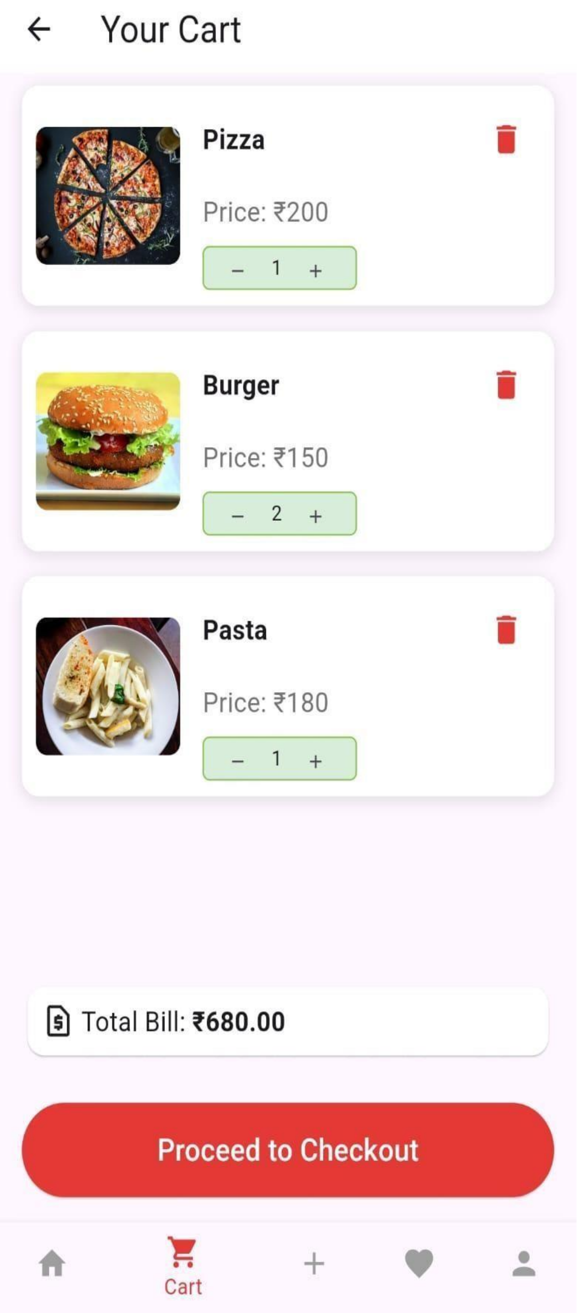
Beverages

Chai	10/-
Coffee	20/-
Black Coffee	15/-
Lassi	30/-
Butter Milk	20/-
Cold Coffee	50/-
Chocolate Shake	50/-
Strawberry Shake	50/-

Snacks

Poha	15/-
Kachori	15/-
Aloo Bada	15/-
Bread Bada	20/-
Baked Samosa (Sada)	20/-
Baked Samosa (Banakar)	25/-
Peanut Chaat	35/-

6.2.6 Add to Cart Screen



Your Cart

Pizza

Price: ₹200

– 1 +

Burger

Price: ₹150

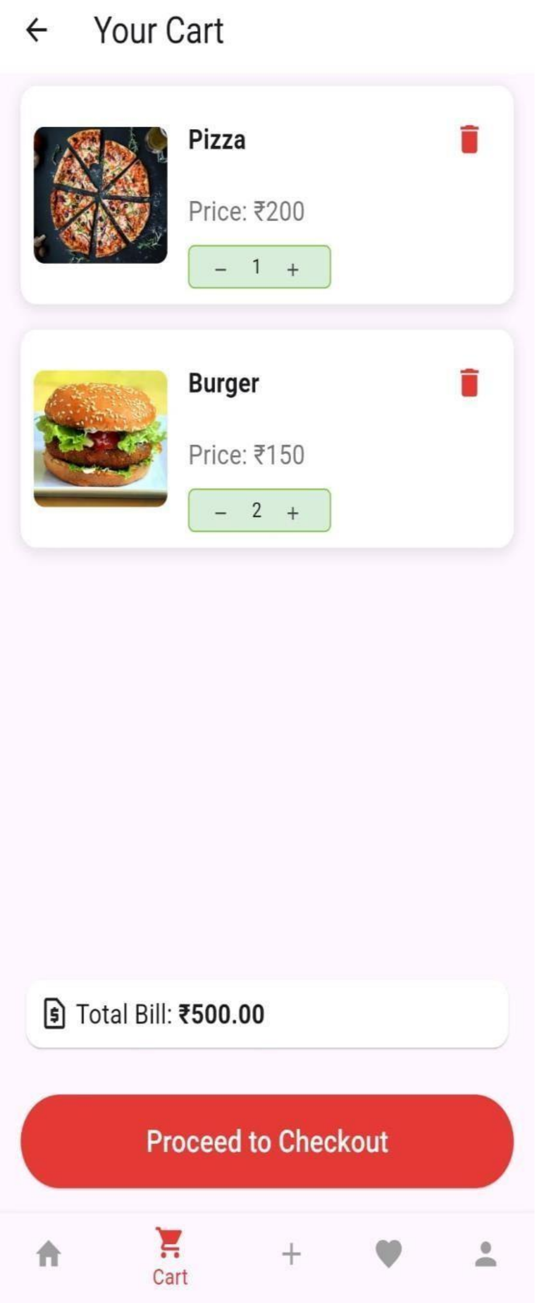
– 2 +

Pasta

Price: ₹180

– 1 +

Total Bill: **₹680.00**



Your Cart

Pizza

Price: ₹200

– 1 +

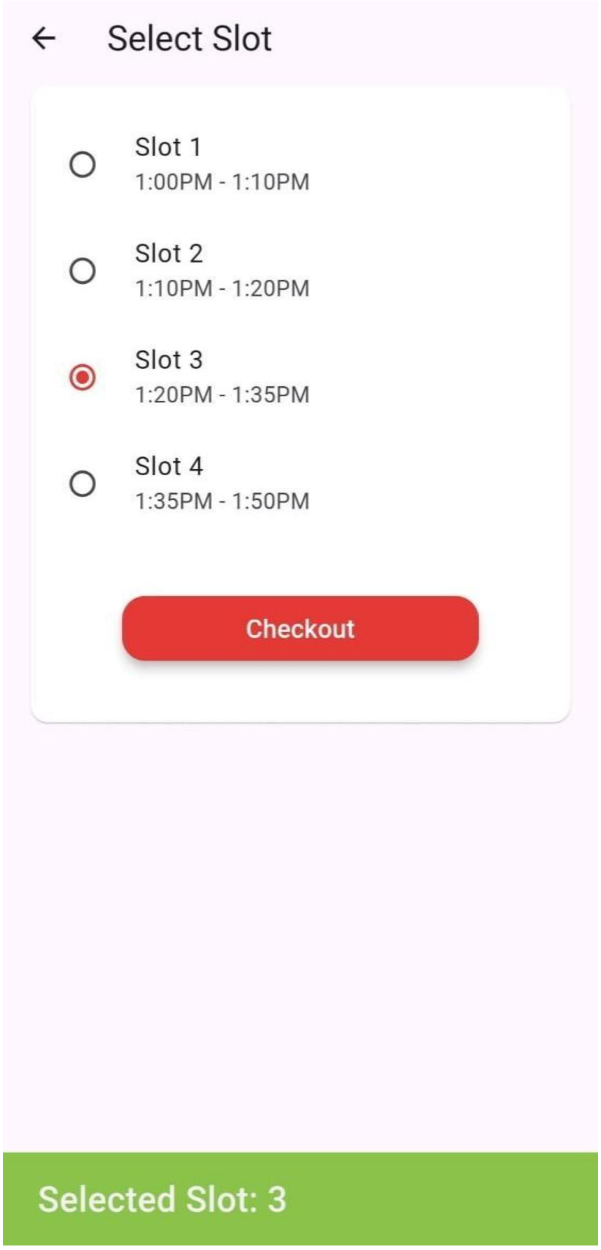
Burger

Price: ₹150

– 2 +

Total Bill: **₹500.00**

6.2.7 Slot Selection Screen



Select Slot

○ Slot 1
1:00PM - 1:10PM

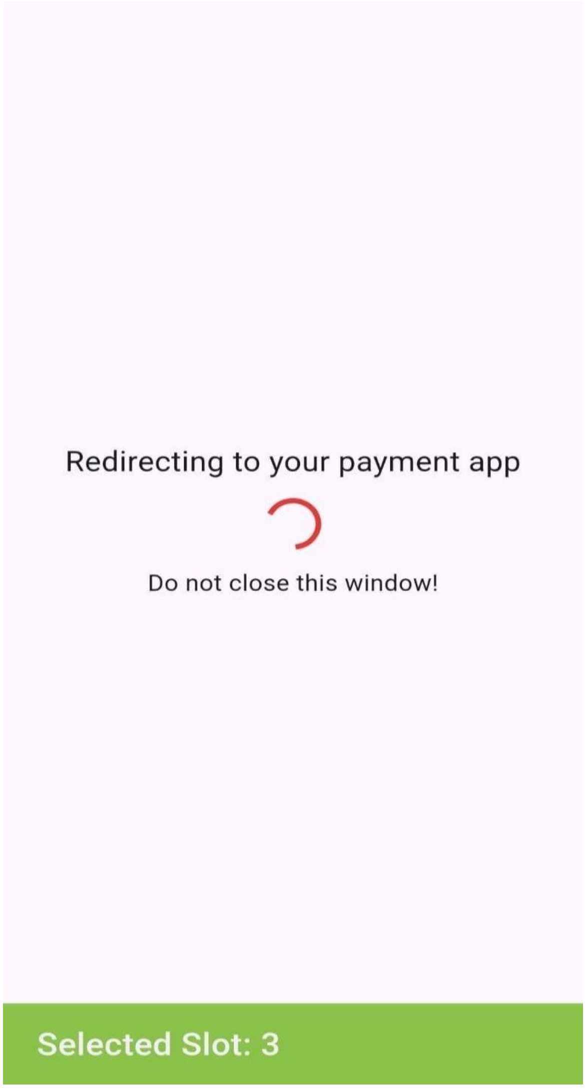
○ Slot 2
1:10PM - 1:20PM

● Slot 3
1:20PM - 1:35PM

○ Slot 4
1:35PM - 1:50PM

Selected Slot: 3

6.2.8 Rediretcing to Payment Screen

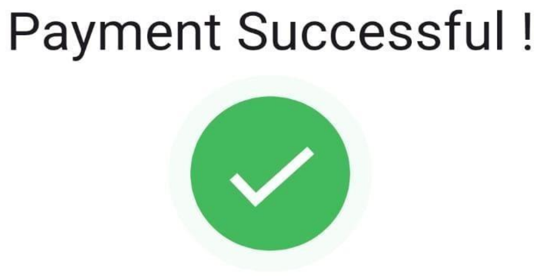


Redirecting to your payment app

Do not close this window!

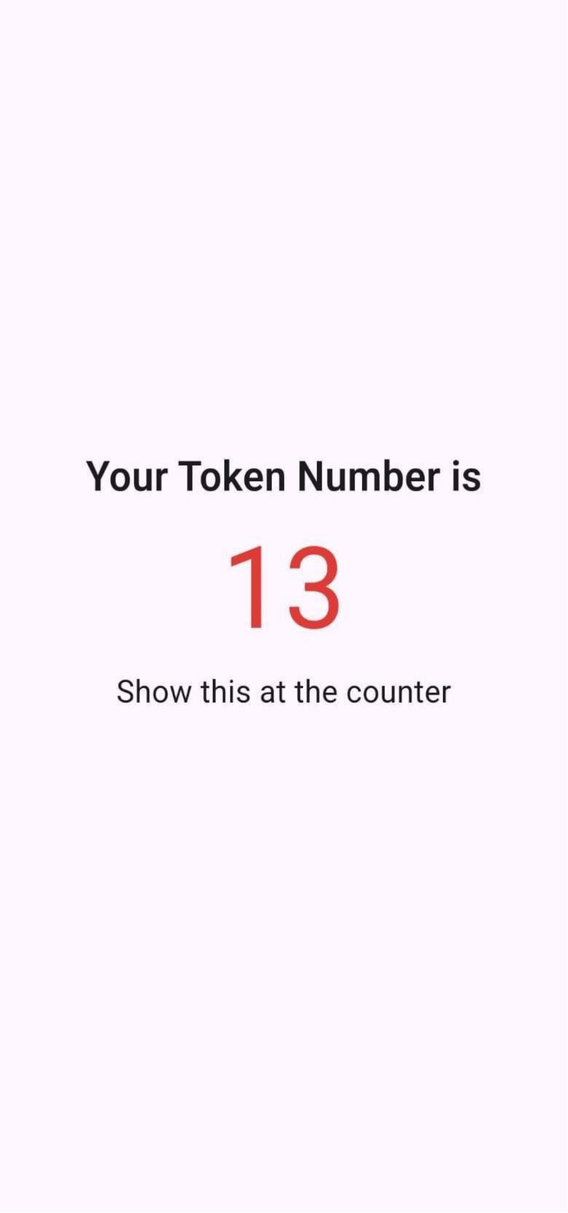
Selected Slot: 3

6.2.9 Payment Successful Screen



Payment Successful !

6.2.10 Token number Screen



Your Token Number is

13

Show this at the counter

CHAPTER 7

Chapter 7: Testing

7.1 Testing Objectives

This checklist is specifically designed to test the characteristics of a canteen management application. The checklist is split into five different fields:

- **Environment**: Check the application's compatibility with different devices (e.g., smartphones, tablets).
- **Device-specific characteristics**: Ensure the application adapts well to device-specific features (e.g., screen sizes, camera for QR scanning).
- **Application checks**: Validate the core functionalities of the canteen management system.
- **Application User Interface Checks**: Ensure the UI is intuitive, responsive, and user-friendly.
- **Store-Specific Check**: Verify that the app can be successfully downloaded, installed, and updated from the app store.

System testing is a critical element of software quality assurance and represents the ultimate review of specifications, design, and coding. Software testing fundamentals define the overriding objectives for software testing, ensuring that the application functions as expected.

Testing is a process of executing the application with the intent of finding errors or unexpected behaviors.

Test Cases for Canteen Management App

Test Case for Login Page

Functional Test Cases:

1. Verify if a user can log in with valid email ID and password.
   - Ensure users can successfully log in using valid credentials.
2. Verify if a user can log in with valid email ID and invalid password.
   - Ensure the app displays an error message when the password is incorrect.
3. Verify if the login page handles blank fields properly.
   - Test whether the app prompts an error when the login button is clicked with empty fields.

Non-Functional Test Cases:

1. Verify login page functionality when pressing the "Back Button" of the device or browser.
   - Ensure the user is logged out when they press the back button and cannot access the canteen system without logging in again.

Test Case for Signup Page

Functional Test Cases:

1. Verify that required fields are clearly marked with an asterisk (*).
   - Ensure the mandatory fields are visually distinguished to the user.
2. Verify that after entering all required fields and clicking the "Create Account" button, the data is submitted to the server.
   - Test whether the user is successfully registered after providing valid data (name, email,

password, etc.).

3. Check that if mandatory fields are not filled, clicking the submit button will lead to a validation error.
    - Ensure the app prompts an error if the user attempts to submit the form with empty mandatory fields.

Test Case for Menu Page

Functional Test Cases:

1. Verify if the user can view the full menu of available food items.
    - Test the display of all food items with their names, prices, and descriptions.
2. Verify if users can search for food items using a search bar.
    - Ensure that the search functionality works to find specific items.
3. Verify that food items are categorized (e.g., drinks, snacks, meals).
    - Test if the food items are organized into appropriate categories for easy browsing.

Ordering Page:

Functional Test Cases:

1. Verify that the user can add food items to the cart.
    - Ensure that when a user selects a food item, it gets added to the cart.
2. Verify that the user can view the total cost of the items in the cart.
    - Test if the total price of the selected items is calculated and displayed correctly.
3. Verify that the user can proceed to checkout from the cart page.
    - Ensure users can move from the cart to the payment page.

Test Case for Payment Page

Functional Test Cases:

1. Verify that users can enter payment details and successfully place an order.
    - Test the payment gateway to ensure that the transaction is processed correctly.
2. Verify that users can cancel or edit their order before completing payment.
    - Ensure users can modify or cancel their order before finalizing payment.

Test Case for Canteen Admin Page

Functional Test Cases:

1. Verify that the admin can add or remove food items from the menu.
    - Test if the admin can successfully manage the food items available in the app.
2. Verify that the admin can view orders placed by users.
    - Ensure the admin has access to a list of pending, completed, or canceled orders.
3. Verify that the admin can update the status of orders (e.g., from “Processing” to “Completed”).
    - Test if the admin can update the status of each order accurately.

Test Case for User Interface

UI Test Cases:

1. Verify that the app has a responsive layout across different screen sizes (smartphones, tablets).
    - Ensure the UI adapts properly to various screen sizes and resolutions.
2. Verify the legibility of text and clarity of images in the menu.
    - Test the readability of food descriptions and clarity of images.
3. Verify that buttons and menus are clickable and respond to user interaction.
    - Ensure all clickable elements are functional and responsive.

Test Case for Store-Specific Check

1. Verify that the app can be downloaded, installed, and updated from the app store.
    - Test the app's availability and installation process from platforms like Google Play or the App Store.

CHAPTER 8

Chapter 8: Conclusion

Based on current technical feasibility and researched information, this project includes all the necessary functionality in the Canteen Management Application System. The aim is to automate the existing manual process of managing orders, menu items, and payments in the canteen, using computerized equipment and a full-fledged software system. This system aims to fulfill the requirements of both users and canteen administrators, ensuring that data is efficiently stored and easily accessible for future manipulation and analysis

8.1 Conclusion

This project is based on research into the operations and working patterns of a canteen, including menu management, food ordering, and payment processes. The application allows users to register, view the menu, place orders, and make payments seamlessly. Canteen administrators can manage food items, track orders, and update inventory through the system. The progress of an order, from placement to completion, is handled digitally, replacing the manual tracking system previously in place.

The system is designed with a user-friendly interface, ensuring that both customers and administrators can easily navigate and use the application. All data related to food items, orders, and transactions is securely stored for easy access and analysis, allowing for improved decision-making and operational efficiency.

8.2 Future Work

In the future, AI features can be incorporated to provide personalized food recommendations based on users' preferences and past orders. Additionally, predictive analytics could be used to forecast food demand, helping administrators optimize stock levels and reduce waste.

With continuous feedback from both users and administrators, the system can be improved to enhance the overall user experience. Future versions may include features such as loyalty programs, order tracking, real-time updates, and integration with mobile payment platforms, further streamlining the ordering and payment process.

This system will continue to evolve, offering more advanced features and optimizations, ultimately improving the efficiency of the canteen's operations and enhancing the overall customer experience

References

Web Sites

1. https://firebase.google.com/docs
2. https://dart.dev/guides
3. https://www.technowebsolutions.com/restaurant-management-system/
4. https://flutter.dev/docs