GOVERNMENT POLYTECHNIC, PUNE

(An Autonomous Institute of Government of Maharashtra)

DEPARTMENT OF COMPUTER ENGINEERING

ACADEMIC YEAR 2020-21

PROJECT REPORT ON

"Virtual Pizza Boy"

SUBMITTED BY

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UNDER THE

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CERTIFICATE

This is to certify that

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of class Third Year (2020-21) has successfully completed Mini project on Travel Diaries under the guidance of **Prof. K.S. Sathawane** in partial fulfilment of the requirement for the award of Diploma in Computer Engineering from Government Polytechnic, Pune.

Prof. K.S. Sathawane	**Mr. U.V. Kokate**	**Dr. V.S. Bandal**
(Project Guide)	(H.O.D)	(Principal)

ACKNOWLEDGMENT

The success of any project depends largely on the encouragement and guidelines of many others. This research project would not have been possible without their support. We take this opportunity to express our gratitude to the people who have been instrumental in the successful completion of this project.

First and foremost, we wish to record our sincere gratitude to the Management of this college and to our Respected Principal Mr.V.S.Bandal, for his constant support and encouragement in the preparation of this report and for the availability of library facilities needed to prepare this report.

Our sincere thanks to Mr.U.V.Kokate, Head, Department of Computer, Govt. Polytechnic, Pune who was abundantly helpful and offered invaluable assistance, support and guidance.

We express our sincere gratitude to our Guide, Prof. K. S. Sathawane for guiding us in investigations of this project and in carrying out experimental work. Our numerous discussions were extremely helpful. We are highly indebted to him for his guidance and constant supervision as well as for providing necessary information regarding the project & also for his support in completing the project. We hold him in esteem for guidance, encouragement and inspiration received from him.

We wish to thank our parents for financing our studies and helping us throughout our life for achieving perfection and excellence. Their personal help in making this report and project worth presentation is gratefully acknowledged. Last but not the least we thank the Almighty for continuous strength we were bestowed for completion of this project.

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ABSTRACT

Virtual Pizza Boy is an Android application which aims at easy accordance for the customers as well as the staff. Customers could easily order any food item from the wide range of fast foods made available using the application while sitting on their table without having to be waiting in the queue and creating a chaos on the counter. The customer has ap option to pay the bill using application itself, we have provided two ways to do so, one is using the net banking and the other is using an in-app payment feature ‘My Wallet’. This application provides to the staff with efficient management of the customer orders as well as the menu.

This project is user-friendly and requires minimum human intervention. Individuals just have to atfirst time sign-up by filling personal information in form and from next just have to log-in. After thatuser can see the large variety of food items along with beverages and the customer can choose the items to order.

CHAPTER - 1

Introduction

1.1 Overview

Virtual Pizza Boy is an Android application through which a customer can order pizzas and other food items and an admin can monitor the menu and customer orders. The app also allows the user to pay the bill through app itself.

1.2 What is Virtual Pizza Boy?

Virtual Pizza Boy is an Android application designed for individual pizza shops for the ease of ordering. The system is flexible to use and reduces reduce the work of user to go to the counter or wait in the waiting line and it also decreases the efforts of the staff since the menu is provided in the app and admin can manage it. The admin is also provided with the current order list.

The application is user friendly and requires minimum user intervention. Individuals just have to signup/register in the application for the first time using valid information and they can access the account from any device using the login facility. The app provides variety of food items for the customer to choose. Then customer shall choose pizzas and other variety food items and add them to cart. Customer is also given an option to pay through the app itself. Application also provides variety in payment methods that are net banking and in-app payment method 'My Wallet'. The admin user should have an account in the app and it has the authority to decide the menu and manage orders of the customer.

With emerging growth in the technology, new applications are being made to reduce the human efforts and to perform tasks in more efficient way and faster. This app is yet another effort made to reduce human efforts required for both staff and the customers. Using this application, there are not needs for waiters and printing the menu cards in the pizza shops and managing the order is also handled efficiently in the app itself. The payment module is provided for the customers.

Our application facilitates the customer to place his/her order while sitting on their table without creating chaos on the counter, hence our slogan is ‘Order From Table’.

1.3 Background

The idea for the application was first developed because of COVID -19 pandemic situation where social distancing was mandatory but was not maintained by the people due to various reasons, one of them was because the customers had to rush to counter in shops and there were not enough people to manage the customers and orders. Hence, we came up with this idea to make an app that will help the user to order a variety of food items and for the staff to effectively manage the customer orders while maintaining social distance.

1.4 Purpose

The main purpose to of this project is to reduce human efforts, provide an efficient and effective way to do the things that require more work and help maintain social distance in this COVID-19 pandemic.

With some clicks users will get the desired foods and with some other clicks staff will be able to manage the orders with minimum human interactions.

CHAPTER – 2

Project Plan

2.1 Software model

- For this project, we use iterative model.
- Iterative process starts with a simple implementation of a subset of the software requirements and iteratively enhances the evolving versions until the full system is implemented.
- At each iteration design modifications are made and new functional capabilities are added. The basic idea behind this method is to develop a system through is to develop a system through repeated cycles and in smaller portions at a time.

2.2 Approach in project development

The project is developed following the SMART approach:

❖ Specific

❖ Measurable

❖ Achievable

❖ Realistic

❖ Time-bound

2.3 Goals

The following goals are achieved by this project plan:

1. Software risks are documented for use in planning and tracking the software project.

2. Software project activities and commitments are planned and documented.

3. Affected groups and individuals agree to their commitments related to the software project.

4. Project is scheduled and documented.

5. Gives the desired output.

2.4 Project scope

Virtual Pizza Boy is a food ordering application for individual pizza shops. Here a wide range of food items along with pizzas and beverages are available for the customer to order and for the admin to manage. It's free for all people and the system is flexible to use. The app provides payment options which can be accessed using their own login credentials.

Project deliverables –

- Project reports
- Weekly meeting notes
- A food ordering system for individual shops

2.5 Project risk

Major risks we have determined for this software are as follows:

- Equipment failure

- Late delivery of software

- Technology will not meet expectations

- Changes in requirements

- Deviation from software engineering standards

- Less use than planned

Risk table:

Risks	Probability	Impact
Equipment failure	60%	1
Late delivery	30%	1
Technology will not meet expectations	25%	3
Changes in requirements	20%	2
Deviation from software engineering standards	10%	3
Less use than planned	40%	4

Impact level:

1- High

2- High to Medium

3- Medium

4- Medium to low

5-low

2.6 Project schedule

Month schedule	Phase	Number of days required	Work done
April	Topic searching	7	Done
April	Topic selection	2	Done
April	Project confirmation	2	Confirmed
April	Requirement analysis	3	Done
April	Requirement gathering	2	Done

May	Deciding technology stack	2	Done
May	Database creation	2	Created
May	Coding according to divided modules	25	Done
May	Integrating the modules	5	Done
May	Integrating the database	2	Done
May	Testing the app	5	Tested
May	Adding additional functionalities	5	Added
June	Testing the working of modules	10	Tested
June	Fixing bugs	5	Fixed
June	Result analysis	2	Done
June	Report	2	Done

CHAPTER – 3

Requirement Analysis

3.1 User interface

This application is very user friendly and interactive with users. It displays appropriate messages whenever the user has entered any invalid data or there is any system error occurred. The color scheme is chosen well by UI team.

3.2 Functional requirements

3.2.1 Admin –

- **Login:**
  Admin should create an account using signup and login anytime later using the same credentials.
- **Add menu and today's special food items:**
  After logging in, an admin has an authority to add the any food item in an existing menu list.
- **Customer orders:**
  An admin also has an authority to manage customer orders.

3.2.2 Customer –

- **Login:**
  Customer should create an account using signup and login anytime later using the same credentials.
- **Place order:**
  A customer can log in and choose the food items from the wide range of food items provided by the application and add them to cart.
- **Payment methods:**

After adding items to cart, a customer is provided with three payment options that are cash, net banking and an in-app payment feature ‘My Wallet’.

3.3. Hardware interface

- Hard disk – 512 GB
- RAM – 8 GB

3.4 Software interface

- Windows 10 OS
- Android API level – 19+
- Android studio – 3.0 (or above)
- JDK (any version)

Fig. 3.1 Android Studio

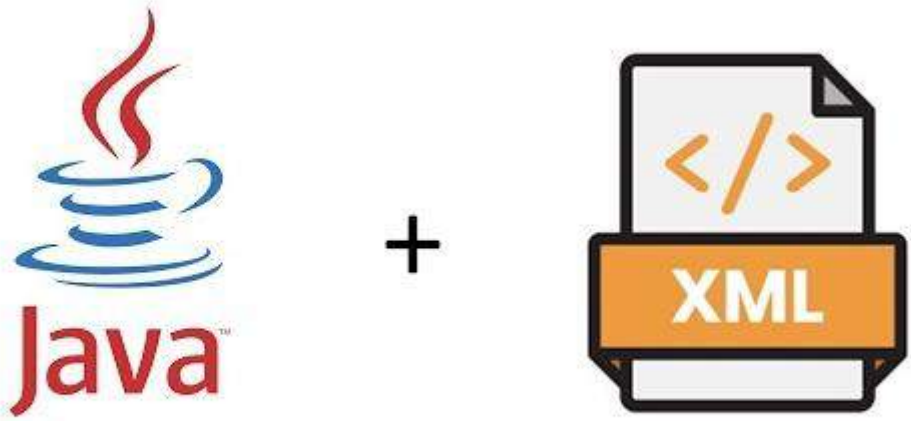


Fig. 3.2 Frontend

Fig. 3.3 Backend

CHAPTER – 4

System Design

4.1 Modules

The proposed system consists of two main modules which are further categorized in submodules, as follows:

- Customer
  - ✓ Signup/login
  - ✓ Home
  - ✓ Menu
  - ✓ Today's specials
  - ✓ Cart
  - ✓ My wallet
- Admin
  - ✓ Signup/login
  - ✓ Home
  - ✓ Add menu
  - ✓ Add today's special items

4.1.1. Customer

Customer can create an account once using sign up and then login any time. After login, he/she can order any items from the wide range of foods provided and add them to cart. The customer can choose a payment option from cash, net banking or my wallet an in-app payment method.

I. Signup/Login –

Customer can create an account using sign up and use these credentials to login later from any android device.

II. Home –

Customer is provided with menu item images on this page. He/she can click on that image to go to that particular menu. This is first page customer will be displayed after signup/ login.

III. Menu –

Menu is displayed to the customer in tabs of veg, non veg pizzas, beverages and sides. Customer can switch between tabs and click on add to cart button to add the food items to cart. The customer can choose their preferences for food items after clicking on any food item from the menu.

IV. Cart –

Cart page displays the food items selected by the user in list format along with their names, price and quantity. The total price is displayed here.

V. My Wallet –

My wallet is an in-app payment method where wallet is used for paying money for the orders from this application. Wallet is created for each user individually.

4.1.2. Admin

Admin can create an account once and login anytime later Admin has the authority to manage the menu and customer orders.

I. Signup/Login -

Admin can create an account using sign up and use these credentials to login later from any android device.

II. Home -

The orders from the customers are displayed here. This is first page admin will be displayed after signup/ login.

III. Add menu –

Admin can add food items to the menu that will be displayed to the customer. Admin should provide and image of the food items along with its name, description and price.

IV. Add today's special –

Admin can add food items to today's special that will be displayed to the customer. Admin should provide and image of the food items along with its name, description and price.

4.2 Database

This application uses firebase cloud-based database. Firebase is a product of Google which helps developers to build, manage, and grow their apps easily. It helps developers to build their apps faster and in a more secure way. No programming is required on the firebase side which makes it easy to use its features more efficiently. It provides services to android, iOS, web, and unity. It provides cloud storage. It uses NoSQL for the database for the storage of data.

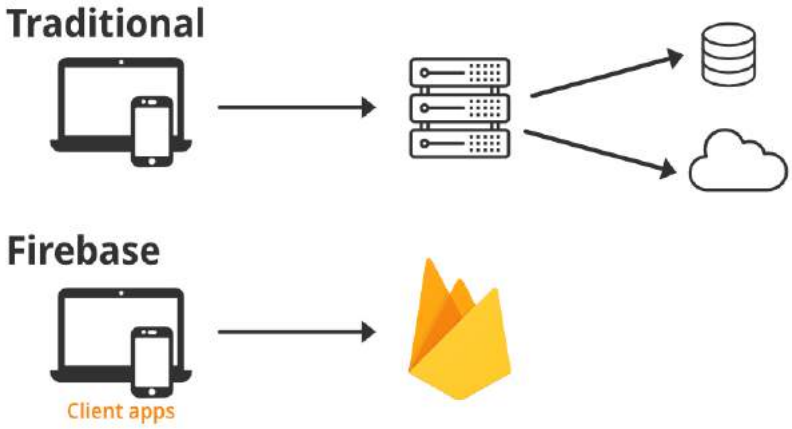


Fig. 4.1 Firebase cloud storage

Firebase initially was an online chat service provider to various website through API and ran with the name Envolve. It got popular as developers used it to exchange application data like a game state in real time across their users more than the chats. This resulted in the separation of the Envolve architecture and its chat system. The Envolve architecture was further evolve

by its founders James Tamplin and Andrew Lee, to what modern day Firebase is in the year 2012.

Features of Firebase:

Mainly there are 3 categories in which firebase provides its services.

User analytics:

It is a Free app measurement service provided by Google that provides insight on app usage and user engagement. It serves unlimited reporting for up to 500 distinct automatic or user-defined events using the Firebase SDK.

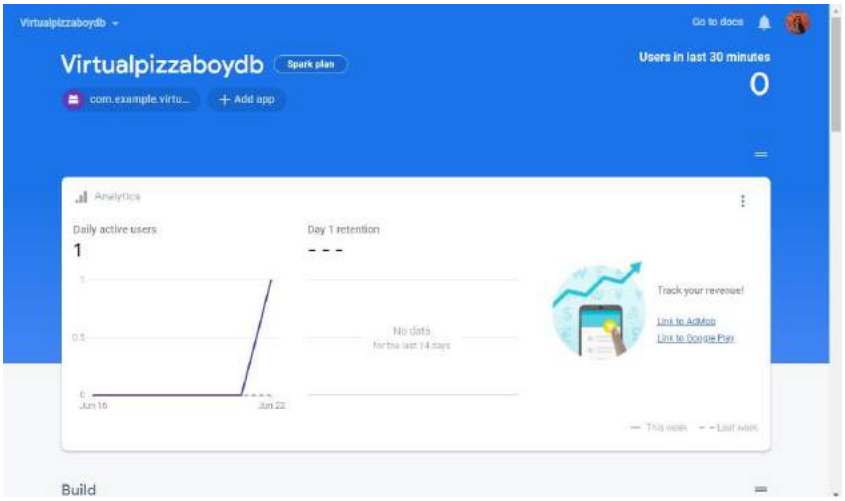


Fig. 4.2 Firebase User Analytics

Realtime Database:

The Firebase Realtime Database is a cloud-based NoSQL database that manages your data at the blazing speed of milliseconds. In simplest term it can be considered as a big JSON file.

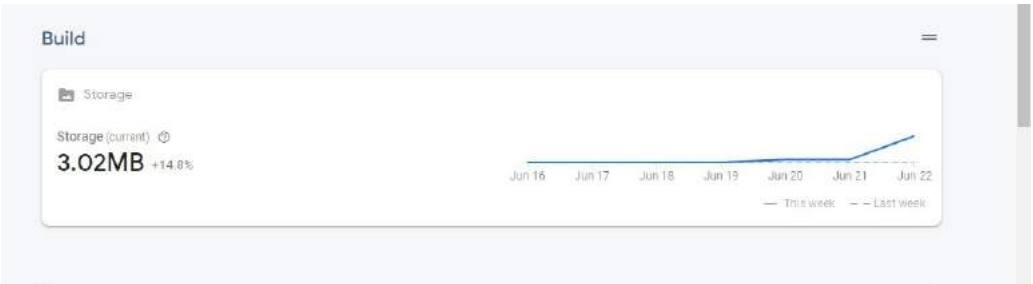


Fig. 4.3 Firebase storage graph

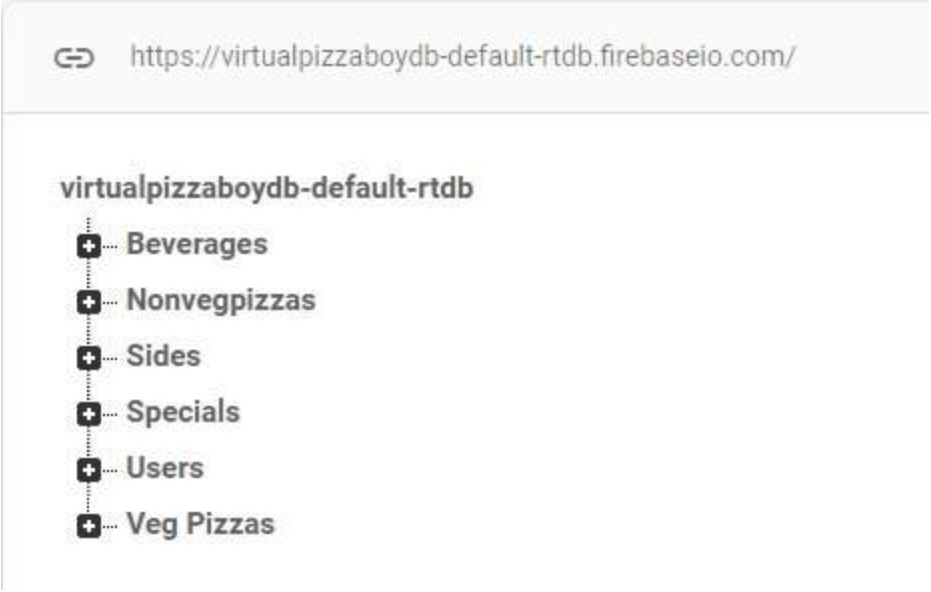


Fig. 4.4 Realtime Database Structure

Authentication:

Firebase Authentication service provides easy to use UI libraries and SDKs to authenticate users to your app. It reduces the manpower and effort required to develop and maintain the user authentication service. It even handles tasks like merging accounts, which if done manually can be hectic.

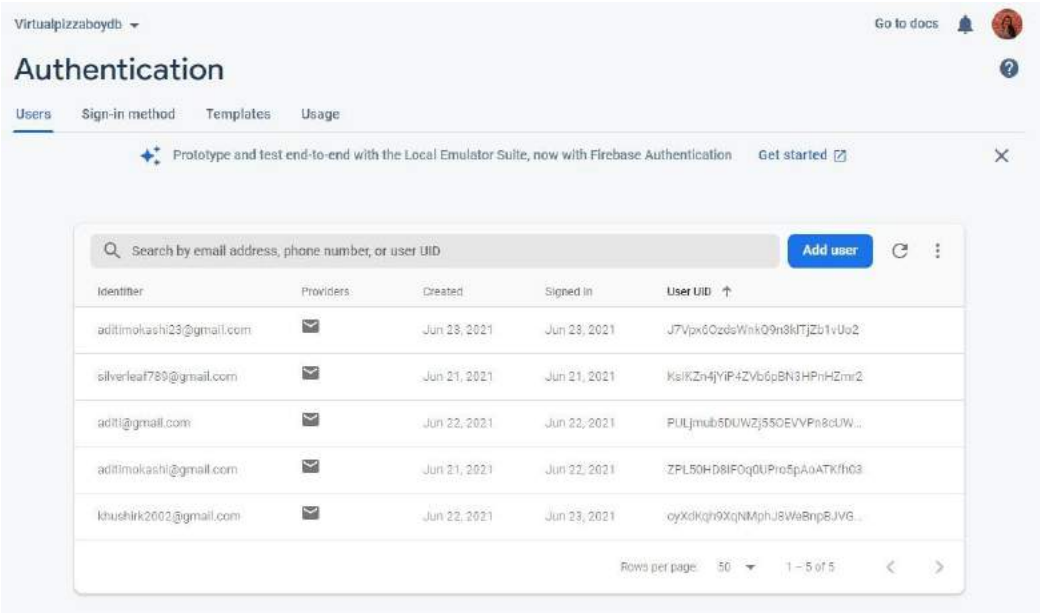


Fig. 4.5 Firebase user authentication

Crashlytics:

It is used to get real-time crash reports. These reports can further be used to improve the quality of the application. The most interesting part of this service is that it gives a detailed description of the crash which is easier to analyze for the developers.

4.3. Diagrams

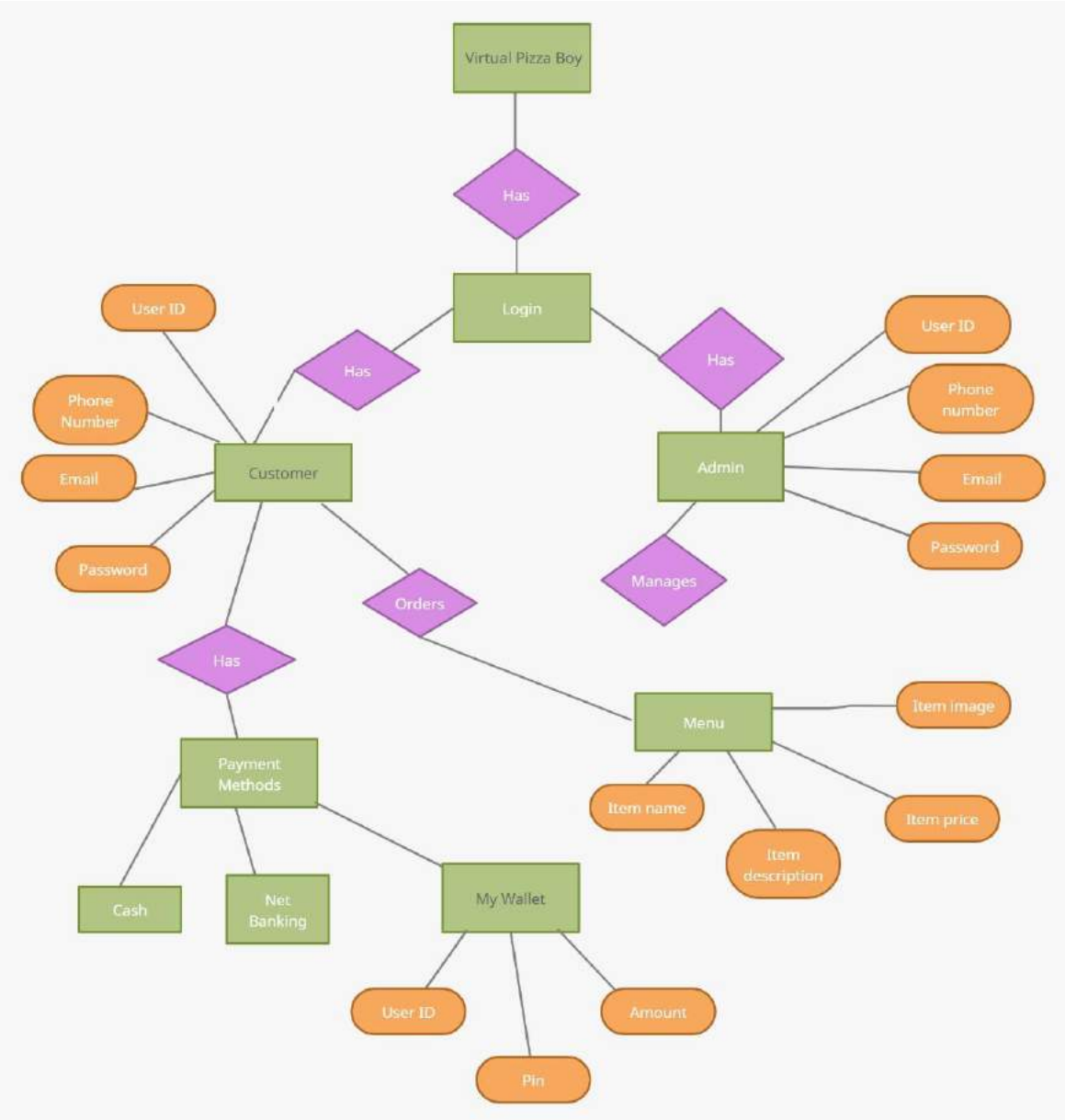


Fig. 4.3.1. ER Diagram

4.3.2 Data Flow Diagrams

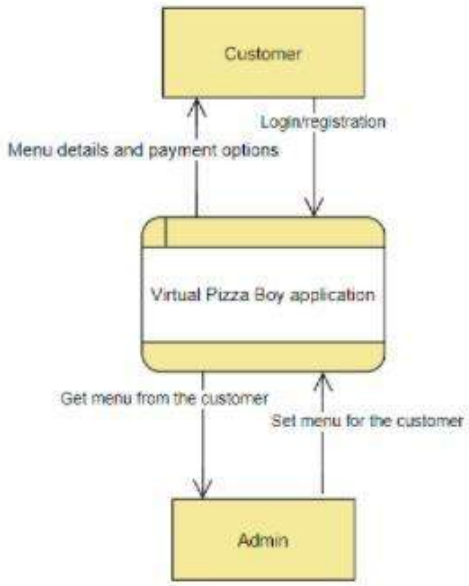


Fig. 4.3.2.1 DFD leve-0

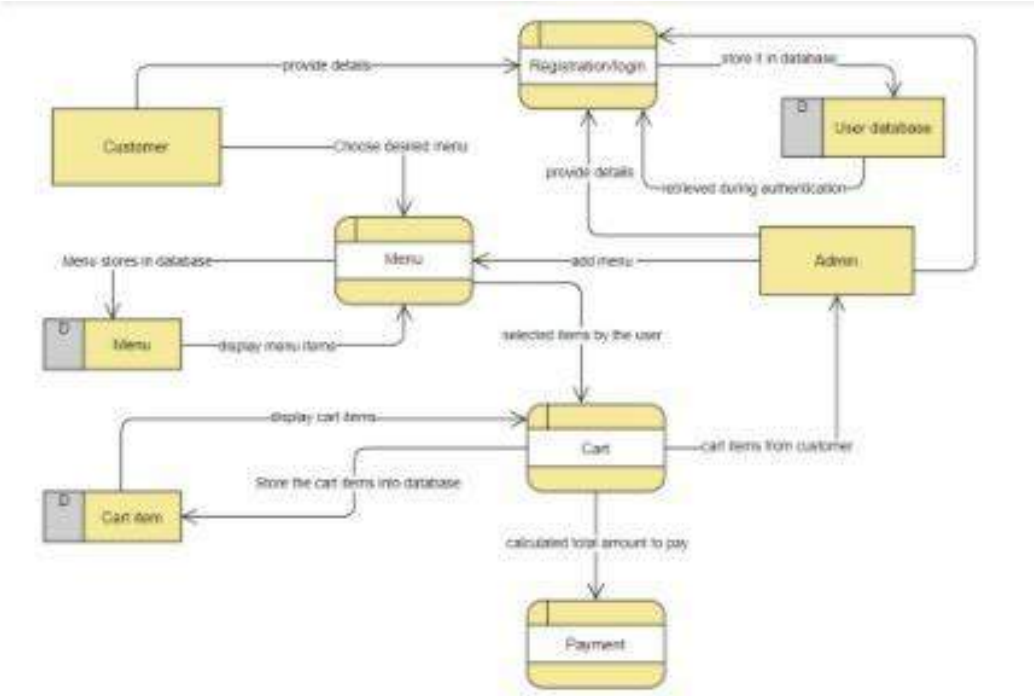


Fig. 4.3.2.2 DFD level-1

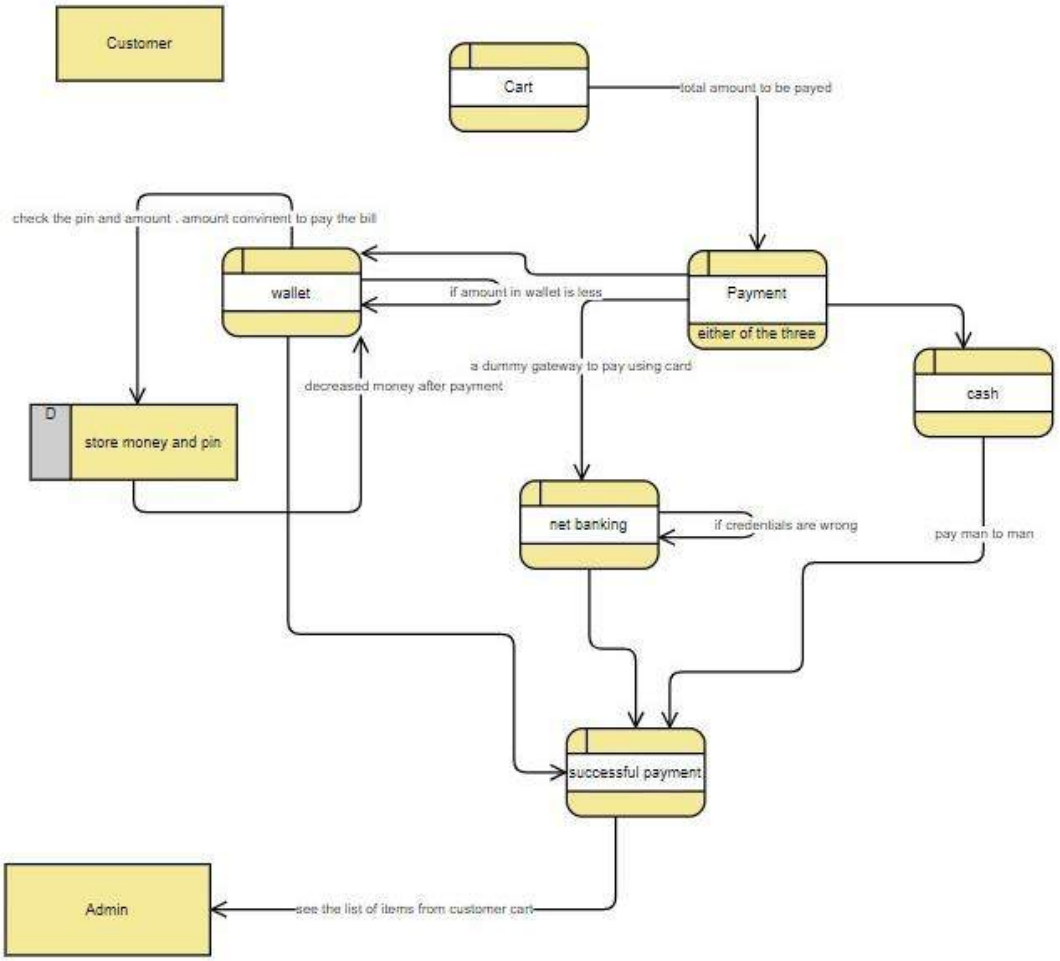


Fig. 4.3.2.3 DFD level-2

4.3. UML Diagrams

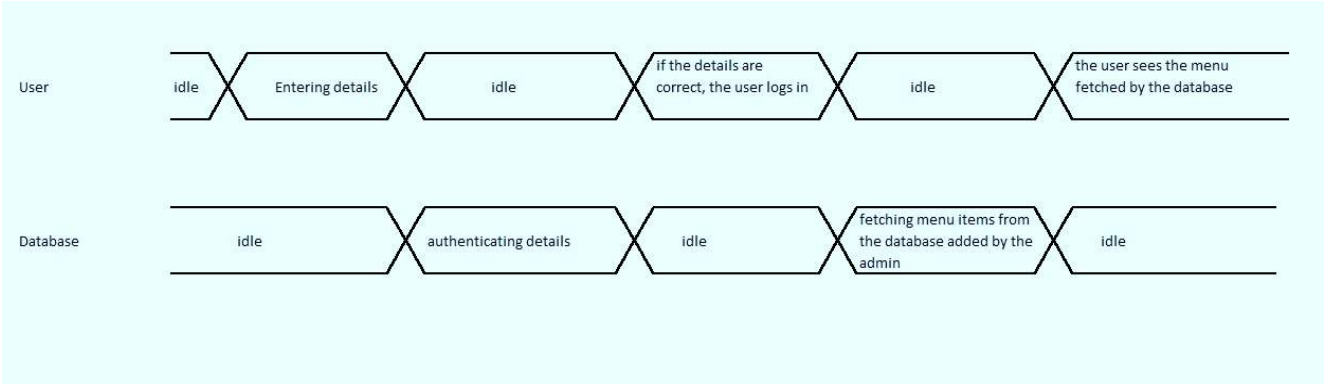


Fig. 4.3.1 Timing diagram

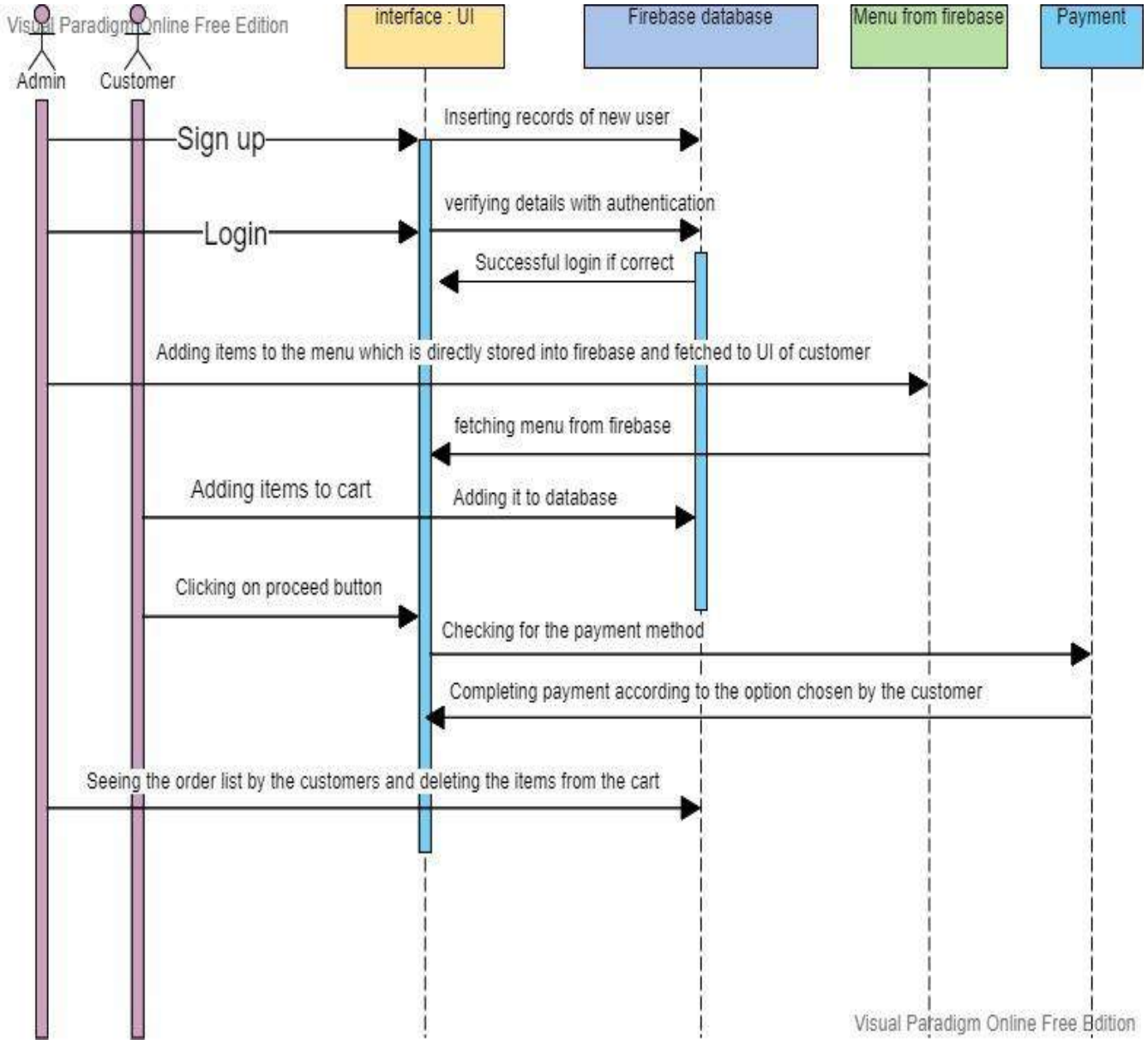


Fig. 4.3.2 Sequence Diagram

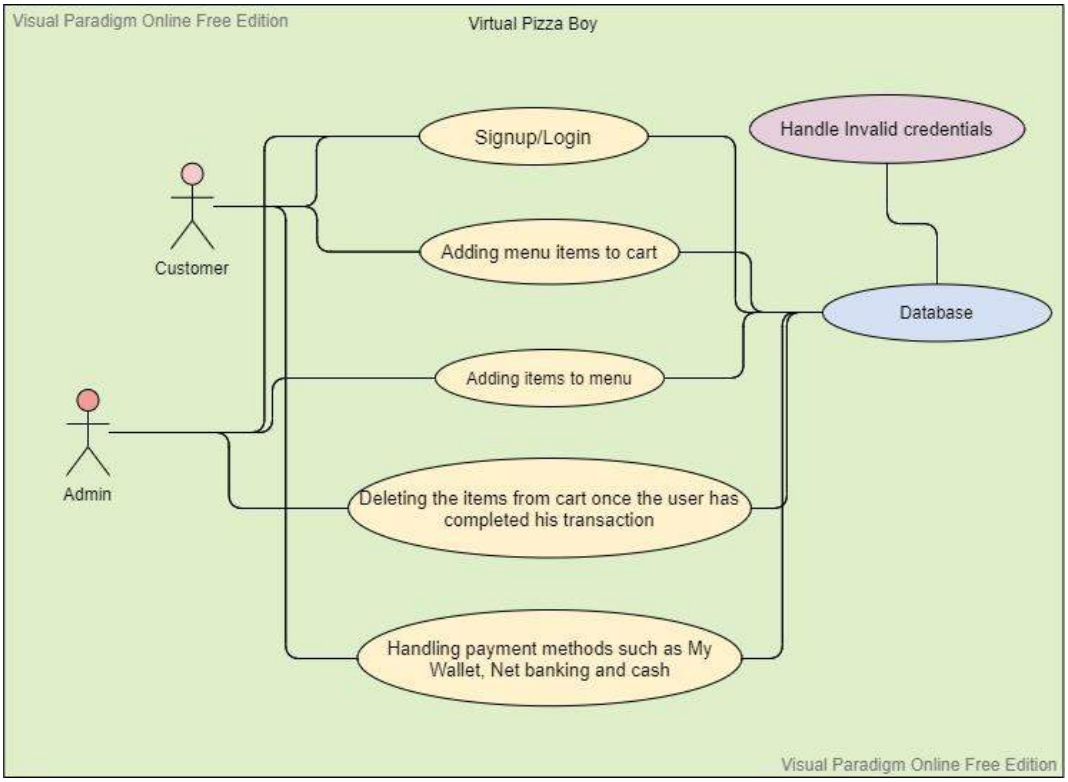


Fig. 4.3.3 Use case Diagram

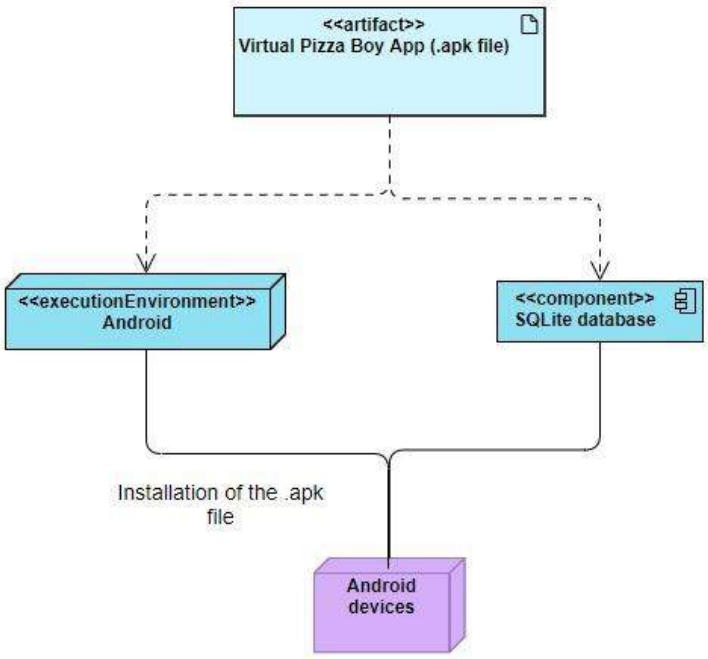


Fig. 4.3.4 Deployment Diagram

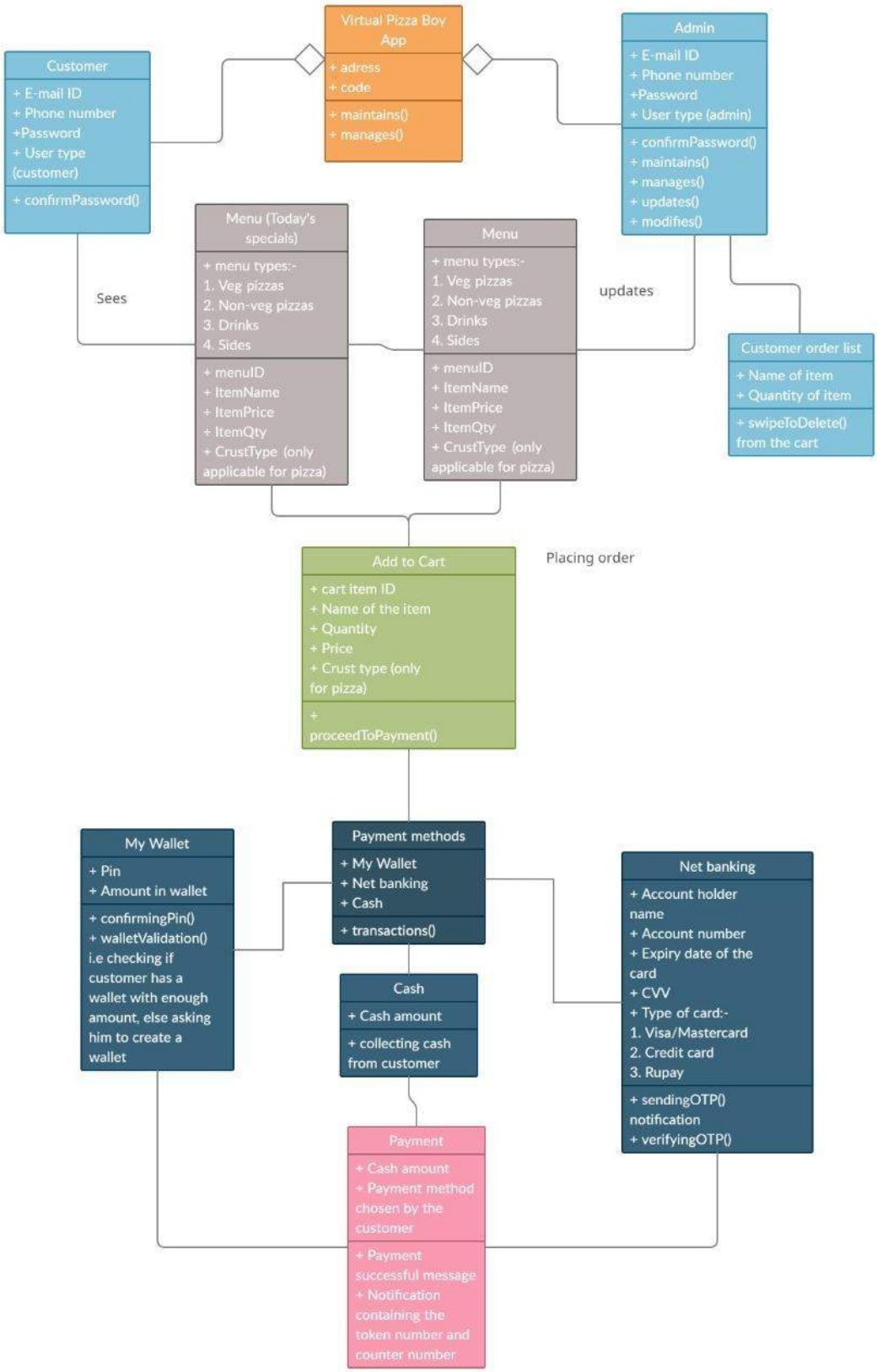


Fig. 4.3.5 Class diagram

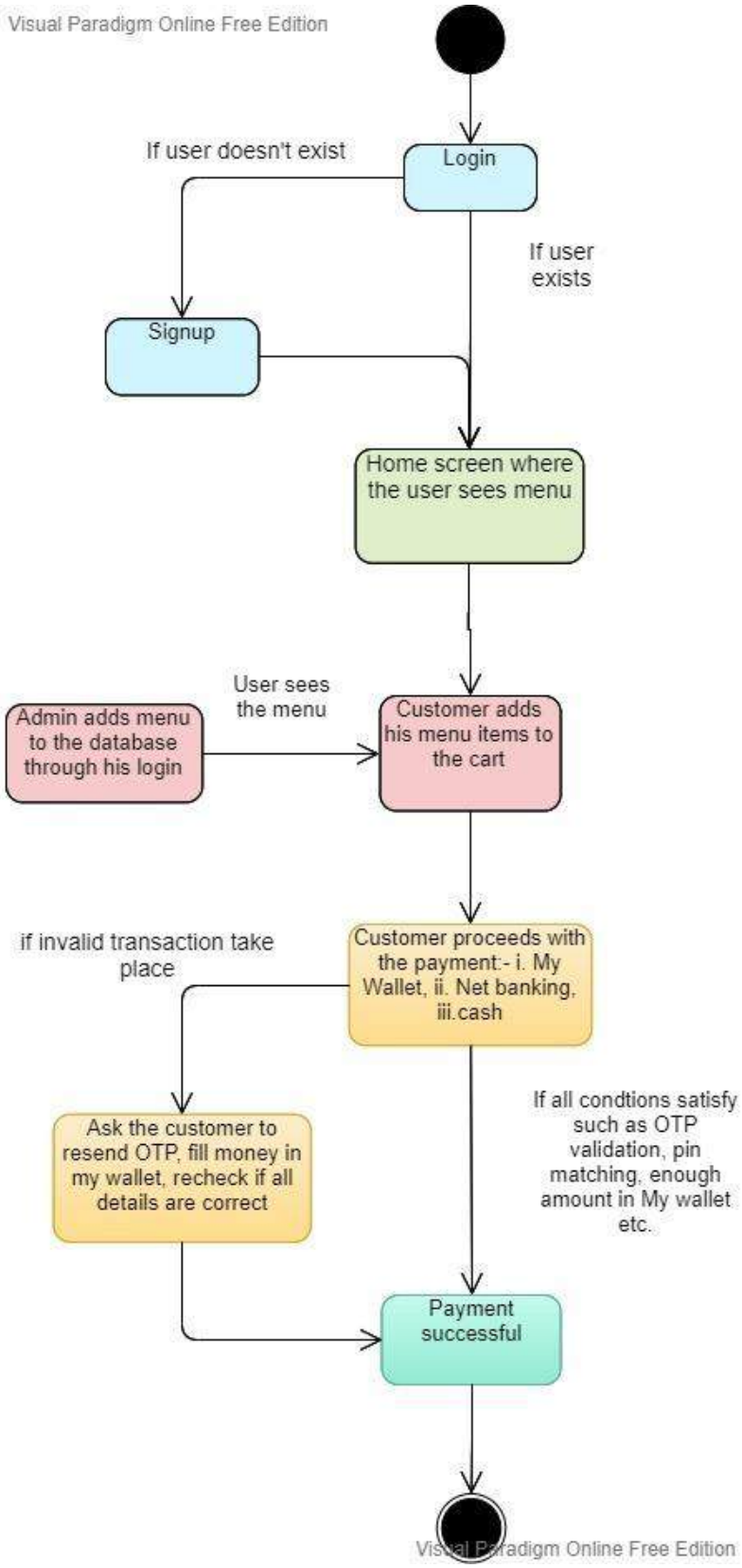


Fig. 4.3.6 State Machine Diagram

CHAPTER – 5

Testing

5.1 Integration testing

Test Title	Test steps	Expected Result	Actual Result	Status
Verify link between login/signup page and menu page	Open the application, fill in correct credentials and click on submit	User should be redirected to menu page	User is redirected to menu page	Pass
Verify link between menu and cart page	Open the app, login and go to menu. Choose food items and add them to cart and then click on cart button.	All the food items selected from the menu should be displayed in the cart.	All chosen items are being displayed.	Pass
Verify link between cart and payment gateway	Open the app, login and go to menu. Choose food items and add them to cart and then click on cart button. Then click on proceed.	Payment should be done for only the cart items total price	Payment status is displayed	Pass
Verify the link between admin login/signup and home page	Open the application, fill in correct credentials and click on submit	Admin should be redirected to home page	User is redirected to home page	Pass
Verify the link between home page and add menu	Open the application, fill in correct credentials and click on submit. Then go to add menu or add today's specials.	Admin should be redirected to page where menu is added	User is redirected to page where menu is added	Pass

5.2 UI testing

Test title	Expected result	Actual Result	Status
To check if there is drawer layout with navigation bar in customer account	Appropriate UI as in requirements	as expected	Pass
To check that home page must have 2 sections Explore menu and Today's special. Each section must have image buttons of menu items which on click navigate to their appropriate fragment.	Redirecting to the appropriate fragment	User is being redirected to expected fragments	Pass
To check if the menu is displayed in form of tab layout with 4 tabs Veg Pizza, Non-veg Pizza, Beverages, Sides. Each tab should contain the menu decided by the admin with images, price, and add to cart button	as per expectation	as per the requirements	Pass
To check if Today’s special page contains the list of menus chosen by the admin	as per requirement	as expected	Pass
To check if the cart screen contains selected menu by the user by clicking on the "add to cart" button on each menu card	The list in UI is perfect	as required	Pass
To check if there is delete button on the all the menus if the user wishes to remove from cart. There should be "proceed" button to move customer to payment module	When user clicks on delete the menu item should be removed from the cart list. When user clicks on proceed the user should be forwarded to payment module	redirection done	Pass

To check if the user on clicking of logout should get the alert box with title "Are you sure" and Logout and cancel option.	When clicked on Logout moved to Login and when clicked on cancel moved to cart where it already was	logout successful	Pass
To check if there is drawer layout with navigation bar in admin account	Appropriate UI as in requirements	as expected	Pass
To check whether admin is provided with customer list in the queue with their orders and remove customer once the order is completed	Admin is able to see the customer orders	as expected	Pass
To check whether admin can add image of the menu to be added along with its name, description and price	The menu should be added and displayed to the user without any change	as expected	Pass

5.3 Functional testing

Test Title	Test steps	Expected Result	Actual Result	Status
Verify the credentials from login and signup page	Open the app, fill in the details for signup/login and click on submit.	If user has entered any invalid credentials, then an appropriate message should be displayed and login should not happen.	A message is displayed if any invalid data is entered an the login is not completed either.	Pass
Verify that the menu is getting to cart after choosing	Open the app, fill in the details for signup/login and click on submit.	Menu items should be added to cart with chosen preferences and total amount	Cart page displays menu items with	Pass

appropriate preferences	Then go to menu and add food items to cart.	should be correct.	appropriate amount.	
Verify that if net banking is chosen as payment method, then all the credentials are checked for validation.	Open the app, fill in the details for signup/login and click on submit. Then go to menu and add food items to cart. Then click on proceed and choose net banking, fill all details and proceed.	If any invalid data is entered in payment page, then a message should be displayed and payment should not happen	As expected	Pass
Verify whether an OTP is received or not	Open the app, fill in the details for signup/login and click on submit. Then go to menu and add food items to cart. Then click on proceed and choose net banking, fill all details and proceed.	If an OTP is not received, resend option should be there.	As expected	Pass
Verify whether the pin validation is accurate while paying using 'My Wallet'	Open the app, fill in the details for signup/login and click on submit. Then go to menu and add food items to cart. Then click on proceed and choose My Wallet, fill all details and proceed.	If pin is invalid message should be displayed and payment should not proceed.	Payment is halted along with the message in case of invalid pin.	Pass
Verify whether the admin is able	Open the app, fill in the details for	Admin should be displayed the orders		

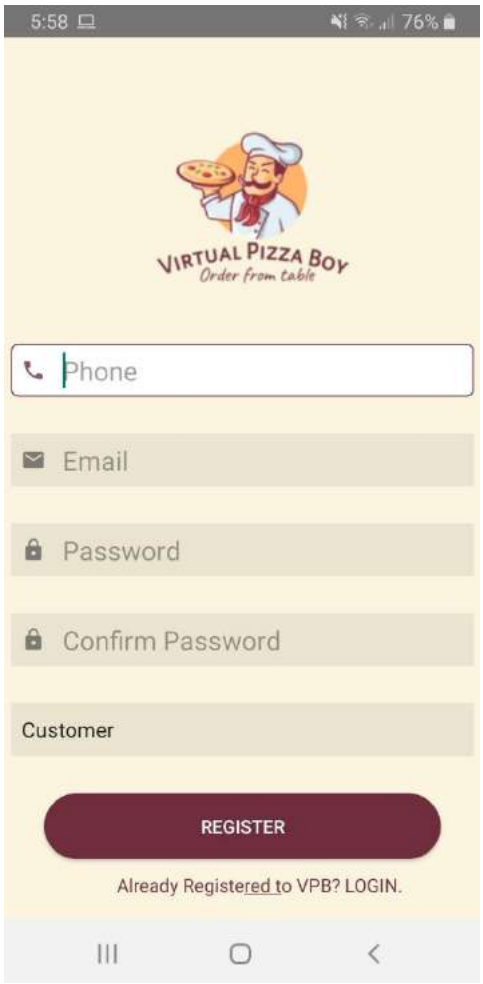
to see and manage customer orders	signup/login and click on submit. On home page swipe an order to delete.	with accurate preferences and swipe to delete should delete the order.	As expected	Pass
Verify whether the menu admin adds is actually displayed to the customer accurately.	Open the app, fill in the details for signup/login and click on submit. Then go to menu and add food items to cart.	Customer should be able to see the menu admin added.	Customer is able to see the menu.	Pass

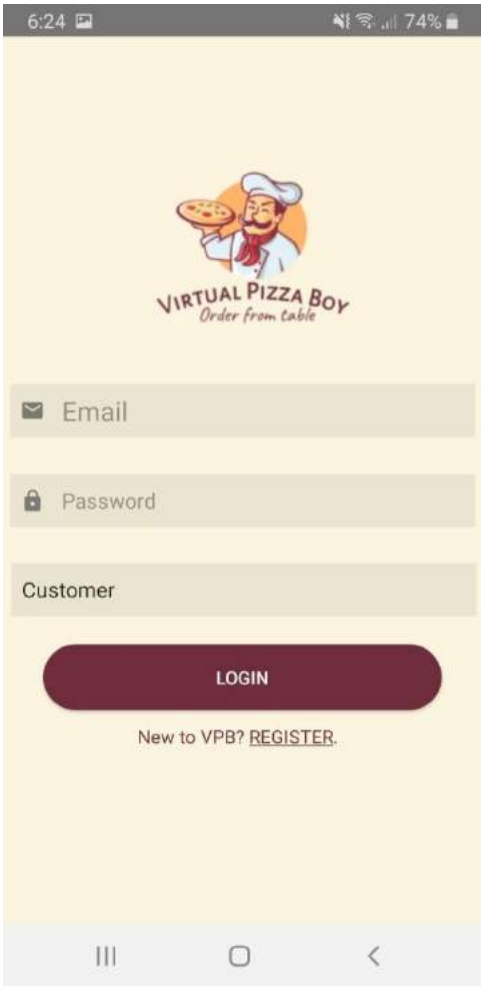
CHAPTER – 6

User Manual

This is a complete guide on how to navigate throughout the application for customers as well as for admins.

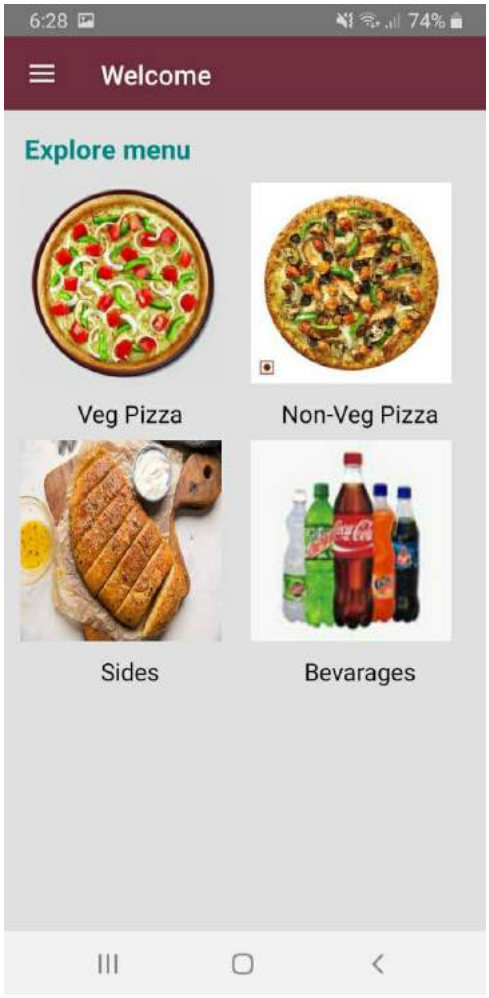
6.1 Customer signup and login pages –

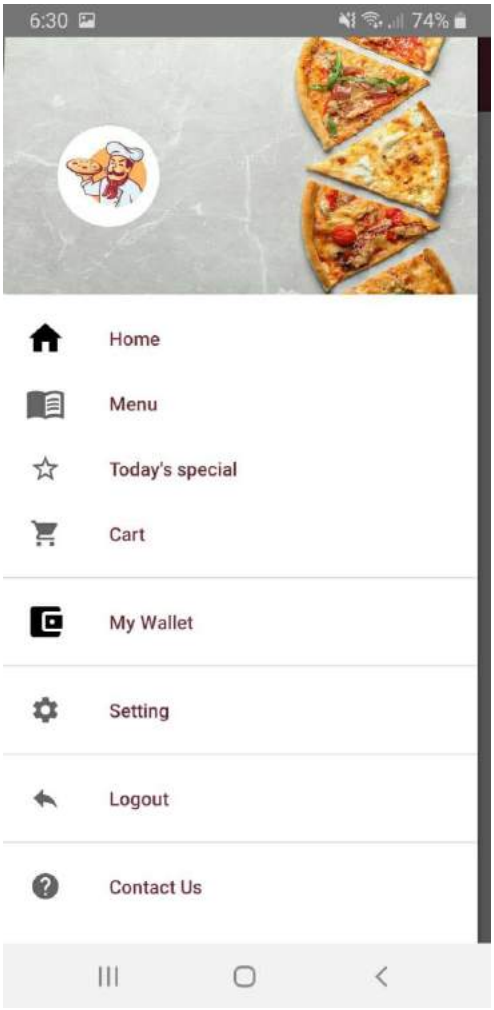




The customer should create an account or login is he/she has an existing account with valid credentials. Then they will go to home page.

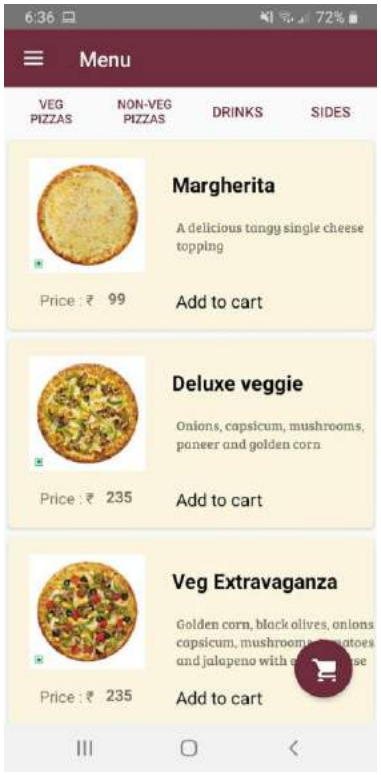
6.2 Customer home page –

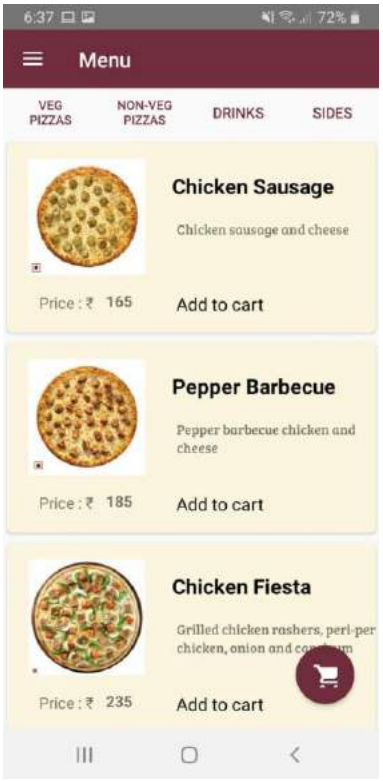


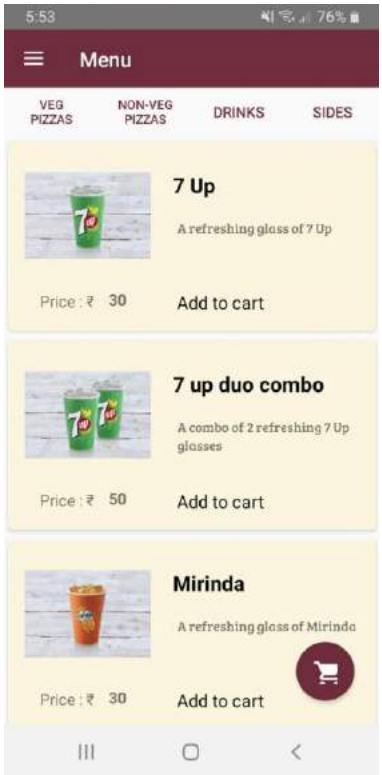


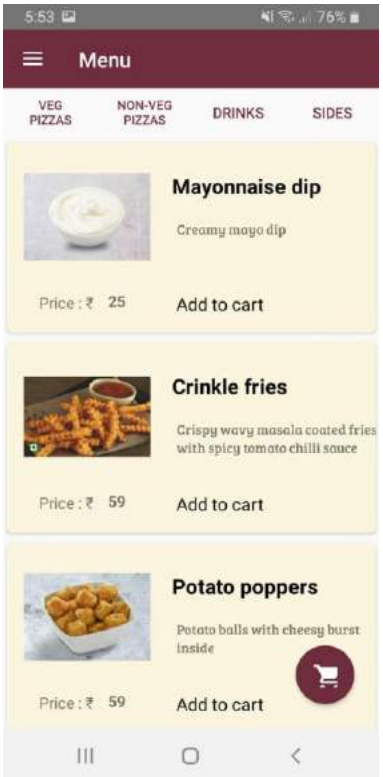
1st page will be displayed when customer first logs in and the drawer will help the customer to navigate throughout the application.

6.3 Customer menu page -

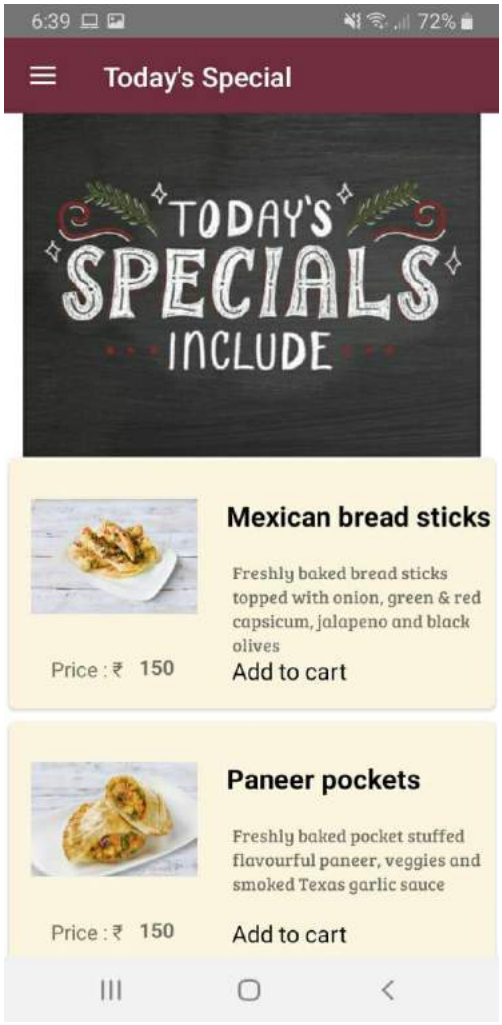






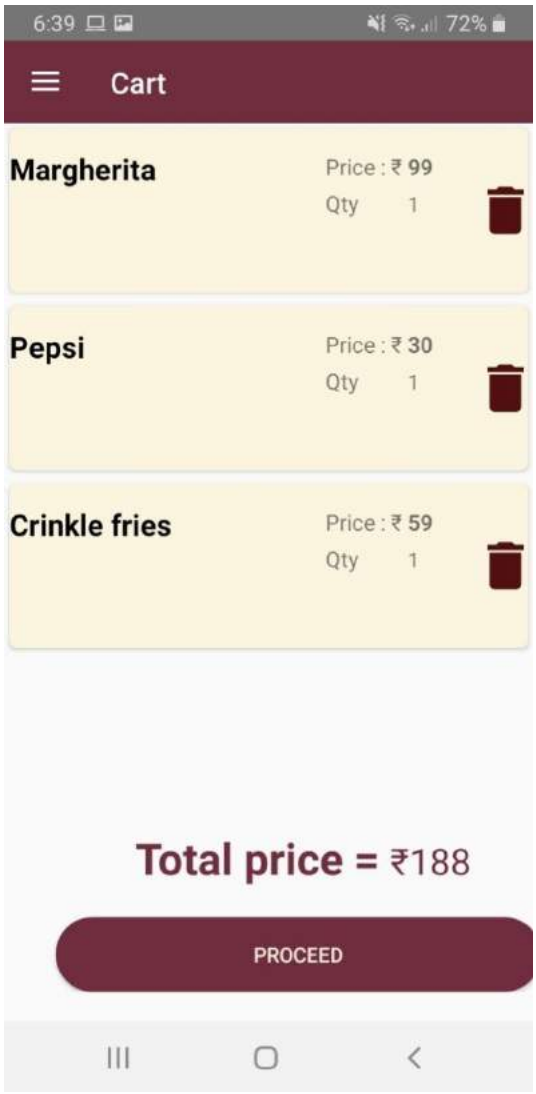


6.4 Today's special menu and place order –



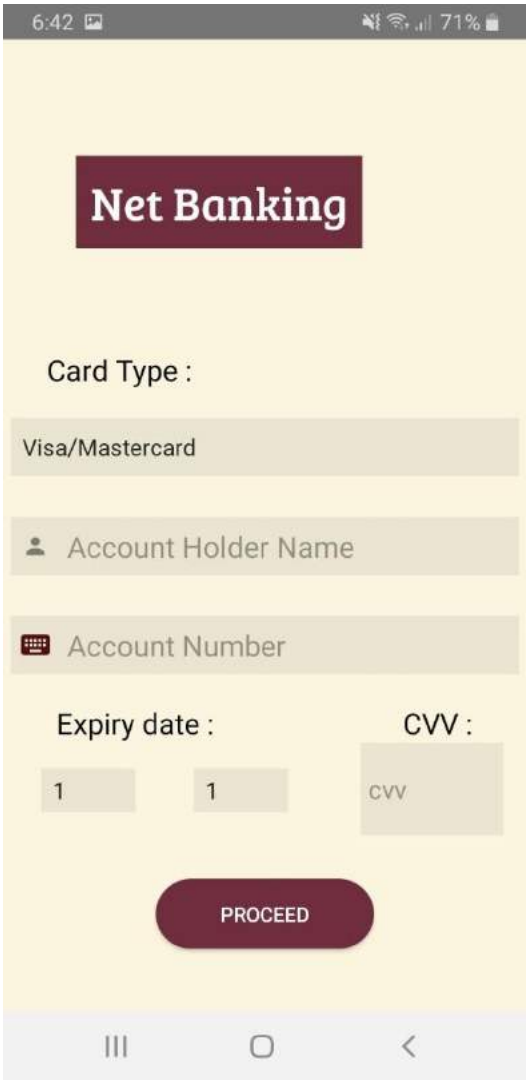
Customer should place order by pressing add to cart option in menu and choose their preferences before pressing add to cart in customize food item page.

6.5 Customer cart and payment options



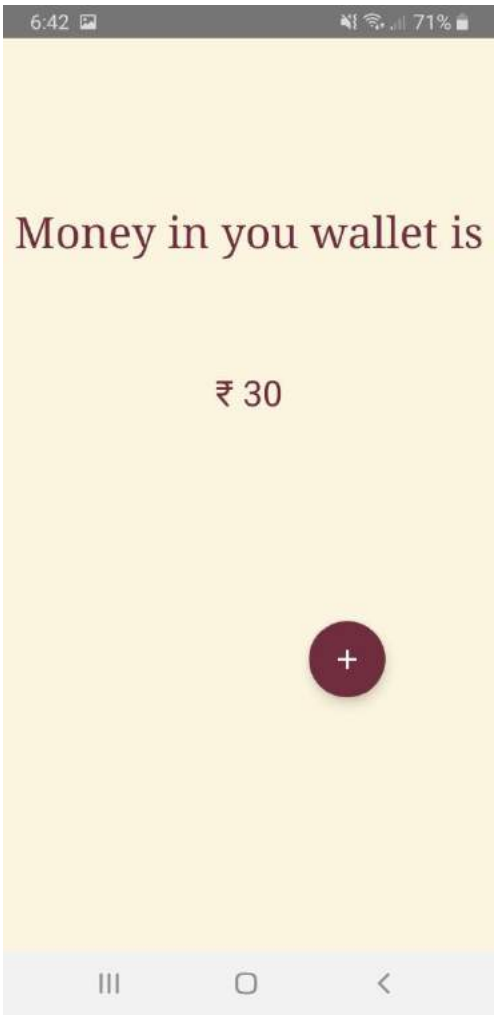
The placed order is displayed in the cart and after clicking on proceed the customer is redirected to payment options. The customer can choose one payment option.

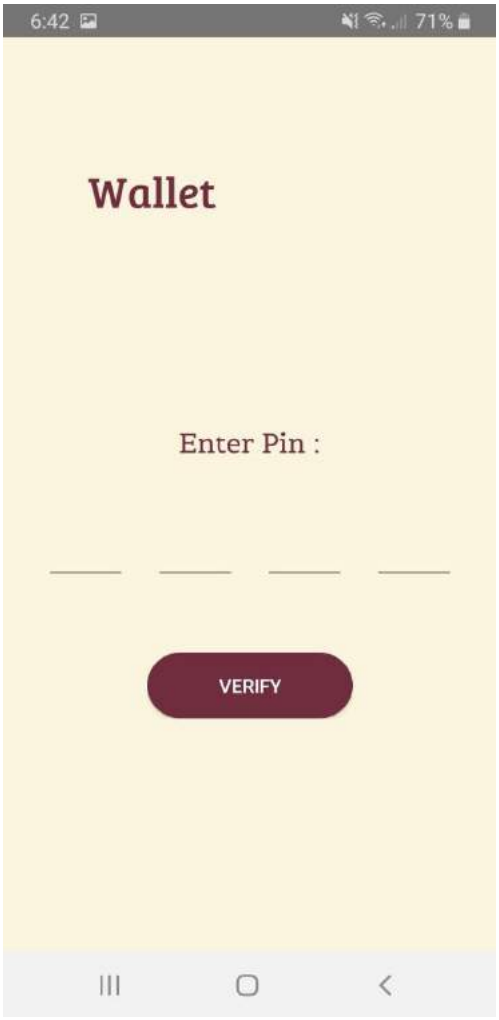
6.6 Net Banking –



If user chooses net banking as payment option then 1st screen will be displayed where user should enter valid cart credentials. Then user will receive an OTP which will be validated.

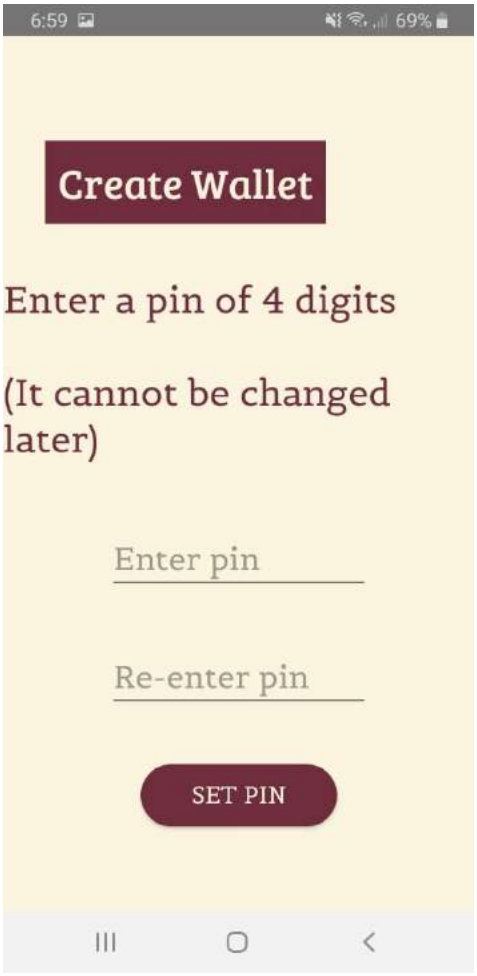
6.7 Pay using wallet –

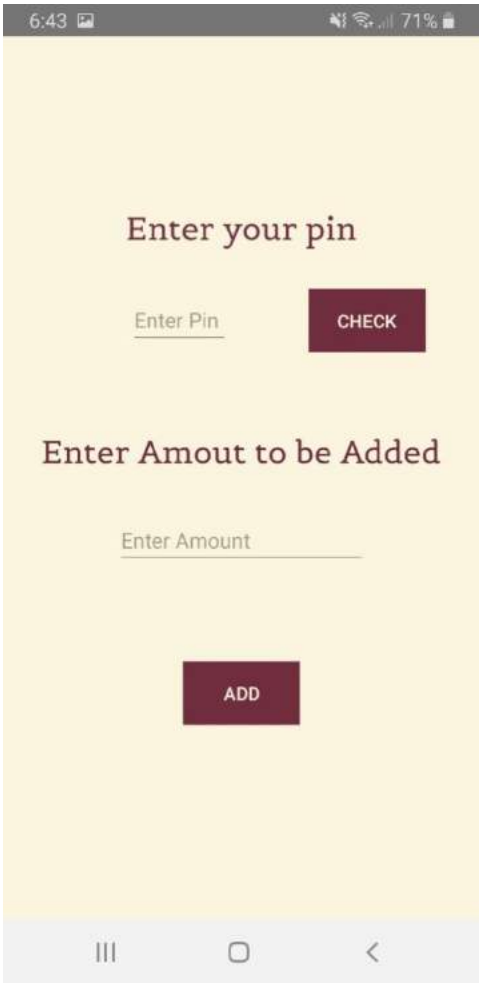




1st page is ‘My Wallet’ where customer can check the ‘my wallet’ balance. 2nd page will be displayed when the user clicks on my wallet option from payment methods. User should enter correct pin in here.

6.8 Create a wallet and add money –



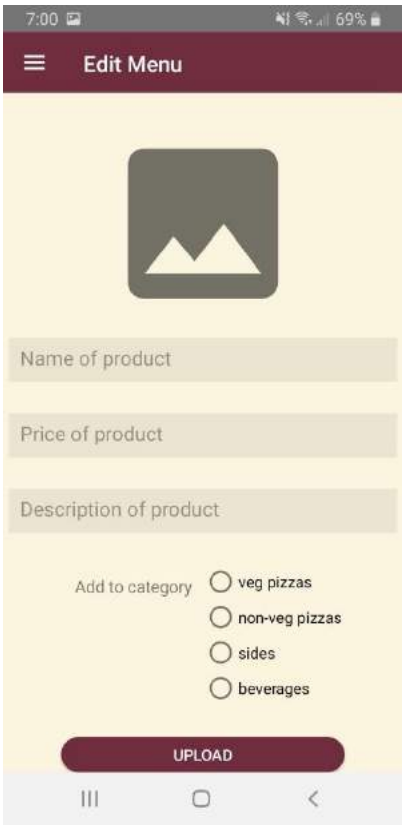


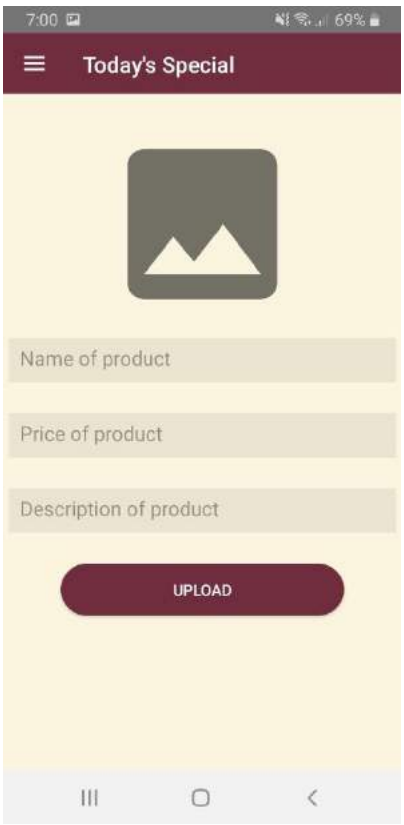
The 1st page is for creating the wallet where a pin needs to be entered. The second page is displayed when the plus button from 'my wallet' page is clicked which is used to add the money in wallet.

6.9 Admin home page –

This page will be displayed when the admin will login. This is the current orders' list.

6.10 Admin add menu and today's special items –





Admin can add menu items using these pages.

CHAPTER – 7

Strength and Limitations

Strengths –

- Virtual Pizza Boy has been designed to make management in pizza shops efficient and simpler.
- The system is flexible to use and reduces reduce the work of user to go to the counter or wait in the waiting line.
- Simple and easy to use.
- Point-and-click functionality ensures all the users finding the information they need.
- My Wallet feature helps users make payment process simpler and faster.
- Net banking is also faster in this application.
- With some clicks users will get the desired foods and with some other clicks staff will be able to manage the orders with minimum human interactions.
- The menu is provided in various types like veg, non veg pizza etc. so user can easily find the food items for their preferences.
- This system is scalable and reliable.
- If the software is corrupted for any reason the data will not be lost because it is kept on firebase cloud so we can restore it.

Limitations –

- If software is corrupted, whole data will be collapsed.
- The My Wallet cannot be used if pin is forgotten by the user.
- Lack of validation.

CHAPTER – 8

Future scope

The project has a very vast scope in future. The project can be implemented on cross platforms in future. Project can be updated in near future as and when requirement for the same arises, as it is very flexible in terms of expansion. With the proposed software of database ready and fully functional the client is now able to manage and hence run the entire work in a much better, accurate and error free.

The future scope of this project is,

- Providing cross platform support
- Implementing the updates as and when there is a requirement
- The application can be further updated for online food ordering and delivering system.
- The application can further enhance its use for multiple pizza shops.
- This project can be of great importance during this pandemic and can be effective even after it.

CHAPTER – 9

Conclusion and References

Conclusion -

With online ordering on board, we will enrichen customer experience by making the process of 'placing orders' a lot easier. Online ordering will boost shops productivity by eliminating the inefficient process of taking orders. Utilizing the latest online ordering technology for shops will also help the pizza shops to tap into a massive customer base which is tech-savvy and believes in 'online way'. Hence, this system is helpful in reducing human efforts and time in many ways.

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