POLITEKNIK SULTAN SALAHUDDIN ABDUL AZIZ SHAH

SMART ORDERING SYSTEM

NAME	NO. REGISTRATION
NURUL BASYIRAH BINTI ABD RAZAK	08DEP17F1117
AHMAD FAHMI BIN HAZMA PUTARA	08DEP17F1175

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ENDORSEMENT

" I hereby acknowledge that I have read this report and I find that its contents meet the requirement in terms of scope and quality for the award of Diploma in Electronic Engineering (Communication)."

Signature :…….

Name of Supervisor :…….

Date :…….

Signature :…….

Name of Supervisor :…….

Date :…….

DECLARATION

"We hereby declare that the work in this report is our own except for quotation and summaries which have been duty acknowledge."

Signature :…….

Name :…….

Registration No :…….

Date :…….

ABSTRACT

In the era of information technology, human tend to develop better and more convenient lifestyle. Wireless technology has already become an important application which usually integrated to a wide range of device and other technologies. The enhancements provide by the wireless technology gives the ease of control to the users. Nowadays, almost all the electronic devices are equipped with wireless technology. This fact shows the necessity and benefits provide by this technology. Therefore, we intend to develop an application which is called Smart Order. The app might look simple or similarly like the app in the market offers but the fact that this is an app where you can search nearby restaurant or any restaurant that you want then it will show you the rating and the location of the restaurant so you can easily know more details about the restaurant. This app also offers you to do a booking or make an order through this app so it will be easier for you when you want to go to a famous restaurant where there is so many customers. The Smart Ordering System also introduced a faster way to order food at a restaurant. The system uses a keypad that is placed on the phone or tablet for customers to place orders then order will made by inserting the code on the keypad menu and this code comes along with the menu. After that, the signal will be delivered to the manager to make the final confirmation then it will automatically be displayed on the screen in the kitchen. This result in the ordering system looks great because this method require some knowledge in Javascript. From this project, we hope that we get to develop a high quality ordering system for users to choose from.

ABSTRAK

Dalam era teknologi maklumat, manusia cenderung untuk mengembangkan gaya hidup yang lebih baik dan lebih mudah. Teknologi tanpa wayar telah menjadi aplikasi penting yang biasanya disepadukan dengan pelbagai peranti dan teknologi lain. Penambahbaikan yang disediakan oleh teknologi tanpa wayar memberikan kemudahan kawalan kepada pengguna. Kini, hampir semua peranti elektronik dilengkapi dengan teknologi tanpa wayar. Fakta ini menunjukkan keperluan dan faedah yang disediakan oleh teknologi ini. Oleh itu, kami berhasrat untuk membangunkan aplikasi yang dipanggil Smart Order. Aplikasi ini mungkin kelihatan sederhana atau serupa seperti aplikasi dalam tawaran pasaran tetapi hakikat bahawa ini adalah aplikasi di mana anda boleh mencari restoran berdekatan atau mana-mana restoran yang anda mahu maka ia akan menunjukkan penarafan dan lokasi restoran supaya anda boleh dengan mudah mengetahui maklumat lanjut mengenai restoran. Aplikasi ini juga menawarkan anda untuk membuat tempahan atau membuat pesanan menerusi aplikasi ini supaya lebih mudah untuk anda apabila anda ingin pergi ke sebuah restoran terkenal di mana terdapat banyak pelanggan. Sistem Pesanan Pintar juga memperkenalkan cara yang lebih cepat untuk memesan makanan di sebuah restoran. Sistem ini menggunakan papan kekunci yang ditempatkan pada telefon atau tablet untuk pelanggan untuk membuat pesanan dan pesanan akan dibuat dengan memasukkan kod pada menu pad kekunci dan kod ini dilengkapi dengan menu. Selepas itu, isyarat akan dihantar kepada pengurus untuk membuat pengesahan akhir maka ia akan dipaparkan secara automatik pada skrin di dapur. Hasilnya dalam sistem pesanan kelihatan hebat kerana kaedah ini memerlukan pengetahuan dalam Javascript. Dari projek ini, kami berharap kami dapat membangunkan sistem tempahan berkualiti tinggi untuk pengguna memilih.

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CHAPTER 1

INTRODUCTION

1.1 Project Overview

This project works is aimed for developing an efficient food ordering system that can be used in the food & beverage (F&B) industry which can help the restaurants to quickly and easily manage daily operational task as well as improve the dining experience of customers. It is believed that still have a lot of restaurants are using the traditional method for food ordering processes. By using the traditional method, it arise a lot of human error while the restaurant's employees deal with large amount of customers, this issue will did a great impact to the restaurant in terms of profitability. Thus, this project is to propose a suitable food ordering system for F&B industry to solve the problem that mentioned above. The system will become an important tools use for restaurant to improve the management aspect by utilizing computerized system to coordinate each and every food ordering transaction instead of traditional method. In addition, it can also provide efficiency for the restaurant by reducing time consuming, minimize human errors and providing good quality customer service. In terms of the integrity and availability of the system provided, it can be concluded that this system is a suitable solution for the F&B industry.

1.2 Background Project

Nowadays, people are more and more frequent to dine-in at restaurant for their meals. Especially in Shah Alam, it has roughly 35 thousands to 40 thousands of citizens staying in this town. Therefore, it will have a lot of people especially students of PSA (Politeknik Sultan Salahuddin Abdul Aziz Shah) looking for restaurant that they prefer as their meals such as breakfast, lunch and dinner. At this moment, it arise a lot of troublesome to restaurants which are still using traditional food order method as their food order process. The traditional food order method is not efficient enough for restaurant to deals with crowded situation in their restaurant. The traditional food order methods can be classified into 2 categories which are paper based and verbal base. For paper based food order method, the waiter will record down foods that customers order and pass the food order paper to the kitchen for further process. This is the method that implement by most of the restaurants in Shah Alam. In addition, this method still consider efficient if restaurants are not crowded, but however it will arise a lot of human errors while restaurants are crowded of customers such as food serve not in sequence, missing of food order paper, mistake in record down the food name and etc. Second, verbal base food order method is even worse than paper base food order method. Because, verbal base food orders method require employees to remember all the customers' food order by relying on their memory and then employees will reach the food order message to the chef in kitchen physically. Verbal base food order method contains the weaknesses such as causing the employees unable to memorize all the food order during the restaurant is crowded of customers and the problems that mentioned above. Thus, this kind of weaknesses will did a great impact to the restaurants' profitability. As a conclusion, this proposal is written to propose an efficient food order system to enhance and improve the existing traditional food order management system and provide convenience, availability and integrity to restaurants. At the end of the project, it will be very useful and did a huge contribution for restaurants which are located in Shah Alam to deals with crowded situation during operation hours.

1.3 Problem Statement

Nowadays, there are lots of article that showing the carelessness of restaurants having bad service and some of them do not know how to solve them. It seems so incomprehensible that restaurant don't take action and do not know the solution to this problem. We realize that in the vast majority of cases, this is a problem that restaurants often face. Restaurants should not take everything way too easily. From the research that we get from the source of the articles, we found that the most of the problems faced by the restaurants are showing cases often due to the carelessness of restaurant having bad service when the workers are not alert of their jobs . Besides, based dated article 15 August 2015, a customer already decided on their meals but the waiter forgot to take orders although they had been in the restaurant earlier than the other customers. The waiter did not put a friendly smile when taking the order from the customer and this gave bad impression to the restaurant.

1.4 Objective

1.4.2 Assist restaurant to plan ahead

Whenever the staff places an order for consumers, the food order details information will be store to the database for further analyzing to perform forecasting. The employees can check previous food order details to solve any misleading and misunderstand incident while it occur. For example, staff can manage to inform the consumer estimated times that require to prepare the food during business hour especially peak hour and hence it can help reduce conflict occur. Therefore, it is very important to keep all the necessary business data for further review.

1.4.3 Prevention of food serves not in sequence

This objective will be achieved because whenever employees place an order into the system, the system will schedule the food order details in a queue then the chef will prepare the food according to the food order queue. In paper based system, the employee will deliver the food order ticket into the kitchen and the chef cook whatever foods that

1.5 Scope Project

The project aimed is to developing an order system that can be used in the small medium enterprise food & beverages (F&B) industries which can help the restaurants to simplified their entire daily operational task as well as improve the dining experience of customers. The system will be in 2 platforms which are customer view (transmitter) and restaurant view (receiver). For the customer view platform, it will developed to let user to view the menu card information of the restaurant and able to let user place an order via the system. In restaurant view platform, the system will be able to let staff to update and make changes to their food and beverage menu information, accept orders sent by customer and also send messages to customer about order details or any extra information. The most important function is to allow staffs to make billing statement for consumer to make their payment after dine-in. At the end of the project, it will improve the restaurants productivity, efficiency, effectiveness and as well as accurateness. Because of this system, it will minimize all the manual work by replacing the traditional order system into a computer system. It will eliminate the manual work such as workers physically deliver food order ticket into the kitchen, manually replace the price tag of the food and manually calculate billing price. These are some main functional module that will exist in the system.

1.5.1 Food & Beverage Ordering Module

This module will be developed in mobile platform which is for the customer view (transmitter) that let users place an order through the mobile devices or application after they make their decision and also some extra remarks that customer wish to request before proceed to the checkout.

1.5.2 Order Queue Module

This module can help queue the food order that had been placed and display to the kitchen staff accordingly.

1.5.3 Menu Management Module

In this module, staff can update the latest and updated food menu information to the system such as name, code, price, and food availability. After the information changes, the mobile devices will retrieve the latest food menu information and display to the customer.

1.5.4 Billing Module

This module will gather the order information and display the billing statement for user to make payment and keep for their reference.

1.5.5 Good & Services Tax (GST) Calculation Module

This module will be able to calculate the total GST that have collected from consumer pay the amount of money to government.

1.6 Impact, Significance and Contribution

After the system was successfully developed, it will bring lots of convenience to the restaurant employees when they perform their duty within the restaurant as well as improve the consumer dining experience. It will rapidly increase the productivity of the restaurant compare to the paper based system as it shorten and simplify the entire process food order, make payment, food deliver and minimize human error. On the other hand, the restaurant can provide better customer services to their valued customers by fully utilizing this system. With a good customer services, is a good starting point to fulfill customers' satisfaction as well as customers' wants and needs. Meanwhile, after customers experience and satisfied with the customer services that provided from the respective restaurant, they would share their experience to the popular social website nowadays. Apart from this activity, it was indirectly advertising the restaurant to the public.

CHAPTER 2

LITERATURE REVIEW

2.1 Introduction

This Smart Ordering System can make customer want to take away or dine in with more faster and easier through the app. With this project, it might be very helpful and give benefits to customer especially for those who don't like to queue and wait to be served. This chapter explained about the theory of writing the related to this project. It is important to get more information about the pass product that have the same criteria as our project. By doing this, it can help to achieve the objective and also can hide from any duplicate that happend to our project. The innovation of this Smart Order is we are using javascript and we add arrival time in the system. Next, we are focusing on customer who wants to dine in. This can make more faster, easier and with arrival time the customers do not need to queue.

2.2 Wireless Food Ordering System

In the pass decades, the rapid growing of network and wireless technology did a great impact for how people communicate with each and other remotely. At the same time, this technology also leads different kind industries to change their entire management aspect. F&B industry is one of the industries in the market that apply these technologies into their business processes that assist them to be much more convenience and efficient. From the message above, Wireless Food Ordering System is a system that integrated both concept of intranet and wireless technology (Khairunnisa, K. and Ayob, J., 2009). This system provide user to access the data, information and services from a remote server, which enable user to access the central databases distributed across the restaurant network. Most of the handheld devices have implemented and support wireless technology and thus mobile devices is an ideal software device that use to support this system in order to allow user remote access to the database for data retrieval. Wireless food ordering system is a solution that can help the restaurant to expedite their customer services as well as management aspect. After the system has been implemented in the restaurant, the flow food ordering process will be changed which is waiters have to take orders by choose the food that wish to order from the menu on the mobile devices as the input and the data will be send to the central database, after that the kitchen will retrieve the data from the central database and display the data. After the food is being cooked, the employee in kitchen can confirm the food order and update to the database. This will signal the waiter mobile device to acknowledge the waiter the food is ready to serve the food to respective customers.

2.3 Online Ordering System

In our generation era, computer has become a key component to our daily life because of the advancement technology of World Wide Web that becomes an internet that allow each and every user connected with theirs' computer for information sharing throughout the whole world. The World Wide Web did a great contribution to a lot of enterprise which use this mechanism for information sharing within the enterprise and also outside the enterprise (Kapchnaga, R, 2014). From the benefit of World Wide Web, a lot of fast food industry applies a system known as Online Ordering System to assist their business processes. Online Ordering System is a technique that allow customer to order their favourite food online via the internet by using a web browser that installed in their respective smart phone. Implementing this system can help fast food industry to solve the problem that they face while using the traditional food ordering processes. The system greatly simplifies the food ordering process for both customer and restaurant compare to the past. The customer can place an order everywhere and anywhere whenever internet connection is available for them. Customers access to the website and choose the food that they prefer from the online menu display then customers have to choose whether the food is delivered to them or it will be packaged for pick up and the payment method will be upon delivered or pick up and lastly it will show all the order details to the customer for double checking and confirmation. On the other hand, the system also greatly lightens the work load on the restaurant's end. Once customers have place an order via the internet, the data will send to the restaurant database and place in a queue in real-time. In addition, the data will be display on the computer screen along with the corresponding option. It allow restaurant employee easily manage the orders sequentially, produce the necessary item with a minimal delay and help reduce human error.

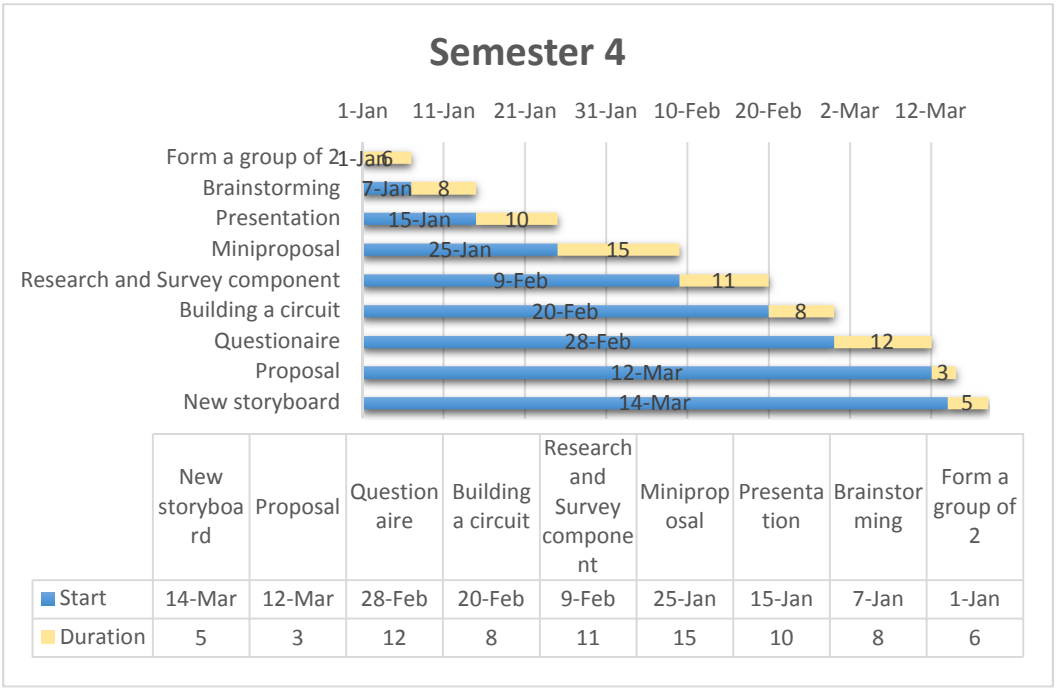
CHAPTER 3

METHODOLOGY

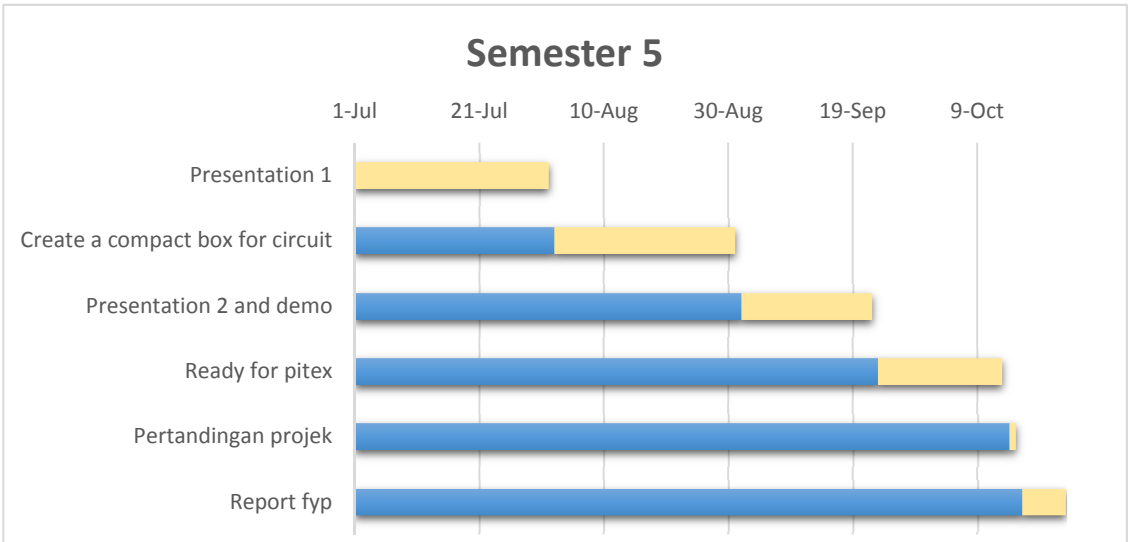
3.1 Introduction

Methodology is the systematic, theoretical analysis of the methods applied to a field of study. It comprises the theoretical analysis of the body methods and principles of associated with branch of knowledge. By doing a lot of research, definitely we can got knowledge from something that we wanted to determine in doing it. So based on the research below we will discuss about research of flowchart.This project focuses on wireless transmission and project development based on Internet Technology. The system has function properly when the internet is active, the transmitter will send the data to the receiver and menu can be automatically displayed on the screen in the kitchen.The project methodology shows that the step will be taken to complete the project. The order is made by inserting the menu code and quantity of the food and also drinks in the space provided. This code also comes together with the menu. A signal will be sent to the order and automatically will be displayed on a screen in the kitchen. The processed data is to be sent to the kitchen for ordering purpose, and to the counter for billing process. This system will be done after the customer completed their orders.

3.1.1 Project Timeline



	New storyboard	Proposal	Questionaire	Building a circuit	Research and Survey component	Miniproposal	Presentation	Brainstorming	Form a group of 2
Start	14-Mar	12-Mar	28-Feb	20-Feb	9-Feb	25-Jan	15-Jan	7-Jan	1-Jan
Duration	5	3	12	8	11	15	10	8	6



	Report fyp	Pertandingan projek	Ready for pitex	Presentation 2 and demo	Create a compact box for circuit	Presentation 1
Start	16-Oct	14-Oct	23-Sep	1-Sep	2-Aug	1-Jul
Duration	7	1	20	21	29	31

3.1.2 Planning & Analysis

First and foremost, in planning phase will conduct Joint Application Session (JAD) with users in order to gather and understand the business needs and system requirements that users are not clear. During the JAD session, will make use of CASE tools such as Microsoft Visual Studio.NET, Microsoft Visual Paradigm and so on to generate the user interface that shows users to verify the user requirements. Furthermore, the activity of observation on the users' daily work in order to understand and has clarity viewpoint of the business process that operate every day. At the end, a work plan which includes the project's Gantt chart, Network Diagram, resource sheet, resource usage and cash flow management will be generated. Then, will follow Gantt chart and Network Diagram as a guideline to perform the tasks that scheduled to develop the system.

3.1.3 Design

Once everything has been set and issues have been properly addressed, the prototype will then be "thrown away" which means discard and the system will be design, taking into consideration the feedback derived during the verification process.

3.1.4 Implementation

This is the last phase, which will develop each and every finalize modules within time frame from design phases and assemble it to be a final version system and deliver to end user.

3.2 System Planning

First of all, in planning phase the system for development will be identified and selected in order to solve the problem that discuss in chapter 1. Several studies are needed to have more clearly understanding about the system requirement. In addition, the SWOT analysis techniques will be used interpret the strength, weakness, opportunities and limitations of the basic requirement for the propose solution. Next, a project timeline will be created to have a clearly understanding of what should do according to the project life cycle. The project timeline typically is a graphic design showing a long bar labelled with dates alongside itself and usually events labelled on points where they would have happened. In this semester, the Documentation for Final Year Project will be complete in seven week. The Documentation include of the design of the system, this will serve as a reference that allow me to develop the prototype of the proposed project more efficiency. Start from week 8, the prototype of

the proposed project will start develop. After that, the full project development will start in the new coming semester and continue until the testing phase. The system will being test and the system will be debug to solve any error that found during testing. The feedback get from the system tester will collect and use as the reference in the system.

3.3 System Analysis

In system analysis phase, interview will carry out with potential user of the propose solution to gather and collect useful information for the propose system. Next, system requirement such as user requirement, software and hardware requirement will be generated and based on the system requirement, project scope and objective is defined.

3.3.1 Functional Requirements Order Management □

- The system shall let the user to place an order for their consumers. □
- The system shall prompt and ask user to verify the order that have been placed. □
- The system shall allow user to add in extra remark regarding the order. The system shall allow user to void the order that mistakenly placed or exceptional case occur.

3.3.2 Reporting Management □

- The system shall generate a report that based on the time period that customize by user. □
- The system shall retrieve related information from the database and generate the report to user.

3.3.3 Menu Management □

- The system shall only allow management level user to edit the menu card information by having an authorization login checking. □
- The system shall allow user to update their restaurant menu card information. □
- The system shall save the updated menu card information to the database.

3.3.4 Billing Management □

- The system shall retrieve data that needed and arrange in a meaningful structure then print for user as a reference. □
- The system shall let user to choose the payment channel that they wish to use.

3.3.5 Goods and Services Tax Management □

- The system shall calculate the total amount of money that need to submit to government at the end of the month.

3.3.6 Order Queue Module

- The system will update the queue display whenever a new order is placed. The system will merge the amount identical food that needs to be prepared and display on the screen.

3.4 Non Functional Requirements

3.4.1 Operational Requirements □

- The system should operate in Window platform environment. □
- The system should prompt user to make a backup at the end of the operational day.

3.4.2 Performance Requirements □

- The system should let user to place an order in a short period of time. The system should complete perform the billing process in a short period of time.

3.4.3 Security Requirements □

- The system should validate the username and password in order to login and make changes to the system. □
- The system should request the current password of the user in order to let them change to a new password.

3.4.4 Usability Requirement □

- The system should have an easy understand graphic user interface that deal with the user. □
- The system should let user easy to understand the functionality of each modules.

3.5 Software □

- Front End : Android Studio Development Kit □
- Back End : MySQL Server, Wamp Server □
- Operating System : Window XP/Window 7/Window 8 and Android 5.0 or above □ Programming Language : JAVA

Description	Minimum Requirement
Mobile Operating System	Android 5.0 or above
Windows Operating System	Windows 7 or above
Development Kit	Latest version of Java Development Kit and Android Studio Development Kit
Interface Design	Netbeans IDE 7 or higher and Android Studio Development Kit

Table 1 Software requirement for development

The software install on the operation android smartphone will be developing using Java programming language with Android Studio Development Kit installed. Next, NetBeans IDE 7 or higher will be cope with Java programming language to develop the software for the computer based side and the database configuration will be using MySQL Workbench database software.

3.6 Diagram

3.6.1 Case Diagram

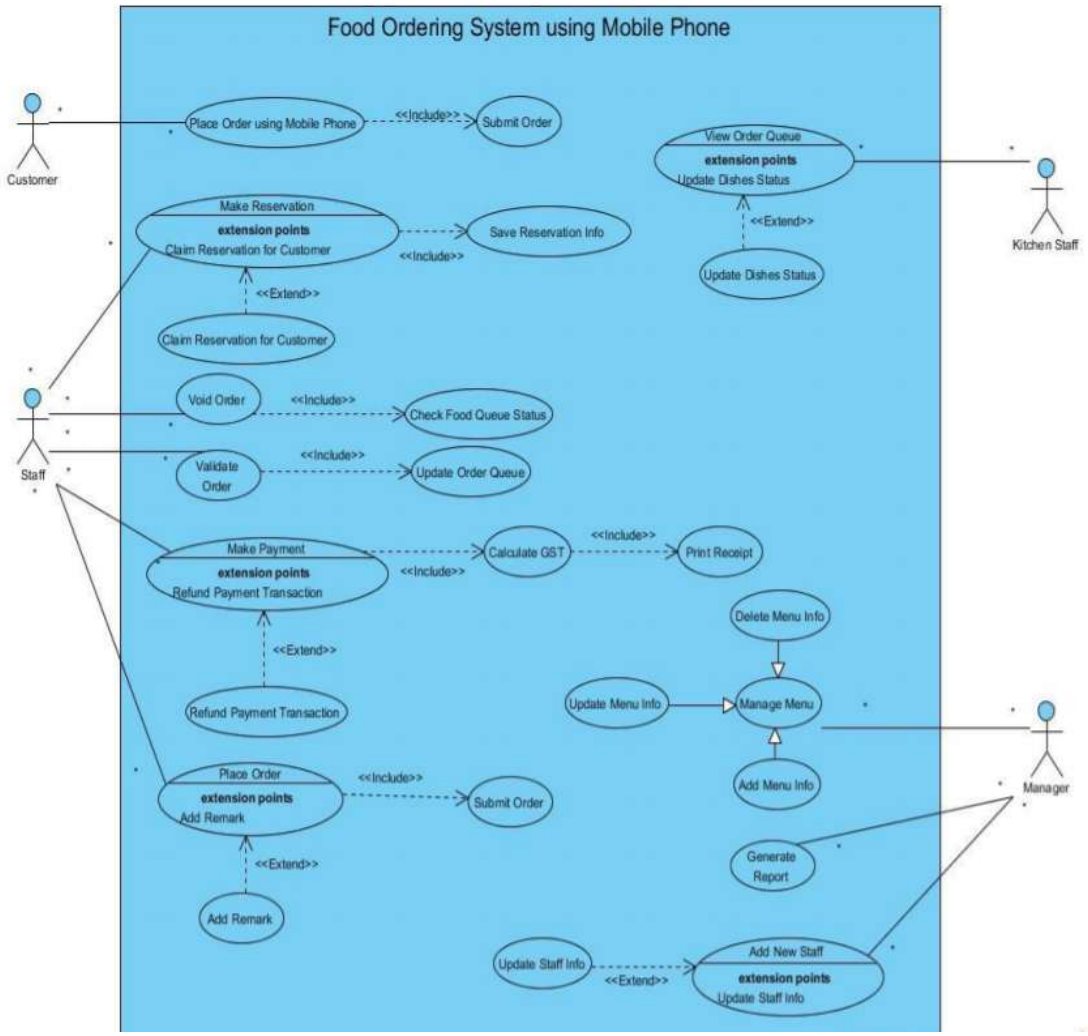


Figure 1 Case Diagram

3.6.2 Activity Diagram for Place Order using Mobile Phone

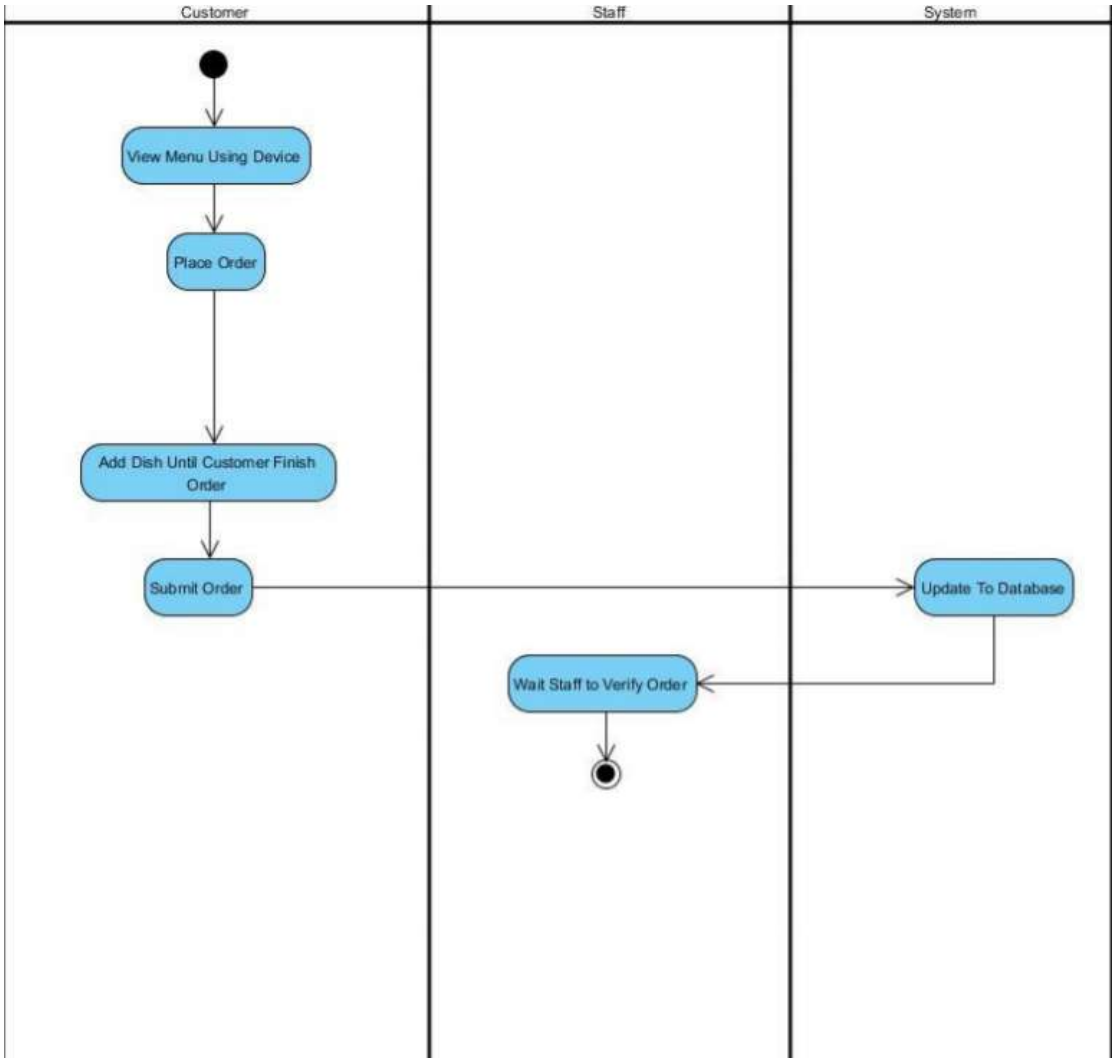


Figure 2 Activity Diagram for Place Order using Mobile Phone

3.6.3 Activity Diagram for Generate Report

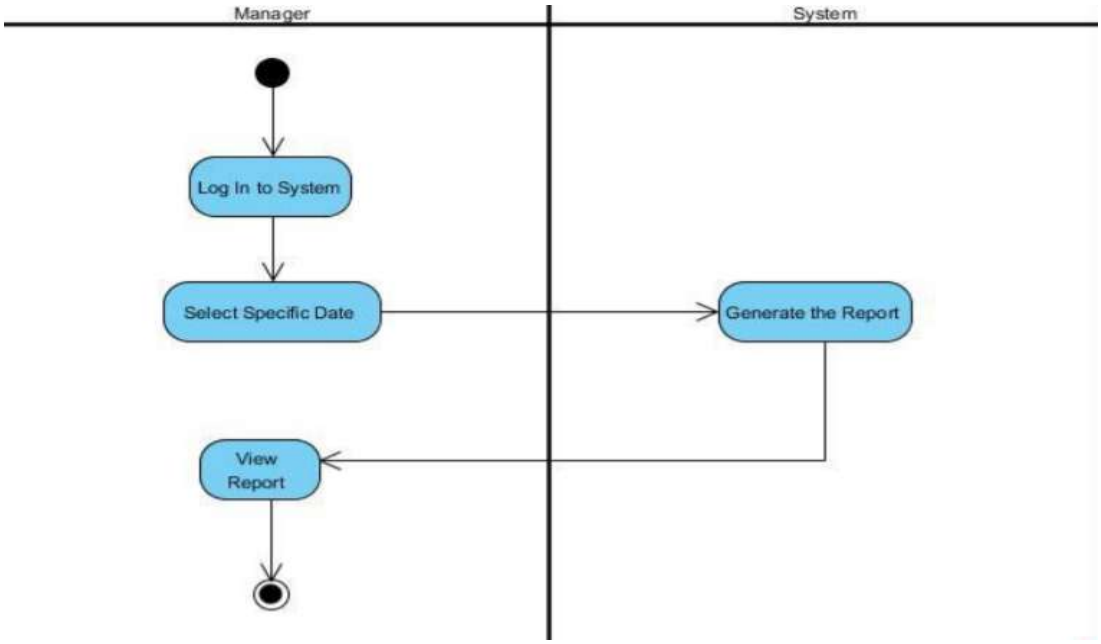


Figure 3 Activity Diagram for Generate Report

3.6.4 Activity Diagram for Update Menu Info

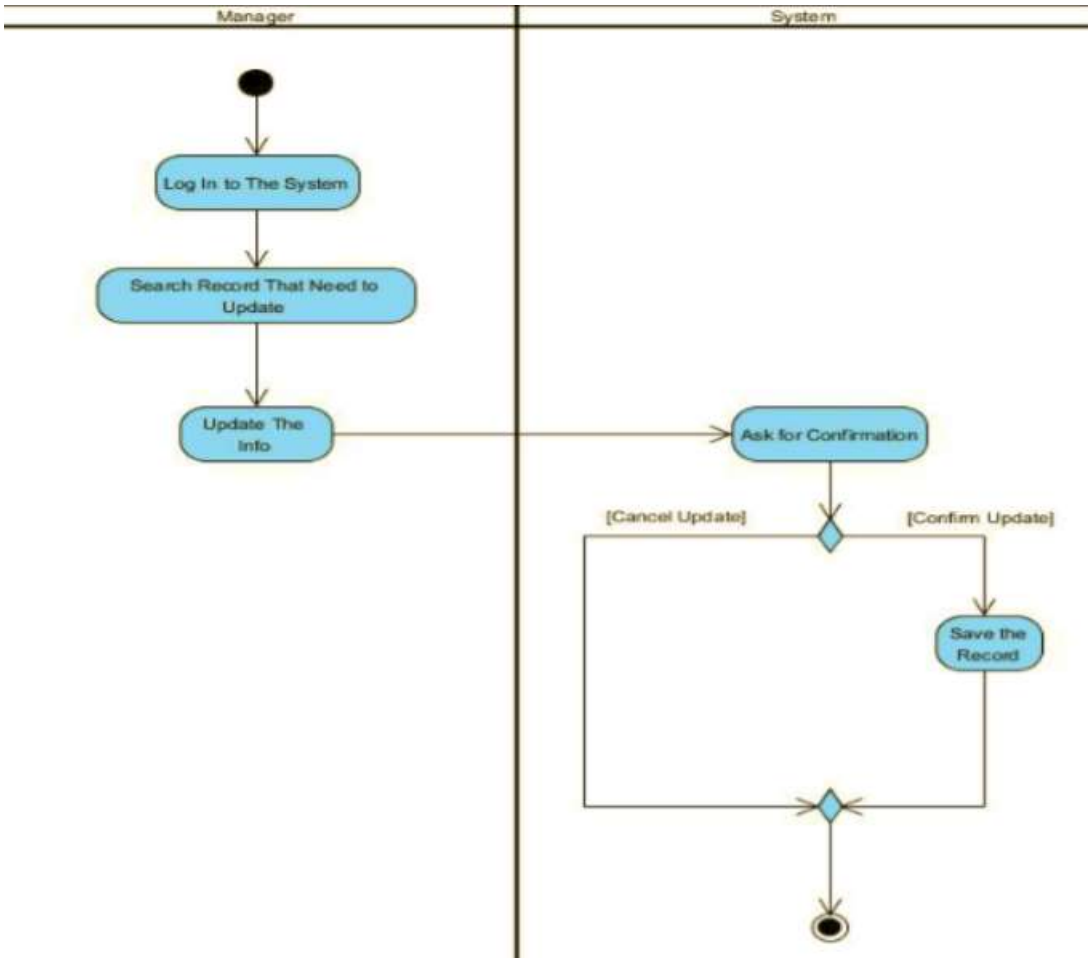


Figure 4 Activity Diagram for Update Menu Info

3.6.5 Activity Diagram for Validate Order

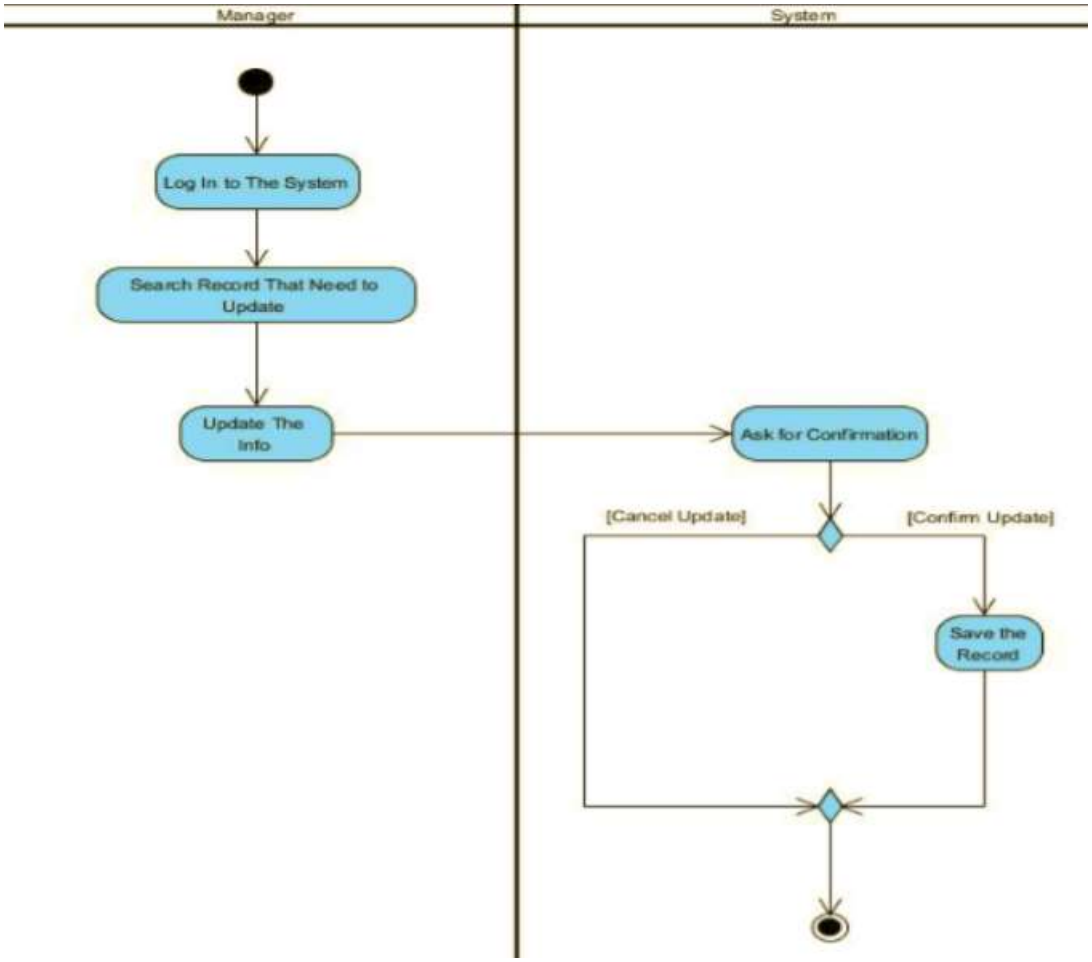


Figure 5 Activity Diagram for Validate Order

3.6.6 Activity Diagram for View Order Queue

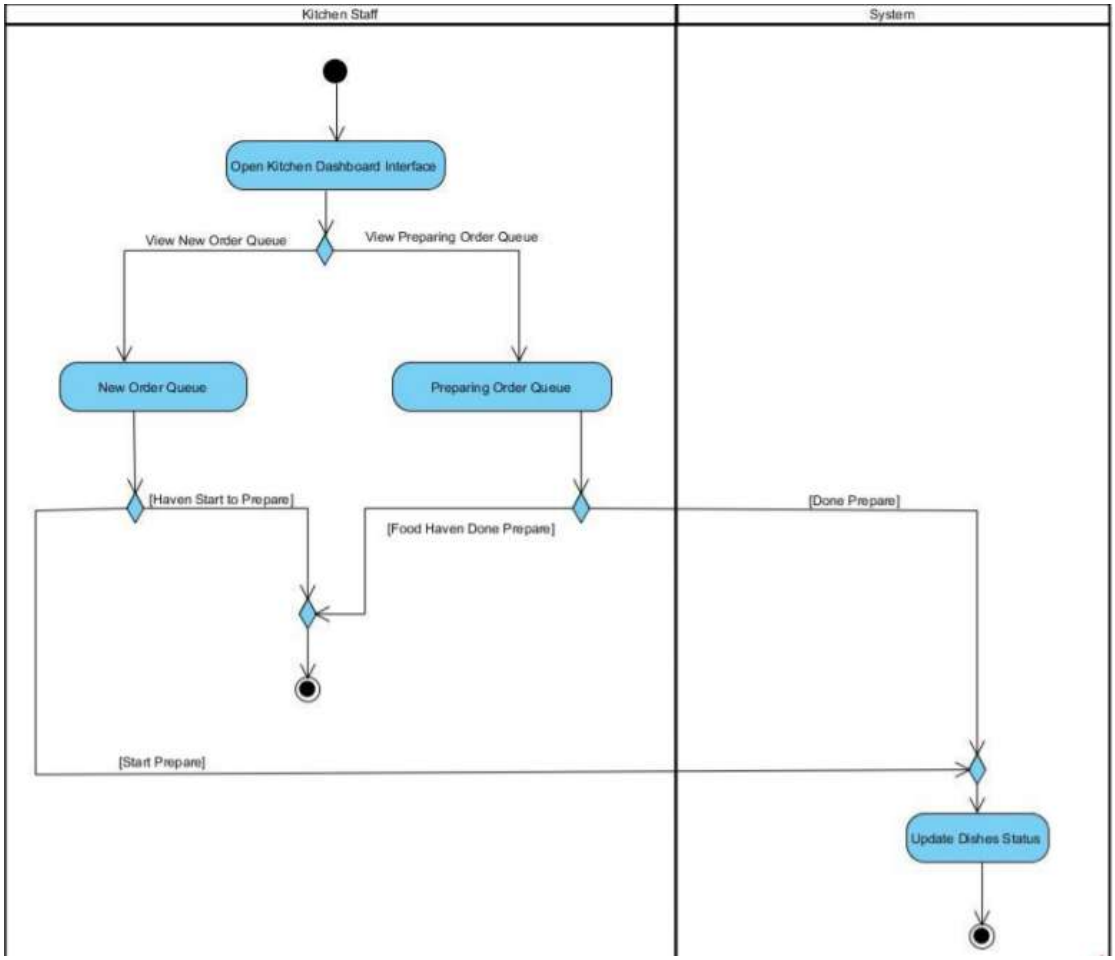


Figure 6 Activity Diagram for View Order Queue

3.6.7 Activity Diagram for Void Order

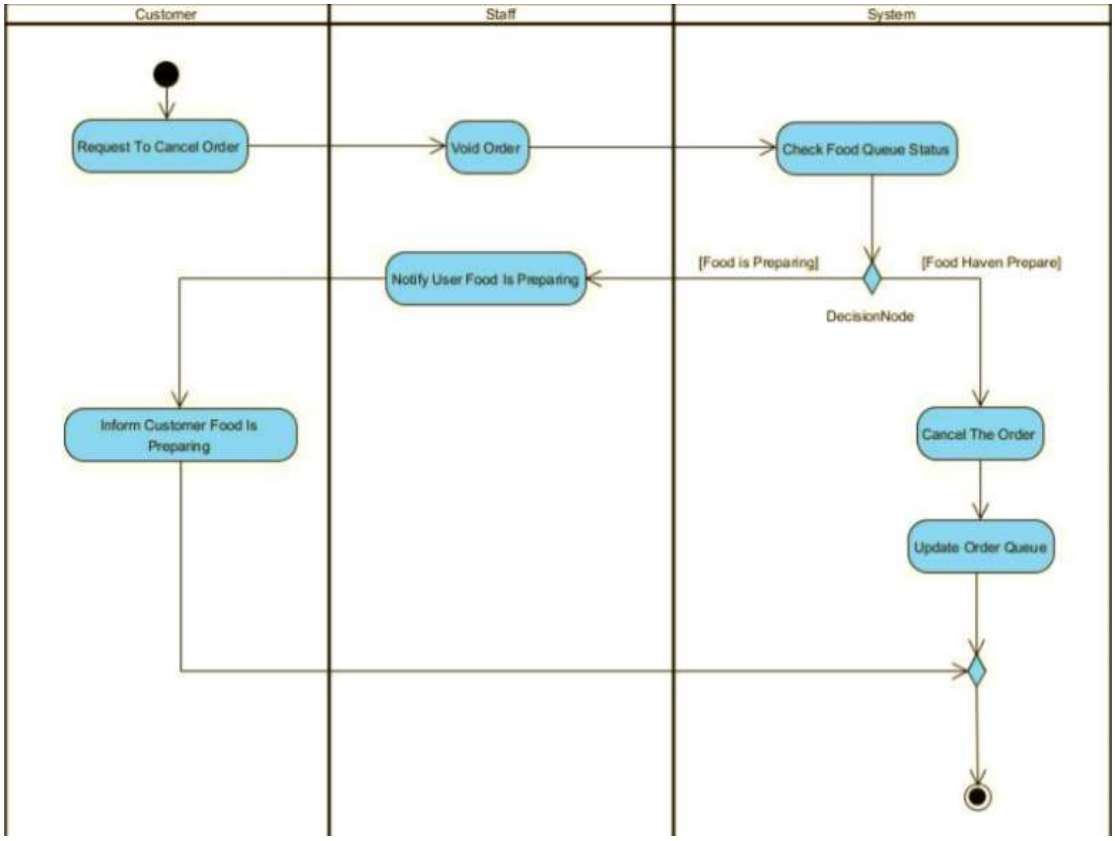


Figure 7 Activity Diagram for Void Order

3.6.8 Activity Diagram for Add Menu Info

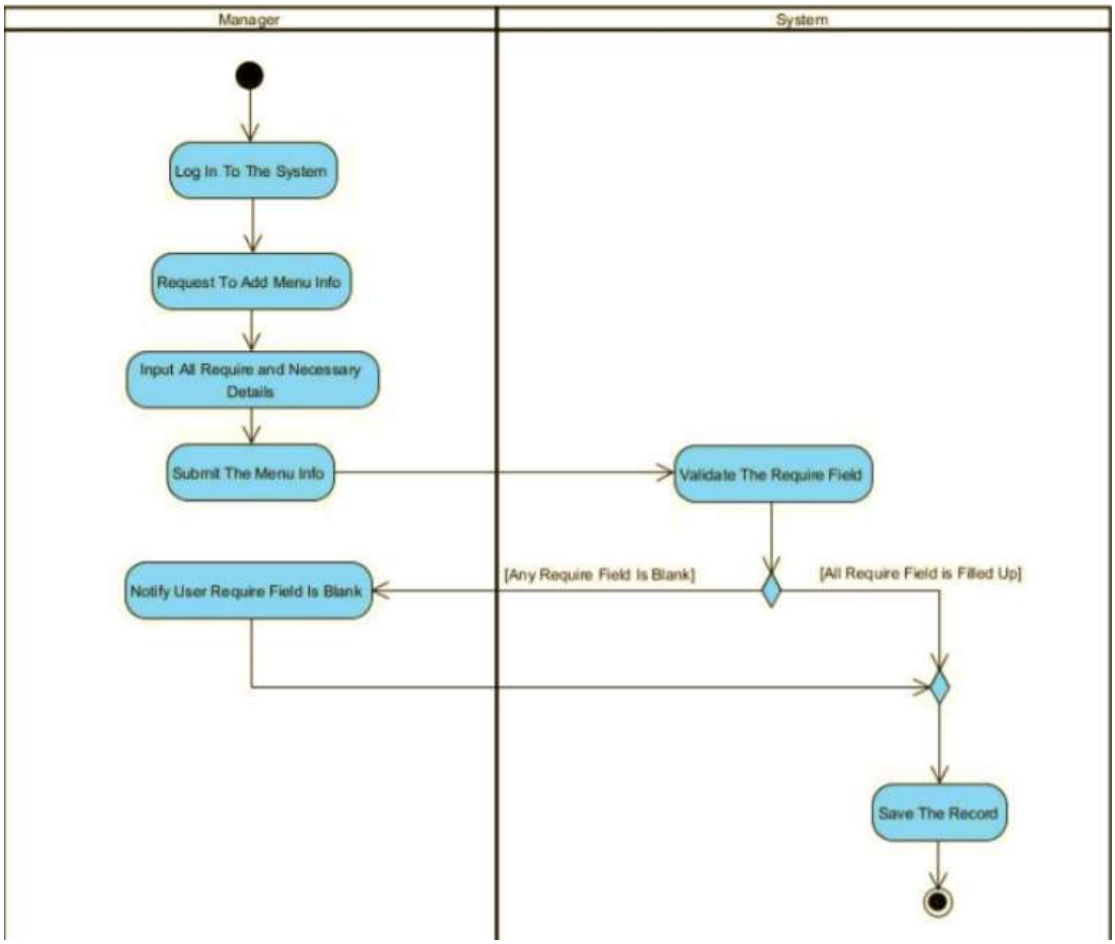


Figure 8 Activity Diagram for Add Menu Info

3.6.9 Activity Diagram for Delete Menu Info

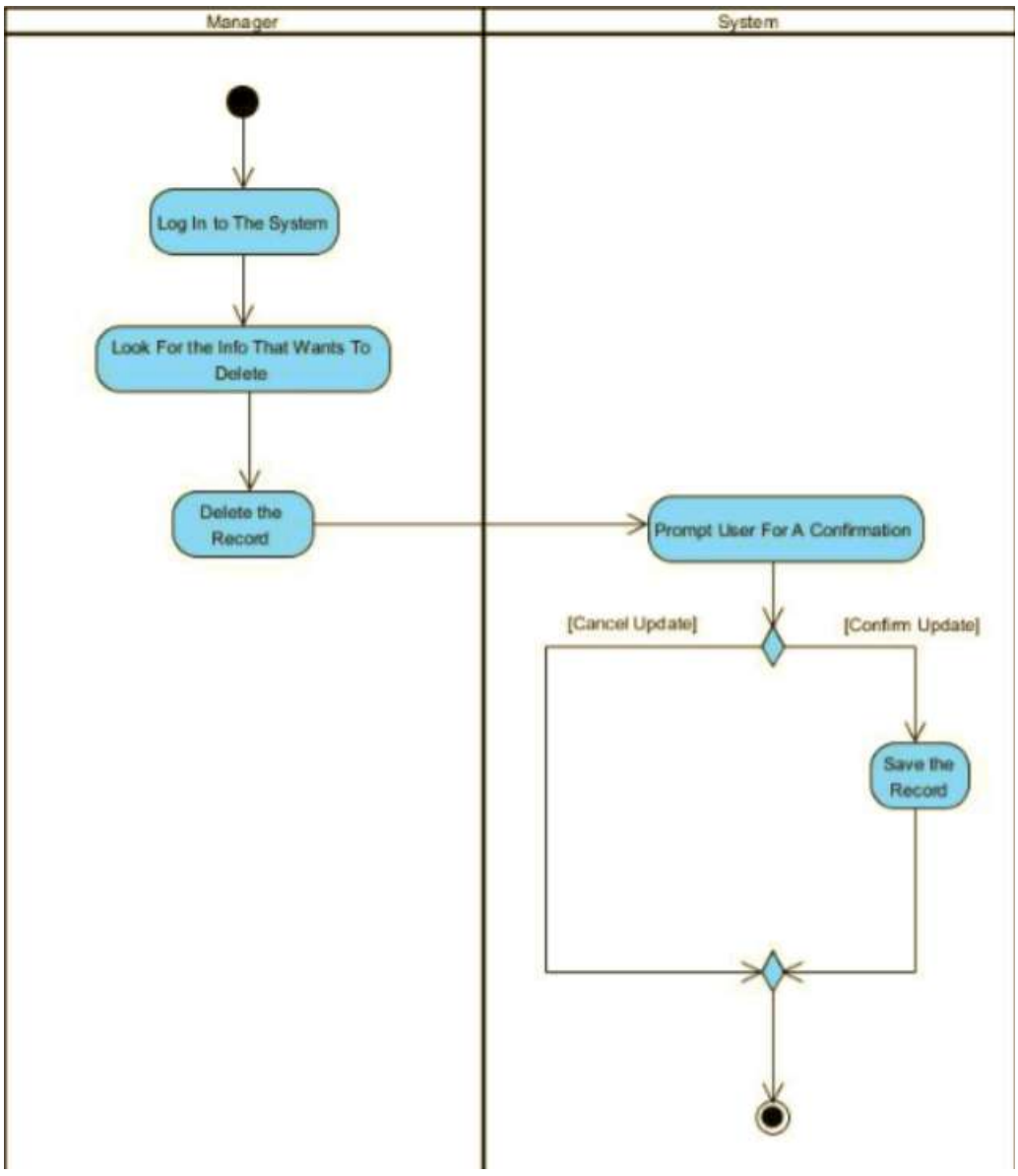


Figure 9 Activity Diagram for Delete Menu Info

3.6.10 Activity Diagram for Make Payment

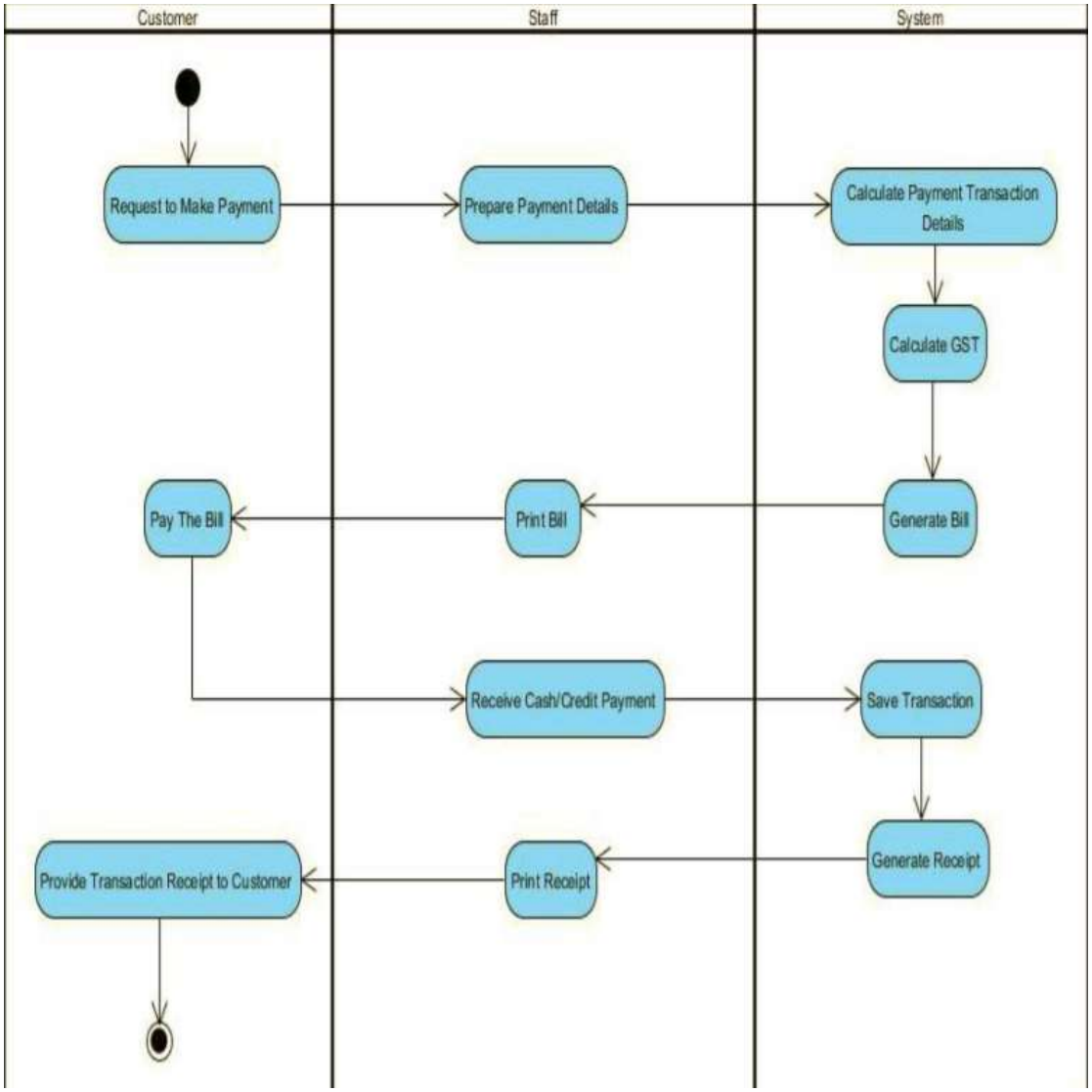


Figure 10 Activity Diagram for Make Payment

3.6.11 Activity Diagram for Make Reservation

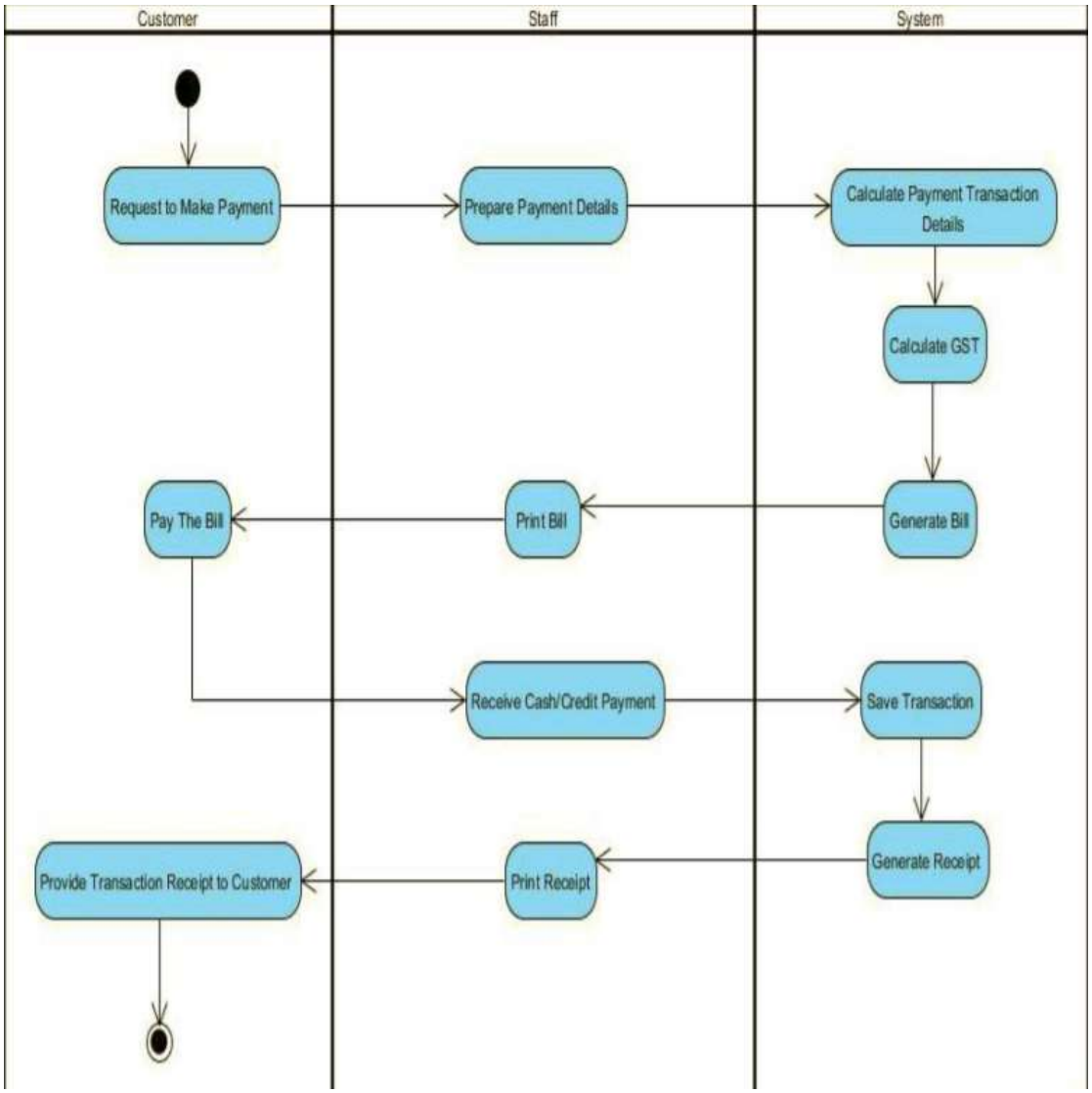


Figure 11 Activity Diagram for Make Reservation

3.6.12 Activity Diagram for Place Order by Staff

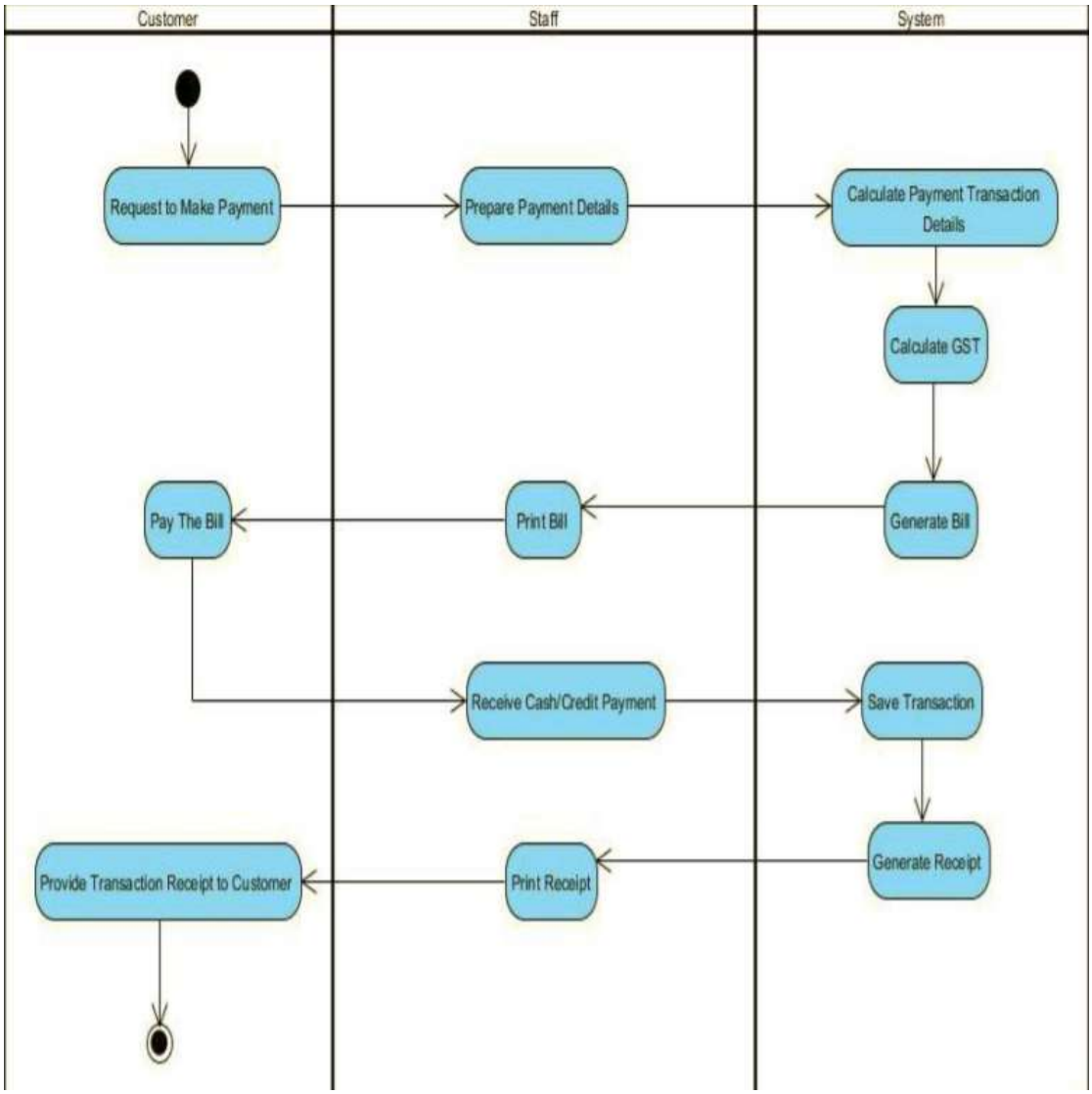


Figure 12 Activity Diagram for Place Order by Staf

CHAPTER 4

RESULT

4.1 Project Design

At the end of the system requirements collection, several relevant diagrams have been generated in order for the preparation of system model design. The design phase activities include the design of project architecture and graphical user interfaces, develop relational databases, business logic and file specifications.

4.2 Graphic User Interface Design

4.2.1 Customer Side

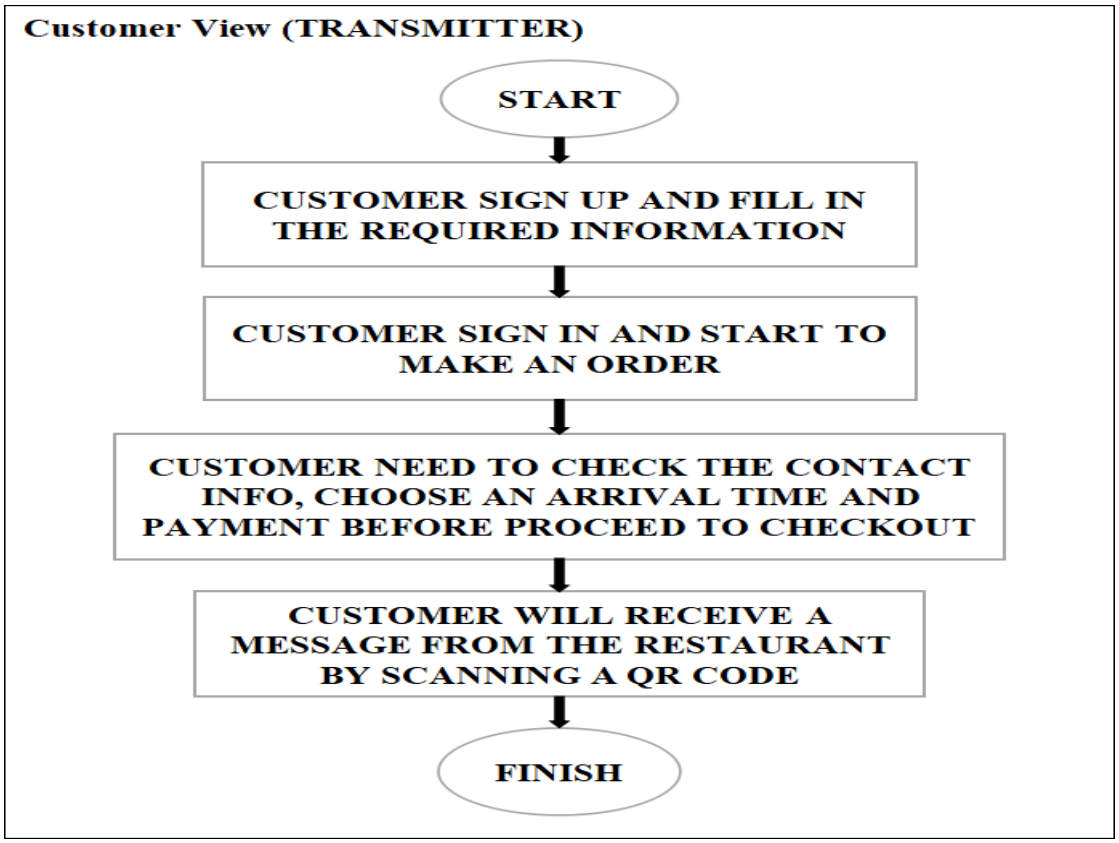


Figure 13 System Screen Flow Diagram

4.2.1.1 CUSTOMER SIGN UP AND FILL IN THE REQUIRED INFORMATION

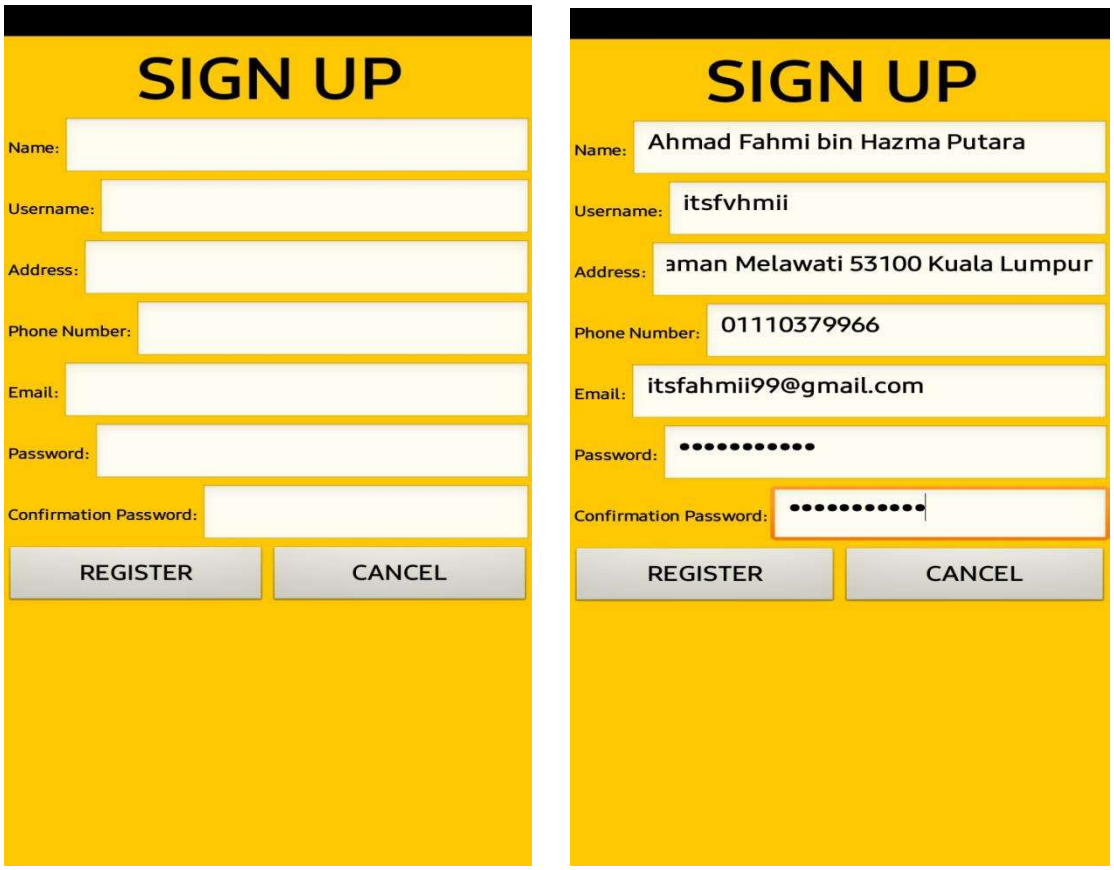


Figure 14 Customer Sign Up and Fill In The Required Information

4.2.1.2 CUSTOMER SIGN IN AND START TO MAKE AN ORDER

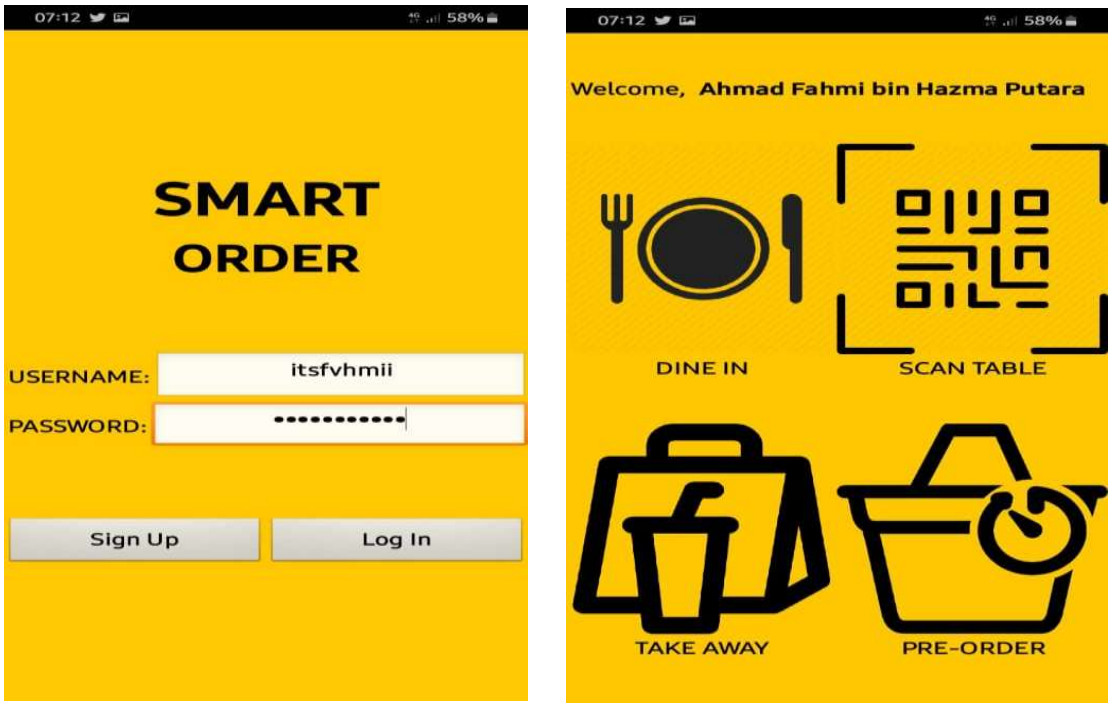


Figure 15 Customer Sign In and Start To Make An Order

4.2.1.3 CUSTOMER CHOOSE RESTAURANT

Figure 16 Custome Choose Restaurant

4.2.1.4 CUSTOMER CHOOSE MENU AND PLACE ORDER

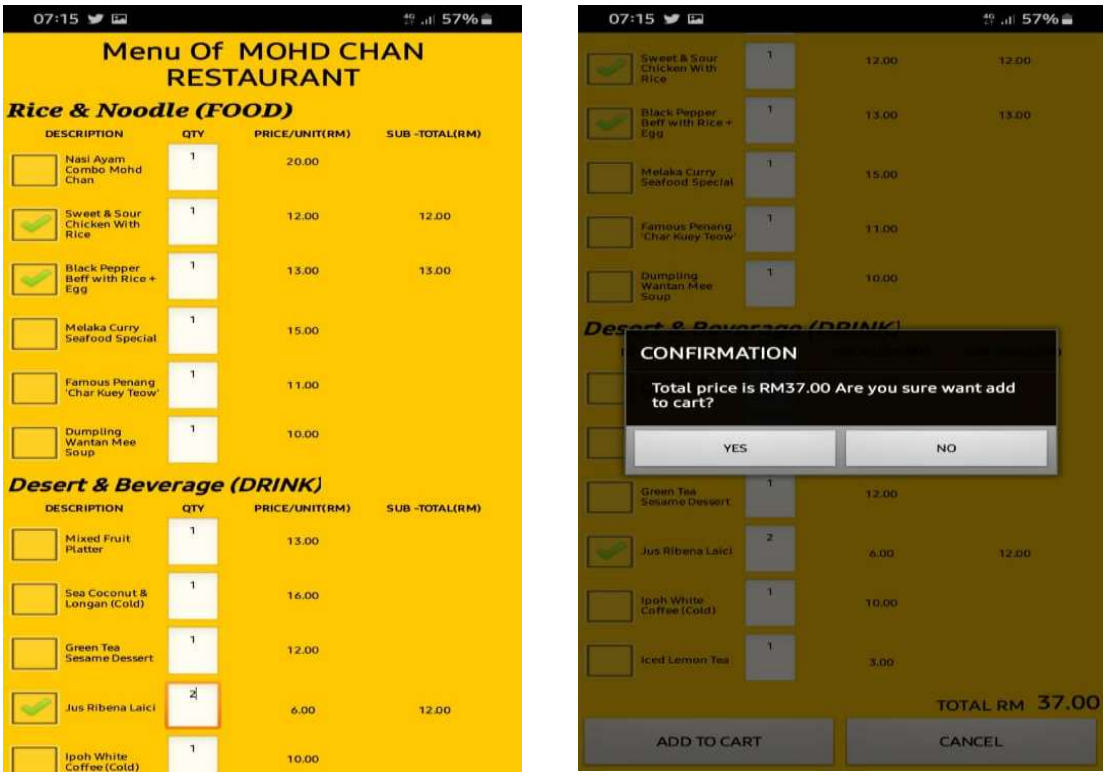


Figure 17 Customer choose menu and place order

4.2.1.5 CUSTOMER NEED TO CHECK THE CONTACT INFO, CHOOSE AN ARRIVAL TIME AND PAYMENT BEFORE PROCEED TO CHECKOUT

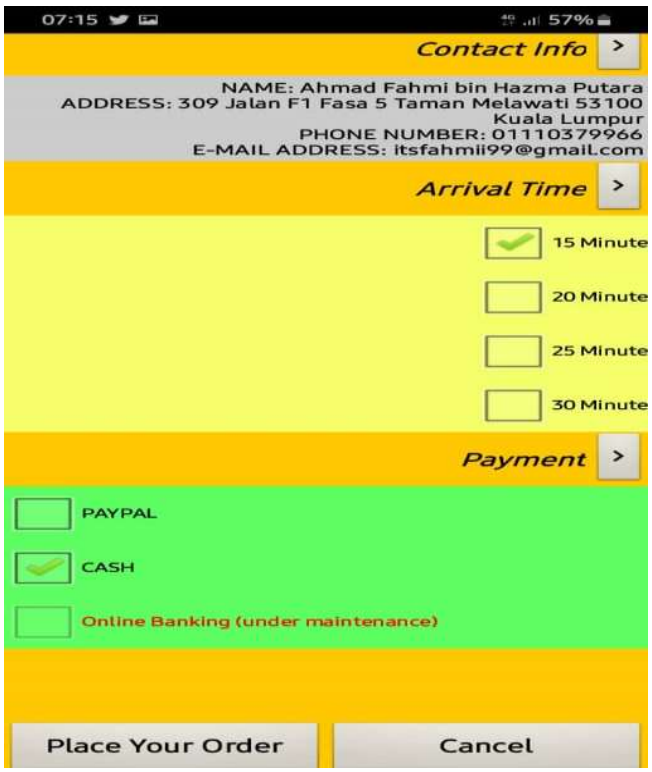


Figure 18 Cutomer need to check the contact info, choose an arrival time and payment before proceed to checkout

4.2.1.4 CUSTOMER WILL RECEIVE A MESSAGE FROM THE RESTAURANT BY SCANNING A QR CODE

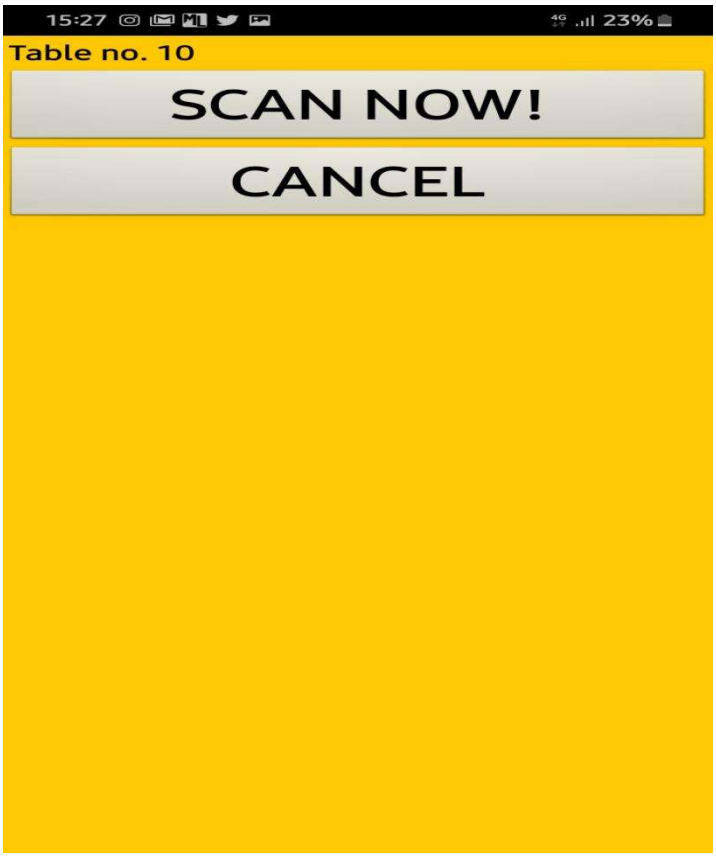


Figure 19 Customer will receive a message from the restaurant by scanning a QR Code

4.3 System Architecture Design

This system requires user to have a smartphone which is with android version version 5.0 or above, for example in this project the test case will be conducted using Oppo Find7A with android v5.0 Lollipop. Other than that, we are expected and assume that all users have the basic knowledge of how to operate an android phone such as connect to a wireless network using Wi-Fi. Although this application is developed under android version, but however it will not be publish to the public Google Play Store. Therefore, user are require to download it from the official restaurant website and sign up for a rules and regulations policy that to prevent misuse of the application and information. The system architecture that implemented in this project would be client-server architecture. Clients are required to connect to the server that hosting the centralized database and web services in order to request server to perform task and respond with the results.

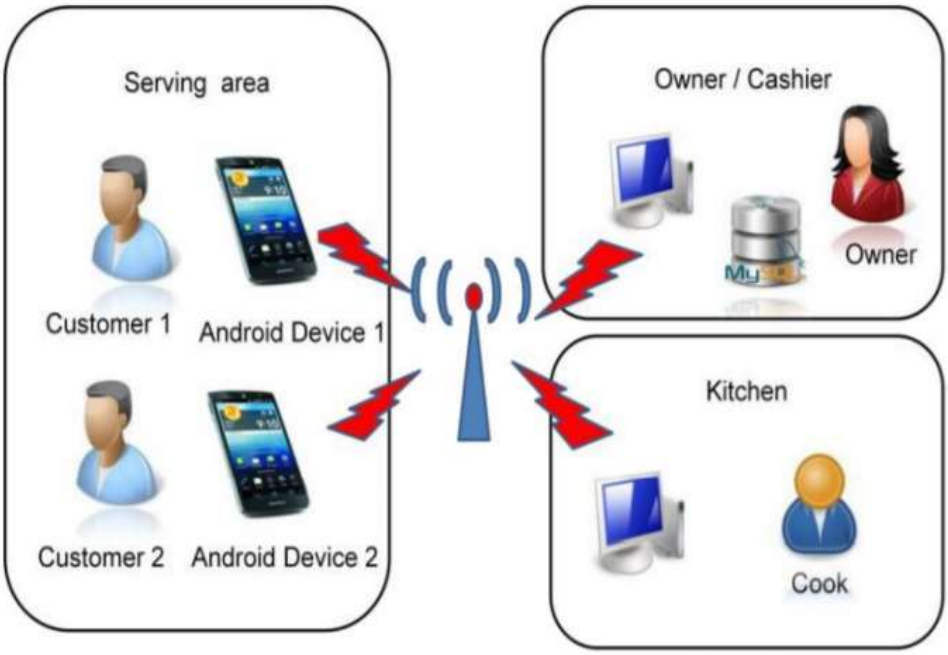


Figure 20 Diagram of System Architecture Design

CHAPTER 5

SYSTEM TESTING

5.1 Project Implementation & Testing

At the end of the system design, it is the beginning for the actual coding to develop the proposed system. During development phase, the table structure of the database will be first built in order to provide a suitable data types that suit the system back end development, system connection and data transfer. Next, the computer side client program will be developed and follow by will be the web services that allow mobile phone client program to communicate with the server and lastly mobile phone side client program will be developed. In testing phase, several test cases will be carry out to test the system in order to determine the system reliability and system accuracy. According to the test cases, a system testing report will be generated for further review to figure out the system weaknesses and made improvement accordingly. In the deployment phase, several training will be provided for the particular restaurant staff such as how to operate the system, the procedure of handling different event and several instruction that need to be follow when operating the system.

5.2 Implementation Issues & Challenges

During the system implementation phase, several challenges need to be confront because it involve end users to test the production system with various situation. The possible challenges may face are as following:

User without background

The users are required to have basic knowledge of how to operate a computer system and android mobile phone in order to use the system. This will be difficulty to give training to the user as the basic knowledge information can be obtained from internet easily.

The screen size of different device

This would be one of the issue that will encounter while implementing the system. Because user are able to download the mobile application from the official website and use it as a client device to place order. Therefore, if the user device screens size are too small or too big. The content and interface of the application may not consistence.

Server performance

During real time system implementation, three would be a huge number of client that access to the server at the same time. Therefore, it may slow down the connection and performances of the system and even causes the server down if the issue goes beyond the level of acceptance.

5.3 Development Tools

5.3.1 Database Environment

The proposed system will need a database system to support in order to store the huge amount of data. MySQL database system will be chosen to support the proposed system because it is well-known open source relational database management system. Other than that, MySQL database system provides software developer with a client program with easy understanding graphical user interface that can communicate to the MySQL database server named as MySQL Workbench 6.3 CE. By doing so, software developer can interact with the database system with the user friendliness client program and without using the command prompt, at the end it may speed up the development progress.

5.3.2 Web Technology

The proposed system is a cross platform system, which include Windows desktop client and Android mobile phone client. Therefore, it require to implement web services in order to support the Android mobile phone client device to fetch data from the database server and store data back to the database server. In this project, WampServer is used to support the issue that mention earlier. WampServer is a Windows web development environment that built-in comes together with the Apache, PHP and MySQL database. Furthermore, PHP will be the programming language that used to create the web services that store in the server and it is able to call by the Android mobile phone client to perform particular task.

5.3.3 System Platform

The project is a cross platform based system which includes Windows desktop client device and Android mobile phone client device in order to operate the proposed system software.

5.3.6 NetBean IDE and Android Studio IDE

Both Android Studio IDE and NetBean IDE is integrated development environment that are supported by Java programming. Furthermore, NetBean IDE is used to develop the computer client side program and Android Studio IDE is used to design and develop the mobile phone client program.

5.4 Test Plan

After the system has been developed, it will move to system testing phase. In system testing phase, the developed system is required to install on appropriate devices for testing purpose. After the system installation has been completed, the system testing task will be performed by different roles of user such as manager role and staff role. The purpose of system testing is to identify and determine the degree of system stability. At the same time, it is given an opportunity for developer to figure out error or bug that has not been raise and encounter during the system development phase. Those error or bug that has been found during the system testing activities will be solved before the system release. Each and every testing before system testing phases is actually tested by the system developer itself. Therefore, it might cause some biases toward the testing due to the system developer have knowledge about the system software logics and lead the result to be inappropriate. There are four types of testing that will be used to test the developed system which includes unit testing, integration testing, system testing and acceptance testing.

5.4.1 Unit Testing

First of all, unit testing will be the first testing method that used to test the developed system. It consists of testing activities that test the system module by module which has not been integrated as a whole. By doing unit testing, developer are able to identify error and bug easily since it is finding the error and bug through a unit part of the system rather than finding error through the complete system. In addition, developer will test the unit part of the system with the validation and the correctness of data value. Valid and invalid input will be entering to test and ensure the system processes perform with an expected result.

Unit Testing 1: Login as system user

No	Event	Attribute and Value	Expected Result	Result
1	Verify that ID and password that enter by user and match the data in the database when user click "OK" button on the login prompt.	Login ID: validID Password: validPassword	Login successfully.	Pass
2	Verify the invalid ID and password that enter by user and match with the data that store in database when user click "OK" button on the login prompt.	Login ID: validID Password: invalidPassword OR Login ID: invalidID Password: validPassword	Login failed and prompt out the error message to user.	Pass
3	Verify the situation that user does not enter any value into both ID and password when user click "OK" button on the login prompt.	Login ID: null Password: null	Login failed and prompt out the error message to user.	Pass

Unit Testing 2: Create new system user

No	Event	Attribute and Value	Expected Result	Result
1	Create new system user.	System user information.	Prompt new user has been created successfully message.	Pass
2	Create new system user without entering any information.	All blank field.	Prompt require field error message.	Pass
3	Create new system user with duplicated staff number.	Enter duplicated staff number and click create new user.	Prompt error message indicate that particular field has duplicated.	Pass
4	Create new system user that has at least one or more field that is leave blank.	System user information with some field leave blank.	Prompt require field error message.	Pass
5	Update existing system user information.	Edit and replace the system user details. Eg: Name: Carson to Name: Carson Leong	Successfully updated system user details into system.	Pass

Unit Testing 3: Enter service tax and GST percentage to the system

No	Event	Attribute and Value	Expected Result	Result
1	Manager enters numeric input for both and click "OK" button.	Service Tax(%): 10 GST Tax(%): 6	Taxes percentage is stored into the database.	Pass
2	Manager leaves taxes blank and click "OK" button.	All fields are blank.	System will detect it is null value and store	Pass
			it with default value which is 0.0 into the database.	
3	Manager enters invalid input for taxes field and click "OK" button.	Service Tax(%): 0.01.1 GST Tax(%): 6	Prompt error message indicate that invalid input has detected.	Pass

Unit Testing 4: Add new food category to the menu

No	Event	Attribute and Value	Expected Result	Result
1	Manager enters the category name and click "OK" button.	Food Category Name: Soup	The entered category name is store into the database and refreshes the food category panel with the new added category.	Pass
2	Manager leaves the category name blank and click "OK" button.	Field is blank.	System will detect it is null value and prompt error message.	Pass
3	Manager enters duplicated food category name and click "OK" button.	Food Category Name: soup Or Food Category Name: Soup	Prompt error message indicate that duplicated food category has been detected.	Pass

Unit Testing 5: Add new food to the menu

No	Event	Attribute and Value	Expected Result	Result
1	Manager enters all valid food information and chooses an image that represents that food and click "Add" button.	Food Code: S002 Food Name: Mushroom Soup Price(RM):12 Food Availability: Yes	The entered food information is store into the database and refreshes the food menu panel with the new added food.	Pass
2	Manager leaves the food information blank and click "Add" button.	Field is blank.	System will detect it is null value and prompt error message.	Pass
3	Manager leaves some required field to blank and click "Add" button.	Food Code: Food Name: Mushroom Soup Price(RM): Food Availability: Yes	System will detect it is null value and prompt error message.	Pass
4	Update existing food information.	Edit and replace the current details. Eg: Food Price(RM): 25.00 to Food Price(RM): 30.00.	Successfully updated food information into system.	Pass

Unit Testing 6: Make reservation for customer

No	Event	Attribute and Value	Expected Result	Result
1	Staff enters all the reservation information and click "Save" button.	Customer Name: Carson Pax: 5 Date: 02 – 13 -2016	The entered reservation information is store	Pass

		Time: 8.00PM	into the database and refreshes the reservation list with the new created reservation.	
2	Manager leaves the reservation information field blank.	Field is blank.	System will detect it is null value and prompt error message.	Pass

Unit Testing 7: Payment for the ordered items

No	Event	Attribute and Value	Expected Result	Result
1	Verify food order record belong to which table and calculate the amount.	Food information and taxes information.	Display all food information that belong to the table and calculated correct price amount.	Pass
2	Verify the price calculation is correct.	Subtotal: RM10 Service Tax(10%): RM1 GST Tax(6%): RM0.60 Grand Total: RM11.60 Amount Receive(RM): RM15.00 Changes(RM): RM3.40	Store data into database and back to the open sales interface.	Pass
3	Verify the cash amount receive from customer must more than or equal to the grand total amount.	Subtotal: RM10 Service Tax(10%): RM1 GST Tax(6%): RM0.60 Grand Total: RM11.60 Amount Receive(RM): 10.00	Payment cannot be make if the amount receives from customer is less than the grand total amount.	Pass
		Changes(RM): -3.40		

5.4.3 System Testing

System testing of the software is a testing conducted on a system which is complete, integrated system that works as a whole. System testing is a critical testing procedure that must be conducted by software developer before the system released. During system testing it can evaluate the system's compliance with its specified requirements according to the system design. Furthermore, several testing activities in system testing test not only the design of the system, but also the behavior and the believed expectations result from the customer. In addition, various complex test cases that used to test the system are according to the business process requirements which are collected from the user. Meanwhile, errors or bugs that detected during the testing is required software developer look into it from the initial step of the business process to the end of the process to ensure it have expected result in order to solve the errors or bugs to determine the degree of system stability.

5.4.4 Acceptance Testing

Last but not lease, acceptance testing also known as user acceptance testing would be the final testing procedure that perform to test the developed software system. In acceptance testing, the testing activities are different compare to the testing activities that mentioned previously because the tester that tests the system will be the final user which do not have knowledge about the system logic. If the final user encountered an error while using the system, system developer are required to maintain the system as soon as possible and release a new patch for the existing system to recover the error. Meanwhile, final user will use the system that visualized as to support their real business routine operation, therefore software support team are required to stand by to provide technical support while final user need any help or support that regarding the system. If there is no errors detected by the final user while using the system for a long period, the development job of developer is consider as complete and the system will be a final system product.

CHAPTER 6

DISCUSSION & CONCLUSION

6.1 DISCUSSION

The system can implement a feature which is real time notification from the mobile phone application to the service desk. This feature enable customer to request customer service through using the mobile application rather than verbally call restaurant staff to approach them. In addition, the mobile application also can implement a feature that allow customer to update the food serve status. For example, customers fine dining at the restaurant they can request the food to be serve through using the mobile application and if the customer finish the main course and feeling full, the customer may request do not serve the following food through using the mobile application. Last but not lease, the mobile application may implement some mini game that is able to entertain customers while they are waiting for the food to be served.

6.2 CONCLUSION

After a decade, the advancement and innovation of technology help people to manage their task easily and efficiently. In many other industry area have been used management system to assist their business grow long time ago, therefore it is also a trend that cause F&B industry to make use of a management system for their business. At the end of this project, the system can reduce and replace the human manpower task, reduce the time consume for each transaction and generate report for further management purpose by fully utilizing the system.

Obviously, the propose system can help improve the productivity of the restaurant and thus directly did an impact to the profitability of the restaurant. Furthermore, it can also help restaurant to reduce the cost of operation in term of manpower, because the system have already facilitate majority of the business process by using the system. Therefore, it is believed that the system can lead the restaurant's business grow from time to time.

On the other hand, the technology nowadays allows the portability requirement easy to achieve. Therefore, portability has become one of the factor that have to take into consideration in the system development process. Because portability bring a lot of benefit to user while they using the system such as it provide convenience, accessibility, easy to communicate and etc. Hence, portability has done an impact to the social that everybody is much more preferable to complete their task with portable device.

In order to fulfill these all requirement, our proposed method is combined the food ordering system which is in mobile platform into the restaurant management system which is in computer platform. The integration of both features which develop a system that can let user to have an experience of portability which is user can process their food ordering through using their smart phone or tablet. Besides, restaurant manage their daily operation management through using the computer platform it is because computer have some other features such as it has a wider screen, other compatible system that can help to manage the restaurant and some other driver that needed to communicate with those necessary hardware.

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