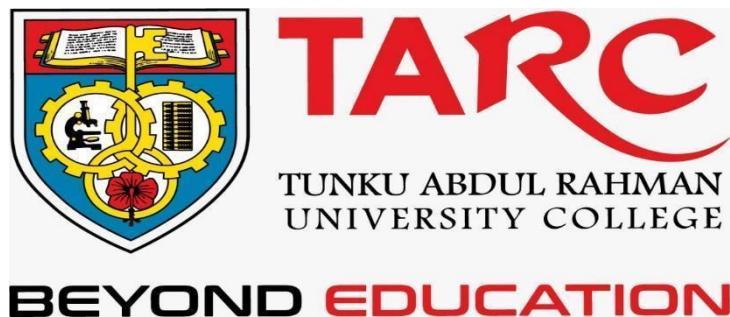


Final Year Project I

By

Ng Kah Loon



**FACULTY OF COMPUTING AND
INFORMATION TECHNOLOGY**

**TUNKU ABDUL RAHMAN UNIVERSITY COLLEGE
KUALA LUMPUR**

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PizzaKing Online Ordering System

By

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A project report submitted to the
Faculty of Computing and Information Technology
in partial fulfillment of the requirement for the
Bachelor of Information Systems (Honours)

Department of Information Systems and Security
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Bachelor of Information Systems (Honours) in Enterprise Information Systems

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Abstract

This project is developing PizzaKing's food online ordering system using the mobile application. Providing this mobile application can make it convenient and can keep up with modern technology. But there are some problems faced by this current PizzaKing online ordering system which lacks a notification system. The current PizzaKing online ordering system didn't have any notification function such as posters about new types of food, limited time special offer, promotion and others and didn't send any message to customers knowing about these new notifications. It will cause less people to know the new updated notification and will reduce the production volume sold. Other than that, we will plan to post the notification and display on the mobile application in the home page and add send email function. Therefore, this current PizzaKing online ordering system lacks real time customer feedback about the food and food rating feature. This system can add the customer feedback comment box then the customer will see the other people comment the feedback after eating this type of food is good or bad. Otherwise, the current PizzaKing online ordering system only can accept the cash but not accept the online payment. It will reduce the service efficiency of PizzaKing. Once this system has an online payment function, it will increase the number of customers to support and buy the food from PizzaKing.

Besides that, this PizzaKing online ordering system using a mobile application is helping to make more convenience to the customers and also the employees. At the same time, it can also improve the service efficiency and save many times and so on. This mobile application will be developed in Android platform and using the Android Studio and connect the Firebase database to run the progress.

(290 Words)

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I would like to special express my sincere thanks to my supervisor Mr. Lai Joo for providing me an opportunity to do this Final Year Project 1 which is “PizzaKing Online Ordering System. When I face any problems or mistakes, he will remind me and give me some suggestions to let me correct their problems.

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Chapter 1

Introduction

1 Introduction

This chapter is about the planning phase for development of the PizzaKing online ordering system by using the mobile application. For example, the project objectives, advantages and contribution, project plan, software development method and chapter summary. Providing this mobile application can bring convenience and can keep us with modern technology. The PizzaKing online ordering system will provide a function which is to post the notification and display on the mobile application in the home page and add send email function. This purpose is to let more people know about the updated information anytime. Besides that, the comment area. This lets customers comment their feedback to the comment area and customers also can see the other people's comments. It is the same as Instagram and Facebook, like sharing good things on social media. Moreover, this PizzaKing online ordering system using mobile applications is helping to make more convenience to the customers and also the employees. At the same time, it can also improve the service efficiency and save many times and so on.

1.1 Project Objectives.

1.1.1 Provide Display Investment and Send Email function

The PizzaKing online ordering system will always update the new investments about the offer, discount, new food, and limited sales and post at the mobile application Home Page in order to let the customers who are using this mobile application know this new information. Another way is the staff will use this system to send the email or message to the customer through their phone number or email. In this way it can help the people who are always less used to using this mobile application and they can get the new information by the message or email. They could be the first ones to know the new notification. Furthermore, it will attract many people who love pizza to download its application and can increase the number of customers using this mobile application to order food and buy from PizzaKing. Moreover, PizzaKing can also increase the production volume sold.

1.1.2 Provide the Comment Area function

This function allows the customers or users to share their comment with an integrated topic and photo, and then post the comment to the comment area. The customer or staff can also go to the comment area there to see every customer's comment and also can reply to its comment. In this way it can be helpful for PizzaKing's staff or manager notices most people are feel not satisfied with this food then the manager will discuss with staff about this problem. After that, PizzaKing will make some changes and enhance service efficiency and improve the skill in order to make delicious food for customers.

By the way, if this food receives a lot of good reviews it can let more people to notice it. It will cause an increased number of customers to buy this food and PizzaKing can increase its sales.

1.1.3 Provide Online Payment Function

This function allows the customer using this mobile application to order the food and can allow them to use an online payment function to bill the payment though their card name, card number in 16 digits, CVV and expiry dates. In this way it can be convenient for everyone to save their time and complete the payment quickly. Furthermore, PizzaKing provides delivery service and sometimes the food driver will forget to bring or didn't bring enough cash to make a return charge to the customer. Once this mobile application has this function, it will be one of the reasons why the customers like to order food from them because it will be convenient for payment.

1.2 Advantage & Contribution

1.2.3 Provide display investment and send email function

This will be more helpful and important to let customers know the new notification anytime when PizzaKing updates the new activities. Nowadays, almost everyone uses a mobile phone. At the same time, it will increase the number of registered PizzaKing accounts. Therefore, every member will receive the message and can also be the first one to know the new notification. Besides that, PizzaKing will always post the new notifications about new food, special offers, promotion and display on the mobile application home page. It will attract many people to download its application and can increase the number of customers using this mobile application to order food and buy from PizzaKing. Moreover, PizzaKing can also increase the production volume sold.

1.2.4 Provide the Comment Area function

If customers want to share their personal feedback, they can post the comment to the comment area. The customer or staff can also go to the comment area there to see every customer's comment and their feedback. If the manager notices most people are not satisfied with this food then the manager will discuss this problem with staff. PizzaKing will make some changes and enhance service efficiency and improve the food quality in order to make delicious food for customers. By the way, if this food receives a lot of good reviews it can let more people to notice it. It will cause an increased number of customers to buy this food and PizzaKing can increase its sales.

1.2.5 Provide online payment function

The customer uses this mobile application to order the food from PizzaKing and can use online payment to bill the payment. For example, the customer can use a credit card to bill the payment through this mobile application. This can make it more convenient for everyone. The customer and food drivers will not encounter the problem of not having enough cash. Furthermore, this also can save time and complete the payment quickly. Other than that, it is low risk of theft. After processing the delay, online payments usually go directly to your bank account, so the risk of theft is minimal.

1.3 Project Scope

1.3.3 Project Scope

The project scope of this PizzaKing online ordering system shows that the system allows the customer using this mobile application to order food or cancel. After that, it allows staff to add food, delete food, modify food detail and other functions. The modules for this PizzaKing online ordering system are shown in Figure 1.

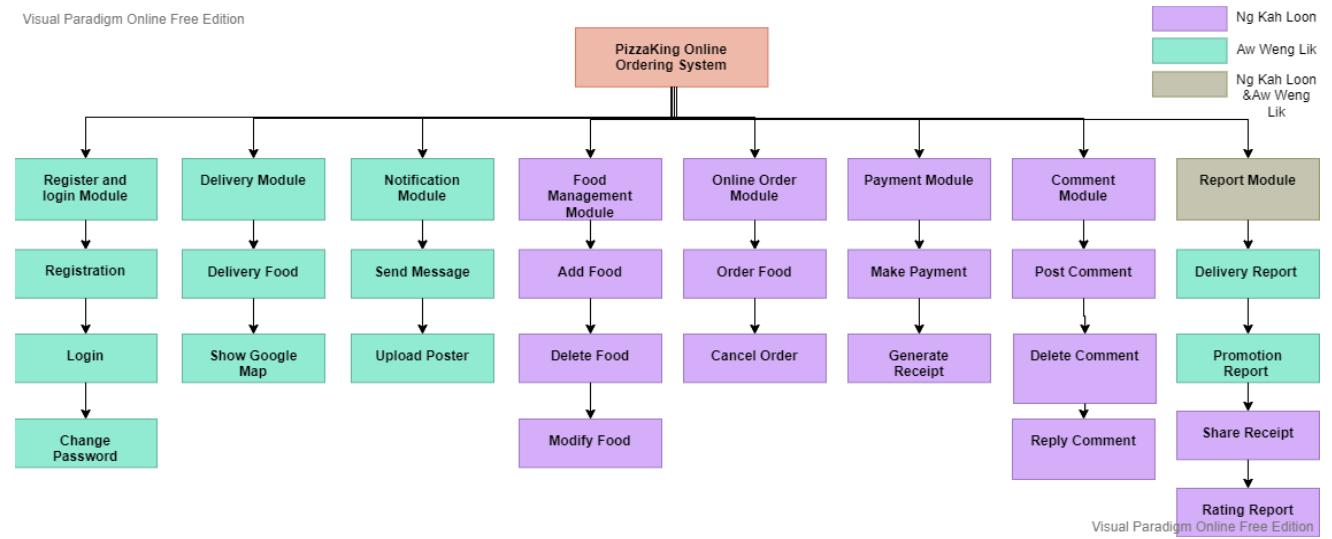


Figure 1-3-1 Project Scope

1.3.4 Task List and Gantt Chart

Gantt Chart



Figure 1-3-2 Gantt Chart

1.3.5 Brief description of each module

Feedback Module

1. Post comment – The system allows the customer to post their comments to the comment area.
2. Delete comment – The system allows the customer to delete the comment.
3. Reply Comment – The system allows the customer to reply to its comment posted by other users.

Food Management Module

1. Add Food – The system allows the staff to add and upload new types of food to the menu, and will show the details of the food such as price, offer price and others.
2. Delete Food – The system allows the staff to select and delete the current food if they didn't provide this type of food because of time limited or other reason.
3. Modify Food – The system allows the staff to modify the details of the food such as name, food price, change picture and description.

Payment Module

1. Make Payment - Customers are required to enter the correct information to the system to process the payment. For example, the customer can choose the credit card or use cash to make payment.
2. Generate Receipt – The user can choose the order receipt from the order history, and then click on the button to generate the receipt as a pdf file in the phone.

Online Order Module

1. Order Food – The system allows the customer to order food by using their mobile phone and using the internet to order. The order details will be displayed on the screen such as food name, price, quantity, food price and others.
2. Cancel Order – The system allows the customer to cancel the order from their order cart.

1.4 Chapter Summary and Evaluation

1.4.3 Software Dev method used

The software development method that we will use in this project is android studio. Because we have more interest with android studio and we need to use Java language to write the code. It is easier to understand and we can refer from the lecture class, practical class taught by the lecturer.

1.4.4 Programming language used

Java is the technology of choice for building applications using managed code that can execute on mobile devices. Android is an open source software platform and Linux-based operating system for mobile devices. The Android platform allows developers to write managed code using Java to manage and control the Android device. Android applications can be developed by using the Java programming language and the Android SDK. So, familiarity with the basics of the Java programming language is a prerequisite for programming on the Android platform. This article discusses where Java fits in mobile application development and how

1.4.5 Data Used

Firebase - Firebase Realtime Database is a NoSQL database hosted by the cloud that allows you to store and synchronize data in real time between users. Cloud Firestore allows you to store, synchronize, and query application data globally.

1.4.6 Chapter Summary & Evaluation

In this chapter, that includes the ideas of the system done to define the objective and scope of this projective scope of this project. The problem faced in this phase is to define the scope of the project, modules needed, programming language and database used, and the time to complete it. Moreover, the problem faced in this phase is to design the Gantt Chart. It needs some time to understand and use it. The tools used for this chapter are WPS office, Visual Paradigm Online Diagram and Microsoft project.

Chapter 2

Literature Review

2 Company Background

PizzaKing was founded in 1958 by brothers Dan and Frank Carney in their hometown of Wichita, Kansas. When a friend suggested opening a pizza parlor--then a rarity--they agreed that the idea could prove successful, and they borrowed \$600 from their mother to start a business with partner John Bender. Renting a small building at 503 South Bluff in downtown Wichita and purchasing second hand equipment to make pizzas, the Carneys and Bender opened the first PizzaKing restaurant; on opening night, they gave pizza away to encourage community interest. A year later, in 1959, PizzaKing was incorporated in Kansas, and Dick Hassur opened the first franchise unit in Topeka, Kansas. In the early 1960s PizzaKing grew on the strength of aggressive marketing of the pizza restaurant idea. In 1962, the Carney brothers bought out the interest held by Bender, and Robert Chisholm joined the company as treasurer. In 1966, when the number of PizzaKing franchise units had grown to 145, a home office was established to coordinate the businesses from Wichita. Two years later, the first PizzaKing franchise was opened in Canada. This was followed by the establishment of the International PizzaKing Franchise Holders Association (IPHFHA). It aimed at acquiring 40 percent of the company's franchise operations, or 120 stores, and adding them to the six outlets wholly owned by PizzaKing. The acquisitions, however, brought turmoil to the chain. Various accounting systems used by the previous franchise owners had to be merged into one operating system, a process that took eight months to complete. In the meantime, sales flattened and profits tumbled. As time went by, PizzaKing developed overseas such as Australia, Germany, Japan and other countries.

2.1 Literature Review

2.1.1 Pizza Hut's Mobile Online Ordering App

Nowadays, Pizza Hut is one of the famous fast food restaurants in Malaysia and Pizza Hut has many corporate franchised stores in Malaysia. Pizza Hut's provide this mobile application not only to bring convenience to customers place their order, but also it allows the customer to online transfer payment. In this way it can save time for each other. Moreover, Pizza Hut's also can increase their revenue, efficiency growth, customer service and productivity since everything can be done by just using mobile devices. Because nowadays every person has their own handphone, they would rather use an app to order their meal rather than to have on-site packaging. This Pizza Hut's app is free and available to download on the phone. This app allows customers to browse the menu and place their order. Customers need to sign up for an account first in order to place their orders.

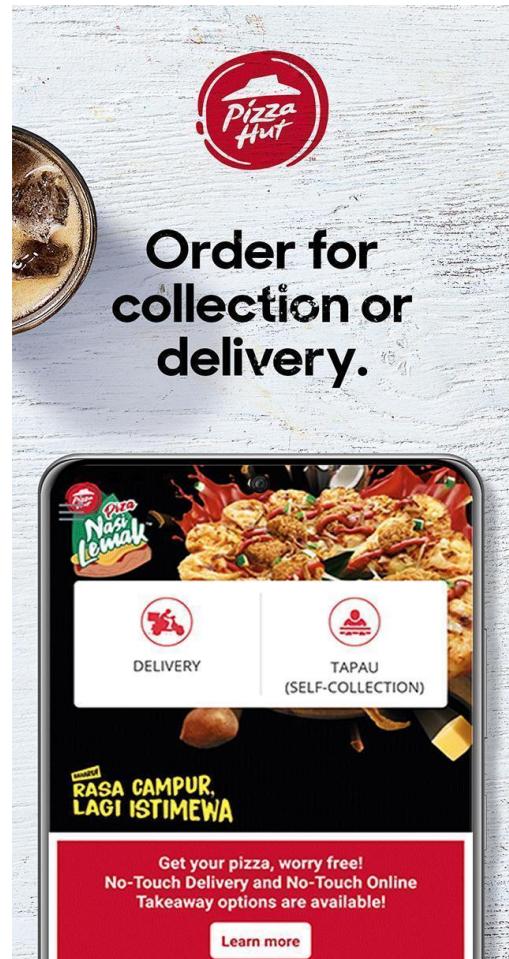


Figure 2-1-1 Pizza Hut's App

Weakness

Pizza Hut's mobile application app didn't have the rating function to let consumers rate the marks for the food item. Therefore, the customer will not be able to know which type of food has the highest rating and which type of food served the best. Although Pizza Hut's app has one feedback function, the customer needs to write a personal message and submit it to them. In this case, this is not the public feedback and it would not let every customer to notice and know about it. Besides that, the rating function also can be one of the good investments to attract consumers to buy food from Pizza Hut.

Strength

Pizza Hut's mobile application app has a good accessibility function that is called FAQ's. This is helping the user to more understand about this mobile application and Pizza Hut Rewards. For example, they have clearly taught the user how to update their Hut Rewards password. Other than that, Pizza Hut's mobile application app is supported in English Language. This is more suitable for

everybody to understand and use its app no matter if Chinese people, India people or Malay people also can understand and use it, and there is no language barrier.

2.1.2 Domino's Pizza Mobile Online Ordering App

Domino's USA launched online pizza ordering in 2007, and in 2008 revolutionized the online delivery experience by launching the innovative Pizza Builder and Domino's Tracker tools. In 2003, Domino's Pizza Malaysia launched www.dominos.com.my, which is the first online ordering platform of its kind in the country. In 2019, the Domino's Malaysia site has Pizza Builder which was a step forward in ordering food online, allowing customers to see their pizza come to life on the computer screen, while Domino's Tracker is an innovation in food delivery , allowing customers to follow the progress of the order from the time it's placed until they receive it. Domino's also has pizza deals and promos featured on the website in order to provide even more value to customers. Domino's innovations simply help them get better at what they love to do most: deliver great pizza to your door, efficiently and enthusiastically.

Weakness

Domino's Pizza mobile application app didn't have the feedback function to let consumers give feedback for the food item. Therefore, the customer will not be able to know which type of food has the highest rating and which type of food served the best. Domino's Pizza app also doesn't have the rating function. In this case it will be inconvenient to customers who want to give feedback for Domino's Pizza, the customer only can contact them and give feedback to them.

Strength

Domino's Pizza mobile application app has support for multiple payment methods for customers to choose which is cash on delivery, credit card, American Express, online banking and GrabPay. Customers have the flexibility to choose from any payment method. Other than that, Domino's Pizza mobile application app provides their customers with multiple login options such as via Facebook, Google email, and Apple account. Furthermore, when the customer places their order, it allows the customer to set order timing with two selections which are now and later. In this way it can bring convenience to customers if the customer is busy at work and the customer can order early at a select time.

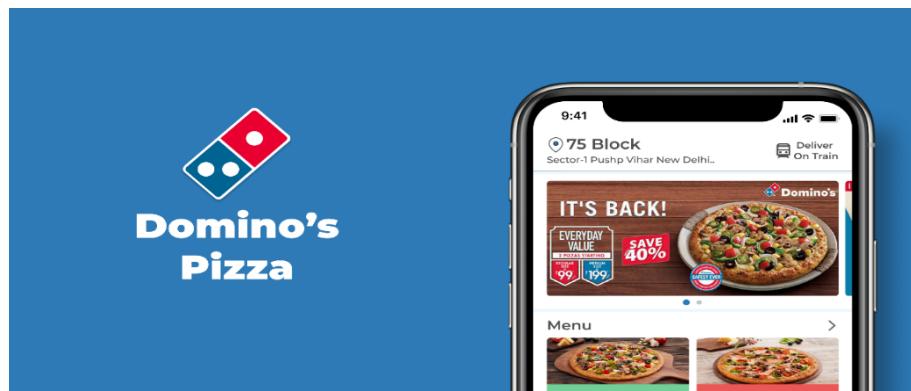


Figure 2-1-2 Domino's Pizza App

2.1.3 Table of Comparison

Features	PizzaKing Online Ordering System	Pizza Hut's Mobile Online Ordering App	Domino's Pizza Mobile Online Ordering App
Rating Feature for customer	Yes	No	No
Able to add into Favourites List	No	No	No
Message Notification System	Yes	No	No
Able to share to social media channer	No	No	Yes
Track Order	No	Yes	Yes
Real-time Feedback	Yes	Yes	No
Order History	Yes	Yes	Yes
Comment Area	Yes	No	No

Delivery Services	Yes	Yes	Yes
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Table 2-1-3 comparisons between PizzaKing Online Ordering System, Pizza Hut's Mobile Online Ordering App and Domino's Pizza Mobile Online Ordering App.

2.2 Cost and Benefits Analysis

Costs					
	Year 0	Year 1	Year 2	Year 3	Total
1. System development staff					
(i) Programmer "Ng Kah Loon" (RM 3000 * 3months)	9000	0	0	0	9000
(ii) Programmer "Aw Weng Lik" (RM 3000 * 3months)	9000	0	0	0	9000
2. Hardware					
(i) Computer Laptops(RM3200 * 1 unit) (2unit)	6400	0	0	0	6400
ii) Server	15000	0	0	0	15000
ii) Router	500	0	0	0	500
3. System Maintenance					
(i) Maintenance System	4500	4500	4500	4500	27000
Total Cost (RM)					66900
Benefits					
1. Profit of Online Order from customer	0	35000	37000	39000	111000
2. Profit of Delivery Charge from customer	0	1750	1850	1900	5500
Total Benefit (RM)					116500

Table 2-2 Cost and Benefit Analysis

Total of benefit earned (116500) – Total of cost used (66900) = Positive (49600)

The cost and benefit analysis is a process where the organizations can analyse the data decision, system, project and determine a value for intangibles. PizzaKing's company can identify the benefits of associated costs, and subtract the costs from benefits. According to the table at the above analysis result, PizzaKing's company could know how many profits they earn in each year and the result within Year 0 to Year 5 they would totally earn RM134600. By the way, as we can see their estimations of cost are positive. It means they developed this mobile application that is worthwhile.

2.3 Chapter Summary and Evaluation

In this chapter 2 summary, we need to estimate the total cost that we need to spend and also estimate the benefits. In case we will not lose money and can keep consumption balance for expenses. Besides that, in order to let us see clearly and calculate the cost accurately, we used table form to arrange the list of things. Furthermore, there are two systems worthy of our reference and it is familiar with our online system. Then, we will learn with these two systems and do some research to improve our system.

Chapter 3

Methodology and Requirements Analysis

3 Methodology and Requirements Analysis

In order to develop this project as can be satisfied to the consumer with using this PizzaKing online ordering system mobile application, the methodology that we used is questionnaires and performing a survey to ask other people of their requirement for this mobile application. There are a lot of questions at the following. After that, we can know the result from these data given by other people.

3.1 Questionnaires

3.1.1 What is your age?

The total of responses is 34. From the figure e 3.1.1 below, we can realize that the most people 61.8% in 15-24 years old, 26.5% in 25-53 years old and 8.8% in 0-14 years old. And 0% in 55-64 years old and 0% in 65 years old or above.

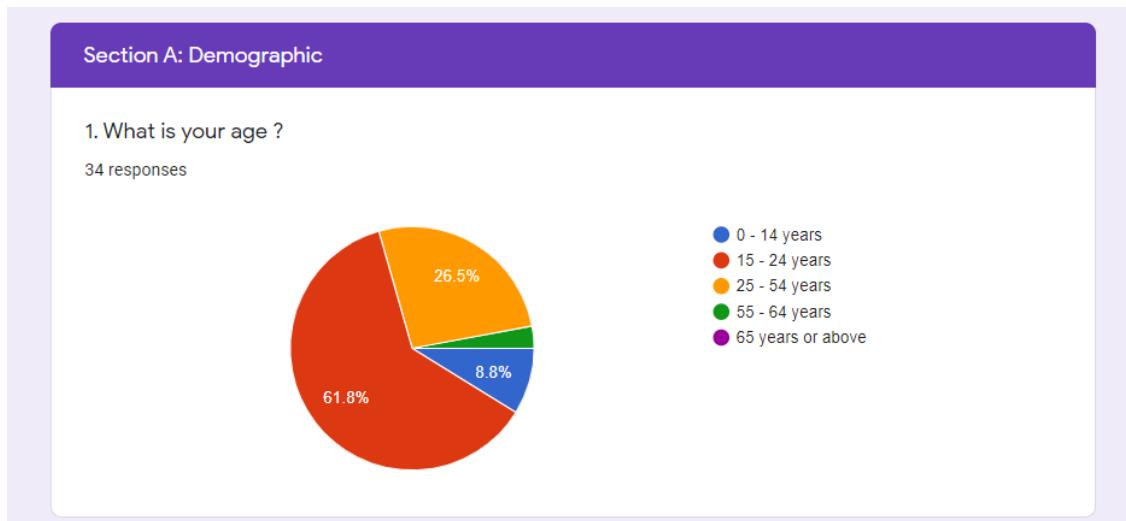


Figure 3-1-1 The age of the respondent percentage

3.1.2 What is your gender?

From the figure e 3.1.2 below, there are more boys than girls for giving the responses.

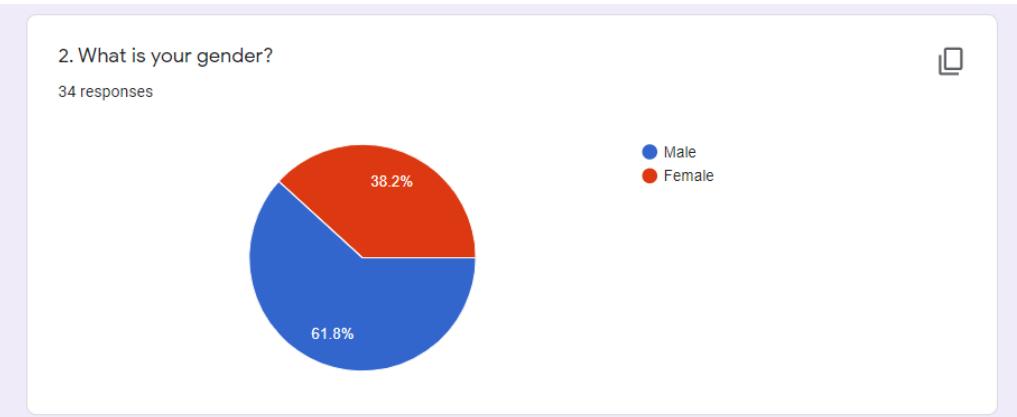


Figure 3-1-2 The gender of the respondent percentage

3.1.3 Do you have any experience of using online food ordering systems on mobile applications?

From the figure e 3.1.3 below, almost all people have experience in using online food order applications.



Figure 3-1-3 Respondent's experience in using ordering application percentage

3.1.4 How much time do you order food online per week?

From the figure e 3.1.4 below, almost all people are ordered 1 or 2 times in per week and the rest are ordered 3 or 4 times in per week. Moreover, there are no people who order 5 or above times per week.

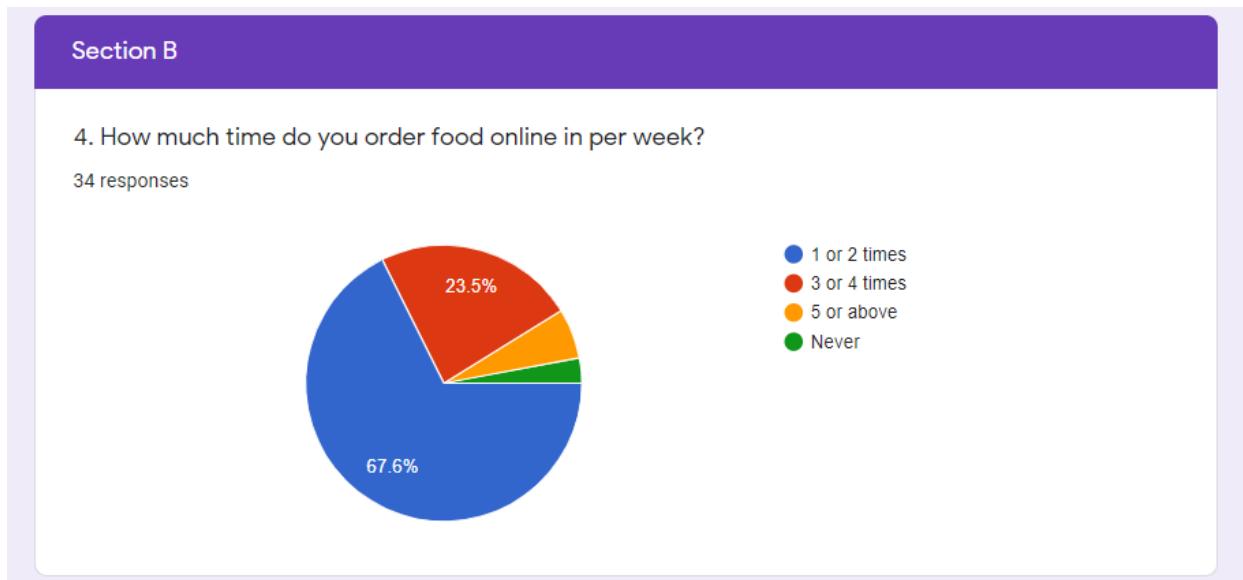


Figure 3-1-4 Respondent's order times in per week percentage

3.1.5 How much time (minutes) do you usually spend to order food online for each time?

From the figure e 3.1.5 below, the most people are using about 5-10minutes to order food, and 32.4% of people are using 11-20minutes to order food, and the smallest people are using 21-30 minutes to order food. Finally, we can realize that there are no people who are using more than 30 minutes to order food.



Figure 3-1-5 Respondents' time required for ordering percentage

3.1.6 How would you rate using food ordering apps?

From the figure 3.1.6 below, we can realize that more people are likely to use food ordering apps and they rate 18/20 for food ordering apps. Furthermore, 44.1% of people are rating 7/20 or 8/20 for food ordering apps and 2.9% are rating 1/20 for food ordering apps.

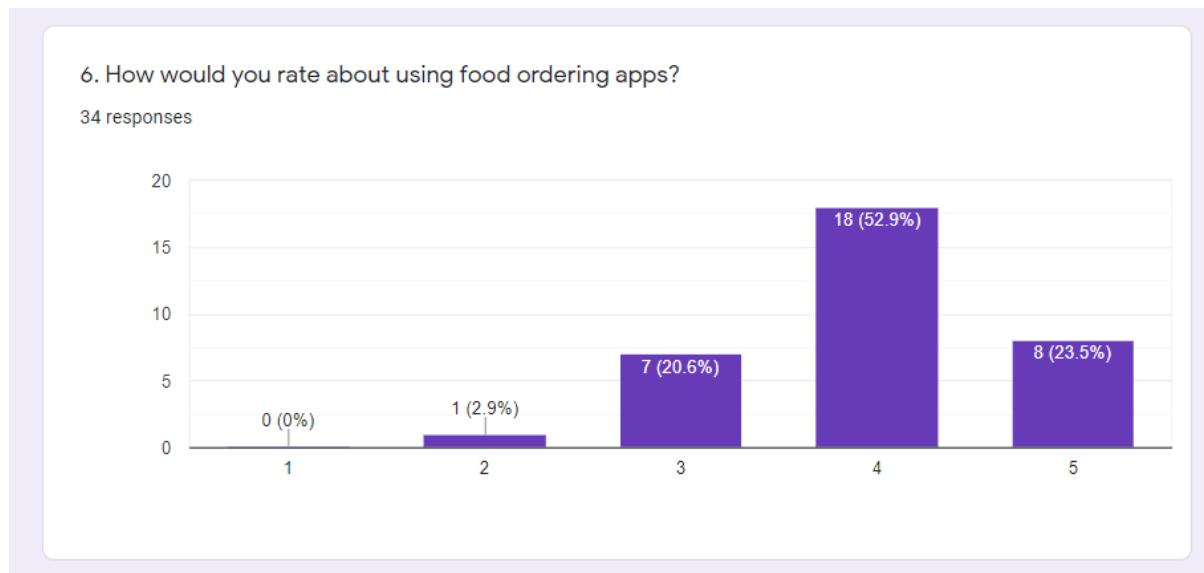


Figure 3-1-6 Respondents' satisfaction with food ordering apps percentage

3.1.7 What functions do you like that the online ordering system has?

From the figure e 3.1.7 below, the most people are likely to enjoy online payment functions and second is delivery services function. Moreover, some people also like feedback functions and display food images and other details. We can realize that all these four main functions are very important and almost all people like these functions.



Figure 3-1-7 Respondents' required function in ordering system percentage

3.1.8 Which payment method do you usually use to pay the bill?

From the figure e 3.1.8 below, most people are using FPX-Online Banking to pay the bill. 26.5% of people use credit cards and 11.8% of people use E-wallet to pay the bill. Other than that, we can realize that there still have 17.6% number of people are use cash to pay the bill.

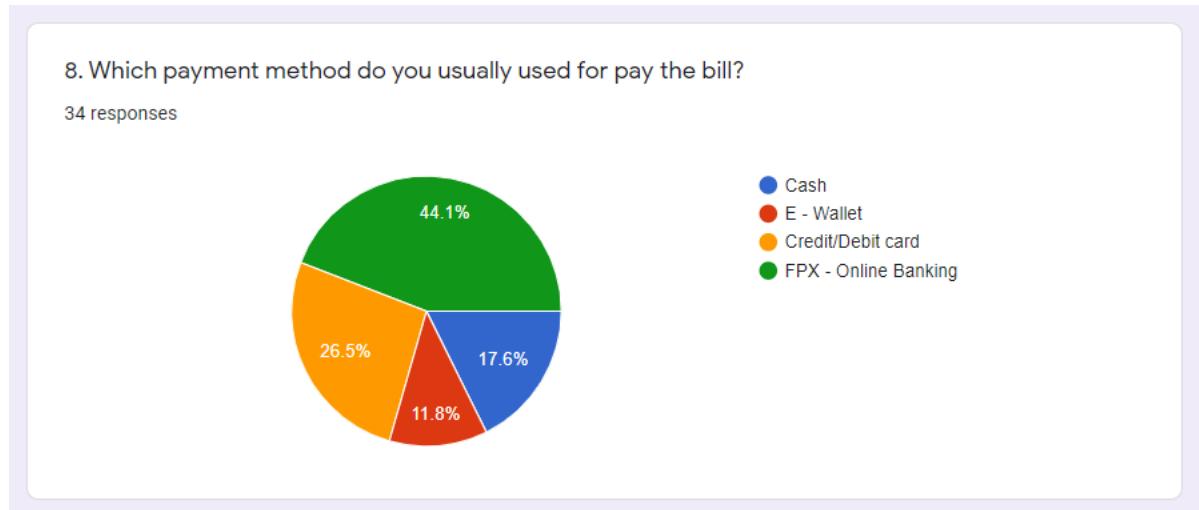


Figure 3-1-8 Payment method of respondent used of percentage

3.1.9 Which meal do you typically order food online?

From the figure e 3.1.9 below, most people order food for lunch and dinner. And few people order food for breakfast and dinner.



Figure 3-1-9 The time of respondents usually order

3.1.10 What is your preferred method of ordering?

From the figure e 3.1.10 below, we can realize that almost of people are preferred method to order food through using mobile apps and rest of people preferred through phone call. There are no people who prefer using websites to order food.

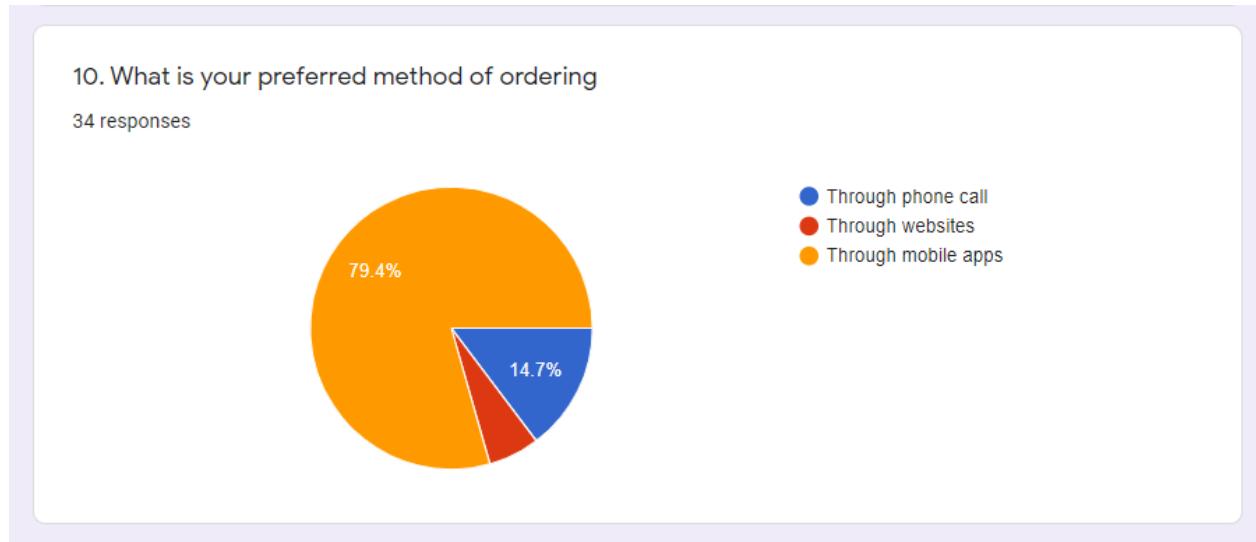


Figure 3-1-10 Respondents' required preferred method percentage

3.1.11 Do you think that notification will be helpful to you?

From the figure e 3.1.11 below, half of the people are thinking that the notification will be helpful to them. 29.4% number of people answered no and 20.6% number of people answered maybe.

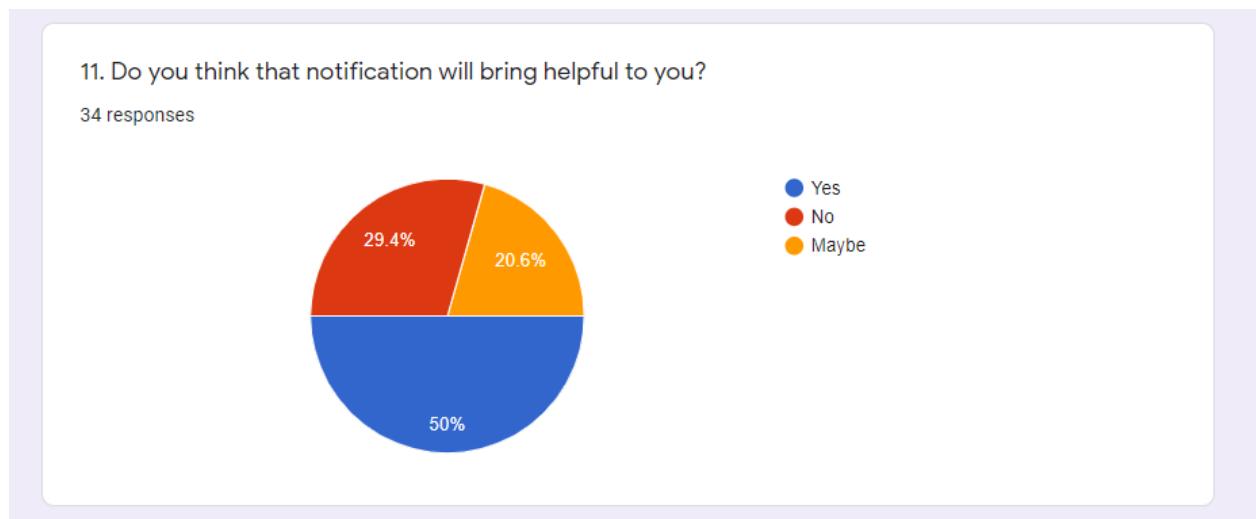


Figure 3-1-11 Respondents feel helpful with the information percentage

3.1.12 Please state your reasons according to Question 11 above.

From the figure e 3.1.12 below, according to the responses comment, we can realize that most people think notifications are important because they can get the news, information, discount details and others. After that, to those who think notifications are not important because of no time to see the message, busy at work, lazy to see and forget to see could happen. And fewer people are not interested in the notification.

12. Please state your reasons according to Question 11 above.

34 responses

convenient

always busy in working, no time to see notification

wouldn't see

get the newest information about discount, how to get voucher and so on

easy

Know when our food reach.

don't like

yes

can get information through using handphone

Let me know there are activities or inform me of discount

It can let me know had event and discounts.

Many time I don't see the notification

.

To keep update the track of the delivery man

With notification, i can keep track if the food has been pickup or is on the way to my place. And notification about the current promotion of the store is very helpful as well.

Won't go to see specially

Not necessary

i dun like to receive notification like discount or anything

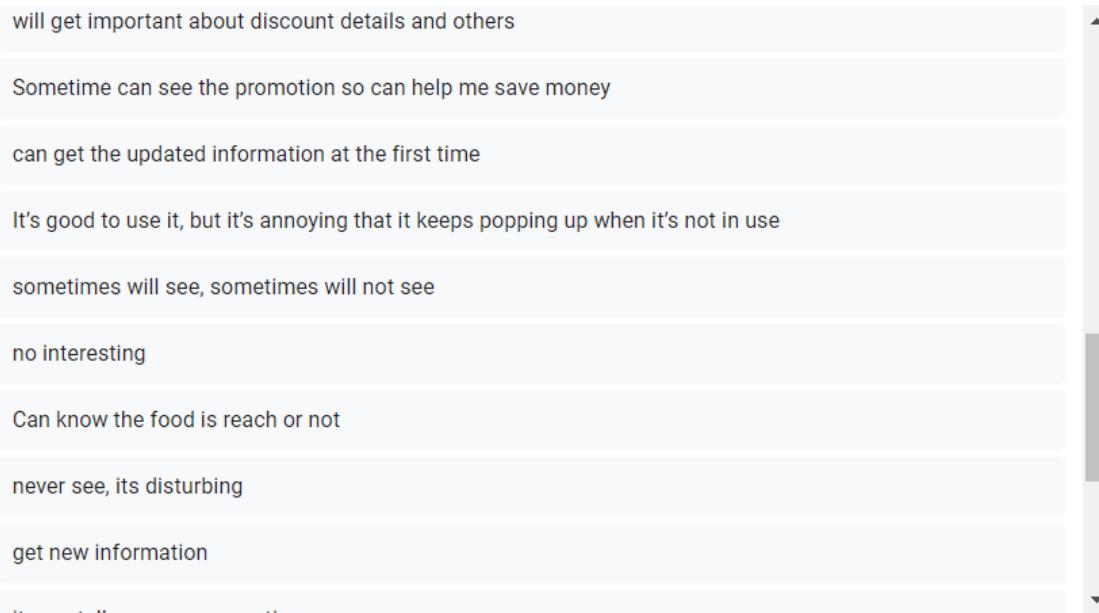


Figure 3-1-12 Respondents' opinion of received information

3.1.13 Any suggestion or feedback would you like to provide us?

From the figure e 3.1.13 below, some people are giving some suggestions to us which can provide new services. Some people preferred to add an authentication function, something like a login account, using email and password to login their own account in these apps.

13. Any suggestion or feedback would you like to provide us?
34 responses

no

nope

nope

improve new service

Nope

The account can direct using the gmail registers and login

Using the gmail to login the account, easy to remember the accounts and password

.

I hope they keep provide good service, since some people are not satisfy with some of the delivery man.

i this it is enough n nothing need to add

The login account I think can direct using the email account login

enhance function and order speed

I think no, perfect already

can improve more online food order

没有

currently no

always innovative function

maybe no

Figure 3-1-13 Respondents' feedback

3.2 System Functional Requirements

3.2.1 Add Food

With this function, the users can add the food item details and add the image into the menu through connect by database which is using Firebase Database. The food details will be added to the menu and display on the menu with the food price, food image and food name. Besides that, there is not a limit for users to add the new food item and they just follow their supervisor or boss's requirement to add a new food item.

3.2.2 Delete Food

For this function, it assists the users to select the food item they don't want and delete it from the menu. Once the food item has been deleted, this food item's information will disappear forever. In order the users delete food items wrongly, before users delete it, the system will ask for a confirmation from users.

3.2.3 Modify Food

Following this function, it is allowed the users to modify the food item details. It is required to modify the food item details by selecting on the menu. The users can change the food price, new name and change the food photo. After the users are modified, the new details will be displayed on the menu.

3.2.4 Make Payment

This function allowed the customers to use credit cards and pay the bill through using online payment by handphone. The customers are required to enter a card number in 16 digits, name on card, expiry date and CVV.

3.2.5 Generate Receipt

In this function, the customer can choose the order receipt from the order history and then generate the receipt as a pdf file. The receipt will display order date and time and other details. In order to make evidence and will not be deceived when found that the order date is wrong, or other details are wrong.

3.2.6 Order Food

This function allowed the customers to order food from select the food type, enter food quantity through using by handphone. After the customer selects a food item, the system will display the order cart and let customers place their order. Before placing the order, it is allowed the customer to enter the voucher number (if customer have). Next, the total amount will be calculated automatically and displayed on the screen and then customers make sure about it and confirm to click the check out button and then make the payment.

3.2.7 Cancel Order

By this function, it allows the customers to cancel orders when suddenly the customers have changed their mind because they want to change other food items or maybe some. This function is very important and brings good customer service to customers in case when customers order wrongly but can't cancel order and it will make customers feel dissatisfied.

3.2.8 Post comment

This is related to communicating with other people through the comment function. It allows customers to upload photos about food and write their thoughts on the box and then post to the comment area. Then, a lot of people will see this comment and it is the same with Facebook and Instagram.

3.2.9 Delete comment

This function allowed the users to delete the comment that was already posted in the comment area. Once the users have deleted the comment, this comment of information and information about other people who have replied to this comment here also will disappear forever.

3.2.10 Reply Comment

Usefulness of this function allowed the users to reply to other people's comments. There is no limit time for users to reply to comments and the users can reply to anything they like.

3.3 Non-Functional Requirements

3.3.1 Availability

This system will relate to application availability. It is usually part of an application monitoring and management software. It is used by application administrators to determine an application's ability to deliver the required functionality. Next, these can include the overall or timed application uptime and downtime, the number of transactions completed and so on. For example, the customer order should be processed within 1 hour and delivered to their home.

3.3.2 Maintainability

Maintainability is a very important quality attribute. As it allows developers to constantly improve the mobile applications and better tailor them to their customer base. Furthermore, maintenance involves functional checks and repairing the software to solve the error problem in the system. By achieving this, the user or customer needs to update the latest version of the system.

3.3.3 Accessibility

This “PizzaKing” app is allowed to be accessed by the public users. The public users are able to access the “PizzaKing” apps by using their handphones and need to connect to the Internet before opening this app. In order to let everybody access these apps no matter where they are, the premise is that the user must connect to the Internet.

3.3.4 Performance

It is required to have good network conditions, no packet loss, no latency, high speed in load time and others. In order to avoid the problem such as a delay in the response from the mobile application or application some time gets restarted, hanged or gets frozen and others. If these problems always come out, it will cause users to dislike using these apps even if they want to uninstall these apps.

3.4 Requirement Analysis

3.4.1 Use Case Diagram

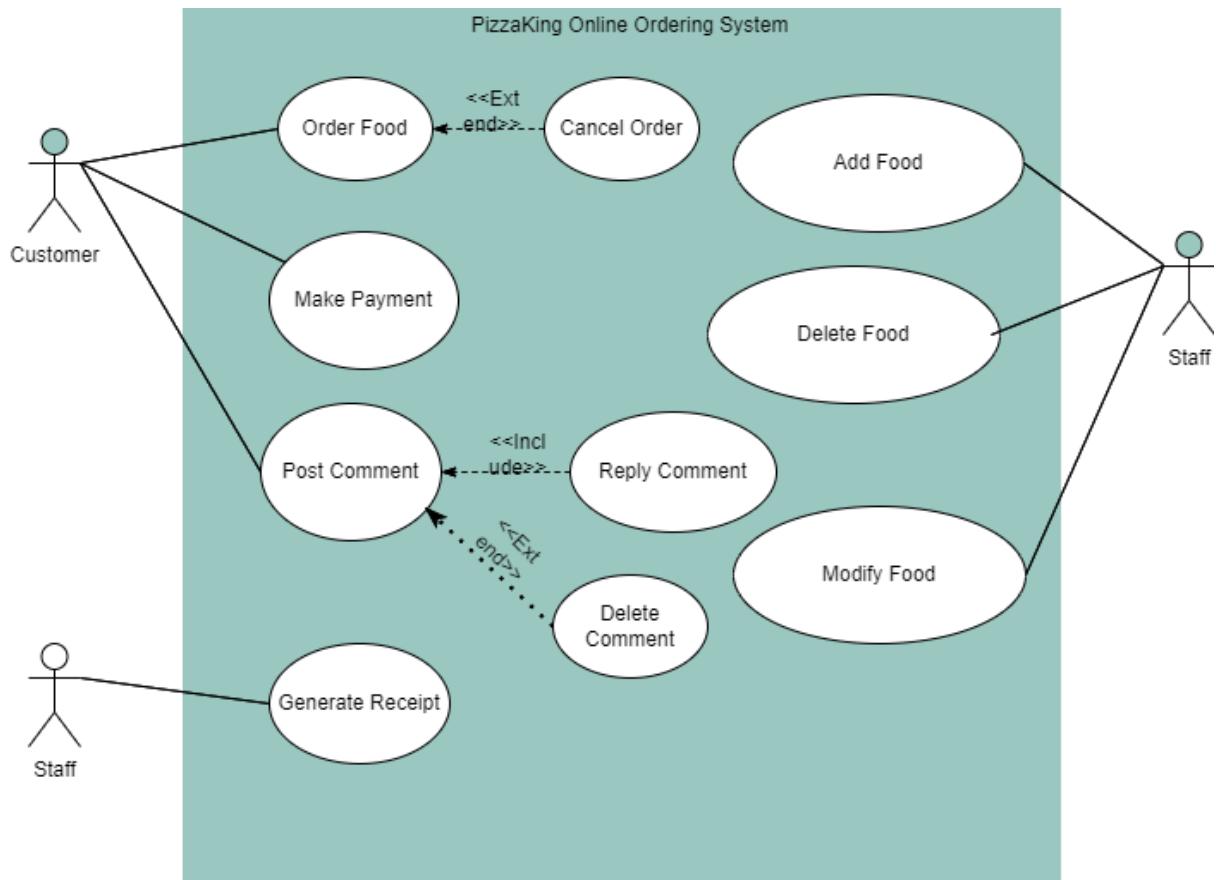


Figure 3-4-1 Use Case Diagram

3.4.2 Use Case Description

3.4.2.1 Add Food

Name of Use Case	Add Food
Brief Description	Allow the staff to add new food items to the food menu.
Actor	staff
Pre-condition	The staff must login their own account with a phone number and password.
Actor Action	System Response
1. Open Pizzaking apps	2. Require fill up the phone number and password.
3. Enter the phone number and password.	4. Display home page.
5. Enter the menu setting.	6. Display menu setting.
7. Enter an add new food function.	8. Display the form and require to fill up the food name, price, description, and choose a food image.
9. Fill up the food name, price, description and select the food image.	
10. Enter the Add button.	11. Display message box asking for confirmation.
12. Enter the “Okay” button.	
13. Done add food items.	
Alternative Flows	If staff enter the “Cancel” button and then the new food item will not be added into the menu.
Post-condition	The new food item is added to the food menu.

Table 3-4-2-1 Add Food

3.4.2.2 Delete Food

Name of Use Case	Delete Food
Brief Description	Allow the staff to delete food items from the menu.
Actor	staff
Pre-condition	The staff must login their own account with phone number and password and then select the food item which they want to delete.
Actor Action	System Response
1. Open Pizzaking apps	2. Require fill up the phone number and password.
3. Enter the phone number and password.	4. Display home page.
5. Enter the menu setting.	6. Display menu setting.
7. Select the delete food function.	
8. Select the food item and enter the delete button.	9. Display message box asking for confirmation.
10. Enter the “Okay” button.	
11. Done deleted food item.	
Alternative Flows	If staff enter the “Cancel” button and then the selected food item will not be removed from the menu.
Post-condition	The food item will be removed from the menu.

Table 3-4-2-2 Delete Food

3.4.2.3 Modify Food

Name of Use Case	Modify Food
------------------	-------------

Brief Description	Allow the staff to modify the food details.	
Actor	staff	
Pre-condition	The staff must login their own account and then select the food item which they want to modify the food details.	
Actor Action	System Response	
1. Open Pizzaking apps	2. Require fill up the phone number and password.	
3. Enter the phone number and password.	4. Display home page.	
5. Enter the menu setting.	6. Display menu setting.	
7. Select the food item.	8. Display its food item details.	
9. Edit the food item details.		
10. Enter edit button.	11. Display message box asking for confirmation.	
12. Enter the “Okay” button.		
13. Done modify food details.		
Alternative Flows	If staff enter the “Cancel” button and then the selected food item will not be modified from the menu.	
Post-condition	The food details will be updated and displayed on the food menu.	

Table 3-4-2-3 Modify Food

3.4.2.4 Order Food

Name of Use Case	Order food
Brief Description	It allowed the customer to order food using a handphone.

Actor	Customer	
Pre-condition	The customer must login to the account and then select the food item that they want to order.	
Actor Action	System Response	
1. Open Pizzaking apps	2. Require fill up the customer phone number and password.	
3. Enter the customer phone number and password.	4. Display home page.	
5. Go to the food menu page.	6. Display food menu.	
7. Select the food item.		
8. Enter the food quantity.		
9. Add to cart.		
10. Go to order cart.	11. Display ordered food item.	
12. Enter the check out button.		
Alternative Flows	-	
Post-condition	Will go to the payment page to make payment.	

Table 3-4-2-4 Order Food

3.4.2.5 Cancel Order

Name of Use Case	Cancel Order
Brief Description	Allow the customer to cancel order before they click the place order button.
Actor	Customer

Pre-condition	The customer must login to the account and select the food item that they want.	
Actor Action	System Response	
1. Open Pizzaking apps	2. Require fill up the customer phone number and password.	
3. Enter the customer phone number and password.	4. Display home page.	
5. Go to order cart.	6. Display ordered food item.	
7. Select the ordered food item and click the remove button.	.	
8. Done Cancel the food item.		
Alternative Flows	-	
Post-condition	The food item selected will be removed.	

Table 3-4-2-5 Cancel Food

3.4.2.6 Make Payment

Name of Use Case	Make Payment
Brief Description	Allow the customers to use credit cards and pay the bill through using online payment by handphone.
Actor	Customer
Pre-condition	The customer must order the food.

Actor Action	System Response
	1. Display customer information, total amount, payment option and others.
2. Fill up the voucher code.	3. Display “-RM2.00”.
4. Choose the credit card payment option.	
5. Enter the card number, expiry date, CVV and others.	
6. Enter the check out button.	
7. Done payment.	
Alternative Flows	-If the user did not fill up the voucher code, the total payment will not be discounted to RM2.00. -If choose the cash payment option, there is no need to fill up credit card form.
Post-condition	The payment will be successful and the system will record into order history.

Table 3-4-2-6 Payment Transfer

3.4.2.7 Generate receipt

Name of Use Case	Generate receipt
Brief Description	After the customer has done the payment, they can choose the ordered record from the order history and then generate the receipt as a pdf file. The pdf file receipt will display order date and time, ordered food item, price and other details.
Actor	Customer

Pre-condition	The customer made the payment.	
Actor Action	System Response	
13. Open Pizzaking apps	1. Require fill up the customer phone number and password.	
2. Enter the customer phone number and password.	3. Display home page.	
4. Go to the order history page.	5. Display ordered record.	
6. Select the ordered record.	7. Display ordered details.	
8. Enter the print receipt button.	9. Create a receipt as a pdf file.	
10. Done generate receipt.		
Alternative Flows	-	
Post-condition	The pdf file will be created on the files phone.	

Table 3-4-2-7 Generate Receipt

3.4.2.8 Post Comment

Name of Use Case	Post and add status	
Brief Description	Allow the customer to post their own comment to the comment area.	
Actor	All users	
Pre-condition	The customer must login to their own account.	
Actor Action	System Response	
1. Open Pizzaking apps	2. Require fill up the phone number and password.	

3. Enter the phone number and password.	4. Display home page.
5. Go to the comment area page.	6. Display comment area.
7. Enter the post comment button.	8. Require fill up the description and upload an image..
9. Fill up the details and upload photos.	
10. Enter the post button.	
11. Done post comment.	
Alternative Flows	-
Post-condition	The comment will be displayed at the comment area.

Table 3-4-2-8 Post and add status

3.4.2.9 Reply Comment

Name of Use Case	Comment feedback	
Brief Description	Allowed the user to reply to anyone's comment.	
Actor	All users	
Pre-condition	The customer must login to their own account.	
Actor Action	System Response	
1. Open Pizzaking apps	2. Require fill up the phone number and password.	

3. Enter the email phone number and password.	4. Display home page.
5. Go to the comment area page.	6. Display comment area.
7. Enter the reply button.	
8. Write a description.	
9. Enter the add reply button.	
10. Done reply.	
Alternative Flows	-
Post-condition	The comment will be displayed on this comment.

Table 3-4-2-9 Comment feedback

3.4.2.10 Delete Comment

Name of Use Case	Delete status	
Brief Description	Allowed the users to delete the comment that was already posted in the comment area.	
Actor	All users	
Pre-condition	The user had to post the comment in the comment area.	
	Actor Action	System Response
	1. Open comment area	2. Display comment area.
	3. Select the comment and delete the comment.	
	4. Done, deleted.	
Alternative Flows	-	
Post-condition	The comment will be removed from the comment area.	

Table 3-4-2-10 Delete status

3.4.3 Activity Diagrams

3.4.3.1 Add Food

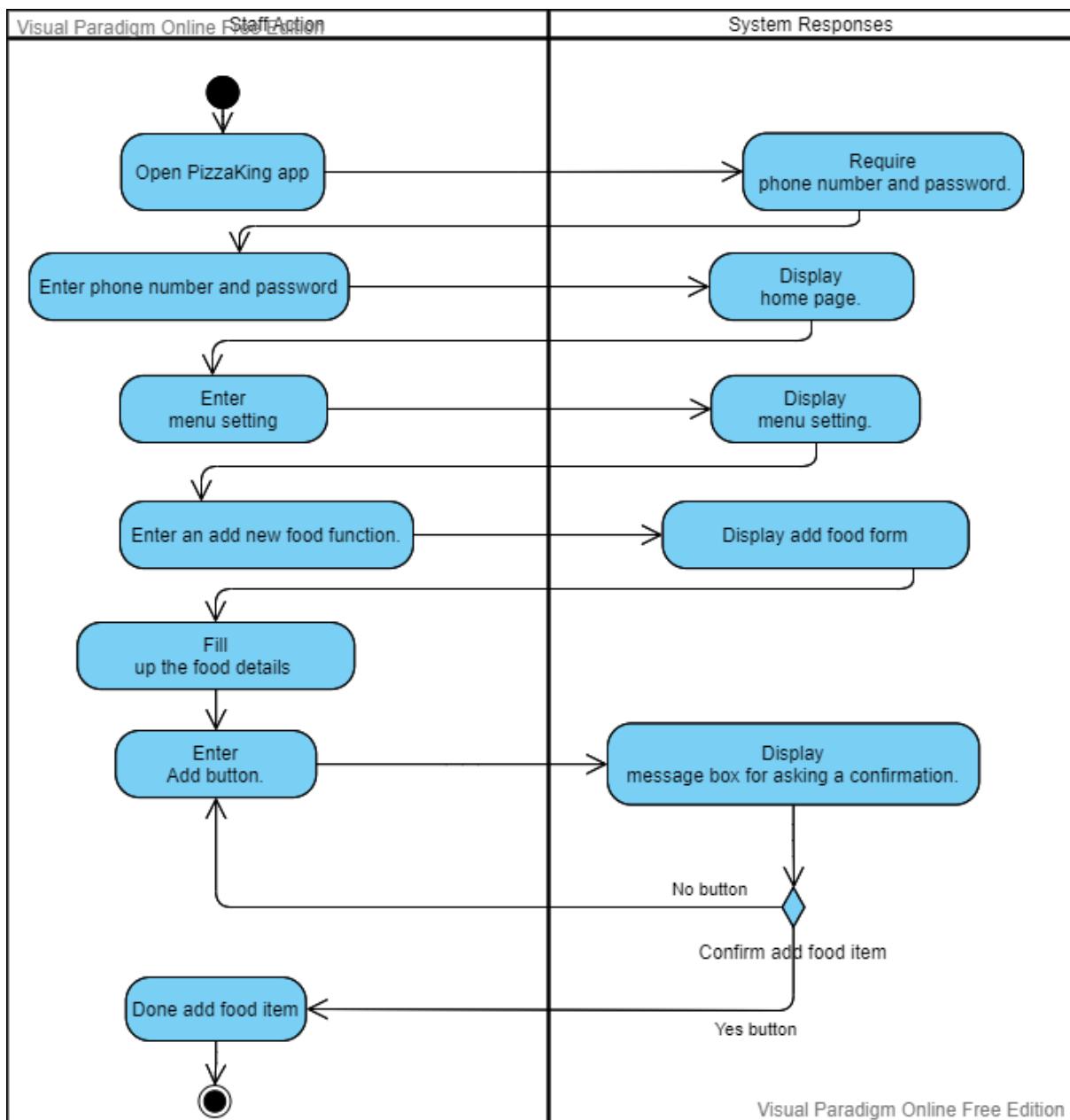


Table 3-4-3-1 Add Food

3.4.3.2 Delete Food

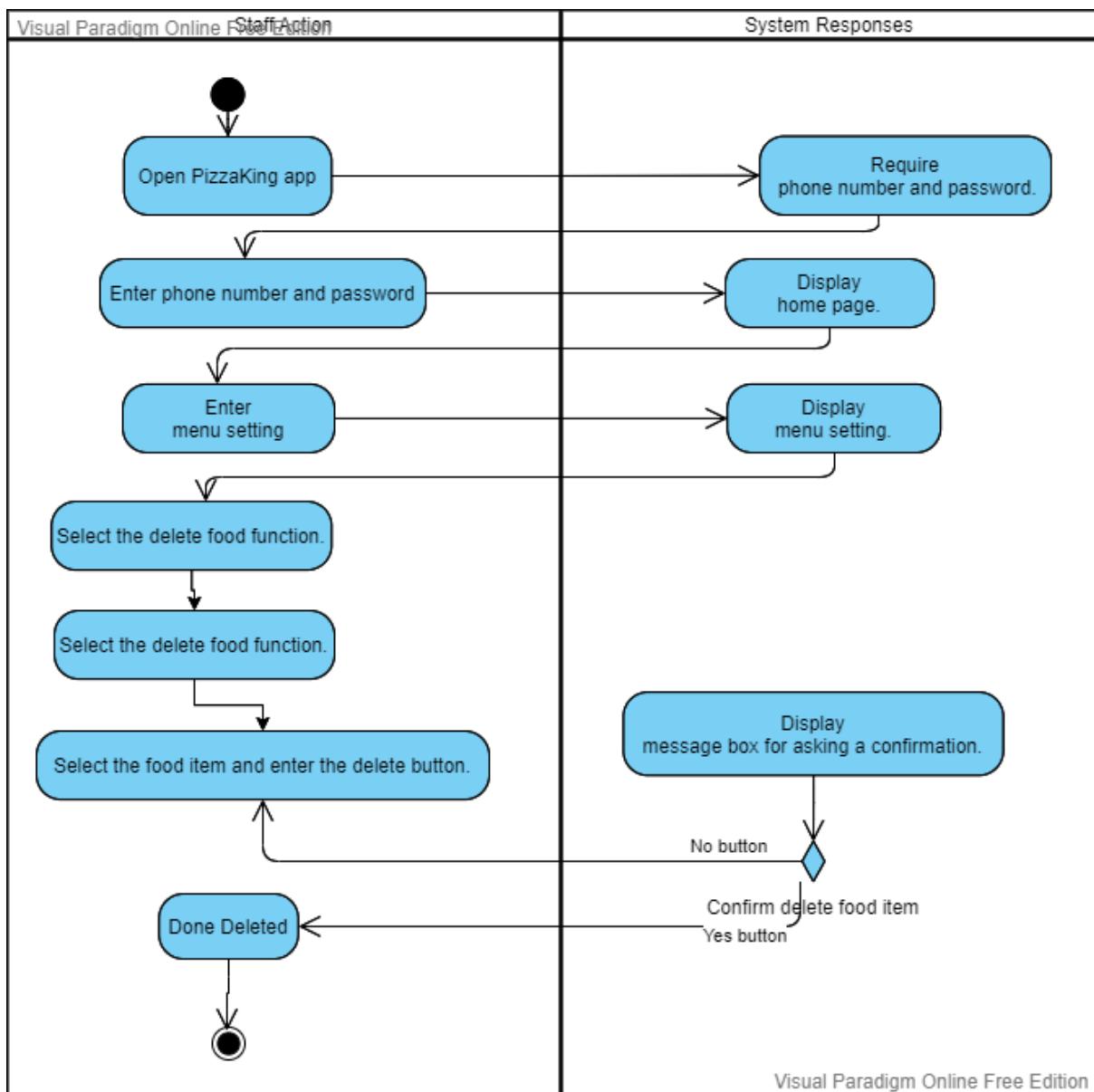


Table 3-4-3-2 Delete Food

3.4.3.3 Modify Food

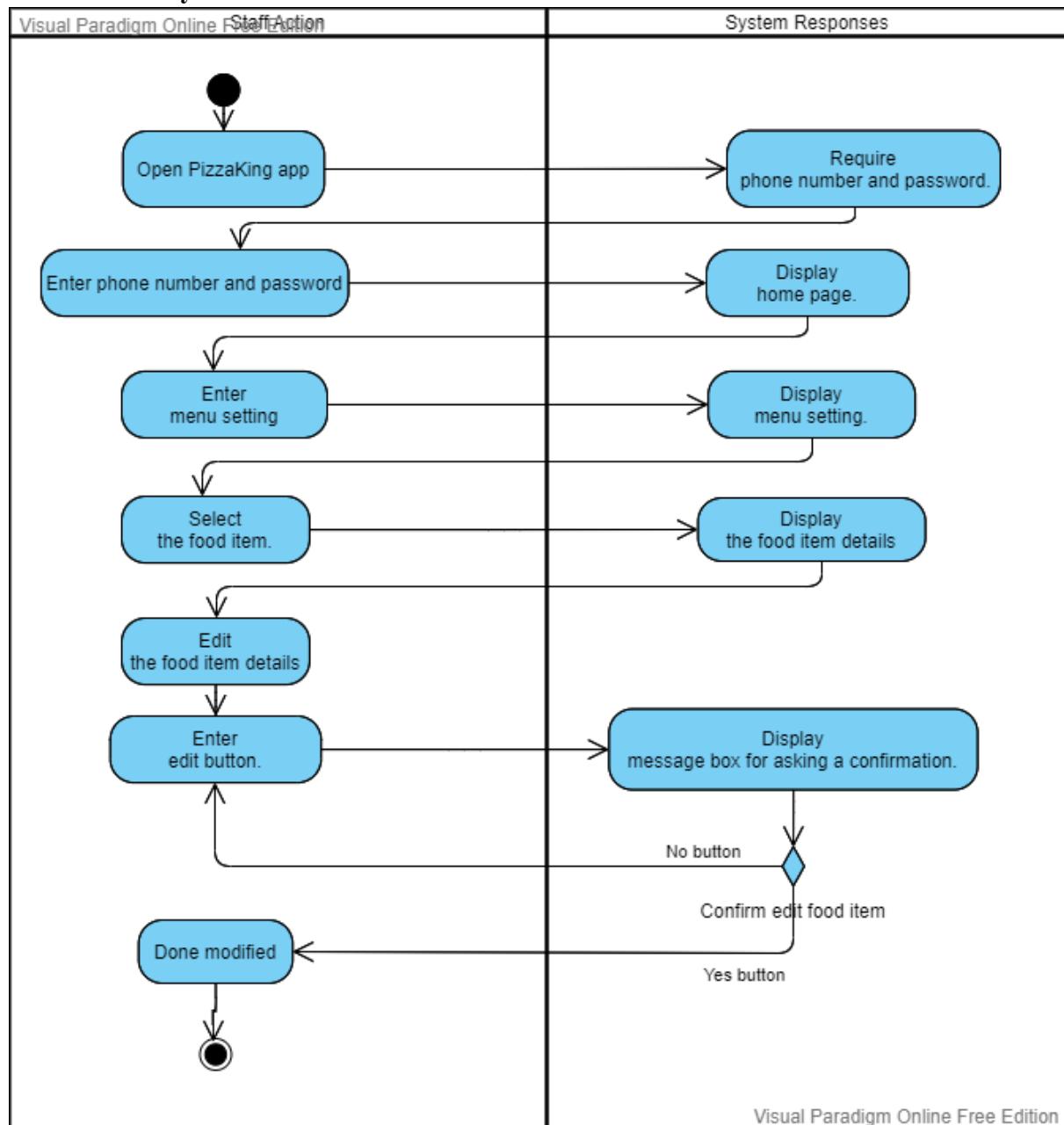
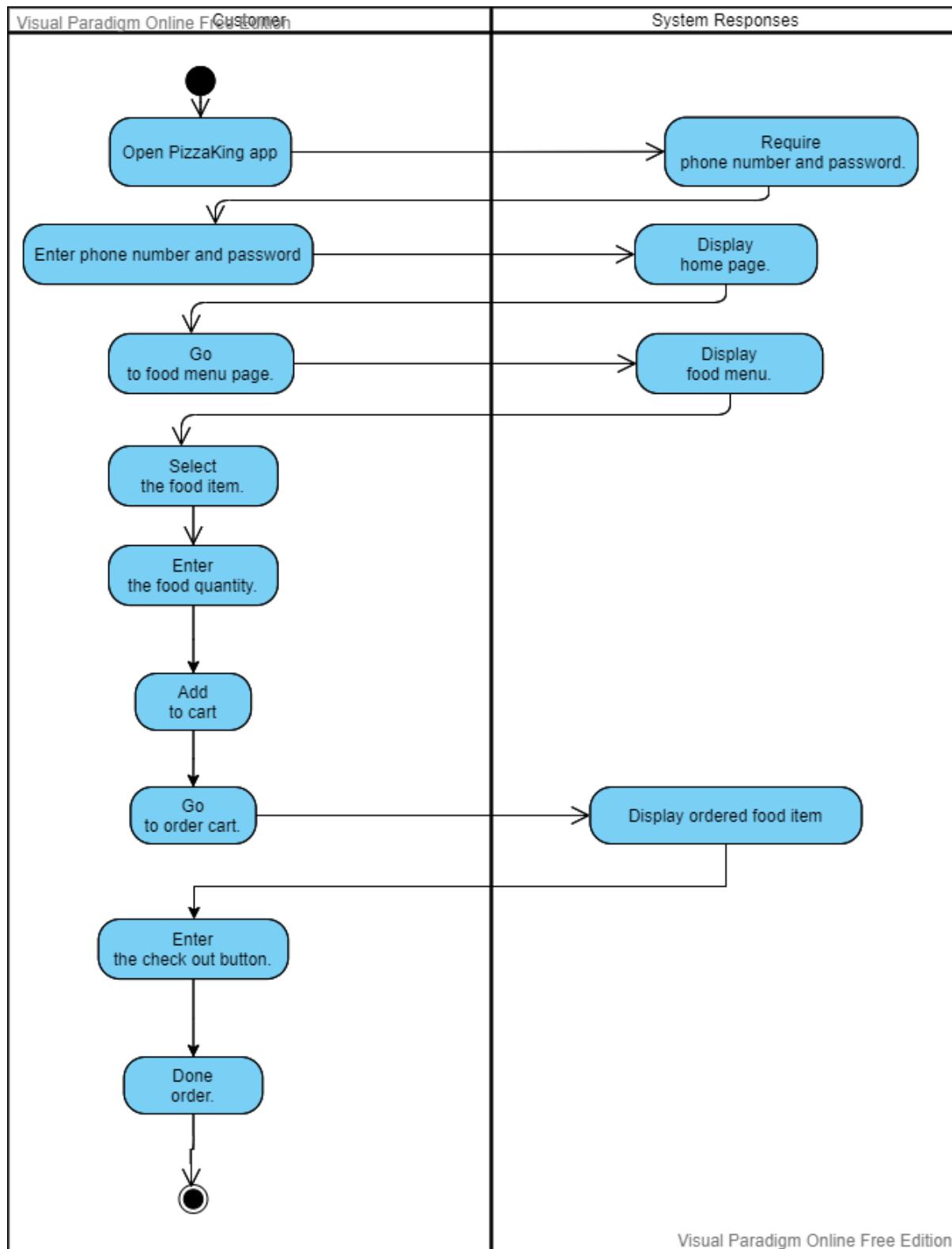


Table 3-4-3-3 Modify Food

3.4.3.4 Order Food



Visual Paradigm Online Free Edition

Table 3-4-3-4 Order Food

3.4.3.5 Cancel Order

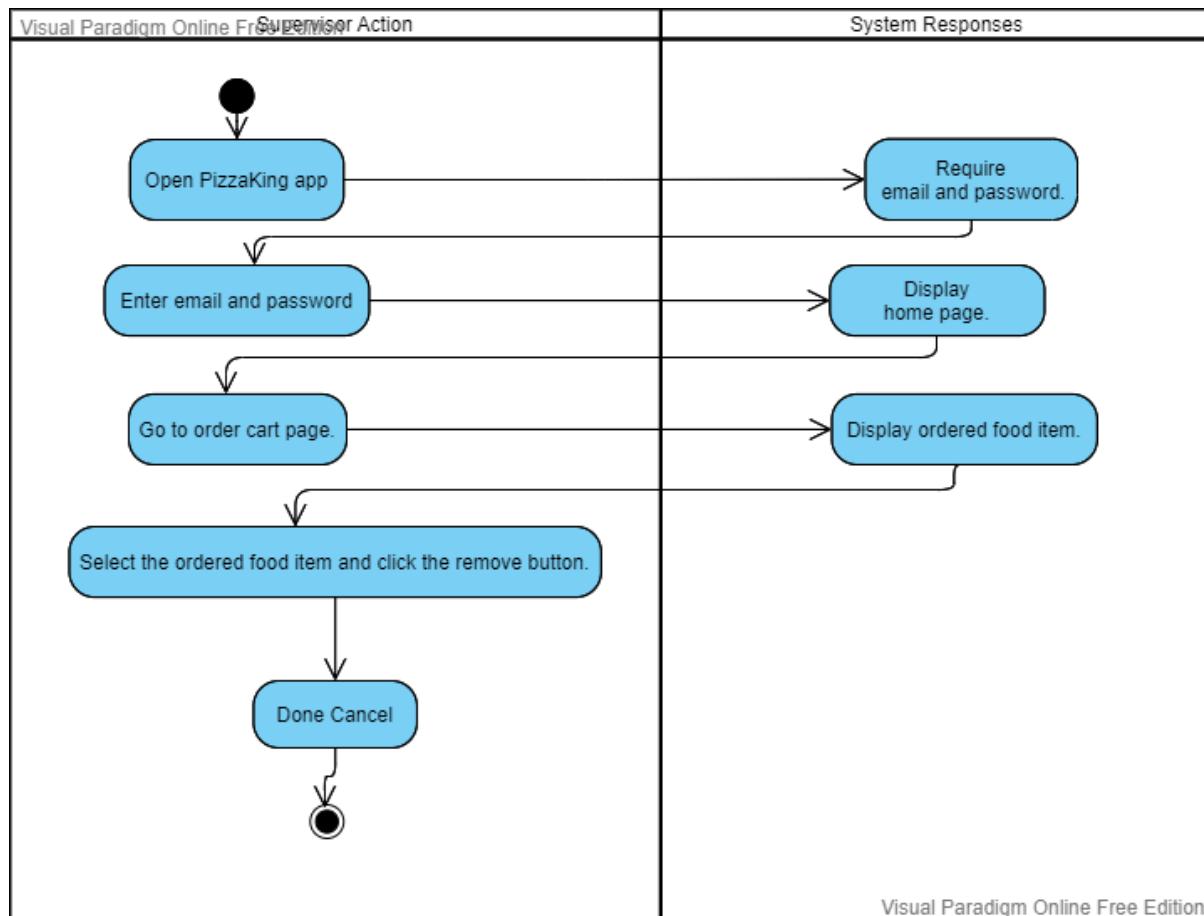


Table 3-4-3-5 Cancel Order

3.4.3.6 Make Payment

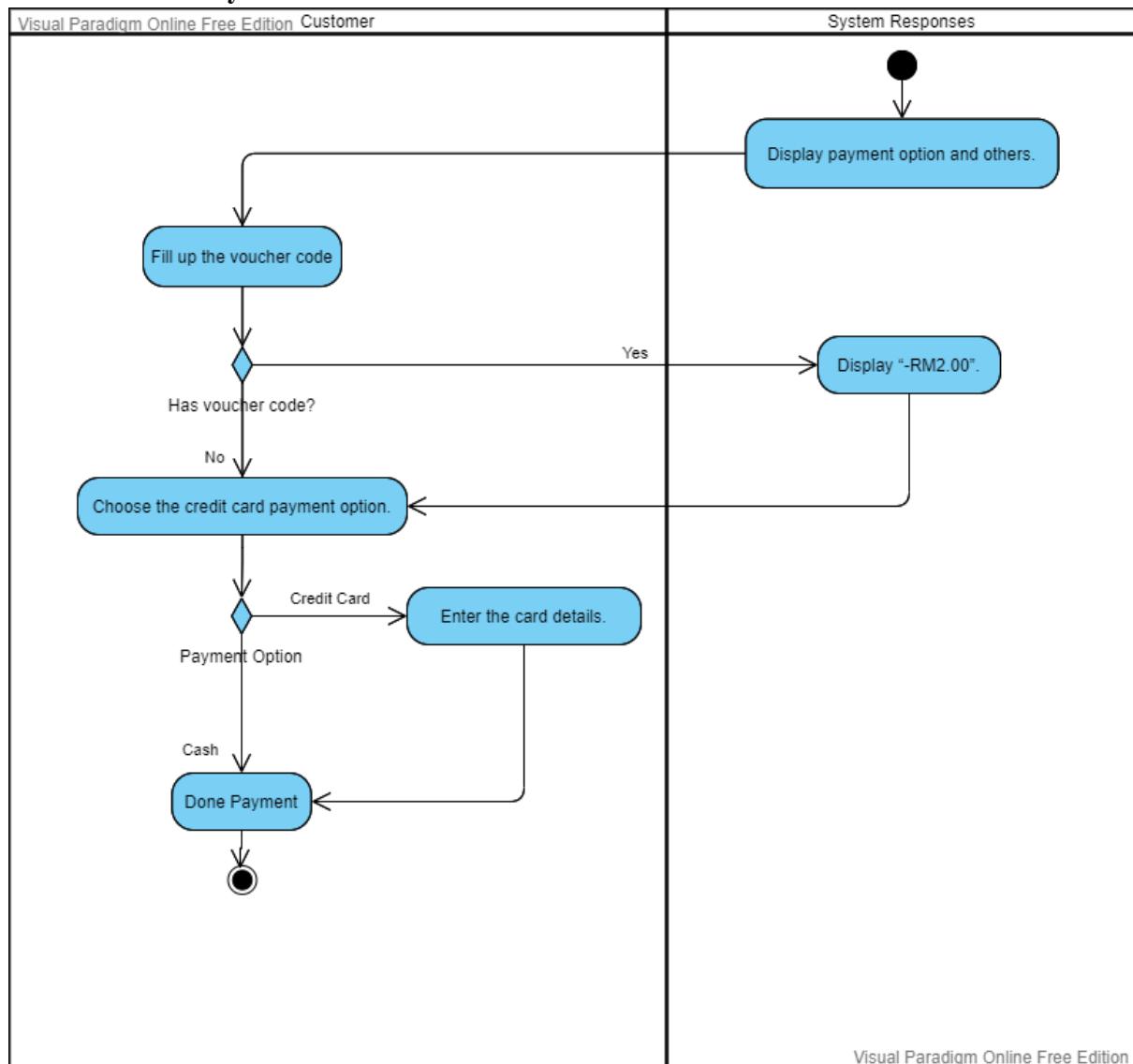


Table 3-4-3-6 Payment Transfer

3.4.3.7 Generate Receipt

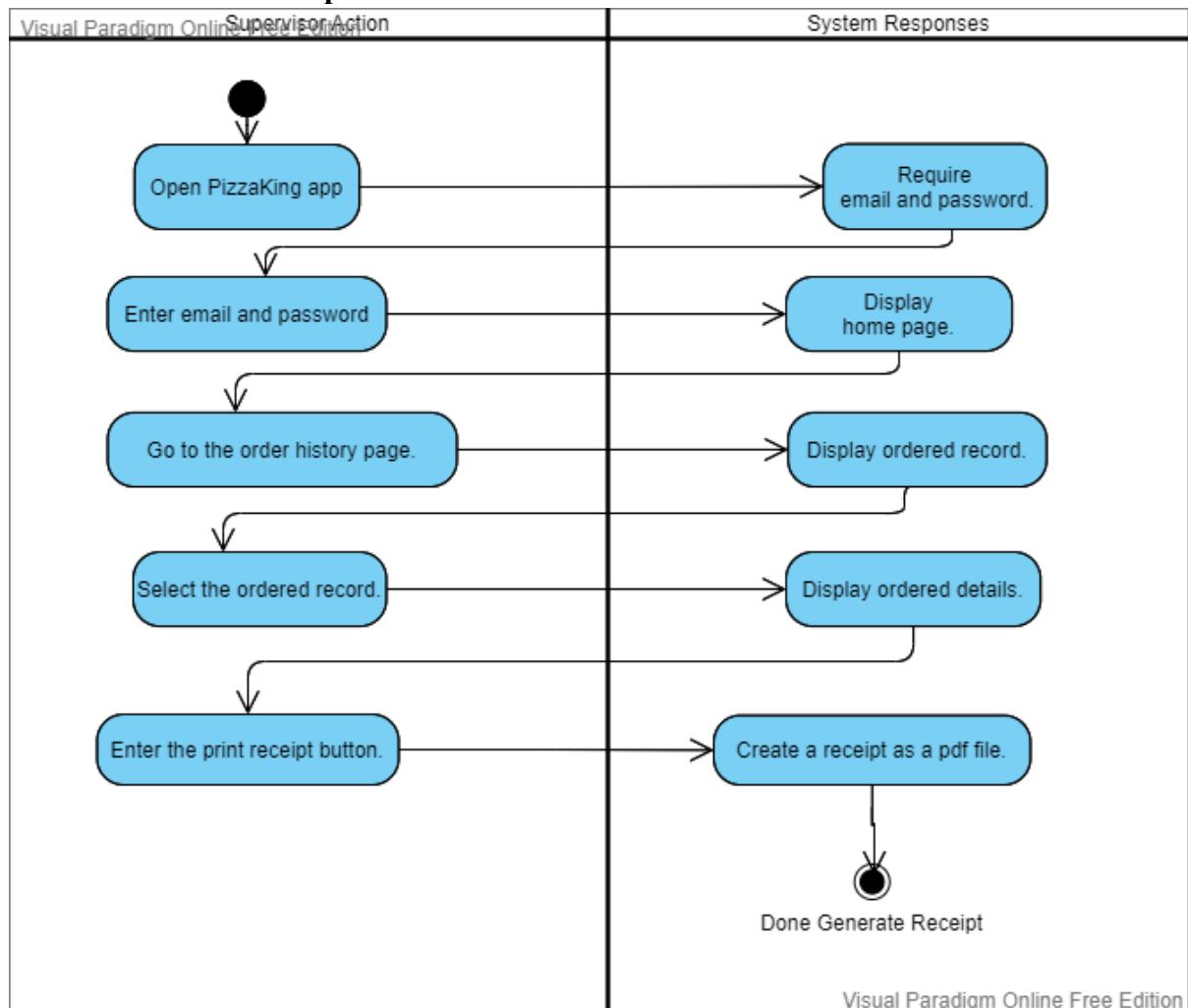


Table 3-4-3-7 Generate Receipt

3.4.3.8 Post Comment

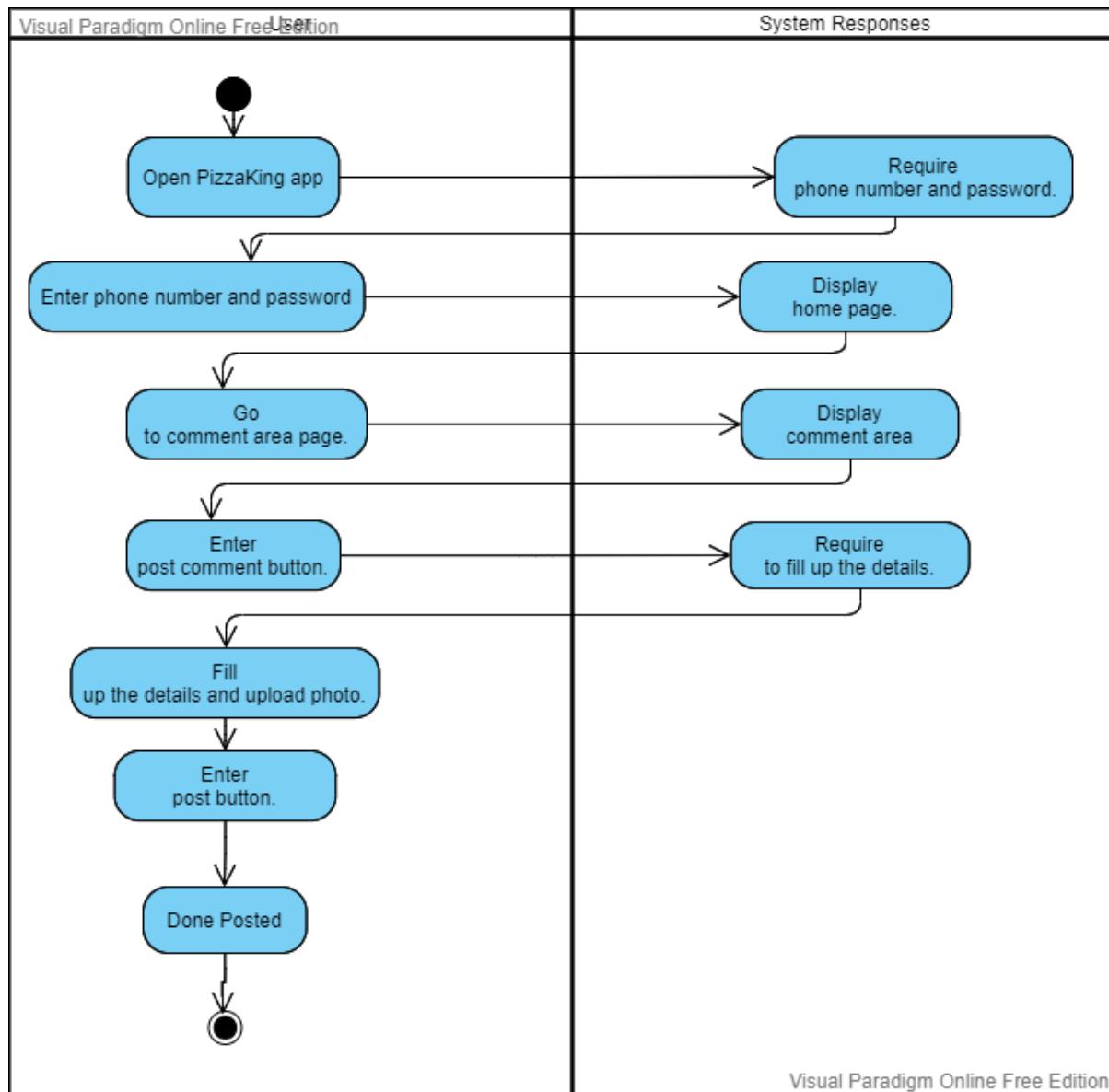


Table 3-4-3-8 Post and add status

3.4.3.9 Delete Comment

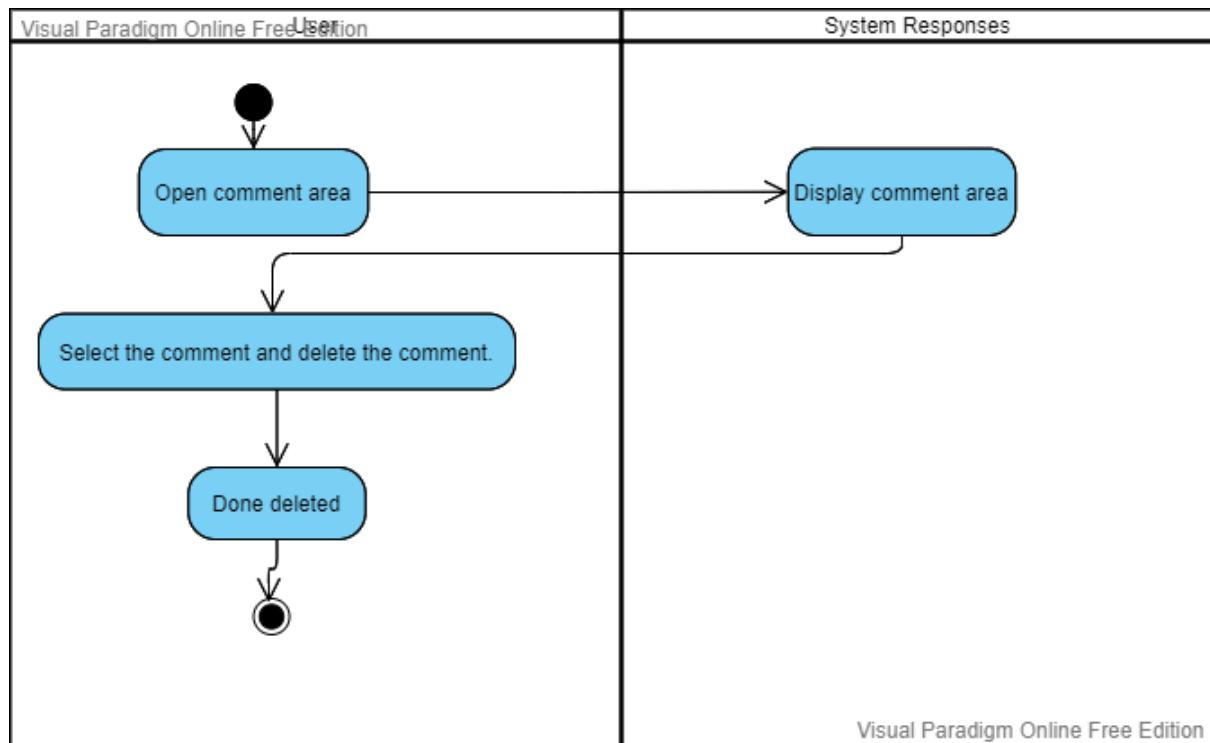


Table 3-4-3-9 Delete status

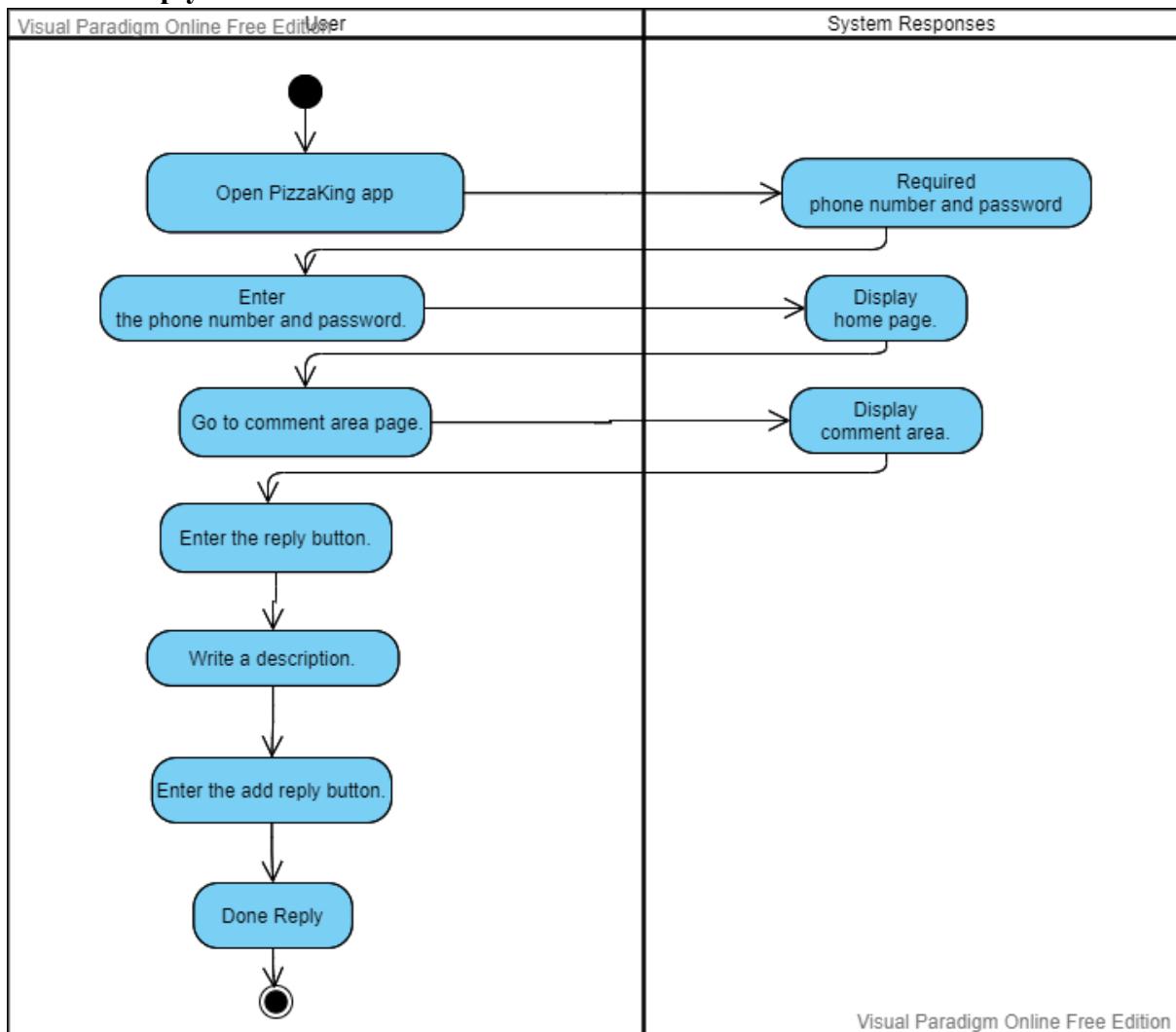
3.4.3.10 Reply Comment

Table 3-4-3-10 Comment Feedback

3.5 Software dev methodology, Programming language used, Database used

3.5.1 Software Dev method used

The software development method that we will use in this project is android studio. Because we have more interest with android studio and we need to use Java language to write the code. It is easier to understand and we can refer from the lecture class, practical class taught by the lecturer. And also, there are many references on the internet for example stack overflow website.

3.5.2 Programming language used

Java - Java is the technology of choice for building applications using managed code that can execute on mobile devices. Android is an open source software platform and Linux-based operating system for mobile devices. The Android platform allows developers to write managed code using Java to manage and control the Android device. Android applications can be developed by using the Java programming language and the Android SDK. So, familiarity with the basics of the Java programming language is a prerequisite for programming on the Android platform. This article discusses where Java fits in mobile application development and how we can use Java and Android SDK to write applications that can work on Android devices.

3.5.3 Database used

Firebase - Firebase Realtime Database is a NoSQL database hosted by the cloud that allows you to store and synchronize data in real time between users. Cloud Firestore allows you to store, synchronize, and query application data globally. I will choose this Firebase Database because I had learned it before as a diploma intern. So that I had more experience in the firebase database.

3.6 Chapter Summary and Evaluation

With this chapter, we had planned the all module function of the process and then we will not be confused about the functional step. I have learned that before we plan to do some project, we need to do some research and setting the process so that we can follow the plan to carry out the project. It is an auxiliary ability which can better complete the project without any problem for example forgetting, confusing and so on.

Chapter 4

System Design

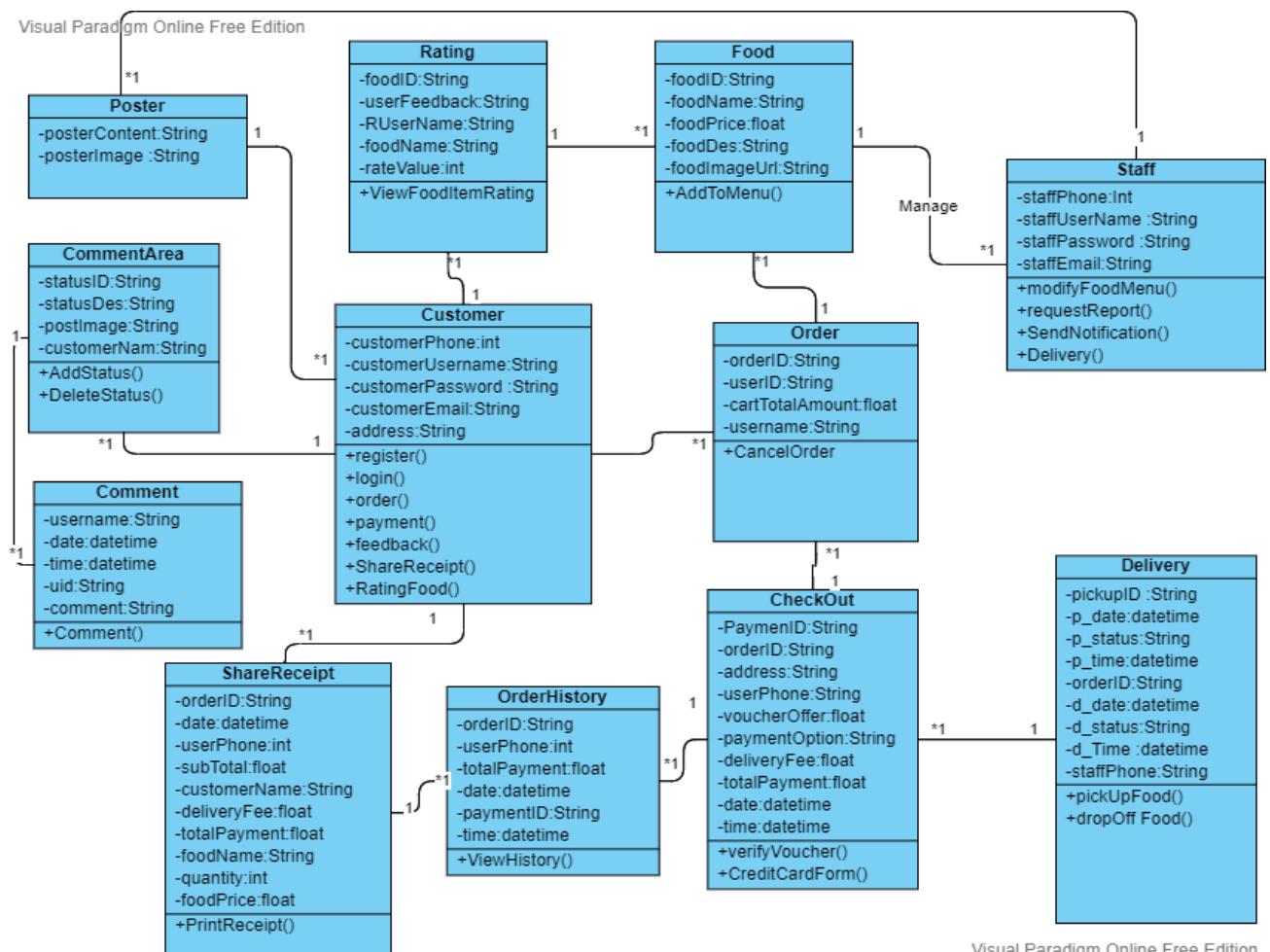
4 Introduction

System design is the process of identifying the element of a system architecture of PizzaKing online ordering system using a mobile application which covers the 2 areas which are serving area and customer area. The system architecture developed in our project would be client-server architecture and.

- The mobile application on the Android devices for customers to place their order.
- Supervisor will manage the food menu and update the menu.
- The wireless technology to support network communication.

4.1 Database Design

4.1.1 Class Diagrams



4-1-1 Class Diagram

4.1.2 Tables design

Table below is showing the data dictionary for each table, with all the attributes, format, data size, and description.

(AwWengLik Part)

4.1.2.1 Customer Table

Attributes	PK/FK	Data Type	Description
customerPhone	PK	Int (12)	Phone number of customer. E.g.: 010383956
customerPassword		String (16)	Password of customer E.g.: John5678910
customerUserName		String (20)	Username of customer E.g.: Jacky Chan
customerEmail		String (30)	Email of customer E.g.: jacky12@gmail.com
address		String (100)	Address of customer E.g.: L13, Persiaran Muhibbah 3, Kampung Muhibbah, Sungai Siput(U), Perak

Table 4-1-2-1 Customer Table

4.1.2.2 Staff Table

Attributes	PK/FK	Data Type	Description
staffPhone	PK	Int (12)	Phone number of staff E.g.: 0163848828
staffPassword		String (16)	Password of staff E.g.: Aw123456
staffUserName		String (20)	Username of staff E.g.: Weng Lik
staffEmail		String (30)	Email of staff E.g.: awlik1@gmail.com

Table 4-1-2-2 Staff Table

4.1.2.3 Deliveries Table

Attributes	PK/FK	Data Size	Description
pickupID	PK	String (10)	ID of pick up. E.g.: D12345678
p_date		Datetime	Date of staff pick up pizza E.g.: 05-December-2021
p_time		Datetime	Time of staff pick up E.g.: 13:56:23
p_status		String (7)	Order of the status E.g.:PickUp
orderID	FK	String (12)	ID of order. E.g.: OD001
d_date		Datetime	Date of staff drop off pizza E.g.: 05-December-2021
d_status		String(7)	Order of the status E.g.:DropOff
d_time		Datetime	Time of staff pick up E.g.: 14:00:50
staffPhone	FK	String (12)	Foreign key of phone number for staff table E.g.: 0163848828

Table 4-1-2-3 Deliveries Table

4.1.2.4 Poster Table

Attributes	PK/FK	Data Size	Description
posterContent		String (2000)	Description of notification E.g.: There is a 40% discount on all pizza this week.
posterImage		Image	Image of notification E.g.: 

Table 4-1-2-4 Notification Table

(NgKahLoon Part)**4.1.2.5 Food Table**

Attributes	PK/FK	Data Size	Description
foodID	PK	String (10)	ID of the food. E.g.: 01
foodName		String (20)	Name of the food. E.g.: Blazing Seafood
foodPrice		Float (5,2)	Price of the food. E.g.: 29.90
foodDes		String (60)	Description of the food. E.g.: With spicy sweet sour sauce,tuna,crab sticks,pineapples, capsicums, onions, mozzarella cheese.
foodImageUrl		String (250)	Image URL of the food item. E.g.: https://firebasestorage.googleapis.com/v0/b/mad-ass-hotel.appspot.com/o/images%2F9115803a-d3a0-4ab0-8b01-7faca6e123e7?alt=media&token=f9d9da9-32d4-4709-907f-b7be84deae1e

Table 4-1-2-5 Food Table

4.1.2.6 Rating Table

Attributes	PK/FK	Data Size	Description
foodID	PK	String (10)	ID of the rating. E.g.: 01
userFeedback		String (50)	Comment from the user for this food. E.g.: This food is very delicious.
RUserName		String (10)	Name of the user. E.g.: kahloon
foodName		String (20)	Name of the Food. E.g.: Blazing Seafood
rateValue		int (1)	The best food of the result. E.g.: 4

Table 4-1-2-6 Rating Table

4.1.2.7 CommentArea Table

Attributes	PK/FK	Data Size	Description
statusID	PK	String (10)	ID of the status. E.g.: 1p5GadRNH2XOgmnBbRfuH1UhZ3L2
customerNam		String (10)	name of the customer. E.g.: kahloon
statusDes		String (50)	Description of the status. E.g.: Today I ate pizza with my family.
date		String (20)	Date of the status posted. E.g.: 19-November-2021
time		String (20)	Time of the status posted. E.g.: 08:24
profileImage		String (250)	User of the image. E.g.: https://firebasestorage.googleapis.com/v0/b/fyp-pizzakingorderingsystem.appspot.com/o/profile%20Images%2F1p5GadRNH2XOgmnBbRfuH1UhZ3L2.jpg?alt=media&token=4edaba25-c78f-4edf-94b8-be92670be627

postImage		String (250)	The image that you want to post at this status. E.g.: https://firebasestorage.googleapis.com/v0/b/mad-ass-hotel.appspot.com/o/images%2F9115803a-d3a0-4ab0-8b01-7facafe123e7?alt=media&token=f9d9da9-32d4-4709-907f-b7be84deae1e
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Table 4-1-2-7 Comment Area Table

4.1.2.8 Order Table

Attributes	PK/FK	Data Size	Description
orderID	PK	String (10)	ID of order. E.g.: OD0511
userID		String (10)	ID of user. E.g.: 1p5GadRNH2XOgmnBbRfuH1UhZ3L2
CartTotalAmount		Float (5,2)	The total price that all of the users order. E.g.: 59.80
username		String (20)	Name of the user. E.g.: kahloon

Table 4-1-2-8 Order Table

4.1.2.9 CheckOut Table

Attributes	PK/FK	Data Size	Description
PaymenID	PK	String (10)	ID of payment. E.g.: PY001
orderID	FK	String (10)	ID of order. E.g.: OD001
address	FK	String (50)	The address that delivery to this place. E.g.: No88, Jalan Maharaja, Taman Budah Jaya 36000 Teluk Intan, Perak.
userPhone	FK	String (10)	Phone number of the user. E.g.: 0173534253
voucherOffer		Float (5,2)	The offer price to get a discount. E.g.: 2.00

paymentOption		String (20)	The payment method of the user used to pay the bill. E.g.: Credit Card
deliveryFee		Float (5,2)	The price for the delivery fee. E.g.: 4.00
totalPayment		Float (5,2)	The total payment that the user needs to pay. E.g.: 61.80

Table 4-1-2-9 Check out table

4.1.2.10 OrderHistory Table

Attributes	PK/FK	Data Size	Description
orderID	FK	String (20)	ID of order. E.g.: OD001
userPhone	FK	String (10)	Phone number of the user in this order id. E.g.: 0173534253
totalPayment		Float (5,2)	The total payment of this order. E.g.: 61.80
date		String (20)	Date of the order. E.g.: 05-December-2021
time		String (20)	Time of the order. E.g.: 08:28
paymentID		String (40)	ID of payment. E.g.: 557

Table 4-1-2-10 Order History Table

4.1.2.11 Receipt Table

Attributes	PK/FK	Data Size	Description
orderID	FK	String (20)	ID of order. E.g.: OD001
date		String (20)	Date of the order. E.g.: 05-December-2021
userPhone	FK	String (10)	Phone number of the user. E.g.: 0173534253

subTotal		Float (5,2)	The total order price that the user ordered. E.g.: 59.80
customerName		String (20)	Name of the user. E.g.: kahloon
deliveryFee		Float (5,2)	The price for the delivery fee. E.g.: 4.00
totalPayment		Float (5,2)	The total payment of this order id. E.g.: 61.80
foodName		String (20)	Name of the food. E.g.: Blazing Seafood
foodPrice		Float (5,2)	Price of the food. E.g.: 29.90
quantity		int	Quantity of the order food. E.g.: 1

Table 4-1-2-11 Receipt Table

4.1.2.12 Comment Table

Attributes	PK/FK	Data Size	Description
uid	PK	String (30)	Uid of the status. E.g.: 1p5GadRNH2XOgmnBbRfuH1UhZ3L2
username		String (10)	Name of the user. E.g.: kahloon
date		String (20)	Date of the reply comment. E.g.: 05-December-2021
time		String (20)	Time of the reply comment. E.g.: 08:28
comment		String (100)	The status of the reply comment. E.g.: I give this 10 Marks!!!

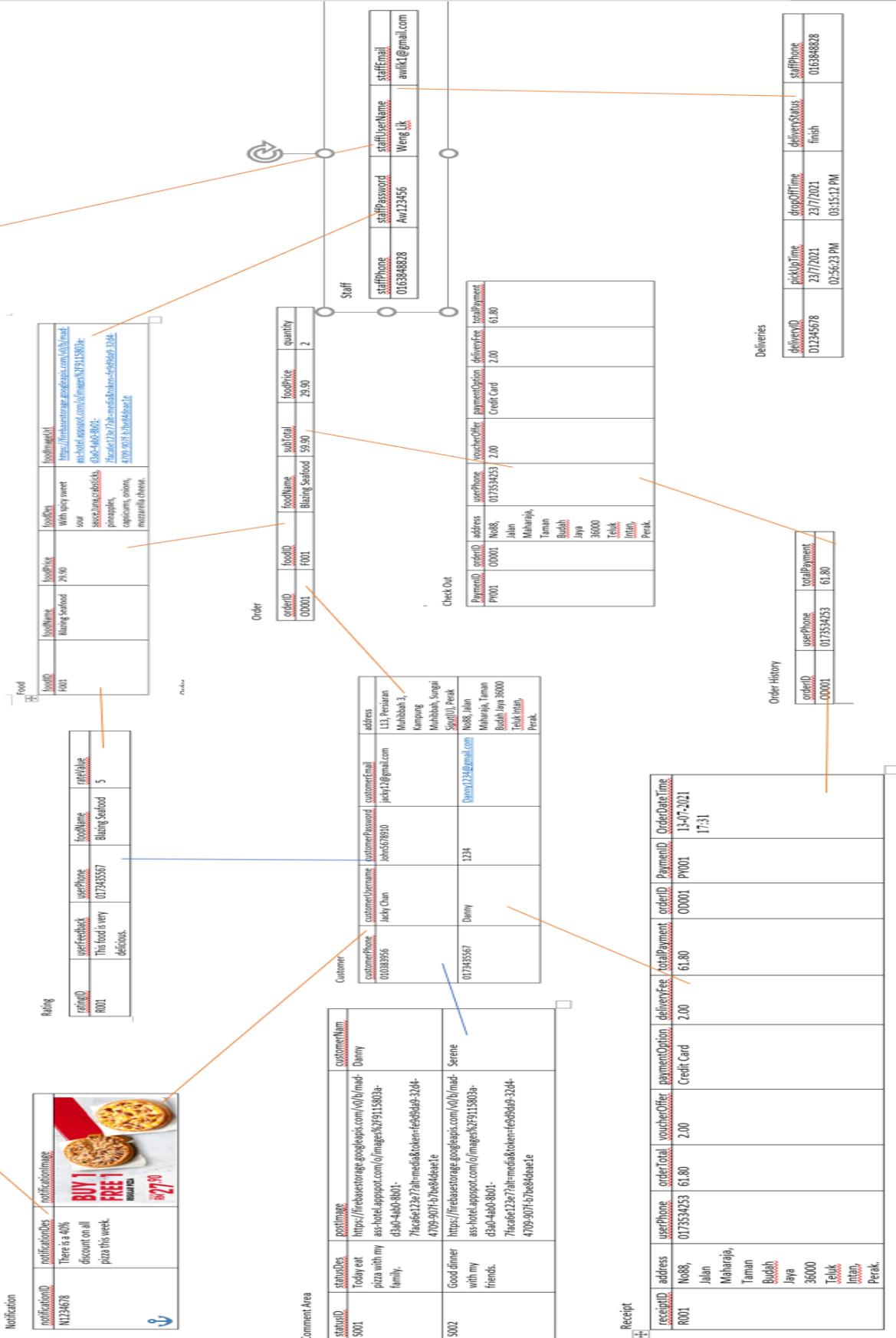


Figure 4.1.1.1 Class Diagram with data example

4.2 User Interface Design

4.2.1 Screen design

4.2.1.1 Home Page

According to figure 4.2.1.1 it shows the home page with some picture of advertising, user name, and address at north point. The user can click the selection button for further action. When a user login its mobile application with their account, it will display the home page. Customers want to order then they can click the view menu button to go see the food menu. This page has put the selection button for the navigation drawer to the selection function. The view menu button will be black colour and the background is white colour because it is clear to see and tidy for me.

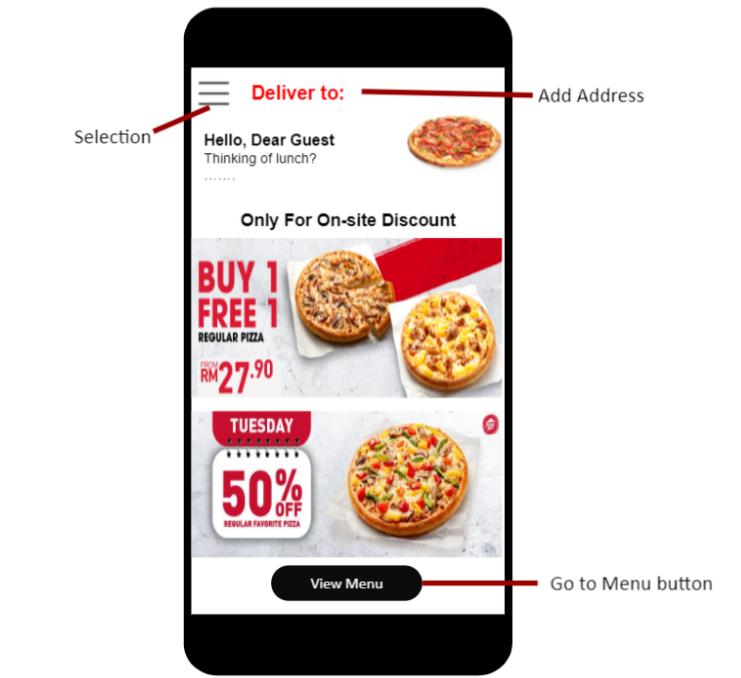


Figure 4-2-1-1 Home Page

4.2.1.2 Navigation Drawer

According to this figure, the left hand side is only available for the supervisor, there are some functions that the supervisor can manage and implement. For the right hand side is available for normal users, they can view order history, go to menu and view comment area. This navigation drawer is to let users choose the function that they want to implement. The navigation drawer will be white colour and the word will be black colour because it is the most suitable for every people to see clearly.

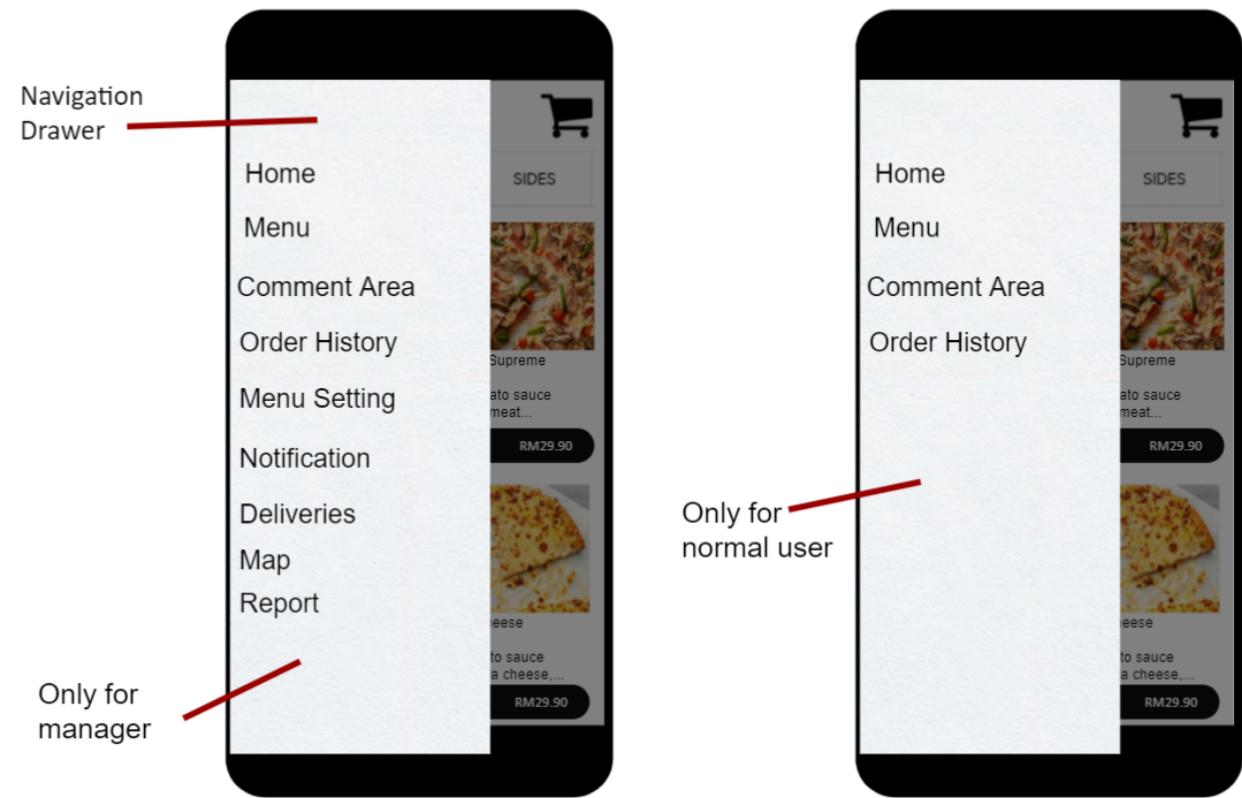


Figure 4-2-1-2 Navigation Drawer

4.2.1.3 Menu Page

This menu page displays the food item that was posted by the supervisor, the details such as food name, food price, and food description. This page is to show the food item on the screen and customers can click on the food item and then go to another page for its food item details. Furthermore, customers can click the button at the top right side and go to the order cart. The cart button is black colour and the background is white colour and the word colour will be black button because it can be seen clearly and tidy.

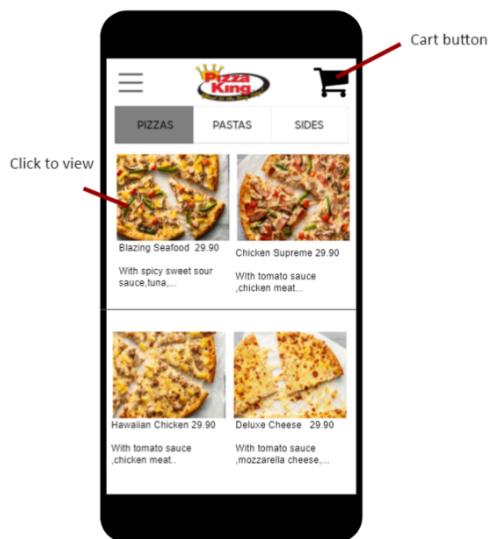


Figure 4-2-1-3 Menu Page

4.2.1.4 Each Item Page

When the customer clicks the food item from the menu, then will display that food item and display the food details. This page is to let customers choose the food item and enter quantity and then add food item into the order cart. The customer can click the star button for rating the food. The add button is black colour and the background is white colour. The minus item and add item is to let customers adjust the number of quantities that they want to order with its food item. The rating of the food is a button and is yellow colour because it is bright and easy to attract to notice it and do the feedback.

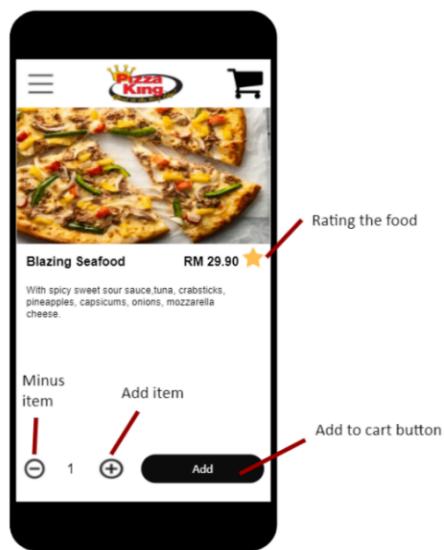


Figure 4-1-2-4 Each Item Page

4.2.1.5 Rating Page

This page is to let customers who are willing to give ratings and submit their feedback for its food item. It will pop up the window like the screen below. There will be the text box, 5 star for rating value from low to high, and the test box for writing description. The background is white and the work is white with a boundary.

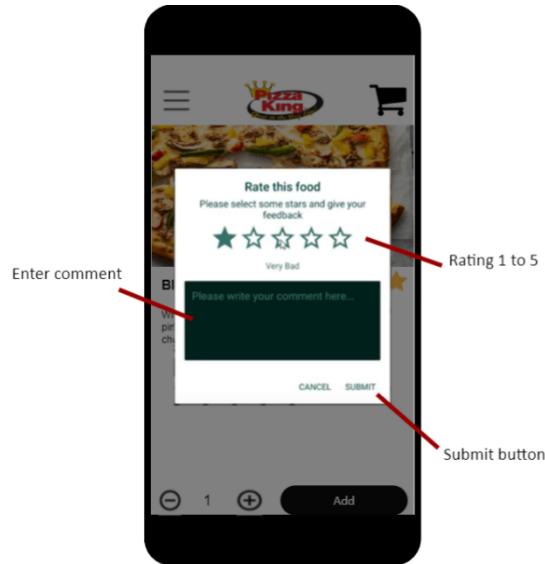


Figure 4-2-1-5 Rating Food

4.2.1.6 Order Cart

The customer can go to the order cart with this page to check the subtotal and then click check out or the customer can cancel the order if they want. Once the customer confirmed already and then needed to click the check out button to do the further action which is make payment. The background is white colour and the checkout button is orange colour because I think this orange colour is suitable in doing about the payment and place order.

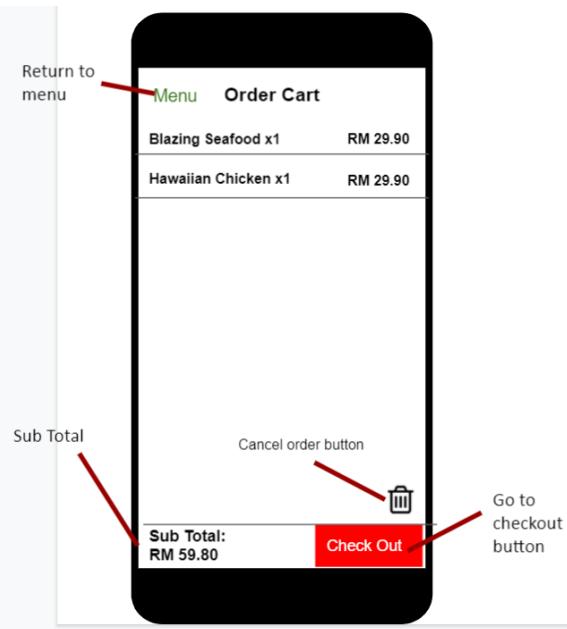


Figure 4-2-1-6 Order Cart

4.2.1.7 Check Out Page

This page is to let the customer enter the voucher pin number if they have, select the payment option, and be required to fill up the user's credit card information and then click the place order button to make payment. The return to checkout order cart button is brown color, background is white color and the place order button is orange color. It can be clearly and tidy to let customers feel comfortable while they are using this mobile application.

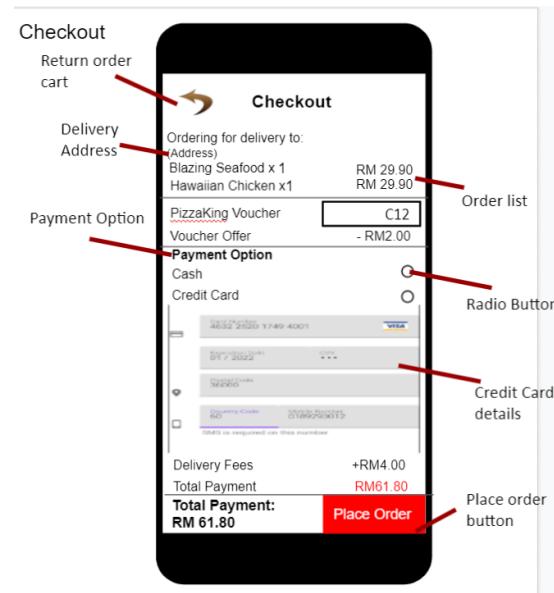


Figure 4-2-1-7 Check Out

4.2.1.8 Menu Setting

This page is to let the staff who want to choose the function and manage the food menu. The background colour is white and these buttons is black colour.

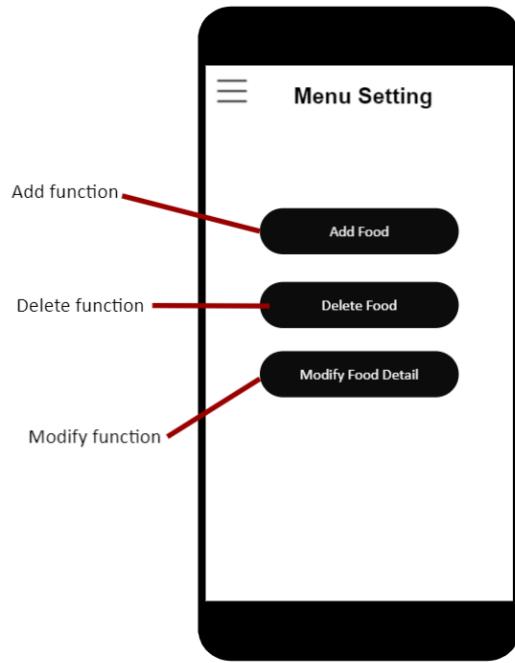


Figure 4-2-1-8 Menu Setting

4.2.1.9 Add Food Function Page

This page allows the staff who want to add food and they need to fill up the food name, food description, and food price and add it to the food menu. Then the new food item will be displayed in the food menu and customers could notice it. Here will be with the image, text box, edit text and button. The background is white colour and the word is black colour so it is clear and tidy.

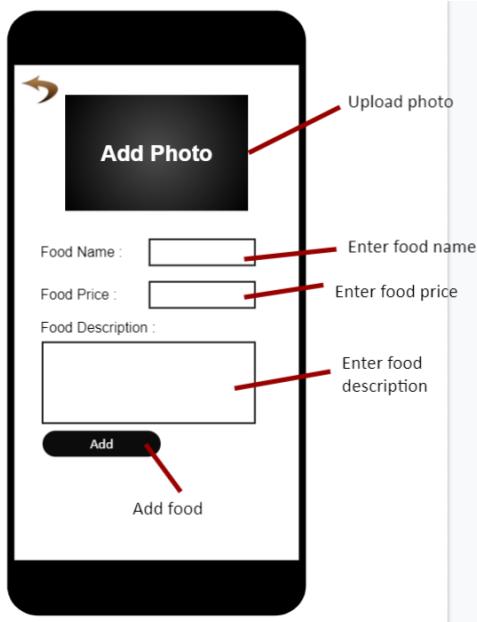


Figure 4-2-1-9 Add Food

4.2.1.10 Delete Food Function Page

This page is to let the staff enter the food name that he wanted to delete this food item from the menu. Then its food item will be removed from the menu.

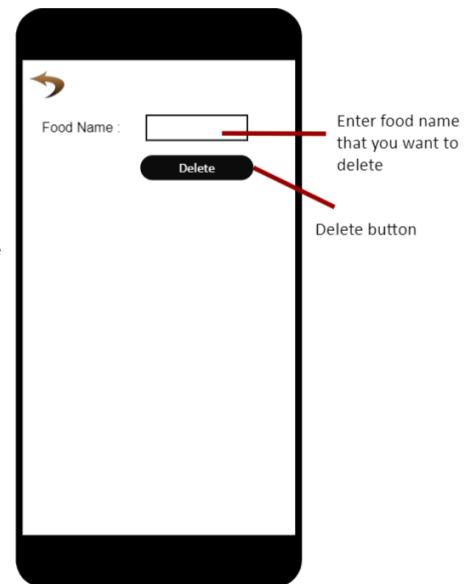


Figure 4-2-1-10 Delete Food

4.2.1.11 Modify Food Function Page

This page is to let the staff who want to modify the food item details and update the new information to the food menu in this page. After staff click the update button, then the food item will be updated

information in the food menu. Here will put with the image, text box, edit text and button. The background is white colour and the word is black colour so it is clear and tidy.

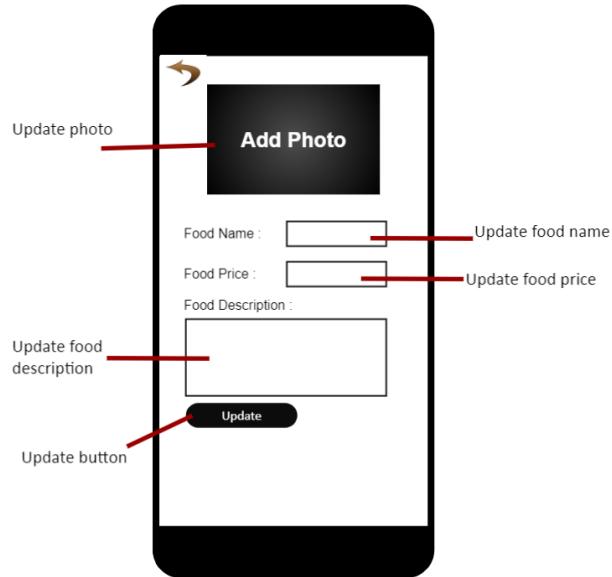


Figure 4-2-1-11 Modify Food

4.2.1.12 Comment Area

The user can go to this page to view the comment of who other users had posted the comment at here. And it allowed users to comment on its comment . Furthermore, users are allowed to add and delete comments with clicking the button. I design with this screen for example the like pattern of the button, message box pattern of the button, and the garbage pattern of button. These designs let user easy to understand these button function and they will feel freshness.

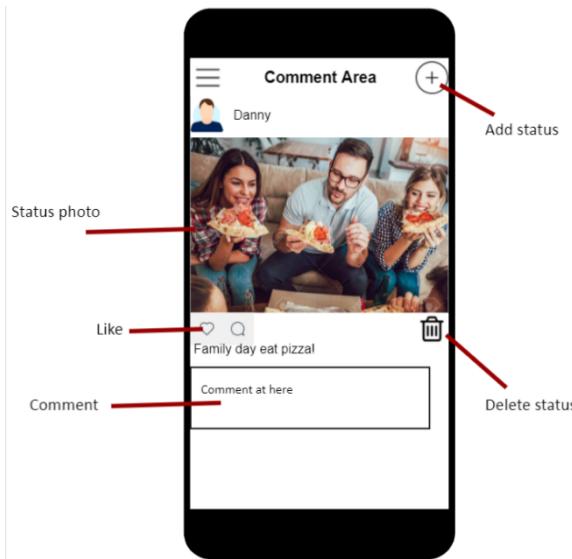


Figure 4-2-1-12 Comment Area

4.2.1.13 Add Comment Page

This page allows the user to add the status to the comment area. And this status will be displayed in the comment area and other people can notice it. Here will be with the image, text box and add button. The background is white colour and the word is black colour so it is clear and tidy.

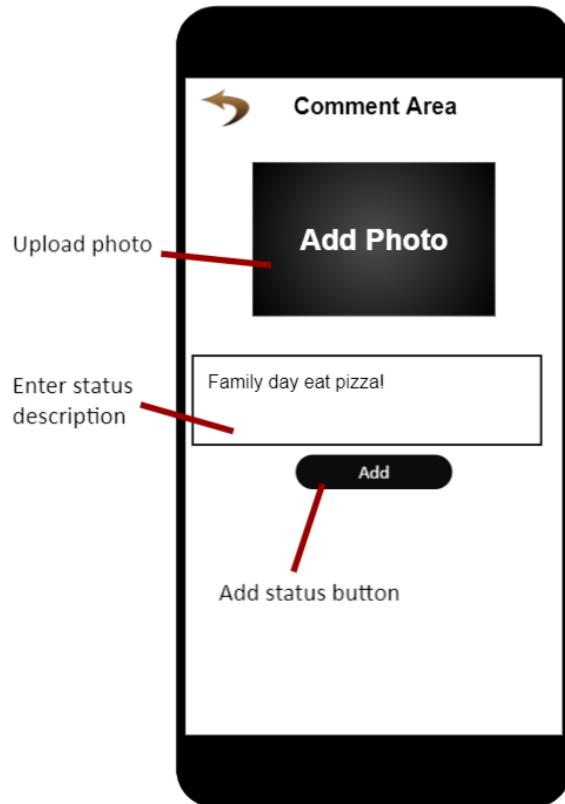


Figure 4-2-1-13 Add Status

4.2.2 Reports design

4.2.2.1 Order History and Print Receipt

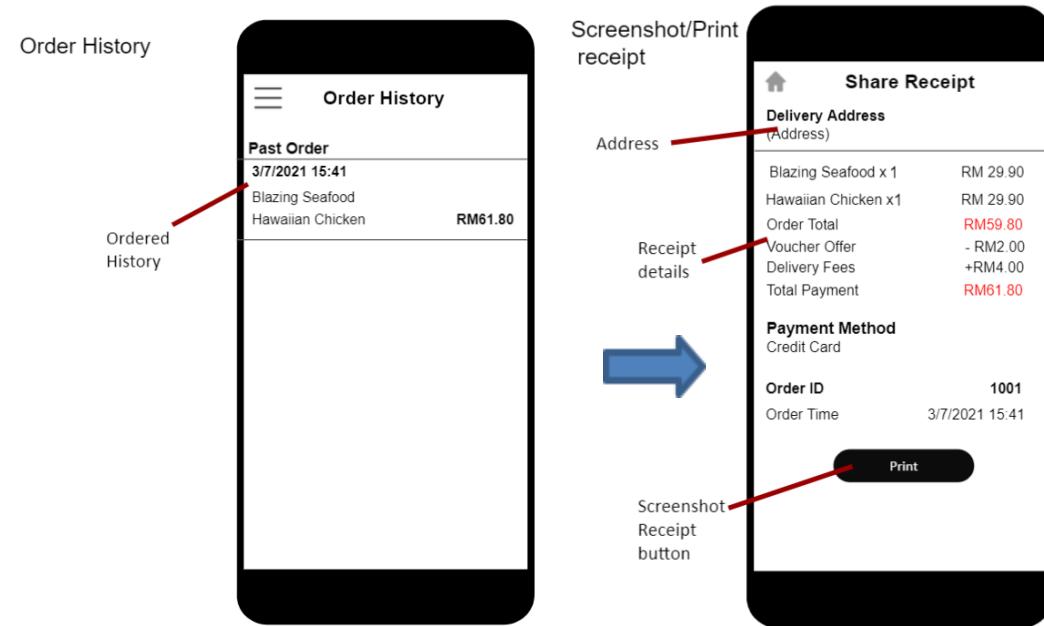


Figure 4-2-2-1 Order History and Print Receipt

After the customer has placed an order and done payment, the system will record its order information and insert into the database. Following the left hand side phone model above, It allowed the customer to view their order history. For the right hand side phone model above, will display the order receipt information and this page allows the customer to print out the receipt as a pdf file function. The background is white colour and the word is black colour so it is clear and tidy. And at the top left side has a back button in order to allow the user to go back.

4.2.2.2 Rating Report and Analysis



Figure 4-2-2-2 Rating Report and Analysis

Following with the phone model at above, this is the page of let staff to check the food rating and evaluating given by the customer. The system will analyze these data and provide the result such as which food item customers are most likely to like, how many rates for each food and other data and showing these data in this page. Here will only put the edit text and one return button. The background is white colour and the word is black colour so it is clear and tidy.

4.3 Chapter Summary and Evaluation

In this chapter, I realized that system design is very important for us to have a good understanding and make it easy in order for us to implement the project smoothly. In this case we also can know how to formal design and know how the system should perform. It is very helpful to us and I hope that we can achieve the result that we want.

Chapter 5

Implementation and Testing

5 Implementation and Introduction

After completing the system design, I started to implement the PizzaKing online ordering system. After I had done around 4 modules and then I showed the mobile screen present to my supervisor to check. The supervisor had given some feedback to my system, those comments will help me to improve my system. Besides that, during the development phase, the structure of the database is first designed and built. Next, the user side and server side are developed and built which allow the communication between the customer and the owner. Furthermore, the unit testing of each module will be tested to find bugs and errors. This testing is easy and suitable to find any error through a unit part of the system rather than the whole system. And it is easy to find the potential problem and at the same time I can get more understanding with my system.

5.1 System Development

5.1.1 Android studio

Android Studio is software and also an integrated development environment (IDE) from Google that provides us with tools needed to build mobile applications.

5.1.2 Java Programming Language

It is a programming language used to develop this project.

5.1.3 Android SDK

Enable us to create mobile applications for the Android platform which contain development tools, emulators and others.

5.1.4 Android Virtual Device Manager

A device that used to work with the emulator to provide a virtual device specification in which to run Android apps.

5.1.5 Firebase

Firebase Realtime Database is a NoSQL database hosted by the cloud that allows you to store and synchronize data in real time between users. New functions Cloud Firestore allows you to store, synchronize, and query application data globally

5.2 Test Plan / Test strategies

5.2.1 Unit Testing

Unit testing is a software testing method to test certain unit functions. Can also know it as the individual components of software. The purpose of unit testing is to test our code and make sure that the code is working and functional without any bugs or errors occurring when using its system. In this case, it helps me to detect and protect against bugs or errors in the future.

5.2.2 Module Testing

Module testing is focused on doing some testing in each module and including with sub-modules/functions. It is not testing for an entire software application at once. Using this module testing method can help me easily to understand, identify and do the improvement at the module level. The purpose of this module testing is to make sure that the module is fully tested and the system can be functional in order to against the bugs or errors occurring.

5.2.3 System Testing

System testing is the level of testing that validates the software testing process in a completed and fully integrated system. The main purpose of this system testing is to evaluate the end-to-end system specifications. Furthermore, actually the system testing is a series of different tests. The sole purpose is to test a complete computer-based system. The FYP Management System is tested after all the modules are integrated successfully.

5.3 Software Testing

Project Title: PizzaKing Online Ordering System

Student's Name: Ng Kah Loon

Programme: REI - Bachelor of Information Systems (Honours) in Enterprise Information Systems Year 3 Semester 2

5.3.1 Food Management Module

Module name		Food Management Module				
Module description		This module allowed the staff to do the update for their food menu such as add food function, delete food function, and modify food detail function.				
Module developed by		Ng Kah Loon				
Tester name:		Ng Kah Loon				
Test Pre-requisites (if any):		Before staff want to delete or modify food, they must select the existing food data and only can do the remove or modify.				
Test Dependencies (if any):		-				
Test case No	Test case description	Test data	Expected Results	Actual Results	Pass(P)/Fail(F)	Remarks
1	Add food with correct information	https://firebasestorage.googleapis.com/v0/b/fyp-pizzakingorderingsystem.appspot.com/o/1637642691055.jpg?alt=media&token=e9f126a8-4d7a-4f17-ac1c-7badbe818751 , 03, Cheesy Popper Pizza, 29.90, with Chicken Pepperoni, chicken meatballs, chicken meat, tomatoes, onion mozzarella cheese and nachos cheese and spicy nachos cheese sauce.	Menu inserted into the database and displayed on the menu list.	Menu inserted into the database and displayed on the menu list.	P	

2	Add food with:					
	a) no choose image	Food image="" ,03, Cheesy Popper Pizza, 29.90, with Chicken Pepperoni, chicken meatballs, chicken meat, tomatoes, onion mozzarella cheese and nachos cheese and spicy nachos cheese sauce.	Display a message “Please select an image”.	Display a message “Please select an image”.	P	
	b) empty food id	https://firebasestorage.googleapis.com/v0/b/fyp-pizzakingorderingsystem.appspot.com/o/1637642691055.jpg?alt=media&token=e9f126a8-4d7a-4f17-ac1c-7badbe818751 , food id="" , Cheesy Popper Pizza, 29.90, with Chicken Pepperoni, chicken meatballs, chicken meat, tomatoes, onion mozzarella cheese and nachos cheese and spicy nachos cheese sauce.	Display a message “Please write the food id”.	Display a message “Please write the food id”.	P	
	c) empty food Name	https://firebasestorage.googleapis.com/v0/b/fyp-pizzakingorderingsystem.appspot.com/o/1637642691055.jpg?alt=media&token=e9f126a8-4d7a-4f17-ac1c-7badbe818751 , 03, food name ="" , 29.90, with Chicken Pepperoni, chicken meatballs, chicken meat, tomatoes, onion mozzarella cheese and nachos cheese and spicy nachos cheese sauce.	Display a message “Please write the food name”.	Display a message “Please write the food name”.	P	
	d) empty food price	https://firebasestorage.googleapis.com/v0/b/fyp-pizzakingorderingsystem.appspot.com/o/1637642691055.jpg?alt=media&token=e9f126a8-4d7a-4f17-ac1c-7badbe818751 , 03, Cheesy Popper Pizza, food price ="" , with Chicken Pepperoni, chicken meatballs, chicken meat, tomatoes, onion mozzarella cheese and nachos cheese and spicy nachos cheese sauce.	Display a message “Please write the food price”.	Display a message “Please write the food price”.	P	

	e) empty food description	https://firebasestorage.googleapis.com/v0/b/fvp-pizzakingorderingsystem.appspot.com/o/1637642691055.jpg?alt=media&token=e9f126a8-4d7a-4f17-ac1c-7badbe818751 , 03, Cheesy Popper Pizza, 29.90, food description =""	Display a message “Please write the food description”.	Display a message “Please write the food description”.	P	
3	Modify food details with correctly	content://com.android.providers.media.documents/document/image%3A45, 03, Cheesy Popper Pizza, 25.90, with cheese source, Chicken Pepperoni, chicken meatballs, chicken meat, tomatoes, onion mozzarella cheese and nachos cheese and spicy nachos cheese sauce.	Food detail modified to database and display the new updated to menu list.	Food detail modified to database and display the new updated to menu list.	P	
4	Modify food detail with:					
	1. No change image	Food image="" , 03, Cheesy Popper Pizza, 25.90, with cheese sauce, Chicken Pepperoni, chicken meatballs, chicken meat, tomatoes, onion mozzarella cheese and nachos cheese and spicy nachos cheese sauce.	Display a message “Please select an image”.	Display a message “Please select an image”.	P	
	2. empty food id	content://com.android.providers.media.documents/document/image%3A45, food id="" , Cheesy Popper Pizza, 25.90, with cheese source, Chicken Pepperoni, chicken meatballs, chicken meat, tomatoes, onion mozzarella cheese and nachos cheese and spicy nachos cheese sauce.	Display a message “Please write the food id”.	Display a message “Please write the food id”.	P	
	3. empty food Name	content://com.android.providers.media.documents/document/image%3A45, 03, food name="" , 25.90, with cheese source, Chicken Pepperoni, chicken meatballs, chicken meat, tomatoes, onion mozzarella cheese and nachos cheese and spicy nachos cheese sauce.	Display a message “Please write the food name”.	Display a message “Please write the food name”.	P	

	4. empty food price	content://com.android.providers.media.documents/document/image%3A45, 03, Cheesy Popper Pizza, food price="”” , with cheese source, Chicken Pepperoni, chicken meatballs, chicken meat, tomatoes, onion mozzarella cheese and nachos cheese and spicy nachos cheese sauce.	Display a message “Please write the food price”.	Display a message “Please write the food price”.	P	
	5. empty food description	content://com.android.providers.media.documents/document/image%3A45, 03, Cheesy Popper Pizza, 25.90, food description =””	Display a message “Please write the food description”.	Display a message “Please write the food description”.	P	
5	Delete food	https://firebasestorage.googleapis.com/v0/b/fyp-pizzakingorderingsystem.appspot.com/o/1637642691055.jpg?alt=media&token=e9f126a8-4d7a-4f17-ac1c-7badbe818751 , 03, Cheesy Popper Pizza, 29.90, with Chicken Pepperoni, chicken meatballs, chicken meat, tomatoes, onion mozzarella cheese and nachos cheese and spicy nachos cheese sauce.	Delete the selected food from the menu list.	Delete the selected food from the menu list.	P	

5.3.2 Online Order Module

Module name	Online Order Module					
Module description	This module allows the customer to order food online, they can go to their order cart to check their order food list and also can order cancer once they don't want to order for its food.					
Module developed by	Ng Kah Loon					
Tester name:	Ng Kah Loon					
Test Pre-requisites¹ (if any):	The customer must order the food from the menu list and enter the food quantity.					
Test Dependencies (if any):	-					
Test case No	Test case description	Test data / Action	Expected Results	Actual Results	Pass(P)/ Fail(F)	Remarks
1	Order food with enter minimum 1 food quantity	01, Hawaiian Chicken, 29.90, 2, 59.80	The food will be inserted into the database and displayed on the food cart list. The sub food price will be calculated.	The food will be inserted into the database and displayed on the food cart list. The sub food price will be calculated.	P	
2	Cancel the food from the food cart list.	Hawaiian Chicken, 29.90, 1, 29.90	The user can enter the removed button to cancel its food from the food cart list. And the price will be recalculated.	The user can enter the removed button to cancel its food from the food cart list. And the price will be recalculated.	P	

5.3.3 Make Payment Module

Module name		Make Payment Module				
Module description		This module allows the customer to make payment for their order. The customer is allowed to enter the PizzaKing voucher to get a RM2 discount once they have the voucher code. Then, the customer needs to choose the payment method to make payment such as cash and using a credit card. The total amount will be calculated. Furthermore, the customer is allowed to generate a receipt in a pdf file from the order history.				
Module developed by		Ng Kah Loon				
Tester name:		Ng Kah Loon				
Test Pre-requisites¹ (if any):		The customer must select any payment option and only can make payment successfully.				
Test Dependencies (if any):		-				
Test case No	Test case description	Test data	Expected Results	Actual Results	Pass(P)/ Fail(F)	Remarks
1	Make payment with correct information.	NO90, Jalan JangKat Jong,Taman Jaya,36000 Teluk Intan,Perak. , Kari Pasta x 1 19.90, PZ666, -RM2.00, cash/credit card, +RM4.00, RM21.9	<ul style="list-style-type: none"> -The particular customer address will be displayed on the text view. -The order list will be displayed on the order food list. -The total payment can be calculated correctly. -The two payments option can function correctly. 	<ul style="list-style-type: none"> -The particular customer address will be displayed on the text view. -The order list will be displayed on the order food list. -The total payment can be calculated correctly. -The two payments option can function correctly. 	P	

2	Test make payment with:					
	a) Does not enter PizzaKing voucher	NO90, Jalan JangKat Jong,Taman Jaya,36000 Teluk Intan,Perak. , Kari Pasta x 1 19.90, PizzaKing voucher = “” , cash/credit card, +RM4.00, RM21.9	The total payment does not include a discount of RM2.00.	The total payment does not include a discount of RM2.00.	P	
	b) Does not select payment option	NO90, Jalan JangKat Jong,Taman Jaya,36000 Teluk Intan,Perak. , Kari Pasta x 1 19.90, PZ666, -RM2.00, cash/credit card =”” , +RM4.00, RM21.9	Display a message “Please select one payment option”.	Display a message “Please select one payment option”.	P	
	c) Select the cash payment option.	NO90, Jalan JangKat Jong,Taman Jaya,36000 Teluk Intan,Perak. , Kari Pasta x 1 19.90, PZ666, -RM2.00, cash, +RM4.00, RM21.9	Enter and choose the cash radio button to make payment directly.	Enter and choose the cash radio button to make payment directly.	P	
	d) Select the credit card payment option and enter the correct information.	NO90,Jalan JangKat Jong,Taman Jaya,36000 Teluk Intan,Perak. , Kari Pasta x 1 19.90, PZ666, -RM2.00, credit card, 4831 4021 1831 4462, 02/2022, 789, 96429, +60 1(890)246-32, +RM4.00, RM21.9	Enter the card number, expiration date, CVV, Postal Code, Count and Mobile Number and all functioning.	Enter the card number, expiration date, CVV, Postal Code, Count and Mobile Number and all functioning.	P	
3	Generate receipt	kahloon, 0128833987, OD0638, 20-November-2021, 04:58, Hawaiian Chicken, 29.90, 1, 29.90, 4.00, 33.90	Select any order history, and enter the print receipt for creating the pdf file. All the	Select any order history, and enter the print receipt for creating the pdf file. All the	P	

			information will be displayed correctly in the pdf file.	information will be displayed correctly in the pdf file.		
--	--	--	--	--	--	--

5.3.4 Comment Module

Module name		Comment Module				
Module description		This module allowed the user to post their comment and upload images into the comment area. It is something like social media such as Facebook and Instagram. The users are allowed to like and dislike a particular comment and also can reply to its comment. If the users don't want to see this comment, they can directly remove its comment by just entering the delete button.				
Module developed by		Ng Kah Loon				
Tester name:		Ng Kah Loon				
Test Pre-requisites¹ (if any):		The users must login their own account.				
Test Dependencies (if any):		-				
Test case No	Test case description	Test data	Expected Results	Actual Results	Pass(P) / Fail(F)	Remarks
1	Display the comment at the comment area	https://firebasestorage.googleapis.com/v0/b/fyp-pizzakingorderingsystem.appspot.com/o/1637656459810.jpg?alt=media&token=3b60fd13-d619-4bdff-adb6-f21953db61e1 , It is very	-The poster is from a particular user. -The time, date, poster name, comment image	-The poster is from a particular user. -The time, date, poster name, comment image	P	

		delicious and cheap, like it!, https://firebasestorage.googleapis.com/v0/b/fyp-pizzakingorderingsystem.appspot.com/o/profile%20Images%2F1p5GadRNH2XOgmBbRfuH1UhZ3L2.jpg?alt=media&token=4eda ba25-c78f-4edf-94b8-be92670be627 , 23-November-2021, 08:34, kahloon	and comment description will be displayed with its comment in the comment area.	and comment description will be displayed with its comment in the comment area.		
2	Post comment into the comment area.	https://firebasestorage.googleapis.com/v0/b/fyp-pizzakingorderingsystem.appspot.com/o/1637656459810.jpg?alt=media&token=3b60fd13-d619-4bd f-adb6-f21953db61e1 , It is very delicious and cheap, like it!	The comment is inserted into the database and displayed in the comment area.	The comment is inserted into the database and displayed in the comment area.		
3	Post comment with:					
	a) No select image	Post image="" , It is very delicious and cheap, like it!	Display a message “Please select post image”.	Display a message “Please select post image”.	P	
	b) No enter comment description	https://firebasestorage.googleapis.com/v0/b/fyp-pizzakingorderingsystem.appspot.com/o/1637656459810.jpg?alt=media&token=3b60fd13-d619-4bd f-adb6-f21953db61e1 , comment description =""	Display a message “Please write something on your mind”.	Display a message “Please write something on your mind”.	P	
4	Delete comment	https://firebasestorage.googleapis.com/v0/b/fyp-pizzakingorderingsystem.appspot.com/o/1637656459810.jpg?alt=media&token=3b60fd13-d619-4bd f-adb6-f21953db61e1 , It is very delicious and cheap, like it! ,	Enter the remove button and then the data will be removed. The comment area will not display its comment again.	Enter the remove button and then the data will be removed. The comment area will not display its comment again.	P	

		kahloon, 23-November-2021, 08:52, It look very nice for me~				
5	Display reply comments from every user.	kahloon, 23-November-2021, 08:52, It look very nice for me~	Reply comments from every user can display in this comment.	Reply comments from every user can display in this comment.	P	
6	Reply comment with description	It look very nice for me~	The comment description can be inserted into the database and displayed on its comment.	The comment description can be inserted into the database and displayed on its comment.	P	
7	Reply comment with no entered description.	Reply comment description =""	Enter the reply button and display a message “Please write something here”.	Enter the reply button and display a message “Please write something here”.	P	
8	Like and unlike for its comment.	1	Enter the like will plus one, while enter again will minus one which means unlike. There will show the total like from the users.	Enter the like will plus one, while enter again will minus one which means unlike. There will show the total like from the users.	P	

5.3.5 Rating Report Module

Module name	Rating Report Module					
Module description	This module allows the customer to rate food from minimum 1 star to maximum 5 stars for each food. After that, the staff can go to view the rating report in the apps. There will display the first top 3 of food and it is according to which food has the most people to rate with more than 3 stars.					
Module developed by	Ng Kah Loon					
Tester name:	Ng Kah Loon					
Test Pre-requisites (if any):	The customer must rate the food.					
Test Dependencies (if any):	-					
Test case No	Test case description	Test data	Expected Results	Actual Results	Pass(P) / Fail(F)	Remarks
1	Rate the food with information correctly.	The pizza is very good, I like it so much!	All the users also can give rating food for all the food from the menu. It is not limited for all users to rate the food.	All the users also can give rating food for all the food from the menu. It is not limited for all users to rate the food.	P	
2	Rating Report	n/a	To display the first top 3 of food and it is according to which food is the most people to rate with more than 3 stars.	To display the first top 3 of food and it is according to which food is the most people to rate with more than 3 stars.	P	

5.3.6 Share Receipt Module

Module name	Share Receipt Module					
Module description	This module allows the customer to select an order receipt and share the receipt using the email.					
Module developed by	Ng Kah Loon					
Tester name:	Ng Kah Loon					
Test Pre-requisites (if any):	Before sharing, the user must select the record from the order history that you want to share, print it as a pdf file first and only can share the file.					
Test Dependencies (if any):	-					
Test case No	Test case description	Test data	Expected Results	Actual Results	Pass(P) / Fail(F)	Remarks
1	Share the order receipt by using email.	ngkl-am18@student.tarc.edu.my , ngklam18@gmail.com , PIZZA KING ORDER RECEIPT OD0638, attach the file with name "PDFFile.pdf"	To make sure the receiver can receive the file in email.	Receiver can receive the file in email.	P	

5.4 Chapter Summary and Evaluation

In this chapter, that includes how my teammate and I implemented our project and define what system development that I used. After that, I had used some test plans such as unit testing, module testing and the system testing. These testing methods help me easily do testing for our system in order it can work and function. Moreover, the problem faced in this chapter is to test the software, needing to use some time to understand and ensure the system didn't have any error and do the evaluation

Chapter 6

Discussions and Conclusion

6. Discussions and Conclusion

In this chapter, evaluation of the project will be described in a few sections. Firstly, the achievement of the project will be described such as project objective and project scope that I had done. Secondly, limitations and future improvements of the project will be provided and at last, issues and solutions will be discussed.

6.1. Achievements

For my part, my achievement in this project is that I can make the goal and vision that I want. I am satisfied with all the module functions that I had done successfully. Besides that, I had learned a lot of new knowledge such as creating the comment area, sharing files, doing the payment and so on. All of these are not easy to do, but I do it step by step.

6.2. Project Objectives

6.2.1. Provide Display Investment and Send Email function

The PizzaKing online ordering system will always update the new investments about the offer, discount, new food, and limited sales and post at the mobile application Home Page in order to let the customers who are using this mobile application know this new information. Another way is the staff will use this system to send the email or message to the customer through their phone number or email. In this way it can help the people who are always less used to using this mobile application and they can get the new information by the message or email. They could be the first ones to know the new notification. Furthermore, it will attract many people who love pizza to download its application and can increase the number of customers using this mobile application to order food and buy from PizzaKing. Moreover, PizzaKing can also increase the production volume sold.

Reply: Yes, our PizzaKing online ordering system allows all the people to download on the mobile phone. Inside the apps we have created the post, the promotions and send email information functions about sharing their new food. The user can get the updated information from the email or notice in this application.

6.2.2. Provide the Comment Area function

This function allows the customers or users to share their comment with an integrated topic and photo, and then post the comment to the comment area. The customer or staff can also go to the comment area there to see every customer's comment and also can reply to its comment. In this way it can be helpful for PizzaKing's staff or manager notices most people are feel not satisfied with this food then the manager will discuss with staff about this problem. After that, PizzaKing will make some changes and enhance service efficiency and improve the skill in order to make delicious food for customers. By the way, if this food receives a lot of good reviews it can let more people to notice it. It will cause an increased number of customers to buy this food and PizzaKing can increase its sales.

Reply: Yes, our PizzaKing online ordering system had created the post comment function. The user can enjoy and see the comment in the comment area there. I design this interface like Facebook and

Instagram, the user also can like and dislike the comment and also can reply to its comment. In this case, the staff can see the situation from here.

6.2.3. Provide Online Payment Function

This function allows the customer using this mobile application to order the food and can allow them to use an online payment function to bill the payment through their card name, card number in 16 digits, CVV and expiry dates. In this way it can be convenient for everyone to save their time and complete the payment quickly. Furthermore, PizzaKing provides delivery service and sometimes the food driver will forget to bring or didn't bring enough cash to make a return charge to the customer. Once this mobile application has this function, it will be one of the reasons why the customers like to order food from them because it will be convenient for payment.

Reply: Reply: Yes, I had created the payment function in this system. The user can choose credit card or cash to make their payment. It can help them to save time and bring convenience to them.

6.3. Project Scope

6.3.1. Food Management Module

Food Management Module allows the user to do any update for their food menu such as add food function, delete food function, and modify food detail function. Before the user wants to delete or modify food, they can select from the menu which is existing food data then only can do the remove or modify. After that, the new food information will be updated into the menu list, the user can see the new menu on time.

Reply: I have fully completed this food management module, which can do the add food, delete food and modify food details in this system. The menu list also will be updated once the user did the customize. I used 3 / 4 days to complete this module.

6.3.2. Online Order Module

Online Order Module allows the customer to order food online, they can go to their order cart to check their order food list and also can order cancer if they don't want to order its food. Moreover, before they order the food, they are required to enter the quantity of food they want, then the total price will be calculated and displayed in the order cart.

Reply: I had fully completed this online order module, the user can use this system to order food and also can cancel the food. The total price can be calculated and displayed at the order cart. I used 1 / 2 days to complete this module.

6.3.3. Make Payment Module

Make Payment Module allows the user to make payment for their order. The user is allowed to enter the PizzaKing voucher to get a RM2 discount once they have the valid voucher code which is "PZ666". Then, the customer needs to choose the payment method to make payment such as cash and using a credit card. The total amount will be calculated. After the payment is done, there will be a record of the order history. Then, the user can go to generate a receipt from the order history.

Reply: I have fully completed this payment module. The total payment can be calculated correctly including the discount, delivery fee and total food price. The user can choose two payment options to make payment. I used 1 / 2 days to complete this module.

6.3.4. Comment Module

Comment Module allows the user to post their comment and upload an image into the comment area. It is something like social media such as Facebook and Instagram. The users are allowed to like and dislike a particular comment and also can reply to its comment. If the users don't want to see this comment, they can directly remove its comment by just entering the delete button.

Reply: I had fully completed this comment module. The user can post and also can view the comment posted by other accounts in the comment area. It can be something like Instagram and the user account is individual. I used 2 / 3 days to complete this module.

6.3.5. Rating report module

Rating report module allows the user to rate food from minimum 1 star to maximum 5 stars for each food. After that, the user can go to view the rating report in the apps. There will display the first top 3 of food and it is according to which food has the most people to rate with more than 3 stars.

Reply: I had fully completed this rating report module. Every time the user rates the food, the rating report food will do the comparison automatically and display on the list. I used 1 / 2 days to complete this module.

6.3.6. Share Receipt Module

Share Receipt Module allows the customer to select an order receipt and share the receipt using the email.

Reply: I had fully completed this share receipt module. The user can use the email and attract the pdf file that they had created in the system and then share to other people. I used 1 / 2 days to complete this module.

6.4. Limitations and Future Improvements

6.4.1. Incompatible with IOS mobile device

Since the android studio system is built under the Android environment, therefore for those people with an Apple mobile device they will not be able to use this application while an android user is able to use this application.

6.4.2. Required Internet Connection

Since the android studio needs to connect to the firebase database for getting the data, the system can only be used and performed under internet connection. In this case, the customers have to connect to the internet only to order the food.

6.5. Future Improvements

6.5.1. Add more Payment Methods

Since our system only has two payment methods, nowadays we have a lot of payment methods by using the mobile phone such as JomPay, Paypal, Touch and Go, Grad and so on. Because having more options of payment methods provide more convenience to the customers, which will help to prevent any food cart abandonment. By providing more than one or two payment methods, it will definitely create a seamless user experience.

6.5.2. Customization

- Provide a feature where customers can customize their order by which they can select any type of pizza, extra salad, etc. After customizing their food, they can save into their favorites list for future order.
- Provide the track function so that after the customer orders the food, they can know what is the situation of their food and know what the time the food will be sent to them.

6.5.3. Design Interface

This system of design interface does not look very excellent but still good for users because it looks neat. Hope can provide more attractive designs and can look more graceful and professional.

6.6. Issues and Solutions

First of all, the problem I face is that sometimes I don't know how to code a function, and then my solution is to search the Internet as much as I can until I make it work.

Secondly, my teammate actually is not familiar with using Javascript in Android Studio. Because last time we were learning the Kotlin Language but I have experienced both languages. We had always open the meeting and doing discussion by yourself, I has try my best to teach my teammate and give him some instruction in order the project can be completed on time.

6.7. Conclusion

Nowadays everyone will have their own handphone and more people like to order food through using mobile devices. It not only can help the company to increase their sales but also can bring convenience to customers. In using this system, the customer can enjoy the food delivery service from the PizzaKing restaurant and it can help to reduce the need to queue up at the counter to take their food. At the same time the customer can choose the payment option which is using cash and using a credit card to pay their payment. Furthermore, the PizzaKing restaurant can collect the feedback given by the customer in this mobile application, then they will be able to overcome their weaknesses. Last but not least, this system also provides convenience to customers as it contains the search engine option where customers can save their time by using it.

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Appendices



Android Studio provides the fastest tools for building apps on every type of Android device.

[Download Android Studio](#)

2020.3.1 for Windows 64-bit (914 MiB)

[Download options](#)

[Release notes](#)

Figure 1.1 Download Android Studio

```
private void uploadToFirebase(Uri uri){
    StorageReference fileRef = reference.child(System.currentTimeMillis() + "." + getFileExtension(uri));
    fileRef.putFile(uri).addOnSuccessListener(new OnSuccessListener<UploadTask.TaskSnapshot>() {
        @Override
        public void onSuccess(UploadTask.TaskSnapshot taskSnapshot) {
            fileRef.getDownloadUrl().addOnSuccessListener(new OnSuccessListener<Uri>() {
                @Override
                public void onSuccess(Uri uri) {

                    String foodID=addFoodID.getText().toString();
                    String foodName=addFoodName.getText().toString().trim();
                    String foodPrice=addFoodPrice.getText().toString().trim();
                    String foodDes=addFoodDesc.getText().toString().trim();

                    HashMap OrderMap = new HashMap();
                    OrderMap.put("foodID",foodID);
                    OrderMap.put("foodDes",foodDes);
                    OrderMap.put("foodImageUrl", uri.toString());
                    OrderMap.put("foodName", foodName);
                    OrderMap.put("foodPrice", foodPrice);

                    // Food food = new Food(foodID ,foodName, uri.toString(),foodPrice, foodDes);

                    root.child(foodID).updateChildren(OrderMap).addOnCompleteListener(new OnCompleteListener() {
                        @Override
                        public void onComplete(@NonNull Task task) {
                            progressBar.setVisibility(View.INVISIBLE);
                            Toast.makeText(context, AddFood.this, "Successfully", Toast.LENGTH_LONG).show();
                            addFoodUrl.setImageResource(R.drawable.ic_baseline_add_photo_alternate_24);

                            Intent intent = new Intent( packageContext, AddFood.this,MenuSetting.class);
                            startActivity(intent);
                        }
                    });
                }
            });
        }
    });
}
```

Figure 1.2 Insert Data To Firebase (Source code)

```
1 package ClassModel;
2
3     public class Order {
4
5         private String FoodID, OrderFoodName, OrderFoodQuantity, OrderFoodPrice, SubTotal;
6
7         public Order(){
8
9             }
10
11        public Order(String foodID, String orderFoodName, String orderFoodQuantity, String orderFoodPrice, String subTotal) {
12            this.FoodID = foodID;
13            OrderFoodName = orderFoodName;
14            OrderFoodQuantity = orderFoodQuantity;
15            OrderFoodPrice = orderFoodPrice;
16            this.SubTotal = subTotal;
17        }
18
19        public String getFoodID() { return FoodID; }
20
21        public void setFoodID(String foodID) { FoodID = foodID; }
22
23        public String getOrderFoodName() { return OrderFoodName; }
24
25        public void setOrderFoodName(String orderFoodName) { OrderFoodName = orderFoodName; }
26
27        public String getOrderFoodQuantity() { return OrderFoodQuantity; }
28
29        public void setOrderFoodQuantity(String orderFoodQuantity) {
30            OrderFoodQuantity = orderFoodQuantity;
31        }
32
33        public String getOrderFoodPrice() { return OrderFoodPrice; }
```

Figure 1.3 Example of Class Model (Source Code)

```

32     @NonNull
33     @Override
34     public FoodViewHolder onCreateViewHolder(@NonNull ViewGroup parent, int viewType) {
35         View v = LayoutInflater.from(context).inflate(R.layout.menu_listi,parent, attachToRoot: false);
36         return new FoodViewHolder(v);
37     }
38
39     @Override
40     public void onBindViewHolder(@NonNull FoodViewHolder holder, int position) {
41         Food food = list.get(position);
42
43         holder.id.setText(food.getFoodID());
44         holder.name.setText(food.getFoodName());
45         holder.price.setText(food.getFoodPrice());
46         holder.desc.setText(food.getFoodDes());
47         Glide.with(holder.img.getContext()).load(food.getFoodImageUrl()).into(holder.img);
48
49         holder.itemView.setOnClickListener(new View.OnClickListener() {
50             @Override
51             public void onClick(View v) {
52                 Intent intent = new Intent(context, EachFoodDetail.class);
53
54                 intent.putExtra( name: "foodID",holder.id.getText().toString());
55                 intent.putExtra( name: "foodName",list.get(position).getFoodName());
56                 intent.putExtra( name: "foodImageUrl",list.get(position).getFoodImageUrl());
57                 intent.putExtra( name: "foodPrice",holder.price.getText().toString());
58                 intent.putExtra( name: "foodDes",holder.desc.getText().toString());
59
60                 context.startActivity(intent);
61             }
62         });
63     }
64
65     @Override
66     public int getItemCount() {
67         return list.size();
68     }
69 
```

Figure 1.4 Retrieve Data from Firebase (Source Code)

```

296     public void createPDF(String count,String name0, String qty0, String price0, String name1, String qty1, String price1) {
297
298         print.setOnClickListener(new View.OnClickListener() {
299             @Override
300             public void onClick(View v) {
301
302                 PdfDocument myPdfDocument = new PdfDocument();
303                 PdfDocument.PageInfo myPageInfo = new PdfDocument.PageInfo.Builder( pageWidth: 1200, pageHeight: 2010, pageNumber: 1).create();
304                 PdfDocument.Page myPage = myPdfDocument.startPage(myPageInfo);
305                 Canvas canvas = myPage.getCanvas();
306
307                 Paint myPaint = new Paint();
308                 Paint titlePaint =new Paint();
309
310                 canvas.drawBitmap(scaleddbmp, left: 0, top: 0,myPaint);
311
312                 titlePaint.setTextAlign(Paint.Align.CENTER);
313                 titlePaint.setTypeface(Typeface.create(Typeface.DEFAULT,Typeface.BOLD));
314                 titlePaint.setTextSize(70);
315                 canvas.drawText( text: "Pizza King", x: pageWidth/2, y: 270,titlePaint);
316
317                 myPaint.setColor(Color.rgb( red: 0, green: 113, blue: 188));
318                 myPaint.setTextSize(30f);
319                 myPaint.setTextAlign(Paint.Align.RIGHT);
320                 canvas.drawText( text: "Call: 019-6666666", x: 1160, y: 40,myPaint);
321                 canvas.drawText( text: "019-6666666", x: 1160, y: 80,myPaint);
322
323                 titlePaint.setTextAlign(Paint.Align.CENTER);
324                 titlePaint.setTypeface(Typeface.create(Typeface.DEFAULT,Typeface.ITALIC));
325                 titlePaint.setTextSize(70);
326                 canvas.drawText( text: "Invoice No", x: pageWidth/2, y: 500,titlePaint);
327                 |
328                 myPaint.setTextAlign(Paint.Align.LEFT);
329             }
330         });
331     }
332 
```

Figure 1.5 Create pdf.file Design (Source code)

Figure 1.6 Card Form (Source Code)

```
        }

        Double TotalPayment = 0.00;
        private void CountTotalPayment(Double amount) {

            voucher_code.setOnClickListener(new View.OnClickListener() {
                @Override
                public void onClick(View v) {
                    // Double TotalPayment = 0.00;
                    if ("PZ666".equals(voucher_code.getText().toString())) {
                        // Double TotalPayment = 0.00;

                        Toast.makeText(context: CheckOut.this, text: "Offer RM!!!", Toast.LENGTH_LONG).show();
                        offer.setVisibility(View.VISIBLE);

                        // Double FP = Double.parseDouble(String.valueOf(amount));
                        TotalPayment = amount - offer2;
                        String offer = "2.00";
                        CK_totalAmount.setText(" RM" + String.valueOf(TotalPayment));
                        CheckRadio(TotalPayment, offer);

                } else {
                    Toast.makeText(context: CheckOut.this, text: "Invalid Voucher Code", Toast.LENGTH_LONG).show();
                    TotalPayment += amount;
                    CK_totalAmount.setText(String.valueOf(TotalPayment));
                }
            });
        }
    }
}
```

Figure 1.7 Validation Voucher (Source Code)

```
    public void setLikeButtonStatus(final String PostKey){

        LikesRef.addValueEventListener(new ValueEventListener() {
            @Override
            public void onDataChange(@NonNull DataSnapshot snapshot) {
                if(snapshot.child(PostKey).hasChild(currentUserId)){
                    countLikes=(int) snapshot.child(PostKey).getChildrenCount();
                    LikePostButton.setImageResource(R.drawable.ic_action_like);
                    DisplayNoOfLikes.setText(Integer.toString(countLikes)+" Likes");
                }else{
                    countLikes=(int) snapshot.child(PostKey).getChildrenCount();
                    LikePostButton.setImageResource(R.drawable.ic_action_dislike);
                    DisplayNoOfLikes.setText(Integer.toString(countLikes)+" Likes");
                }
            }

            @Override
            public void onCancelled(@NonNull DatabaseError error) {
            }
        });
    }
}
```

Figure 1.8 Like and Unlike Function (Source Code)

```

public boolean onNavigationItemSelected(@NonNull MenuItem menuItem) {

    switch (menuItem.getItemId()){
        case R.id.nav_home:
            Intent intent = new Intent( packageContext: Menu.this, HomePage.class);
            startActivity(intent);
            break;
        case R.id.nav_CommentArea:
            Intent intent3 = new Intent( packageContext: Menu.this, CommentArea.class);
            startActivity(intent3);
            break;
        case R.id.nav_orderhistory:
            Intent intent4 = new Intent( packageContext: Menu.this, OrderHistory.class);
            startActivity(intent4);
            break;
        case R.id.nav_menuSetting:
            Intent intent5 = new Intent( packageContext: Menu.this, MenuSetting.class);
            startActivity(intent5);
            break;
        case R.id.nav_notification:
            Intent intent6 = new Intent( packageContext: Menu.this, NotificationOption.class);
            startActivity(intent6);
            break;
        case R.id.nav_deliveries:
            Intent intent7 = new Intent( packageContext: Menu.this, Delivery.class);
            startActivity(intent7);
            break;
        case R.id.nav_map:
            Intent intent8 = new Intent( packageContext: Menu.this, MapTrack.class);
            startActivity(intent8);
            break;
    }
}

```

Figure 1.9 Navigation View (Source Code)

```

public void buttonShareFile(View view){
    String stringFile = Environment.getExternalStoragePublicDirectory(Environment.DIRECTORY_DOWNLOADS).getPath() + "/PDFFile.pdf";
    File file = new File(stringFile);
    if(!file.exists()){
        Toast.makeText( context: this, text: "No such this pdf file...", Toast.LENGTH_LONG).show();
        return;
    }

    Intent intentShare = new Intent(Intent.ACTION_SEND);
    intentShare.setType("application/pdf");
    intentShare.putExtra(Intent.EXTRA_STREAM, Uri.parse("file://" + file));
    intentShare.putExtra(Intent.EXTRA_SUBJECT, value: "PIZZA KING ORDER RECEIPT" + mOrderID);
    startActivityForResult(Intent.createChooser(intentShare, title: "Share the file.."));
}

```

Figure 1.10 Send Email Function (Source Code)

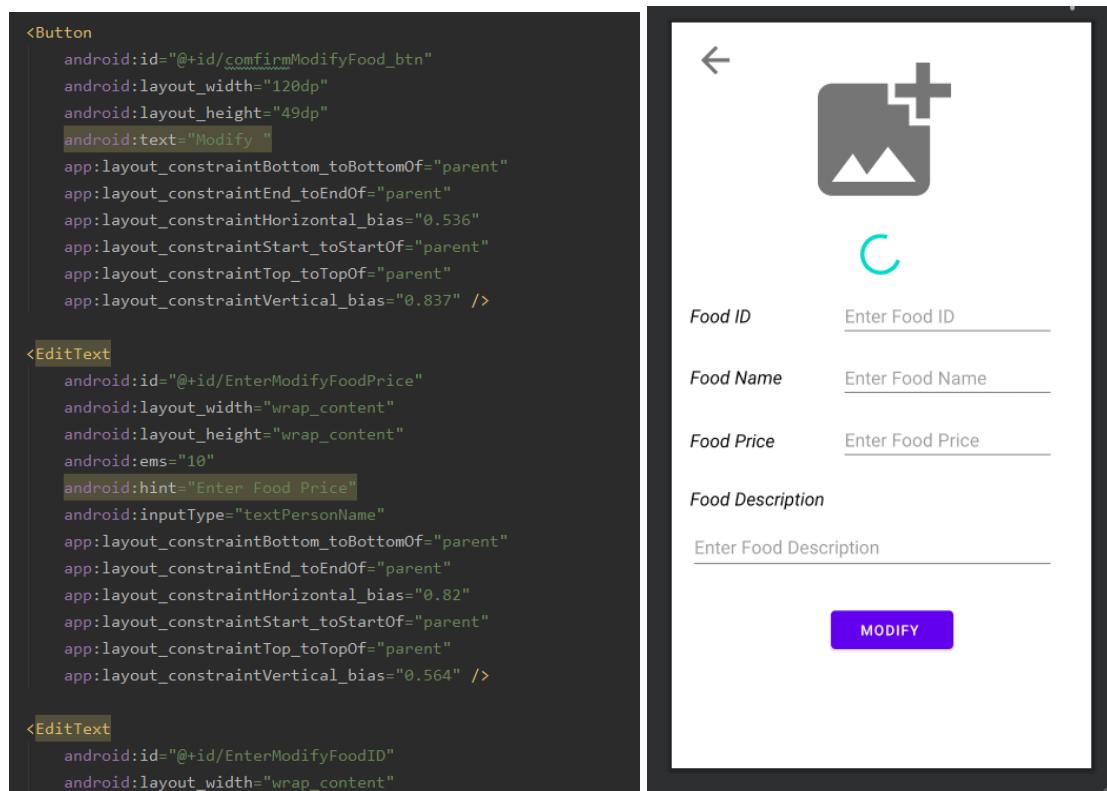


Figure 1.11 Layout Design (Source Code)

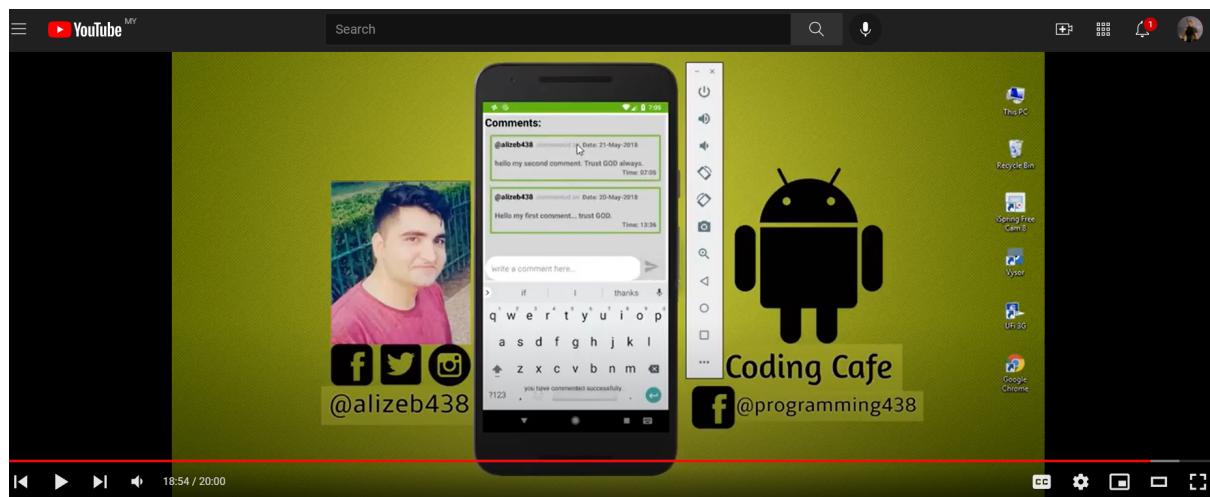


Figure 1.12 YouTube Searching

The screenshot shows a Stack Overflow search results page. The query is "Create, write and display PDF file in android app". The results list a single question posted 6 years, 7 months ago, which has been active for 1 year, 2 months ago, and viewed 54k times. The question asks about creating a PDF file from user input stored in a database for an Android app. It includes a code snippet for creating a PDF using iText:

```

public void createPDF()
{
    Document doc = new Document();

    try {
        String path = Environment.getExternalStorageDirectory().getAbsolutePath() + "/";

        File dir = new File(path);
        if(!dir.exists())
            dir.mkdirs();

        Log.d("PDFCreator", "PDF Path: " + path);

        File file = new File(dir, "demo.pdf");
        FileOutputStream fOut = new FileOutputStream(file);

        PdfWriter.getInstance(doc, fOut);

        //open the document
        doc.open();
    }
}

```

Figure 1.13 Online Stack Overflow Searching

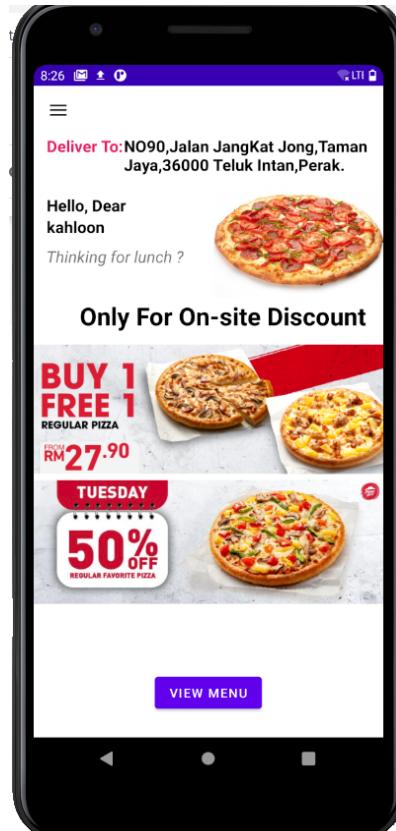


Figure 1.14 Home Page

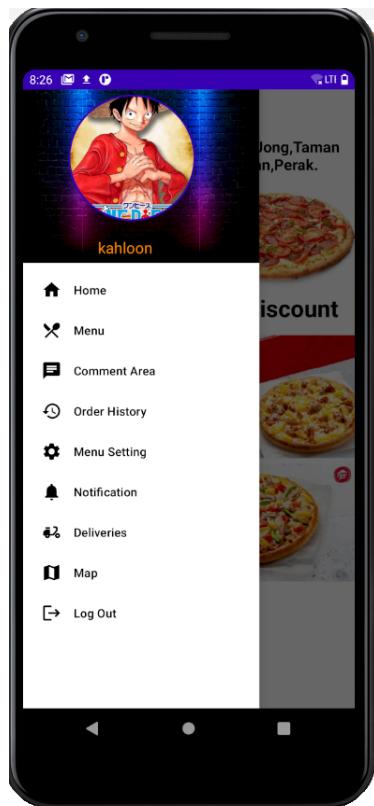


Figure 1.15 Navigation View

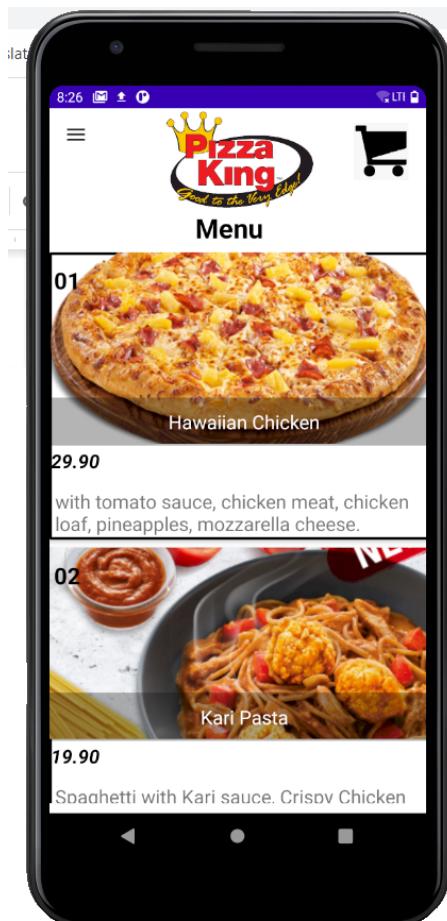


Figure 1.16 Menu Page

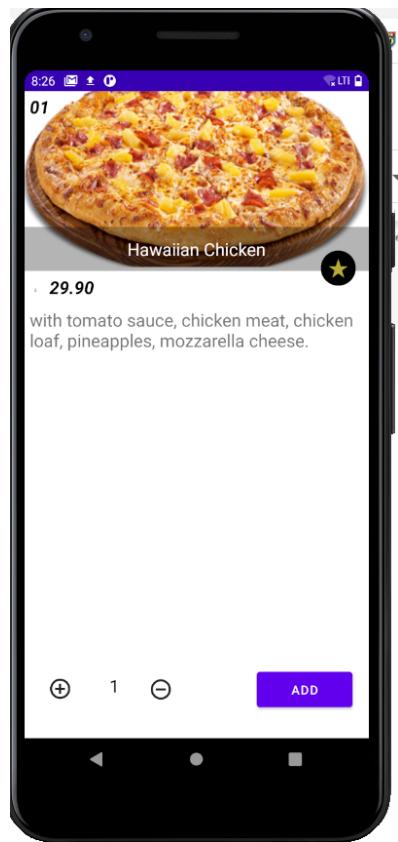


Figure 1.17 Food Details



Figure 1.18 Order Cart



Figure 1.19 Order Request in Firebase

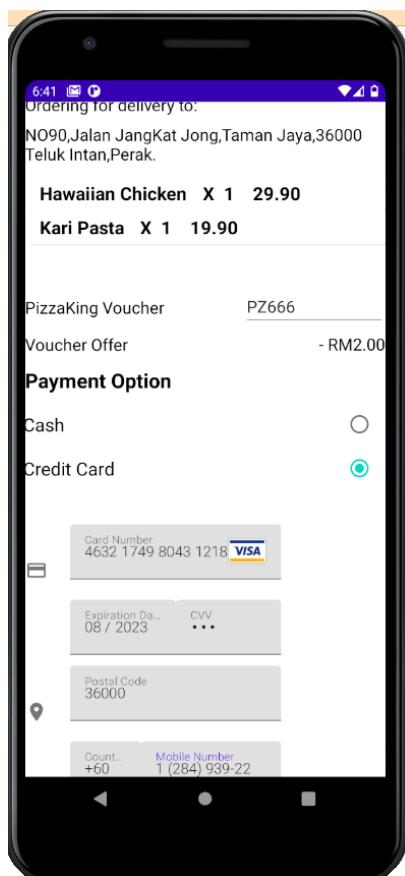


Figure 1.20 Make Payment

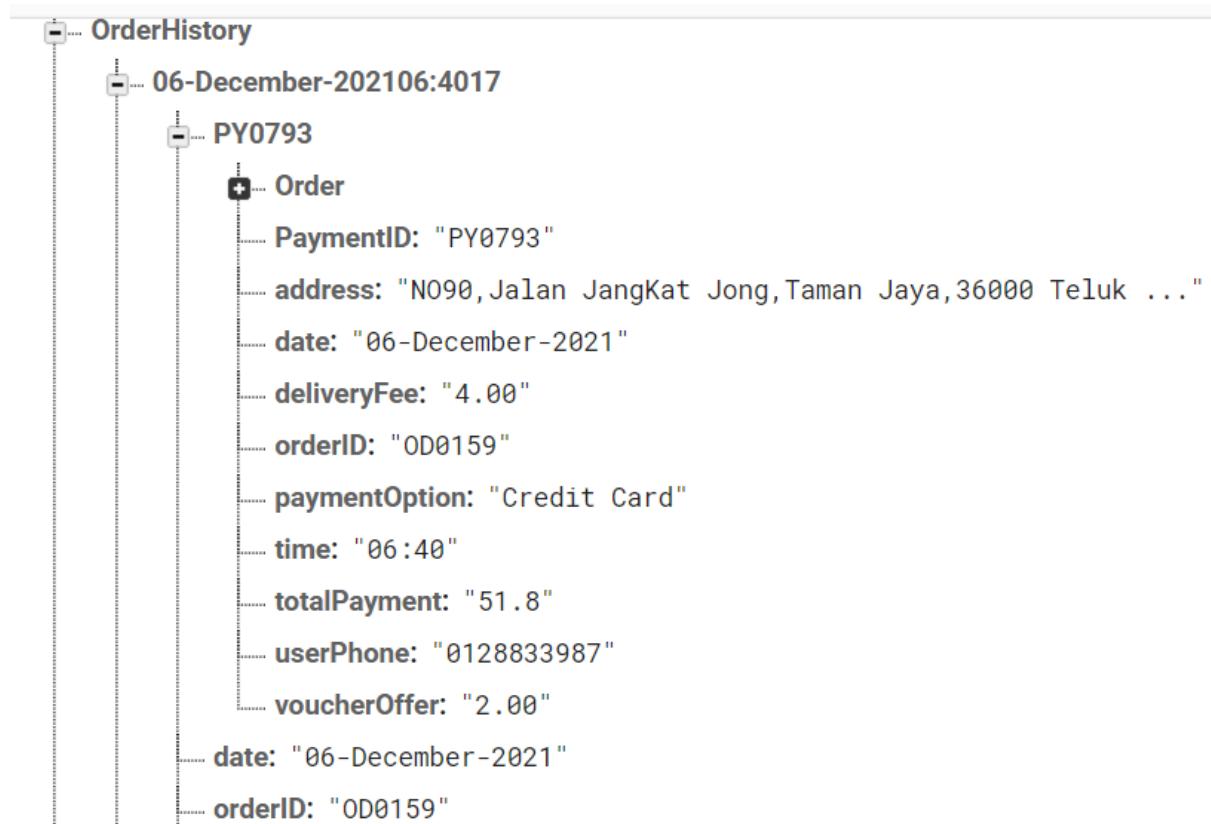


Figure 1.21 Order Record

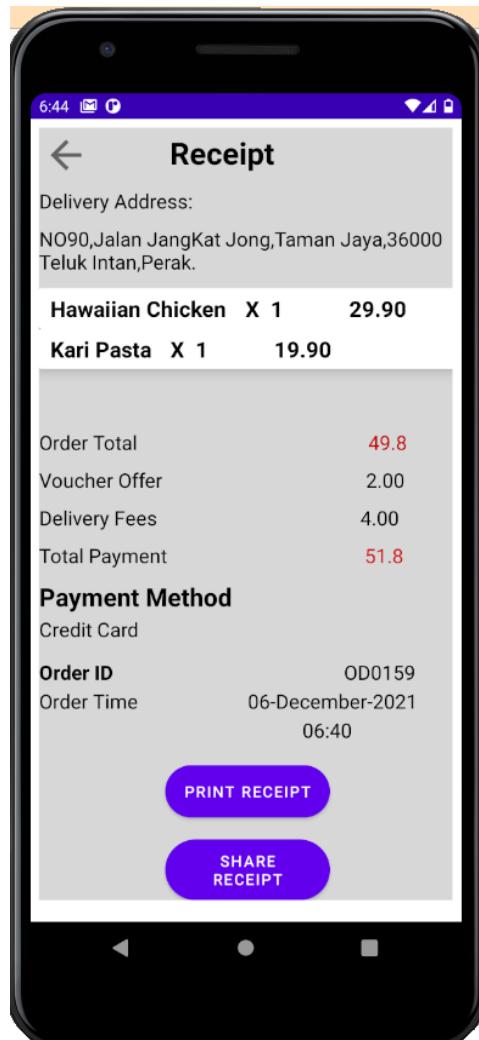


Figure 1.22 Order Receipt Details

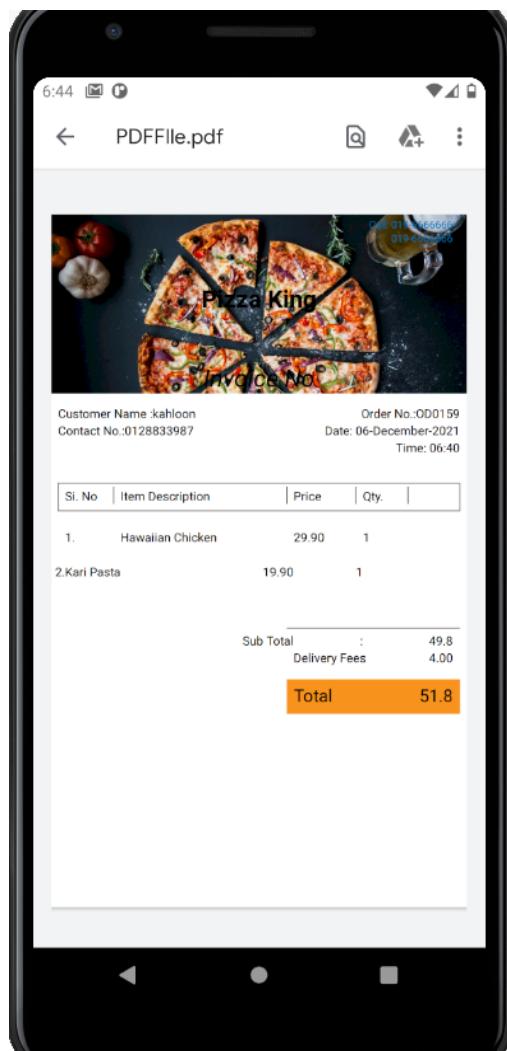


Figure 1.23 Order Receipt as Pdf.file

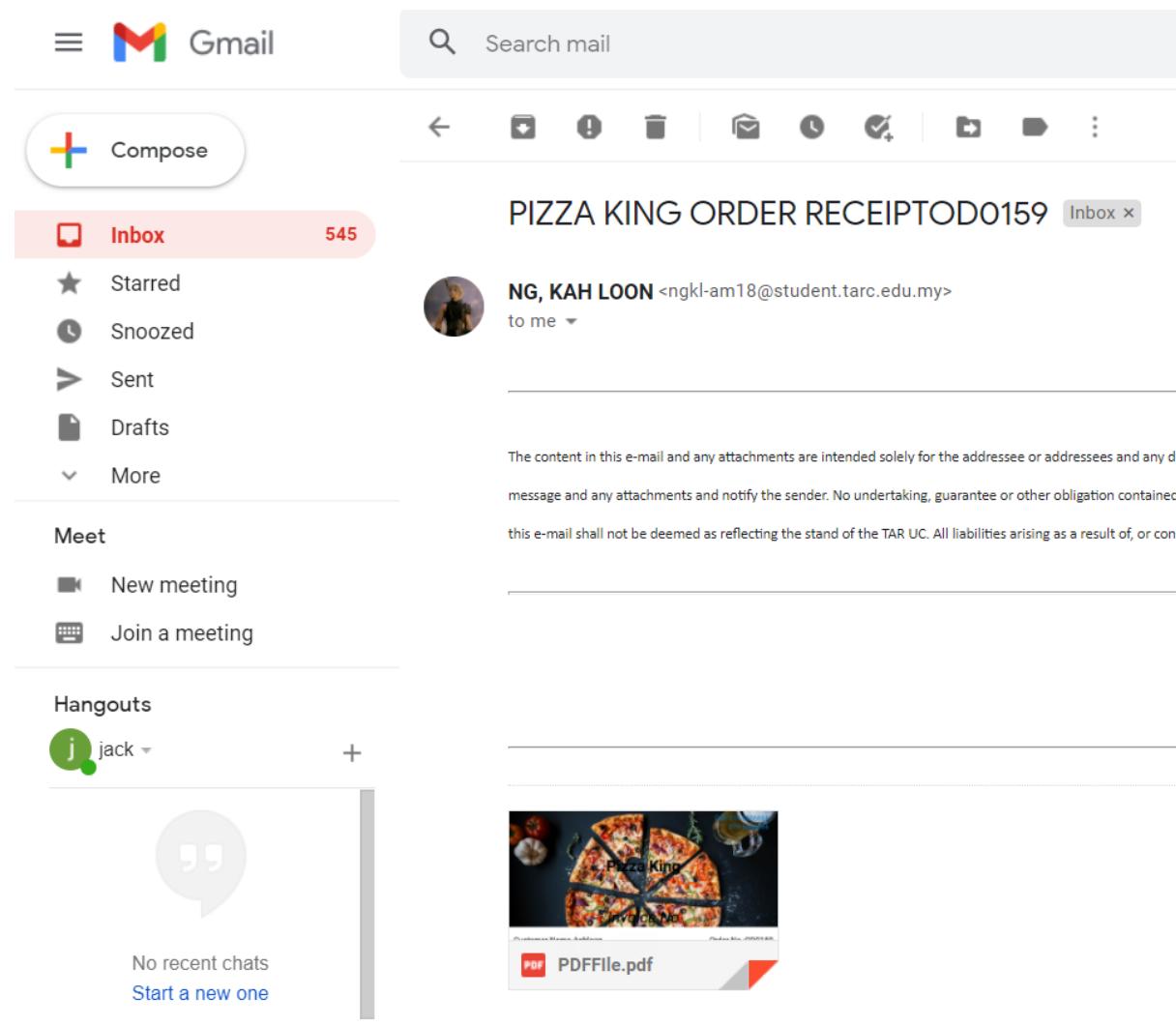


Figure 1.24 Received the Email



Figure 1.25 Comment Area

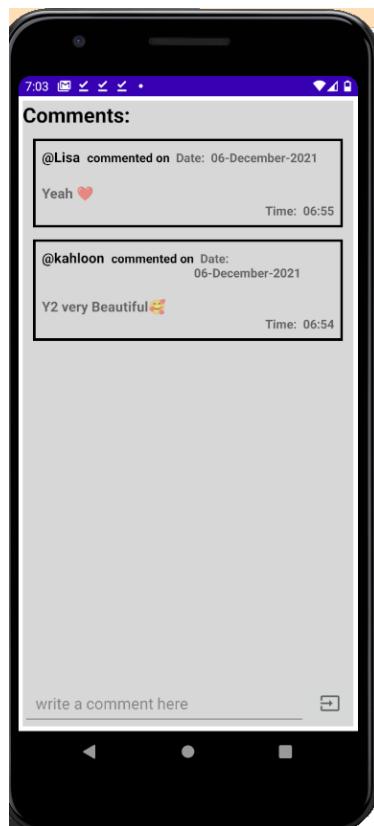


Figure 1.26 Reply Comment

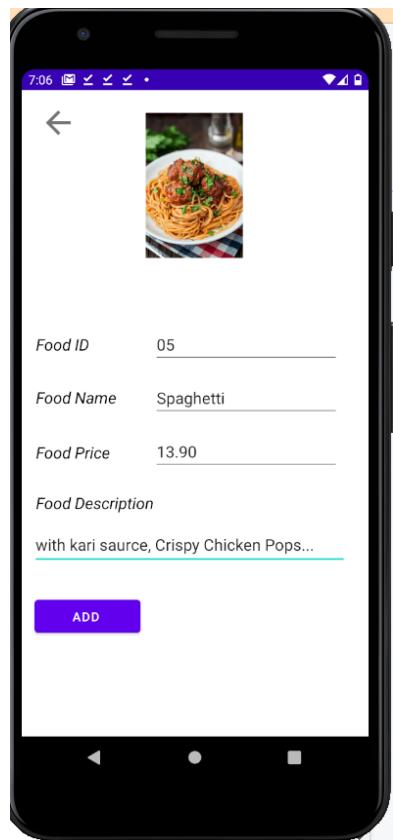


Figure 1.27 Add Food

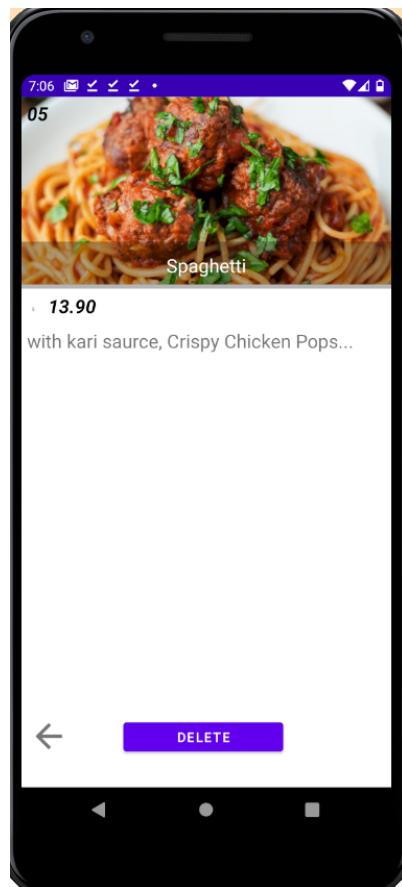


Figure 1.28 Delete Food

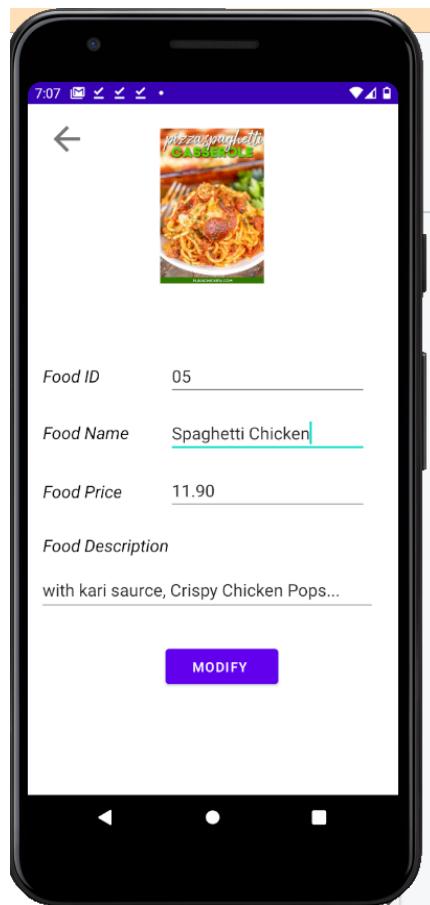


Figure 1.29 Modify Food Details

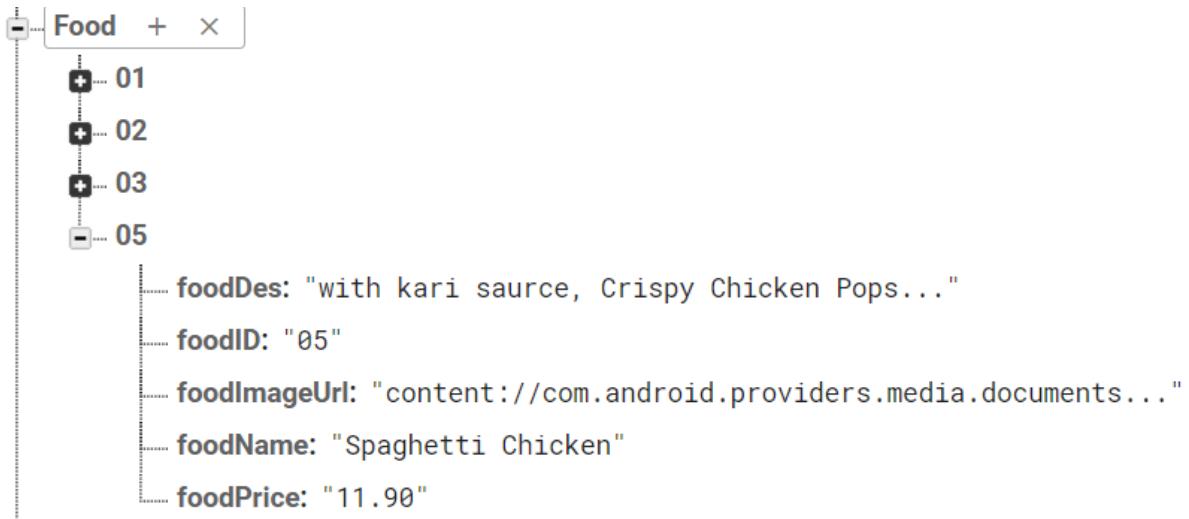


Figure 1.30 Modified the Food Data

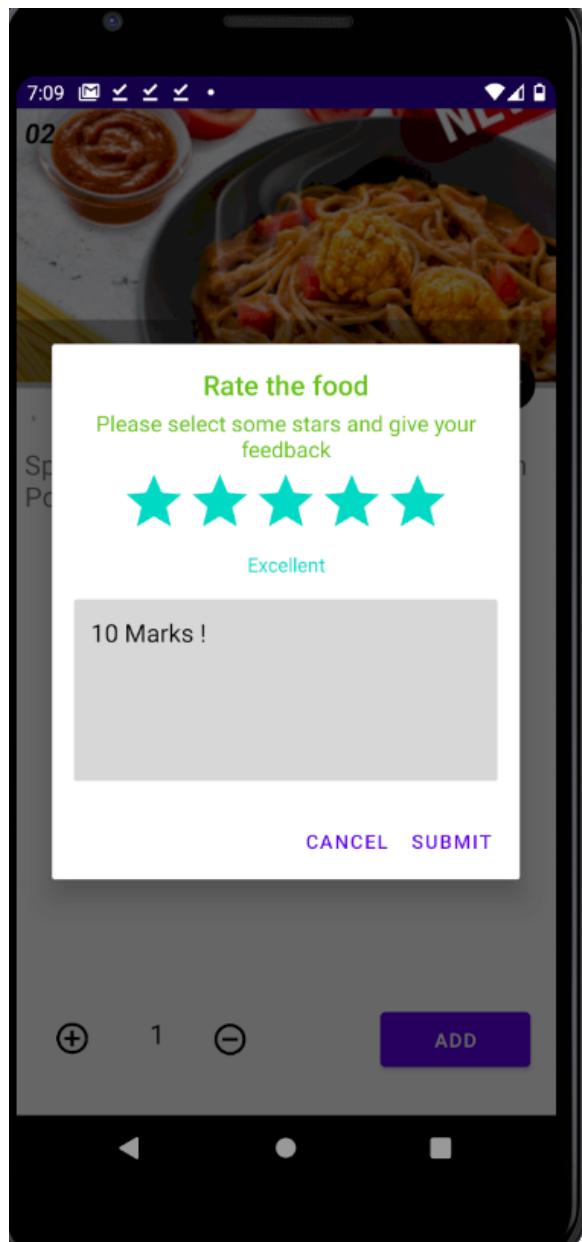


Figure 1.31 Rating Food

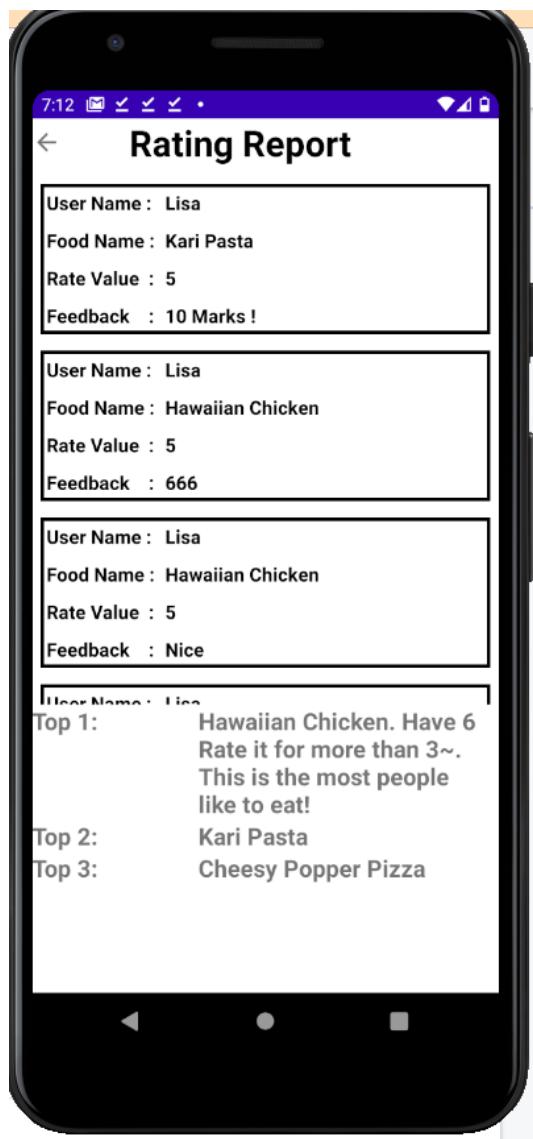


Figure 1.32 Rating Report

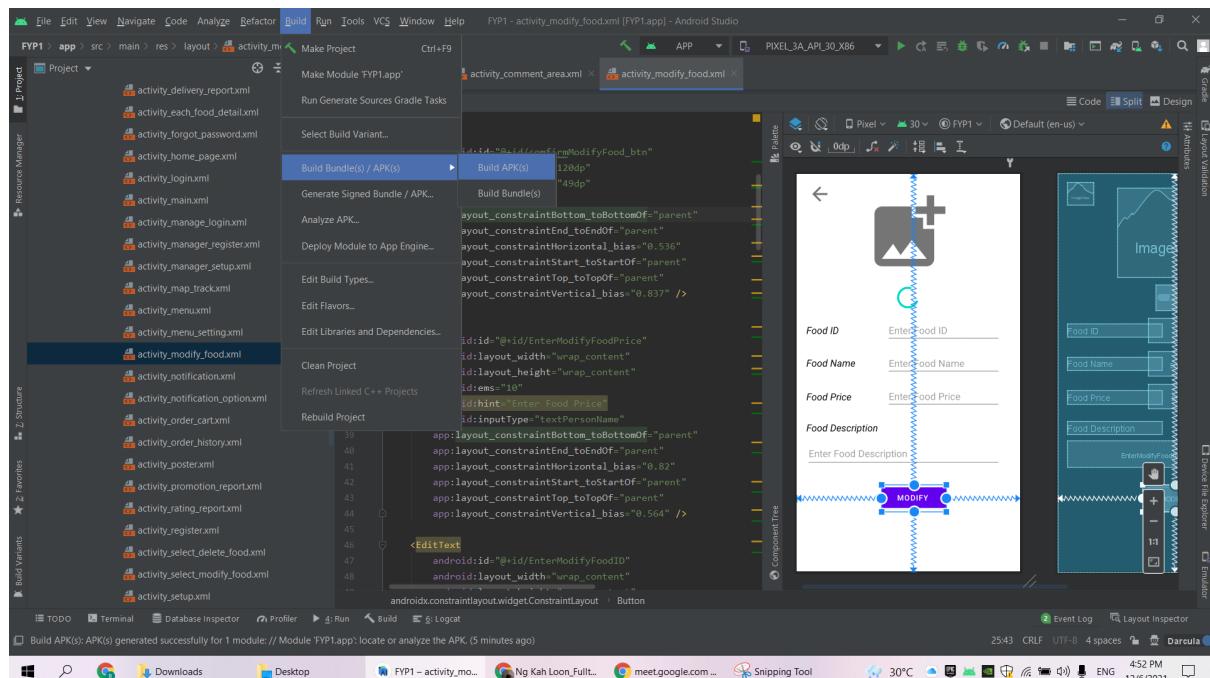


Figure 1.33 Open the Build APK(s)

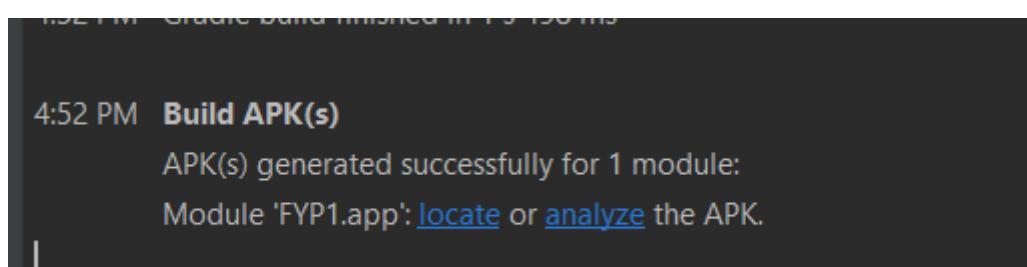


Figure 1.34 Click on the locate link

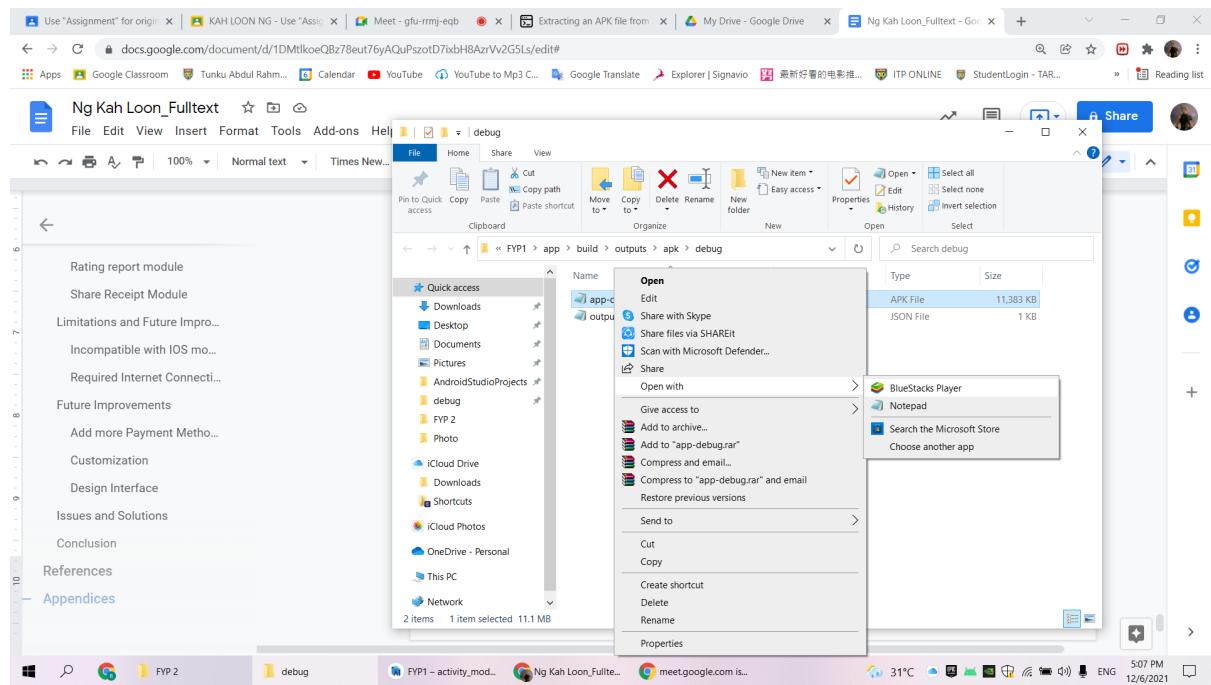


Figure 1.35 Open with BlueStack

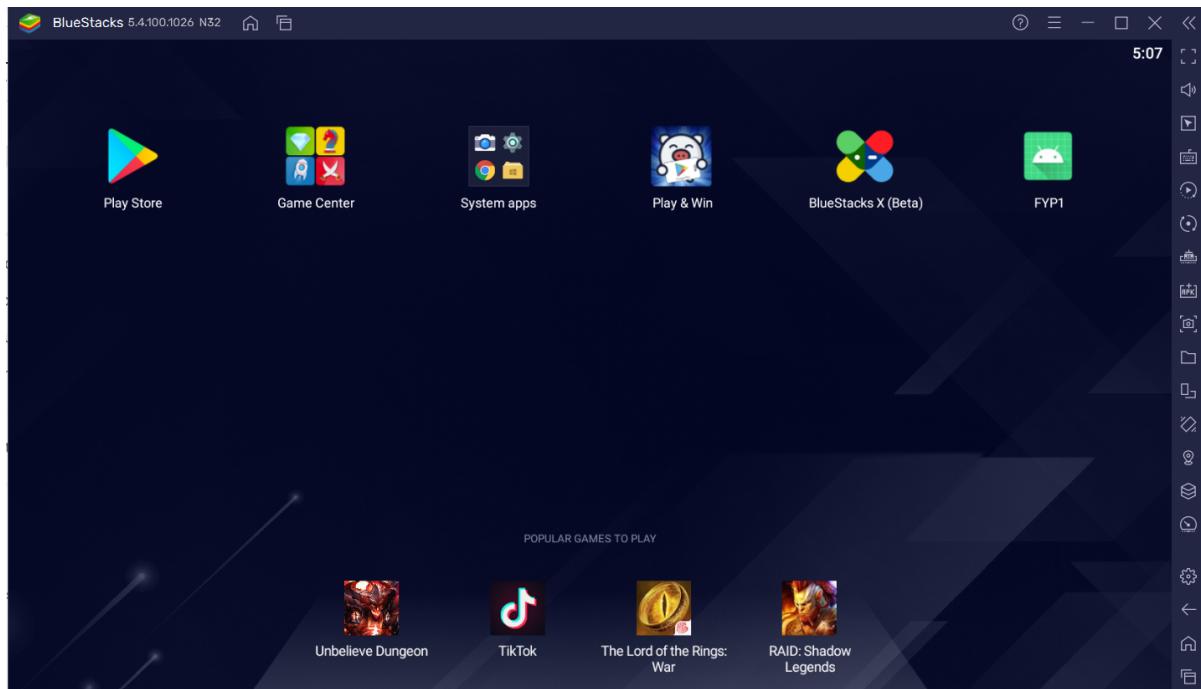


Figure 1.36 Show at BlueStacks

**BACS3403 PROJECT I****Project Appointment Record**

Student's Details						
Name		Ng Kah Loon				
Programme		REI3				

No	Date	Time		Duration (Minutes)	Venue	Project Progress & Remarks	Students' Signature
		From	To				
1.	20/01/20 21	14:00pm	14:35pm	35 minutes	Google Meet	FYP Discussion	
2.	22/01/20 21	10:00pm	10:45pm	45 minutes	Google Meet	FYP second discussion	
3.	05/02/20 21	15:10pm	14:00pm	50 minutes	Google Meet	FYP third discussion	
4.	02/03/20 21	17:00pm	17.30pm	30 minutes	Google Meet	Chapter 1 & 2 discussion	
5.	29/03/20 21	14:00pm	14:45pm	45 minutes	Google Meet	Chapter 1 & 2 second discussion	
6.	23/04/20 21	10:00am	10:30am	30 minutes	Google Meet	FYP Chapter 1 feedback	
7.	03/06/20 21	15:20pm	14:00pm	40 minutes	Google Meet	FYP Chapter 2 feedback	
8.	20/06/20 21	12:00pm	13:00pm	1 hour	Google Meet	Chapter 3 & 4 discussion	

9.	14/07/20 21	15:35pm	14:00pm	25 minutes	Google Meet	Chapter 2 second feedback	
10.	17/07/20 21	14:00pm	14:35pm	35 minutes	Google Meet	Briefing Chapter 3 & 4	

**BACS3403 PROJECT II****Project Appointment Record**

Student's Details							
Name	Ng Kah Loon						
Programme	REI3						

No	Date	Time		Duration (Minutes)	Venue	Project Progress & Remarks	Students' Signature
		From	To				
1.	28/10/2 021	18:00pm	18:45pm	45 minutes	Google Meet	Check FYP process	
2.	05/11/2 021	10:00am	10:35am	35 minutes	Google Meet	Check FYP second process	
3.	11/11/2 021	14:15pm	14:45pm	30 minutes	Google Meet	Briefing Chapter 5 & 6	
4.	26/11/2 021	17:00pm	17.30pm	30 minutes	Google Meet	Check FYP Report	
5.	28/11/2 021	11:00pm	12:00am	1 hour	Google Meet	Check FYP second Report	