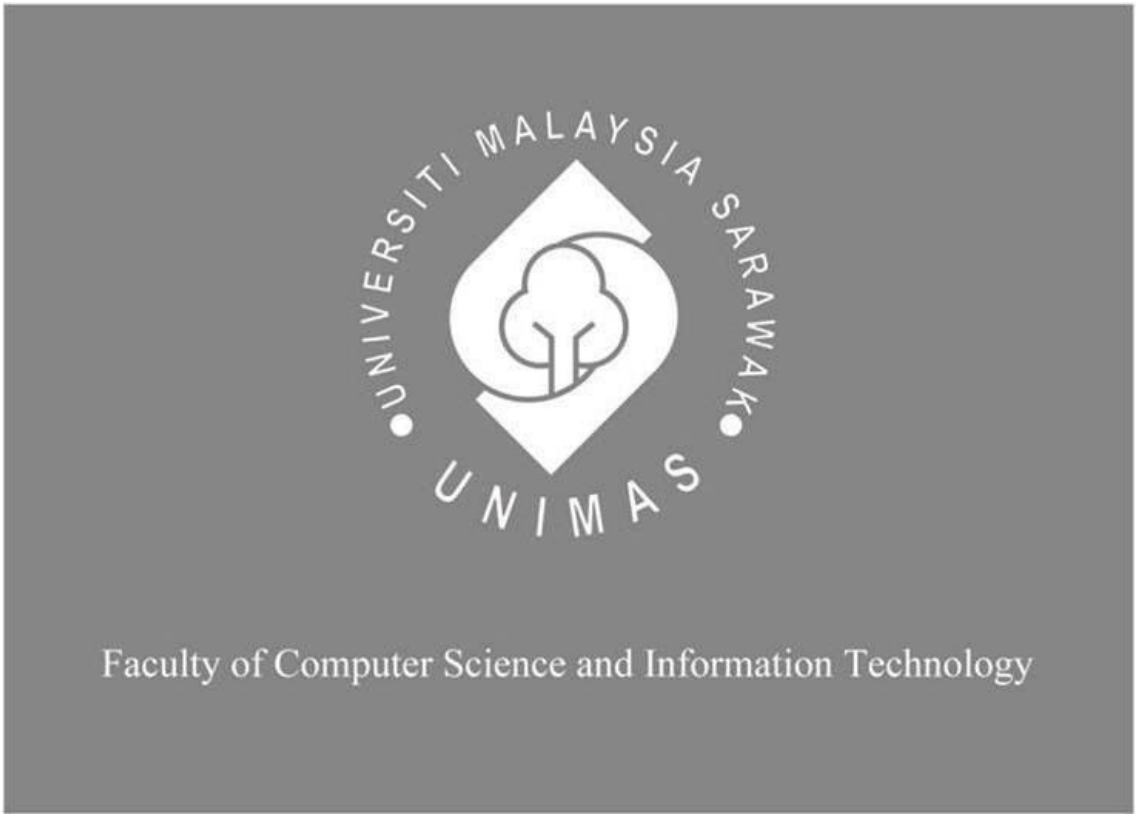

SELF-ORDERING SYSTEM FOR RESTAURANT USING QR CODE

SHAHIRA NAZIRA BINTI SHAHROL RIZAL

Bachelor of Computer Science with Honours

(Multimedia Computing)

2019

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This project is submitted in partial fulfilment of the requirement for
the degree of
Bachelor of Computer Science with Honours
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Faculty Computer Science and Information Technology
UNIVERSITI MALAYSIA SARAWAK 2019

SELF-ORDERING SYSTEM FOR RESTAURANT USING QR CODE

SHAHIRA NAZIRA BINTI SHAHROL RIZAL

Projek ini merupakan salah satu keperluan untuk
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UNIVERSITI MALAYSIA SARAWAK 2019

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ABSTRACT

Technological advancement allows more development of system use in everyday life to ease the work system of human. In this project we will focus on the technological approach towards system of ordering in the restaurant. As we all have been known, the traditional way of ordering system is the paper-based approach where waiter will approach customer to their table and write down all the order on the paper. Next, the paper will be sent to the kitchen staff and they will sort it out by first-come-first served approach. This traditional system of taking order has been analysed its downside. The main concern on this traditional system is the burden towards waiter side that has so much workload during the work hour. Also, the time consume for waiter to wait on the customer to pick menus and choose order. In the meantime, the probability of waiter to falsely write down order makes it troublesome to the workflow and customer satisfaction Therefore, technological approach will be implemented on this system where it will utilising QR code so that customer can self-served and have their time to choose order without taking time of waiters. This will help to ease the workflow of the restaurant management. Also, the system will be improved by having recommended menus so that customer can have few suggestions on their option for their order. This can increase customer experience hence will create customer loyalty towards the restaurant.

ABSTRAK

Kemajuan teknologi membolehkan lebih banyak penggunaan sistem teknologi dalam kehidupan seharian untuk memudahkan sistem kerja manusia. Dalam projek ini, Kami memfokuskan kepada pendekatan teknologi ke arah sistem pesanan di restoran. Seperti yang kita ketahui, sistem pesanan makanan secara tradisinya adalah menggunakan kertas di mana pelayan akan mengambil pesanan pelanggan dari meja mereka dan menulis semua pesanan di atas kertas. Seterusnya, kertas pesanan akan dihantar ke pekerja di dapur dan pesanan akan disusun mengikut aturan pesanan yang awal sampai akan didahulukan. Sistem pesanan makanan ini telah dianalisis kelemahannya. Kelemahan utama sistem tradisional ini adalah beban kerja kepada pelayan menjadi terlalu banyak. Selain itu, sistem pesanan ini memakan masa pelayan untuk menunggu pelanggan memilih pesanan mereka. Malah, kebarangkalian pelayan untuk membuat pesanan yang salah membuatkan sistem kerja tergendala seterusnya membuatkan pelanggan tidak berpuas hati dengan perkhidmatan restoran tersebut. Oleh itu, pendekatan teknologi akan dilaksanakan pada sistem pesanan ini di mana kod QR digunakan supaya pelanggan dapat mebuat pesanan secara sendiri dan memiliki waktu untuk memilih pesanan tanpa mengambil masa pelayan. Sistem ini dapat membantu memudahkan proses kerja di restoran. Selain itu, sistem akan ditambah baik dengan adanya rekomendasi menu untuk pelanggan supaya pelanggan dapat mencuba menu daripada pilihan cadangan tersebut. Dengan ini, pelanggan dapat meningkatkan pengalaman serta meningkatkan setia pelanggan kepada restoran tersebut.

CHAPTER 1: Introduction

1.1 Background

Restaurant is one of the foods and beverage enterprises that focus on service to prepare food and serve them to satisfy customer satisfaction. The most important aspect of managing restaurant is the workflow of the working staff should be smooth and manageable. The communication between waiter, manager and kitchen staff should be clear and concise where both parties send and understand the right information on the ordering.

In this project, technological approach is used to solve this issue. A web-based system to ease the workflow of restaurant will be developed where it will implement QR code so customer can self-order and take their time to choose their food without delaying waiter time to serve food to other customer. The system is also equipped with kitchen display and administration part to manage the order coming and editing menus.

Also, customer satisfaction is the key of success to every restaurant. They need to ensure the customer are satisfied with the services they had given. Personalized customer experience has been a new chamber to marketing strategies that offers restaurant a way to engage their customer to not only gain their satisfaction also to keep customer loyalty. For this project, data of customers such as highest rating menu will be tracked down and analyse to personalize customer menus recommendation for their next visits.

1.2 Problem Statement

In a traditional way of taking order in restaurant, there will be few occasions to be face with during time of ordering where there are customers that takes extra time on choosing their order which makes delay on waiters' work to serve other customers. This makes workflow of staff fails to operate at the same rate.

A paper-based ordering system also seem to be inorganized and unreliable. When sending order to the kitchen, the kitchen staff will have to go through paper by paper. They have to sort which order should be serve first before proceeding back to their food preparation. Error such as missing paper, wrong order taking, or untraceable order can always happen.

The problem encounter staff need to be proactive to get smooth workflow of the restaurant management especially during peak hour. This is hard when the traditional ordering system is not efficient enough in the use of time where it mostly wasted on customers' time to choose order and unreliable use of paper-based system.

1.3 Objectives

Based on the problem statement, this project is basically trying to achieve smooth and manageable workflow by creating new system using technological approach. A web-based system that ensure good distribution of workload for the worker from ordering – sending order to kitchen – to serve food. This project also trying to reach customer satisfaction by adding feature of menu recommendation. This build customer relationship with the restaurant by collecting customers' data and tracking their favourite pick to personalize their order on their next visit.

i. To implement self-ordering system for customer utilizing QR code.
ii. To implement recommendation menu feature to improve customer experience based on their personal preference.

1.4 Methodology

In this development of the project, agile software methodology will be used to develop the system. The requirement of the project should solve the users' problem. Therefore, design is based on collaboration towards users and constant testing to ensure feature of the system satisfied the needs of users.

1.5 Project Scope

This project scope is targeted to be used in mid-range restaurant where customers will dine-in the restaurant and take order. Moreover, the proposed system is made to be used on

mobile phone only. Besides, the main focus of this system is the ordering process of the restaurant with two-way communication. Hence, payment system will not be included in this system.

1.6 Significance of project

This project will be focus on mid-range type of restaurant where there will be full-course meal with a way of serving whether customer order at the counter and food will be brought to the table for them or self-services[1] since the management system suits best with the flow of work for this restaurant. Customer personalization also focus on the tracking data of customer frequent chosen menu. In this case, the customer will have recommended menu provided on top of the site that recommend based on the menus with the highest sales.

1.7 Project Schedule

	PROJECT NAME	PROJECT DURATION	PROJECT START DATE	PROJECT END DATE
	Final Year Project Schedule 1	107	September 19, 2019	January 12, 2020

TASK ID	TASK DESCRIPTION	TASK DURATION (DAYS)	START DATE	END DATE
1	Submission of Brief Proposal	11	September 19, 2019	September 29, 2019
2	Feedback and Comments	7	September 29, 2019	October 5, 2019
3	Submission of Full Proposal	15	October 5, 2019	October 19, 2019
4	Chapter 1	8	October 19, 2019	October 26, 2019
5	Chapter 2	22	October 26, 2019	November 16, 2019
6	Chapter 3	20	November 16, 2019	December 5, 2019
7	Final Year Project 1 Report	8	December 5, 2019	December 12, 2019
8	Final Year Project 1 Symposium	2	December 17, 2019	December 18, 2019
9	Submission of Final Report (Softcopy)	25	December 18, 2019	January 11, 2020

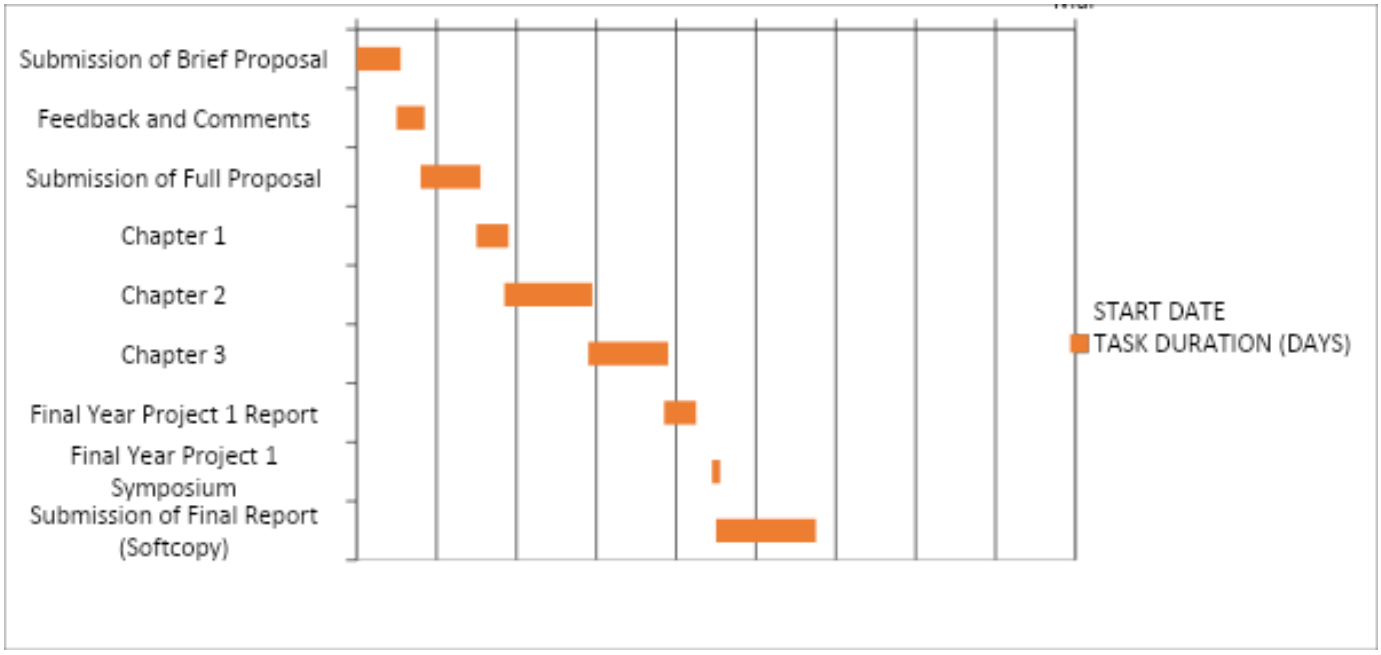

Figure 1.1 Gantt Chart of FYP1 timeline

1.8 Expected outcome

At the end of this project, a web-based system will be developed to synchronizes flow of restaurant management from taking order to serving food. Each table will have its QR code uniquely address based on its table number and customer can self-order by scanning through the code and it will be redirected to the web app that contains page of menus to choose from. Customer can take time to pick their favourable menu to be ordered in the system. Order sends to the waiter to be confirmed and sent to the kitchen for preparation. The kitchen displays the order sequentially and divided by the type of menus i.e dish, drink, sides etc. For customer who has past ordering history, system will be personalized recommended menus by their past preference dish.

With this project, workload of workers in restaurant will be ease and there will be no delay of waiter to do their services. Management of restaurant will be more systematic and kitchen staff would not have to deal with a messy paper-based ordering system. Also, marketing strategies of customer menu recommendation can be benefit by restaurant management to get loyalty of customer. Customer will easily return to the restaurant with new menus recommended to them using their history of ordered pick.

1.9 Thesis outline

Chapter 2 will be cover about the reviewed system. Literature review on four existing system will be covered on this chapter to help on searching the relevancy of this project to be executed. Comparison of each system will be analysed in a tabulation and explain in detail the improvement from the existing solution.

Chapter 3 will be explaining about methodology that will be utilize to develop the project The reasoning of why a particular method was chosen for the project and how each of the phase is done for the project.

Chapter 4 will be discussing on the implementation details of the system. In this chapter, we will take a screenshot of the system that was developed and explaining how the system work with the user interface and their relation towards each other. This also includes the tool that was used to complete the project development.

Chapter 5 comprises of explanation on testing of the system. the testing of the system used a few methods that will be explained in this chapter and the evaluation towards the system that was develop by potential users that

Chapter 6 wraps up the whole project completion and gives insight towards the future work that will be continued. This is by analysing the limitation of the project and feature that can be added in the future.

CHAPTER 2: Literature Review

2.1 Introduction

In this chapter, we will be covering the literature review of similar existing application for restaurant management that has been proposed with additional features that use technological approach to improve their services. The technological approach will be reviewed and analysed its strength and weaknesses so that this project will get to be improved. To review certain application, objectives will be brought to focus so that features that will be reviewed are in accordance to the implementation of the objectives. With that, we will be reviewing on the aspect of way to tackle ordering system in restaurant with technological approach.

A lot of restaurant has been using various methodological approach to overcome hassle while taking order. The convenience technology bring to the work of human has make it utilize by Food and Beverages (F&B) industry so the flow of work system in the industry itself manageable to the people in the industries. Many of the technological approach have make the work easier and increase the productivity, efficiency and accuracy of work in the restaurants.

However, there are a few aspects in the features of the existing application that need to be re-evaluate whether it is suitable to be consider having in the proposed application or need to be left necessarily. Therefore, we will make comparison to all features in the application to assess the best feature to brought in the proposed system. Moreover, tools and methodological approach in the proposed system are also will be evaluated so that the approach used are suitable to the

system being designed and to assess the project with the right methodology to get the project done on the time allocated.

2.2 Reviews on Similar Existing Application

2.2.1 Yhofoodie

Many software developer company has started to provide an appropriate situation for using QR code for customer ordering. One of the samples studied is yhofoodie (Yhofoodie.com, 2019) who provide customer self-service ordering through QR code.

Figure 2.1: the use of QR code in yhofoodie

Yhofoodie as a mobile app that partnered with a few local restaurant/shops and centralized their order-taking into one application. Therefore, user can install this app at Google Playstore and search for nearest restaurant/shops that collaborate with this app to make online reservation or delivery services.

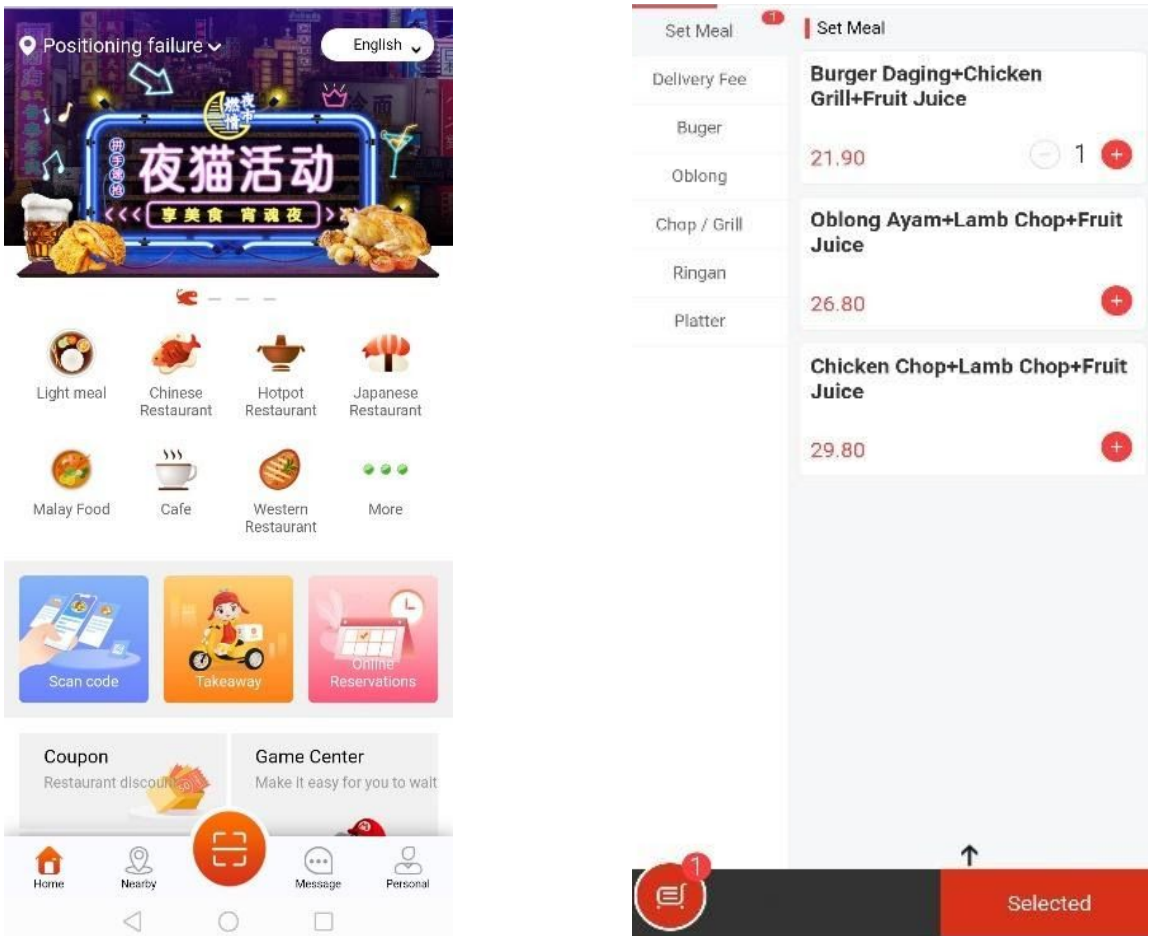

Figure 2.2: Interface of yhofoodie app main page and order review page

In this app, we will be focusing on QR code feature that they implemented. When going to restaurant that partnered with yhofoodie, they provide services for restaurant which use QR code for each table in the restaurant so that customer can make order through the app. Customer will scan the QR code in the table and they will be redirected to the app specifically to the intended page of restaurant that they went to with the list of menu served in the restaurant. In that app, they can go through the menu and place order on their own. The submitted order will be sent to the system so the staffs can review it and send it to the back kitchen for preparation.

Example of one of the restaurants is ‘Zennovi Confinement Meal’. They have collaborated with yhofoodie and use this feature for their restaurant.

Figure 2.3: QR marker placed on every table in the dining restaurant Zennovi Confinement Meal.

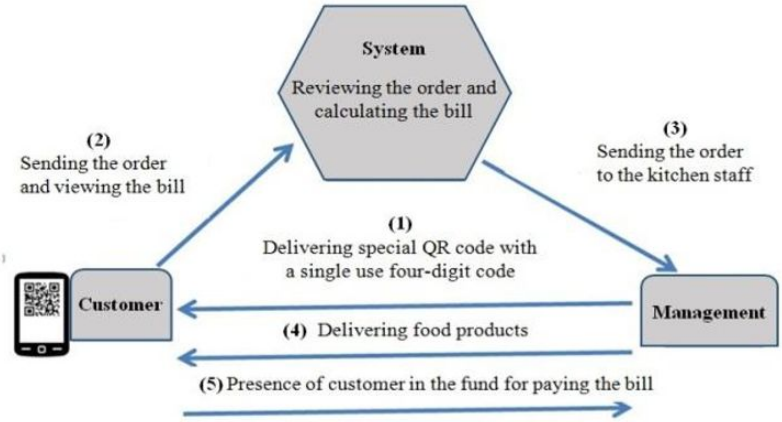

Figure 2.4: Example Architectural System Diagram of QR code usage ordering plan in the restaurant